

Kingbright

Optoelectronic Components

HIGH BRIGHTNESS LED

0.5W
1W

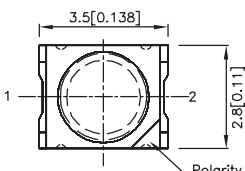
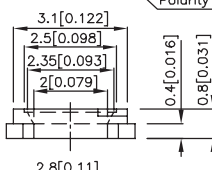
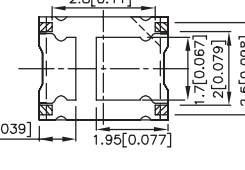
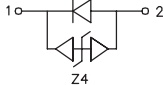
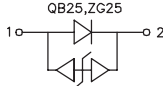
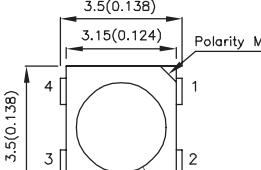
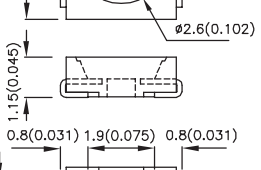
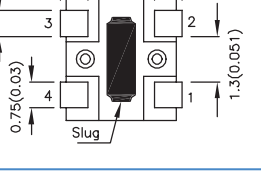
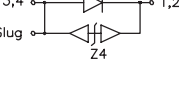
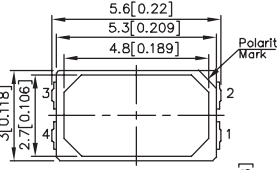
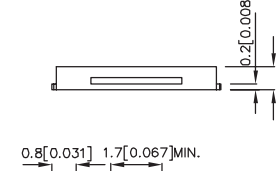
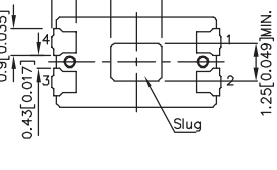
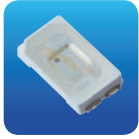
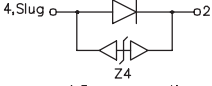
2
3



■ Quality ■ Efficiency ■ Service ■ Innovation

2016-2018

0.5W

Part Number	Material	λ_D (nm)	Lens Type	Pd (W)	Φ_v (lm) @150mA	Viewing Angle	Dimensions
					Typ.	201/2	
KA-3529ASEL2Z4S	AlGaInP	623	water clear	0.5	12	120°	3.5mm x 2.8mm x 0.8mm     KA-3529A   Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-3529ASYL2Z4S	AlGaInP	590	water clear	0.5	14	120°	
KA-3529AZG25Z4S	InGaN	525	water clear	0.5	20	120°	
KA-3529AQB25Z4S	InGaN	450	water clear	0.5	4.5	120°	
KA-3535SEL2Z4S	AlGaInP	623	water clear	0.5	13	120°	3.5mm x 3.5mm x 1.15mm     KA-3535  Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-3535SYL2Z4S	AlGaInP	590	water clear	0.5	14	120°	
KA-3535ZG25Z4S	InGaN	525	water clear	0.5	20	120°	
KA-3535QB25Z4S	InGaN	450	water clear	0.5	3.5	120°	
KA-5630SEL2Z4S	AlGaInP	623	water clear	0.5	14	120°	5.6mm x 3.0mm x 0.77mm     KA-5630  Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-5630SYL2Z4S	AlGaInP	590	water clear	0.5	15	120°	
KA-5630ZG25Z4S	InGaN	525	water clear	0.5	27	120°	

NOTE:

1. Luminous Flux value is traceable to CIE127-2007 standards.

1W

Part Number	Material	λ_D (nm)	Lens Type	Pd (W)	Φ_V (lm) @100mA	Viewing Angle	Dimensions
					Typ.		
KA3030BR34-S2	InGaN	450	water clear	1.32	10	120°	3.0mm x 3.0mm x 0.6mm Units : mm(inch) Tolerance : $\pm 0.25(0.01)$

Part Number	Material	λ_D (nm)	Lens Type	Pd (W)	Φ_V (lm) @350mA	Viewing Angle	Dimensions
					Typ.		
KTDS-3536SE28Z4S	AlGaInP	625	water clear	1.05	43	120°	3.45mm x 3.45mm x 2.0mm Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KTDS-3536SY28Z4S	AlGaInP	593	water clear	1.05	50	120°	
KTDS-3536ZG10Z4S	InGaN	530	water clear	1.9	100	120°	
KTDS-3536QB14Z4S	InGaN	460	water clear	2.8	24	120°	

NOTE:

1. Luminous Flux value is traceable to CIE127-2007 standards.

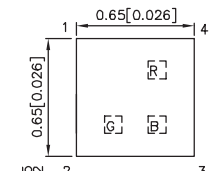
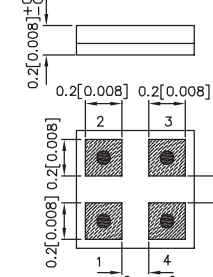
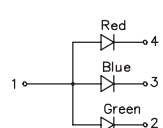
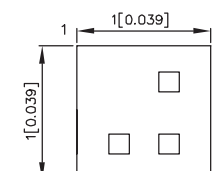
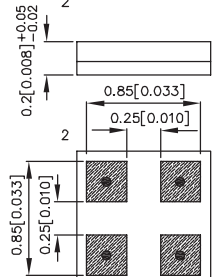
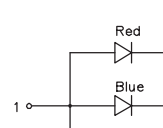
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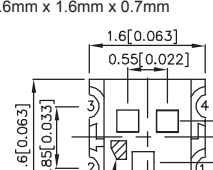
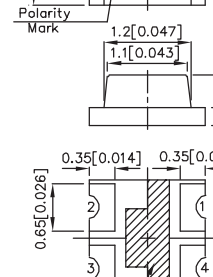
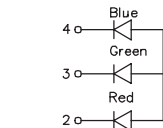
Optoelectronic Components

SMD LED

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RGB SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @5mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPGF-0606GBRC-120	InGaN	527	water clear	30	90	140°	0.65mm x 0.65mm x 0.2mm      KPGF-0606 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
	InGaN	467		5	20	140°	
	AlGaInP	624		10	30	140°	
KPGF-1011GBRC-120	InGaN	527	water clear	50	80	150°	1.0mm x 1.0mm x 0.2mm      KPGF-1011 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
	InGaN	467		10	23	150°	
	AlGaInP	624		15	30	150°	

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPTF-1616RGBC-11	AlGaInP	621	water clear	55	110	130°	1.6mm x 1.6mm x 0.7mm      KPTF-1616 Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	InGaN	525		120	280	130°	
	InGaN	465		40	70	130°	

NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

RGB SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPFA-2507BRGC-11	InGaP	465	water clear	40	65	130°	2.5mm x 1.0mm x 0.7mm KPFA-2507 Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
	AlGaInP	621		80	110	130°	
	InGaP	525		200	400	130°	
KPFA-3010RGBC-11	AlGaInP	621	water clear	80	140	150°	3.0mm x 1.5mm x 1.0mm KPFA-3010 Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	InGaP	525		300	500	150°	
	InGaP	465		40	70	150°	
KPFA-3011BZ1RGZ1C-132/F	InGaP	470	water clear	55	110	150°	3.0mm x 1.5mm x 1.0mm KPFA-3011 Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	AlGaInP	624		400	660	150°	
	InGaP	525		500	780	150°	

NOTES:

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RGB SMD LED

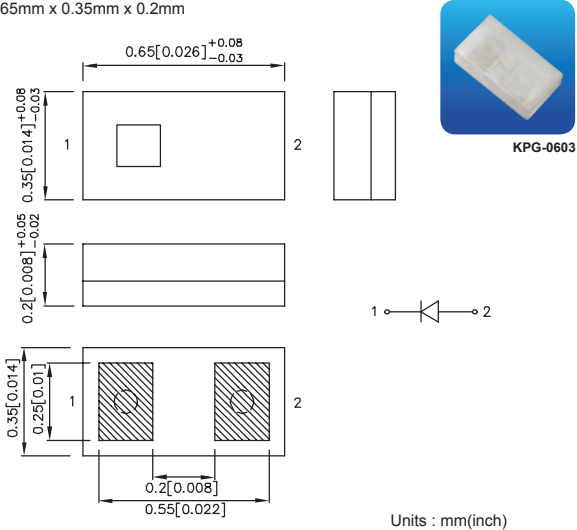
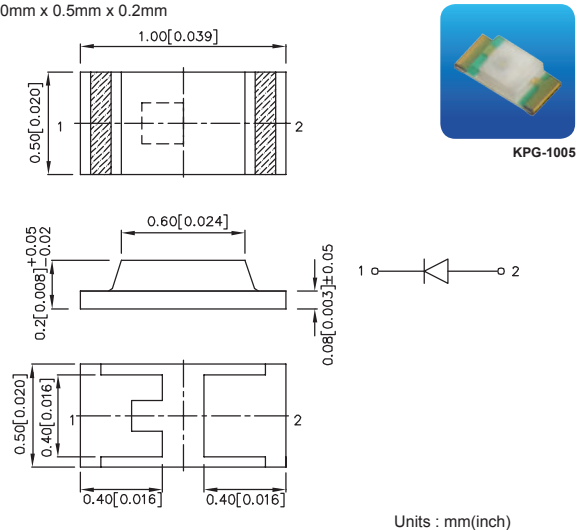
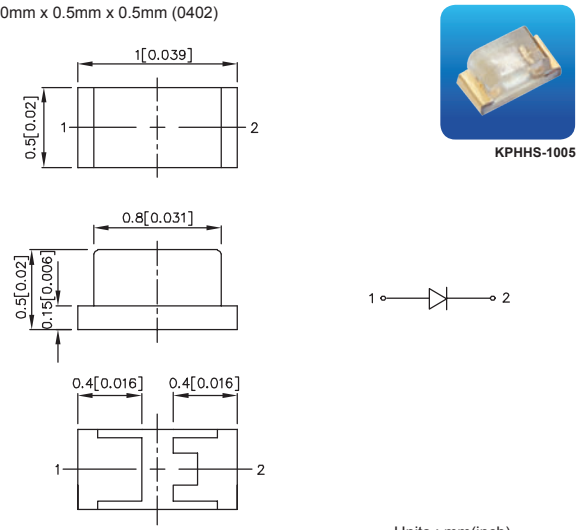
Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KAA-3528RGBS-K11-C8-CC	AlGaInP	625	water clear	400	500	120°	3.5mm x 2.8mm x 1.9mm Units : mm(inch) Tolerance : ±0.25(0.01)
	InGaIn	525		1000	1600	120°	
	InGaIn	470		200	330	120°	
KAAF-3529BGRS-132	InGaIn	470	water clear	200	300	130°	3.5mm x 2.8mm x 1.8mm Units : mm(inch) Tolerance : ±0.2(0.008)
	InGaIn	525		1000	1600	130°	
	AlGaInP	624		700	950	130°	

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @30mA *50mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KAAF-5050RGBS-13	AlGaInP	625	water clear	*1000	*1400	120°	5.0mm x 5.0mm x 1.5mm Units : mm(inch) Tolerance : ±0.2(0.008)
	InGaIn	525		1000	1400	120°	
	InGaIn	470		300	420	120°	

NOTE:

1. Luminous intensity value is traceable to CIE127-2007 standards.

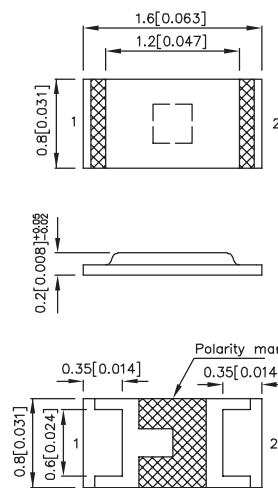
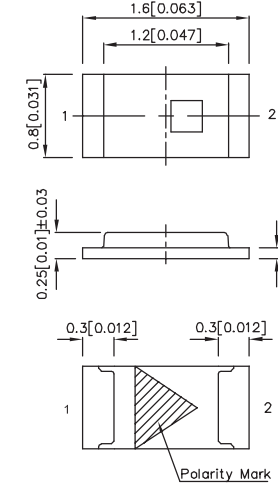
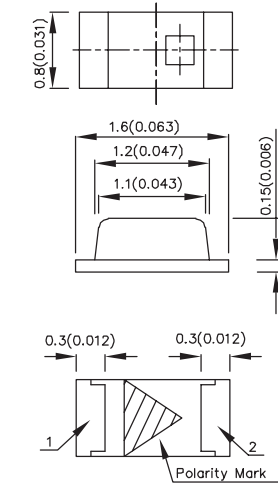
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA*10mA**5mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPG-0603SURC-TT	AlGaInP	631	water clear	*10	*35	140°	0.65mm x 0.35mm x 0.2mm  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPG-0603SEC-E-TT	AlGaInP	624	water clear	*15	*40	140°	
KPG-0603SEC-TT	AlGaInP	605	water clear	*20	*50	140°	
KPG-0603SYC-TT	AlGaInP	589	water clear	*10	*30	140°	
KPG-0603CGC-TT	AlGaInP	571	water clear	*6	*15	140°	
KPG-0603VGC-TT-5MAV	InGaN	527	water clear	**30	**80	140°	
KPG-0603PBC-TT-5MAV	InGaN	467	water clear	**15	**25	140°	
KPG-1005SURC-TT	AlGaInP	631	water clear	20	65	120°	1.0mm x 0.5mm x 0.2mm  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPG-1005SEC-E-TT	AlGaInP	624	water clear	20	75	120°	
KPG-1005SEC-TT	AlGaInP	605	water clear	40	90	120°	
KPG-1005SYC-TT	AlGaInP	589	water clear	55	100	120°	
KPG-1005CGC-TT	AlGaInP	571	water clear	12	35	120°	
KPG-1005VGC-TT-5MAV	InGaN	527	water clear	**30	**70	140°	
KPG-1005PBC-TT-5MAV	InGaN	467	water clear	**20	**28	140°	
KPHHS-1005SURCK	AlGaInP	630	water clear	40	70	120°	1.0mm x 0.5mm x 0.5mm (0402)  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPHHS-1005SECK	AlGaInP	601	water clear	80	150	120°	
KPHHS-1005SYCK	AlGaInP	590	water clear	80	150	120°	
KPHHS-1005CGCK	AlGaInP	570	water clear	20	50	120°	
KPHHS-1005ZGC-V	InGaN	525	water clear	200	450	140°	
KPHHS-1005QBC-D-V	InGaN	465	water clear	40	60	140°	

NOTES:

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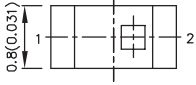
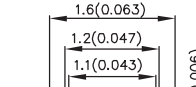
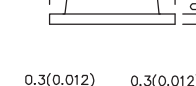
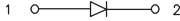
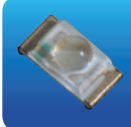
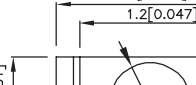
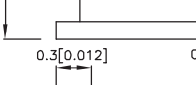
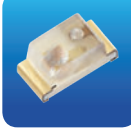
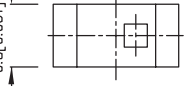
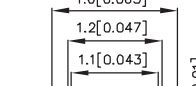
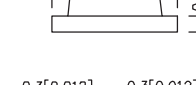
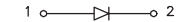
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA*5mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
KPG1-1608SURC-TT	AlGaInP	631	water clear	20	65	120°	1.6mm x 0.8mm x 0.2mm  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPG1-1608SEC-E-TT	AlGaInP	624	water clear	20	75	120°	
KPG1-1608SEC-TT	AlGaInP	605	water clear	40	90	120°	
KPG1-1608SYC-TT	AlGaInP	589	water clear	55	100	120°	
KPG1-1608CGC-TT	AlGaInP	571	water clear	12	35	120°	
KPG1-1608VGC-TT-5MAV	InGaN	527	water clear	*30	*70	120°	
KPG1-1608PBC-TT-5MAV	InGaN	467	water clear	*8	*20	120°	
KPG-1608SURKC-T	AlGaInP	630	water clear	55	110	120°	1.6mm x 0.8mm x 0.25mm (0603)  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPG-1608SEKC-T	AlGaInP	601	water clear	55	100	120°	
KPG-1608SYKC-T	AlGaInP	590	water clear	55	120	120°	
KPG-1608CGKC-T	AlGaInP	570	water clear	20	50	120°	
KPG-1608ZGC	InGaN	525	water clear	300	450	130°	
KPG-1608QBC-D	InGaN	465	water clear	40	100	130°	
KPG-1608VBC-D	InGaN	470	water clear	120	200	130°	
KPHM-1608EC-T	GaAsP/GaP	617	water clear	3	8	150°	1.6mm x 0.8mm x 0.4mm  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPHM-1608SURCK	AlGaInP	630	water clear	40	80	120°	
KPHM-1608SECK	AlGaInP	601	water clear	80	180	120°	
KPHM-1608YC-T	GaAsP/GaP	588	water clear	5	8	150°	
KPHM-1608SYCK	AlGaInP	590	water clear	80	150	120°	
KPHM-1608SGC-T	GaP	568	water clear	5	12	150°	
KPHM-1608CGCK	AlGaInP	570	water clear	20	50	120°	
KPHM-1608QBC-D	InGaN	465	water clear	40	100	130°	
KPHM-1608VBC-D	InGaN	470	water clear	120	180	130°	

NOTES:

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2. Luminous intensity value is traceable to CIE127-2007 standards.

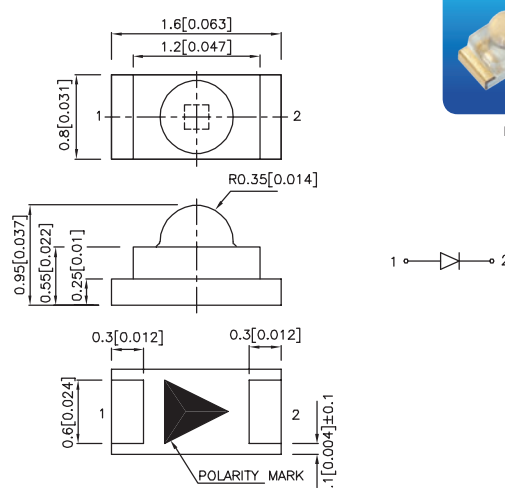
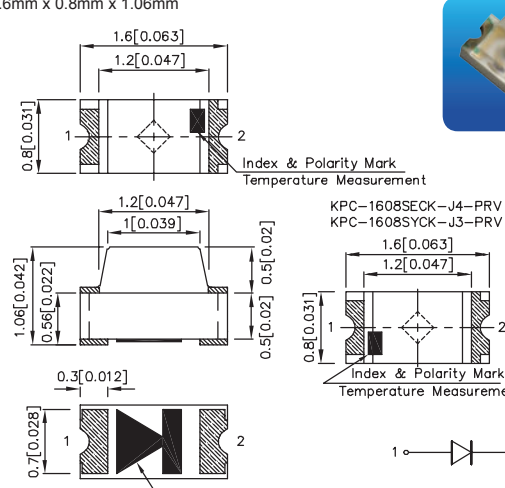
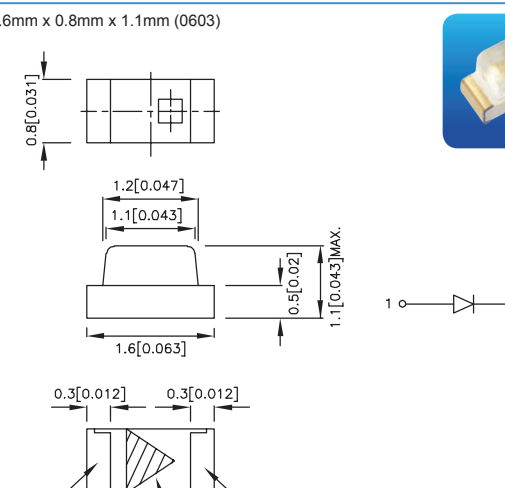
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPH-1608SURCK	AlGaInP	630	water clear	40	80	120°	1.6mm x 0.8mm x 0.65mm (0603)  KPH-1608     Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPH-1608SECK	AlGaInP	601	water clear	80	180	120°	
KPH-1608YC	GaAsP/GaP	588	water clear	3	8	150°	
KPH-1608SYCK	AlGaInP	590	water clear	80	150	120°	
KPH-1608SGC	GaP	568	water clear	5	12	150°	
KPH-1608CGCK	AlGaInP	570	water clear	20	50	120°	
KPH-1608QBC-D	InGaN	465	water clear	40	100	130°	
KPHD-1608SURCK	AlGaInP	630	water clear	40	170	120°	1.6mm x 0.8mm x 0.65mm  KPHD-1608     Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KPHD-1608SECK-J3-PRV	AlGaInP	625	water clear	300	600	120°	
KPHD-1608SECK-J4-PRV	AlGaInP	605	water clear	400	820	120°	
KPHD-1608SECK	AlGaInP	601	water clear	80	210	120°	
KPHD-1608SYCK	AlGaInP	590	water clear	80	210	120°	
KPHD-1608SYCK-J3-PRV	AlGaInP	590	water clear	300	600	120°	
KPHD-1608CGCK	AlGaInP	570	water clear	20	80	120°	
KPHD-1608ZGCK	InGaN	525	water clear	400	940	90°	
KPHD-1608QBC-D	InGaN	465	water clear	40	140	90°	
KPHD-1608VBC-D	InGaN	470	water clear	120	260	90°	
KPT-1608EC	GaAsP/GaP	617	water clear	3	8	150°	1.6mm x 0.8mm x 0.75mm (0603)  KPT-1608     Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPT-1608SURCK	AlGaInP	630	water clear	40	80	120°	
KPT-1608SECK	AlGaInP	601	water clear	80	180	120°	
KPT-1608YC	GaAsP/GaP	588	water clear	3	8	150°	
KPT-1608SYCK	AlGaInP	590	water clear	80	150	120°	
KPT-1608SGC	GaP	568	water clear	5	12	150°	
KPT-1608CGCK	AlGaInP	570	water clear	20	50	120°	
KPT-1608ZGC	InGaN	525	water clear	200	400	130°	
KPT-1608QBC-D	InGaN	465	water clear	40	100	130°	
KPT-1608VBC-D	InGaN	470	water clear	120	180	130°	

NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

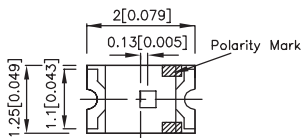
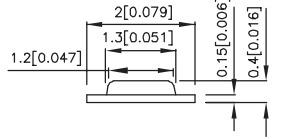
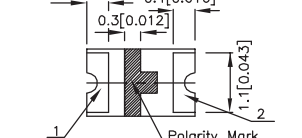
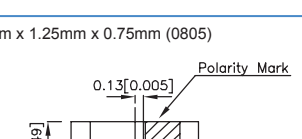
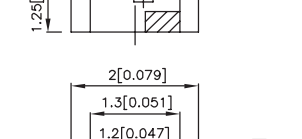
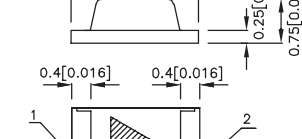
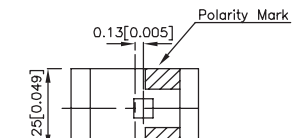
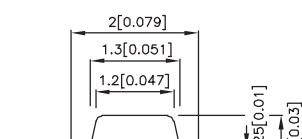
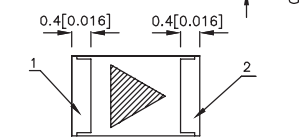
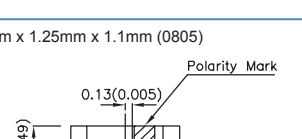
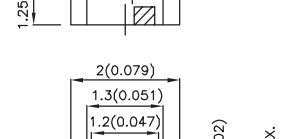
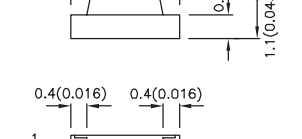
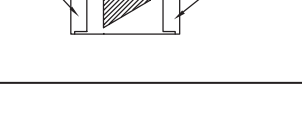
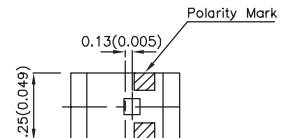
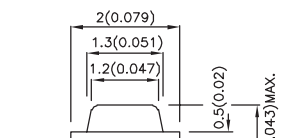
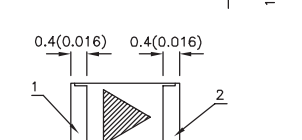
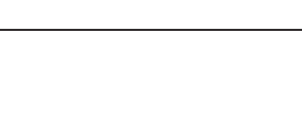
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimensions
				Min.	Typ.		
KPTD-1608SURCK	AlGaInP	630	water clear	80	250	60°	1.6mm x 0.8mm x 0.95mm (Dome Lens)  Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KPTD-1608SECK	AlGaInP	601	water clear	200	500	60°	
KPTD-1608SYCK	AlGaInP	590	water clear	300	600	60°	
KPTD-1608CGCK	AlGaInP	570	water clear	80	190	60°	
KPTD-1608ZGC	InGaN	525	water clear	700	1300	60°	
KPTD-1608ZGC-G	InGaN	525	water clear	1000	1500	60°	
KPTD-1608QBC-D	InGaN	465	water clear	80	200	40°	
KPTD-1608QBC-G	InGaN	465	water clear	200	350	40°	
KPTD-1608VBC-D	InGaN	470	water clear	200	350	40°	
KPC-1608SEC-E	AlGaInP	621	water clear	55	100	150°	1.6mm x 0.8mm x 1.06mm  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPC-1608SECK-J4-PRV	AlGaInP	605	water clear	300	550	150°	
KPC-1608SYCK	AlGaInP	590	water clear	80	150	150°	
KPC-1608SYCK-J3-PRV	AlGaInP	590	water clear	200	320	150°	
KPC-1608FGCK	AlGaInP	568	water clear	20	50	150°	
KP-1608EC	GaAsP/GaP	617	water clear	3	8	150°	1.6mm x 0.8mm x 1.1mm (0603)  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KP-1608SURCK	AlGaInP	630	water clear	40	80	120°	
KP-1608SECK	AlGaInP	601	water clear	80	180	120°	
KP-1608YC	GaAsP/GaP	588	water clear	3	8	150°	
KP-1608SYCK	AlGaInP	590	water clear	80	150	120°	
KP-1608SGC	GaP	568	water clear	5	12	150°	
KP-1608CGCK	AlGaInP	570	water clear	20	50	120°	
KP-1608ZGC	InGaN	525	water clear	200	400	130°	
KP-1608QBC-D	InGaN	465	water clear	40	100	130°	

NOTES:

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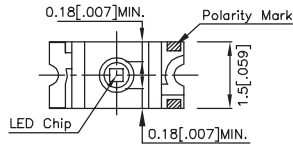
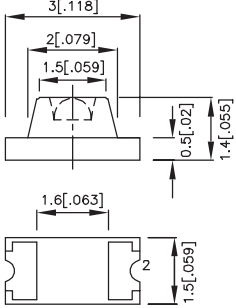
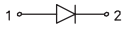
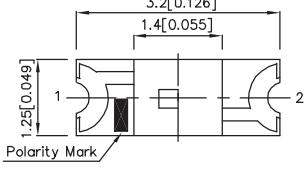
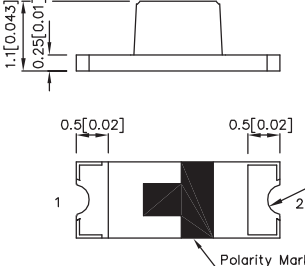
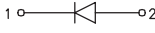
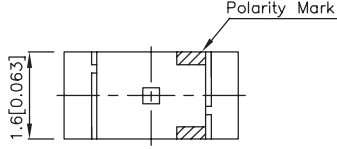
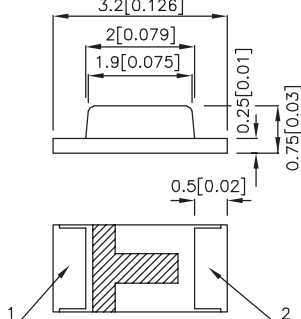
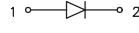
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPHCM-2012SURCK	AlGaInP	630	water clear	40	80	140°	2.0mm x 1.25mm x 0.4mm (0805)      
KPHCM-2012SECK	AlGaInP	601	water clear	80	180	140°	
KPHCM-2012SYCK	AlGaInP	590	water clear	80	150	140°	
KPHCM-2012CGCK	AlGaInP	570	water clear	20	50	140°	
KPHCM-2012ZGCK	InGaN	525	water clear	200	400	140°	
KPHCM-2012QBC-D	InGaN	465	water clear	40	100	140°	
KPT-2012EC	GaAsP/GaP	617	water clear	3	8	160°	2.0mm x 1.25mm x 0.75mm (0805)        
KPT-2012SURCK	AlGaInP	630	water clear	40	80	140°	
KPT-2012SECK	AlGaInP	601	water clear	80	180	140°	
KPT-2012YC	GaAsP/GaP	588	water clear	3	8	160°	
KPT-2012SYCK	AlGaInP	590	water clear	80	150	140°	
KPT-2012SGC	GaP	568	water clear	5	12	160°	
KPT-2012CGCK	AlGaInP	570	water clear	20	50	140°	
KPT-2012ZGCK	InGaN	525	water clear	200	400	140°	
KPT-2012QBC-D	InGaN	465	water clear	40	100	140°	
KPT-2012VBC-D	InGaN	470	water clear	120	180	140°	
KP-2012EC	GaAsP/GaP	617	water clear	3	8	160°	2.0mm x 1.25mm x 1.1mm (0805)     
KP-2012SURCK	AlGaInP	630	water clear	40	80	140°	
KP-2012SECK	AlGaInP	601	water clear	80	180	140°	
KP-2012YC	GaAsP/GaP	588	water clear	3	8	160°	
KP-2012SYCK	AlGaInP	590	water clear	80	150	140°	
KP-2012SGC	GaP	568	water clear	5	12	160°	
KP-2012CGCK	AlGaInP	570	water clear	20	50	140°	
KP-2012ZGCK	InGaN	525	water clear	200	400	140°	
KP-2012QBC-D	InGaN	465	water clear	40	100	140°	

NOTES:

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2. Luminous intensity value is traceable to CIE127-2007 standards.

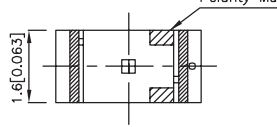
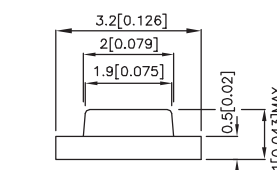
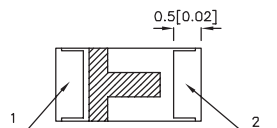
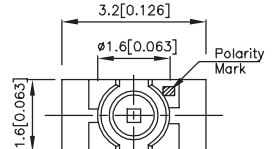
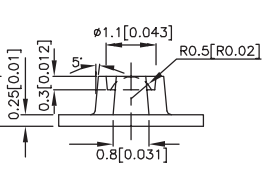
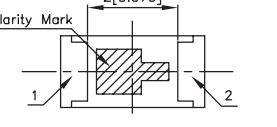
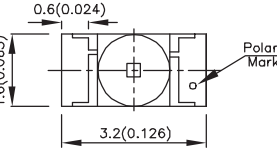
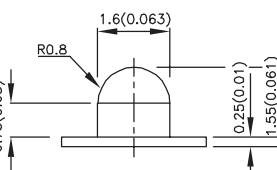
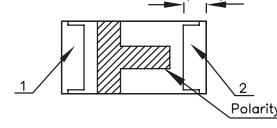
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
KPL-3015EC	GaAsP/GaP	617	water clear	5	12	100°	3.0mm x 1.5mm x 1.4mm (1106)    Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPL-3015SURCK	AlGaInP	630	water clear	120	180	70°	
KPL-3015SECK	AlGaInP	601	water clear	120	350	70°	
KPL-3015SYCK	AlGaInP	590	water clear	200	350	70°	
KPL-3015YC	GaAsP/GaP	588	water clear	8	14	100°	
KPL-3015SGC	GaP	568	water clear	8	18	100°	
KPL-3015CGCK	AlGaInP	570	water clear	55	120	70°	
KPL-3015ZGC	InGaN	525	water clear	500	800	50°	
KPL-3015QBC-D	InGaN	465	water clear	120	200	50°	
KPTC-3212SURCK-01	AlGaInP	630	water clear	40	80	140°	3.2mm x 1.25mm x 1.1mm    Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPTC-3212SECK-01	AlGaInP	601	water clear	80	180	140°	
KPTC-3212SYCK-01	AlGaInP	590	water clear	80	180	140°	
KPTC-3212CGCK-01	AlGaInP	570	water clear	20	50	140°	
KPTC-3212QBC-D-01	InGaN	465	water clear	40	80	140°	
KPT-3216EC	GaAsP/GaP	617	water clear	3	8	160°	3.2mm x 1.6mm x 0.75mm (1206)    Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPT-3216SURCK	AlGaInP	630	water clear	40	80	140°	
KPT-3216SECK	AlGaInP	601	water clear	80	180	140°	
KPT-3216YC	GaAsP/GaP	588	water clear	3	8	160°	
KPT-3216SYCK	AlGaInP	590	water clear	80	150	140°	
KPT-3216SGC	GaP	568	water clear	5	12	160°	
KPT-3216CGCK	AlGaInP	570	water clear	20	50	140°	
KPT-3216ZGC	InGaN	525	water clear	200	400	150°	
KPT-3216QBC-D	InGaN	465	water clear	40	100	150°	

NOTES:

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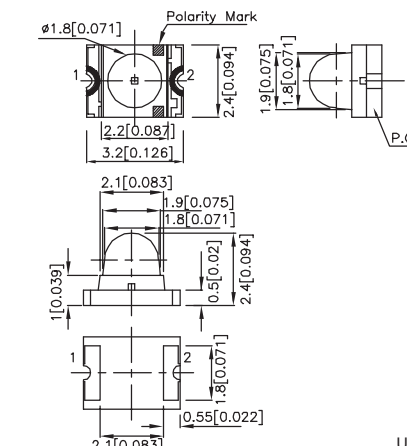
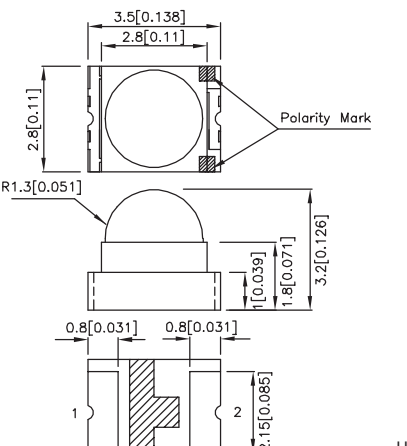
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KP-3216EC	GaAsP/GaP	617	water clear	3	8	160°	3.2mm x 1.6mm x 1.1mm (1206)    Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KP-3216SURCK	AlGaInP	630	water clear	40	80	140°	
KP-3216SECK	AlGaInP	601	water clear	80	180	140°	
KP-3216YC	GaAsP/GaP	588	water clear	3	8	160°	
KP-3216SYCK	AlGaInP	590	water clear	80	150	140°	
KP-3216SGC	GaP	568	water clear	5	12	160°	
KP-3216CGCK	AlGaInP	570	water clear	20	50	140°	
KP-3216ZGC	InGaN	525	water clear	200	400	150°	
KP-3216QBC-D	InGaN	465	water clear	40	100	150°	
KPTL-3216SURCK	AlGaInP	630	water clear	120	230	80°	3.2mm x 1.6mm x 1.1mm (1206)    Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPTL-3216SECK	AlGaInP	601	water clear	200	350	80°	
KPTL-3216SYCK	AlGaInP	590	water clear	200	350	80°	
KPTL-3216CGCK	AlGaInP	570	water clear	55	100	80°	
KPTL-3216ZGC	InGaN	525	water clear	700	1100	80°	
KPTL-3216QBC-D	InGaN	465	water clear	120	250	80°	
KPTD-3216SURCK	AlGaInP	630	water clear	300	800	40°	3.2mm x 1.6mm x 1.8mm (1206 Dome Lens)    Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPTD-3216SECK	AlGaInP	601	water clear	500	1000	40°	
KPTD-3216SYCK	AlGaInP	590	water clear	700	800	40°	
KPTD-3216CGCK	AlGaInP	570	water clear	120	300	40°	
KPTD-3216ZGC	InGaN	525	water clear	1900	3500	30°	
KPTD-3216ZGC-G	InGaN	525	water clear	3100	4200	30°	
KPTD-3216QBC-D	InGaN	465	water clear	300	700	30°	

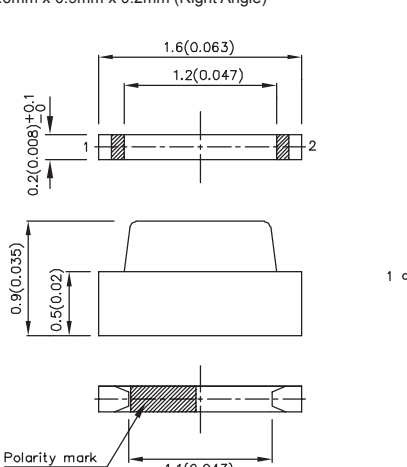
NOTES:

1. KP series custom-made is available upon request.
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TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPD-3224SURCK	AlGaInP	630	water clear	700	1500	20°	3.2mm x 2.4mm x 2.4mm (Dome Lens)  Units : mm (inch) Tolerance : $\pm 0.1(0.004)$
KPD-3224SECK	AlGaInP	601	water clear	1000	1600	20°	
KPD-3224SYCK	AlGaInP	590	water clear	1000	1300	20°	
KPD-3224CGCK	AlGaInP	570	water clear	400	600	20°	
KPD-3224ZGC	InGaN	525	water clear	3100	6000	20°	
KPD-3224QBC-D	InGaN	465	water clear	500	900	20°	
KPED-3528SURCK	AlGaInP	630	water clear	120	250	70°	3.5mm x 2.8mm x 3.2mm (Dome Lens)  Units : mm (inch) Tolerance : $\pm 0.2(0.008)$
KPED-3528SECK	AlGaInP	601	water clear	400	700	70°	
KPED-3528SYCK	AlGaInP	590	water clear	300	500	70°	
KPED-3528CGCK	AlGaInP	570	water clear	80	200	70°	

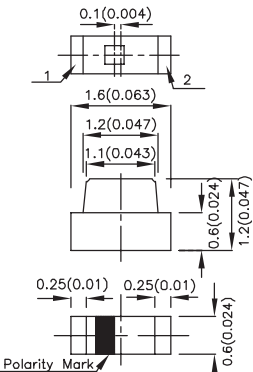
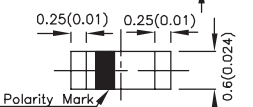
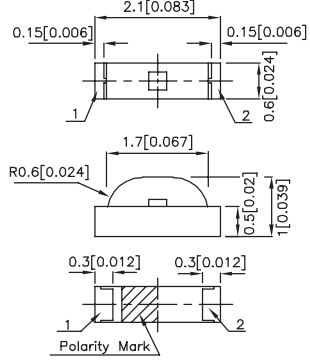
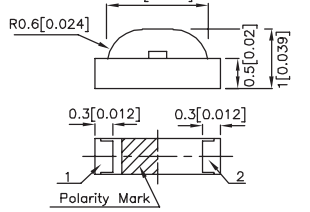
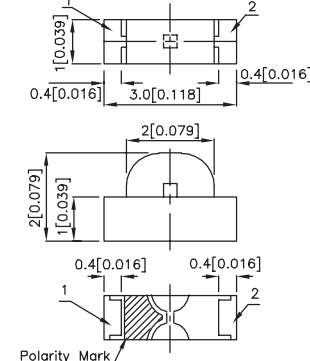
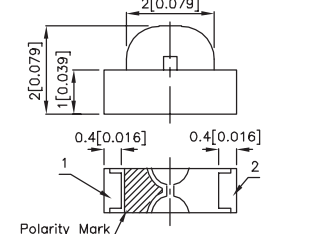
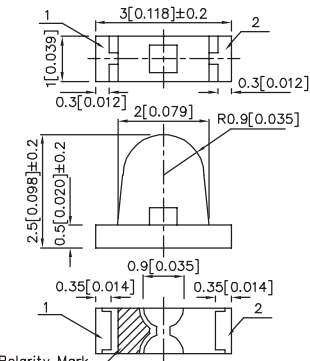
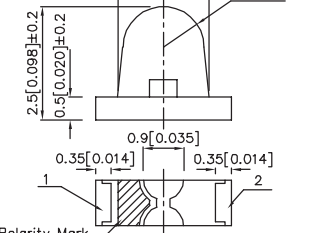
RIGHT ANGLE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPGA-1602SURC-KA	AlGaInP	631	water clear	20	70	150°	1.6mm x 0.9mm x 0.2mm (Right Angle)  Units : mm (inch) Tolerance : $\pm 0.1(0.004)$
KPGA-1602SEC-E-KA	AlGaInP	624	water clear	55	120	150°	
KPGA-1602SEC-KA	AlGaInP	605	water clear	20	70	150°	
KPGA-1602SYC-KA	AlGaInP	589	water clear	40	75	150°	
KPGA-1602CGC-KA	AlGaInP	571	water clear	12	30	150°	
KPGA-1602QBC-KA	InGaN	463	water clear	20	60	150°	

NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

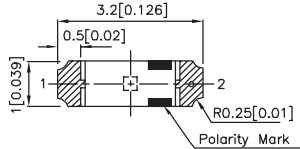
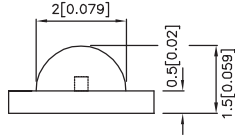
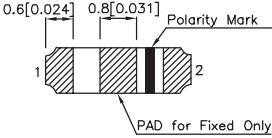
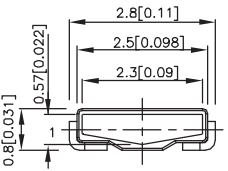
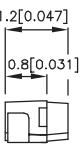
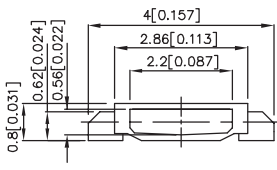
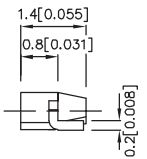
RIGHT ANGLE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimensions
				Min.	Typ.		
KPA-1606SURCK	AlGaInP	630	water clear	40	80	110°	1.6mm x 1.2mm x 0.6mm (0602 Right Angle)    Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPA-1606SECK	AlGaInP	601	water clear	80	180	110°	
KPA-1606SYCK	AlGaInP	590	water clear	80	150	110°	
KPA-1606CGCK	AlGaInP	570	water clear	20	50	110°	
KPA-1606ZGC	InGaN	525	water clear	200	400	110°	
KPA-1606QBC-D	InGaN	465	water clear	40	80	110°	
KPA-1606QBC-G	InGaN	465	water clear	80	150	110°	
KPA-1606VBC-D	InGaN	470	water clear	120	200	110°	
KPA-2107SURCK	AlGaInP	630	water clear	40	80	140°	2.1mm x 1.0mm x 0.6mm (Right Angle)    Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPA-2107SECK	AlGaInP	601	water clear	80	180	140°	
KPA-2107SYCK	AlGaInP	590	water clear	80	150	140°	
KPA-2107CGCK	AlGaInP	570	water clear	20	50	140°	
KPA-2107ZGCK	InGaN	525	water clear	200	300	170°	
KPA-2107ZGC-G	InGaN	525	water clear	400	650	170°	
KPA-2107QBC-D	InGaN	465	water clear	40	80	170°	
KPA-2107VBC-D	InGaN	470	water clear	120	200	170°	
KPA-3010EC	GaAsP/GaP	617	water clear	3	6	120°	3.0mm x 2.0mm x 1.0mm (1104 Right Angle)    Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KPA-3010SURCK	AlGaInP	630	water clear	40	80	120°	
KPA-3010SECK	AlGaInP	601	water clear	80	180	120°	
KPA-3010YC	GaAsP/GaP	588	water clear	3	6	120°	
KPA-3010SYCK	AlGaInP	590	water clear	80	150	120°	
KPA-3010SGC	GaP	568	water clear	5	12	120°	
KPA-3010CGCK	AlGaInP	570	water clear	20	50	120°	
KPA-3010ZGC	InGaN	525	water clear	200	400	120°	
KPA-3010QBC-D	InGaN	465	water clear	40	80	120°	
KPPA-3010SURCK	AlGaInP	630	water clear	200	300	30°	3.0mm x 2.5mm x 1.0mm (Right Angle)    Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KPPA-3010SYCK	AlGaInP	590	water clear	300	450	30°	
KPPA-3010CGCK	AlGaInP	570	water clear	80	150	30°	

NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

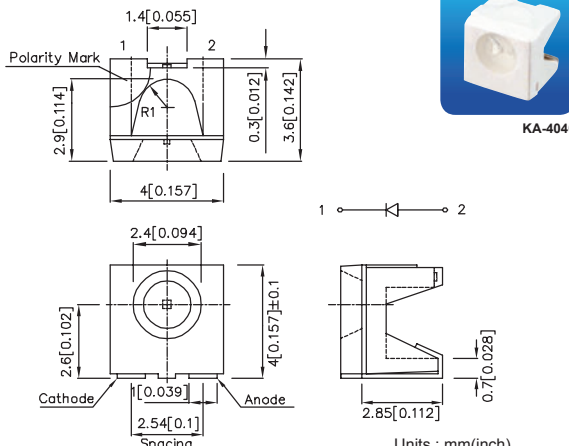
RIGHT ANGLE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPA-3210SYCK	AlGaInP	590	water clear	80	150	120°	3.2mm x 1.5mm x 1.0mm (1304 Right Angle)     KPA-3210 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPA-3210ZGC	InGaN	525	water clear	200	400	150°	
KPA-3210VBC-D	InGaN	470	water clear	120	200	150°	
KA-2810ASURSK	AlGaInP	630	water clear	40	100	110°	2.8mm x 1.2mm x 0.8mm (Right Angle)    KA-2810A Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KA-2810ASYSK	AlGaInP	590	water clear	120	200	110°	
KA-2810ACGSK	AlGaInP	570	water clear	20	60	110°	
KA-2810AZGS	InGaN	525	water clear	500	850	110°	
KA-2810AZGS-G	InGaN	525	water clear	1000	1400	110°	
KA-2810AQBS-D	InGaN	465	water clear	80	150	110°	
KA-2810AVBS-D	InGaN	470	water clear	200	350	110°	
KA-4008SURSK	AlGaInP	630	water clear	55	90	120°	4.0mm x 0.8mm (Right Angle)    KA-4008 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KA-4008ZGS	InGaN	525	water clear	500	800	120°	
KA-4008VBS-D	InGaN	470	water clear	300	450	120°	

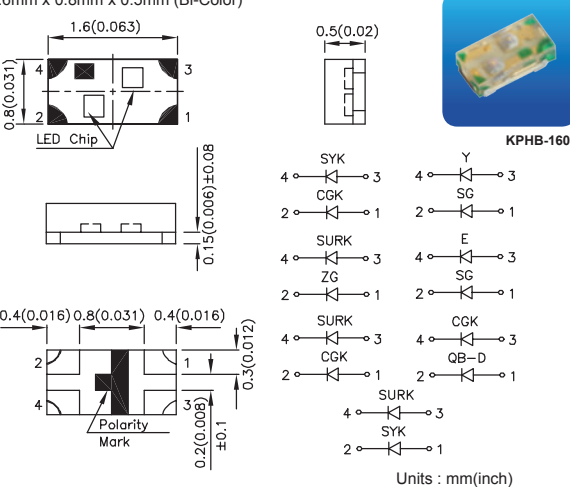
NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

RIGHT ANGLE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KA-4040SURCKT	AlGaInP	630	water clear	80	150	120°	4.0mm x 4.0mm (Right Angle)  Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-4040SECKT	AlGaInP	601	water clear	80	220	120°	
KA-4040SYCKT	AlGaInP	590	water clear	120	250	120°	
KA-4040CGCKT	AlGaInP	570	water clear	40	90	120°	
KA-4040ZGCT	InGaN	525	water clear	500	850	120°	
KA-4040QBS-D	InGaN	465	water clear	80	220	120°	

MULTI-COLOR SMD LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimensions
				Min.	Typ.		
KPHB-1608CGKSYKC-GX	AlGaInP	570	water clear	20	50	130°	1.6mm x 0.8mm x 0.5mm (Bi-Color)  KPHB-1608 4 3 2 1 SYK CGK 4 3 2 1 Y SG 4 3 2 1 SURK ZG 4 3 2 1 CGK QB-D 4 3 2 1 SYK SYK Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
	AlGaInP	590		80	150		
KPHB-1608ZGSURKC-GX	InGaN	525	water clear	200	350	130°	
	AlGaInP	630		40	90		
KPHB-1608CGKSURKC-GX	AlGaInP	570	water clear	20	50	130°	
	AlGaInP	630		40	90		
KPHB-1608SGYC-GX	GaP	568	water clear	5	15	130°	
	GaAsP/GaP	588		3	5		
KPHB-1608SGEC-GX	GaP	568	water clear	5	15	130°	
	GaAsP/GaP	617		5	12		
KPHB-1608QBDCGKC-GX	InGaN	465	water clear	40	70	130°	
	AlGaInP	570		20	50		
KPHB-1608SYKSURKC-GX	AlGaInP	590	water clear	80	150	130°	
	AlGaInP	630		40	90		
KPTB-1612ESGC	GaAsP/GaP	617	water clear	3	7	150°	
	GaP	568		5	12		
KPTB-1612SURKCGKC	AlGaInP	630	water clear	40	80	150°	
	AlGaInP	570		20	50		
KPTB-1612SURKQBDC	AlGaInP	630	water clear	40	80	150°	
	InGaN	465		40	80		
KPTB-1612SYKCGKC	AlGaInP	590	water clear	80	120	150°	
	AlGaInP	570		20	50		

NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

MULTI-COLOR SMD LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimensions
				Min.	Typ.		
KPTB-1615ESGC	GaAsP/GaP	617	water clear	3	7	150°	1.6mm x 1.5mm x 0.7mm (0606 Bi-Color) KPTB-1615 Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	GaP	568		5	12		
KPTB-1615SURKCGKC	AlGaInP	630	water clear	40	80	150°	
	AlGaInP	570		20	50		
KPTB-1615SURKQBDC	AlGaInP	630	water clear	40	80	150°	
	InGaIn	465		40	80		
KPTB-1615YSGC	GaAsP/GaP	588	water clear	3	8	150°	
	GaP	568		5	12		
KPTB-1615SYKCGKC	AlGaInP	590	water clear	80	120	150°	
	AlGaInP	570		20	50		
KPHBM-2012SURKCGKC	AlGaInP	630	water clear	40	80	120°	
	AlGaInP	570		20	50		
KPHBM-2012CGKSEKC	AlGaInP	570	water clear	20	50	120°	
	AlGaInP	601		80	180		
KPHBM-2012CGKSYKC	AlGaInP	570	water clear	20	50	120°	
	AlGaInP	590		80	120		
KPHBM-2012QBDSURKC	InGaIn	465	water clear	40	80	120°	
	AlGaInP	630		40	80		
KPHBM-2012QBDCGKC	InGaIn	465	water clear	40	80	120°	
	AlGaInP	570		20	50		
KPBA-3010ESGC	GaAsP/GaP	617	water clear	3	8	140°	
	GaP	568		5	15		
KPBA-3010SURKCGKC	AlGaInP	630	water clear	40	80	140°	
	AlGaInP	570		40	70		
KPBA-3010SURKQBDC	AlGaInP	630	water clear	40	80	140°	
	InGaIn	465		40	90		
KPBA-3010SEKCGKC	AlGaInP	601	water clear	80	150	140°	
	AlGaInP	570		40	70		
KPBA-3010SYKCGKC	AlGaInP	590	water clear	80	120	140°	
	AlGaInP	570		40	70		

NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

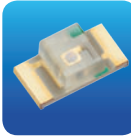
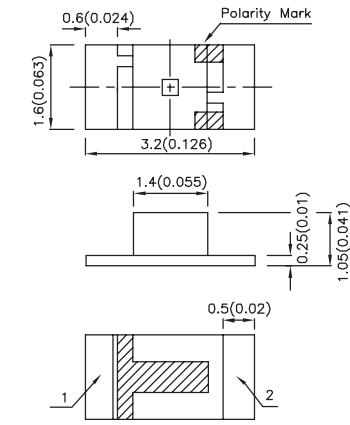
MULTI-COLOR SMD LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimensions
				Min.	Typ.		
KPTBD-3216ESGC	GaAsP/GaP	617	water clear	3	8	30°	3.2mm x 1.6mm x 1.8mm (Bi-Color) 2 1 3 4

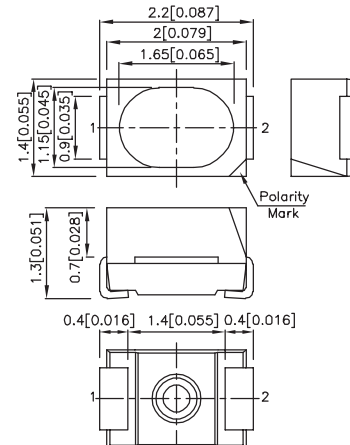
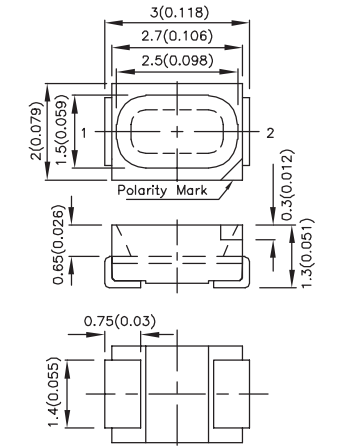
NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

REVERSE MOUNT SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KPTR-3216SURCK	AlGaInP	630	water clear	40	80	140°	3.2mm x 1.6mm x 1.05mm (1206 Reverse Mount)  KPTR-3216  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPTR-3216SECK	AlGaInP	601	water clear	80	180	140°	
KPTR-3216SYCK	AlGaInP	590	water clear	80	150	140°	
KPTR-3216CGCK	AlGaInP	570	water clear	20	50	140°	
KPTR-3216ZGC	InGaN	525	water clear	200	400	140°	
KPTR-3216QBC-D	InGaN	465	water clear	40	100	140°	

TOP-EMITTING PLCC SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KA-2214SURSK	AlGaInP	630	water clear	55	100	120°	2.2mm x 1.4mm x 1.3mm  KA-2214  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KA-2214ZGS	InGaN	525	water clear	400	700	120°	
KA-2214QBS-D	InGaN	465	water clear	80	150	120°	
KA-3021SURSK	AlGaInP	630	water clear	40	90	120°	3.0mm x 2.0mm x 1.3mm  KA-3021  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KA-3021YS	GaAsP/GaP	588	water clear	8	15	120°	
KA-3021SYSK	AlGaInP	590	water clear	120	200	120°	
KA-3021SGS	GaP	568	water clear	12	20	120°	
KA-3021CGSK	AlGaInP	570	water clear	40	80	120°	
KA-3021ZGS	InGaN	525	water clear	400	800	120°	
KA-3021QBS-D	InGaN	465	water clear	80	120	120°	

NOTES:

1. KP series custom-made is available upon request.
2. Luminous intensity value is traceable to CIE127-2007 standards.

TOP-EMITTING PLCC SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KA-3022CGSK-4.5SF	AlGaInP	570	water clear	40	80	120°	3.0mm x 2.2mm x 1.5mm Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-3528SURCKT	AlGaInP	630	water clear	55	100	120°	3.5mm x 2.8mm x 1.9mm Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-3528SECKT	AlGaInP	601	water clear	120	230	120°	
KA-3528SYCKT	AlGaInP	590	water clear	120	250	120°	
KA-3528CGCKT	AlGaInP	570	water clear	40	100	120°	
KA-3528ZGCKT	InGaIn	525	water clear	300	500	120°	
KA-3528QBS-D	InGaIn	465	water clear	80	150	120°	
KA-3528VBS-D	InGaIn	470	water clear	300	450	120°	Units : mm(inch) Tolerance : $\pm 0.25(0.01)$

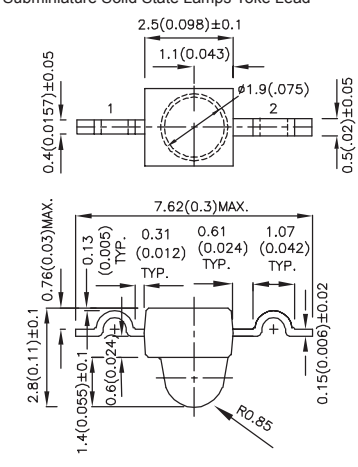
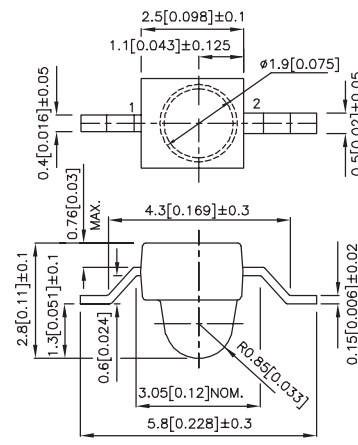
SUBMINIATURE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KM2520EC03	GaAsP/GaP	617	water clear	20	50	20°	Subminiature Solid State Lamps Gull Wing Lead Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KM2520SURCK03	AlGaInP	630	water clear	500	1000	20°	
KM2520YC03	GaAsP/GaP	588	water clear	20	50	20°	
KM2520SYCK03	AlGaInP	590	water clear	1300	2300	20°	
KM2520SGC03	GaP	568	water clear	40	90	20°	
KM2520CGCK03	AlGaInP	570	water clear	400	800	20°	
KM2520ZGC03	InGaIn	525	water clear	2700	6000	20°	
KM2520QBC-D03	InGaIn	465	water clear	300	900	20°	

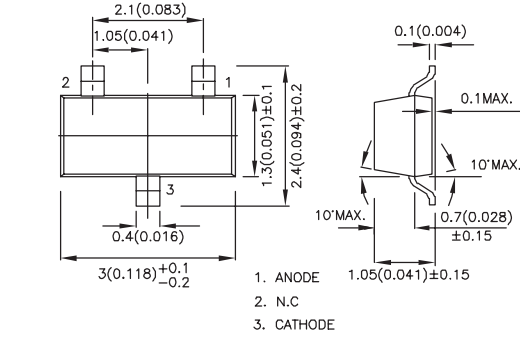
NOTE:

1. Luminous intensity value is traceable to CIE127-2007 standards.

SUBMINIATURE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KM2520QBC-D08	InGaN	465	water clear	300	900	20°	Subminiature Solid State Lamps Yoke Lead   KM2520xxx08 Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KM2520EC09	GaAsP/GaP	617	water clear	20	50	20°	Subminiature Solid State Lamps Z-Bend Lead   KM2520xxx09 Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KM2520SURCK09	AlGaInP	630	water clear	500	1000	20°	
KM2520SECK09	AlGaInP	601	water clear	1000	1800	20°	
KM2520YC09	GaAsP/GaP	588	water clear	20	50	20°	
KM2520SYCK09	AlGaInP	590	water clear	1300	2300	20°	
KM2520SGC09	GaP	568	water clear	40	90	20°	
KM2520CGCK09	AlGaInP	570	water clear	400	800	20°	
KM2520ZGC09	InGaN	525	water clear	2700	6000	20°	
KM2520QBC-D09	InGaN	465	water clear	300	900	20°	

SOT-23 SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KM-23EC-F	GaAsP/GaP	617	water clear	3	5	170°	SOT-23 Surface Mount LED Lamp (3mm x 1.3mm)   KM-23-F Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KM-23YC-F	GaAsP/GaP	588	water clear	3	8	170°	
KM-23SGC-F	GaP	568	water clear	5	10	170°	

NOTE:

1. Luminous intensity value is traceable to CIE127-2007 standards.

AMBIENT LIGHT SENSOR

Part Number

KPS-3227SP1C

Electrical And Radiant Characteristics
(Ta =25°C, Unless Otherwise Specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Collector Emitter Breakdown Voltage	BV _{ceo}	60	-	-	V	I _{ceo} =100μA
Emitter Collector Breakdown Voltage	BV _{eco}	4	-	-	V	I _{eco} =100μA
Collector Dark Current	I _D	-	10	100	nA	V _{CE} =5V E _V =0Lx
Light Current(1)	I _{PH1}	-	6	-	μA	V _{CE} =5V, E _V =100 Lx ^[1]
Light Current(2)	I _{PH2}	-	130	-	μA	V _{CE} =5V, E _V =1000 Lx ^[1]
Light Current(3)	I _{PH3}	-	950	-	μA	V _{CE} =5V, E _V =1000 Lx ^[2]
Light Current(4)	I _{PH4}	-	420	-	μA	V _{CE} =5V, E _V =1000 Lx ^[3]
Saturation Output Voltage	V _o	4.5	4.7	-	V	V _{CC} =5V, E _V =1000Lx ^[1] , R _L =75KΩ
Peak Wavelength	λ _P	-	580	-	nm	-
Response Wavelength	λ	390	-	700	nm	>10% Response
Collector Emitter Saturation Voltage	V _{CE(sat)}	-	-	0.4	V	I _c =10 mA

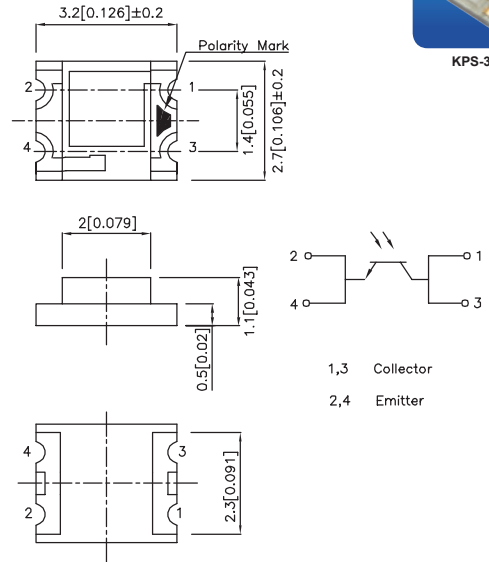
Notes:

- 1.White Fluorescent light (Color Temperature = 6200K) is used as light source.
- 2.Illuminance by CIE standard illuminant-A/2856K, incandescent lamp.
- 3.Sunlight (Color Temperature = 4600K) is used as light source.

Dimensions

KPS-3227SP1C 3.2mm x 2.7mm x 1.1mm
(Ambient Light Sensor)

KPS-3227SP1C

Units : mm(inch)
Tolerance : ±0.1(0.004)

COLOR SENSOR

Part Number

KPS-5130PD7C

Electrical And Radiant Characteristics
(Ta =25°C, Unless Otherwise Specified)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak Sensitivity Wavelength	λ _P	Red	-	620	-	nm
		Green	-	550	-	
		Blue	-	470	-	
Light Current (1)	I _{L1}	100Lux [1] VR =5V	Red	0.039	-	μA
			Green	0.042	-	
			Blue	0.022	-	
Light Current (2)	I _{L2}	1000Lux [1] VR =5V	Red	0.427	-	μA
			Green	0.498	-	
			Blue	0.262	-	
Diameter of the irradiation sensitive area	D		-	2.0	-	mm
Irradiation sensitive area per element	A		-	0.85	-	mm ²
Photo sensibility of the single color areas	S _{Max}	λ _R =620 nm λ _G =550 nm λ _B =470 nm	-	0.33 0.25 0.18	-	A/W
Reverse Dark Current	I _D	VR =5V	-	-	10	nA

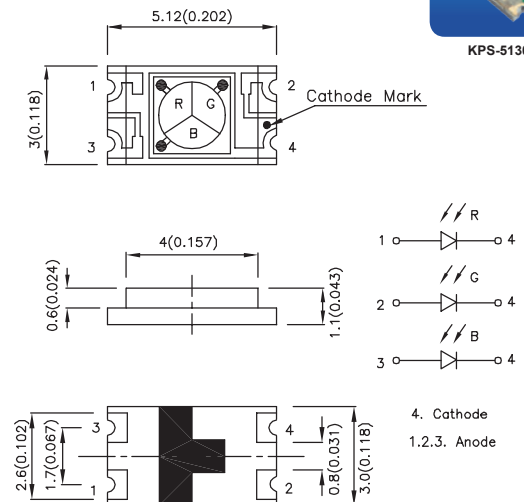
Note:

- 1.White fluorescent light (Color Temperature = 6500K) is used as light source.

Dimensions

KPS-5130PD7C 5.12mm x 3mm x 1.1mm
(RGB Color Sensor)

KPS-5130PD7C

Units : mm(inch)
Tolerance : ±0.25(0.01)

Kingbright

Optoelectronic Components

THROUGH-HOLE LED

Degradation Resistant Blue	25
Subminiature LED	26
Round LED	26
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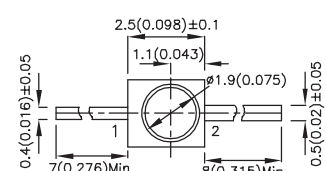
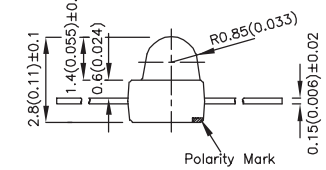
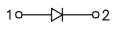
DEGRADATION RESISTANT BLUE

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
L-10934VBC/DS-D	InGaN	470	water clear	2300	4000	30°	T-1 (3mm) Round
L-19294VBC/DS-D	InGaN	470	water clear	400	800	60°	5mm Round
L-19804VBC/DS-D	InGaN	470	water clear	6000	9000	12°	T-1 3/4 (5mm) Round
L-17114VBC/DS-D	InGaN	470	water clear	6000	9000	15°	T-1 3/4 (5mm) Round

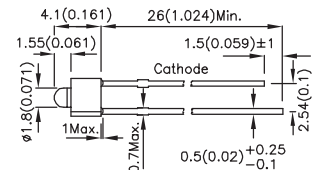
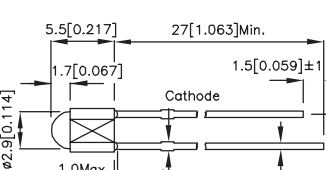
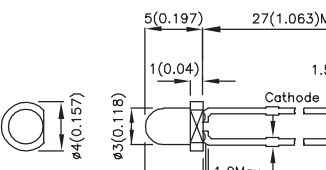
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

SUBMINIATURE LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KM2520SURCK01	AlGaInP	630	water clear	500	1000	20°	Subminiature Solid State Lamps      KM2520xxx01
KM2520SYCK01	AlGaInP	590	water clear	1300	2300	20°	
KM2520SGC01	GaP	568	water clear	40	90	20°	

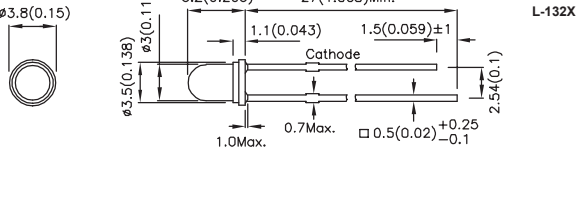
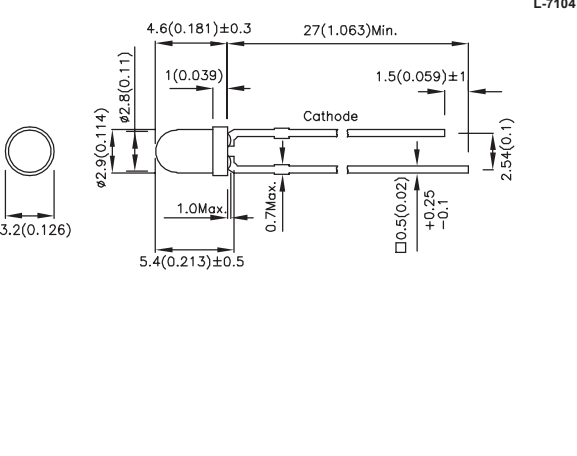
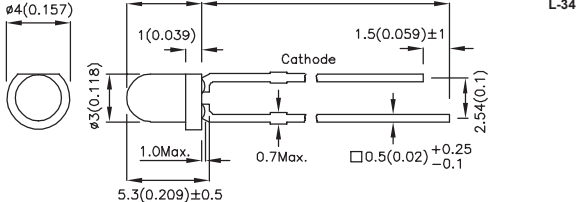
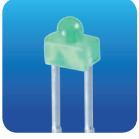
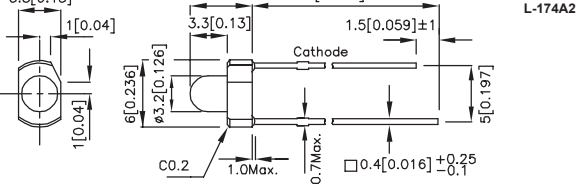
ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-4060ID	GaAsP/GaP	617	red diffused	4	8	70°	1.8mm Round   L-4060
L-4060SRD	GaAlAs	640	red diffused	*30	*80	70°	
L-4060YD	GaAsP/GaP	588	yellow diffused	4	8	70°	
L-4060GD	GaP	568	green diffused	6	12	70°	
L-4060ZGD	InGaN	525	green diffused	*500	*1000	120°	
L-4060QBC-D	InGaN	465	water clear	*400	*700	30°	
L-908A8ID	GaAsP/GaP	617	red diffused	6	15	60°	T-1 (3mm) Round   L-908A8
L-908A8SURTK	AlGaInP	630	red transparent	*200	*400	50°	
L-908A8SYTK	AlGaInP	590	yellow transparent	*400	*900	50°	
L-908A8GD	GaP	568	green diffused	10	25	60°	
L-1154ID	GaAsP/GaP	617	red diffused	6	15	60°	T-1 (3mm) Round   L-1154
L-1154SURDK	AlGaInP	630	red diffused	*120	*200	60°	
L-1154YD	GaAsP/GaP	588	yellow diffused	5	15	60°	
L-1154GD	GaP	568	green diffused	10	25	60°	
L-1154CGDK	AlGaInP	570	green diffused	*80	*120	60°	
L-1154QBDZ1C/ATBS	InGaN	465	water clear	*1000	*2000	20°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

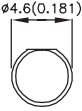
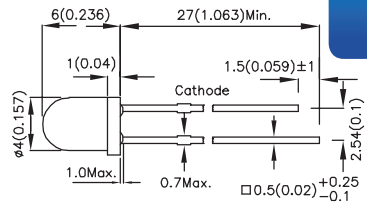
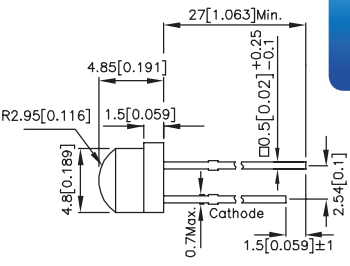
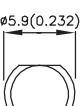
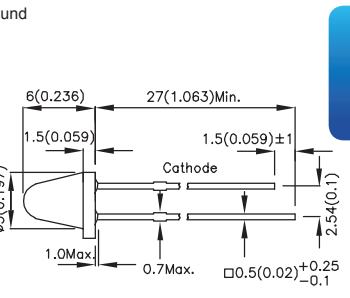
ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-132XID	GaAsP/GaP	617	red diffused	8	16	60°	T-1 (3mm) Round  
L-132XKD	GaAsP/GaP	625	red diffused	5	12	60°	
L-132XSURTK	AlGaInP	630	red transparent	*200	*400	50°	
L-132XSED-E	AlGaInP	621	orange diffused	*120	*300	60°	
L-132XND	GaAsP/GaP	602	orange diffused	8	16	60°	
L-132XNT	GaAsP/GaP	602	orange transparent	10	20	50°	
L-132XYD	GaAsP/GaP	588	yellow diffused	6	15	60°	
L-132XYT	GaAsP/GaP	588	yellow transparent	10	20	50°	
L-132XGD	GaP	568	green diffused	15	25	60°	
L-132XSGC	GaP	568	water clear	*40	*80	50°	
L-132XPGC-20MAV	GaP	557	water clear	*15	*35	50°	
L-132XQBC-D	InGaIn	465	water clear	*750	*1300	30°	
L-7104ID	GaAsP/GaP	617	red diffused	10	20	50°	T-1 (3mm) Round  
L-7104EC	GaAsP/GaP	617	water clear	12	30	30°	
L-7104ND	GaAsP/GaP	602	orange diffused	10	20	50°	
L-7104NC	GaAsP/GaP	602	water clear	12	30	30°	
L-7104YD	GaAsP/GaP	588	yellow diffused	8	15	50°	
L-7104GD	GaP	568	green diffused	10	25	50°	
L-7104GC	GaP	568	water clear	12	40	30°	
L-7104PGD	GaP	557	green diffused	3	8	50°	
L-7104SRD-F	GaAlAs	640	red diffused	*90	*160	50°	
L-7104SRC-D	GaAlAs	640	water clear	*120	*240	30°	
L-7104SURDK	AlGaInP	630	red diffused	*120	*240	50°	
L-7104SURC-E	AlGaInP	630	water clear	*500	*1100	30°	
L-7104SECK	AlGaInP	601	water clear	*700	*1400	30°	
L-7104SEC-H	AlGaInP	625	water clear	*1200	*2200	30°	
L-7104SYCK	AlGaInP	590	water clear	*650	*1150	30°	
L-7104SYC-H	AlGaInP	589	water clear	*1100	*2000	30°	
L-7104SGD	GaP	568	green diffused	*18	*40	50°	
L-7104SGC	GaP	568	water clear	*30	*60	30°	
L-7104CGCK	AlGaInP	570	water clear	*150	*330	30°	
L-7104ZGC	InGaIn	525	water clear	*6000	*9000	30°	
L-7104QBC-D	InGaIn	465	water clear	*900	*1600	30°	
L-7104VBC-D	InGaIn	470	water clear	*2100	*3700	30°	
L-34ID	GaAsP/GaP	617	red diffused	6	15	60°	T-1 (3mm) Round  
L-34SURDK	AlGaInP	630	red diffused	*100	*250	60°	
L-34YD	GaAsP/GaP	588	yellow diffused	8	15	60°	
L-34SYCK	AlGaInP	590	water clear	*400	*700	50°	
L-34GD	GaP	568	green diffused	12	25	60°	
L-34CGCK	AlGaInP	570	water clear	*150	*400	50°	
L-34ZGC	InGaIn	525	water clear	*4200	*6500	30°	
L-34QBC-D	InGaIn	465	water clear	*800	*1500	30°	
L-174A2IT	GaAsP/GaP	617	red transparent	10	40	35°	3.2mm Round  
L-174A2GT	GaP	568	green transparent	20	70	35°	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

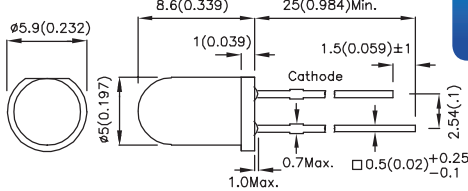
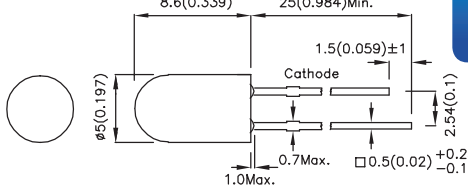
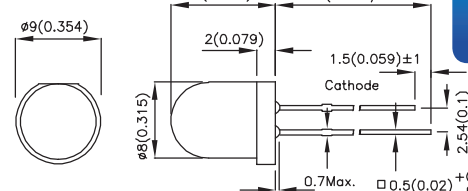
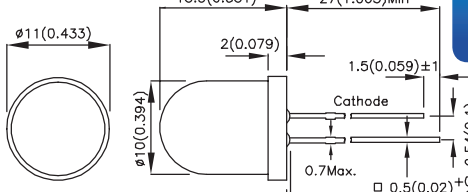
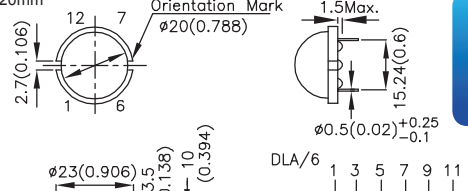
ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-43HD	GaP	635	red diffused	0.8	2	80°	4mm Round    L-43
L-43ID	GaAsP/GaP	617	red diffused	4	10	80°	
L-43YD	GaAsP/GaP	588	yellow diffused	5	10	80°	
L-43GD	GaP	568	green diffused	8	16	80°	
L-9294SURCK	AlGaInP	630	water clear	*100	*180	70°	5mm Round    L-9294
L-63ID	GaAsP/GaP	617	red diffused	8	12	60°	
L-63IT	GaAsP/GaP	617	red transparent	10	30	30°	
L-63GD	GaP	568	green diffused	8	16	60°	
L-7113ID	GaAsP/GaP	617	red diffused	18	40	30°	T-1 3/4 (5mm) Round    L-63
L-7113ED	GaAsP/GaP	617	orange diffused	18	40	30°	
L-7113EC	GaAsP/GaP	617	water clear	40	100	20°	
L-7113YD	GaAsP/GaP	588	yellow diffused	10	25	30°	
L-7113YC	GaAsP/GaP	588	water clear	30	80	20°	
L-7113GD	GaP	568	green diffused	15	30	30°	
L-7113GC	GaP	568	water clear	25	80	20°	
L-7113SRD-D	GaAlAs	640	red diffused	*120	*210	30°	
L-7113SRD-E	GaAlAs	640	red diffused	*180	*250	30°	
L-7113SURDK	AlGaInP	630	red diffused	*300	*650	30°	
L-7113SURCK	AlGaInP	630	water clear	*900	*1300	20°	
L-7113SEC-H	AlGaInP	625	water clear	*3100	*5000	20°	
L-7113SEC-J3	AlGaInP	625	water clear	*5000	*8000	20°	
L-7113SYCK	AlGaInP	590	water clear	*1800	*3000	20°	
L-7113SYC-H	AlGaInP	589	water clear	*2700	*4000	20°	
L-7113SYC-J3	AlGaInP	590	water clear	*4200	*6000	20°	
L-7113CGCK	AlGaInP	570	water clear	*400	*700	20°	
L-7113ZGC	InGaN	525	water clear	*8000	*14000	20°	
L-7113QBC-D	InGaN	465	water clear	*1900	*3600	20°	
L-7113VBC-D	InGaN	470	water clear	*3500	*6000	20°	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

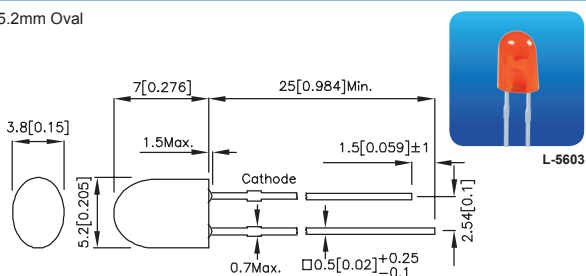
ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-7143SURCK	AlGaInP	630	water clear	*500	*900	30°	T-1 3/4 (5mm) Round 
L-7143SEC-H	AlGaInP	625	water clear	*1600	*3200	30°	
L-7143SGC	GaP	568	water clear	*120	*300	30°	
L-7143QBC-D	InGaN	465	water clear	*600	*1100	30°	
L-7143VBC-D	InGaN	470	water clear	*1500	*3000	30°	
L-1503ID	GaAsP/GaP	617	red diffused	12	40	30°	T-1 3/4 (5mm) Round 
L-1503SRC-J4	AlGaInP	640	water clear	*1900	*3000	20°	
L-1503SRD	GaAlAs	640	red diffused	*120	*260	30°	
L-1503SURDK	AlGaInP	630	red diffused	*400	*700	30°	
L-1503YD	GaAsP/GaP	588	yellow diffused	15	30	30°	
L-1503GD	GaP	568	green diffused	15	30	30°	8mm Round 
L-793ID	GaAsP/GaP	617	red diffused	*30	*60	30°	
L-793SRC-J4	AlGaInP	640	water clear	*1300	*2000	15°	
L-793SRD-D	GaAlAs	640	red diffused	*60	*140	30°	
L-793SRD-E	GaAlAs	640	red diffused	*140	*180	30°	
L-793SURDK	AlGaInP	630	red diffused	*120	*300	30°	10mm Round 
L-793YD	GaAsP/GaP	588	yellow diffused	*20	*50	30°	
L-793GD	GaP	568	green diffused	*30	*60	30°	
L-813ID	GaAsP/GaP	617	red diffused	*36	*80	30°	
L-813SRD-C	GaAlAs	640	red diffused	*80	*160	30°	
L-813SRC-J4	AlGaInP	640	water clear	*1800	*3000	15°	20mm 
L-813SRD-E	GaAlAs	640	red diffused	*120	*200	30°	
L-813YD	GaAsP/GaP	588	yellow diffused	*18	*50	30°	
L-813GD	GaP	568	green diffused	*20	*60	30°	
L-813QBD-D	InGaN	465	blue diffused	*180	*400	20°	
DLA/6ID	GaAsP/GaP	617	red diffused	6	17	120°	
DLC/6ID	GaAsP/GaP	617	red diffused	6	17	120°	
DLA/6SRD	GaAlAs	640	red diffused	*55	*100	120°	
DLC/6SRD	GaAlAs	640	red diffused	*55	*100	120°	
DLA/6YD	GaAsP/GaP	588	yellow diffused	6	17	120°	
DLC/6YD	GaAsP/GaP	588	yellow diffused	6	17	120°	
DLA/6GD	GaP	568	green diffused	6	15	120°	
DLC/6GD	GaP	568	green diffused	6	15	120°	DLA/6 1 3 5 7 9 11 2 4 6 8 10 12 DLC/6 1 3 5 7 9 11 2 4 6 8 10 12
DLA/6SGD	GaP	568	green diffused	*12	*31	120°	
DLC/6SGD	GaP	568	green diffused	*12	*31	120°	

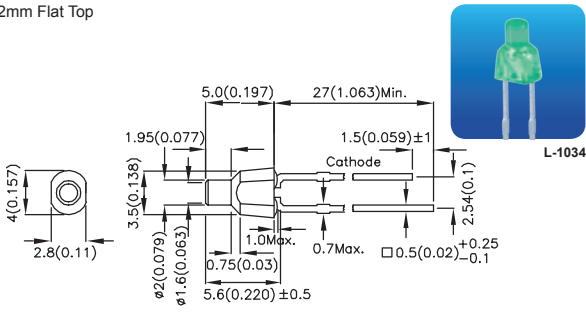
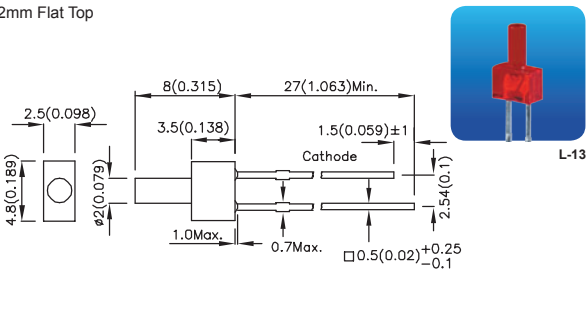
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

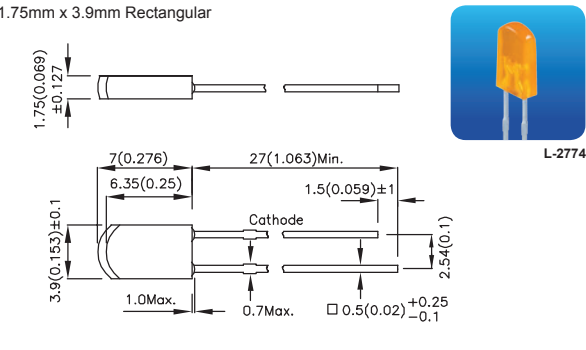
OVAL LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
L-5603SURCK	AlGaInP	630	water clear	400	800	70°(H) 30°(V)	5.2mm Oval 
L-5603SIDL/SD-J3	AlGaInP	625	red semi diffused	800	1400	80°(H) 40°(V)	
L-5603SYCK	AlGaInP	590	water clear	1000	1600	70°(H) 30°(V)	
L-5603ZGT	InGaIn	525	green transparent	2800	4100	50°(H) 30°(V)	
L-5603QBC-D	InGaIn	465	water clear	380	700	50°(H) 30°(V)	

FLAT TOP LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
L-1034IDT	GaAsP/GaP	617	red diffused	2	4	140°	2mm Flat Top 
L-1034YDT	GaAsP/GaP	588	yellow diffused	1.8	3	140°	
L-1034GDT	GaP	568	green diffused	2	5	140°	
L-13ID	GaAsP/GaP	617	red diffused	6	12	50°	2mm Flat Top 
L-13YD	GaAsP/GaP	588	yellow diffused	4	8	50°	
L-13GD	GaP	568	green diffused	6	12	50°	

RECTANGULAR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
L-2774ID	GaAsP/GaP	617	red diffused	2	6	70°	1.75mm x 3.9mm Rectangular 
L-2774ND	GaAsP/GaP	602	orange diffused	2	6	70°	
L-2774YD	GaAsP/GaP	588	yellow diffused	2	5	70°	
L-2774GD	GaP	568	green diffused	4	12	70°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

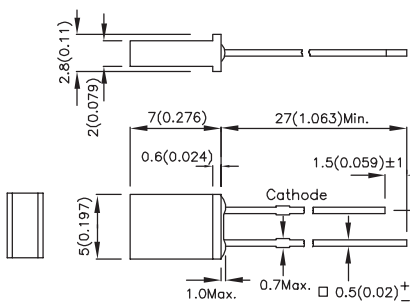
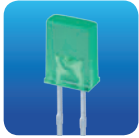
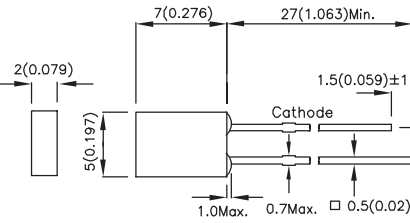
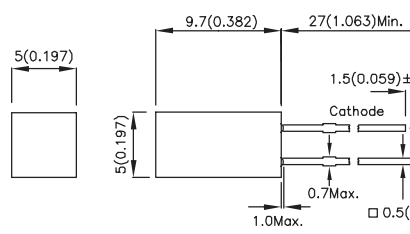
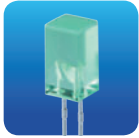
RECTANGULAR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-144HDT	GaP	635	red diffused	0.2	0.5	140°	1.9mm x 3.9mm Rectangular
L-144IDT	GaAsP/GaP	617	red diffused	1.2	3	140°	
L-144YDT	GaAsP/GaP	588	yellow diffused	1.5	4	140°	
L-144GDT	GaP	568	green diffused	2	6	140°	
L-914IDT	GaAsP/GaP	617	red diffused	1.2	4	140°	2mm x 3mm Rectangular
L-914SURDTK	AlGaInP	630	red diffused	*20	*50	140°	
L-914SYCK	AlGaInP	590	water clear	*70	*150	130°	
L-914GDT	GaP	568	green diffused	3	6	140°	
L-914CGDTK	AlGaInP	570	green diffused	*15	*35	140°	2mm x 3mm Rectangular
L-91A7YDT	GaAsP/GaP	588	yellow diffused	1.5	4	140°	
L-91A7GDT	GaP	568	green diffused	4	7	140°	
L-91A7CGDTK	AlGaInP	570	green diffused	*12	*40	140°	
L-169XID	GaAsP/GaP	617	red diffused	8	14	60°	2mm x 3mm Rectangular
L-169XYD	GaAsP/GaP	588	yellow diffused	5	10	60°	
L-169XSYDK	AlGaInP	590	yellow diffused	*300	*500	60°	
L-169XGD	GaP	568	green diffused	8	15	60°	
L-169XCGDK	AlGaInP	570	green diffused	*50	*120	60°	2mm x 5mm Rectangular
L-9763PBDT-A	InGaN	465	blue diffused	*20	*55	120°	

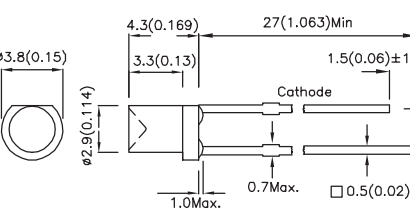
NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

RECTANGULAR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
L-103IDT	GaAsP/GaP	617	red diffused	1.2	3	140°	2mm x 5mm Rectangular   L-103
L-103SRDT	GaAlAs	640	red diffused	*12	*30	140°	
L-103YDT	GaAsP/GaP	588	yellow diffused	1.5	4	140°	
L-103GDT	GaP	568	green diffused	2	5	140°	
L-113IDT	GaAsP/GaP	617	red diffused	2	4	140°	2mm x 5mm Rectangular   L-113
L-113YDT	GaAsP/GaP	588	yellow diffused	1.2	4	140°	
L-113SYDTK	AlGaInP	590	yellow diffused	*70	*120	140°	
L-113GDT	GaP	568	green diffused	1.2	5	140°	
L-113CGDTK	AlGaInP	570	green diffused	*10	*30	140°	5mm x 5mm Square   L-1553
L-1553IDT	GaAsP/GaP	617	red diffused	2	5	140°	
L-1553YDT	GaAsP/GaP	588	yellow diffused	1.5	5	140°	
L-1553SYDTK	AlGaInP	590	yellow diffused	*80	*180	140°	
L-1553GDT	GaP	568	green diffused	3	6	140°	

CYLINDRICAL LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ /2	Dimensions
				Min.	Typ.		
L-47XEC	GaAsP/GaP	617	water clear	4	8	100°	T-1 (3mm) Cylindrical   L-47X
L-47XYT	GaAsP/GaP	588	yellow transparent	2	4	100°	
L-47XSCK	AlGaInP	590	water clear	*40	*100	100°	
L-47XZGC	InGaN	525	water clear	*180	*500	100°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

CYLINDRICAL LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-424HDT	GaP	635	red diffused	0.2	0.6	140°	T-1 (3mm) Cylindrical
L-424IDT	GaAsP/GaP	617	red diffused	1.2	4	140°	
L-424YDT	GaAsP/GaP	588	yellow diffused	1.2	3	140°	
L-424GDT	GaP	568	green diffused	2	6	140°	
L-483IDT	GaAsP/GaP	617	red diffused	1.2	4	140°	T-1 3/4 (5mm) Cylindrical
L-483YDT	GaAsP/GaP	588	yellow diffused	1.2	3	140°	
L-483GDT	GaP	568	green diffused	1.5	3	140°	

MULTI-COLOR LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimensions
				Min.	Typ.		
L-937IID	GaAsP/GaP	617	red diffused	2	4	60°	T-1 (3mm) Round L-937
	GaAsP/GaP	617		2	4		
L-937YYD	GaAsP/GaP	588	yellow diffused	3	9	60°	
	GaAsP/GaP	588		3	9		
L-937GGD	GaP	568	green diffused	4	10	60°	
	GaP	568		4	10		
L-937EGW	GaAsP/GaP	617	white diffused	4	10	60°	
	GaP	568		6	14		
L-937EYW	GaAsP/GaP	617	white diffused	4	10	60°	
	GaAsP/GaP	588		4	8		
L-937GYW	GaP	568	white diffused	6	14	60°	
	GaAsP/GaP	588		4	8		
L-115VEGW-BBTS	GaAsP/GaP	617	white diffused	8	20	60°	T-1 (3mm) Round L-115V
	GaP	568		10	30		
L-115VEYW-BBTS	GaAsP/GaP	617	white diffused	8	20	60°	
	GaAsP/GaP	588		10	24		
L-115VGyw-BBTS	GaP	568	white diffused	10	30	60°	
	GaAsP/GaP	588		10	24		

NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

MULTI-COLOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-59EGW	GaAsP/GaP	617	white diffused	20	40	30°	T-1 3/4 (5mm) Round L-59
L-59EGW-CA	GaP	568		20	60		
L-59EYW	GaAsP/GaP	617	white diffused	1.2	3	60°	
	GaAsP/GaP	588		3	8		
L-59GYW	GaAsP/GaP	617	white diffused	20	40	30°	
	GaP	568		20	40		
L-59SURKSGW	GaAsP/GaP	588	white diffused	50	100	30°	
	AlGaInP	630		20	40		
L-59SURKCGKW	AlGaInP	630	white diffused	80	200	30°	
	AlGaInP	570		20	60		
L-59EGC	AlGaInP	630	white diffused	80	200	30°	
	GaP	568		80	180		
L-59GYC	GaAsP/GaP	617	water clear	50	100	20°	
	GaP	568		50	120		
L-59SURKSGC	GaP	568	water clear	50	120	20°	
	GaAsP/GaP	588		40	80		
L-154A4SUREQBFZGC	AlGaInP	630	water clear	600	1200	20°	
	GaP	568		50	120		
	GaP	568		50	120		
L-154A4SURKQBDZGW	AlGaInP	630	white diffused	200	400	50°	
	InGaIn	465		400	900		
	InGaIn	525		1000	1700		
L-154A4SURKQBDGCKW	AlGaInP	630	white diffused	100	200	60°	
	InGaIn	465		120	300		
	InGaIn	525		600	1300		
L-154A4SUREQBFZGEW	AlGaInP	630	white diffused	100	200	60°	
	InGaIn	465		120	300		
	InGaIn	525		80	150		
L-819EGW	AlGaInP	630	white diffused	120	250	60°	
	InGaIn	465		300	500		
	InGaIn	525		900	1700		
L-819SURKMGKW	AlGaInP	630	white diffused	120	250	50°	
	AlGaInP	570		300	500		
L-91A6PYGWT	GaAsP/GaP	585	white diffused	30	60	140°	
	GaP	568		15	50		
L-91A6SURKCGKWT	GaAsP/GaP	585	white diffused	120	350	140°	
	GaP	568		55	130		
L-91A6PYGWT	GaAsP/GaP	585	white diffused	2	4	140°	
	GaP	568		4	8		
L-91A6SURKCGKWT	AlGaInP	630	white diffused	25	50	140°	
	AlGaInP	570		15	40		

NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

Part Number	Material	λ_D (nm)	Lens Type	I _v (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-117EGWT	GaAsP/GaP	617	white diffused	1.2	4	140°	2mm x 5mm Rectangular
	GaP	568		2	6		
L-117SURKCGKWT	AlGaInP	630	white diffused	30	50	140°	
	AlGaInP	570		15	25		
L-119EGWT	GaAsP/GaP	617	white diffused	4	10	140°	2mm x 5mm Rectangular
	GaP	568		3	9		
L-119SURKCGKWT	AlGaInP	630	white diffused	30	55	140°	
	AlGaInP	570		15	30		
L-489EGWT	GaAsP/GaP	617	white diffused	3	6	140°	T-1 3/4 (5mm) Cylindrical
	GaP	568		4	10		

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

RESISTOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd)		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-7104ID-5V	GaAsP/GaP	617	red diffused	6	14	50°	T-1 (3mm) Round
L-7104ID-12V	GaAsP/GaP	617	red diffused	*2	*5	50°	
L-7104YD-5V	GaAsP/GaP	588	yellow diffused	7	15	50°	
L-7104YD-12V	GaAsP/GaP	588	yellow diffused	*5	*10	50°	
L-7104GD-5V	GaP	568	green diffused	12	25	50°	
L-7104GD-12V	GaP	568	green diffused	6*	*15	50°	
L-7104SRD-5V	GaAlAs	640	red diffused	25	50	50°	
L-7104SRD-14V	GaAlAs	640	red diffused	**20	**40	50°	
L-7113ID-5V	GaAsP/GaP	617	red diffused	12	25	30°	T-1 3/4 (5mm) Round
L-7113ID-12V	GaAsP/GaP	617	red diffused	*10	*20	30°	
L-7113YD-5V	GaAsP/GaP	588	yellow diffused	10	22	30°	
L-7113YD-12V	GaAsP/GaP	588	yellow diffused	*8	*15	30°	
L-7113GD-5V	GaP	568	green diffused	15	25	30°	
L-7113GD-12V	GaP	568	green diffused	*8	*20	30°	

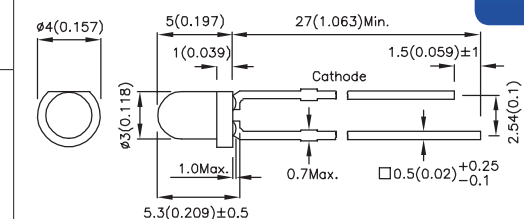
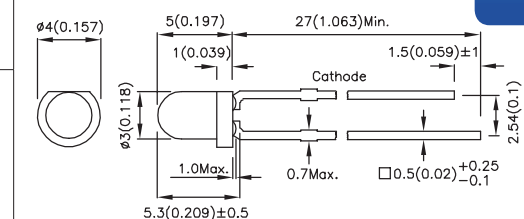
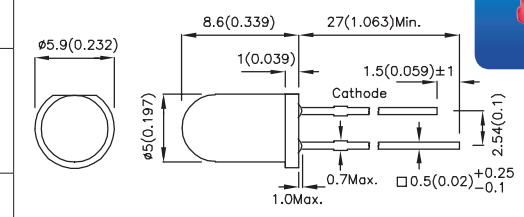
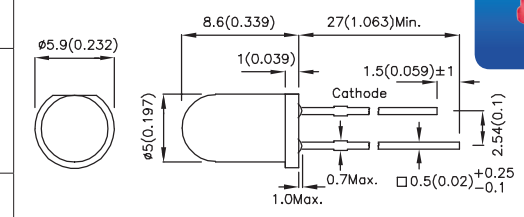
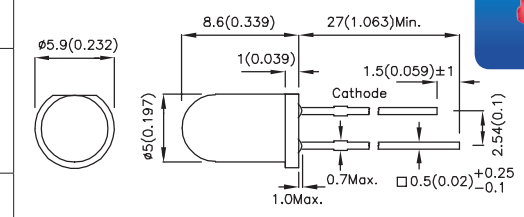
LOW CURRENT LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @2mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-7104LID	GaAsP/GaP	617	red diffused	0.2	0.6	50°	T-1 (3mm) Round
L-7104LYD	GaAsP/GaP	588	yellow diffused	0.7	1.5	50°	
L-7104LGD	GaP	568	green diffused	1	2	50°	
L-7113LID	GaAsP/GaP	617	red diffused	0.7	2	30°	T-1 3/4 (5mm) Round
L-7113LYD	GaAsP/GaP	588	yellow diffused	1	3	30°	
L-7113LGD	GaP	568	green diffused	1.2	3	30°	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

BLINKING LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) V=9V		Viewing Angle	Dimensions
				Min.	Typ.		
L-36BID	GaAsP/GaP	● 617	red diffused	6	15	60°	T-1 (3mm) Round  
L-36BSRD-B	GaAlAs	● 640	red diffused	40	100	60°	 
L-56BHD	GaP	● 635	red diffused	1.2	4	60°	T-1 3/4 (5mm) Round  
L-56BID	GaAsP/GaP	● 617	red diffused	12	25	60°	 
L-56BSRD-B	GaAlAs	● 640	red diffused	30	70	60°	 

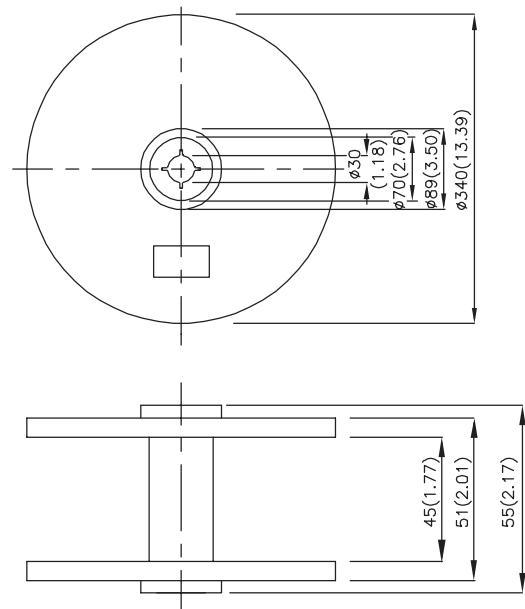
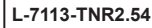
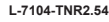
SUPER FLUX LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA*30mA**70mA		Viewing Angle	Dimensions
				Min.	Typ.		
L-7676CSEC-H	AlGaInP	● 625	water clear	400	800	70°	7.6mm x 7.6mm
L-7676CSYC	AlGaInP	● 590	water clear	200	400	70°	
L-7679C1SURC-G	AlGaInP	● 630	water clear	**500	**1000	70°	7.62mm x 7.62mm
L-7679C1SEC-H	AlGaInP	● 625	water clear	**1000	**2300	70°	
L-7679C1SYC-H	AlGaInP	● 589	water clear	**2300	**4200	70°	
L-7679C1QBC-D	InGaN	● 465	water clear	*360	*800	40°	

NOTES:

- NOTES:
1. All dimensions are in millimeters(inches).
 2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
 3. Luminous intensity value is traceable to CIE127-2007 standards.

L-7104-TNR2.54



REEL DIMENSION

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

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Optoelectronic Components

SMD DISPLAY

7-Segment SMD Display

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Alphanumeric SMD Display

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7-SEGMENT SMD DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
KCSA02-105 KCDA02-105	KCSC02-105 KCDC02-105	AlGaInP	630	3600	8100	0.2 inch (5.08mm), Gray Face, White Segment
KCSA02-106 KCDA02-106	KCSC02-106 KCDC02-106	AlGaInP	601	5600	12000	
KCSA02-107 KCDA02-107	KCSC02-107 KCDC02-107	AlGaInP	590	5600	15000	
KCSA02-123 KCDA02-123	KCSC02-123 KCDC02-123	AlGaInP	570	2200	4300	
KCSA02-136 KCDA02-136	KCSC02-136 KCDC02-136	InGaN	465	2200	4300	
KCSA03-105 KCDA03-105	KCSC03-105 KCDC03-105	AlGaInP	630	3600	6400	0.3 inch (7.62mm), Gray Face, White Segment
KCSA03-106 KCDA03-106	KCSC03-106 KCDC03-106	AlGaInP	601	5600	11000	
KCSA03-107 KCDA03-107	KCSC03-107 KCDC03-107	AlGaInP	590	5600	13000	
KCSA03-123 KCDA03-123	KCSC03-123 KCDC03-123	AlGaInP	570	1400	3100	
KCSA03-136 KCDA03-136	KCSC03-136 KCDC03-136	InGaN	465	1400	2500	

NOTES:

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3. Luminous intensity value is traceable to CIE127-2007 standards.

Part Number		Material	λ_D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
KCSA39-105 KCDA39-105	/	AlGaInP	630	3600	9000	0.39 inch (10mm), Gray Face, White Segment KCSx39-1xx
KCSA39-106 KCDA39-106	/	AlGaInP	601	21000	40000	KCSA39-1xx KCSC39-1xx KCDx39-1xx
KCSA39-107 KCDA39-107	/	AlGaInP	590	14000	30000	KCSA39-1xx KCDC39-1xx KCDx39-1xx
KCSA39-123 KCDA39-123	/	AlGaInP	570	3600	7000	KCSA39-1xx KCDC39-1xx KCDx39-1xx
KCSA39-136 KCDA39-136	KCSC39-136 KCDC39-136	InGaN	465	2200	5600	KCSA39-1xx KCDC39-1xx KCDx39-1xx
KCSA04-105 KCDA04-105	KCSC04-105 KCDC04-105	AlGaInP	630	9000	20000	0.4 inch (10.16mm) Gray Face, White Segment KCSx04-1xx
KCSA04-106 KCDA04-106	KCSC04-106 KCDC04-106	AlGaInP	601	9000	15000	KCSA04-1xx KCSC04-1xx KCDx04-1xx
KCSA04-107 KCDA04-107	KCSC04-107 KCDC04-107	AlGaInP	590	9000	23000	KCSA04-1xx KCDC04-1xx KCDx04-1xx
KCSA04-123 KCDA04-123	KCSC04-123 KCDC04-123	AlGaInP	570	2200	4100	KCSA04-1xx KCDC04-1xx KCDx04-1xx
KCSA04-136 KCDA04-136	KCSC04-136 KCDC04-136	InGaN	465	2200	5200	KCSA04-1xx KCDC04-1xx KCDx04-1xx

7-SEGMENT SMD DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
						0.51 inch (13mm) Gray Face, White Segment KCSx51-1xx
KCSA51-136 KCDA51-136	KCSC51-136 KCDC51-136	InGaN	● 465	3600	6500	 KCDx51-1xx
KCSA56-105 KCDA56-105	KCSC56-105 KCDC56-105	AlGaInP	● 630	14000	29000	0.56 inch (14.22mm), Gray Face, White Segment KCSx56-1xx
KCSA56-106 KCDA56-106	KCSC56-106 KCDC56-106	AlGaInP	● 601	14000	23000	
KCSA56-107 KCDA56-107	KCSC56-107 KCDC56-107	AlGaInP	● 590	14000	29000	
KCSA56-123 KCDA56-123	KCSC56-123 KCDC56-123	AlGaInP	● 570	2200	4600	 KCDx56-1xx
KCSA56-131 KCDA56-131	KCSC56-131 KCDC56-131	InGaN	● 465	5600	15000	
KCSA56-136 KCDA56-136	KCSC56-136 KCDC56-136	InGaN	● 465	2200	6600	

NOTES:

- NOTES:
1. All dimensions are in millimeters(inches).
 2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
 3. Luminous intensity value is traceable to CIE127-2007 standards.

Part Number		Material	λ , D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
KCPSA04-105 KCPDA04-105	KCPSC04-105 KCPDC04-105	AlGaInP	630	3600	8300	0.4 inch (10.16mm), Gray Face, White Segment
KCPSA04-106 KCPDA04-106	KCPSC04-106 KCPDC04-106	AlGaInP	601	5600	13000	
KCPSA04-107 KCPDA04-107	KCPSC04-107 KCPDC04-107	AlGaInP	590	5600	12000	
KCPSA04-123 KCPDA04-123	KCPSC04-123 KCPDC04-123	AlGaInP	570	1400	3100	

NOTES:

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3. Luminous intensity value is traceable to CIE127-2007 standards.

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Optoelectronic Components

THROUGH-HOLE DISPLAY

Single Digit 7-Segment Through-Hole Display	44
Dual Digit 7-Segment Through-Hole Display	50
Three Digit 7-Segment Through-Hole Display	52
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Bar Graph Array	68
Light Bar	69

Part Number		Material	λ_D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
SA03-11SEKWA	SC03-12SEKWA	AlGaInP	601	21000	51000	0.3 inch (7.62mm), Gray Face, White Segment
SA03-11SURKWA	SC03-12SURKWA	AlGaInP	630	9000	20000	
SA03-11SYKWA	SC03-12SYKWA	AlGaInP	590	14000	30000	
SA03-11CGKWA	SC03-12CGKWA	AlGaInP	570	9000	17000	
SA32-11EWA	SC32-11EWA	GaAsP/GaP	617	1400	3300	0.32 inch (8mm), Gray Face, White Segment
SA32-11SRWA	SC32-11SRWA	GaAlAs	640	5600	10000	
SA32-11YWA	SC32-11YWA	GaAsP/GaP	588	900	1700	
SA32-11GWA	SC32-11GWA	GaP	568	1400	2500	
SA36-11SEKWA	SC36-11SEKWA	AlGaInP	601	5600	14000	0.36 inch (9.14mm), Gray Face, White Segment
SA36-11SURKWA	SC36-11SURKWA	AlGaInP	630	3600	9000	
SA36-11SYKWA	SC36-11SYKWA	AlGaInP	590	5600	14000	
SA36-11CGKWA	SC36-11CGKWA	AlGaInP	570	1400	3700	

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

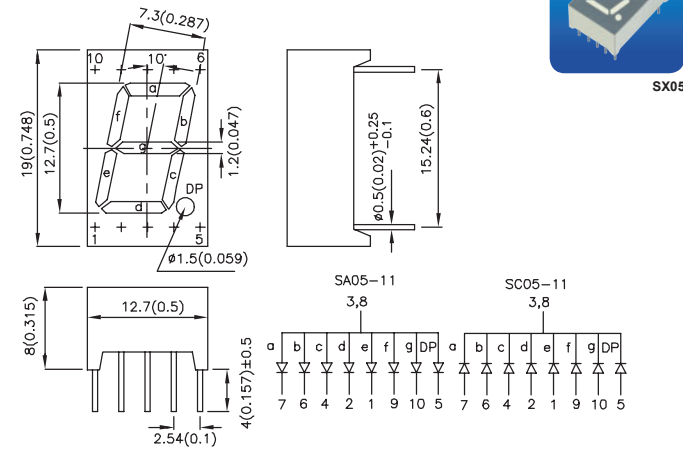
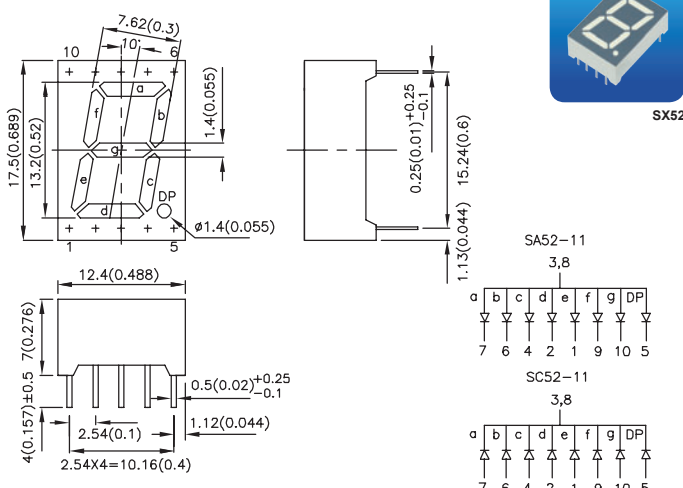
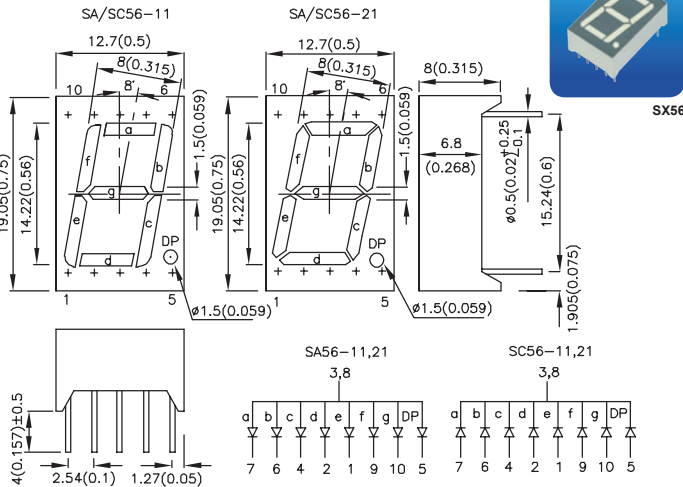
SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
SA39-11SEKWA SA39-12SEKWA	SC39-11SEKWA SC39-12SEKWA	AlGaInP	601	14000	30000	0.39 inch (9.9mm), Gray Face, White Segment SA39-11 3,8 a b c d e f g DP 10 9 7 5 4 2 1 6 SC39-11 3,8 a b c d e f g DP 10 9 7 5 4 2 1 6 SA39-12 1,6 a b c d e f g DP 10 9 8 5 4 2 3 7 SC39-12 1,6 a b c d e f g DP 10 9 8 5 4 2 3 7
SA39-11SURKWA SA39-12SURKWA	SC39-11SURKWA SC39-12SURKWA	AlGaInP	630	5600	12000	
SA39-11SYKWA SA39-12SYKWA	SC39-11SYKWA SC39-12SYKWA	AlGaInP	590	14000	26000	
SA39-11CGKWA SA39-12CGKWA	SC39-11CGKWA SC39-12CGKWA	AlGaInP	570	3600	6800	
SA04-11SEKWA SA04-12SEKWA	SC04-11SEKWA SC04-12SEKWA	AlGaInP	601	21000	46000	0.4 inch (10.16mm), Gray Face, White Segment SA04-11 3,14 a b c d e f g DP 1 13 10 8 7 2 11 9 SC04-11 4,12 a b c d e f g DP 14 13 8 7 6 1 2 9 SA04-12 1,6 a b c d e f g DP 10 9 8 5 4 2 3 7 SC04-12 1,6 a b c d e f g DP 10 9 8 5 4 2 3 7 A: SA04-11 B: SC04-11 C: SA/SC04-12
SA04-11SURKWA SA04-12SURKWA	SC04-11SURKWA SC04-12SURKWA	AlGaInP	630	9000	24000	
SA04-11SYKWA SA04-12SYKWA	SC04-11SYKWA SC04-12SYKWA	AlGaInP	590	21000	40000	
SA04-11CGKWA SA04-12CGKWA	SC04-11CGKWA SC04-12CGKWA	AlGaInP	570	5600	11000	
SA43-11SEKWA SA43-13SEKWA	SC43-11SEKWA SC43-13SEKWA	AlGaInP	601	31000	70000	0.43 inch (10.92mm), Gray Face, White Segment SA43-11,13 3,14 a b c d e f g DP1 DP2 1 13 10 8 7 2 11 6 9 SC43-11,13 3,14 a b c d e f g DP1 DP2 1 13 10 8 7 2 11 6 9 SA43-11 DP1 NO Chip SC43-11 DP1 NO Chip
SA43-11SURKWA SA43-13SURKWA	SC43-11SURKWA SC43-13SURKWA	AlGaInP	630	14000	29000	
SA43-11SYKWA SA43-13SYKWA	SC43-11SYKWA SC43-13SYKWA	AlGaInP	590	21000	50000	
SA43-11CGKWA SA43-13CGKWA	SC43-11CGKWA SC43-13CGKWA	AlGaInP	570	5600	13000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

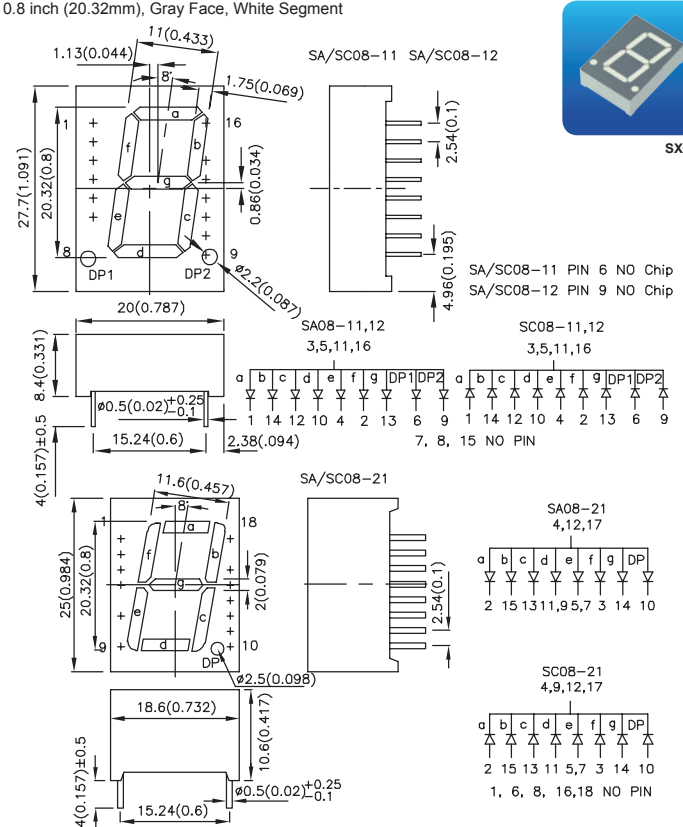
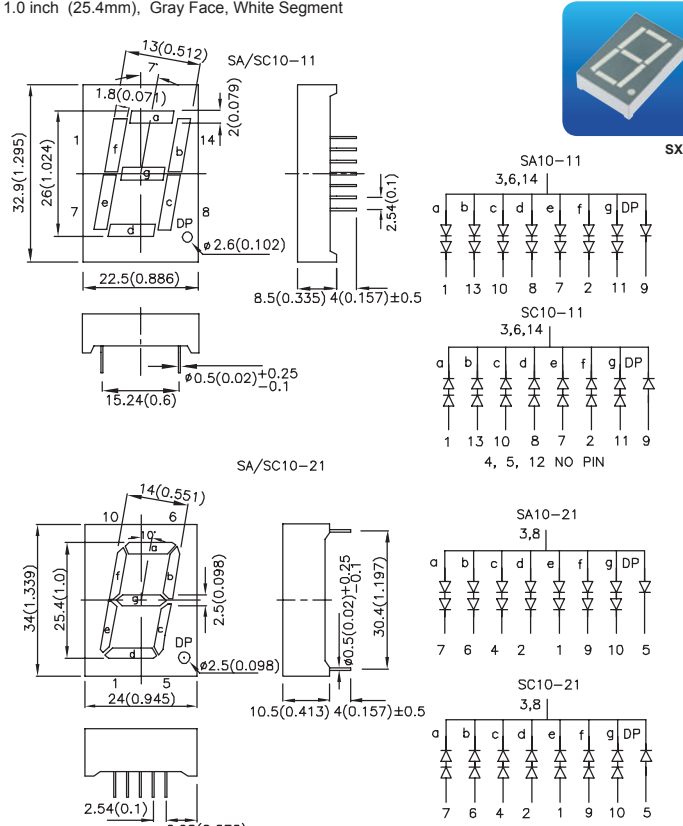
SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
SA05-11SEKWA	SC05-11SEKWA	AlGaInP	601	14000	28000	0.5 inch (12.7mm), Gray Face, White Segment 
SA05-11SURKWA	SC05-11SURKWA	AlGaInP	630	9000	23000	
SA05-11SYKWA	SC05-11SYKWA	AlGaInP	590	21000	40000	
SA05-11CGKWA	SC05-11CGKWA	AlGaInP	570	5600	11000	
SA52-11SEKWA	SC52-11SEKWA	AlGaInP	601	21000	48000	0.52 inch (13.2mm), Gray Face, White Segment 
SA52-11SURKWA	SC52-11SURKWA	AlGaInP	630	14000	32000	
SA52-11SYKWA	SC52-11SYKWA	AlGaInP	590	21000	45000	
SA52-11CGKWA	SC52-11CGKWA	AlGaInP	570	5600	13000	
SA56-11SEKWA SA56-21SEKWA	SC56-11SEKWA SC56-21SEKWA	AlGaInP	601	21000	40000	0.56 inch (14.2mm), Gray Face, White Segment 
SA56-11SURKWA SA56-21SURKWA	SC56-11SURKWA SC56-21SURKWA	AlGaInP	630	14000	27000	
SA56-11SYKWA SA56-21SYKWA	SC56-11SYKWA SC56-21SYKWA	AlGaInP	590	21000	48000	
SA56-11CGKWA SA56-21CGKWA	SC56-11CGKWA SC56-21CGKWA	AlGaInP	570	5600	12000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
SA08-11SEKWA SA08-12SEKWA SA08-21SEKWA	SC08-11SEKWA SC08-12SEKWA SC08-21SEKWA	AlGaInP	601	21000	48000	0.8 inch (20.32mm), Gray Face, White Segment  SA/SC08-11 SA/SC08-12 SA08-11,12 3,5,11,16 SC08-11,12 3,5,11,16 SA08-21 4,12,17 SC08-21 4,9,12,17
SA08-11SURKWA SA08-12SURKWA SA08-21SURKWA	SC08-11SURKWA SC08-12SURKWA SC08-21SURKWA	AlGaInP	630	9000	19000	
SA08-11SYKWA SA08-12SYKWA SA08-21SYKWA	SC08-11SYKWA SC08-12SYKWA SC08-21SYKWA	AlGaInP	590	9000	18000	
SA08-11CGKWA SA08-12CGKWA SA08-21CGKWA	SC08-11CGKWA SC08-12CGKWA SC08-21CGKWA	AlGaInP	570	3600	8700	
SA10-11SEKWA SA10-21SEKWA	SC10-11SEKWA SC10-21SEKWA	AlGaInP	601	52000	150000	1.0 inch (25.4mm), Gray Face, White Segment  SA/SC10-11 SA10-11 3,6,14 SC10-11 3,6,14 SA10-21 3,8 SC10-21 3,8
SA10-11SURKWA SA10-21SURKWA	SC10-11SURKWA SC10-21SURKWA	AlGaInP	630	31000	70000	
SA10-11SYKWA SA10-21SYKWA	SC10-11SYKWA SC10-21SYKWA	AlGaInP	590	52000	140000	
SA10-11CGKWA SA10-21CGKWA	SC10-11CGKWA SC10-21CGKWA	AlGaInP	570	14000	33000	

NOTES:

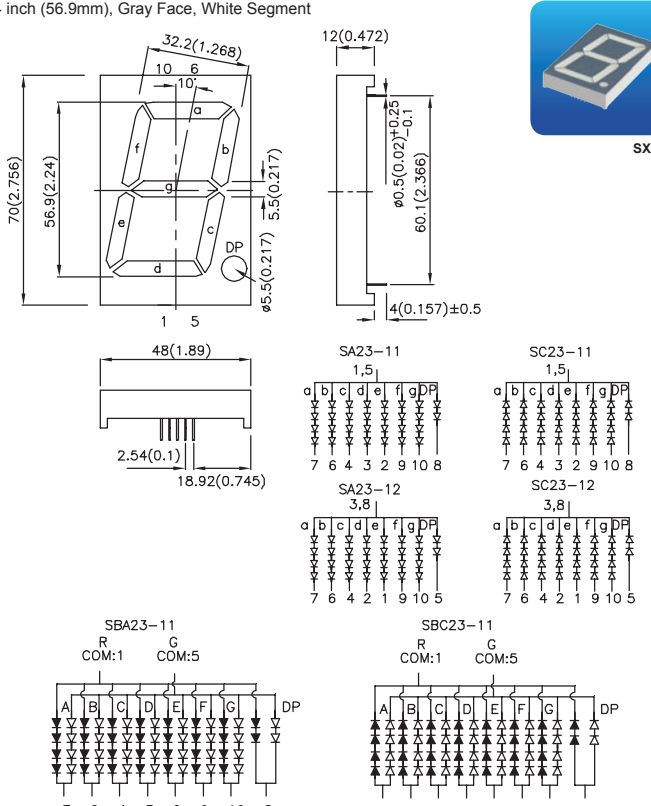
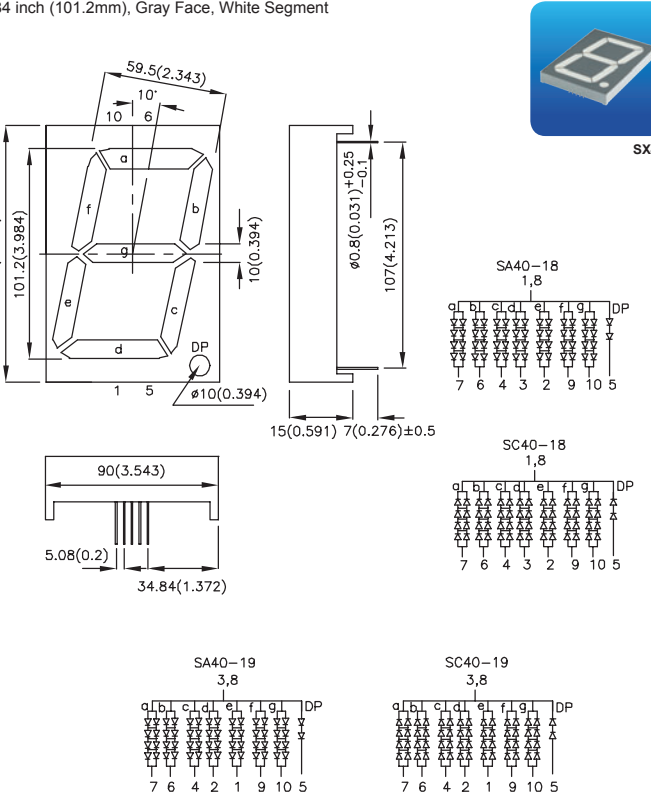
1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
SA15-11SEKWA	SC15-11SEKWA	AlGaInP	601	52000	140000	1.5 inch (38.1mm), Gray Face, White Segment
SA15-11SURKWA	SC15-11SURKWA	AlGaInP	630	31000	62000	
SA15-11SYKWA	SC15-11SYKWA	AlGaInP	590	52000	120000	
SA15-11CGKWA	SC15-11CGKWA	AlGaInP	570	21000	40000	
SBA15-11 SURKCGKWA	SBC15-11 SURKCGKWA	AlGaInP	630	31000	62000	
		AlGaInP	570	21000	40000	
SA18-11SEKWA	SC18-11SEKWA	AlGaInP	601	88000	210000	1.75 inch (44.5mm), Gray Face, White Segment
SA18-11SURKWA	SC18-11SURKWA	AlGaInP	630	31000	90000	
SA18-11SYKWA	SC18-11SYKWA	AlGaInP	590	88000	190000	
SA18-11CGKWA	SC18-11CGKWA	AlGaInP	570	21000	50000	
SBA18-11 SURKCGKWA	SBC18-11 SURKCGKWA	AlGaInP	630	31000	90000	
		AlGaInP	570	21000	50000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

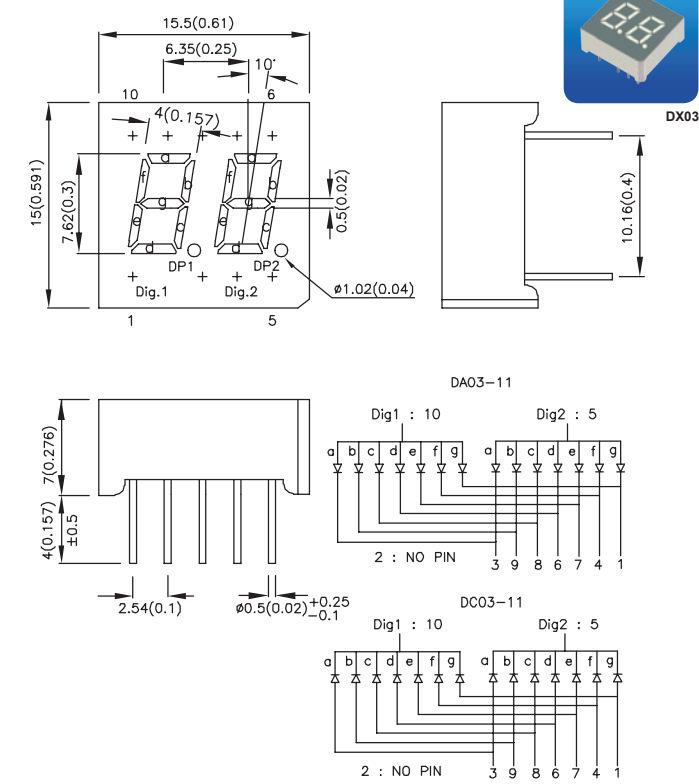
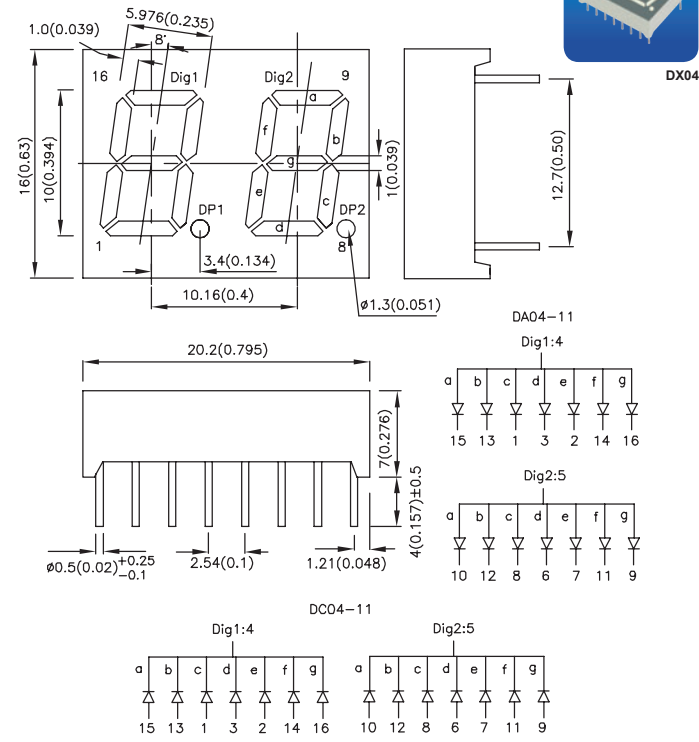
SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
SA23-11SEKWA SA23-12SEKWA	SC23-11SEKWA SC23-12SEKWA	AlGaInP	601	88000	190000	2.24 inch (56.9mm), Gray Face, White Segment 
SA23-11SURKWA SA23-12SURKWA	SC23-11SURKWA SC23-12SURKWA	AlGaInP	630	52000	120000	
SA23-11SYKWA SA23-12SYKWA	SC23-11SYKWA SC23-12SYKWA	AlGaInP	590	88000	210000	
SA23-11CGKWA SA23-12CGKWA	SC23-11CGKWA SC23-12CGKWA	AlGaInP	570	31000	62000	
SBA23-11 SURKCGKWA	SBC23-11 SURKCGKWA	AlGaInP	630	52000	120000	
		AlGaInP	570	31000	62000	
SA40-18SEKWA SA40-19SEKWA	SC40-18SEKWA SC40-19SEKWA	AlGaInP	601	88000	180000	3.984 inch (101.2mm), Gray Face, White Segment 
SA40-18SURKWA SA40-19SURKWA	SC40-18SURKWA SC40-19SURKWA	AlGaInP	630	31000	74000	
SA40-18SYKWA SA40-19SYKWA	SC40-18SYKWA SC40-19SYKWA	AlGaInP	590	52000	140000	
SA40-18CGKWA SA40-19CGKWA	SC40-18CGKWA SC40-19CGKWA	AlGaInP	570	14000	30000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

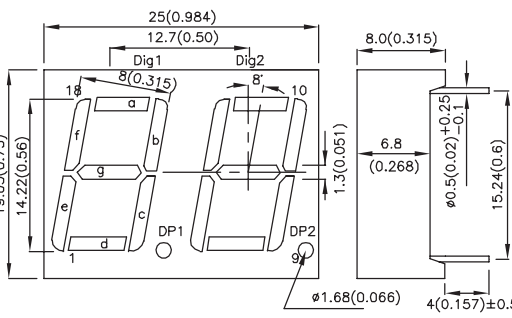
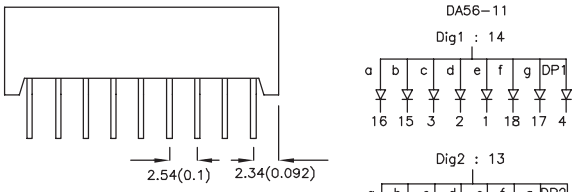
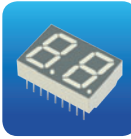
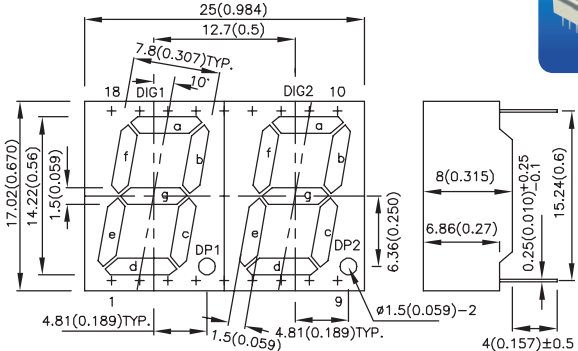
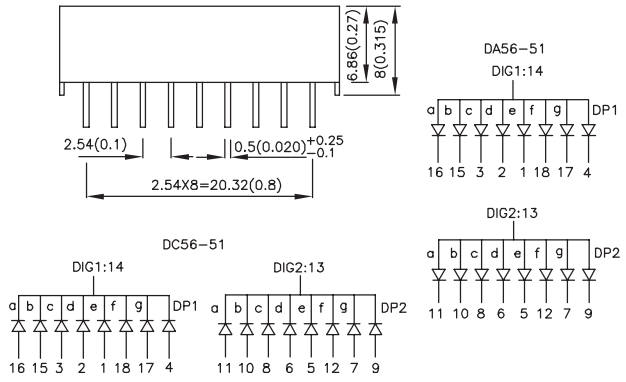
DUAL DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
DA03-11SEKWA	DC03-11SEKWA	AlGaInP	601	9000	21000	0.3 inch (7.62mm), Gray Face, White Segment 
DA03-11SURKWA	DC03-11SURKWA	AlGaInP	630	5600	13000	
DA03-11SYKWA	DC03-11SYKWA	AlGaInP	590	9000	18000	
DA03-11CGKWA	DC03-11CGKWA	AlGaInP	570	3600	6000	
DA04-11SEKWA	DC04-11SEKWA	AlGaInP	601	14000	30000	0.394 inch (10mm), Gray Face, White Segment 
DA04-11SURKWA	DC04-11SURKWA	AlGaInP	630	14000	24000	
DA04-11SYKWA	DC04-11SYKWA	AlGaInP	590	14000	28000	
DA04-11CGKWA	DC04-11CGKWA	AlGaInP	570	3600	8000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

DUAL DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
DA56-11SEKWA	DC56-11SEKWA	AlGaInP	601	21000	40000	0.56 inch (14.22mm), Gray Face, White Segment  DX56-11  
DA56-11SURKWA	DC56-11SURKWA	AlGaInP	630	9000	24000	
DA56-11SYKWA	DC56-11SYKWA	AlGaInP	590	21000	40000	
DA56-11CGKWA	DC56-11CGKWA	AlGaInP	570	5600	12000	
DA56-51SEKWA	DC56-51SEKWA	AlGaInP	601	21000	40000	0.56 inch, (14.22mm), Gray Face, White Segment  DX56-51  
DA56-51SURKWA	DC56-51SURKWA	AlGaInP	630	14000	30000	
DA56-51SYKWA	DC56-51SYKWA	AlGaInP	590	21000	40000	
DA56-51CGKWA	DC56-51CGKWA	AlGaInP	570	3600	7600	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

DUAL DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
DA08-11SEKWA	DC08-11SEKWA	AlGaInP	601	21000	37000	0.8 inch (20.32mm), Gray Face, White Segment DA08-11 Dig1 : 14 DC08-11 Dig2 : 13
DA08-11SURKWA	DC08-11SURKWA	AlGaInP	630	9000	21000	
DA08-11SYKWA	DC08-11SYKWA	AlGaInP	590	14000	30000	
DA08-11CGKWA	DC08-11CGKWA	AlGaInP	570	5600	12000	

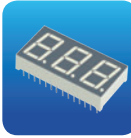
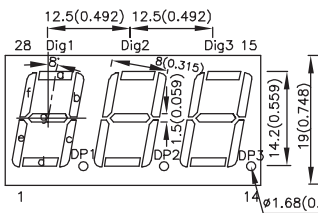
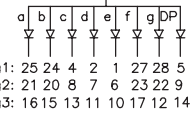
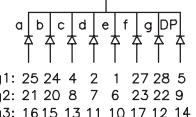
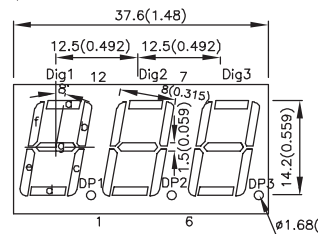
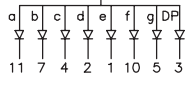
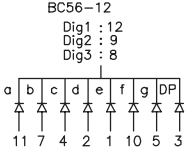
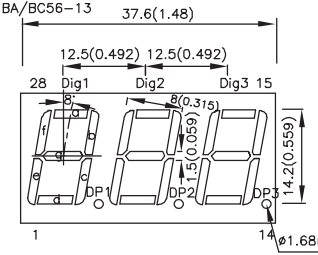
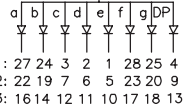
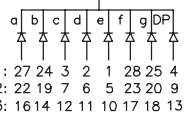
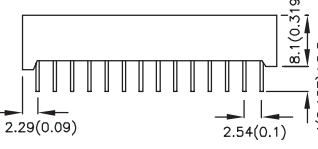
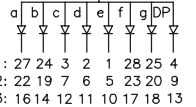
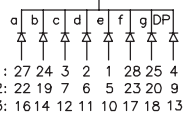
THREE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
BA04-11SEKWA	BC04-11SEKWA	AlGaInP	601	21000	48000	0.4 inch (10.2mm), Gray Face, White Segment BA04-11 Dig.1:4 Dig.2:5 Dig.3:9 BC04-11 Dig.1:4 Dig.2:5 Dig.3:9
BA04-11SURKWA	BC04-11SURKWA	AlGaInP	630	14000	24000	
BA04-11SYKWA	BC04-11SYKWA	AlGaInP	590	14000	30000	
BA04-11CGKWA	BC04-11CGKWA	AlGaInP	570	3600	7000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

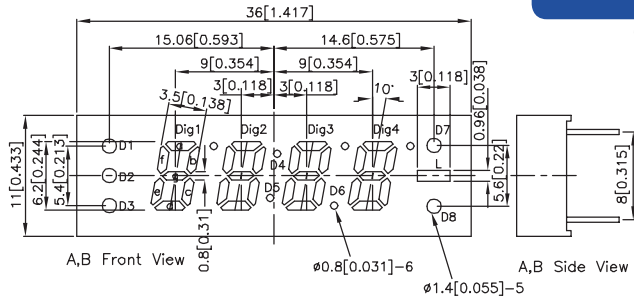
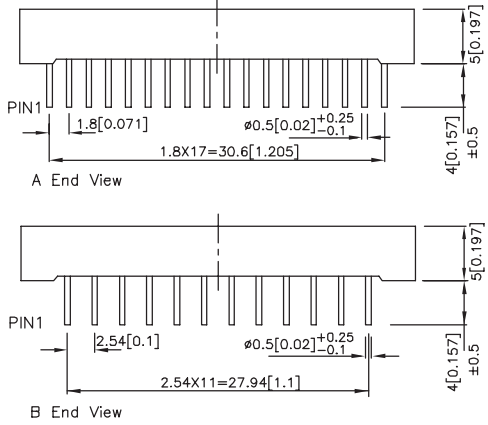
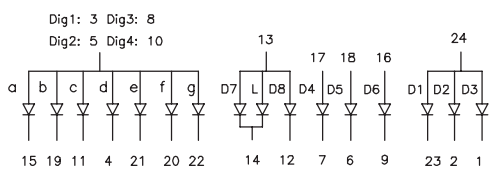
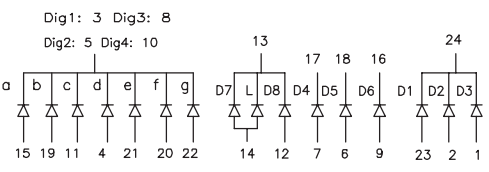
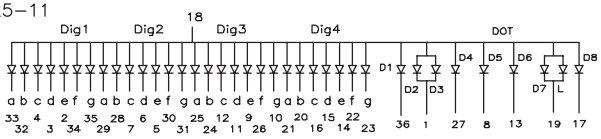
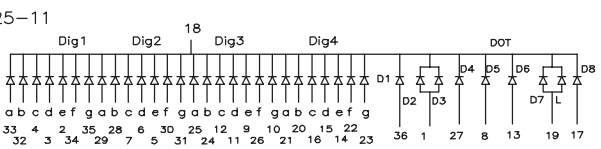
THREE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
BA56-11SEKWA BA56-12SEKWA BA56-13SEKWA	BC56-11SEKWA BC56-12SEKWA BC56-13SEKWA	AlGaInP	601	21000	39000	0.56 inch (14.22mm), Gray Face, White Segment  BA/BC56-11  BA56-11 Dig1:3,26 Dig2:19 Dig3:18  BC56-11 Dig1:3,26 Dig2:19 Dig3:18 
BA56-11SURKWA BA56-12SURKWA BA56-13SURKWA	BC56-11SURKWA BC56-12SURKWA BC56-13SURKWA	AlGaInP	630	9000	22000	BA/BC56-12  BA56-12 Dig1:12 Dig2:9 Dig3:8  BC56-12 Dig1:12 Dig2:9 Dig3:8 
BA56-11SYKWA BA56-12SYKWA BA56-13SYKWA	BC56-11SYKWA BC56-12SYKWA BC56-13SYKWA	AlGaInP	590	21000	39000	BA/BC56-13  BA56-13 Dig1:26 Dig2:8,21 Dig3:15  BC56-13 Dig1:26 Dig2:8,21 Dig3:15 
BA56-11CGKWA BA56-12CGKWA BA56-13CGKWA	BC56-11CGKWA BC56-12CGKWA BC56-13CGKWA	AlGaInP	570	5600	11000	BA/BC56-13  BA56-13 Dig1:26 Dig2:8,21 Dig3:15  BC56-13 Dig1:26 Dig2:8,21 Dig3:15 

NOTES:

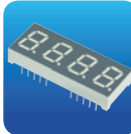
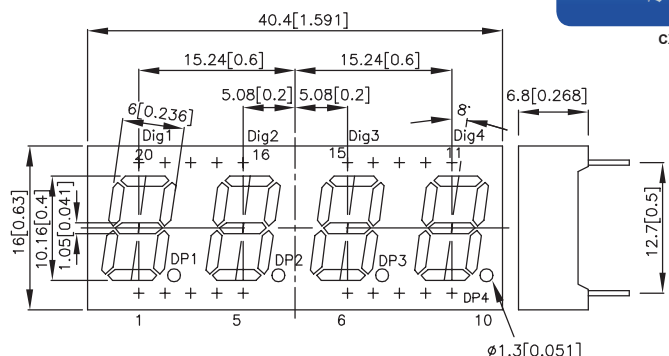
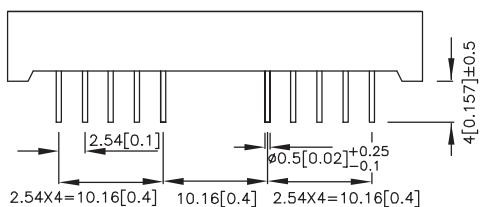
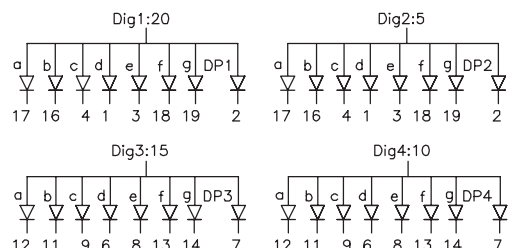
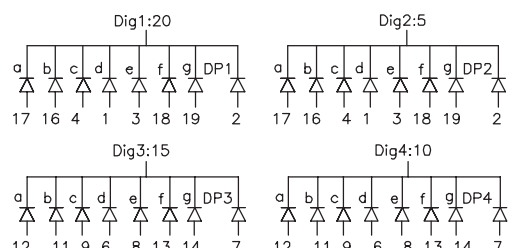
1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

FOUR DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
CA25-11SEKWA CA25-12SEKWA	CC25-11SEKWA CC25-12SEKWA	AlGaInP	601	21000	55000	0.244 inch (6.2mm), Gray Face, White Segment A: CA/CC25-11 B: CA/CC25-12  A,B Front View A,B Side View
CA25-11SURKWA CA25-12SURKWA	CC25-11SURKWA CC25-12SURKWA	AlGaInP	630	14000	24000	 A End View B End View
CA25-11SYKWA CA25-12SYKWA	CC25-11SYKWA CC25-12SYKWA	AlGaInP	590	14000	35000	CA25-12  CC25-12 
CA25-11CGKWA CA25-12CGKWA	CC25-11CGKWA CC25-12CGKWA	AlGaInP	570	3600	10000	CA25-11  CC25-11 

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
CA04-41SEKWA	CC04-41SEKWA	AlGaInP	601	21000	45000	0.4 inch (10.16mm), Gray Face, White Segment   
CA04-41SURKWA	CC04-41SURKWA	AlGaInP	630	9000	22000	
CA04-41SYKWA	CC04-41SYKWA	AlGaInP	590	14000	36000	CA04-41  CC04-41 
CA04-41CGKWA	CC04-41CGKWA	AlGaInP	570	3600	9000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

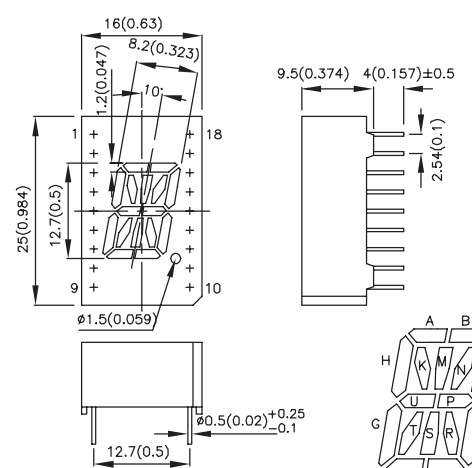
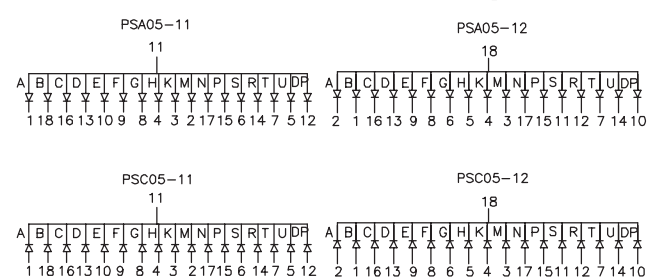
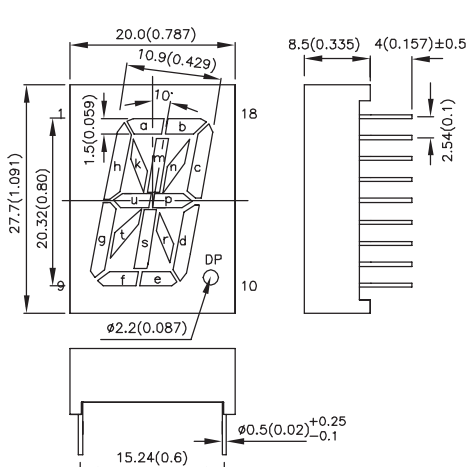
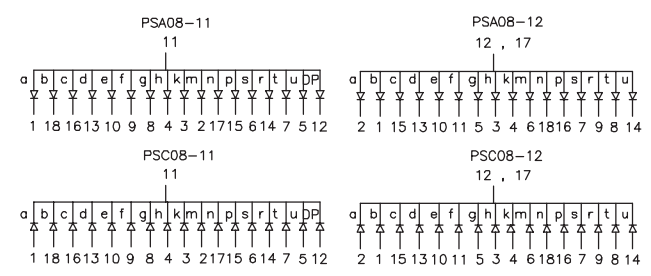
FOUR DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ_D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
CA56-11SEKWA CA56-12SEKWA CA56-21SEKWA	CC56-11SEKWA CC56-12SEKWA CC56-21SEKWA	AlGaInP	601	21000	41000	0.56 inch (14.22mm), Gray Face, White Segment A:CA/CC56-11 B:CA/CC56-12 C:CA/CC56-21 CA56-11 Front View CA56-11 CC56-11 CA56-12 CC56-12 CA56-21 CC56-21
CA56-11SURKWA CA56-12SURKWA CA56-21SURKWA	CC56-11SURKWA CC56-12SURKWA CC56-21SURKWA	AlGaInP	630	14000	24000	CA56-11 Front View CA56-11 CC56-11 CA56-12 CC56-12 CA56-21 CC56-21
CA56-11SYKWA CA56-12SYKWA CA56-21SYKWA	CC56-11SYKWA CC56-12SYKWA CC56-21SYKWA	AlGaInP	590	21000	40000	CA56-11 Front View CA56-11 CC56-11 CA56-12 CC56-12 CA56-21 CC56-21
CA56-11CGKWA CA56-12CGKWA CA56-21CGKWA	CC56-11CGKWA CC56-12CGKWA CC56-21CGKWA	AlGaInP	570	5600	12000	CA56-11 Front View CA56-11 CC56-11 CA56-12 CC56-12 CA56-21 CC56-21

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

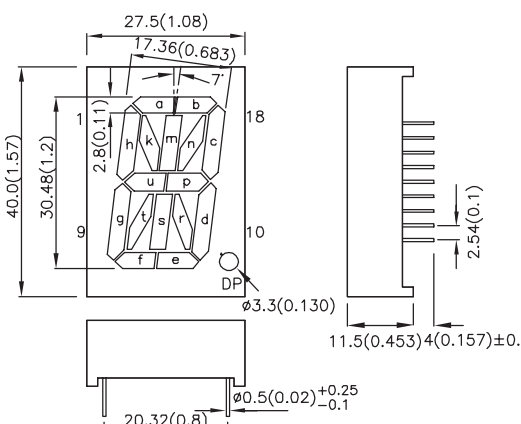
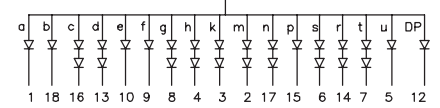
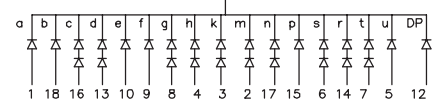
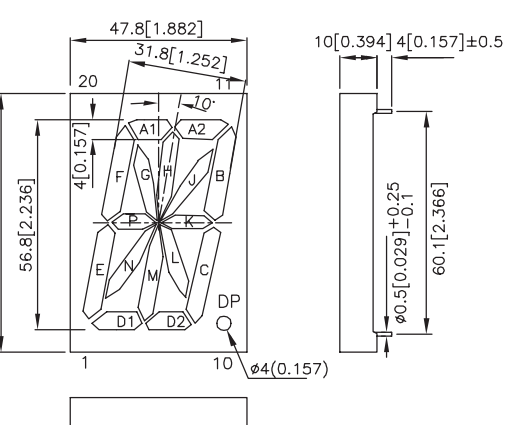
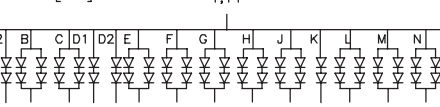
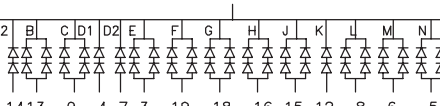
ALPHANUMERIC THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
PSA05-11SEKWA PSA05-12SEKWA	PSC05-11SEKWA PSC05-12SEKWA	AlGaInP	601	21000	43000	0.5 inch (12.7mm), Gray Face, White Segment  
PSA05-11SURKWA PSA05-12SURKWA	PSC05-11SURKWA PSC05-12SURKWA	AlGaInP	630	14000	31000	
PSA05-11SYKWA PSA05-12SYKWA	PSC05-11SYKWA PSC05-12SYKWA	AlGaInP	590	21000	48000	
PSA05-11CGKWA PSA05-12CGKWA	PSC05-11CGKWA PSC05-12CGKWA	AlGaInP	570	5600	13000	
PSA08-11SEKWA PSA08-12SEKWA	PSC08-11SEKWA PSC08-12SEKWA	AlGaInP	601	21000	34000	0.8 inch (20.32mm), Gray Face, White Segment  
PSA08-11SURKWA PSA08-12SURKWA	PSC08-11SURKWA PSC08-12SURKWA	AlGaInP	630	9000	21000	
PSA08-11SYKWA PSA08-12SYKWA	PSC08-11SYKWA PSC08-12SYKWA	AlGaInP	590	21000	37000	
PSA08-11CGKWA PSA08-12CGKWA	PSC08-11CGKWA PSC08-12CGKWA	AlGaInP	570	3600	9000	

NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

ALPHANUMERIC THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
PSA12-11SEKWA	PSC12-11SEKWA	AlGaInP	601	21000	37000	1.2 inch (30.48mm), Gray Face, White Segment  PSA12-11  PSC12-11 
PSA12-11SURKWA	PSC12-11SURKWA	AlGaInP	630	9000	22000	
PSA12-11SYKWA	PSC12-11SYKWA	AlGaInP	590	14000	25000	
PSA12-11CGKWA	PSC12-11CGKWA	AlGaInP	570	3600	9000	
PSA23-11SEKWA	PSC23-11SEKWA	AlGaInP	601	21000	51000	2.24 inch (56.8mm), Gray Face, White Segment  PSA23-11  PSC23-11 
PSA23-11SURKWA	PSC23-11SURKWA	AlGaInP	630	9000	25000	
PSA23-11SYKWA	PSC23-11SYKWA	AlGaInP	590	21000	49000	
PSA23-11CGKWA	PSC23-11CGKWA	AlGaInP	570	5600	14000	

NOTES:

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3. Luminous intensity value is traceable to CIE127-2007 standards.

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Common Anode	Common Cathode			Min.	Typ.	
PDA54-11SEKWA PDA54-12SEKWA	PDC54-11SEKWA PDC54-12SEKWA	AlGaInP	601	21000	40000	0.543inch (13.8mm), Gray Face, White Segment
PDA54-11SURKWA PDA54-12SURKWA	PDC54-11SURKWA PDC54-12SURKWA	AlGaInP	630	9000	23000	PDA54-11 Dig 1 : 16 Dig 2 : 11 PDC54-11 Dig 1 : 16 Dig 2 : 11
PDA54-11SYKWA PDA54-12SYKWA	PDC54-11SYKWA PDC54-12SYKWA	AlGaInP	590	14000	29000	PDA54-12 Dig. 1 Dig. 2 PDC54-12 Dig. 1 Dig. 2
PDA54-11CGKWA PDA54-12CGKWA	PDC54-11CGKWA PDC54-12CGKWA	AlGaInP	570	3600	8000	PIN 2,7,11,13,16 NO Connection PDC54-12 Dig. 1 Dig. 2 PIN 2,7,11,13,16 NO Connection

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

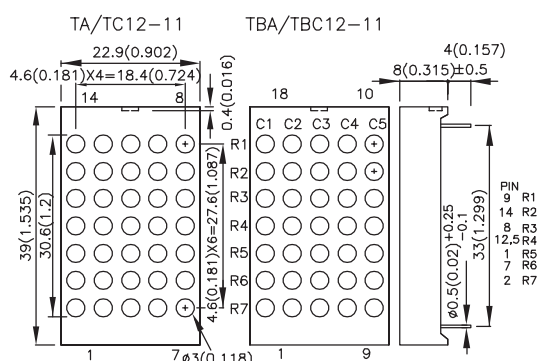
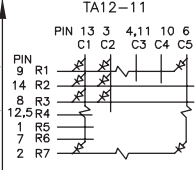
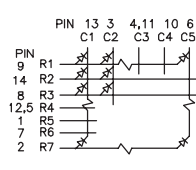
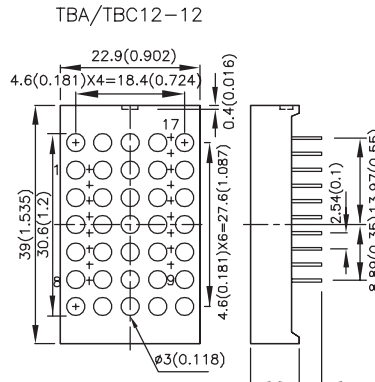
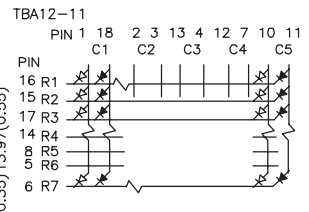
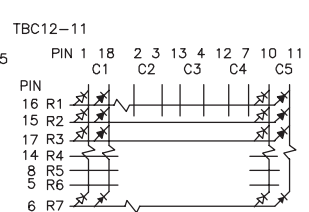
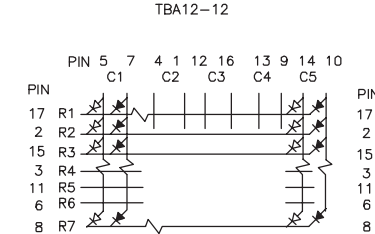
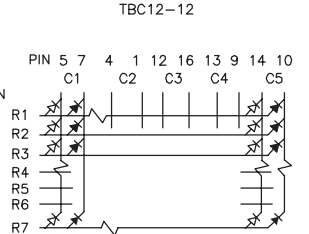
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA03-11SRT	/	GaAlAs	640	3600	7500	0.3 inch (7.62mm) Dot Matrix TA03-11 C1 C2 C3 C4 C5 C6 7 5 1 8 14 13 2 R1 12 R2 3 R3 4 R4 11 R5 10 R6 9 R7
TA03-11GT	/	GaP	568	1400	3000	
TA07-11SEKWA	TC07-11SEKWA	AlGaInP	601	21000	42000	0.7 inch (18mm), 5x7, Gray Face, White Dot TA07-11 C1 C2 C3 C4 C5 PIN 1 3 10 7 8 5 12R1 11R2 2 R3 9 R4 4 R5 5 R6 6 R7 TC07-11 C1 C2 C3 C4 C5 PIN 1 3 10 7 8 5 12R1 11R2 2 R3 9 R4 4 R5 5 R6 6 R7
TA07-11SURKWA	TC07-11SURKWA	AlGaInP	630	14000	24000	
TA07-11SYKWA	TC07-11SYKWA	AlGaInP	590	21000	47000	
TA07-11CGKWA	TC07-11CGKWA	AlGaInP	570	5600	12000	
TA16-11SEKWA	TC16-11SEKWA	AlGaInP	601	31000	65000	1.38 inch (35.2mm), 5x8, Gray Face, White Dot TA16-11 C1 C2 C3 C4 C5 PIN 13 3 4 11 10 6 9 R1 14 R2 8 R3 12 R4 5 R5 1 R6 7 R7 2 R8 TC16-11 C1 C2 C3 C4 C5 PIN 13 3 4 11 10 6 9 R1 14 R2 8 R3 12 R4 5 R5 1 R6 7 R7 2 R8
TA16-11SURKWA	TC16-11SURKWA	AlGaInP	630	21000	36000	
TA16-11SYKWA	TC16-11SYKWA	AlGaInP	590	31000	60000	
TA16-11CGKWA	TC16-11CGKWA	AlGaInP	570	9000	16000	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

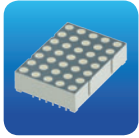
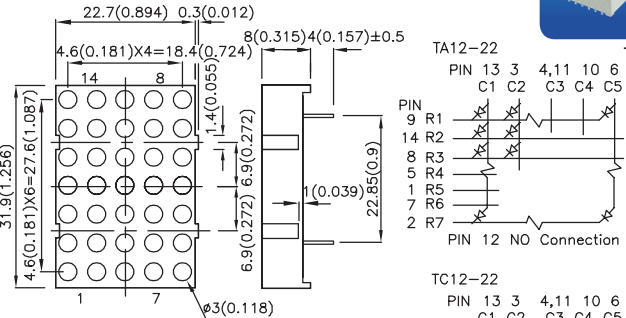
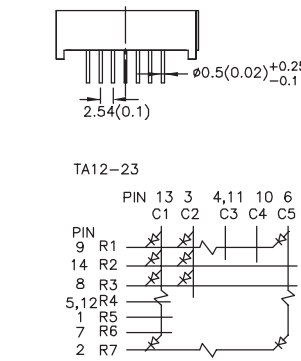
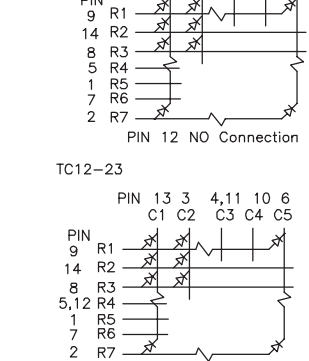
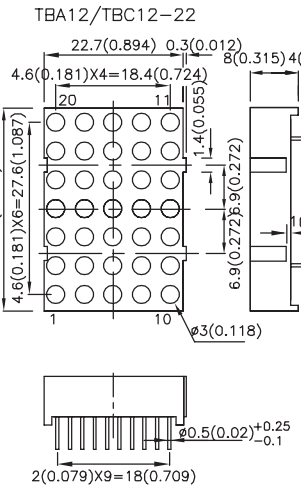
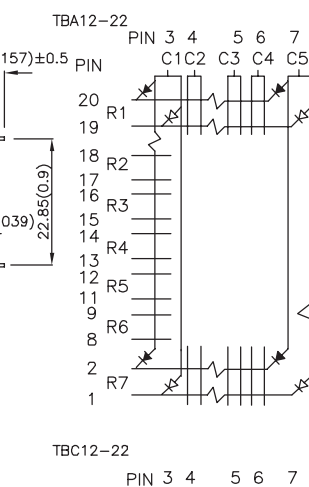
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA12-11SEKWA	TC12-11SEKWA	AlGaInP	601	31000	75000	1.2 inch (30mm), 5x7, Gray Face, White Dot  TX12-11 TA/TC12-11 TBA/TBC12-11  TA12-11  TC12-11  TBA/TBC12-12  TBA12-11  TBC12-11  TBA12-12  TBC12-12  GREEN RED
TA12-11SURKWA	TC12-11SURKWA	AlGaInP	630	21000	40000	
TA12-11SYKWA	TC12-11SYKWA	AlGaInP	590	31000	70000	
TA12-11CGKWA	TC12-11CGKWA	AlGaInP	570	14000	27000	
TBA12-11SURKCGKWA	TBC12-11SURKCGKWA	AlGaInP	630	21000	40000	
		AlGaInP	570	14000	27000	
TBA12-12SURKCGKWA	TBC12-12SURKCGKWA	AlGaInP	630	21000	40000	
		AlGaInP	570	14000	27000	

NOTES:

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3. Luminous intensity value is traceable to CIE127-2007 standards.

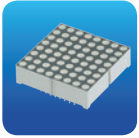
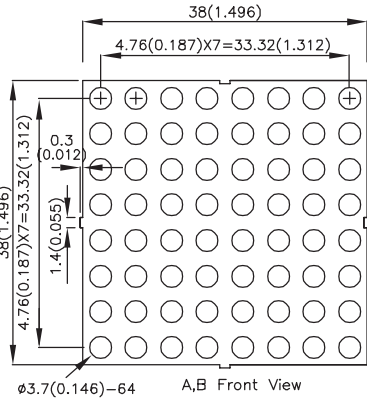
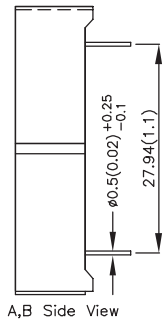
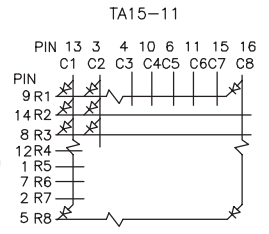
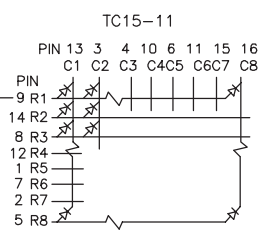
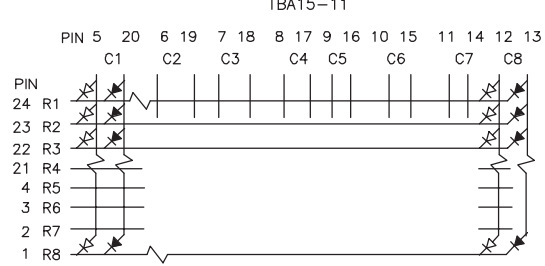
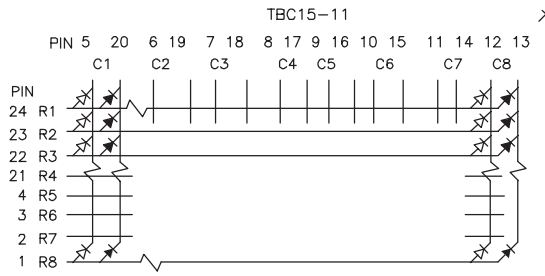
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA12-22SEKWA	TC12-22SEKWA	AlGaInP	601	31000	75000	1.2 inch (30mm), 5x7, Gray Face, White Dot TA12/TC12-22 TA12/TC12-23  TX12-22  TA12-23  TC12-23 
TA12-22SURKWA	TC12-22SURKWA	AlGaInP	630	21000	40000	
TA12-22SYKWA	TC12-22SYKWA	AlGaInP	590	31000	70000	
TA12-22CGKWA	TC12-22CGKWA	AlGaInP	570	14000	27000	
TBA12-22 SURKCGKWA	TBC12-22 SURKCGKWA	AlGaInP	630	21000	40000	
		AlGaInP	570	14000	27000	TBA12-22  TBC12-22 
TA12-23SRWA	TC12-23SRWA	GaAlAs	640	5600	14000	Green Red 10 : N.C.
TA12-23YWA	TC12-23YWA	GaAsP/GaP	588	2200	4600	

NOTES:

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3. Luminous intensity value is traceable to CIE127-2007 standards.

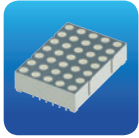
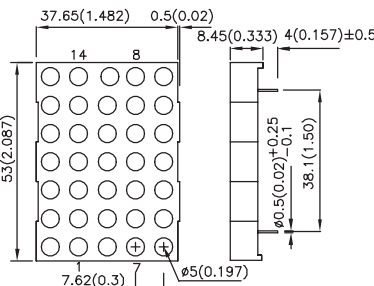
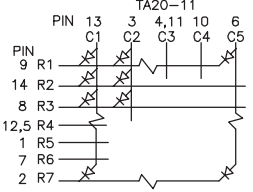
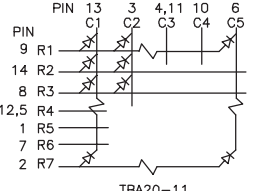
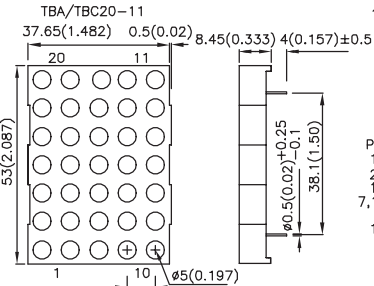
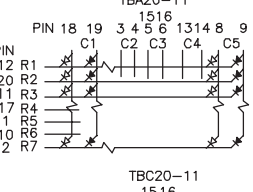
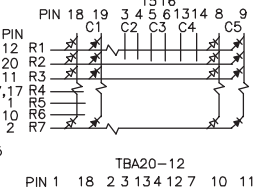
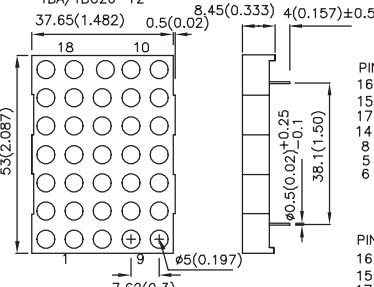
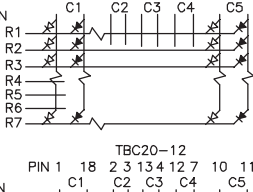
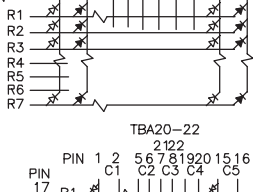
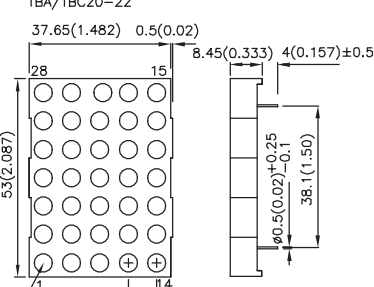
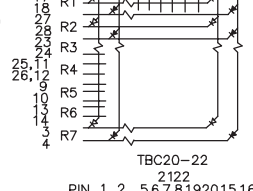
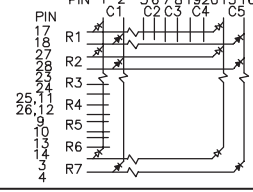
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA15-11SEKWA	TC15-11SEKWA	AlGaInP	601	21000	57000	1.5 inch (38mm), 8x8, Gray Face, White Dot A : TA/TC15-11 B : TBA/TBC15-11  TX15  A,B Front View  A,B Side View  TA15-11  TC15-11  TBA15-11  TBC15-11 Green Red
TA15-11SURKWA	TC15-11SURKWA	AlGaInP	630	21000	41000	
TA15-11SYKWA	TC15-11SYKWA	AlGaInP	590	31000	70000	
TA15-11CGKWA	TC15-11CGKWA	AlGaInP	570	9000	18000	
TBA15-11 SURKCGKWA	TBC15-11 SURKCGKWA	AlGaInP	630	21000	41000	
		AlGaInP	570	9000	18000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

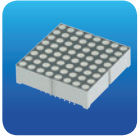
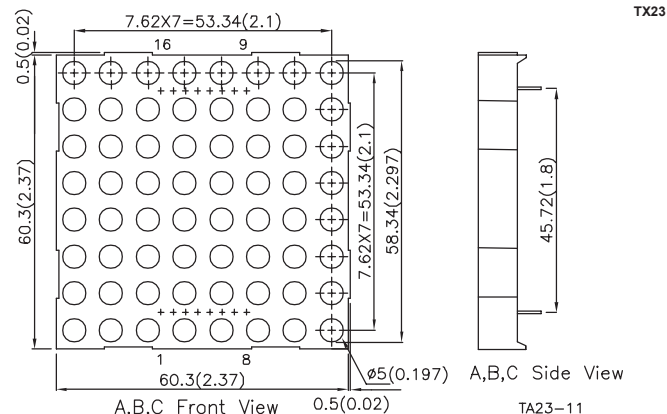
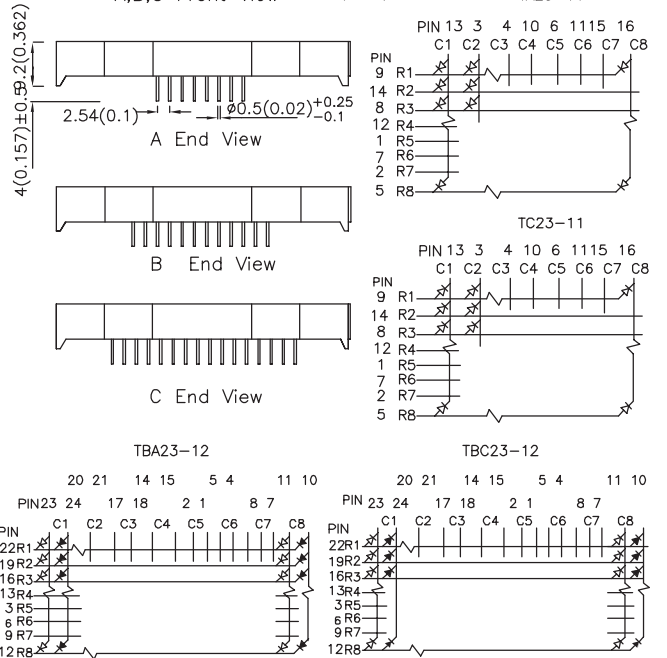
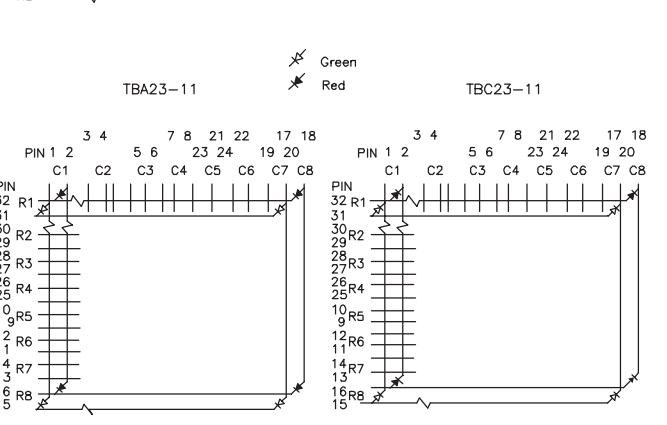
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA20-11SEKWA	TC20-11SEKWA	AlGaInP	601	31000	71000	2.0 inch (50mm), 5x7, Gray Face, White Dot  TA/TC20-11  TA20-11  TC20-11  TBA/TBC20-11  TBA20-11  TBC20-11  TBA20-12  TBA20-12  TBC20-12  TBA20-22  TBA20-22  TBC20-22 
TA20-11SURKWA	TC20-11SURKWA	AlGaInP	630	21000	42000	
TA20-11SYKWA	TC20-11SYKWA	AlGaInP	590	21000	51000	
TA20-11CGKWA	TC20-11CGKWA	AlGaInP	570	9000	20000	
TBA20-11 SURKCGKWA	TBC20-11 SURKCGKWA	AlGaInP	630	21000	42000	
		AlGaInP	570	9000	20000	
TBA20-12 SURKCGKWA	TBC20-12 SURKCGKWA	AlGaInP	630	21000	42000	
		AlGaInP	570	9000	20000	
TBA20-22 SURKCGKWA	TBC20-22 SURKCGKWA	AlGaInP	630	21000	42000	
		AlGaInP	570	9000	20000	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

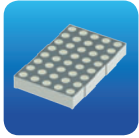
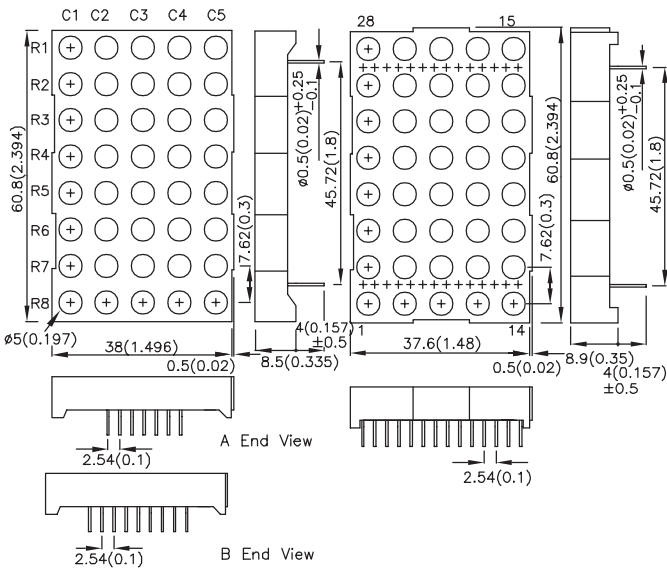
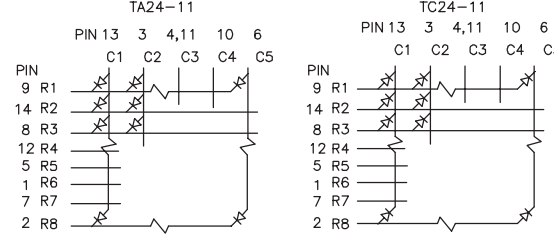
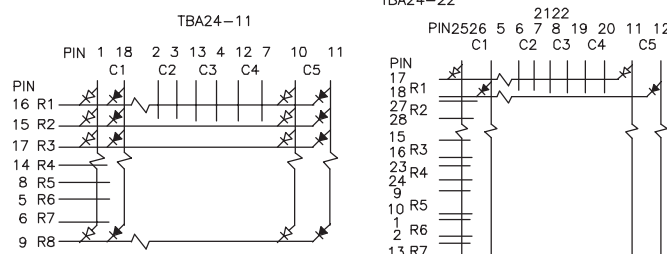
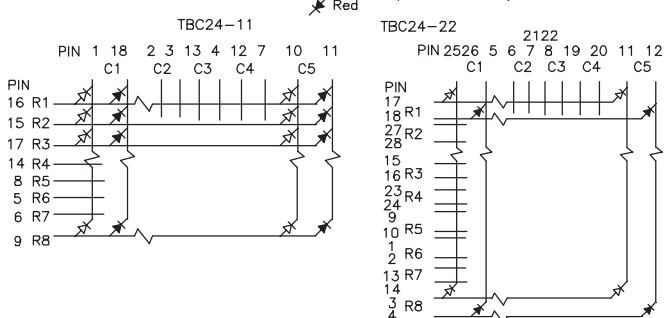
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA23-11SEKWA	TC23-11SEKWA	AlGaInP	601	31000	63000	2.3 inch (58mm), 8x8, Gray Face, White Dot A : TA/TC23-11 B : TBA/TBC23-12 C : TBA/TBC23-11  TX23  A,B,C Front View A,B,C Side View TA23-11  TBA23-12 TBC23-12 TA23-11 TBC23-11  TBA23-11 TBC23-11
TA23-11SURKWA	TC23-11SURKWA	AlGaInP	630	21000	33000	
TA23-11SYKWA	TC23-11SYKWA	AlGaInP	590	31000	60000	
TA23-11CGKWA	TC23-11CGKWA	AlGaInP	570	5600	14000	
TBA23-11 SURKCGKWA	TBC23-11 SURKCGKWA	AlGaInP	630	21000	33000	
TBA23-11 SURKCGKWA	TBC23-11 SURKCGKWA	AlGaInP	570	5600	14000	
TBA23-12 SURKCGKWA	TBC23-12 SURKCGKWA	AlGaInP	630	21000	33000	TA23-11 TBC23-11 TBA23-12 TBC23-12 TA23-11 TBC23-11 TBA23-12 TBC23-12
TBA23-12 SURKCGKWA	TBC23-12 SURKCGKWA	AlGaInP	570	5600	14000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

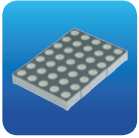
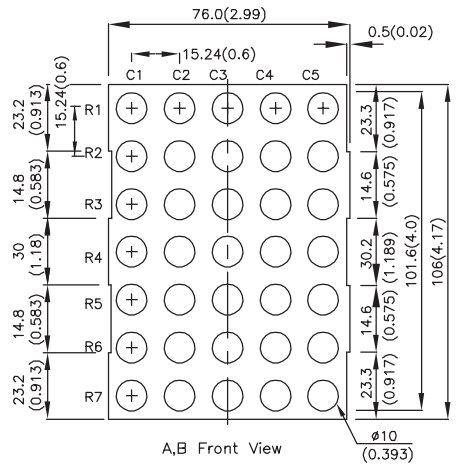
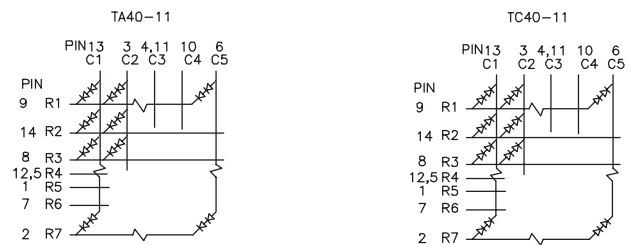
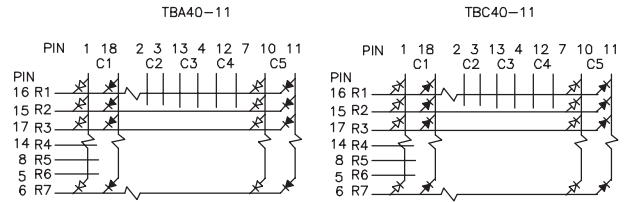
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA24-11SEKWA	TC24-11SEKWA	AlGaInP	601	31000	65000	2.4 inch (60.8mm), 5x8, Gray Face, White Dot A: TA/TC24-11 B: TBA/TBC24-11  A,B Front View A,B Side View TBA/TBC24-22 TX24 
TA24-11SURKWA	TC24-11SURKWA	AlGaInP	630	21000	49000	
TA24-11SYKWA	TC24-11SYKWA	AlGaInP	590	31000	70000	
TA24-11CGKWA	TC24-11CGKWA	AlGaInP	570	9000	17000	
TBA24-11 SURKCGKWA	TBC24-11 SURKCGKWA	AlGaInP	630	21000	49000	
		AlGaInP	570	9000	17000	  
TBA24-22 SURKCGKWA	TBC24-22 SURKCGKWA	AlGaInP	630	21000	49000	
		AlGaInP	570	9000	17000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimensions
Column Anode	Column Cathode			Min.	Typ.	
TA40-11SEKWA	TC40-11SEKWA	AlGaInP	601	88000	190000	4.0 inch (100mm), 5x7, Gray Face, White Dot A : TA/TC40-11 B : TBA/TBC40-11  TX40  A,B Side View: Side profile view showing the package height and mounting features. Dimensions include total height 106(4.17) and mounting hole diameter 13(0.512).  B End View: Rear view of the package showing the dot array and mounting pins. Dimensions include pin pitch 5.08(0.2) and pin height 6(0.236)±0.5.   For 2 Red Chips For 2 Green Chips
TA40-11SURKWA	TC40-11SURKWA	AlGaInP	630	31000	70000	
TA40-11SYKWA	TC40-11SYKWA	AlGaInP	590	88000	170000	
TA40-11CGKWA	TC40-11CGKWA	AlGaInP	570	21000	45000	
TBA40-11SURKCGKWA	TBC40-11SURKCGKWA	AlGaInP	630	31000	70000	
		AlGaInP	570	21000	45000	

NOTES:

1. All dimensions are in millimeters(inches).
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3. Luminous intensity value is traceable to CIE127-2007 standards.

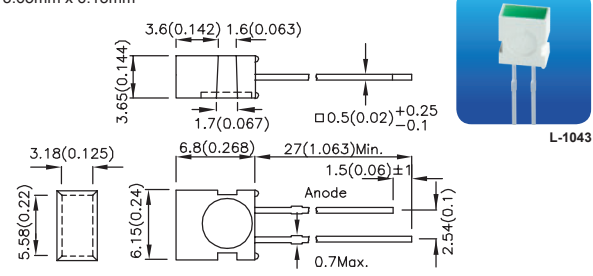
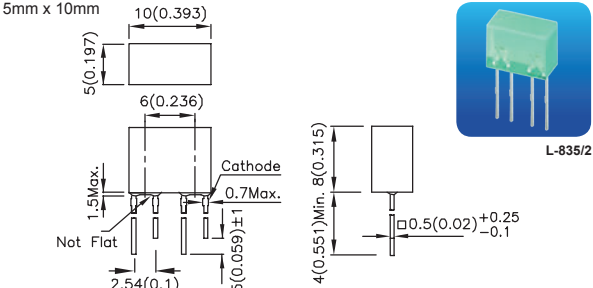
BAR GRAPH ARRAY

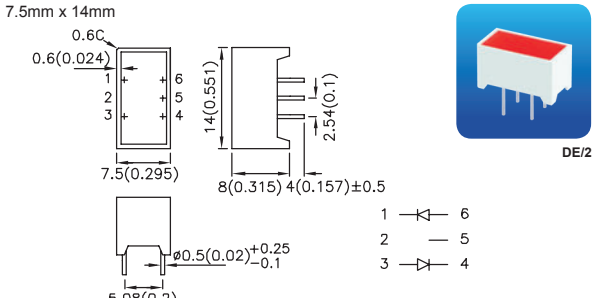
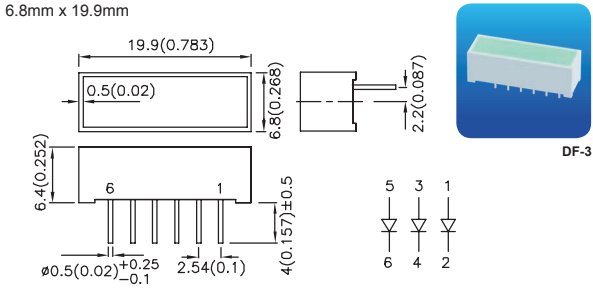
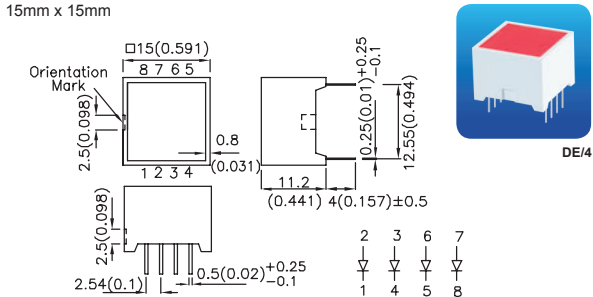
Part Number	Material	λ_D (nm)	Iv (ucd) @10mA		Dimensions
			Min.	Typ.	
DC-05YWA	GaAsP/GaP	588	900	2400	5 Segments, Bar graph-Display, Gray Face, White Segment
DC-05GWA	GaP	568	1400	4000	
DC-10SEKWA	AlGaInP	601	21000	35000	10 Segments, Bar graph-Display, Gray Face, White Segment
DC-10SURKWA	AlGaInP	630	9000	25000	
DC-10SYKWA	AlGaInP	590	21000	36000	
DC-10CGKWA	AlGaInP	570	3600	8000	
DC-20/20SEKWA	AlGaInP	601	21000	35000	20 Segments, Bar graph-Display, Gray Face, White Segment
DC-20/20SURKWA	AlGaInP	630	9000	25000	
DC-20/20SYKWA	AlGaInP	590	21000	36000	
DC-20/20CGKWA	AlGaInP	570	3600	8000	
DD-12SEKWB	AlGaInP	601	31000	60000	12 Segments, Bar graph-Display, Black Face, White Segment
DD-12SURKWB	AlGaInP	630	14000	30000	
DD-12SYKWB	AlGaInP	590	14000	33000	
DD-12CGKWB	AlGaInP	570	5600	11000	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

LIGHT BAR

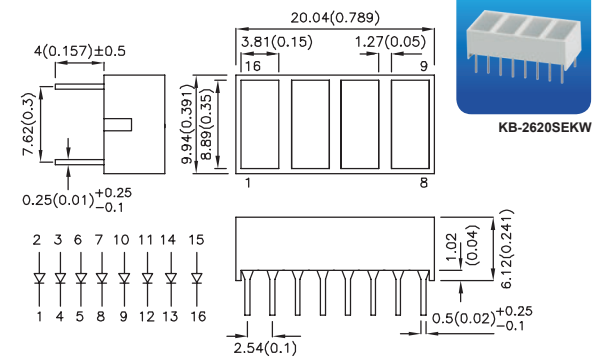
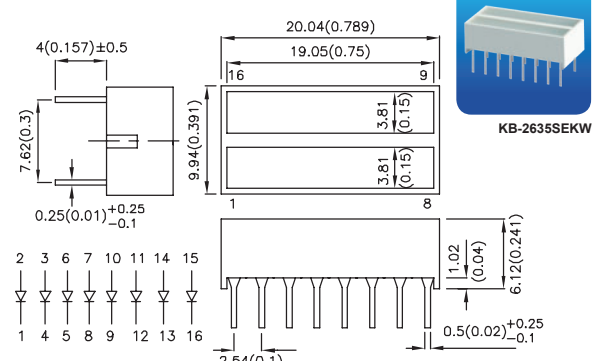
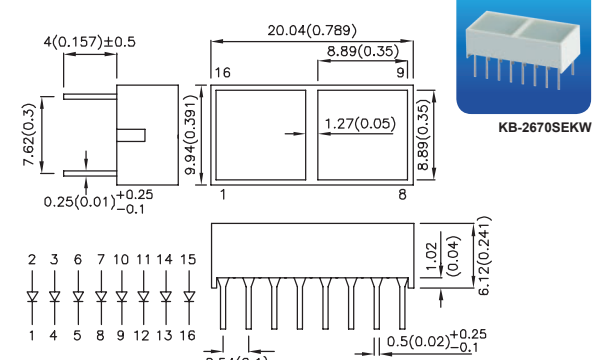
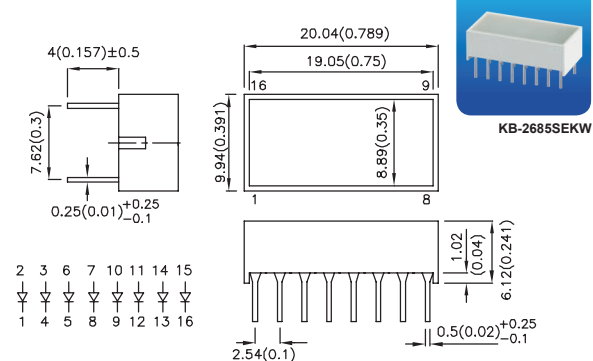
Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-1043SEDTK	AlGaInP	601	orange diffused	60	120	100°	3.65mm x 6.15mm 
L-1043SURDTK	AlGaInP	630	red diffused	30	60	100°	
L-1043SYDTK	AlGaInP	590	yellow diffused	80	150	100°	
L-1043CGDTK	AlGaInP	570	green diffused	8	20	100°	
L-835/2SEDTK	AlGaInP	601	orange diffused	55	150	140°	5mm x 10mm 
L-835/2SURDTK	AlGaInP	630	red diffused	20	80	140°	
L-835/2SYDTK	AlGaInP	590	yellow diffused	55	120	140°	
L-835/2CGDTK	AlGaInP	570	green diffused	12	30	140°	

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Dimensions
				Min.	Typ.	
DE/2SEKD	AlGaInP	601	orange diffused	200	310	7.5mm x 14mm 
DE/2SURKD	AlGaInP	630	red diffused	80	170	
DE/2SYKD	AlGaInP	590	yellow diffused	120	300	
DE/2CGKD	AlGaInP	570	green diffused	20	54	
DF-3SEKD	AlGaInP	601	orange diffused	200	360	6.8mm x 19.9mm 
DF-3SURKD	AlGaInP	630	red diffused	80	160	
DF-3SYKD	AlGaInP	590	yellow diffused	120	240	
DF-3CGKD	AlGaInP	570	green diffused	55	94	
DE/4SEKD	AlGaInP	601	orange diffused	120	280	15mm x 15mm 
DE/4SURKD	AlGaInP	630	red diffused	120	250	
DE/4SYKD	AlGaInP	590	yellow diffused	120	250	
DE/4CGKD	AlGaInP	570	green diffused	40	77	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

LIGHT BAR

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Dimensions
				Min.	Typ.	
KB-2620SEKW	AlGaInP	601	white diffused	55	130	8.89mm x 3.81mm Size of Light Emitting Areas  KB-2620SEKW
KB-E100SURKW	AlGaInP	630	white diffused	40	70	
KB-2720SYKW	AlGaInP	590	white diffused	20	50	
KB-2820CGKD	AlGaInP	570	green diffused	8	16	
KB-2635SEKW	AlGaInP	601	white diffused	55	120	3.81mm x 19.05mm Size of Light Emitting Areas  KB-2635SEKW
KB-F100SURKW	AlGaInP	630	white diffused	20	60	
KB-2735SYKW	AlGaInP	590	white diffused	40	80	
KB-2835CGKD	AlGaInP	570	green diffused	8	17	
KB-2670SEKW	AlGaInP	601	white diffused	55	120	8.89mm x 8.89mm Size of Light Emitting Areas  KB-2670SEKW
KB-G100SURKW	AlGaInP	630	white diffused	20	56	
KB-2770SYKW	AlGaInP	590	white diffused	20	50	
KB-2870CGKD	AlGaInP	570	green diffused	8	18	
KB-2685SEKW	AlGaInP	601	white diffused	80	140	8.89mm x 19.05mm Size of Light Emitting Areas  KB-2685SEKW
KB-H100SURKW	AlGaInP	630	white diffused	40	65	
KB-2785SYKW	AlGaInP	590	white diffused	20	57	
KB-2885CGKD	AlGaInP	570	green diffused	8	19	

NOTES:

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3. Luminous intensity value is traceable to CIE127-2007 standards.

Kingbright

Optoelectronic Components

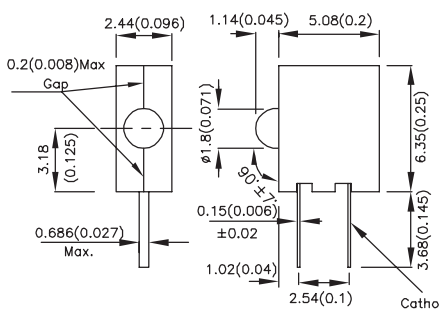
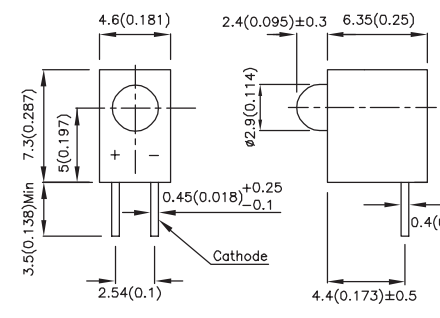
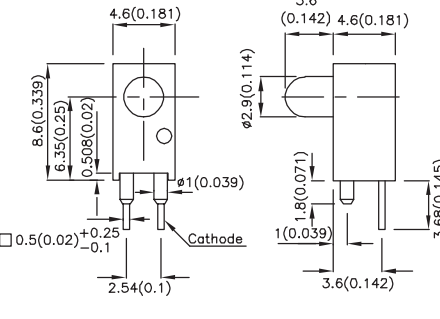
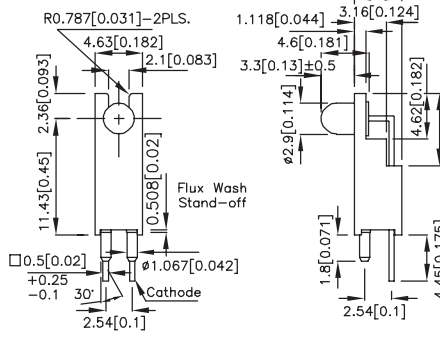
CIRCUIT BOARD INDICATOR

Single-Level CBI	72
Bi-Level CBI	75
Tri-Level CBI	77
Quad-Level CBI	78
With Spacer	78
SMD CBI	78

LED CLIPS AND MOUNTS

Value Added LED Lamps	81
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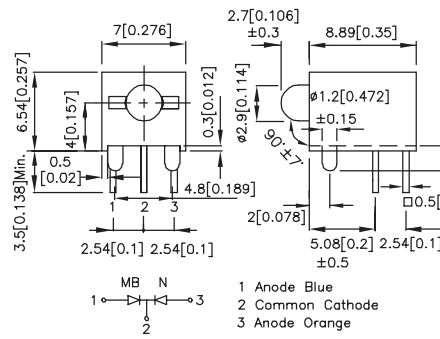
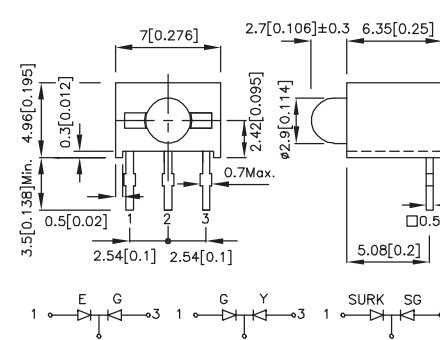
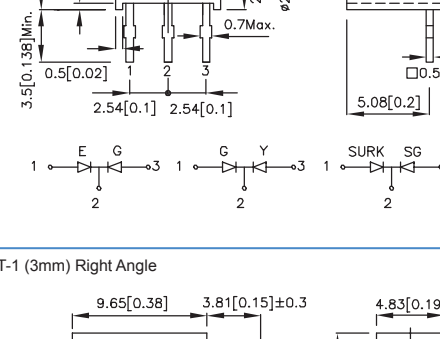
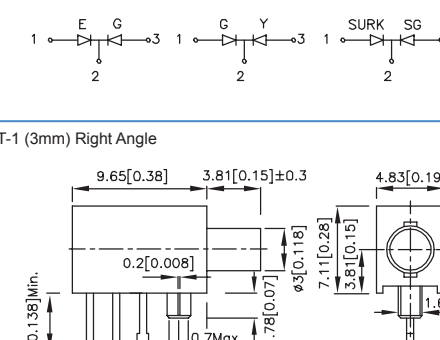
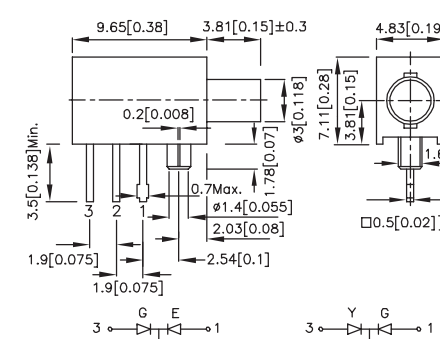
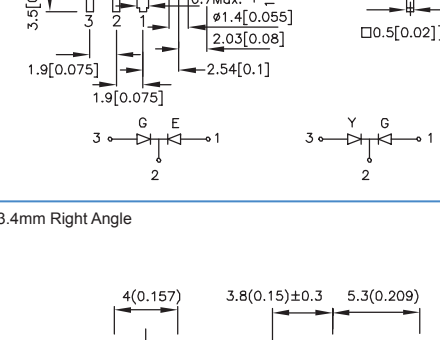
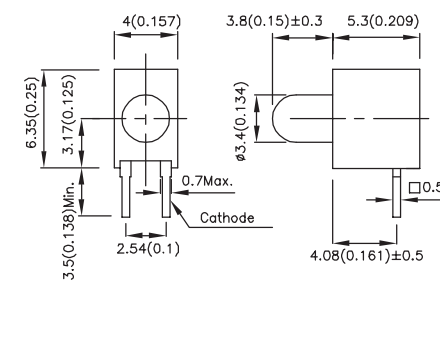
SINGLE-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KM2520EH/1ID	GaAsP/GaP	617	red diffused	*8	*16	40°	Subminiature Solid State Lamps   KM2520EH/1
KM2520EH/1YD	GaAsP/GaP	588	yellow diffused	*5	*10	40°	
KM2520EH/1SGD	GaP	568	green diffused	*5	*12	40°	
L-710A8CB/1ID	GaAsP/GaP	617	red diffused	6	12	50°	T-1 (3mm) Right Angle   L-710A8CB/1
L-710A8CB/1YD	GaAsP/GaP	588	yellow diffused	6	15	50°	
L-710A8CB/1GD	GaP	568	green diffused	8	25	50°	
L-7104RS/1SRD	GaAlAs	640	red diffused	*50	*100	50°	T-1 (3mm) Right Angle   L-7104RS/1
L-7104RS/1YD	GaAsP/GaP	588	yellow diffused	8	15	50°	
L-7104RS/1GD	GaP	568	green diffused	10	25	50°	
L-7104ZH/1ID	GaAsP/GaP	617	red diffused	10	20	50°	T-1 (3mm) Right Angle   L-7104ZH/1
L-7104ZH/1GD	GaP	568	green diffused	10	25	50°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

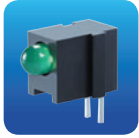
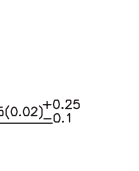
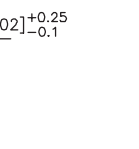
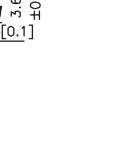
SINGLE-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-130WARA/1MBNW	GaN	466	white diffused	*10	*30	60°	T-1 (3mm) Right Angle  L-130WARA/1
	GaAsP/GaP	602		*10	*30		
L-130WDT/1EGW	GaAsP/GaP	617	white diffused	*10	*24	60°	T-1 (3mm) Right Angle  L-130WDT/1
	GaP	568		*12	*30		
L-130WDT/1GYW	GaP	568	white diffused	*18	*40	60°	 L-130WDT/1
	GaAsP/GaP	588		*10	*20		
L-130WDT/1SURKSGW-DTS	AlGaInP	630	white diffused	*100	*200	60°	 L-130WDT/1
	GaP	568		*12	*30		
L-42WUM/1EGWT	GaAsP/GaP	617	white diffused	*4	*8	140°	T-1 (3mm) Right Angle  L-42WUM/1
	GaP	568		*4	*12		
L-42WUM/1GYWT	GaP	568	white diffused	*4	*10	140°	 L-42WUM/1
	GaAsP/GaP	588		*2	*6		
L-1384AD/1ID	GaAsP/GaP	617	red diffused	8	16	60°	3.4mm Right Angle  L-1384AD/1
L-1384AD/1YD	GaAsP/GaP	588	yellow diffused	8	15	60°	
L-1384AD/1GD	GaP	568	green diffused	10	20	60°	

NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

SINGLE-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-1384AL/1ID	GaAsP/GaP	617	red diffused	8	16	60°	3.4mm Right Angle  L-1384AL/1
L-1384AL/1GD	GaP	568	green diffused	10	20	60°	
L-1533BQ/1ID	GaAsP/GaP	617	red diffused	12	30	30°	4.7mm Right Angle  L-1533BQ/1
L-1533BQ/1GD	GaP	568	green diffused	20	50	30°	
L-150A9VS/1EGW	GaAsP/GaP	617	white diffused	*12	*30	40°	T-1 3/4 (5mm) Right Angle  L-150A9VS/1
	GaP	568		*18	*50		
L-150A9VS/1GYW	GaP	568	white diffused	*18	*50	40°	
	GaAsP/GaP	588		*8	*20		
L-59BL/1EGW	GaAsP/GaP	617	white diffused	*20	*40	30°	T-1 3/4 (5mm) Right Angle  L-59BL/1
	GaP	568		*20	*60		
L-59BL/1GEW	GaP	568	white diffused	*50	*100	30°	
	GaAsP/GaP	617		*12	*35		

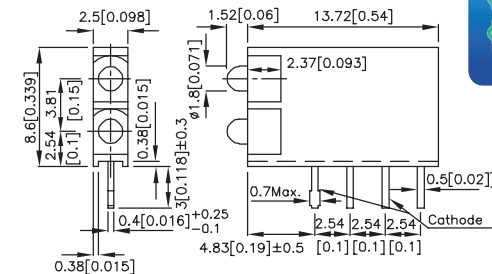
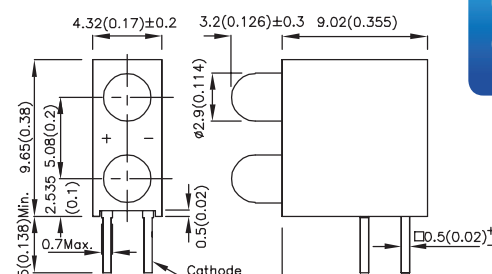
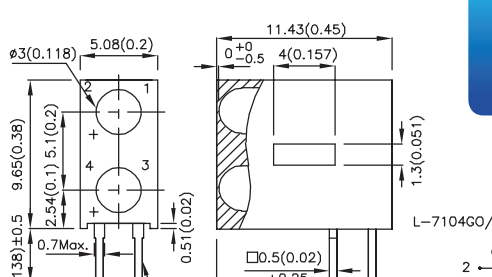
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

SINGLE-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-59CB/1EGW	GaAsP/GaP	617	white diffused	20	40	30°	T-1 3/4 (5mm) Right Angle L-59CB/1
	GaP	568		20	60		

BI-LEVEL CBI

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-4060VH/2ID	GaAsP/GaP	● 617	red diffused	4	8	70°	1.8mm Bi-Level  L-4060VH/2
L-4060VH/2YD	GaAsP/GaP	● 588	yellow diffused	4	8	70°	
L-4060VH/2GD	GaP	● 568	green diffused	6	12	70°	
L-7104EB/2ID	GaAsP/GaP	● 617	red diffused	10	20	50°	T-1 (3mm) Bi-Level  L-7104EB/2
L-7104EB/1Y1GD	GaAsP/GaP	● 588	yellow diffused	8	15	50°	
	GaP	● 568	green diffused	10	25	50°	
L-7104EB/2GD	GaP	● 568	green diffused	10	25	50°	
L-7104GO/2SRD	GaAlAs	● 640	red diffused	*50	*100	50°	T-1 (3mm) Bi-Level  L-7104GO/2
L-7104GO/2GD	GaP	● 568	green diffused	10	25	50°	
L-7104GO/ 1CGK1CGKSYKC	AlGaInP	● 570	water clear	*150	*330	30°	
	AlGaInP	● 570	water clear	*55	*160	60°	
	AlGaInP	● 590		*100	*300		

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

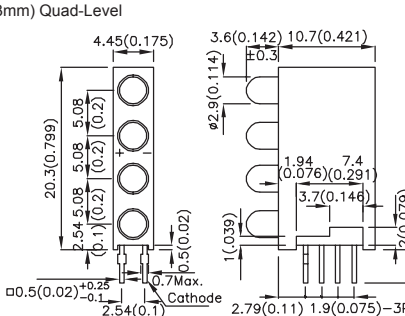
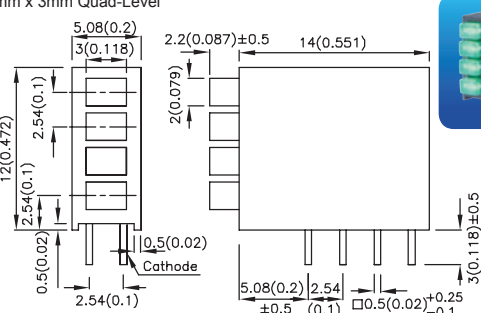
BI-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
L-7104MD/1G1ID	GaP	568	green diffused	10	25	50°	T-1 (3mm) Bi-Level
	GaAsP/GaP	617	red diffused	10	20	50°	
L-7104MD/2YD	GaAsP/GaP	588	yellow diffused	8	15	50°	
L-7104MD/2GD	GaP	568	green diffused	10	25	50°	
L-7104RT/2ID	GaAsP/GaP	617	red diffused	10	20	50°	T-1 (3mm) Bi-Level
	GaP	568	green diffused	10	25	50°	
L-7104RT/1G1YD	GaAsP/GaP	588	yellow diffused	8	15	50°	T-1 (3mm) Bi-Level
	GaP	568	green diffused	10	25	50°	
L-130WCP/2EGW	GaAsP/GaP	617	white diffused	*10	*24	60°	T-1(3mm) Bi-Level
	GaP	568		*12	*30		
L-130WCP/1MBN1XGW	GaN	466	white diffused	*10	*30	60°	T-1(3mm) Bi-Level
	GaAsP/GaP	602		*10	*30		
	GaP	568	white diffused	*12	*30	60°	
L-130WCP/2GYW	GaP	568	white diffused	*18	*40	60°	T-1(3mm) Bi-Level
	GaAsP/GaP	588		*10	*20		
L-73EB/1G1YDA	GaP	568	green diffused	10	30	40°	4.8mm Bi-Level
	GaAsP/GaP	588	yellow diffused	6	15	40°	
L-73EB/2GDA	GaP	568	green diffused	10	30	40°	

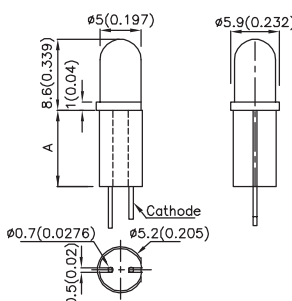
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

QUAD-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle	Dimensions
				Min.	Typ.		
L-7104SB/1G1Y1G1YD	GaP	 568	green diffused	10	25	50°	T-1 (3mm) Quad-Level  L-7104SB/4
	GaAsP/GaP	 588	yellow diffused	8	15	50°	
L-7104SB/4GD	GaP	 568	green diffused	10	25	50°	
L-914CK/4GDT	GaP	 568	green diffused	3	6	140°	2mm x 3mm Quad-Level  L-914CK/4

WITH SPACER

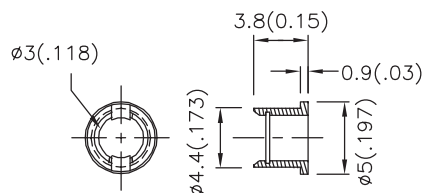
Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle	Dimensions
				Min.	Typ.		
L-7113BR-9.52/ID L-7113BR-12.7/ID	GaAsP/GaP	 617	red diffused	18	40	30°	T-1 3/4 (5mm) With Spacer  
L-7113BR-9.52/YD L-7113BR-12.7/YD	GaAsP/GaP	 588	yellow diffused	10	25	30°	
L-7113BR-9.52/GD L-7113BR-12.7/GD	GaP	 568	green diffused	15	30	30°	

SMD CBI[illegible]

NOTES:

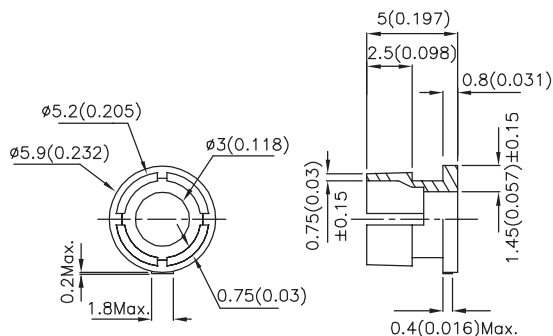
- NOTES:
1. All dimensions are in millimeters(inches).
 2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
 3. Luminous intensity value is traceable to CIE127-2007 standards.

RTC-31



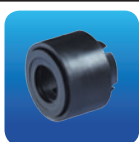
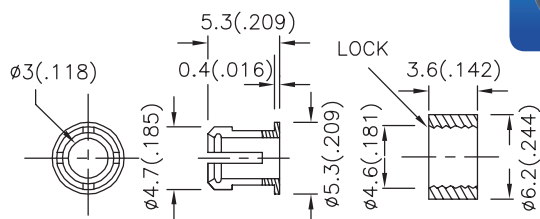
RTC-31

CB-30



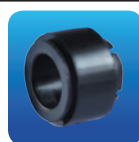
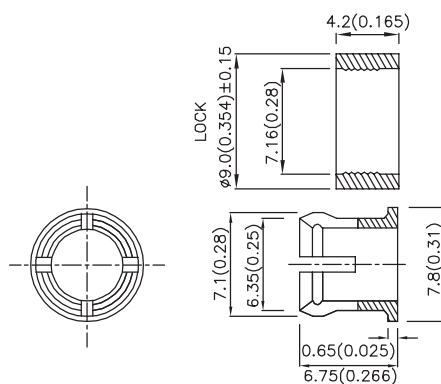
CB-30

RTC-32



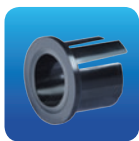
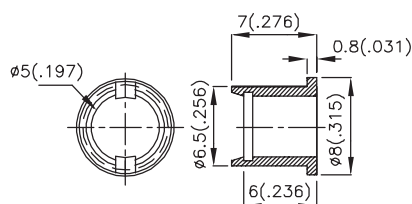
RTC-32

CB-50



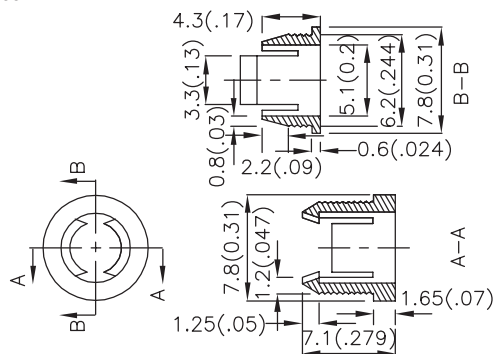
CB-50

RTC-51



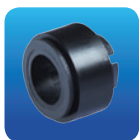
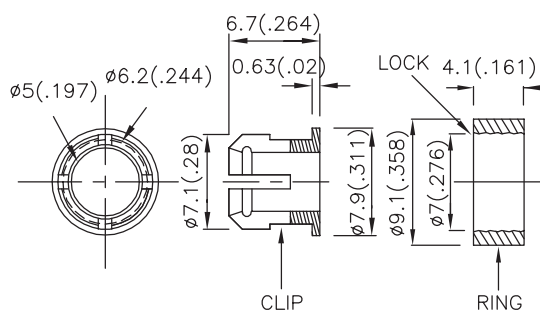
RTC-51

CB-55



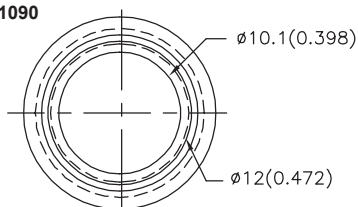
CB-55

RTC-52

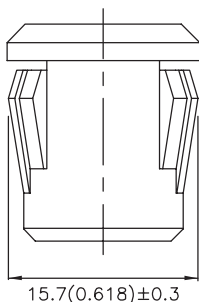
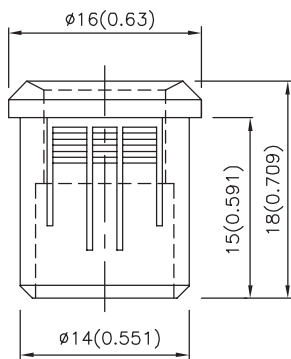


RTC-52

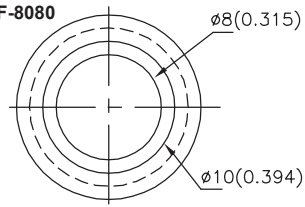
RTF-1090



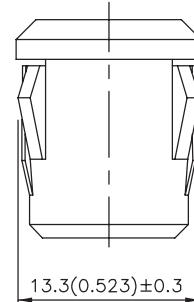
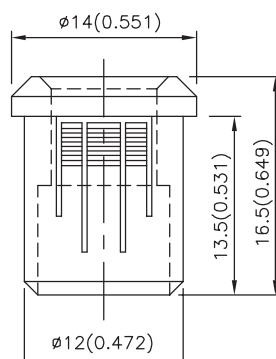
RTF-1090



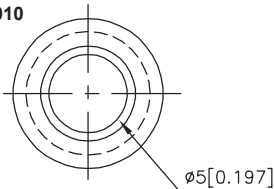
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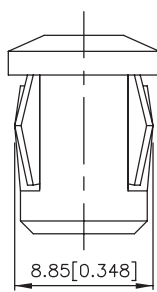
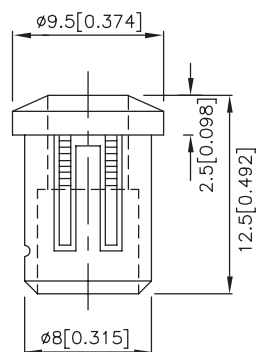
RTF-8080



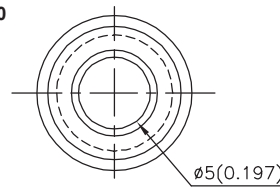
RTF-5010



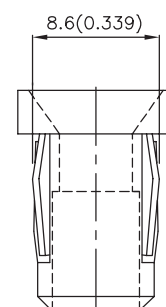
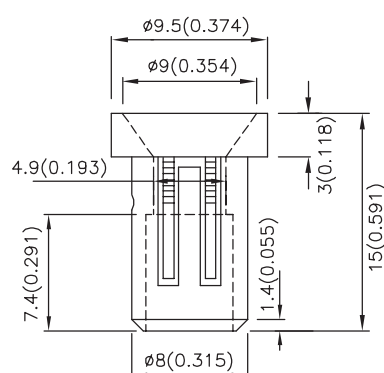
RTF-5010



RTF-5020

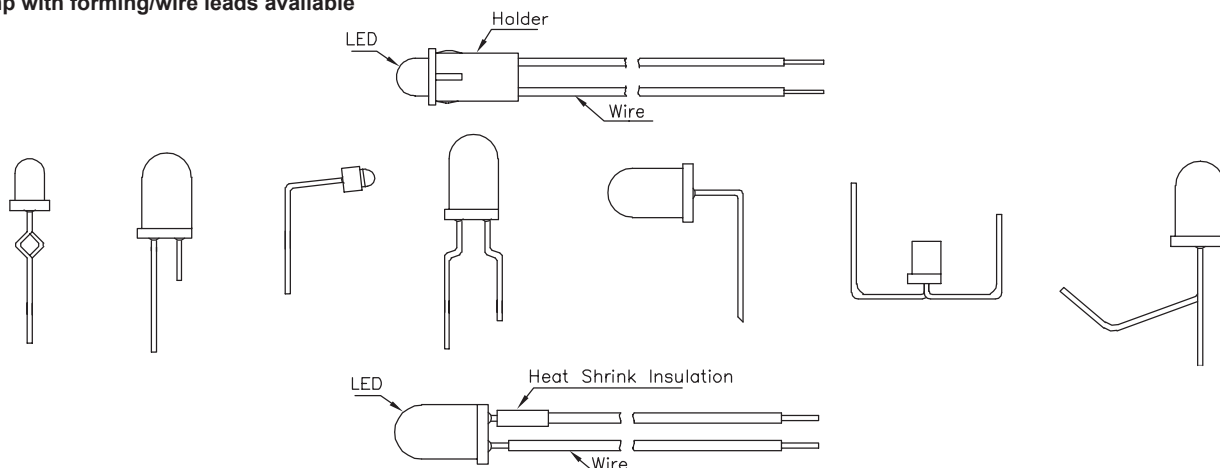


RTF-5020



VALUE ADDED LED LAMPS

LED lamp with forming/wire leads available



NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

Kingbright

Optoelectronic Components

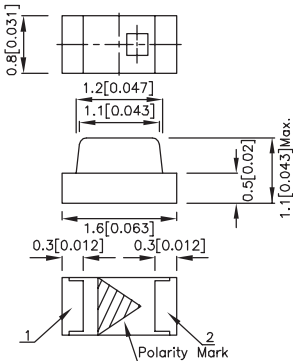
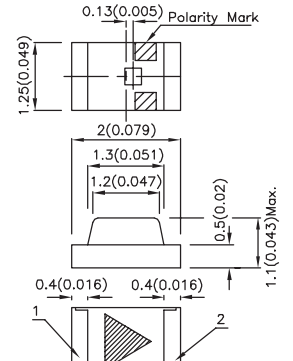
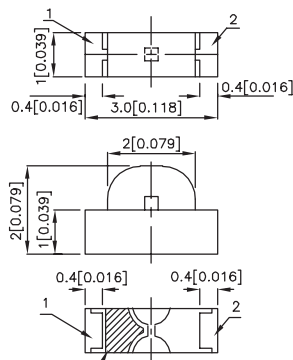
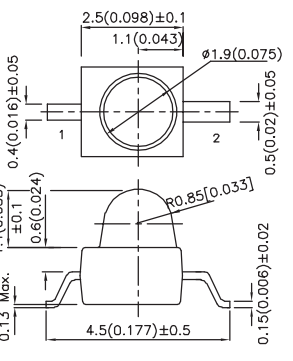
INFRARED & PHOTOTRANSISTOR

Infrared Emitting Diode 82

Phototransistor 84

CLUSTER 86

INFRARED EMITTING DIODE

Part Number	Material	λ_p (nm)	Lens Type	Po (mW/sr) @20mA *50mA		Viewing Angle 2 θ 1/2	Dimensions
				Min.	Typ.		
KP-1608F3C	GaAs	940	water clear	0.8	2	150°	1.6mm x 0.8mm x 1.1mm (0603)   KP-1608 F3 1 $\rightarrow$ $\rightarrow$ 2 SF4 1 $\rightarrow$ $\rightarrow$ 2 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KP-1608SF4C	GaAlAs	880	water clear	0.8	1.5	150°	
KP-2012F3C	GaAs	940	water clear	0.8	2	160°	2.0mm x 1.25mm x 1.1mm (0805)   KP-2012 F3 1 $\rightarrow$ $\rightarrow$ 2 SF4 1 $\rightarrow$ $\rightarrow$ 2 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KP-2012SF4C	GaAlAs	880	water clear	0.8	1.5	160°	
KPA-3010F3C	GaAs	940	water clear	0.8	2	160°	3.0mm x 1.0mm x 2.0mm (1104 Right Angle)   KPA-3010 1 $\rightarrow$ $\rightarrow$ 2 Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KM2520F3C03	GaAs	940	water clear	3	8	20°	2mm Subminiature IR Emitter   KM2520xxx03 1 $\rightarrow$ $\rightarrow$ 2 Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
				*8	*16		

NOTE:

1. Radiant intensity value is traceable to CIE127-2007 standards.

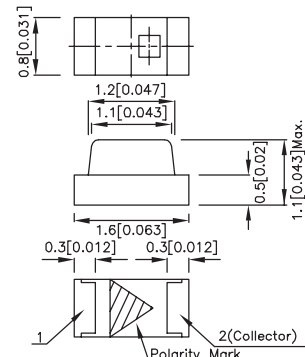
Part Number	Material	λ P (nm)	Lens Type	Po (mW/sr) @20mA *50mA		Viewing Angle	Dimensions
				Min.	Typ.	201/2	
L-34F3C	GaAs	● 940	water clear	3	8	50°	T-1 (3mm) Round
				*8	*15	50°	
L-34SF4C	GaAlAs	● 880	water clear	3	16	50°	Units : mm(inch) Tolerance : ±0.25(0.01)
				*5	*20	50°	
L-7104F3C	GaAs	● 940	water clear	3	8	30°	T-1 (3mm) Round
				*12	*25	30°	
L-7104F3BT	GaAs	● 940	blue transparent	3	8	30°	Units : mm(inch) Tolerance : ±0.25(0.01)
				*12	*25	30°	
L-7113F3C	GaAs	● 940	water clear	8	20	20°	T-1 3/4 (5mm) Round
L-7113F3BT	GaAs	● 940	blue transparent	8	20	20°	
L-7113SF4C	GaAlAs	● 880	water clear	6	15	20°	Units : mm(inch) Tolerance : ±0.25(0.01)
				*12	*25	20°	
L-7113SF4BT	GaAlAs	● 880	blue transparent	6	15	20°	
				*12	*25	20°	
L-7113SF6C	GaAlAs	● 860	water clear	18	40	20°	
				*55	*100	20°	
L-7113SF7C	GaAlAs	● 850	water clear	12	30	20°	Units : mm(inch) Tolerance : ±0.25(0.01)
				*40	*90	20°	

1. Radiant intensity value is traceable to CIE127-2007 standards.

PHOTOTRANSISTOR

Part Number		Lens Type		Dimensions	
KP-1608P1C		water clear		1.6mm x 0.8mm x 1.1mm (0603)	
KP-2012P3C		water clear		2.0mm x 1.25mm x 1.1mm (0805)	
KP-3216P3C		water clear		3.2mm x 1.6mm x 1.1mm (1206)	
KPA-3010P3C		water clear		3.0mm x 1.0mm x 2.0mm (1104)	

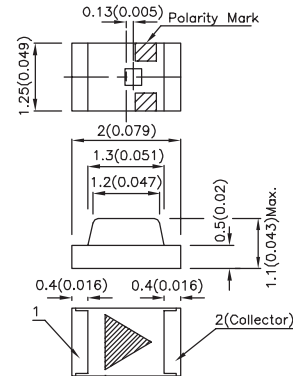
1.6mm x 0.8mm x 1.1mm (0603)



KP-1608

Units : mm(inch)
Tolerance : $\pm 0.1(0.004)$

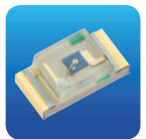
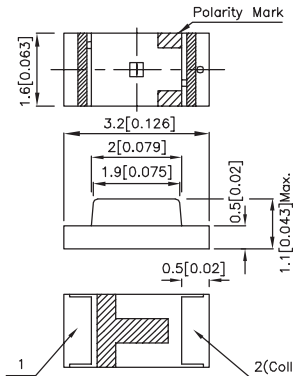
2.0mm x 1.25mm x 1.1mm (0805)



KP-2012

Units : mm(inch)
Tolerance : $\pm 0.1(0.004)$

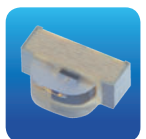
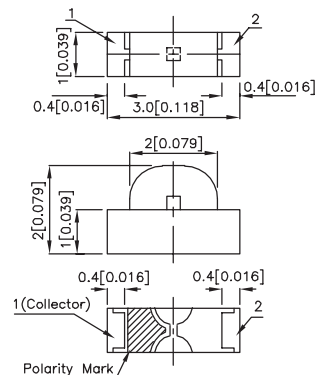
3.2mm x 1.6mm x 1.1mm (1206)



KP-3216

Units : mm(inch)
Tolerance : $\pm 0.2(0.008)$

3.0mm x 1.0mm x 2.0mm (1104)



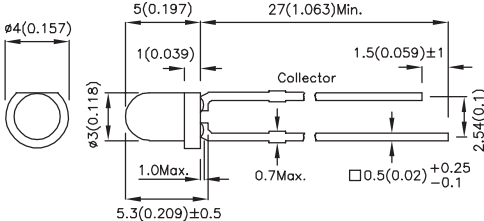
KPA-3010

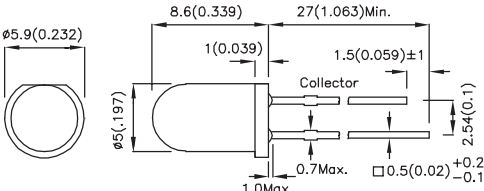
Units : mm(inch)
Tolerance : $\pm 0.15(0.006)$

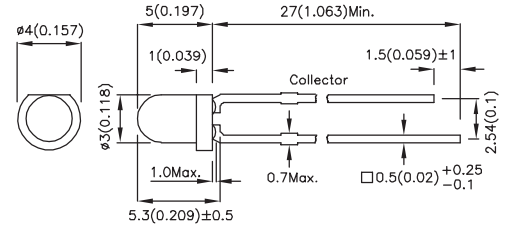
PHOTOTRANSISTOR

Part Number		Lens Type					Dimensions	
L-3DP3BT		blue transparent					T-1 (3mm) Phototransistor  L-3D	
L-7113P3C		water clear						
Electrical And Radiant Characteristics TA =25°C								
Parameter	Symbol	Part Number	Min.	Typ.	Max.	Unit	Test Condition	
Collector-to-Emitter Breakdown Voltage	VBR CEO	-	30	-	-	V	IC=100μA Ee=0mW/cm²	
Emitter-to-Collector Breakdown Voltage	VBR ECO	-	5	-	-	V	IE=100μA Ee=0mW/cm²	
Collector-to-Emitter Saturation Voltage	VCE (SAT)	-	-	-	0.8	V	IC=2mA Ee=20mW/cm²	
Collector Dark Current	ICEO	-	-	-	100	nA	VCE=10V Ee=0mW/cm²	
Rise Time (10% to 90%)	TR	-	-	15	-	μs	VCE=5V IC=1mA RL=1KΩ	
Fall Time (90% to 10%)	TF	-	-	15	-	μs		
On State Collector Current	I (ON)	L-3DP3BT	0.1	0.2	-	mA	VCE=5V, Ee=1mW/cm² λ=940nm	
		L-7113P3C	0.5	2.5				

Absolute Maximum Rating TA =25°C	
Parameter	Maximum Ratings
Collector-to-Emitter Voltage	30V
Emitter-to-Collector Voltage	5V
Power Dissipation at (or below) 25°C Free Air Temperature	100mW
Operating Temperature Range	-40°C ~ +85°C
Storage Temperature Range	-40°C ~ +85°C
Lead Soldering Temperature (>5mm For 5sec)	260°C

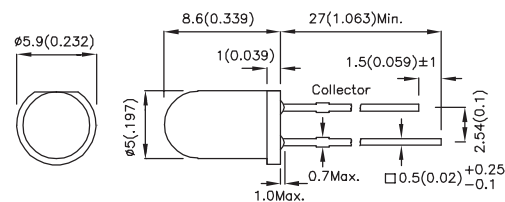
T-1 3/4 (5mm) Phototransistor  L-7113	
	
Units : mm(inch) Tolerance : ±0.25(0.01)	

T-1 3/4 (5mm) Phototransistor  L-7113	
	
Units : mm(inch) Tolerance : ±0.25(0.01)	



Units : mm(inch)
Tolerance : $\pm 0.25(0.01)$

T-1 3/4 (5mm) Phototransistor



Units : mm(inch)
Tolerance : $\pm 0.25(0.01)$

26mm

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd)		Viewing Angle 2 θ 1/2	IF(mA)
				Min.	Typ.		
BL0102-14-34	GaAlAs	640	water clear	600	1200	40°	20
	GaP	568	water clear	800	1600	40°	40

BL0102-14-34

L-1583SRC-11.7X6Pcs
L-1583SGC-11.7X8Pcs

SR
SG
LED $\phi 5(0.157)$

39(1.535)
7.5(0.295)
3(0.118)
26(1.024)
6.3(0.248)
30.3(1.193)
6
M3
Wire
Connector L9.5xW3.5xH7.0

6(0.236)
3(0.118)
5(0.197)
22.5(0.886)
17.5(0.689)
2.5(0.098)
6.2(0.244)

1 (Red)
2 (White)
3 (Green)
SG

52mm

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd)		Viewing Angle 2 θ 1/2	IF(mA)
				Min.	Typ.		
BL0307-50-44	GaAlAs	640	water clear	5000	10000	40°	200
BL0307-50-46	GaP	568	water clear	5000	10000	40°	200

BL0307-50-xxx

L-1583xxx-11.7X50 Pcs

2 (White)
1 (Red)

72(2.835)
62(2.441)
4(0.157)
260(10.236)Typ.
4(0.157)
8(0.315)
1.2(0.047)
43(1.693)
10°
Connector L7.0xW3.5xH7.0

41.5(1.634)
48.5(1.909)
6(0.236)
12(0.472)
15(0.591)
3(0.118)
4(0.157)
M4.0(0.157)
R5-2PLS.
3.5(0.138)X2

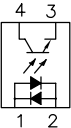
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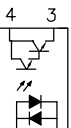
1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.
3. Luminous intensity value is traceable to CIE127-2007 standards.

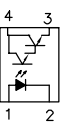
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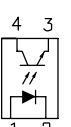
Optoelectronic Components

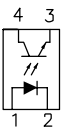
PHOTOCOUPLERS	87
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PHOTO REFLECTIVE SENSOR	93

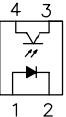
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =5V		IF=±20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB814		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage AC input response	5000	35	20	300	0.1	0.2	4	3

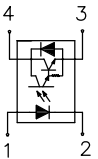
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =2V		IF=±20mA, I _C =5mA		V _{CE} =2V, I _C =10mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB8141		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage High sensitivity AC input response	5000	35	600	7500	0.8	1	60	53

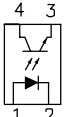
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=1mA, V _{CE} =2V		IF=20mA, I _C =5mA		V _{CE} =2V, I _C =10mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB815		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage High sensitivity	5000	35	600	7500	0.8	1	60	53

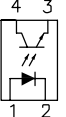
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB816		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage High collector-emitter voltage	5000	70	50	600	0.1	0.2	4	3

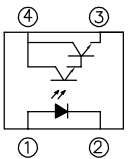
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB817		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage	5000	35	50	600	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB851		VDE0884. NO.40006364	High collector-emitter Voltage	5000	350	-	-	0.1	0.3	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=1mA, V _{CE} =2V		IF=20mA, I _C =100mA		V _{CE} =2V, I _C =20mA, R _L =1000Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB852		VDE0884. NO.40006364	High collector-emitter voltage High sensitivity	5000	350	1000	15000	-	1.2	100	20

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB817-B		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage SMD Type	5000	35	50	600	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB817-M		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage	5000	35	50	600	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=1mA, V _{CE} =2V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB355NT		UL NO.E225308 & VDE0884. NO.40017614	High current transfer ratio Small package size	3750	35	600	7500	0.8	1.0	60	53

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB356NT		UL NO.E225308 & VDE0884. NO.40017614	High collector-emitter Voltage Small package size	3750	80	50	600	0.1	0.2	6	8
KB357NT			Small package size	3750	35	50	600	-	0.2	4	3

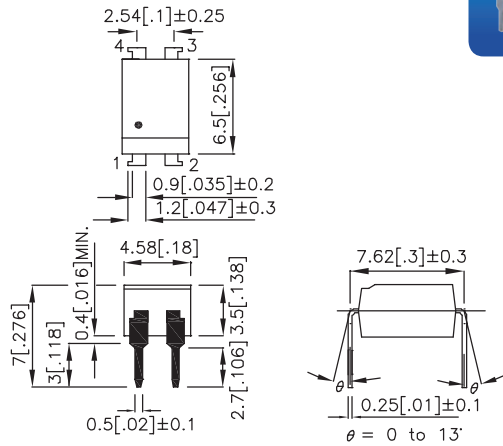
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =5V		IF=±20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB354NT		UL NO.E225308 & VDE0884. NO.40017614	AC.input response Small package size	3750	35	20	400	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =2V		IF=±20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB3541NT		UL NO.E225308 & VDE0884. NO.40017614	AC.input response High sensitivity Small package size	3750	35	450	7400	0.8	1.0	60	53

KB814, KB8141, KB815, KB816, KB817, KB851, KB852



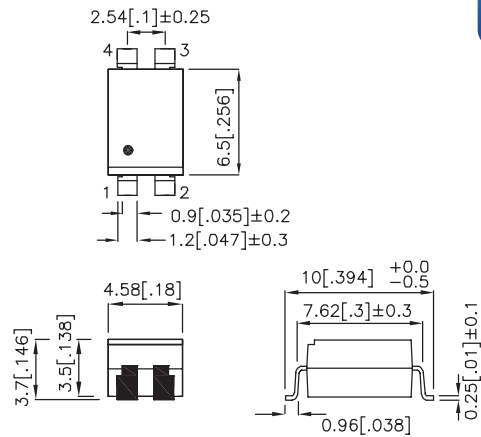
KB814



KB817-B



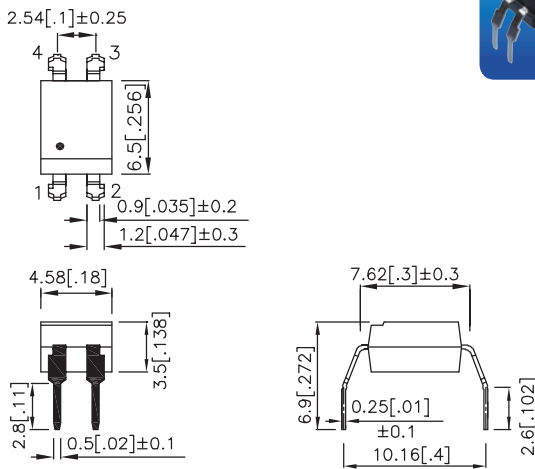
KB817-B



KB817-M



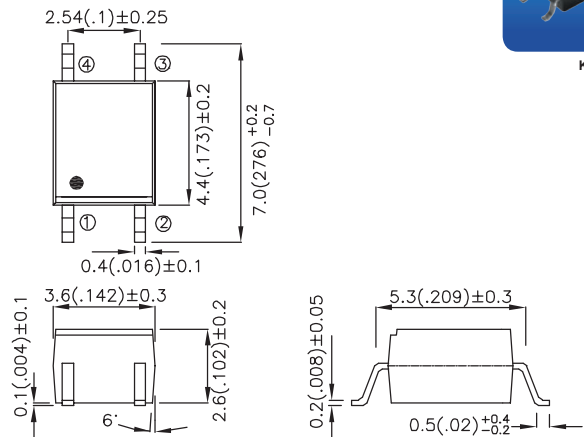
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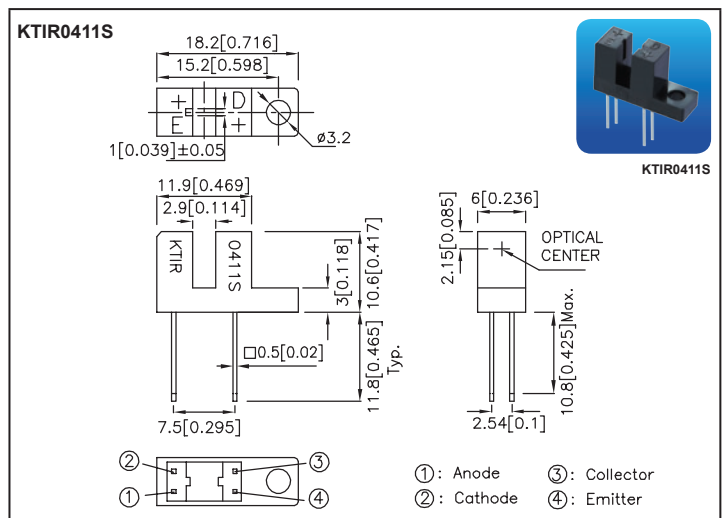
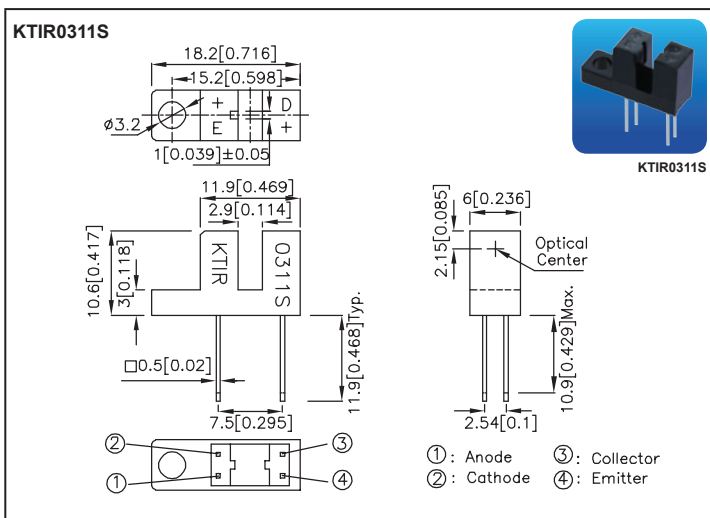
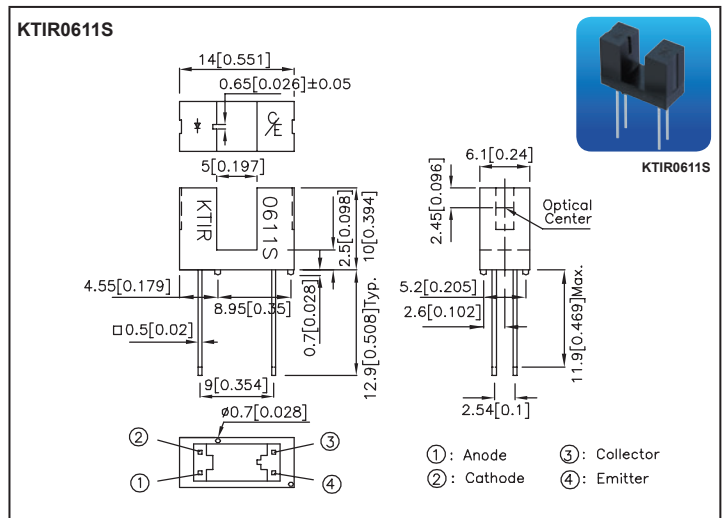
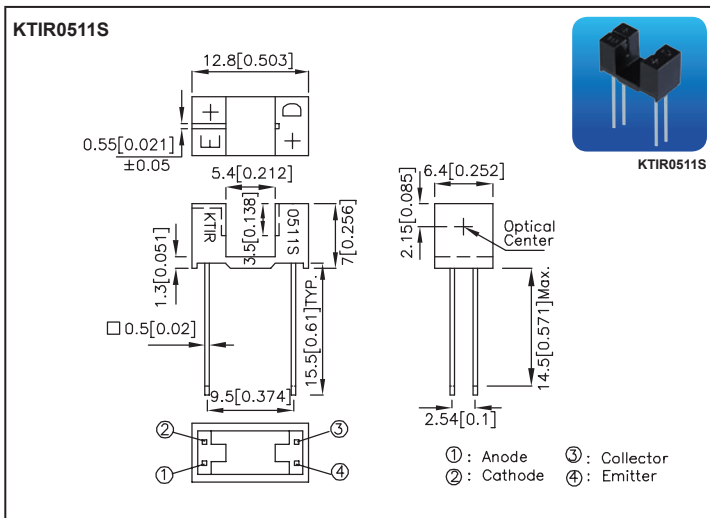
KB355NT, KB356NT, KB357NT, KB354NT, KB3541NT



KB355NT



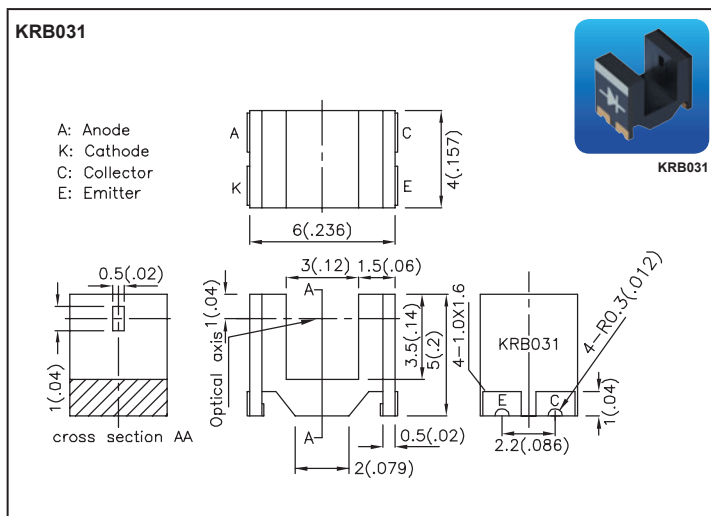
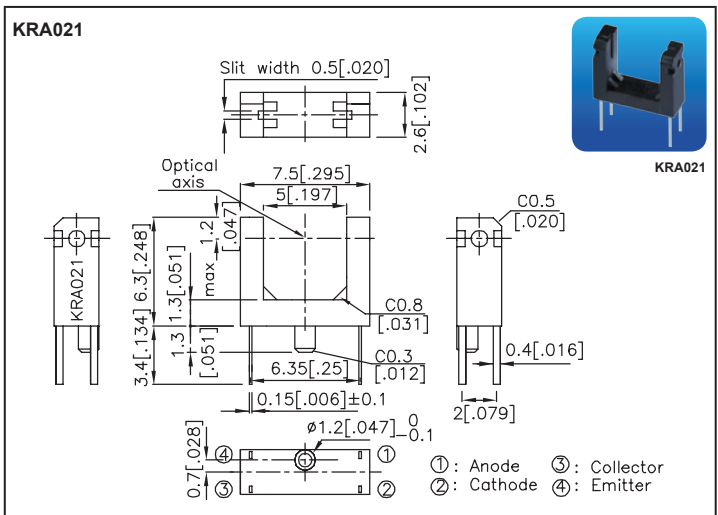
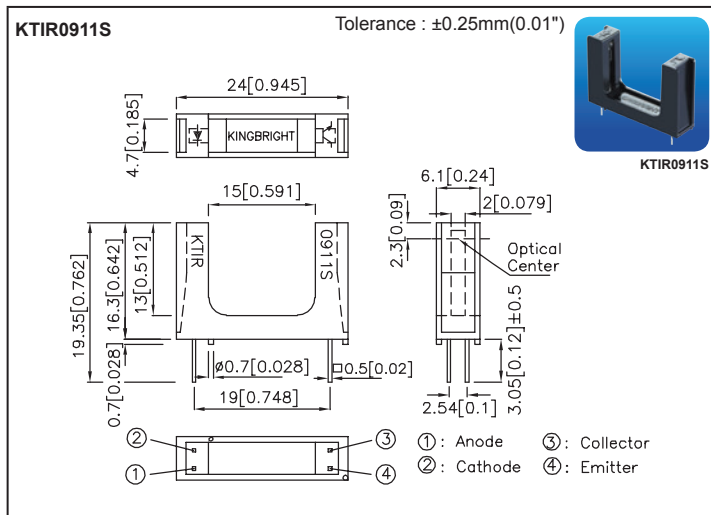
Part Number	Pin Configuration	Material	λ_P (nm)	CTR			$V_{CE(SAT)}$			Rise Time (μs)	Fall Time (μs)
				IF(mA)	$V_{CE(V)}$	Typ.(%)	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KTIR0511S		GaAs/SiC	940	20	5	10	40	1	0.4	5	4
KTIR0611S		GaAs/SiC	940	20	5	14	40	1	0.4	5	4
KTIR0311S		GaAs/SiC	940	20	5	38	40	1	0.4	5	4
KTIR0411S		GaAs/SiC	940	20	5	38	40	1	0.4	5	4



NOTES:
1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

Part Number	Pin Configuration	Material	λ P (nm)	CTR			$V_{CE(SAT)}$			Rise Time (μ s)	Fall Time (μ s)
				IF(mA)	$V_{CE(V)}$	Typ.(%)	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KTIR0911S		GaAs/SiC	940	20	5	9.5	40	1	0.4	5	4
KRA021		GaAs/SiC	940	10	2	18	20	0.25	0.4	15	15

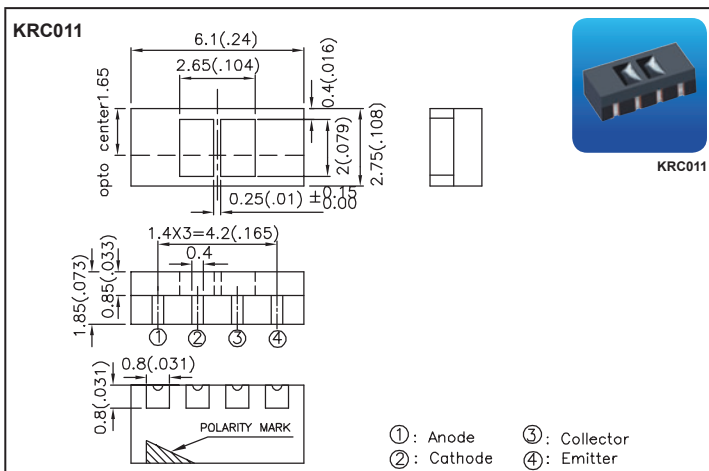
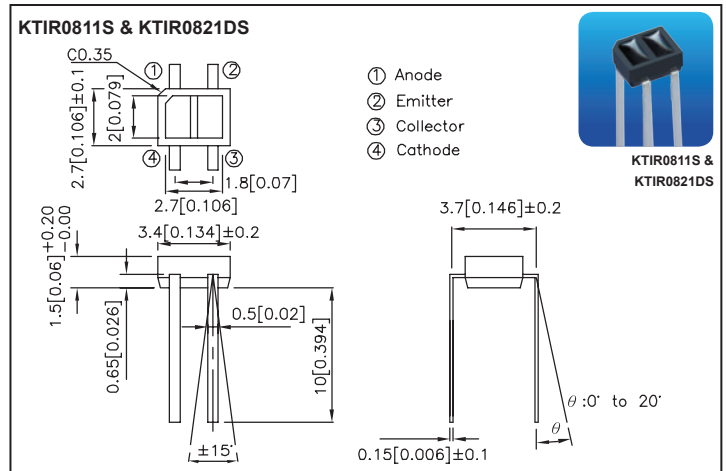
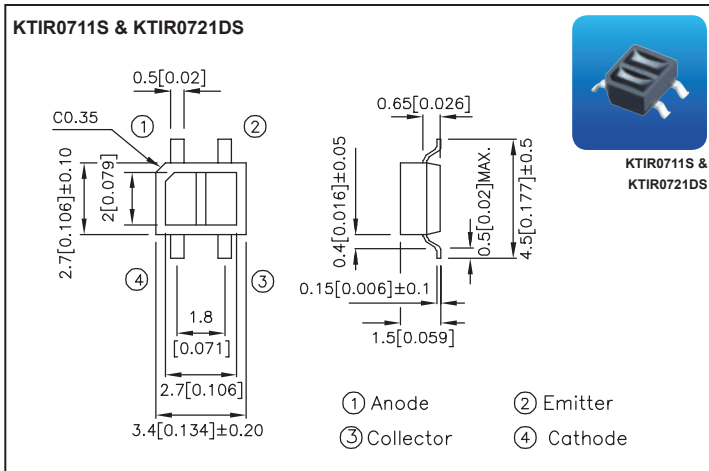
Part Number	Pin Configuration	Material	λ P (nm)	IC (μ A)	V _{CE} (SAT)			Rise Time (μ s)	Fall Time (μ s)	
				V _{CE} =5V, IF=5mA				Typ.	IF(mA)	IC(mA)
				KRB031		GaAs/SiC		150	20	0.05



NOTES:
 1. All dimensions are in millimeters(inches).
 2. Tolerance is $\pm 0.15mm(0.006")$ unless otherwise noted.

Part Number	Pin Configuration	Material	λ P (nm)	IC (μ A)			V _{CE} (SAT)			Rise Time (μ s)	Fall Time (μ s)
				V _{CE} =2V, IF=4mA							
				Min.	Typ.	Max.	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KTIR0711S		GaAs/SiC	● 940	10	-	400	-	-	-	20	20
KTIR0721DS		GaAs/SiC	● 940	-	3000	-	-	-	-	80	70
KTIR0811S		GaAs/SiC	● 940	10	-	400	-	-	-	20	20
KTIR0821DS		GaAs/SiC	● 940	-	3000	-	-	-	-	80	70

Part Number	Pin Configuration	Material	λ P (nm)	IC (μ A)			$V_{CE(SAT)}$			Rise Time (μ s)	Fall Time (μ s)
				$V_{CE}=5V, I_F=20mA$							
				Min.	Typ.	Max.	$I_F(mA)$	$I_C(mA)$	Max.(V)	Typ.	Typ.
KRC011		GaAs/SiC	 940	10	-	300	-	-	-	20	20



NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25mm(0.01")$ unless otherwise noted.

Kingbright

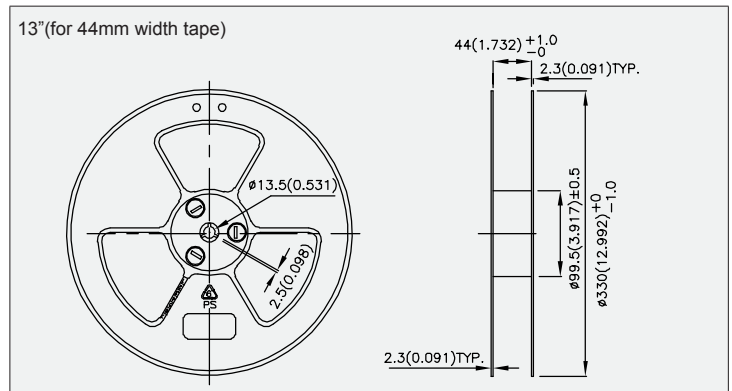
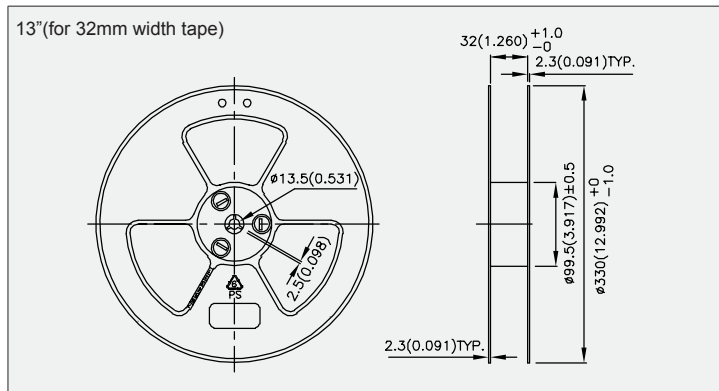
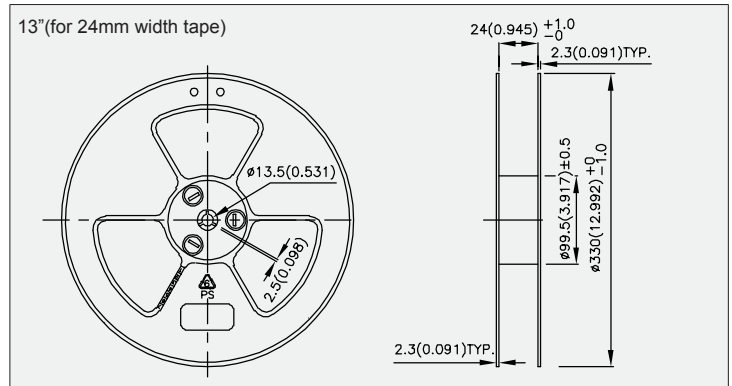
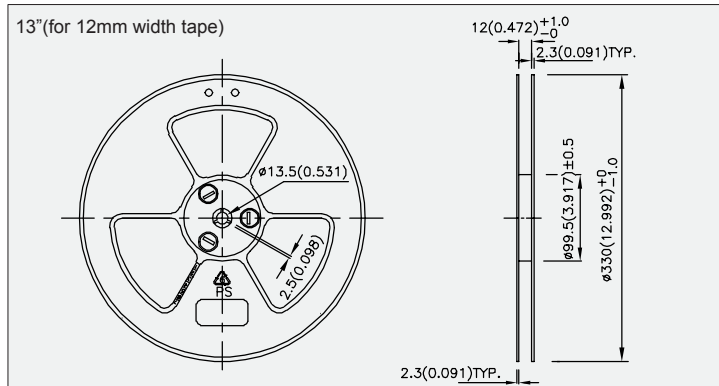
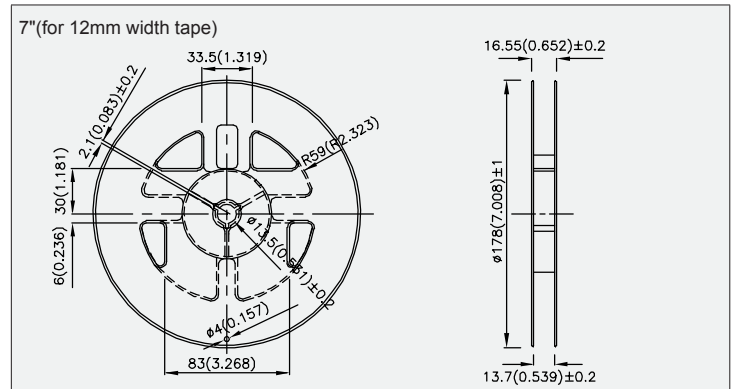
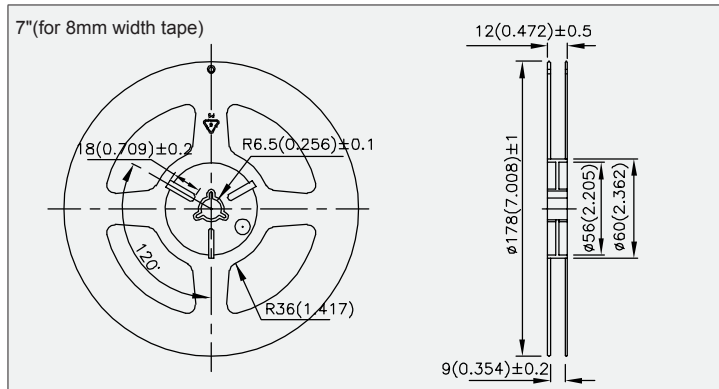
Optoelectronic Components

TECHNICAL NOTES

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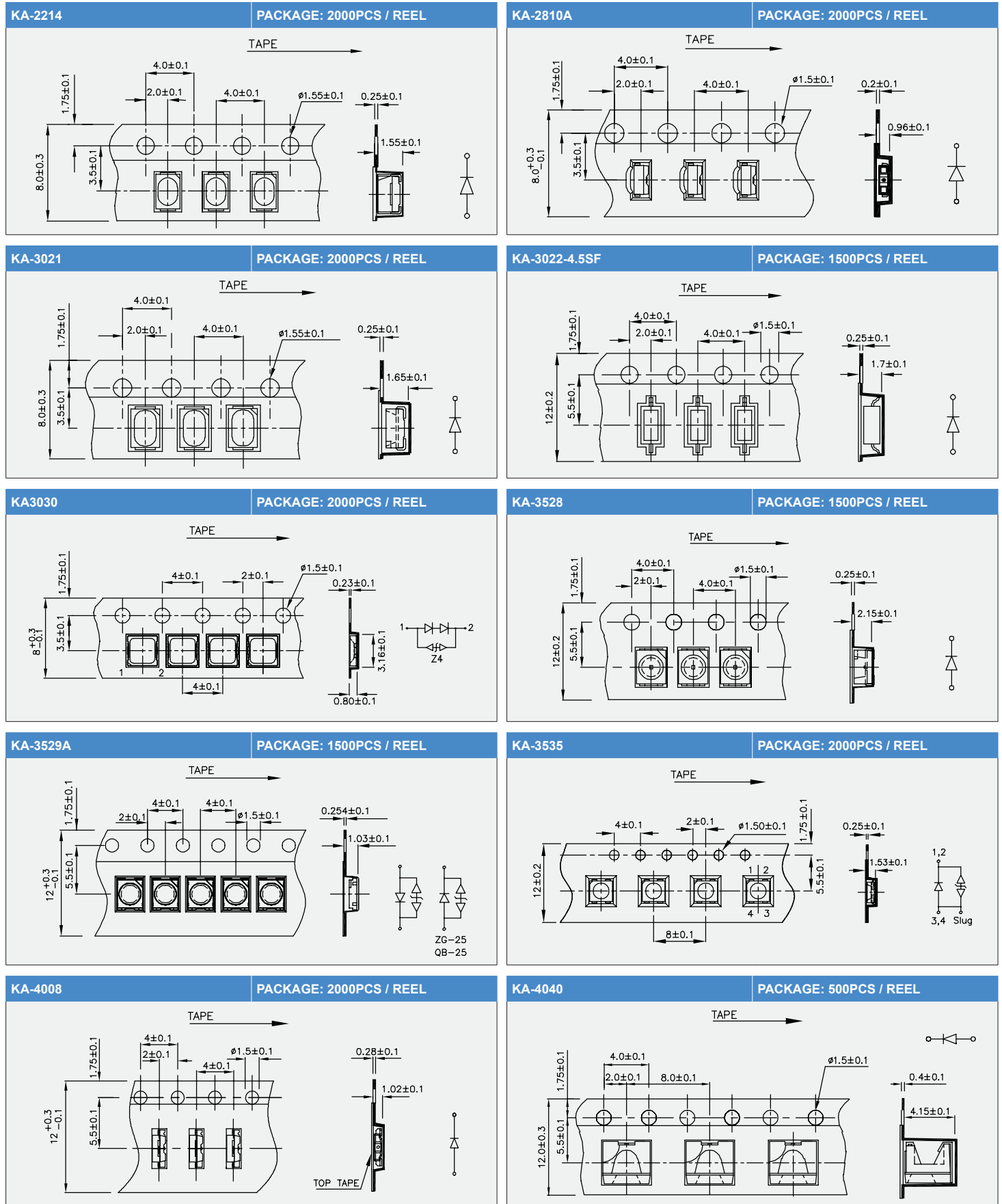
SMD TAPE SPECIFICATIONS

Reel Dimensions	Part Number			Reel Dimensions	Part Number	Reel Dimensions	Part Number
7" (for 8mm width tape)	KA-2214	KPG-1608	KPTF-1616	7" (for 12mm width tape)	KA-3022-4.5SF	13" (for 12mm width tape)	KA-3535
	KA-2810A	KPG1-1608	KPTL-3216		KA3030	13" (for 24mm width tape)	KCDX02
	KA-3021	KPGA-1602	KPTR-3216		KA-3528		KCDX03
	KM-23-F	KPGF-0606			KA-3529A		KCSX02
	KM-23xxx	KPGF-1011			KA-4008		KCSX03
	KP-1608	KPH-1608			KA-4040		KCSX04
	KP-2012	KPHB-1608			KA-5630		
	KP-3216	KPHBM-2012			KAA-3528		
	KPA-1606	KPHCM-2012			KAA-3528-C8-CC		
	KPA-2107	KPHD-1608			KAAF-3529		
	KPA-3010	KPHHS-1005			KAAF-5050-13		
	KPA-3210	KPHM-1608			KM2520xxx03		
	KPB-3025	KPL-3015			KM2520xxx08		
	KPBA-3010	KPPA-3010			KM2520xxx09		
	KPBD-3224	KPS-3227SP1C			KPED-3528		
	KPBDA-3020-PF	KPT-1608			KPS-5130PD7C		
	KPBL-3025	KPT-2012			KTDS-3536		
	KPC-1608	KPT-3216				13" (for 44mm width tape)	KCDX56
	KPD-3224	KPTB-1612					
	KPFA-2507	KPTB-1615					
	KPFA-3010	KPTBD-3216					
	KPFA-3011	KPTC-3212					
	KPG-0603	KPTD-1608					
	KPG-1005	KPTD-3216					

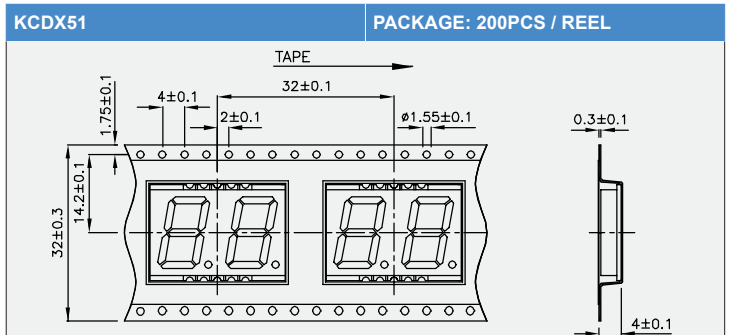
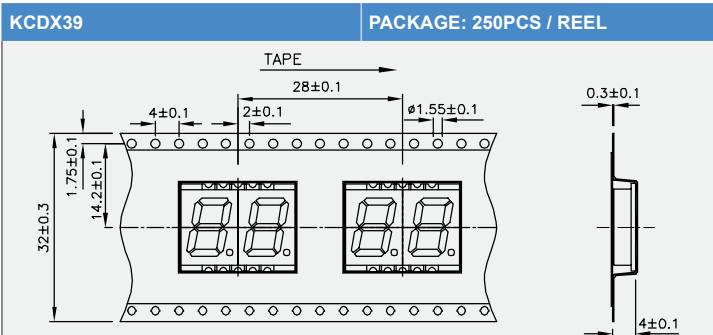
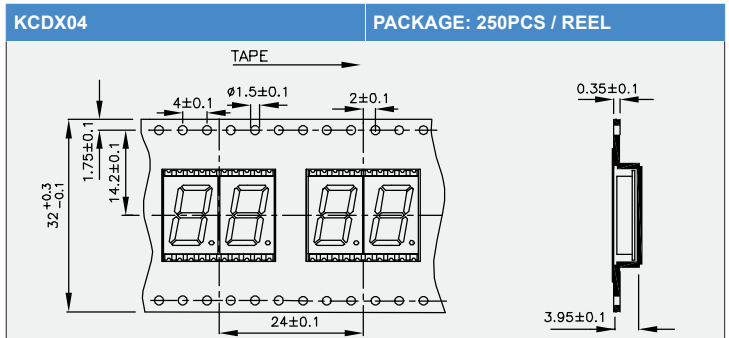
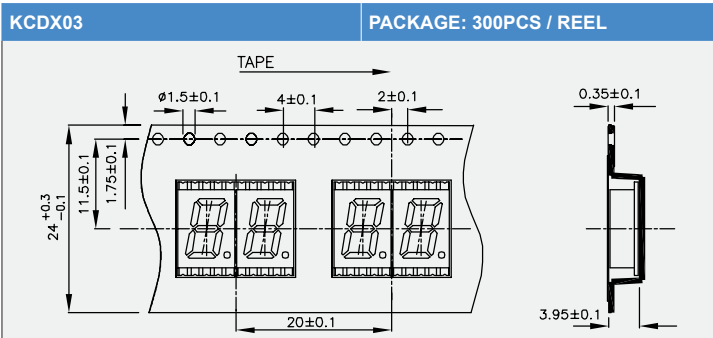
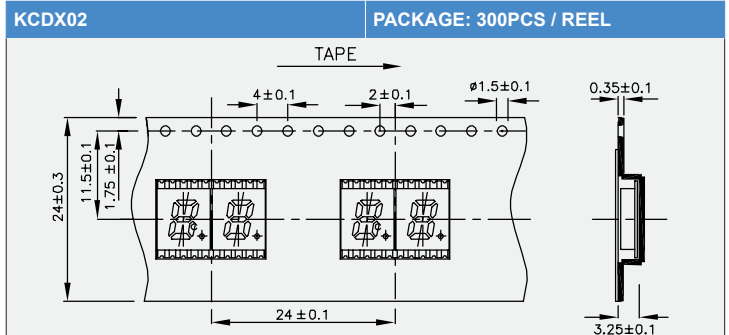
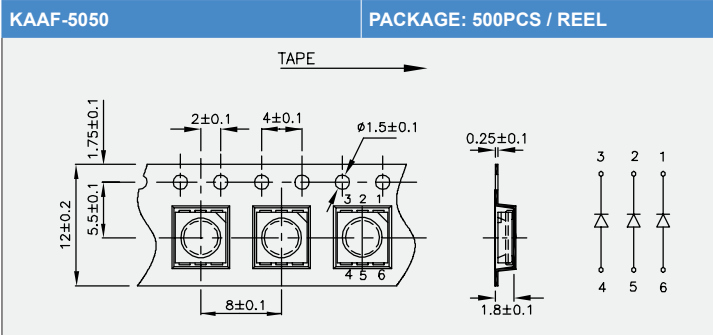
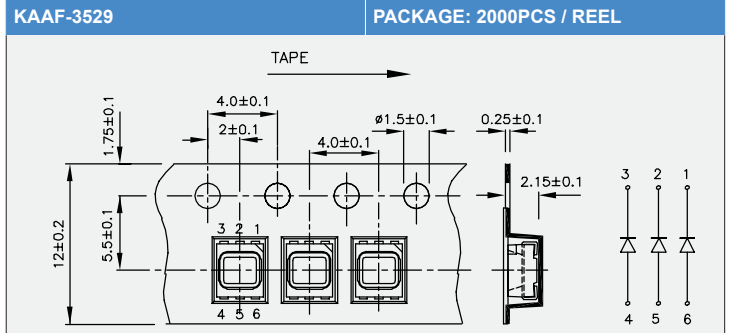
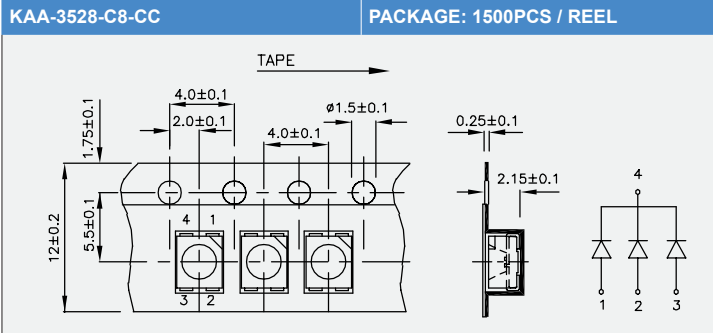
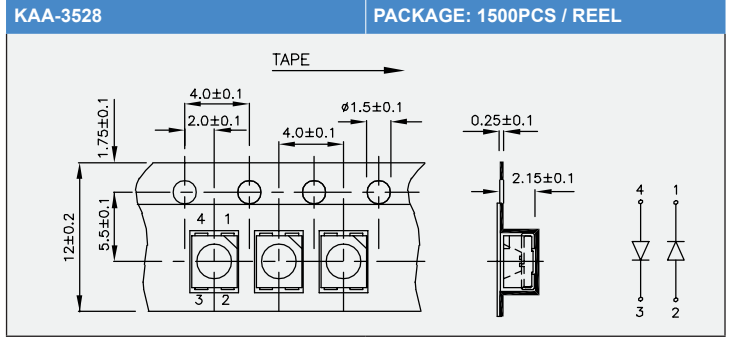
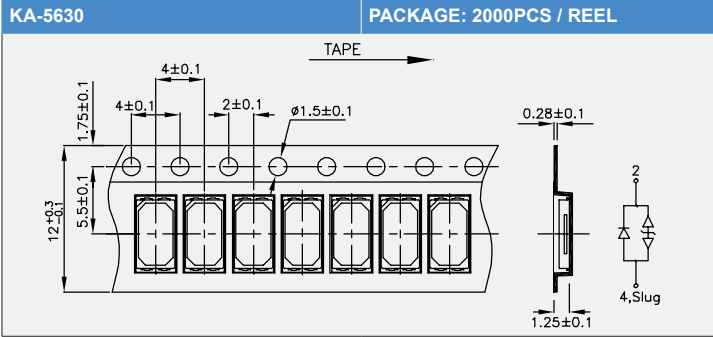


NOTE: 1. All dimensions are in millimeters(inches).

SMD TAPE SPECIFICATIONS



SMD TAPE SPECIFICATIONS

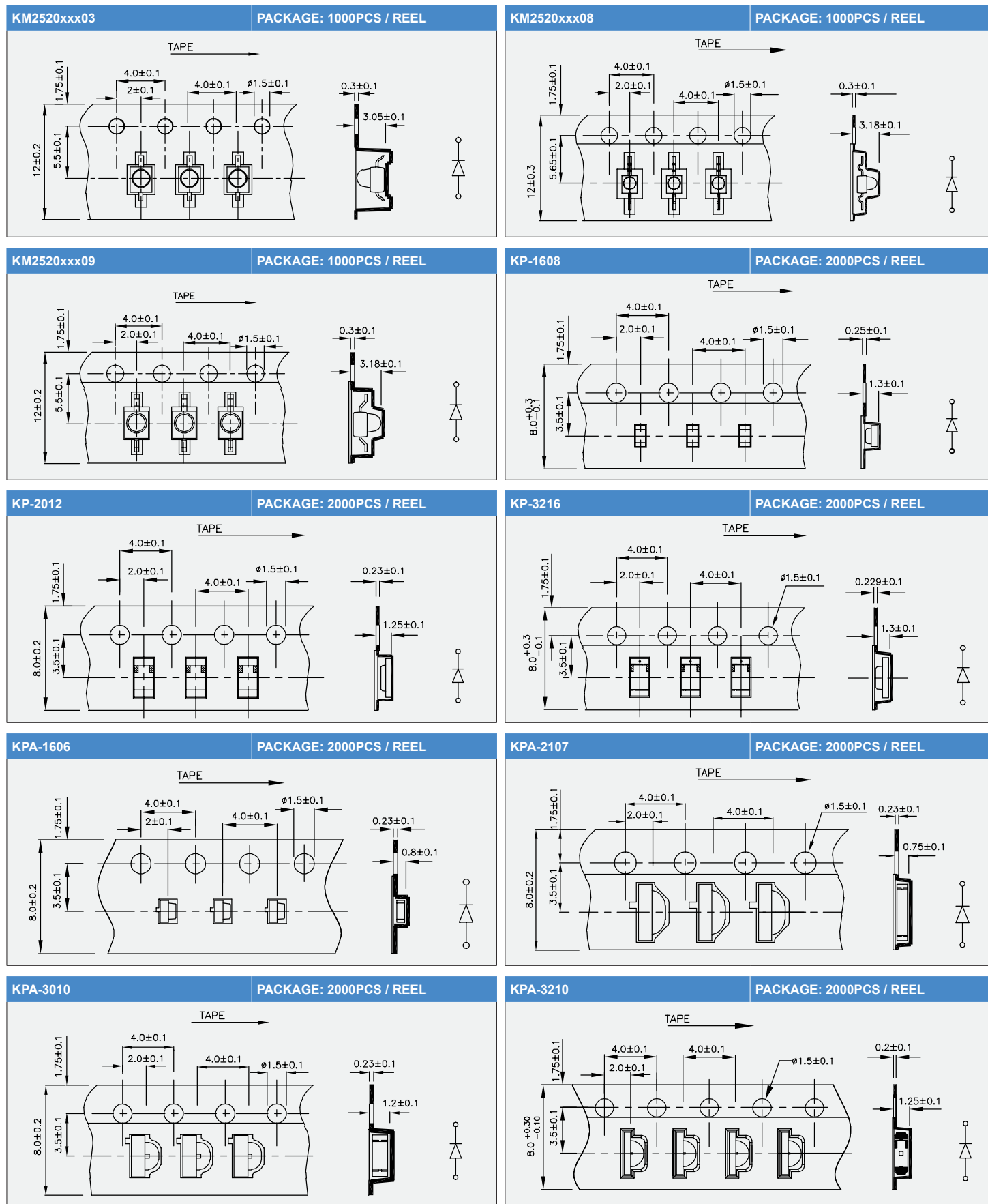


SMD TAPE SPECIFICATIONS

KCDX56	PACKAGE: 200PCS / REEL	KCPDX04	PACKAGE: 250PCS / REEL	
KCPSX04	PACKAGE: 400PCS / REEL	KCSX02	PACKAGE: 650PCS / REEL	
KCSX03	PACKAGE: 550PCS / REEL	KCSX04	PACKAGE: 400PCS / REEL	
KCSX39	PACKAGE: 400PCS / REEL	KCSX51	PACKAGE: 400PCS / REEL	
KCSX56	PACKAGE: 400PCS / REEL	KM-23-F, KM-23xxxx		PACKAGE: 2000PCS / REEL

NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS



NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

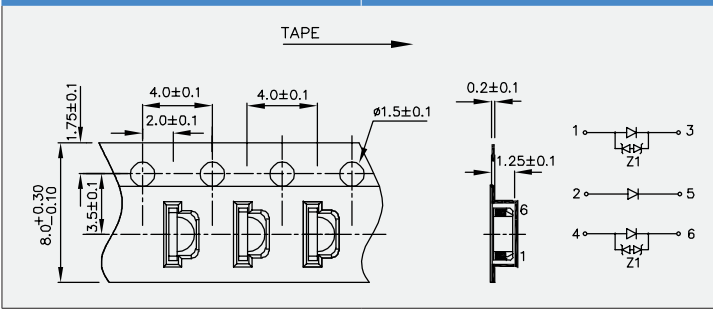
KPB-3025 	PACKAGE: 2000PCS / REEL
KPBA-3010 	PACKAGE: 2000PCS / REEL
KPBD-3224 	PACKAGE: 1500PCS / REEL
KPBDA-3020-PF 	PACKAGE: 2000PCS / REEL
KPBL-3025 	PACKAGE: 2000PCS / REEL
KPC-1608 	PACKAGE: 3000PCS / REEL
KPD-3224 	PACKAGE: 1500PCS / REEL
KPED-3528 	PACKAGE: 500PCS / REEL
KPFA-2507 	PACKAGE: 3000PCS / REEL
KPFA-3010 	PACKAGE: 2000PCS / REEL

NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

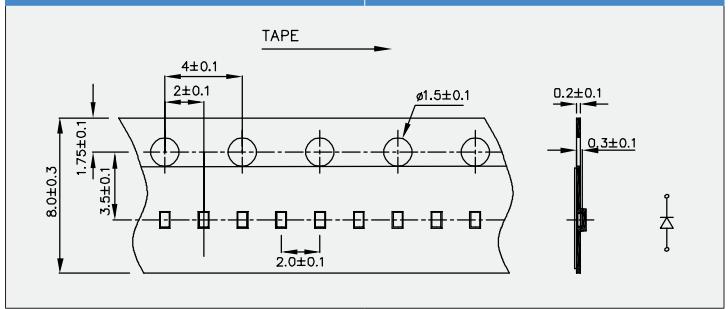
KPFA-3011

PACKAGE: 2000PCS / REEL



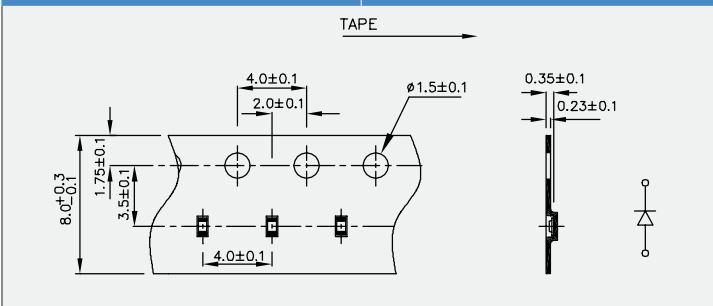
KPG-0603

PACKAGE: 4000PCS / REEL



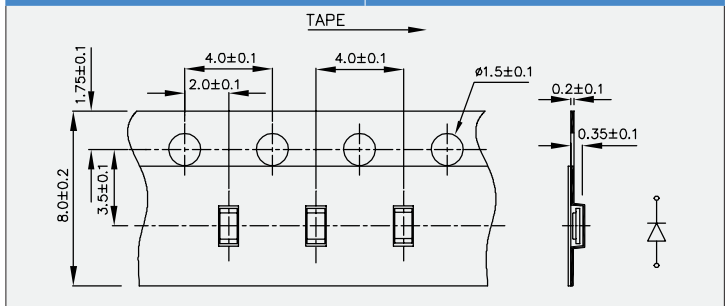
KPG-1005

PACKAGE: 4000PCS / REEL



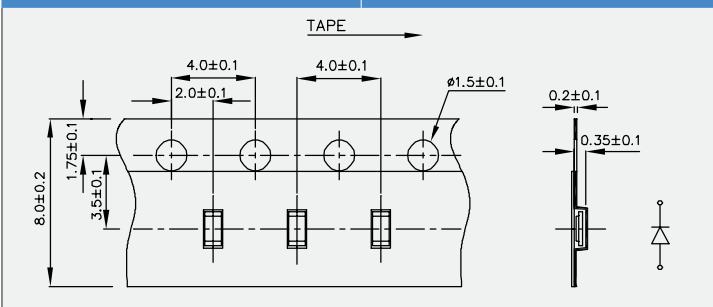
KPG-1608

PACKAGE: 2000PCS / REEL



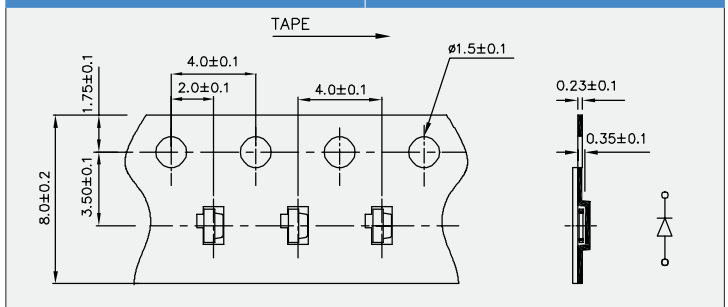
KPG1-1608

PACKAGE: 4000PCS / REEL



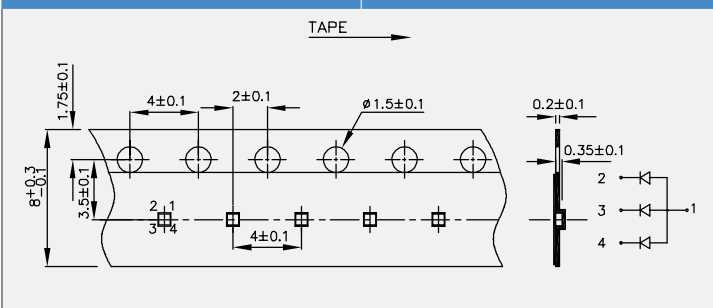
KPGA-1602

PACKAGE: 2000PCS / REEL



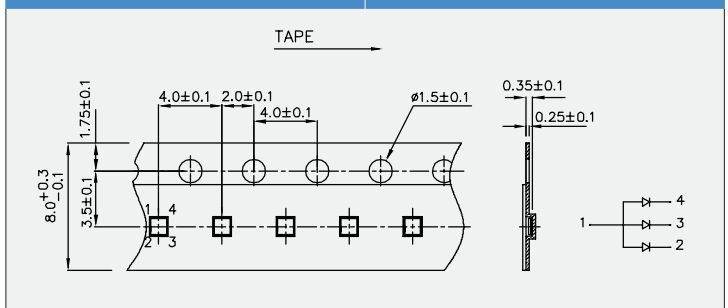
KPGF-0606

PACKAGE: 4000PCS / REEL



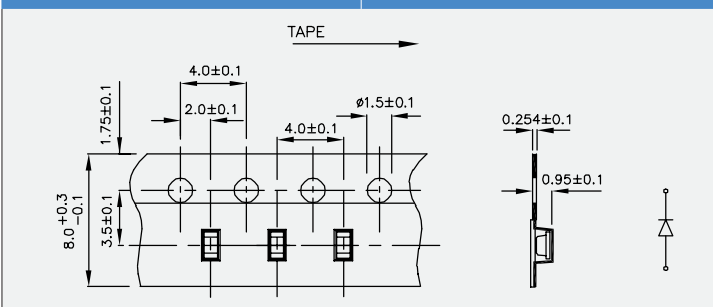
KPGF-1011

PACKAGE: 4000PCS / REEL



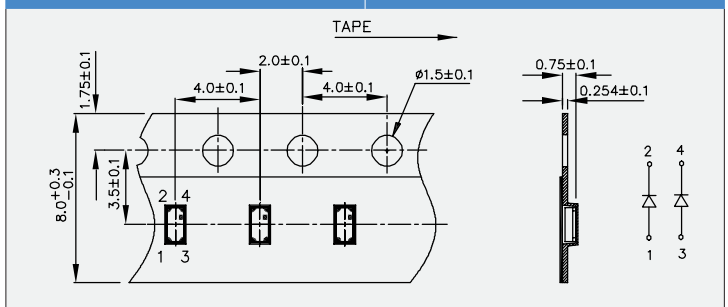
KPH-1608

PACKAGE: 2000PCS / REEL



KPHB-1608

PACKAGE: 2000PCS / REEL



SMD TAPE SPECIFICATIONS

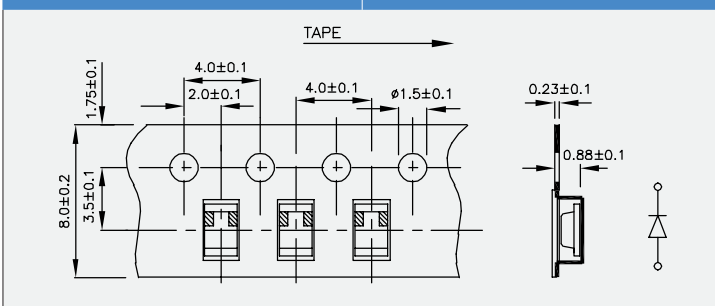
KPHBM-1212 	PACKAGE: 2000PCS / REEL
KPHCM-1212 	PACKAGE: 2000PCS / REEL
KPHD-1608 	PACKAGE: 4000PCS / REEL
KPHHS-1005 	PACKAGE: 2000PCS / REEL
KPHD-1608 	PACKAGE: 2000PCS / REEL
KPL-3015 	PACKAGE: 2000PCS / REEL
KPPA-3010 	PACKAGE: 2000PCS / REEL
KPS-3227 	PACKAGE: 200PCS / REEL
KPS-5130 	PACKAGE: 1500PCS / REEL
KPT-1608 	PACKAGE: 2000PCS / REEL

NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

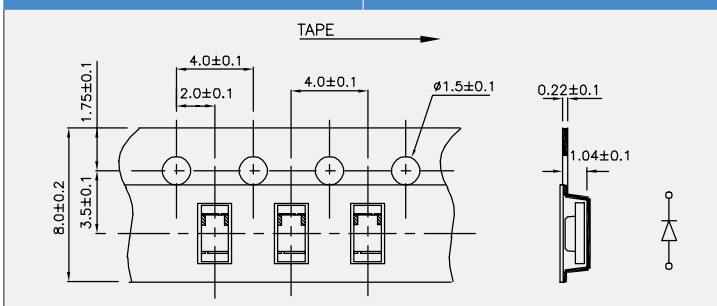
KPT-2012

PACKAGE: 2000PCS / REEL



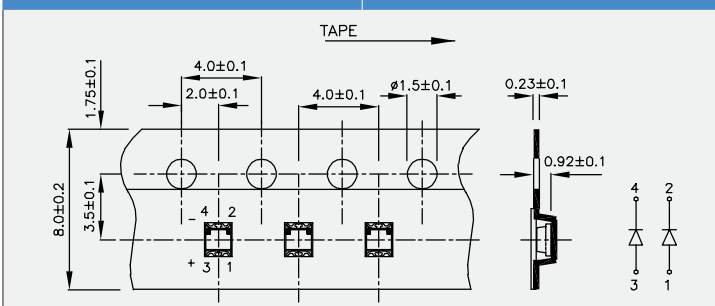
KPT-3216

PACKAGE: 2000PCS / REEL



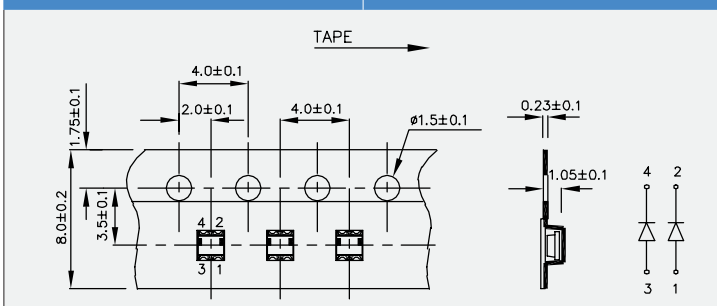
KPTB-1612

PACKAGE: 2000PCS / REEL



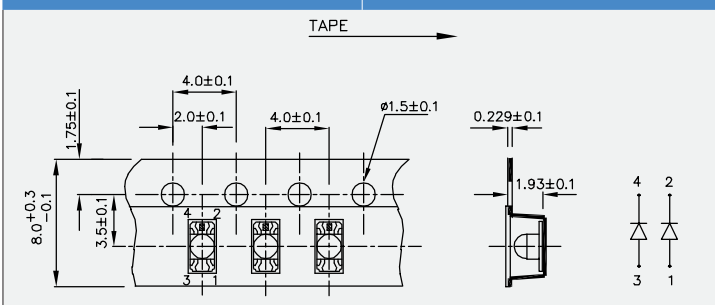
KPTB-1615

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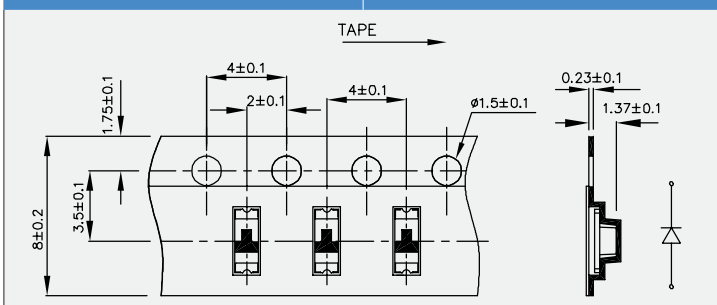
KPTBD-3216

PACKAGE: 2000PCS / REEL



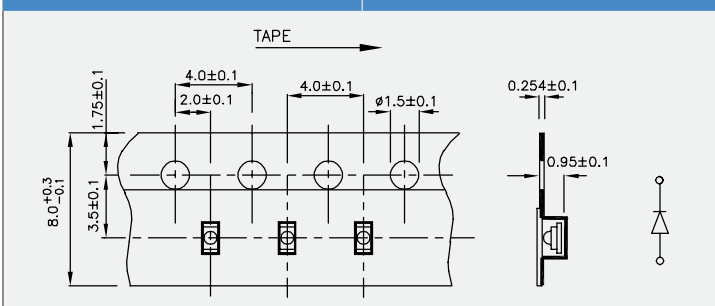
KPTC-3212-01

PACKAGE: 2000PCS / REEL



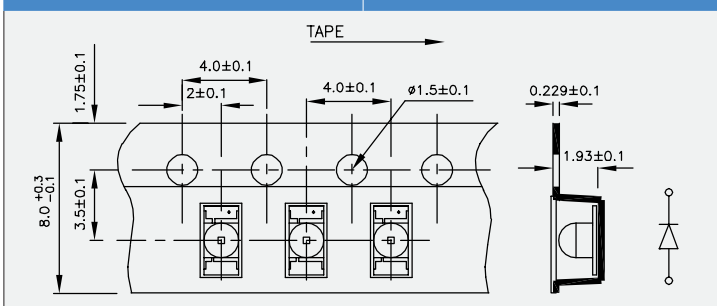
KPTD-1608

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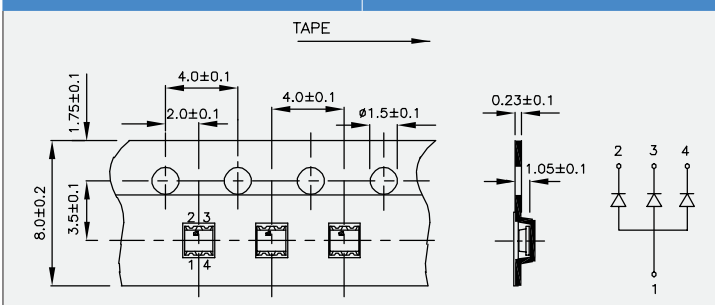
KPTD-3216

PACKAGE: 2000PCS / REEL



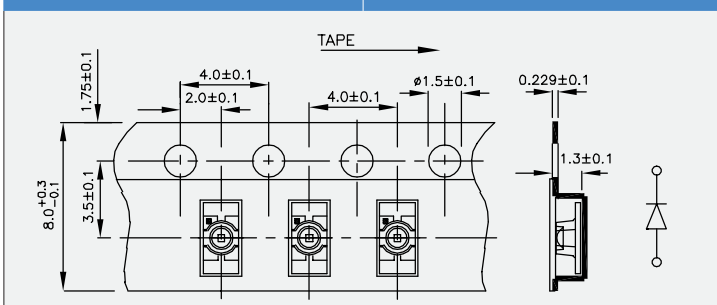
KPTF-1616RGC-11

PACKAGE: 2000PCS / REEL



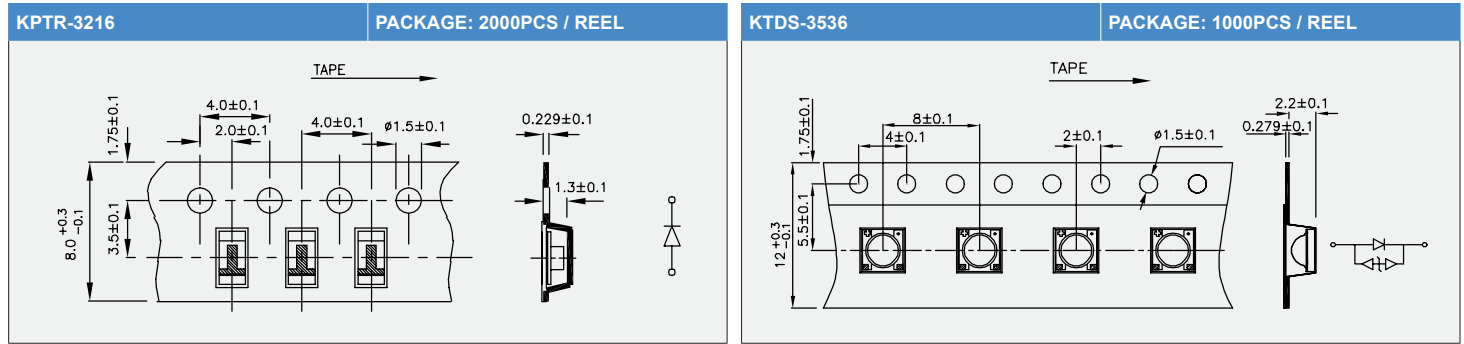
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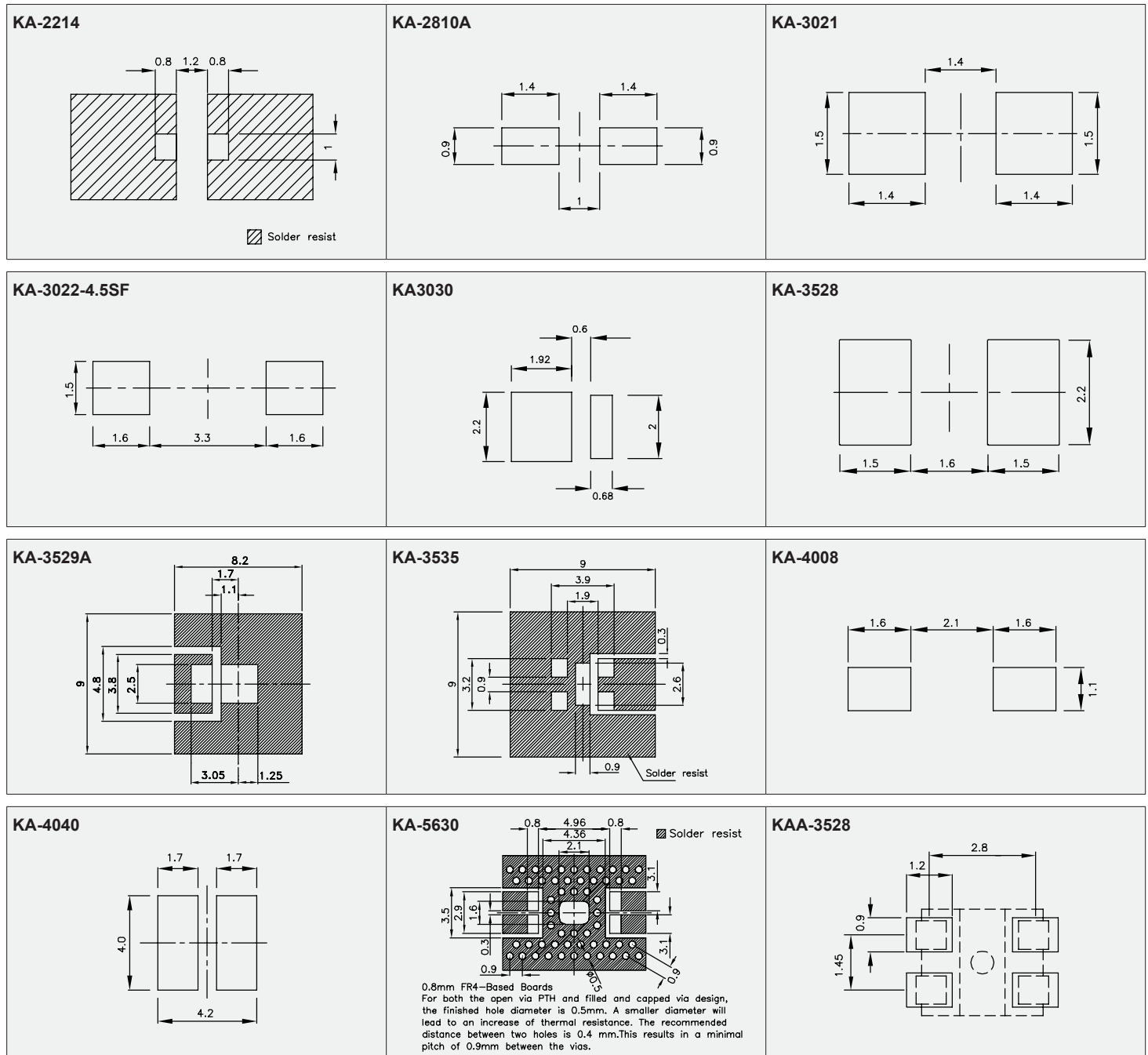


NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS



RECOMMENDED SOLDERING PATTERN

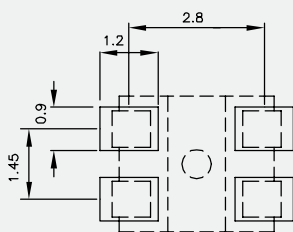


NOTES:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.1 mm unless otherwise noted.

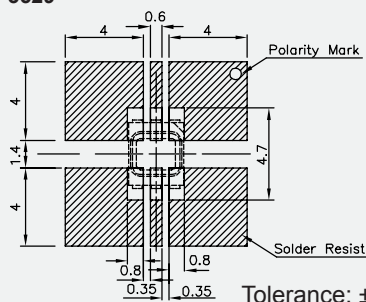
RECOMMENDED SOLDERING PATTERN

KAA-3528



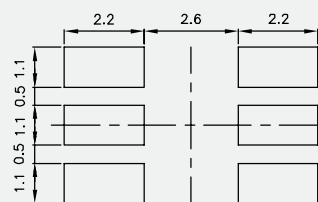
Tolerance: ± 0.1

KAAF-3529



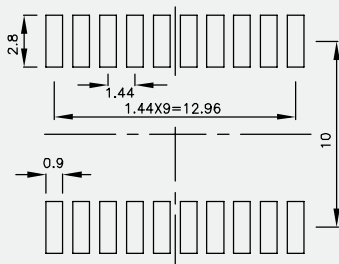
Tolerance: ± 0.1

KAAF-5050

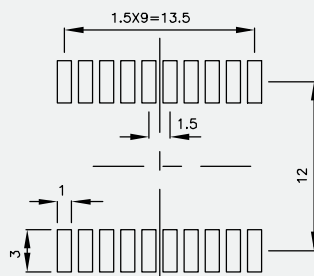


Tolerance: ± 0.1

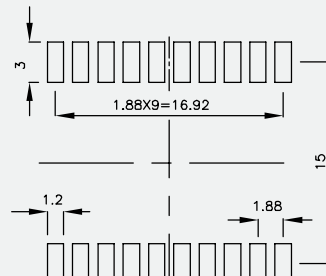
KCDX02



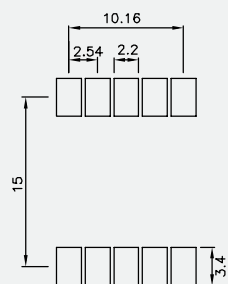
KCDX03



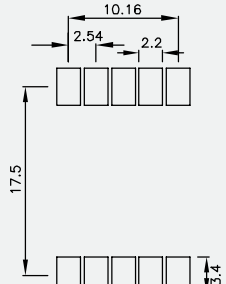
KCDX04



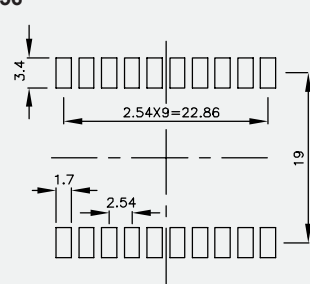
KCDX39



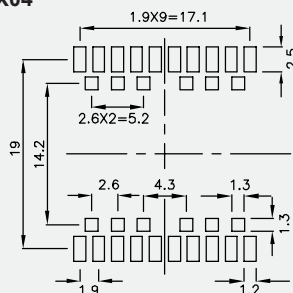
KCDX51



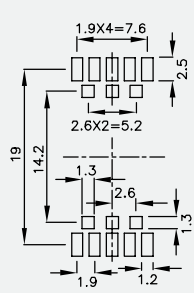
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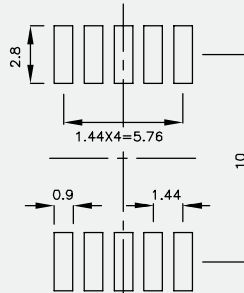
KCPDX04



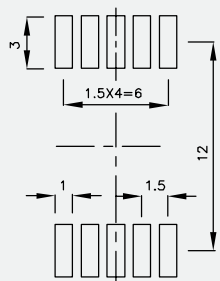
KCPSX04



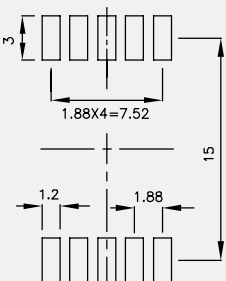
KCSX02



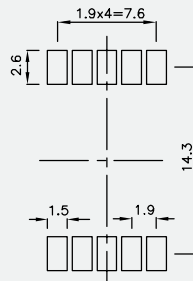
KCSX03



KCSX04



KCSX39



NOTES:

1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.15\text{mm}$ unless otherwise noted.

RECOMMENDED SOLDERING PATTERN

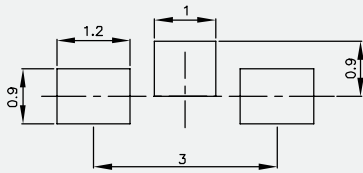
KCSX51 Tolerance: ± 0.15	KCSX56 Tolerance: ± 0.15	KM-23-F, KM-23xxx
KM2520xxx03	KM2520xxx08	KM2520xxx09
KP-1608, KPC-1608, KPG-1608, KPH-1608, KPHM-1608, KPT-1608, KPTD-1608	KP-2012, KPT-2012	KP-3216, KPT-3216, KPTD-3216
KPA-1606	KPA-2107	KPA-3010, KPBA-3010
KPA-3210	KPB-3025, KPBL-3025	KPBD-3224

NOTES:

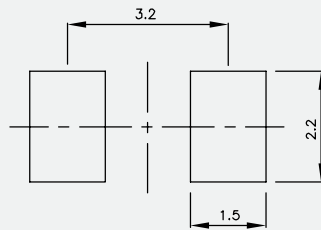
1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

RECOMMENDED SOLDERING PATTERN

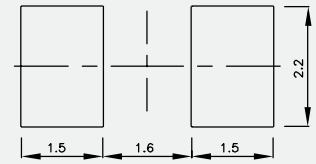
KPBDA-3020-PF



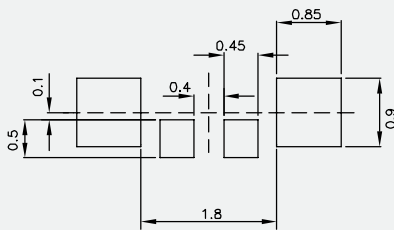
KPD-3224



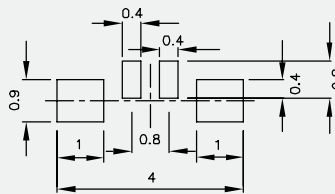
KPED-3528



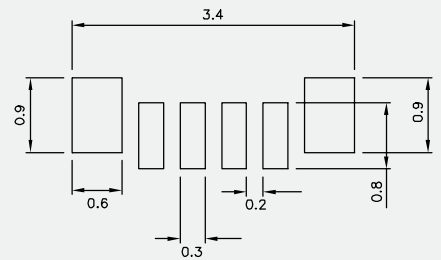
KPFA-2507



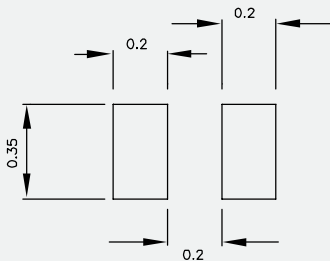
KPFA-3010



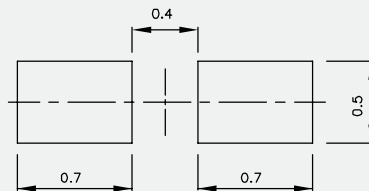
KPFA-3011



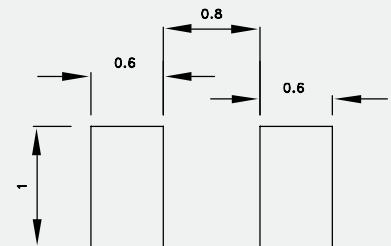
KPG-0603



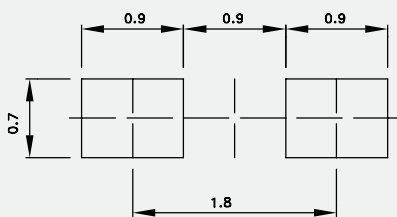
KPG-1005,KPHHS-1005



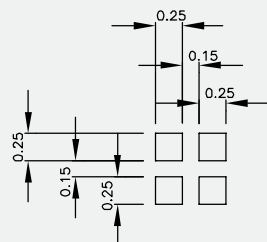
KPG1-1608



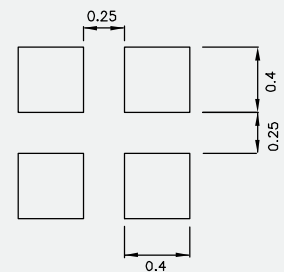
KPGA-1602



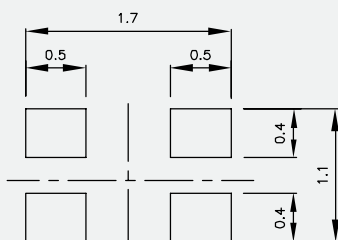
KPGF-0606



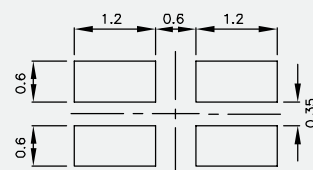
KPGF-1011



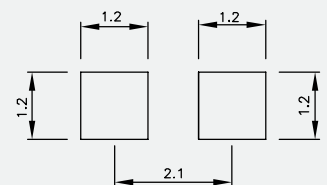
KPHB-1608



KPHBM-2012



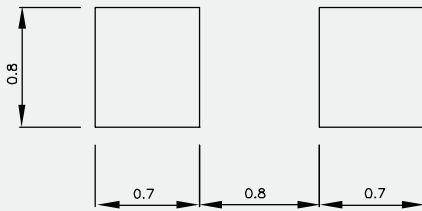
KPHCM-2012



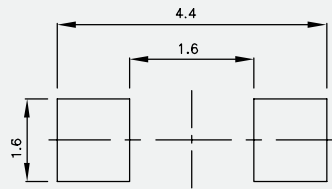
NOTES:
1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

RECOMMENDED SOLDERING PATTERN

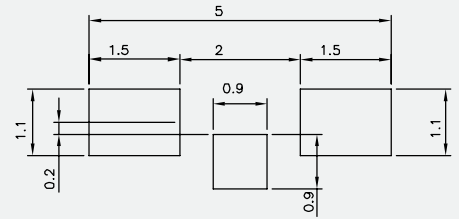
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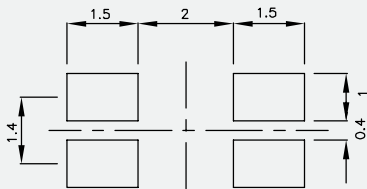
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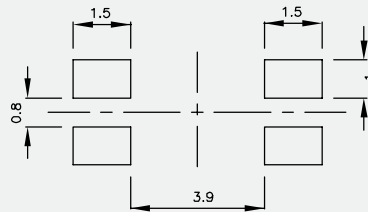
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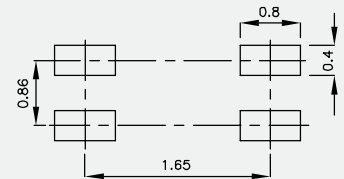
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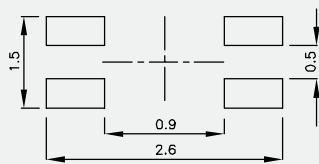
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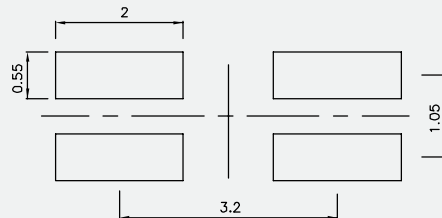
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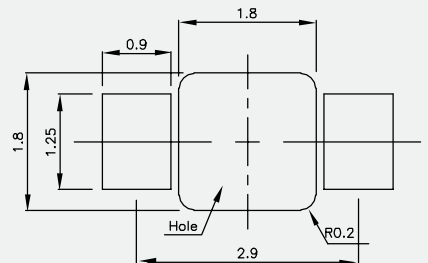
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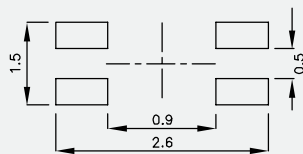
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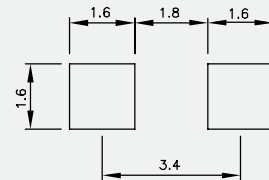
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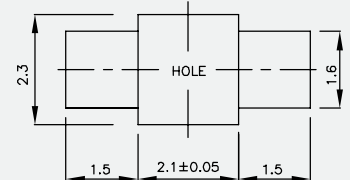
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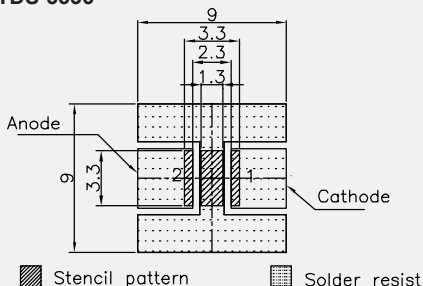
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KPTR-3216



KTDS-3536



NOTES:

1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		E, I Hi.Eff.Red Orange (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	SR-J4 Super Bright Red (AlGaInP)	SURK Hyper Red (AlGaInP)	SURK-T Hyper Red (AlGaInP)	SUR-E Hyper Red (AlGaInP)	Unit
Reverse voltage	V _R	5	5	5	5	5	5	5	V
Forward current	I _F	30	25	30	30	30	30	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	I _{FS}	160	130	155	150	185	150	200	mA
Power dissipation	P _D	75	62.5	75	75	75	75	75	mW
LED LAMPS:									
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:									
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		E, I Hi.Eff.Red Orange (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	SR-J4 Super Bright Red (AlGaInP)	SURK Hyper Red (AlGaInP)	SURK-T Hyper Red (AlGaInP)	SUR-E Hyper Red (AlGaInP)	Unit
Forward voltage (typ.) I _F =20mA	V _F	2.0	2.25	1.85	2.1	1.95	2.0	1.9	V
I _F =10mA		1.9	2.05	1.8	1.8	1.85	1.85	1.8	
I _F =2mA		1.7	1.85	1.65	1.65	1.75	1.75	1.7	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	2.5	2.5	2.5	2.5	2.5	2.5	2.5	V
Reverse current V _R =5V	I _R	10	10	10	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _P	627	700	655	660	645	645	645	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	617	635	640	640	630	630	630	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	45	45	20	20	28	20	25	nm
Capacitance V _F =0V, f=1MHZ	C	15	40	45	45	35	35	45	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		SUR-G Hyper Red (AlGaInP)	SE-J3-K Hyper Red (AlGaInP)	SE-J3 Hyper Red (AlGaInP)	SE-E Hyper Red (AlGaInP)	SE-H Hyper Red (AlGaInP)	SE-J4-K Super Bright Orange (AlGaInP)	SE-J4 Super Bright Orange (AlGaInP)	N Pure Orange (GaAsP/GaP)	Unit
Reverse voltage	V _R	5	5	5	5	5	5	5	5	V
Forward current	I _F	30	30	30	30	30	30	30	25	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	150	150	150	195	150	150	150	145	mA
Power dissipation	P _D	75	84	84	75	84	84	84	62.5	mW
LED LAMPS:										
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:										
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		SUR-G Hyper Red (AlGaInP)	SE-J3-K Hyper Red (AlGaInP)	SE-J3 Hyper Red (AlGaInP)	SE-E Hyper Red (AlGaInP)	SE-H Hyper Red (AlGaInP)	SE-J4-K Super Bright Orange (AlGaInP)	SE-J4 Super Bright Orange (AlGaInP)	N Pure Orange (GaAsP/GaP)	Unit
Forward voltage (typ.) I _F =20mA	V _F	1.9	2.2	2.2	2.0	2.2	2.2	2.2	2.05	V
I _F =10mA		1.85	2.0	2.0	1.9	2.05	2.0	2.0	1.95	
I _F =2mA		1.75	1.8	1.8	1.8	1.85	1.8	1.8	1.85	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	2.5	2.8	2.8	2.5	2.8	2.8	2.8	2.5	V
Reverse current V _R =5V	I _R	10	10	10	10	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _P	645	640	640	630	635	611	611	607	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	630	625	625	621	625	605	605	602	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	22	20	25	20	25	17	17	35	nm
Capacitance V _F =0V,f=1MHZ	C	45	27	27	25	27	27	27	15	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		SEK Super Bright Orange (AlGaInP)	SEK-T Super Bright Orange (AlGaInP)	G,SG Green, Super Bright Green (GaP)	CGK Green (AlGaInP)	CGK-T Green (AlGaInP)	ZG-K Green (InGaIn)	ZG Green (InGaIn)	Unit
Reverse voltage	V _R	5	5	5	5	5	5	5	V
Forward current	I _F	30	30	25	30	30	25	25	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	195	150	140	150	150	150	150	mA
Power dissipation	P _D	75	75	62.5	75	78	102.5	102.5	mW
LED LAMPS:									
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:									
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		SEK Super Bright Orange (AlGaInP)	SEK-T Super Bright Orange (AlGaInP)	G,SG Green, Super Bright Green (GaP)	CGK Green (AlGaInP)	CGK-T Green (AlGaInP)	ZG-K Green (InGaIn)	ZG Green (InGaIn)	Unit
Forward voltage (typ.) I _F =20mA	V _F	2.1	2.05	2.2	2.1	2.1	3.3	3.3	V
I _F =10mA		2.0	1.95	2.0	2.0	1.95	3.0	3.0	
I _F =2mA		1.85	1.8	1.9	1.9	1.8	2.65	2.65	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	2.5	2.5	2.5	2.5	2.6	4.1	4.1	V
Reverse current V _R =5V	I _R	10	10	10	10	10	50	50	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _P	610	610	565	574	574	515	515	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	601	601	568	570	570	525	525	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	29	17	30	20	15	35	30	nm
Capacitance V _F =0V, f=1MHZ	C	15	15	15	15	15	45	45	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		ZG-E Green	ZG-G Green	Y Yellow	SYK Super Bright Yellow	SYK-T Super Bright Yellow	SY Super Bright Yellow	SY-H Super Bright Yellow	Unit
		(InGaN)	(InGaN)	(GaAsP/GaP)	(AlGaInP)	(AlGaInP)	(AlGaInP)	(AlGaInP)	
Reverse voltage	V _R	5	5	5	5	5	5	5	V
Forward current	I _F	30	30	30	30	30	30	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	100	100	140	175	150	150	140	mA
Power dissipation	P _D	120	120	75	75	75	75	84	mW
LED LAMPS:									
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:									
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		ZG-E Green	ZG-G Green	Y Yellow	SYK Super Bright Yellow	SYK-T Super Bright Yellow	SY Super Bright Yellow	SY-H Super Bright Yellow	Unit
		(InGaN)	(InGaN)	(GaAsP/GaP)	(AlGaInP)	(AlGaInP)	(AlGaInP)	(AlGaInP)	
Forward voltage (typ.) I _F =20mA	V _F	3.2	3.2	2.1	2.0	2.05	2.0	2.3	V
I _F =10mA		3.05	3.05	1.95	1.95	1.95	1.95	2.2	
I _F =2mA		2.8	2.8	1.85	1.85	1.8	1.8	2	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	4.0	4.0	2.5	2.5	2.5	2.5	2.8	V
Reverse current V _R =5V	I _R	50	50	10	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _P	520	520	590	590	590	590	590	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	525	525	588	590	590	590	589	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	35	35	35	20	15	28	20	nm
Capacitance V _F =0V, f=1MHZ	C	100	100	20	20	25	25	45	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		SY-J3-K Super Bright Yellow	SY-J3 Super Bright Yellow	MB Blue	PB-A Blue	QB-D Blue	QB-F Blue	QB-G Blue	VB-D Blue	Unit
		(AlGaInP)	(AlGaInP)	(GaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	
Reverse voltage	V _R	5	5	5	5	5	5	5	5	V
Forward current	I _F	30	30	30	30	30	30	30	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	I _{FS}	140	140	150	100	150	150	150	100	mA
Power dissipation	P _D	75	75	135	120	120	120	120	120	mW
LED LAMPS:										
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:										
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		SY-J3-K Super Bright Yellow	SY-J3 Super Bright Yellow	MB Blue	PB-A Blue	QB-D Blue	QB-F Blue	QB-G Blue	VB-D Blue	Unit
		(AlGaInP)	(AlGaInP)	(GaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	
Forward voltage (typ.) I _F =20mA	V _F	2.0	2.0	3.8	3.2	3.3	3.3	3.3	3.3	V
I _F =10mA		1.95	1.95	3.6	3.05	3.0	3.0	3.0	3.0	
I _F =2mA		1.85	1.85	3.4	2.8	2.65	2.65	2.65	2.65	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	2.5	2.5	4.5	4.0	4.0	4.0	4.0	4.0	V
Reverse current V _R =5V	I _R	10	10	10	10	50	50	50	50	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _P	590	590	430	468	460	460	461	465	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	590	590	466	465	465	465	465	470	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	20	20	60	21	25	25	25	22	nm
Capacitance V _F =0V, f=1MHZ	C	45	45	100	100	100	100	100	100	pF

TECHNICAL DATA 5V/14V WITH INTERNAL RESISTANCE

Absolute maximum ratings (T _A =25°C)		I Hi.Eff.Red (GaAsP/GaP)	SR Super Bright Red (GaAlAs)	G Green (GaP)	Y Yellow (GaAsP/GaP)	Unit
Reverse voltage	V _R	5	5	5	5	V
Forward voltage (Max.) for 5V	V _F	6	6	6	6	V
Forward voltage (Max.) for 14V	V _F	16	16	16	16	V
Power dissipation for 5V	P _D	85	85	85	85	mW
Power dissipation for 14V	P _D	160	160	160	160	mW
LED LAMPS:						
Operating temperature	T _A	- 40~+70	- 40~+70	- 40~+70	- 40~+70	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:						
Operating temperature	T _A	- 40~+70	- 40~+70	- 40~+70	- 40~+70	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		I Hi.Eff.Red (GaAsP/GaP)	SR Super Bright Red (GaAlAs)	G Green (GaP)	Y Yellow (GaAsP/GaP)	Unit
Forward current (typ.) V _F =5V	I _F	13	13	11.5	13	mA
Forward current (typ.) V _F =14V	I _F	10.5	10.5	10.5	10.5	mA
Forward current (max.) V _F =5V	I _F	17.5	17.5	17.5	17.5	mA
Forward current (max.) V _F =14V	I _F	13.5	13.5	13.5	13.5	mA
Reverse current V _R =5V	I _R	10	10	10	10	uA
Peak Emission Wavelength V _F =5V,14V	λ _p	627	655	565	590	nm
Dominant Wavelength V _F =5V,14V	λ _D	617	640	568	588	nm
Spectral line half-width V _F =5V,14V	Δλ _{1/2}	45	20	30	35	nm

TECHNICAL DATA FOR BLINKING LED LAMPS

Absolute maximum ratings (T _A =25°C)		I Hi.Eff.Red (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	Unit
Reverse voltage	V _R	0.5	0.5	0.5	V
Forward voltage (max.)	V _F	14	14	14	V
Total Power dissipation	P _D	310	310	310	mW
Operating temperature	T _A	- 40~+70	- 40~+70	- 40~+70	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		I Hi.Eff.Red (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	Unit
Forward current (min.) V _F =3.5V	I _F	8	8	8	mA
Forward current (typ.) V _F =5V	I _F	22	22	22	mA
Supply current V _F =3.5V ~ 14V	I _{SON}	8 ~ 44	8 ~ 44	8 ~ 44	mA
Blink frequency V _F =3.5V ~ 14V	f	3 ~ 1.5	3 ~ 1.5	3 ~ 1.5	Hz
Peak Emission Wavelength	λ _p	627	700	655	nm
Dominant Wavelength	λ _D	617	635	640	nm
Spectral line half-width	Δλ _{1/2}	45	45	20	nm

TECHNICAL DATA FOR INFRARED

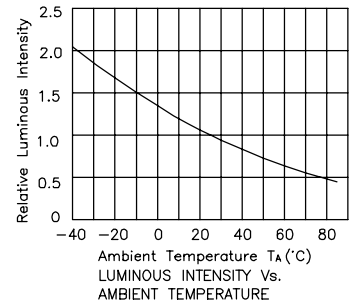
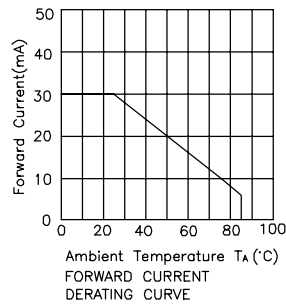
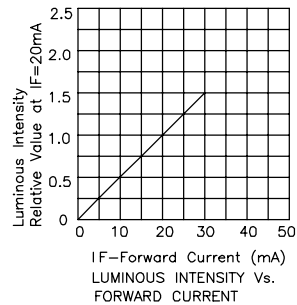
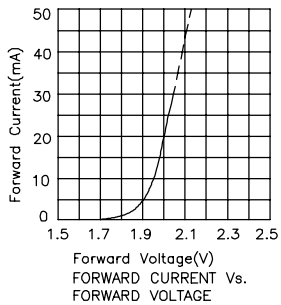
Absolute maximum ratings (T _A =25°C)		F3	SF4	SF6	SF7	Unit
		(GaAs)	(GaAlAs)	(GaAlAs)	(GaAlAs)	
Reverse voltage	V _R	5	5	5	5	V
Forward current	I _F	50	50	50	50	mA
Forward current (Peak) 1/100 Duty Cycle, 10μs Pulse Width	i _{FS}	1.2	1.2	1	1	A
Power dissipation	P _D	80	80	80	80	mW
LED LAMPS:						
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:						
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		F3	SF4	SF6	SF7	Unit
		(GaAs)	(GaAlAs)	(GaAlAs)	(GaAlAs)	
Forward voltage (typ.) I _F =20mA	V _F	1.2	1.3	1.35	1.4	V
Forward voltage (max.) I _F =20mA	V _F	1.6	1.6	1.6	1.6	V
Reverse current V _R =5V	I _R	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA	λ _p	940	880	860	850	nm
Spectral line half-width I _F =20mA	Δλ _{1/2}	50	50	50	50	nm
Capacitance V _F =0V, f=1MHZ	C	90	90	30	30	pF

TECHNICAL DATA

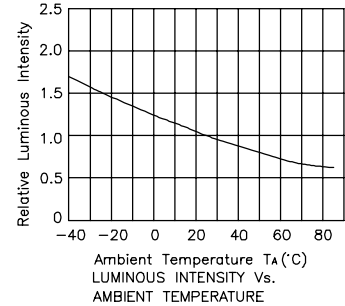
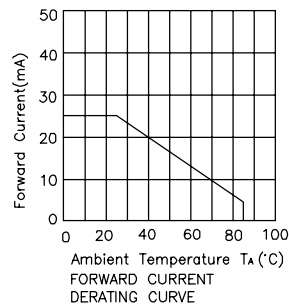
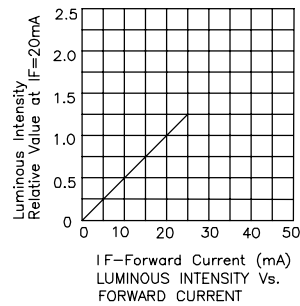
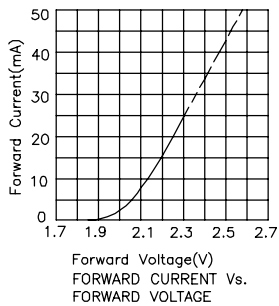
High Efficiency Red, Orange

E, I : GaAsP/GaP



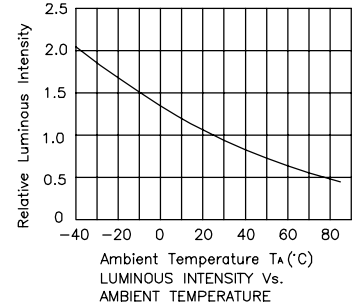
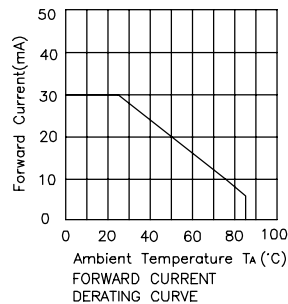
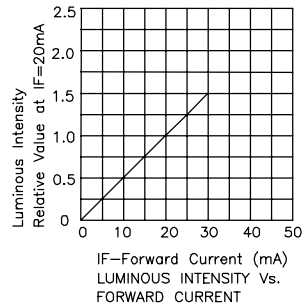
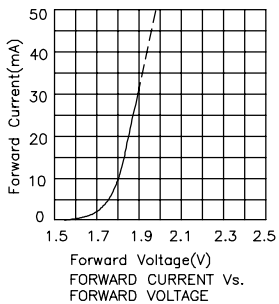
Bright Red

H : GaP



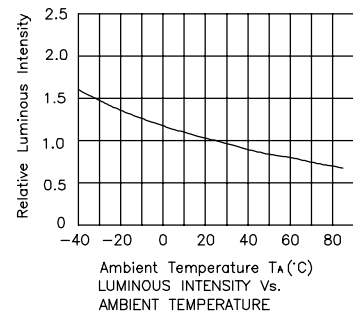
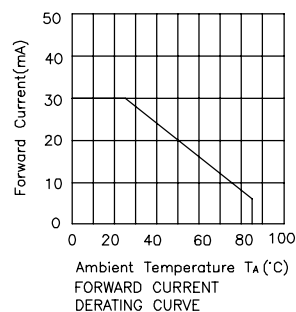
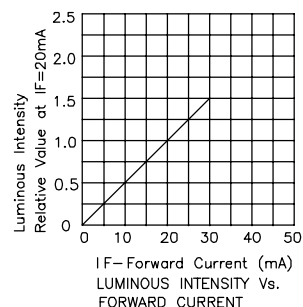
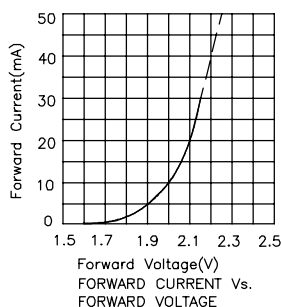
Super Bright Red

SR : GaAlAs



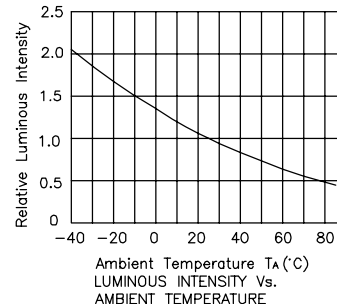
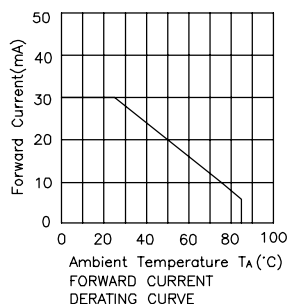
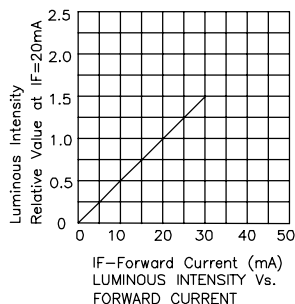
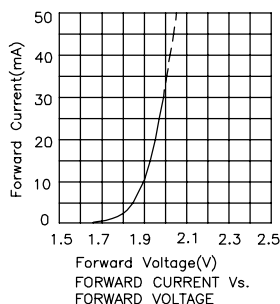
Super Bright Red

SR-J4 : AlGaInP



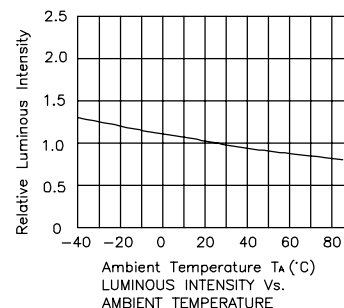
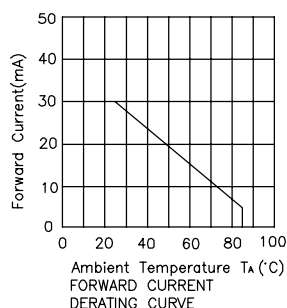
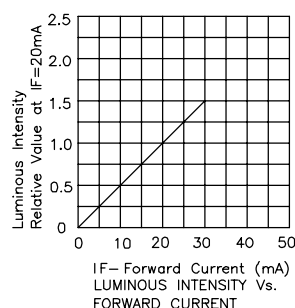
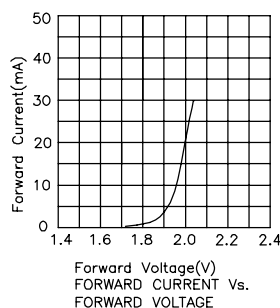
TECHNICAL DATA

Hyper Red



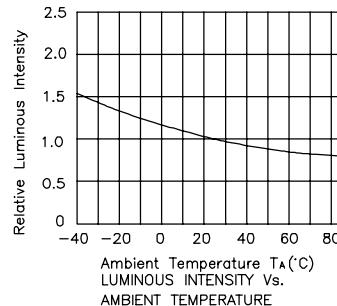
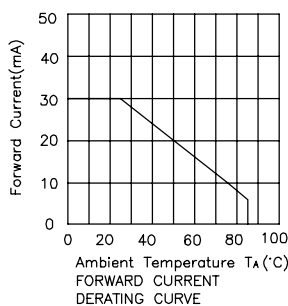
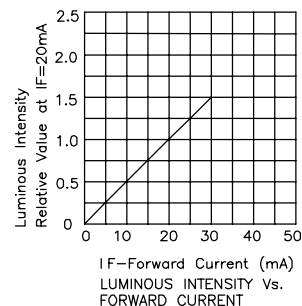
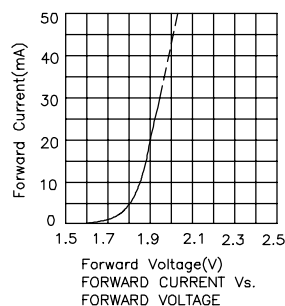
SURK : AlGaInP

Hyper Red



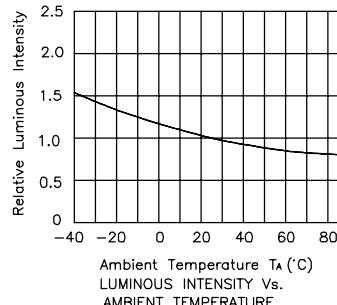
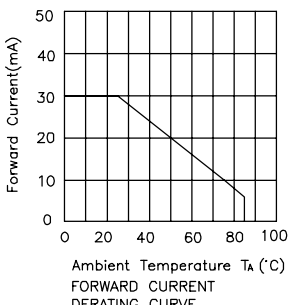
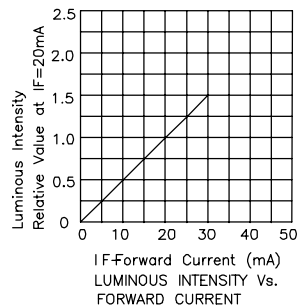
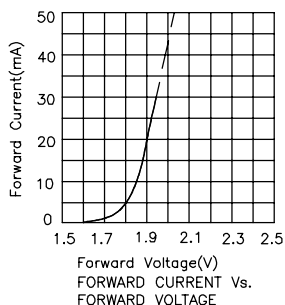
SURK-T : AlGaInP

Hyper Red



SUR-E : AlGaInP

Hyper Red

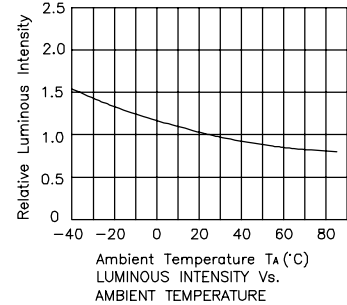
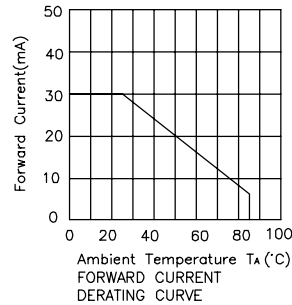
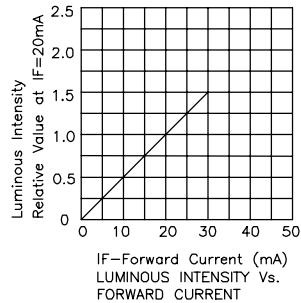
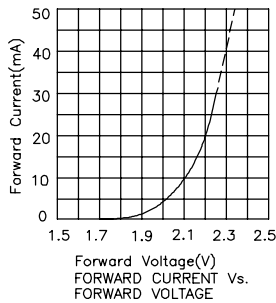


SUR-G : AlGaInP

TECHNICAL DATA

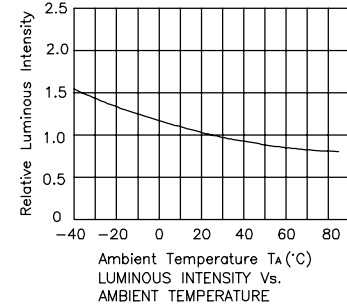
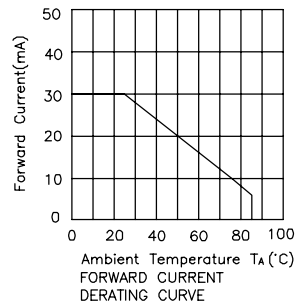
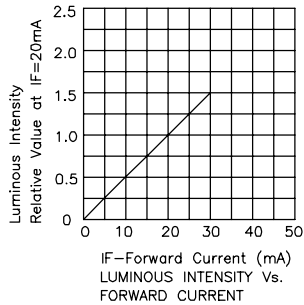
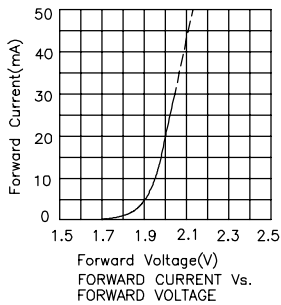
Hyper Red

SE-J3-K, SE-J3 : AlGaInP



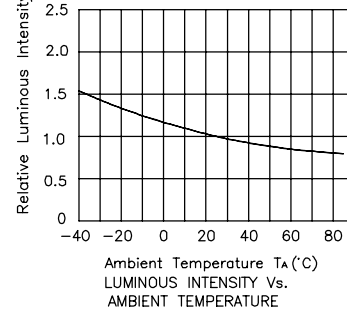
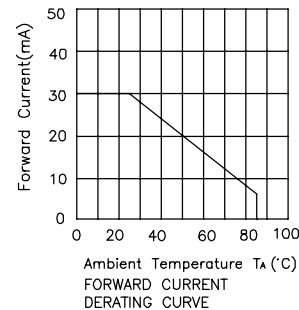
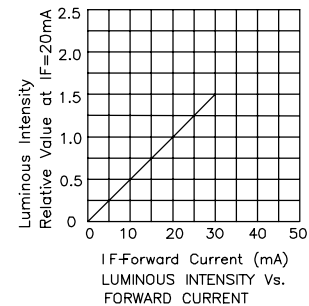
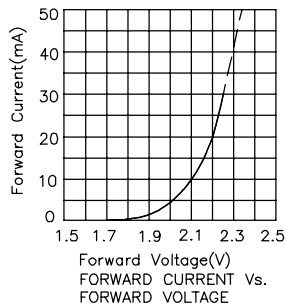
Hyper Red

SE-E : AlGaInP



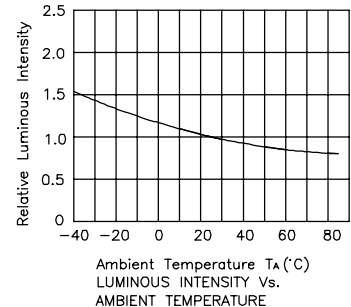
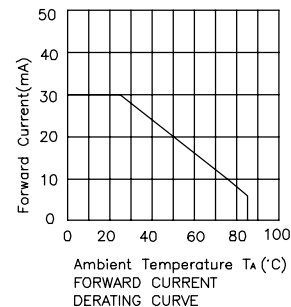
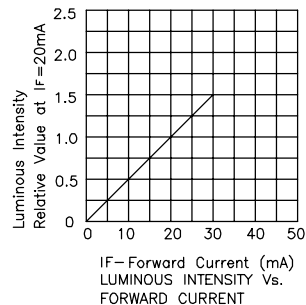
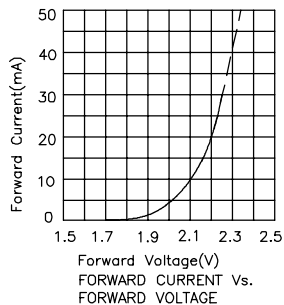
Hyper Red

SE-H : AlGaInP



Super Bright Orange

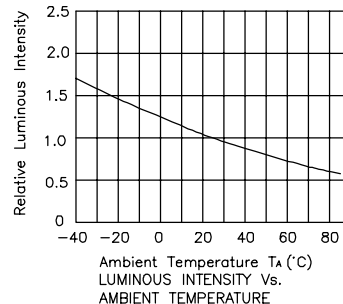
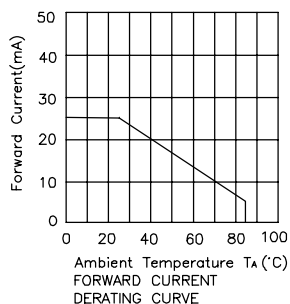
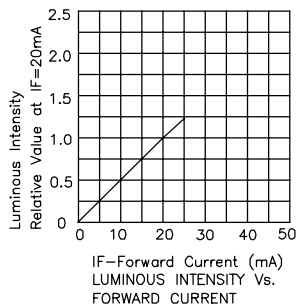
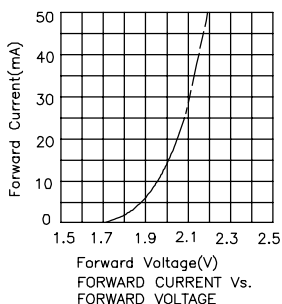
SE-J4-K, SE-J4 : AlGaInP



TECHNICAL DATA

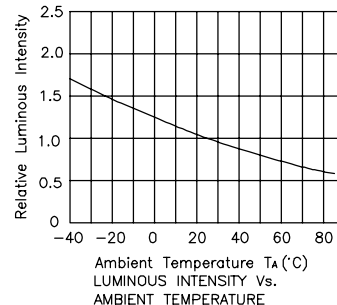
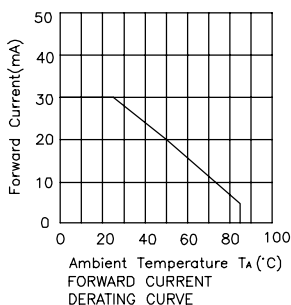
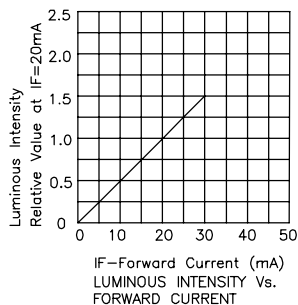
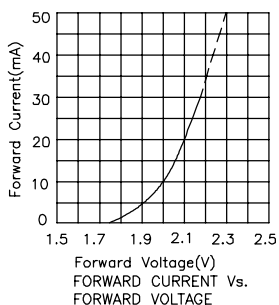
Pure Orange

N : GaAsP/GaP



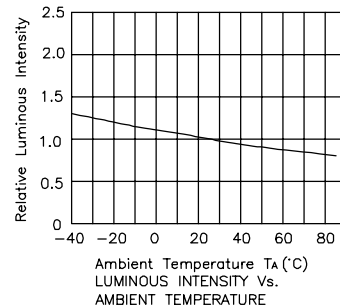
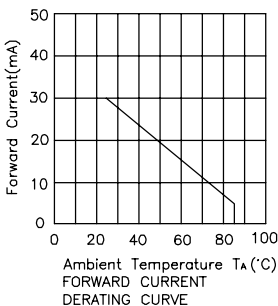
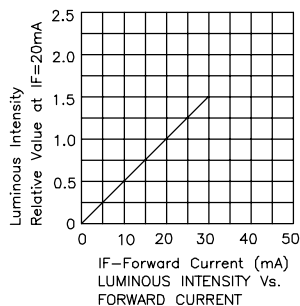
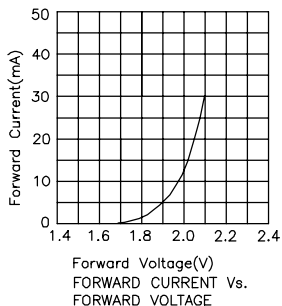
Super Bright Orange

SEK : AlGaInP



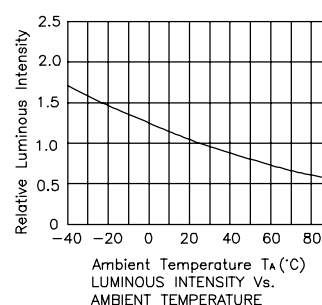
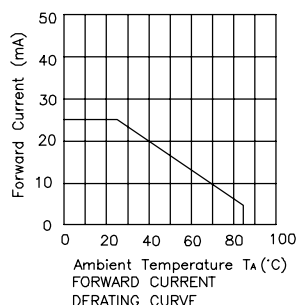
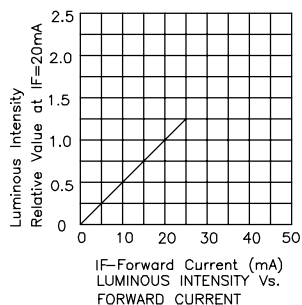
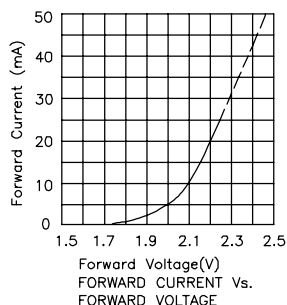
Super Bright Orange

SEK-T : AlGaInP



Green/Super Bright Green

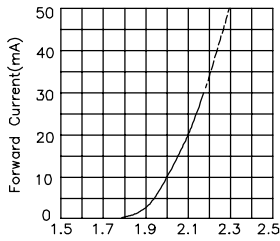
G, SG : GaP



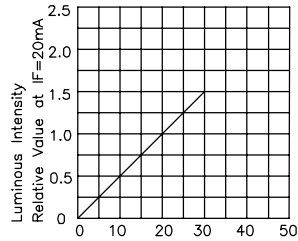
TECHNICAL DATA

Green

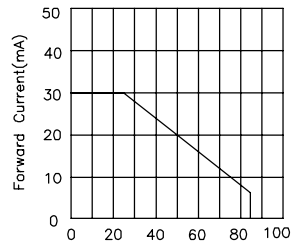
CGK : AlGaInP



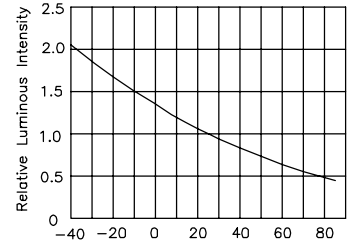
Forward Voltage(V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE



IF-Forward Current (mA)
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



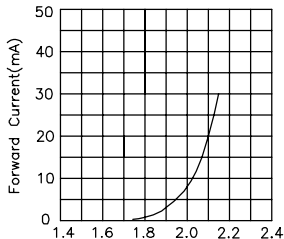
Ambient Temperature T_A (°C)
FORWARD CURRENT
DERATING CURVE



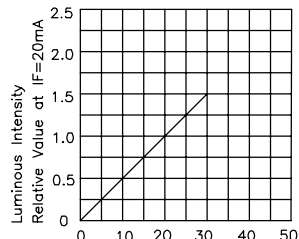
Ambient Temperature T_A (°C)
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

Green

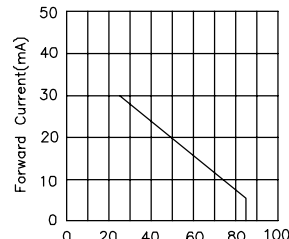
CGK-T : AlGaInP



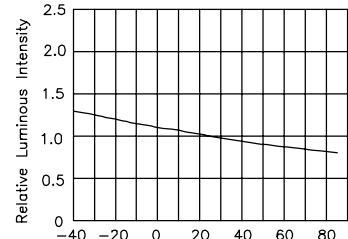
Forward Voltage(V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE



IF-Forward Current (mA)
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



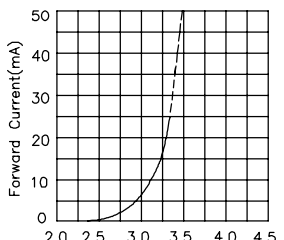
Ambient Temperature T_A (°C)
FORWARD CURRENT
DERATING CURVE



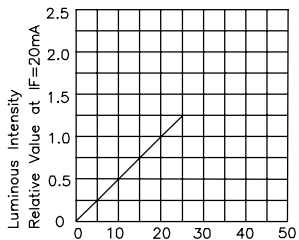
Ambient Temperature T_A (°C)
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

Green

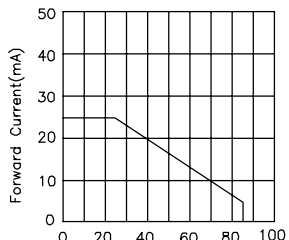
ZG-K : InGaN



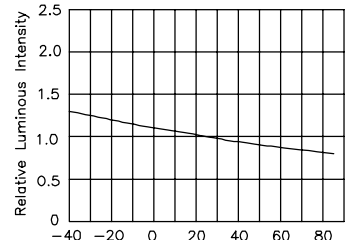
Forward Voltage(V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE



IF-Forward Current (mA)
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



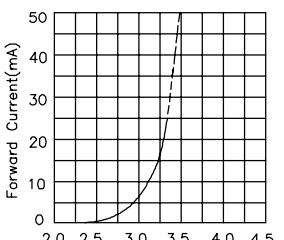
Ambient Temperature T_A (°C)
FORWARD CURRENT
DERATING CURVE



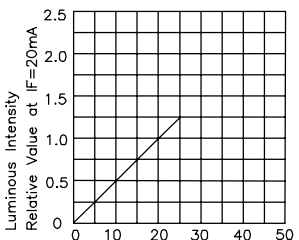
Ambient Temperature T_A (°C)
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

Green

ZG : InGaN



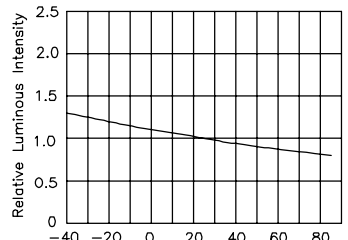
Forward Voltage(V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE



IF-Forward Current (mA)
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



Ambient Temperature T_A (°C)
FORWARD CURRENT
DERATING CURVE

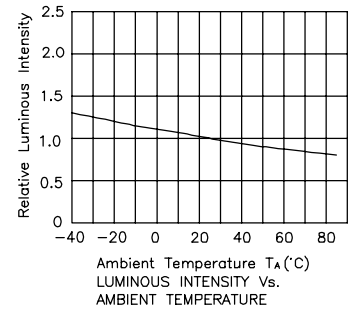
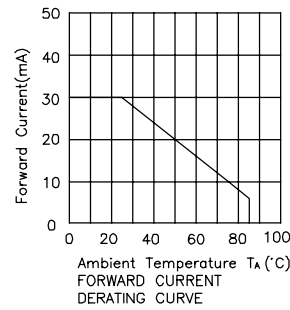
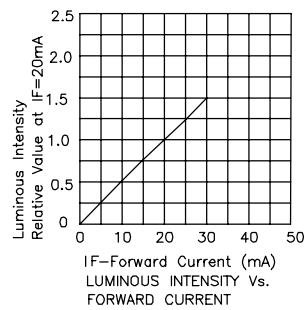
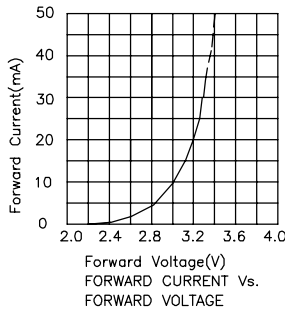


Ambient Temperature T_A (°C)
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

TECHNICAL DATA

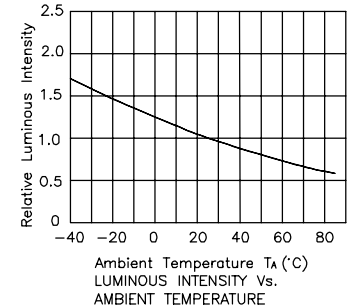
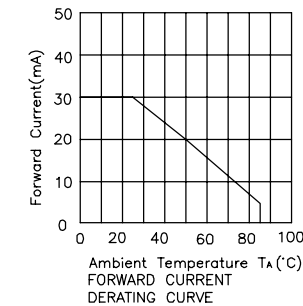
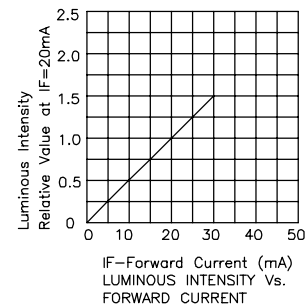
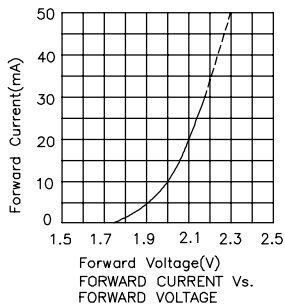
Green

ZG-E, ZG-G : InGaN



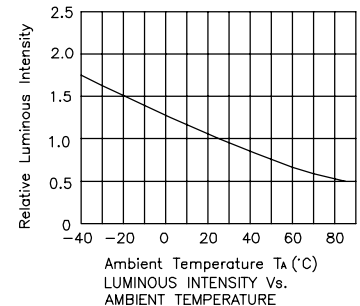
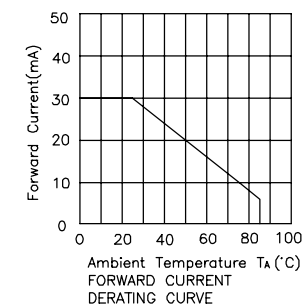
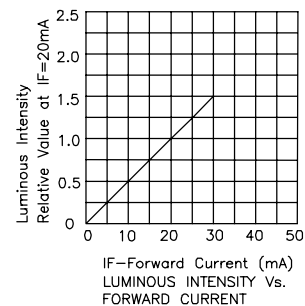
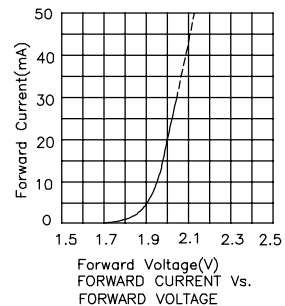
Yellow

Y : GaAsP/GaP



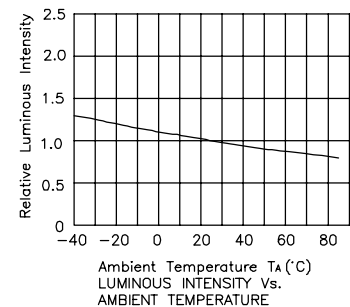
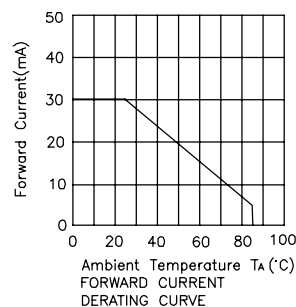
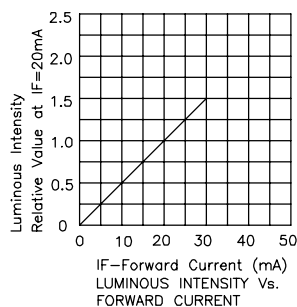
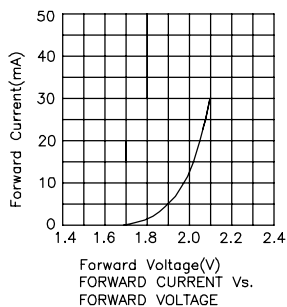
Super Bright Yellow

SYK, SY, SY-J3-K, SY-J3 : AlGaInP



Super Bright Yellow

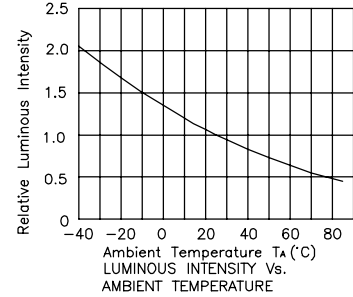
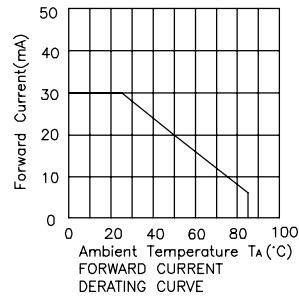
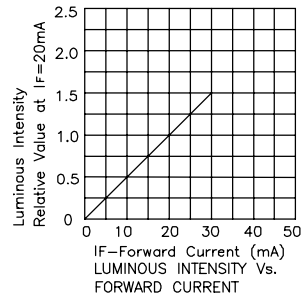
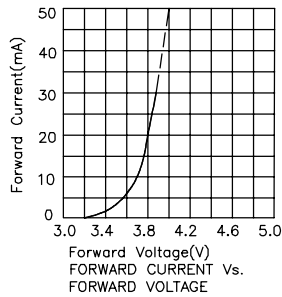
SYK-T : AlGaInP



TECHNICAL DATA

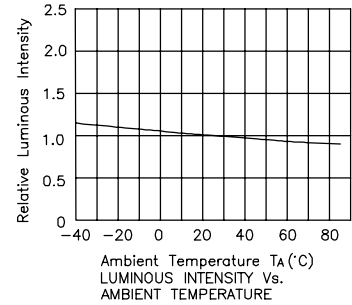
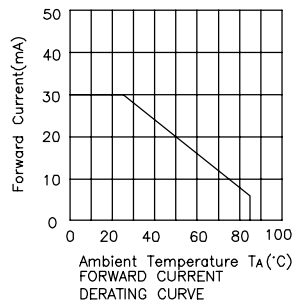
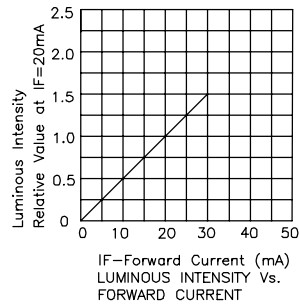
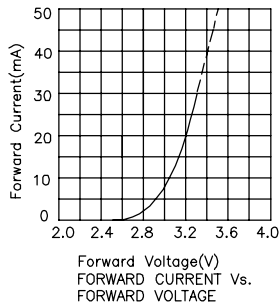
Blue

MB : GaN



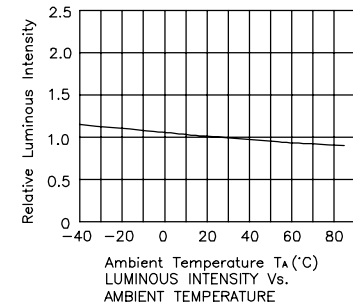
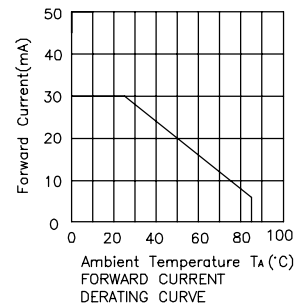
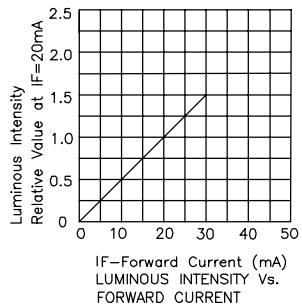
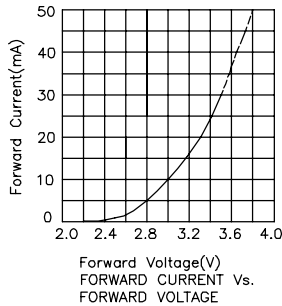
Blue

PB-A : InGaN



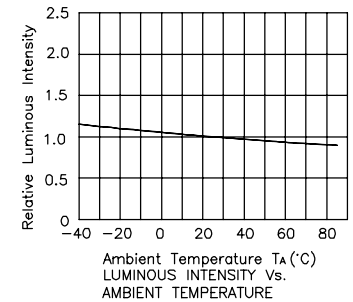
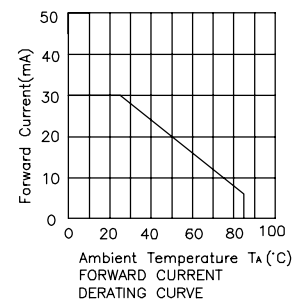
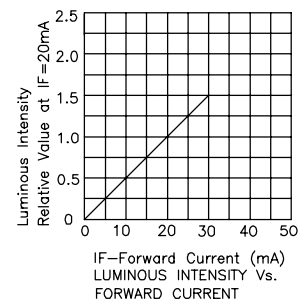
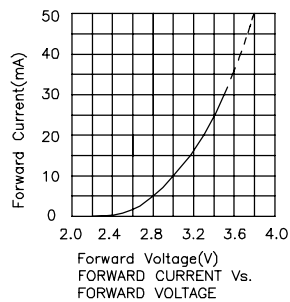
Blue

QB-D, QB-F, QB-G : InGaN



Blue

VB-D : InGaN



BIN CODE SYSTEMS

SELECTION CODE FOR STANDARD AND LOW CURRENT LEDs (T _A =25°C Tolerance +/-15% IF<15mA)					
Group	Light intensity in mcd		Group	Light intensity in mcd	
	Min.	Max.		Min.	Max.
F	0.1	0.2	W	120	180
G	0.2	0.35	X	180	250
H	0.35	0.5	Y	250	320
I	0.5	0.8	Z	320	450
K	0.8	1.2	ZA	450	550
L	1.2	2	ZB	550	700
M	2	4	ZC	700	1000
N	4	6	ZD	1000	1600
P	6	10	ZE	1600	2200
Q	10	15	ZF	2200	2800
R	15	20	ZG	2800	3400
S	20	30	ZH	3400	4300
T	30	50	ZM	4300	5200
U	50	80	ZN	5200	6300
V	80	120	ZP	6300	7400

SELECTION CODE FOR NPN PHOTOTRANSISTORS (T _A =25°C Tolerance +/-15%)					
Group	Photocurrent(mA)		Group	Photocurrent(mA)	
	Min.	Max.		Min.	Max.
F	0.1	0.2	L	1.2	2
G	0.2	0.35	M	2	4
H	0.35	0.5	N	4	6
I	0.5	0.8	P	6	10
K	0.8	1.2	-	-	-

SELECTION CODE FOR INFRARED EMITTING DIODES (T _A =25°C Tolerance +/-15%)					
Group	Radiant intensity in mW/sr		Group	Radiant intensity in mW/sr	
	Min.	Max.		Min.	Max.
AK	0.8	1.2	D	8	12
AL	1.2	2	E	12	20
A	2	3	F	20	40
B	3	5	G	40	55
C	5	8	H	55	80

SELECTION CODE FOR SUPER BRIGHT LEDs (T _A =25°C Tolerance +/-15% IF≥15mA)					
Group	Light intensity in mcd		Group	Light intensity in mcd	
	Min.	Max.		Min.	Max.
A	2	3	ZA	3100	3600
B	3	5	ZB	3600	4200
C	5	8	ZC	4200	5000
D	8	12	ZD	5000	6000
E	12	20	ZE	6000	7000
F	20	40	ZF	7000	8000
G	40	55	ZG	8000	9000
H	55	80	ZH	9000	11000
M	80	120	ZM	11000	14000
N	120	200	ZN	14000	18000
P	200	300	ZP	18000	22000
Q	300	400	ZQ	22000	27000
R	400	500	ZR	27000	35000
S	500	700	ZS	35000	43000
T	700	1000	ZT	43000	55000
U	1000	1300	ZU	55000	75000
V	1300	1600	ZV	75000	130000
W	1600	1900	ZW	130000	200000
X	1900	2300	ZX	200000	320000
Y	2300	2700	ZY	320000	490000
Z	2700	3100	ZZ	490000	800000

SELECTION CODE FOR DISPLAYS (T _A =25°C Tolerance +/-15%)					
Group	Light intensity in ucd		Group	Light intensity in ucd	
	Min.	Max.		Min.	Max.
C	70	140	P	14000	21000
D	140	240	Q	21000	31000
E	240	360	R	31000	52000
F	360	560	S	52000	88000
G	560	900	T	88000	150000
H	900	1400	U	150000	255000
I	1400	2200	V	255000	433000
K	2200	3600	W	433000	736000
L	3600	5600	X	736000	1251000
M	5600	9000	Y	1251000	2126000
N	9000	14000	Z	2126000	3614000

BIN CODE SYSTEMS

SELECTION CODE FOR LUMINOUS FLUX (T _A =25°C; Tolerance: +/-15%)					
Group	Luminous Flux in lm		Group	Luminous Flux in lm	
	Min.	Max.		Min.	Max.
A1	0.5	0.6	B10	50	60
A2	0.6	0.7	B11	60	70
A3	0.7	0.8	B12	70	80
A4	0.8	1	B13	80	90
A5	1	1.2	B14	90	100
A6	1.2	1.4	C1	100	120
A7	1.4	1.7	C2	120	140
A8	1.7	2	C3	140	160
A9	2	2.4	C4	160	180
A10	2.4	2.9	C5	180	210
A11	2.9	3.5	C6	210	240
A12	3.5	4.2	C7	240	280
A13	4.2	5	C8	280	320
A14	5	6	C9	320	370
A15	6	7.2	C10	370	430
A16	7.2	8.6	C11	430	490
A17	8.6	10	C12	490	560
B1	10	12	C13	560	640
B2	12	14	C14	640	740
B3	14	17	C15	740	850
B4	17	20	C16	850	1000
B5	20	24	D1	1000	1200
B6	24	29	D2	1200	1400
B7	29	35	D3	1400	1600
B8	35	42	D4	1600	1800
B9	42	50	D5	1800	2100

COLOR CODE FOR GREEN LEDS + DISPLAYS (T _A =25°C; Tolerance: +/-1nm)				
Group	Dom. Wavelength (nm)			
	Min.	Max.	Min.	Max.
0	556	559	-	-
1	559	561	515	520
2	561	563	520	525
3	563	565	525	530
4	565	567	530	535
5	567	569	535	540
6	569	571	-	-
7	571	573	-	-
8	573	575	-	-

COLOR CODE FOR BLUE LEDS + DISPLAYS (T _A =25°C; Tolerance: +/-1nm)					
Group	Dom. Wavelength (nm)		Group	Dom. Wavelength (nm)	
	Min.	Max.		Min.	Max.
1	445	450	3A	471	473
2	450	455	3B	473	475
3	455	460	4A	475	477
1A	460	463	4B	477	479
1B	463	466	5A	479	481
2A	466	469	5B	481	483
2B	469	471	5C	483	486

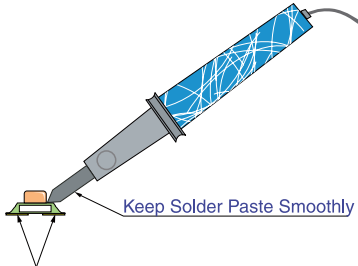
COLOR CODE FOR YELLOW LEDS + DISPLAYS (T _A =25°C; Tolerance: +/-1nm)					
Group	Dom. Wavelength (nm)		Group	Dom. Wavelength (nm)	
	Min.	Max.		Min.	Max.
1	581	584	5	590	592
2	584	586	6	592	594
3	586	588	7	594	597
4	588	590	8	597	600

SOLDERING INSTRUCTIONS						
Types	Dip soldering / * wave soldering			Iron soldering (with 1.5mm iron tip)		
	Temperature of the soldering bath	Maximum soldering time	Distance from solder joint to package	Temperature of soldering iron	Maximum soldering time	Distance from solder joint to package
LEDS	<=260°C	3s	>=2mm	<=350°C	3s	>2mm
	<=260°C	5s	>=5mm	<=350°C	5s	>5mm
SMDS	-	-	-	<=350°C	3s (one time only)	-
DISPLAYS	*<=260°C	*3s	*>2mm	<=350°C	3s	>2mm
PHOTOCOUPLER	<=260°C	3s	>2mm	<=310°C	3s	-
	-	-	-	<=260°C	10s	-

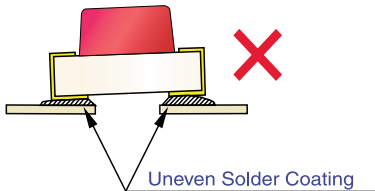
APPLICATION NOTES

General Notes

1. We recommend manual soldering operations only for repair and rework purposes. The soldering iron should not exceed 30W in power. The maximum soldering temperature is 300°C for Pb-Sn solder and 350°C for lead-free solder for normal lamps and displays. For blue (typ.:465nm), green (typ.:525nm), and all white LEDs, the maximum soldering iron temperature is 280°C. Do not place the soldering iron on the component for more than 3 seconds.



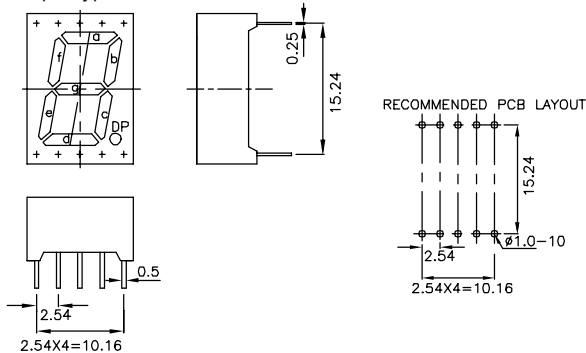
2. The tip of the soldering iron should never touch the epoxy lens.
3. Do not apply stress to the leads when the component is heated above 85°C, otherwise internal wire bonds may be damaged.
4. Through-Hole LEDs are incompatible with reflow soldering.
5. If the LED will undergo multiple soldering passes or face other processes where the part may be subjected to intense heat, please check with Kingbright for compatibility.
6. SMD products must be mounted according to specified soldering pad patterns. Refer to the product datasheet for details. Solder paste must be evenly applied to each soldering pad to insure proper bonding and positioning of the component.



7. After soldering, allow at least three minutes for the component to cool down to room temperature before further operations.
8. Recommended PCB pin hole diameters for display products are listed below :

Round pin type : 2 x pin diameters

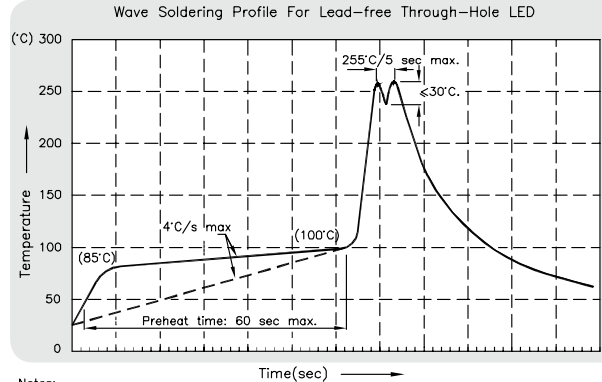
Square pin type :



9. Data subject to change without notice. For additional detail of application notes, product information, and disclaimers, please visit our website at http://www.kingbright.com/application_notes.

Recommended Wave Soldering Profiles For Kingbright Through-Hole Products

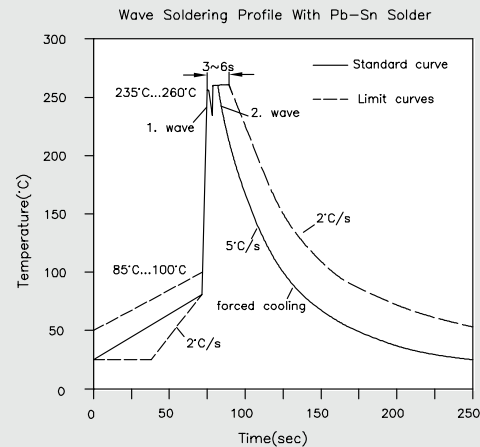
1. Lead-Free Wave Soldering Profile



Notes:

1. Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C.
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85°C.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.
7. During wave soldering, the PCB top-surface temperature should be kept below 105°C.

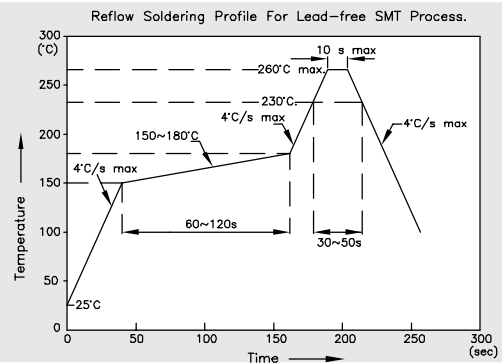
2. Wave Soldering Profile With Pb-Sn Solder



Recommended Reflow Soldering Profiles For Kingbright SMD Products

1. Lead-Free Reflow Soldering Profile

No more than two soldering passes with the recommended profile.



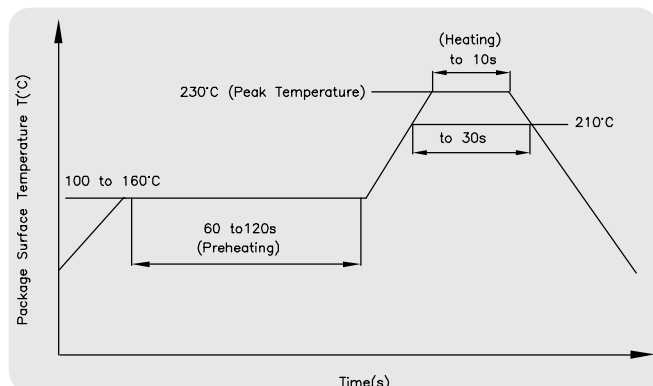
NOTES:

1. We recommend the reflow temperature 245°C (+/-5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

2. Reflow Soldering Profiles With Pb-Sn Solder

No more than two soldering passes with the recommended profile.

Recommended Reflow Profile



Static Electricity and Voltage Spikes in InGaN/GaN Products

InGaN/GaN products are sensitive to electrostatic discharge (ESD) and other transient voltage spikes. ESD and voltage spikes can affect the component's reliability, increase reverse current, and decrease forward voltage. This may result in reduced light intensity or cause component failure.

Kingbright InGaN/GaN products are stored in anti-static packaging for protection during transport and storage. Please note the anti-static measures below when handling Kingbright InGaN/GaN products.

Design Precautions

Products using InGaN/GaN components must incorporate protection circuitry to prevent ESD and voltage spikes from reaching the vulnerable component.

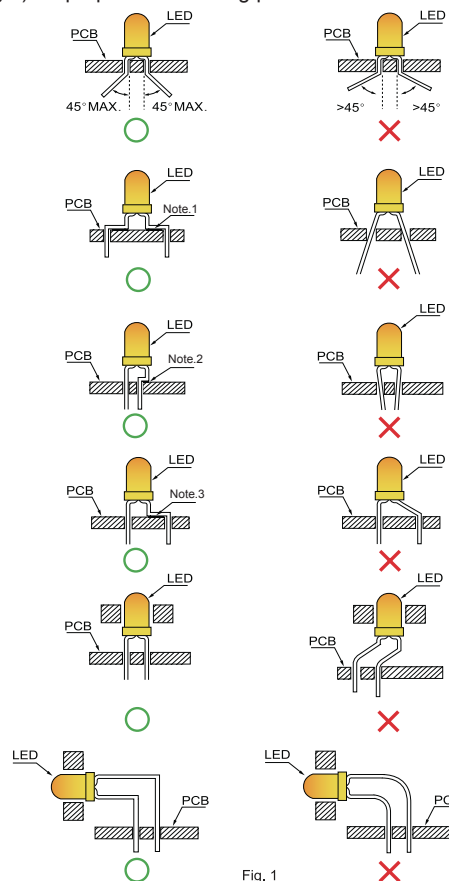
ESD Protection During Production

Static discharge can result when static-sensitive products come in contact with the operator or other conductors. The following procedures may decrease the possibility of ESD damage:

1. Minimize friction between the product and surroundings to avoid static buildup.
2. All manufacturing and testing equipment should be grounded.
3. All personnel in an ESD protected area should wear antistatic garments and wrist straps.
4. Set up ESD protection areas using grounded metal plating for component handling.
5. All workstations that handle IC and ESD-sensitive components must maintain an electrostatic potential of 150V or less.
6. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.
7. Use anti-static packaging for transport and storage.
8. All anti-static equipment and procedures should be periodically inspected and evaluated for proper functionality.

LED Mounting Method

1. The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement. Lead-forming may be required to insure the lead pitch matches the hole pitch. Refer to (Fig.1) for proper lead forming procedures.



"O" Correct mounting method "X" Incorrect mounting method

2. When soldering wires to the LED, each wire joint should be separately insulated with heat-shrink tube to prevent short-circuit contact. Do not bundle both wires in one heat shrink tube to avoid pinching the LED leads. Pinching stress on the LED leads may damage the internal structures and cause failure. (Fig.2)

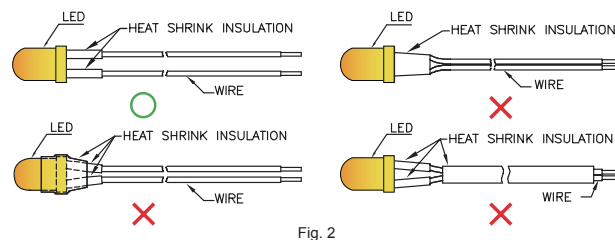


Fig. 2

3. Use stand-offs (Fig.3) or spacers (Fig.4) to securely position the LED above the PCB.

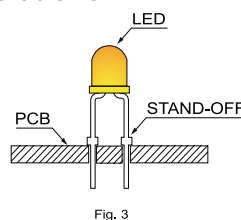


Fig. 3

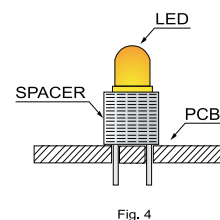


Fig. 4

- Do not route PCB trace in the contact area between the leadframe and the PCB to prevent short-circuits.

Lead Forming Procedures

- Maintain a minimum of 3mm clearance between the base of the LED lens and the first lead bend. (Fig. 5 and 6)

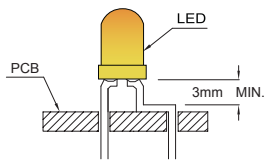


Fig. 5

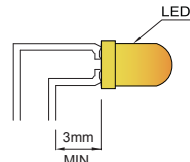


Fig. 6

- Lead forming or bending must be performed before soldering, never during or after soldering.
- Do not stress the LED lens during lead-forming in order to prevent fractures in the epoxy lens and damage the internal structures.
- During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering. (Fig. 7)

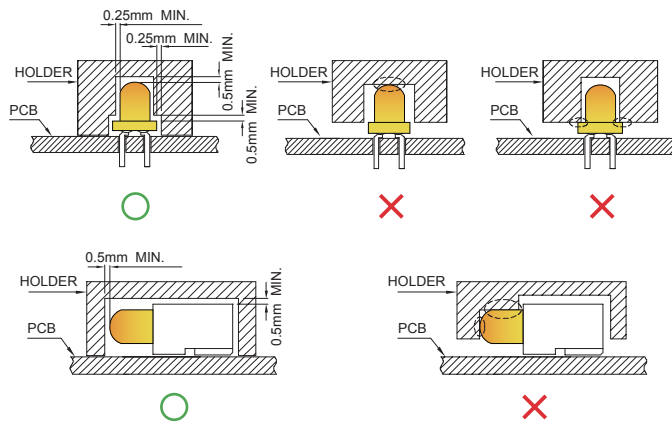


Fig. 7

- During lead forming, use tools or jigs to hold the leads securely so that the bending force will not be transmitted to the LED lens and its internal structures. Do not perform lead forming once the component has been mounted onto the PCB. (Fig. 8)

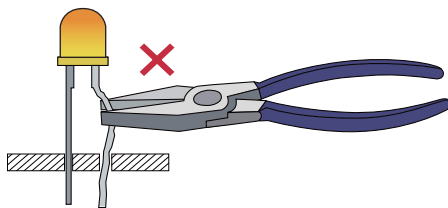


Fig. 8

- Do not bend the leads more than twice. (Fig. 9)

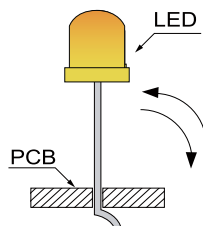


Fig. 9

- After soldering or other high-temperature assembly, allow the LED to cool down to 50°C before applying outside force (Fig. 10). In general, avoid placing excess force on the LED to avoid damage. For any questions please consult with Kingbright representative for proper handling procedures.

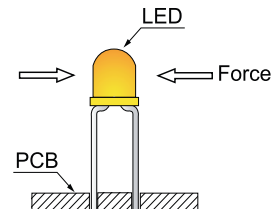


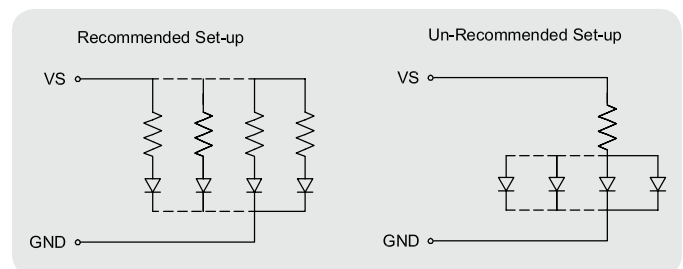
Fig. 10

Cleaning

- Do not use harsh organic solvents for cleaning because they may cloud or damage the LED lens.
- Isopropyl alcohol or deionized water are recommended solvents for cleaning.
- Special attention should be taken if other chemicals are used for cleaning because other solvents may damage the epoxy in the lens or housing.
- The cleaning process should take place at room temperature and the devices should not be washed for more than one minute.
- When water is used for cleaning, immediately use forced-air drying to remove excess moisture from the LED.
- Do not use acidic solvents or unknown chemicals to clean the component. Before using any cleaning solvent, check to insure the chemical composition will not corrode or damage epoxy resin, organosilicates, silicone resin, and silver plating, in order to prevent accidental damage or degraded function.
- Typically we suggest ethanol for cleaning SMD LEDs. Lightly wipe away any surface contaminants and avoid excessive force that might damage the lens surface or internal structures. Allow to dry under room temperature conditions before further usage. Do not soak the SMD LED in ethanol or other solutions.

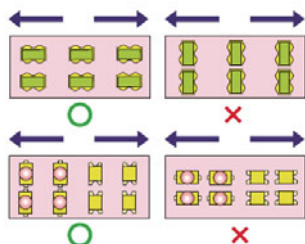
Miscellaneous Design Notes

- Protective current-limiting resistors may be necessary to operate the LEDs within the specified range.
- LEDs mounted in parallel should each be placed in series with its own current-limiting resistor.

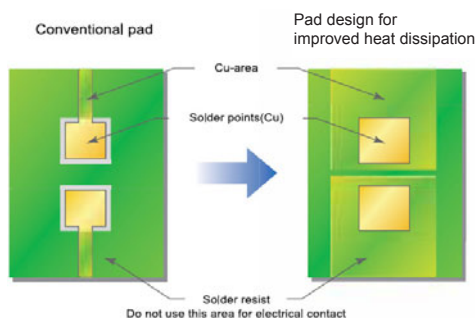


- The driving circuit should be designed to avoid reverse voltages and transient voltage spikes when the circuit is powered up or shut down.
- High temperatures can reduce device performance and reliability. Keep LED devices away from heat source for best performance.
- The safe operation current should be chosen after considering the maximum ambient temperature of the operating environment.

6. During soldering, SMD components should be mounted such that the leads are placed perpendicular to the direction of PCB travel to ensure the solder on each lead melts simultaneously during reflow.

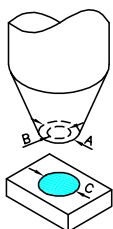


7. Optimal usage of high-power LED devices requires careful design by the end-user to optimize heat dissipation, such as increasing the size of the metal backing around the soldering pad. Refer to the product datasheet for specific design recommendations regarding heat dissipation.



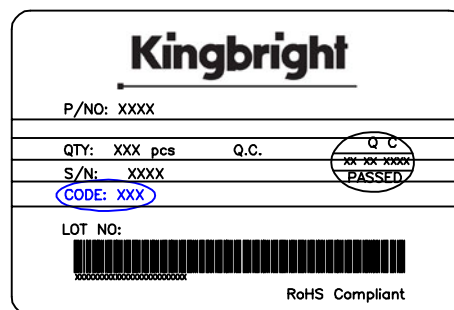
Restrictions on Product Use

- Not all devices and product families are available in every country.
- The light output from UV, blue, white, and other high-power LEDs may cause injury to the human eye when viewed directly.
- LED devices may contain gallium arsenide (GaAs) material. GaAs is harmful if ingested. GaAs dust and fumes are toxic. Do not break, cut, or pulverize LED devices. Do not dissolve LEDs in chemical solvents.
- Semiconductor devices can fail or malfunction due to their sensitivity to electrical fluctuation and physical stress. It is the responsibility of the user to observe all safety standards when using Kingbright products, in order to avoid situations in which the malfunction or failure of a Kingbright product could cause injury, property damage, or the loss of human life. In developing designs, please insure that Kingbright products are used within specified operating conditions as set forth in the most recent product specification datasheet.
- For LEDs with silicone encapsulation such as the AA and AT series, the outer diameter of the pick-up nozzle must be longer than that of the LED's light emitting area. i. e. $A > C$, and B shall be shorter than the width of the LED.



A is the outer diameter pick-up nozzle
B is the inner diameter of the nozzle
C is the diameter of lens

- The size of the nozzle should be as large as possible if the tape is not involved.
- The LEDs should not be exposed to an environment where high level of moisture or corrosive gases are present.
- Prolonged reverse bias should be avoided, as it could cause metal migration, leading to an increase in leakage current or causing a short circuit.
- Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.
- It is not recommended to assemble LEDs of different color or intensity bins together, as there may be perceivable color or intensity variation. Each bag contains parts from the same bin code. The bin code is printed on the bag's label as below.



Storage Control For SMD Products

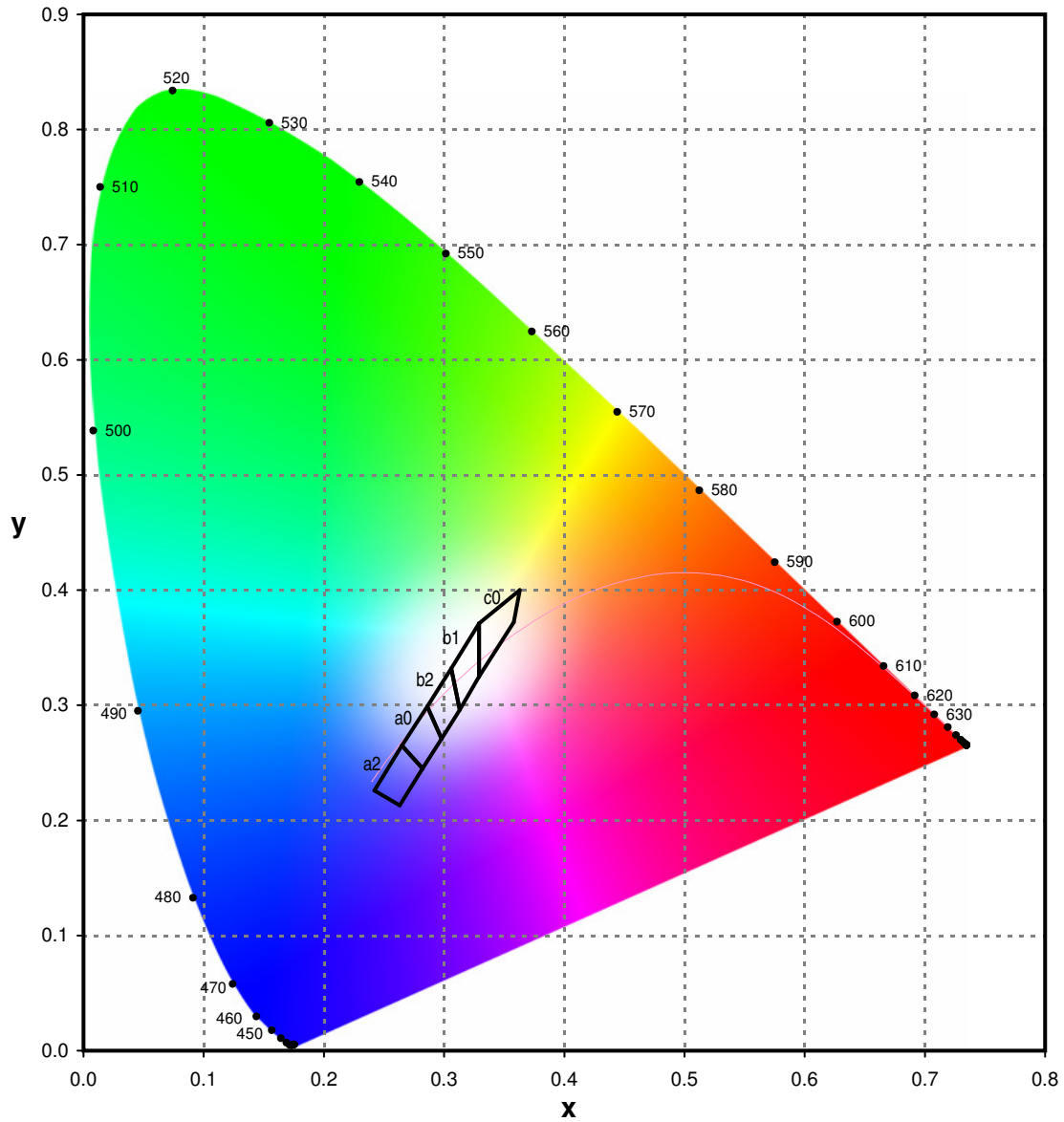
- Before a sealed moisture barrier bag (MBB) is opened, contained LEDs shall be kept in an environment with temperature below 40°C and humidity below 90% RH. MBB shall be kept sealed until LEDs contained in the bag are ready to be used. Once MBB is opened, it shall be stored in an environment with temperature range of 5°C~30°C and humidity below 60% RH.
- Once MBB is opened, all contained LEDs shall complete soldering process within the specified time frame according to the conditions labeled on Kingbright MBB.
- When the 10% spot of a humidity indicator card (HIC) from MBB indicates wet, the contained LEDs shall be baked according to the baking conditions labeled on Kingbright MBB before mounting.

For Through-Hole Products

- Avoid continued exposure to the condensing moisture environment and keep the product away from rapid transitions in ambient temperature.
- LEDs should be stored with temperature $\leq 30^\circ\text{C}$ and relative humidity $< 60\%$.
- Product in the original sealed package is recommended to be assembled within 72 hours of opening. Product in opened package for more than a week should be baked for 30 (+10/-0) hours at 85 ~ 100°C.
- The LED leadframe surface is plated with silver. When the leadframe is stored under high-humidity environments, or exposed to certain chemical elements or gases, the surface may become discolored. Please maintain the cleanliness of the storage environment.
- If the storage conditions do not meet specification standards, the component pins may become oxidized requiring re-plating and re-sorting before use. Suggest customers consume LEDs as soon as possible, and avoid long-term storage of large inventories.

CIE CHROMATICITY DIAGRAM

White Bin Code



Bin	x	y
a2	0.263	0.213
	0.282	0.245
	0.265	0.265
	0.242	0.226
CCT: 15000K~		

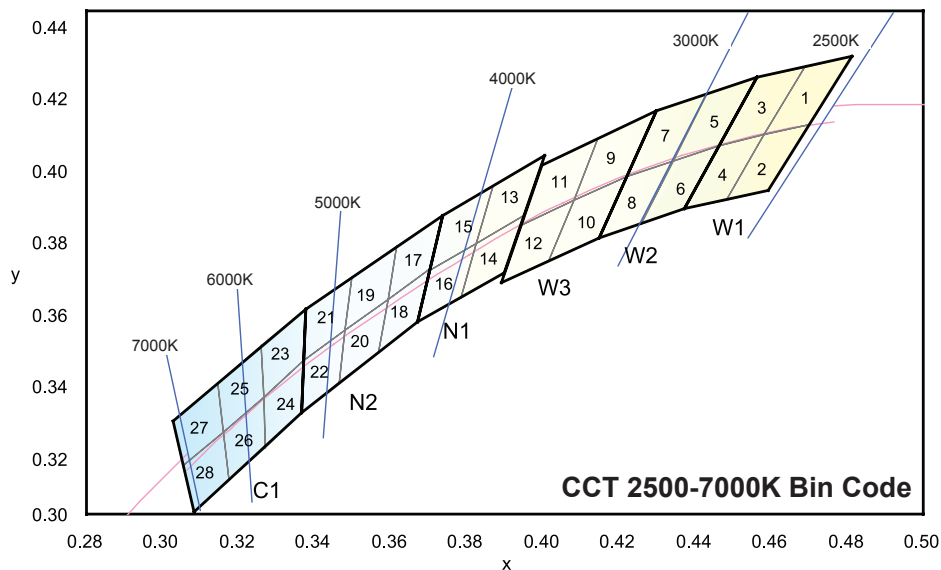
Bin	x	y
a0	0.282	0.245
	0.298	0.271
	0.286	0.299
	0.265	0.265
CCT: 9000~15000K		

Bin	x	y
b2	0.298	0.271
	0.313	0.296
	0.306	0.332
	0.286	0.299
CCT: 6800~9000K		

Bin	x	y
b1	0.313	0.296
	0.329	0.325
	0.329	0.371
	0.306	0.332
CCT: 5600~6800K		

Bin	x	y
c0	0.329	0.325
	0.358	0.372
	0.363	0.400
	0.329	0.371
CCT: 4600~5600K		

CIE CHROMATICITY DIAGRAM



Group	Chromaticity Regions	CCT (K)		
		Min.	Typ.	Max.
W1	1, 2, 3, 4	2580	2700	2870
W2	5, 6, 7, 8	2870	3000	3220
W3	9, 10, 11, 12	3220	3500	3710

Group	Chromaticity Regions	CCT (K)		
		Min.	Typ.	Max.
N1	13, 14, 15, 16	3710	4000	4260
N2	17, 18, 19, 20, 21, 22	4260	4700	5310
C1	23, 24, 25, 26, 27, 28	5310	6000	7040

	x	y		x	y		x	y
1	0.4582	0.4099	8	0.4147	0.3814	15	0.3702	0.3722
	0.4687	0.4289		0.4221	0.3984		0.3736	0.3874
	0.4813	0.4319		0.4342	0.4028		0.3869	0.3958
	0.4700	0.4126		0.4259	0.3853		0.3825	0.3798
2	0.4483	0.3919	9	0.4080	0.3916	16	0.3670	0.3578
	0.4582	0.4099		0.4146	0.4089		0.3702	0.3722
	0.4700	0.4126		0.4299	0.4165		0.3825	0.3798
	0.4593	0.3944		0.4221	0.3984		0.3783	0.3646
3	0.4465	0.4071	10	0.4017	0.3751	17	0.3736	0.3874
	0.4562	0.4260		0.4080	0.3916		0.3616	0.3788
	0.4687	0.4289		0.4221	0.3984		0.3592	0.3641
	0.4582	0.4099		0.4147	0.3814		0.3703	0.3726
4	0.4373	0.3893	11	0.3941	0.3848	18	0.3703	0.3726
	0.4465	0.4071		0.3996	0.4015		0.3592	0.3641
	0.4582	0.4099		0.4146	0.4089		0.3568	0.3495
	0.4483	0.3919		0.4080	0.3916		0.3670	0.3578
5	0.4342	0.4028	12	0.3889	0.3690	19	0.3616	0.3788
	0.4430	0.4212		0.3941	0.3848		0.3496	0.3702
	0.4562	0.4260		0.4080	0.3916		0.3481	0.3557
	0.4465	0.4071		0.4017	0.3751		0.3592	0.3641
6	0.4259	0.3853	13	0.3825	0.3798	20	0.3592	0.3641
	0.4342	0.4028		0.3869	0.3958		0.3481	0.3557
	0.4465	0.4071		0.4006	0.4044		0.3466	0.3411
	0.4373	0.3893		0.3950	0.3875		0.3568	0.3495
7	0.4221	0.3984	14	0.3783	0.3646	21	0.3496	0.3702
	0.4299	0.4165		0.3825	0.3798		0.3376	0.3616
	0.4430	0.4212		0.3950	0.3875		0.3370	0.3472
	0.4342	0.4028		0.3898	0.3716		0.3481	0.3557

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