

# *Brighter World Brighter Life*

更明亮的世界·更明亮的人生

## Optoelectronics SMD CHIP LED



Provide LED Total Solution Since 1981

提供LED全方面的解決方案



佰鴻工業股份有限公司  
Bright Led Electronics Corp.



# About Bright Led Group

佰鴻工業成立於1981年，是一家具有三十多年生產銷售經驗的LED光電元件專業製造廠商，也是台灣知名的LED股票上市公司。

集團營運總部位在台灣新北市，在香港、韓國首爾、美國加州等國外地區分別成立銷售分公司，同時也在世界各地建立了經銷代理網絡服務全球客戶，為了加強中國大陸市場的拓展，在中國地區成立了許多銷售通路及辦事處，進行LED照明光源及燈具的推廣及客戶服務。

主要生產基地在中國廣東東莞，主力產品包括數碼管、直插發光二極體、貼片發光二級體（SMD）、大功率LED、COB、紅外線產品及LED車燈、路燈、隧道燈、天井燈、投射燈、燈泡、燈管、平板燈、筒燈、號誌燈、全彩看板、植物生長燈等，藉由轉投資的藍寶石廠、LED晶片廠、支架PCB衝壓加工、及塑膠射出...等多家關係企業的垂直整合下，形成LED產業鏈，能提供最佳性價比的產品給客戶。

佰鴻工業擁有光、電、機、熱方面的專業研發團隊，開發LED在照明應用上的先進技術，提供四十多篇國內外專利申請。未來佰鴻工業將續以LED專業製造廠的角色，不斷地提供人類更節能、更環保、更變化的新世代照明。



Bright LED, founded in 1981, is a professional LED optoelectronic manufacturer and a well-known publicly listed LED company in Taiwan market for more than 30 years.

Bright LED group headquarter locates in New Taipei City, Taiwan. We have several sales branches in China, Hong Kong, Japan, Korea, Germany, Singapore, US and other countries as well. Meanwhile, Bright LED also establishes a long term relationship with distributors/dealers around the world to serve global customers with high efficiency and best solution.

In order to strengthen the expansion in China market, we also established offices within several districts of China to promote and sell LED products and to provide customer service.

Our main factory locates in China. Our main products include LED digits display, DIP LED, SMD, high-power LED, invisible, as well as, LED automotive lamps and LED lighting products...etc. The Sapphire subsidiary, wafer factory, PCB assembly factory and other subsidiaries within Bright LED group formed our own upper, middle and lower stream of product supply chains and so contribute much reliable and best C/P products to customers.

Bright LED possesses the outstanding R&D team with their professions in lighting, electronic, electric, and heating areas. We constantly develop advanced technologies in LED field and as a result, we now have more than 40 local and international patents. Bright LED, as a role model of professional LED manufacturer, commits to provide better energy-saving, eco-friendly, and more diversified developments of LED in new era.

## BRIEF HISTORY OF BRIGHT LED

- 1981** Company established and started the production of LED Indicator Lamps
- 1990** Established both Dong Guan factory in China and Distribution Center in Hong Kong
- 1995** Developed and started SMT LED Production;  
Established U.S. SALES OFFICE in L.A. California.
- 1999** ISO-9001 and QS-9000 certified
- 2000** New Dong Guan factory started production
- 2001** Listed at Taiwan OTC
- 2002** Listed at Taiwan stock exchange market.
- 2004** ISO 14001 certified RoHS compliance
- 2005** ISO/TS16949:2002 certified
- 2013** Established Bright Wonder Science & Technology Park
- 2014** Established Henan Jinghong Optoelectronics Technology Co., Ltd
- 2017** IATF16949:2016 certified



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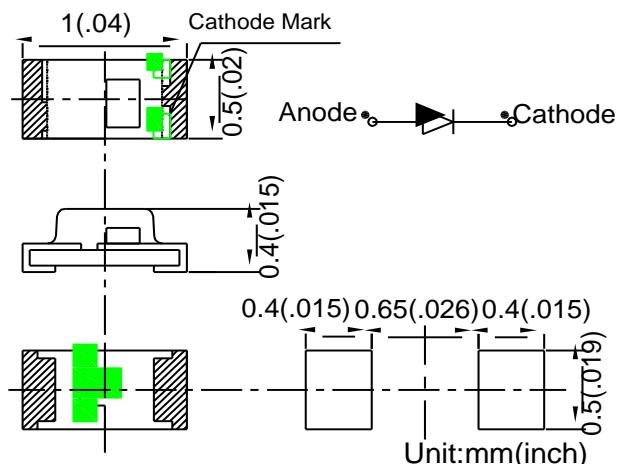
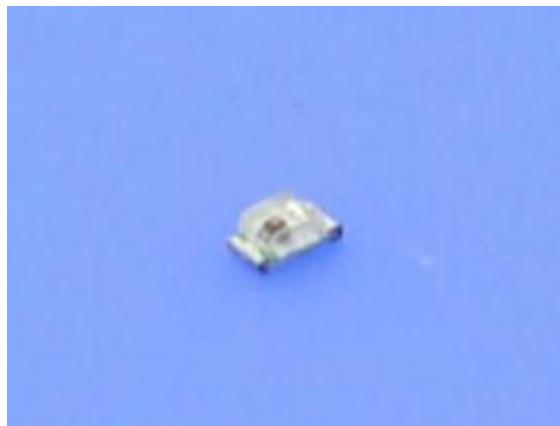
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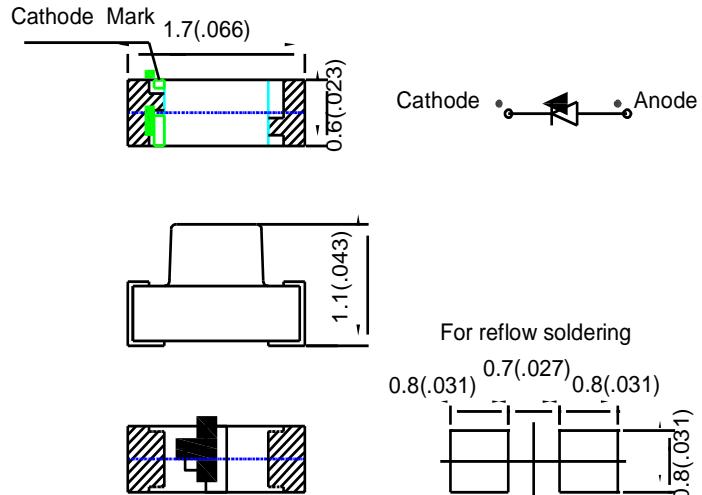
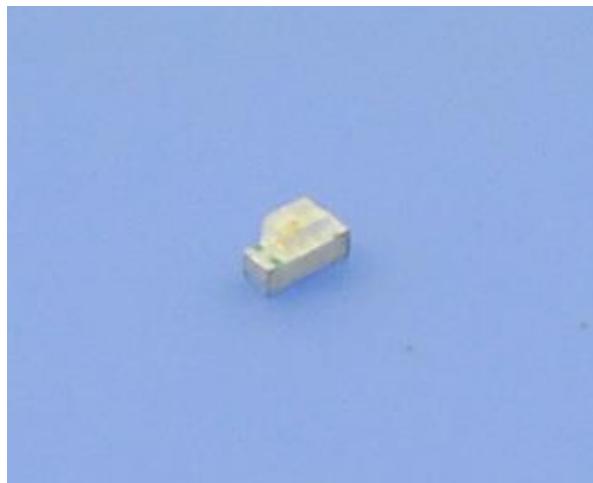
## SMD LED 0402-0.4T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB337A	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK37A	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG837A	Green	520-535	Transparent	3.2	3.6	140	317	120°
BL-HGE37A	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKC37A	Yellow	584-594		2.2	2.6	63	120	
BL-HJC37A	Amber	600-610		2.2	2.6	63	140	
BL-HJE37A	Orange Red	615-625		2.2	2.6	63	100	
BL-HUB37A	Red	620-640		2.2	2.6	28	63	

## SMD LED 0602-1.1T



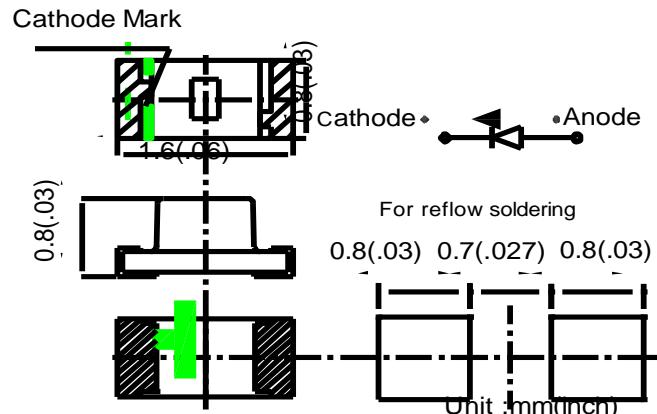
Unit:mm (inch)

Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @If=5mA		IV(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-HZ338E-L8	White	0.31	0.31	Yellow Clear	2.8	3.2	63	140	120°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=5mA		IV(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB538E	Blue	465-475	Transparent	2.8	3.2	28	63	120°
BL-HGK38E	Green	520-535		2.8	3.2	94.0	140.0	
BL-HGK38E-Q	Green	520-535		2.8	3.2	140.0	317.0	

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=20mA		IV(mcd) @If=20mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG838E	Green	520-535	Transparent	2.8	3.2	140	317	120°
BL-HG838E-Q	Green	520-535		2.8	3.2	475	1070	
BL-HGE38E	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKC38E	Yellow	584-594		2.2	2.6	63	140	
BL-HUB38E	Red	620-640		2.2	2.6	28	63	

## SMD LED 0603-0.8T

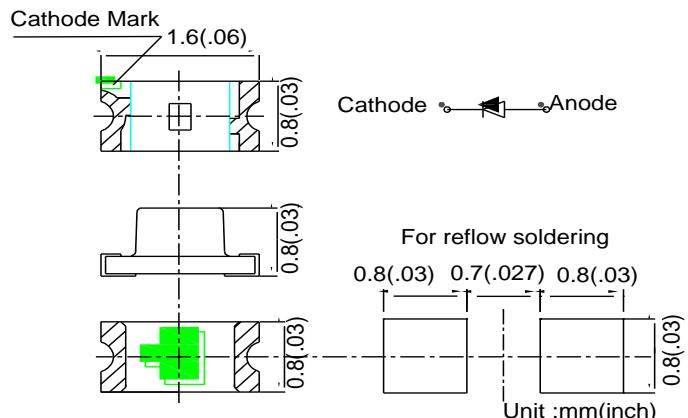


Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =5mA		IV(mcd) @I <sub>f</sub> =5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB36D	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK36D	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =20mA		IV(mcd) @I <sub>f</sub> =20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG836D	Green	520-535	Transparent	3.2	3.6	140	317	120°
BL-HW136D	Green	558-568		2.2	2.6	1.6	3.0	
BL-HGE36D	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HY036D	Yellow	582-592		2.2	2.6	3.7	8.2	
BL-HKC36D	Yellow	584-594		2.2	2.6	63	120	
BL-HJC36D	Amber	600-610		2.2	2.6	63	140	
BL-HJE36D	Orange Red	615-625		2.2	2.6	63	100	
BL-HUB36D	Red	620-640		2.2	2.6	28	63	
BL-HE136D	Red	626-636		2.2	2.6	3.7	18.5	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =50mA		IV(mcd) @I <sub>f</sub> =50mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HO036D	IR	850	Transparent	1.3	1.8	1.83	3.0	120°
BIR-HM136D	IR	940		1.2	1.7	0.92	2.57	

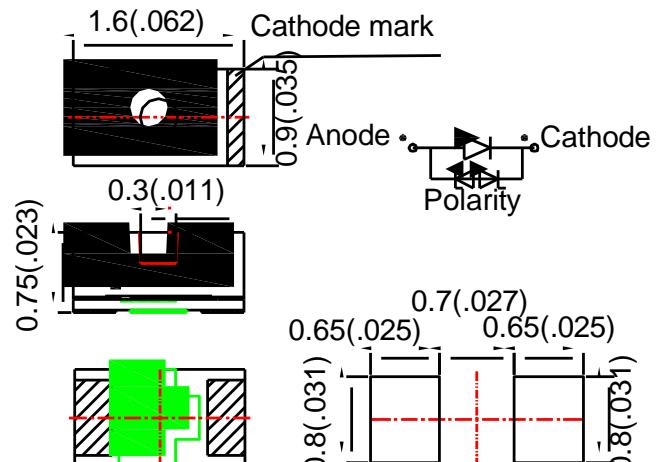
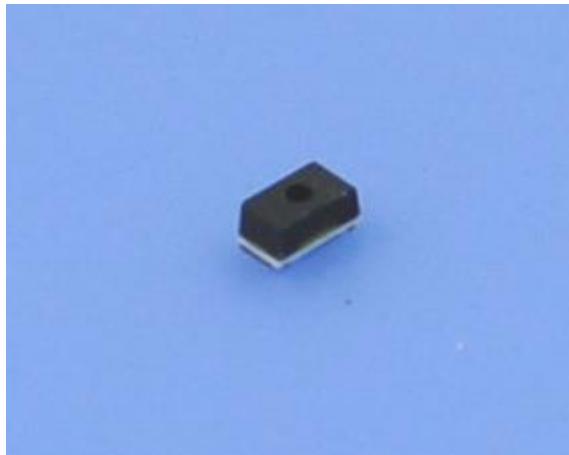
## SMD LED 0603-0.8T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB336R	Blue	460-475	Transparent	2.8	3.2	28	63	120°

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGE36R	Yellow Green	566-576	Transparent	2.2	2.6	18.5	42	120°
BL-HKC36R	Yellow	584-594		2.2	2.6	63	120	
BL-HUB36R	Red	620-640		2.2	2.6	28	63	

## SMD LED 0603-0.75T

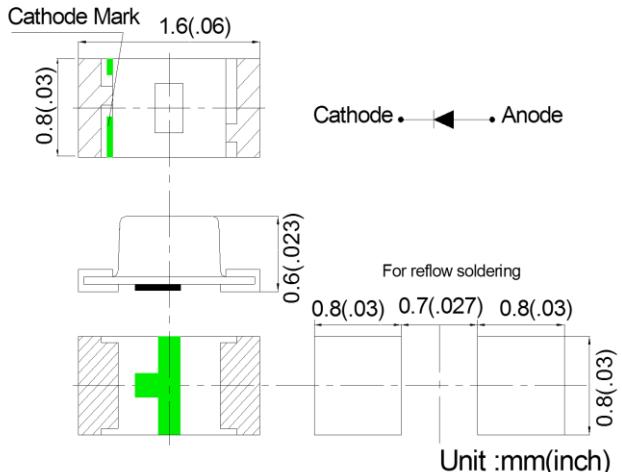
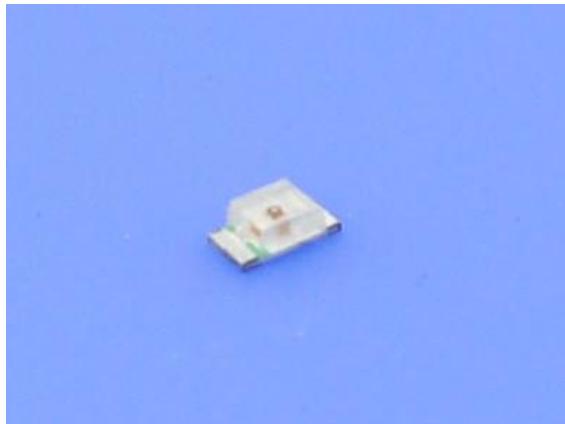


Unit:mm (inch)

Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @If=5mA		IV(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-H1609-W1	White	0.26	0.25	Yellow Resin with Black Cap	2.8	3.2	19	32	50°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=5mA		IV(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-H1609-B1	Blue	465-475	Clear Resin with Black Cap	2.8	3.2	12.3	28	50°
BL-H1609-G1	Green	520-535		2.8	3.2	63	140	
BL-H1609-Y1	Yellow	584-594		2.0	2.4	12.3	25	
BL-H1609-A1	Amber	600-610		1.9	2.3	18.5	42	
BL-H1609-R1	Red	615-625		1.9	2.5	12.3	25	

## SMD LED 0603-0.6T

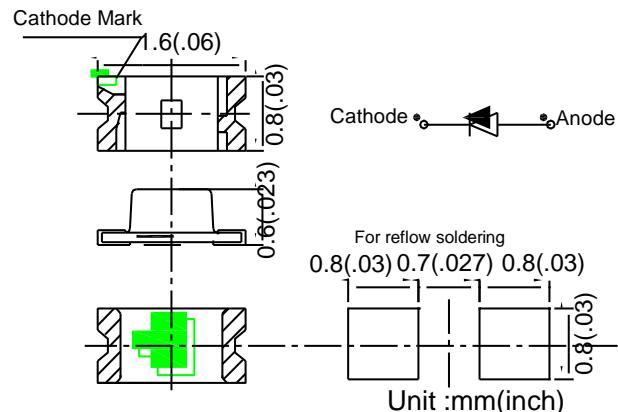
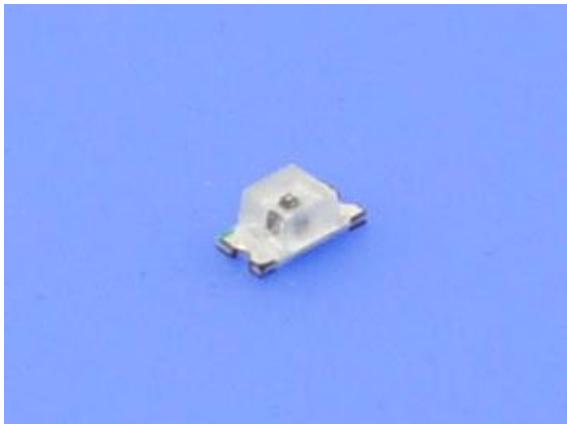


Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=5mA		IV(mcd) @If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB336A	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK36A	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=20mA		IV(mcd) @If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG836A	Green	520-535	Transparent	3.2	3.6	140	317	120°
BL-HGE36A	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKC36A	Yellow	584-594		2.2	2.6	63	120	
BL-HJC36A	Amber	600-610		2.2	2.6	63	140	
BL-HJE36A	Orange Red	615-625		2.2	2.6	63	100	
BL-HUB36A	Red	620-640		2.2	2.6	28	63	
BL-HS136A	Red	638-648		2.2	2.6	5.5	12.3	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=20mA		IV(mcd) @If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HM136A	IR	940	Transparent	1.2	1.7	0.92	2.57	120°

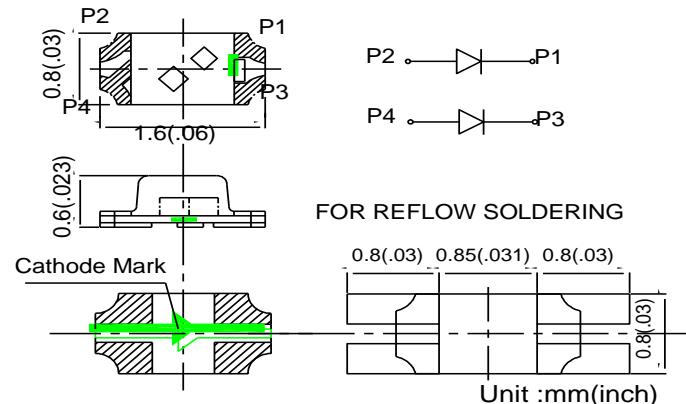
## SMD LED 0603-0.6T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=5\text{mA}$		IV(mcd) @ $I_f=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB36P	Blue	460-475	Transparent	2.8	3.2	28	63	120°

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=20\text{mA}$		IV(mcd) @ $I_f=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGE36P	Yellow Green	566-576	Transparent	2.2	2.6	18.5	42	120°
BL-HKC36P	Yellow	584-594		2.2	2.6	63	120	
BL-HUB36P	Red	620-640		2.2	2.6	28	63	

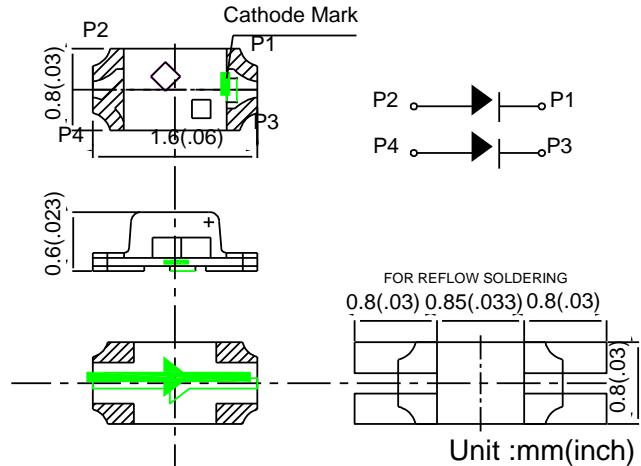
## SMD LED 0603-0.6T(Bi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=5\text{mA}$		IV(mcd) @ $I_f=5\text{mA}$		Viewing Angle 2 $\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HUBB336F	Red	620-640	Transparent	2.0	2.4	8.2	20	120°
	Blue	460-475		2.8	3.2	28	63	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=20\text{mA}$		IV(mcd) @ $I_f=20\text{mA}$		Viewing Angle 2 $\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGEJE36F	Yellow Green	566-576	Transparent	2.2	2.6	18.5	35	120°
	Orange Red	615-625		2.2	2.6	63	120	
BL-HGEKC36F	Yellow Green	566-576	Transparent	2.2	2.6	18.5	35	120°
	Yellow	584-594		2.2	2.6	63	120	
BL-HJDGE36F	Orange Red	620-630	Transparent	2.2	2.6	28	50	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	

## SMD LED 0603-0.6T(Bi-color)

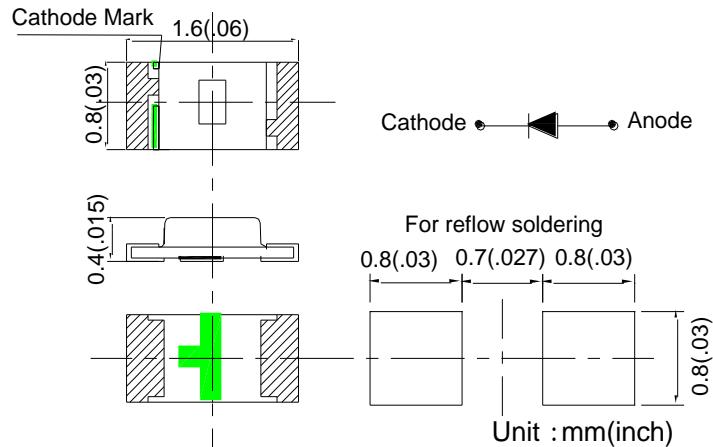
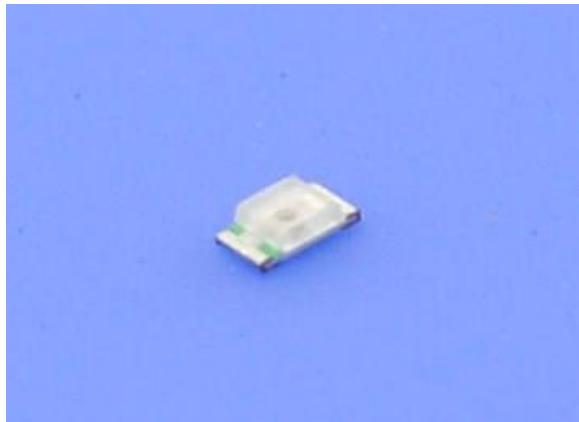


Part No.	Brilliant Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2 \theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB6JC36B	Blue	475-485	Transparent	3.0	3.4	12.3	28	120°
	Amber	600-610		2	2.4	18.5	35	

Part No.	Brilliant Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2 \theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB3UB36B	Blue	460-475	Transparent	2.8	3.2	28	63	120°
	Red	620-640		2.0	2.4	8.2	25	
BL-HGKUB36B	Green	520-535	Transparent	2.8	3.2	63	120	120°
	Red	620-640		2.0	2.4	8.2	25	

Part No.	Brilliant Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2 \theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGEUB36B	Yellow Green	566-576	Transparent	2.2	2.6	18.5	35	120°
	Red	620-640		2.2	2.6	28	63	

## SMD LED 0603-0.4T

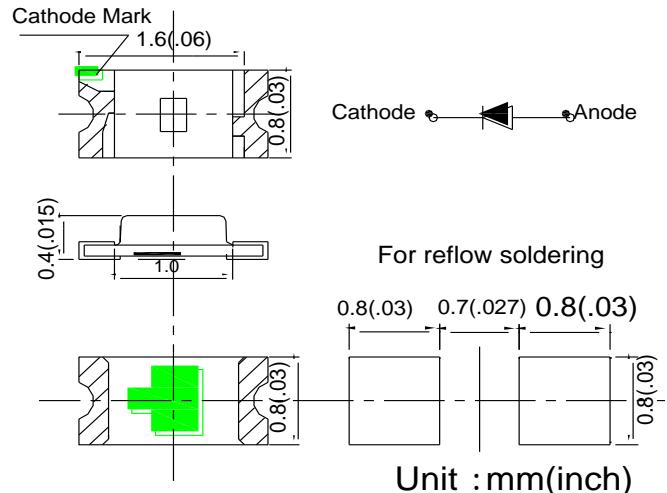


Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @ If=5mA		IV(mcd) @ If=5mA		Viewing Angle 2 θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-HZ336G-L8	White	0.28	0.28	Yellow Clear	2.8	3.2	42	140	120°

Part No.	Emitted Color	λ d (nm)	Lens Appearance	Vf(V) @ If=5mA		IV(mcd) @ If=5mA		Viewing Angle 2 θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB336G	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK36G	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	λ d (nm)	Lens Appearance	Vf(V) @ If=20mA		IV(mcd) @ If=20mA		Viewing Angle 2 θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG836G	Green	520-535	Transparent	3.2	3.6	140	317	120°
BL-HGE36G	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKC36G	Yellow	584-594		2.2	2.6	63	120	
BL-HJC36G	Amber	600-610		2.2	2.6	63	140	
BL-HJE36G	Orange Red	615-625		2.2	2.6	63	100	
BL-HUB36G	Red	620-640		2.2	2.6	28	63	

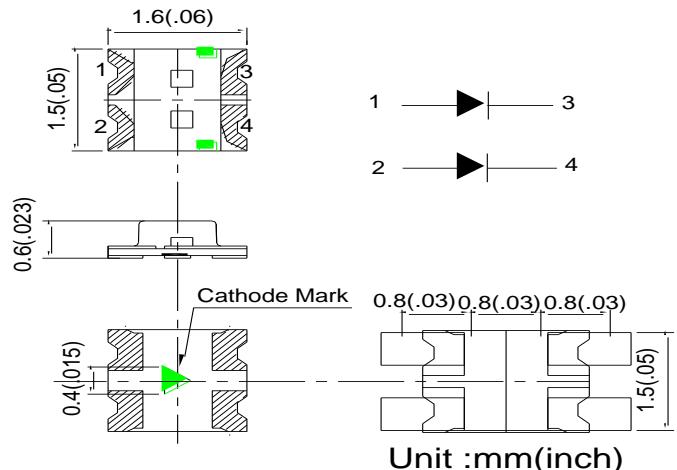
## SMD LED 0603-0.4T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB336N	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK36N	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG836N	Green	520-535	Transparent	3.2	3.6	140	317	120°
BL-HGE36N	Yellow Green	566-576		2.2	2.6	19	42	
BL-HKC36N	Yellow	584-594		2.2	2.6	63	120	
BL-HJC36N	Amber	600-610		2.2	2.6	63	140	
BL-HUB36N	Red	620-640		2.2	2.6	28	63	

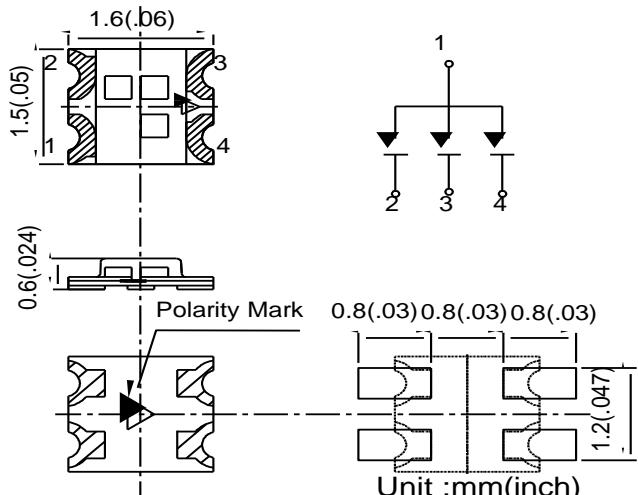
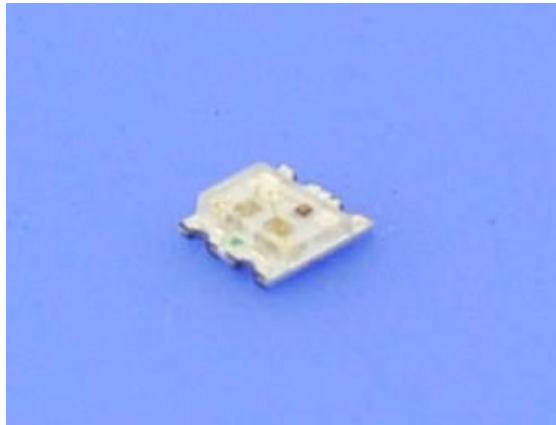
## SMD LED 0605-0.6T(Bi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEB536J	Orange Red	615-625	Transparent	2.0	2.4	18.5	35	120°
	Blue	460-475		2.8	3.2	28	63	
BL-HGKJE36J	Green	520-535		2.8	3.2	63	120	
	Orange Red	615-625		2.0	2.4	18.5	35	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG0E136J	Yellow Green	566-576	Transparent	2.2	2.6	3.7	1.0	120°
	Red	626-636		2.2	2.6	3.7	1.0	
BL-HGEUB36J	Yellow Green	566-576		2.2	2.6	18.5	35	
	Red	620-640		2.2	2.6	28	63	

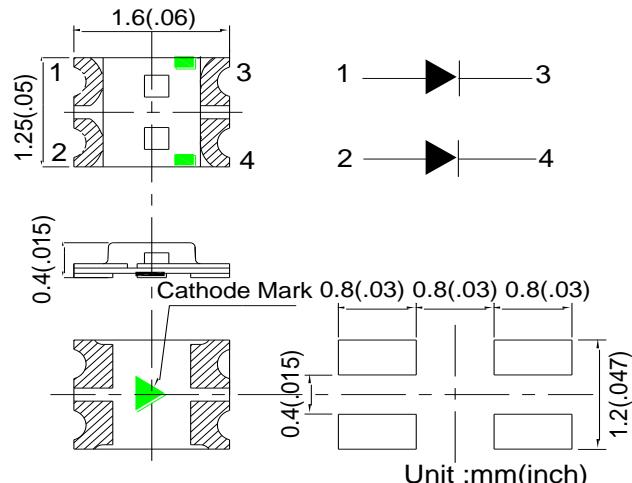
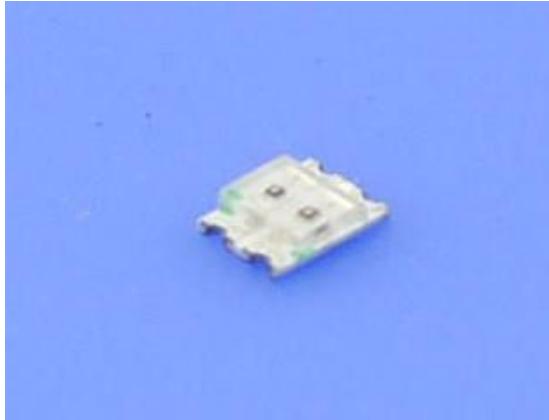
## SMD LED 0605-0.6T(Multi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=5mA		IV(mcd) @ If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEGKB536E	Orange red	615-625	Transparent	2.2	2.6	18.5	35	120°
	Green	520-535		3.2	3.6	63	120	
	Blue	460-475		3.2	3.6	28	42	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		IV(mcd) @ If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEG8BH36E	Orange red	615-625	Transparent	2.2	2.6	63	120	120°
	Green	520-535		3.2	3.6	140	300	
	Blue	460-475		3.2	3.6	63	120	
BL-HJEG8B536E	Orange red	615-625	Transparent	2.2	2.6	63	120	120°
	Green	520-535		3.2	3.6	140	300	
	Blue	460-475		3.2	3.6	42	100	

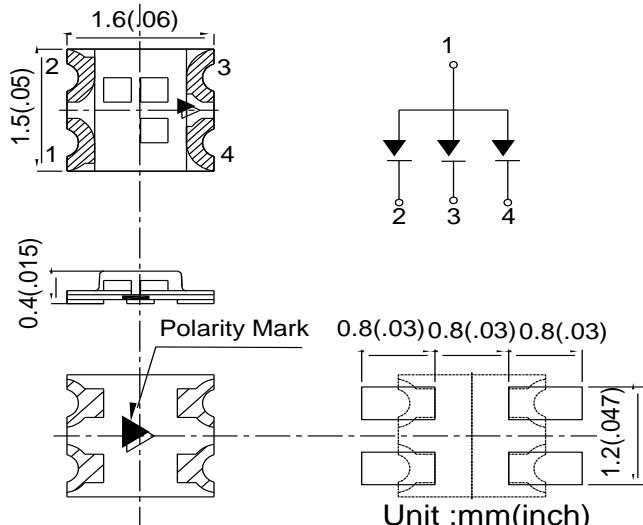
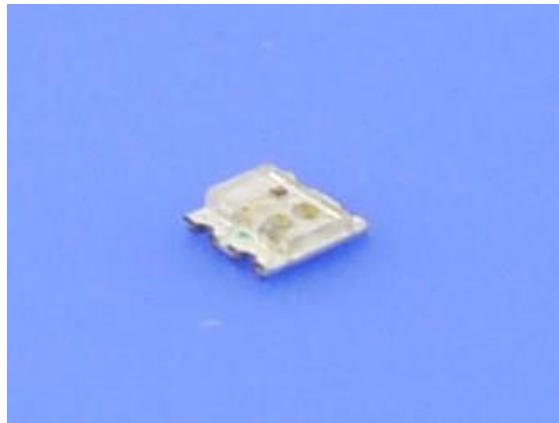
## SMD LED 0605-0.4T(Bi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB5JC36H	Blue	460-475	Transparent	2.8	3.2	28	63	120°
	Amber	600-610		2.0	2.4	18.5	35	
BL-HB5UB36H	Blue	460-475		2.8	3.2	28	63	
	Red	620-640		2.0	2.4	28	63	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEGE36H	Orange Red	615-625	Transparent	2.2	2.6	63	120	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HUBGE36H	Red	620-640		2.2	2.6	28	63	
	Yellow Green	566-576		2.2	2.6	18.5	35	

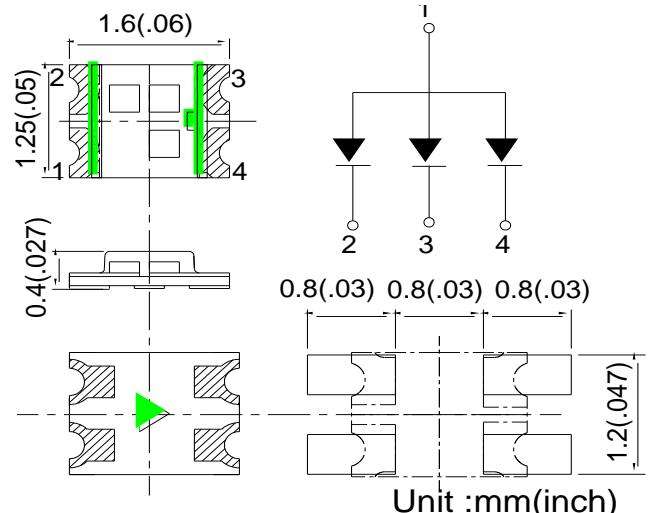
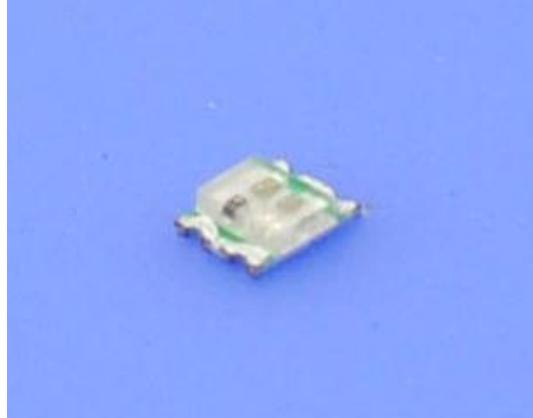
## SMD LED 0605-0.4T(Multi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=5mA		IV(mcd) @ If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEGKB536M	Orange red	615-625	Transparent	2.2	2.6	18.5	35	120°
	Green	520-535		3.2	3.6	63	120	
	Blue	460-475		3.2	3.6	28	42	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		IV(mcd) @ If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEG8BH36M	Orange red	615-625	Transparent	2.2	2.6	63	120	120°
	Green	520-535		3.2	3.6	140	300	
	Blue	460-475		3.2	3.6	63	120	
BL-HJEG8B536M	Orange red	615-625	Transparent	2.2	2.6	63	120	120°
	Green	520-535		3.2	3.6	140	300	
	Blue	460-475		3.2	3.6	42	100	

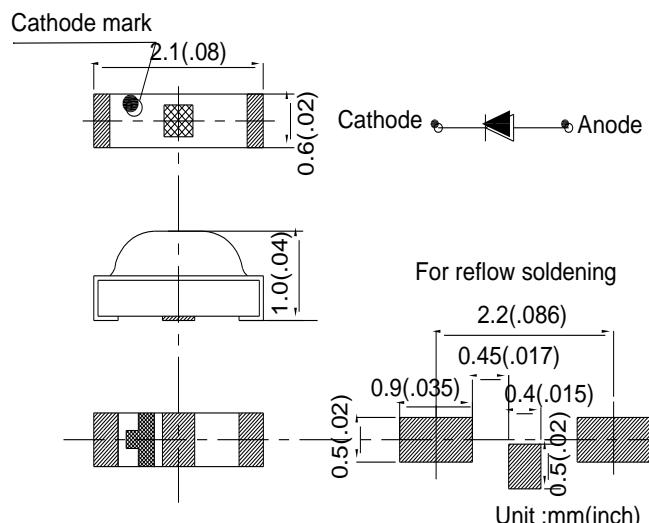
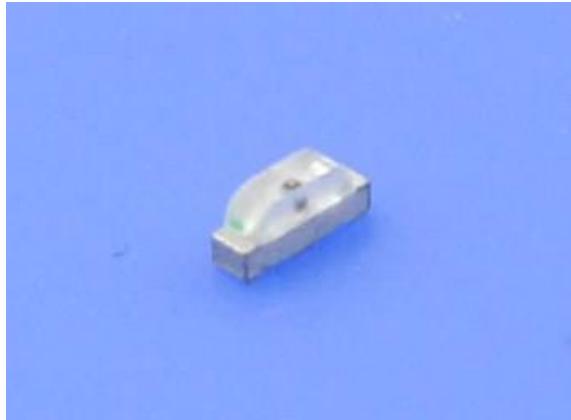
## SMD LED 0605-0.4T(Multi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=5mA		IV(mcd) @ If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEGKBE36T	Orange red	615-625	Transparent	2.0	2.4	28	63	120°
	Green	520-535		2.8	3.2	94	210	
	Blue	460-475		2.8	3.2	28	63	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		IV(mcd) @ If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEG8B536T	Orange red	615-625	Transparent	2.2	2.6	63	120	120°
	Green	520-535		3.2	3.6	140	300	
	Blue	460-475		3.2	3.6	42	100	

## SMD LED 0802-1.0T

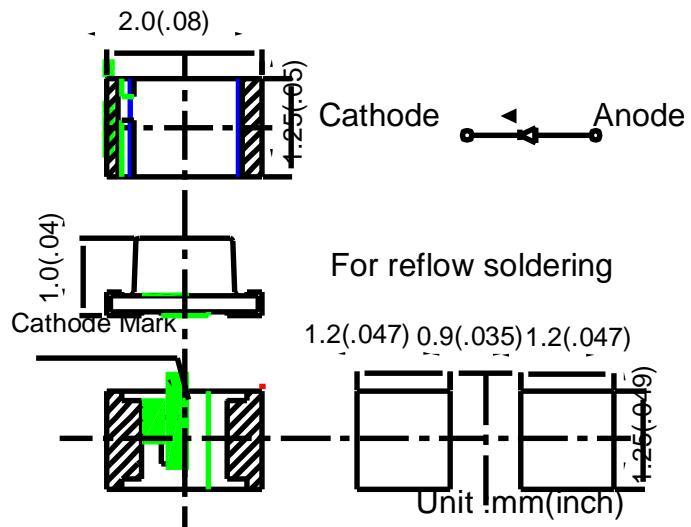
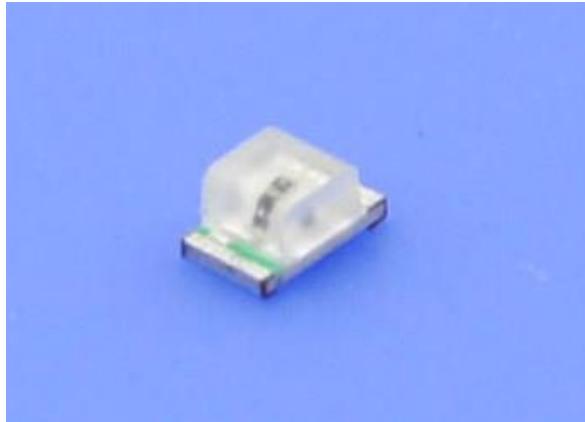


Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @ If=5mA		Iv(mcd) @ If=5mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-HZ334E-L8	White	0.32	0.34	Yellow Clear	2.8	3.2	42	80	130°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @ If=5mA		Iv(mcd) @ If=5mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB334E	Blue	460-475	Transparent	2.8	3.2	28	63	130°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGE34E	Yellow Green	566-576	Transparent	2.2	2.6	18.5	35	130°
BL-HKC34E	Yellow	584-594		2.2	2.6	63	120	
BL-HUB34E	Red	620-640		2.2	2.6	28	42	

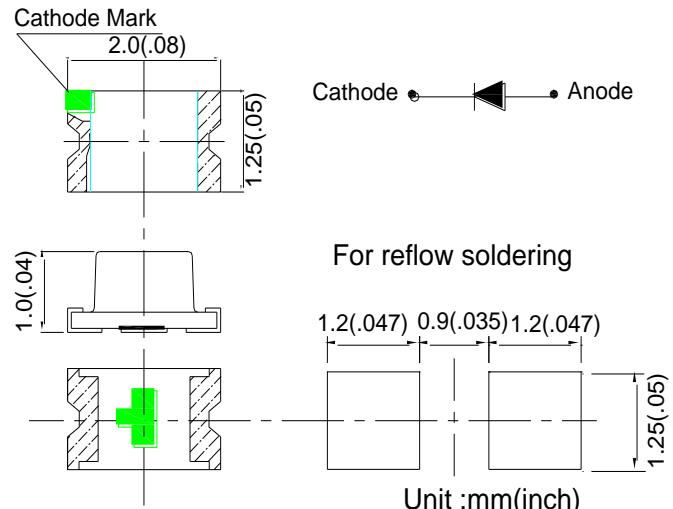
## SMD LED 0805-1.0T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB335A	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK35A	Green	520-535		2.6	3.2	63	140	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG835A	Green	520-535	Transparent	3.2	3.6	140	317	120°
BL-HGE35A	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKC35A	Yellow	584-594		2.2	2.6	63	120	
BL-HJC35A	Amber	600-610		2.2	2.6	63	140	
BL-HJE35A	Orange Red	615-625		2.2	2.6	63	100	
BL-HUB35A	Brilliant Red	620-640		2.2	2.6	28	63	
BL-HS135A	Red	638-648		2.2	2.6	5.5	12.3	

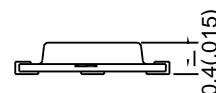
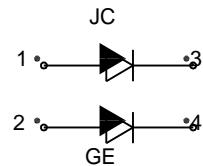
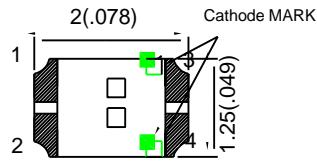
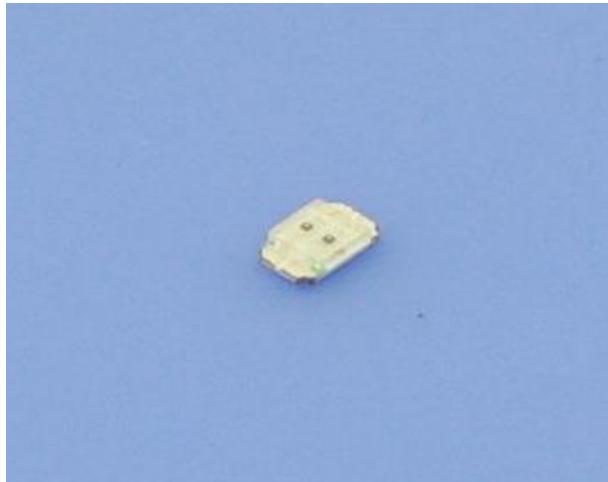
## SMD LED 0805-1.0T



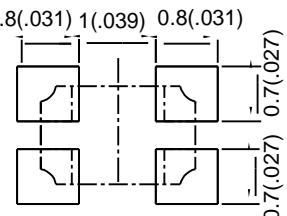
Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=5mA		IV(mcd) @If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB35B	Blue	460-475	Transparent	2.8	3.2	28	63	120°

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=20mA		IV(mcd) @If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGE35B	Yellow Green	566-576	Transparent	2.2	2.6	18.5	42	120°
BL-HKC35B	Super Yellow	584-594		2.2	2.6	63	120	
BL-HUF35B	Red	620-640		2.2	2.6	28	63	

## SMD LED 0805-0.4T



For reflow soldering

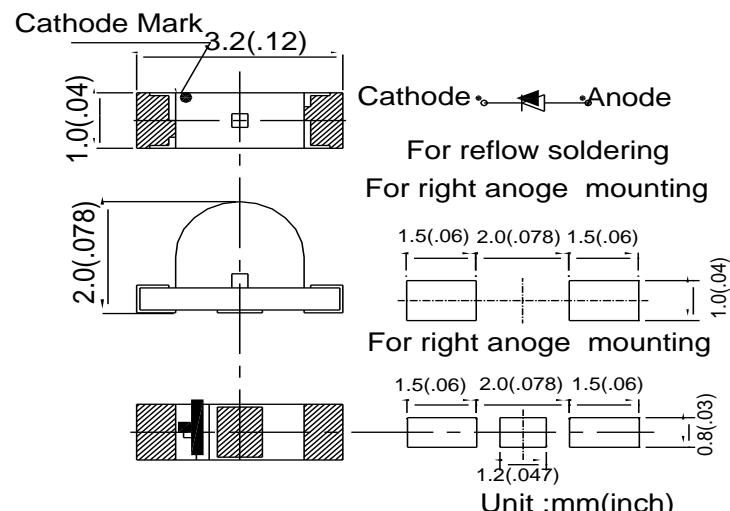
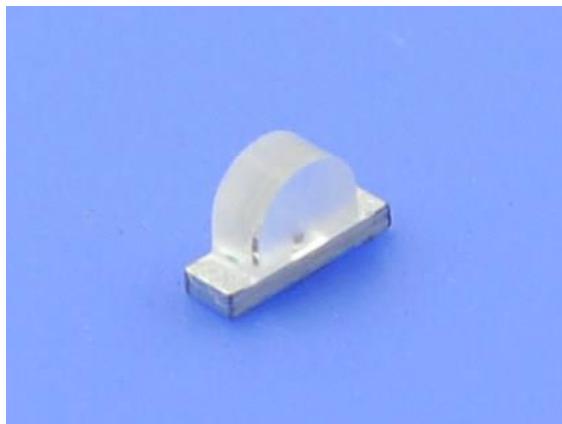


Unit:mm ( inch )

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle 2 $\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGEB335C	Yellow Green	566-576	Transparent	2.0	2.4	5.5	12.3	120°
	Blue	460-475		2.8	3.2	28	63	
BLHUBB535C	Red	620-640		2.0	2.4	8.2	18.5	
	Blue	465-475		2.8	3.2	28	63	

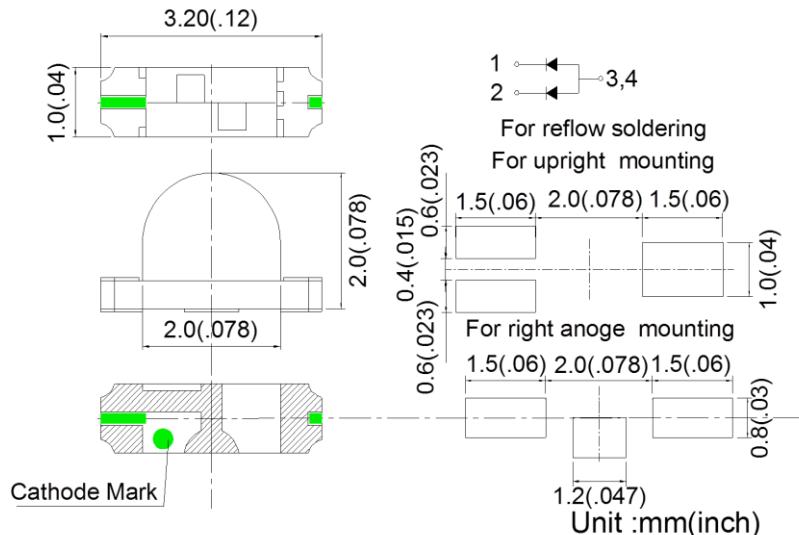
Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle 2 $\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGEUB35C	Yellow Green	566-576	Transparent	2.2	2.6	18.5	42	120°
	Red	620-640		2.2	2.6	28	63	
BL-HKCGE35C	Yellow	584-594	Transparent	2.2	2.6	63	120	120°
	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HJCGE35C	Amber	600-610	Transparent	2.2	2.6	63	120	120°
	Yellow Green	566-576		2.2	2.6	18.5	42	

## SMD LED 1204-2.0T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) $@I_f=20mA$		IV(mcd) $@I_f=20mA$		Viewing Angle 2 $\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB434A	Blue	460-475	Transparent	3.2	3.6	42	80	100°
BL-HGE34A	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HY034A	Yello	584-594		2.2	2.6	3.7	8.2	
BL-HUF34A	Red	620-640		2.2	2.6	28	63	

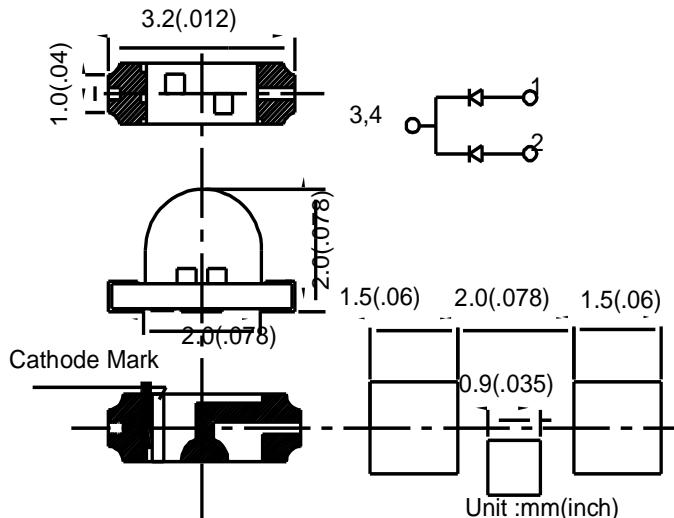
## SMD LED 1204-2.0T(Bi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =5mA		IV(mcd) @I <sub>f</sub> =5mA		Viewing Angle 2 $\theta$ $1/2$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HUBB534B	Red	620-640	Transparent	2.0	2.4	18.5	35	120°
	Blue	460-475		2.8	3.2	28	63	
BL-HUBGK34B	Red	620-640		2.0	2.4	18.5	35	
	Green	520-535		2.8	3.2	63	120	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =20mA		IV(mcd) @I <sub>f</sub> =20mA		Viewing Angle 2 $\theta$ $1/2$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HKBGE34B	Yellow	582-592	Transparent	2.2	2.6	42	94	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HUBGE34B	Red	620-640		2.2	2.6	28	63	
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HE1G034B	Red	626-636		2.2	2.6	3.7	1.0	
	Yellow Green	566-576		2.2	2.6	3.7	1.0	

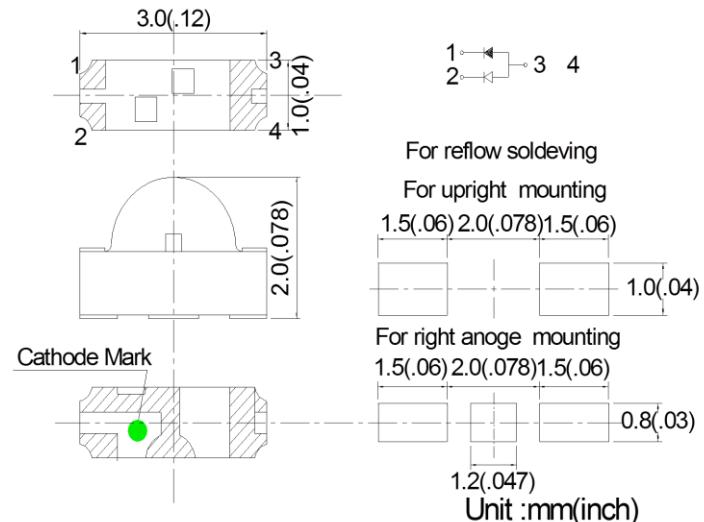
## SMD LED 1204-2.0T(Bi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=5mA		IV(mcd) @If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB5UB34J	Blue	460-475	Transparent	3.2	3.6	63	120	120°
	Red	620-640		2.2	2.6	28	63	

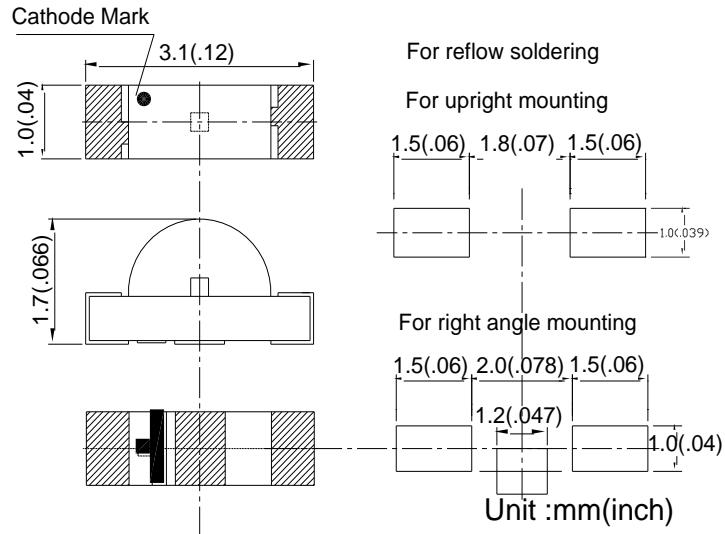
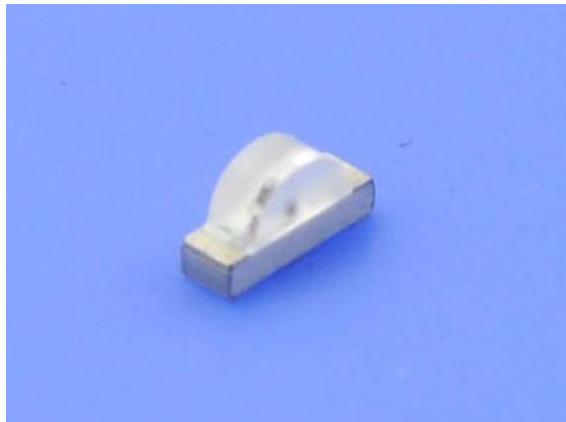
Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=20mA		IV(mcd) @If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HUBG834J	Red	620-640	Transparent	2.2	2.6	42	94	120°
	Green	520-535		3.2	3.6	140	317	

## SMD LED 1204-2.0T(Bi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20mA$		IV(mcd) @ $I_F=20mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HKBGE34H	Yellow	582-592	Transparent	2.2	2.6	42	94	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HUBGE34H	Red	620-640	Transparent	2.2	2.6	28	63	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HUB34H	Red	620-640		2.2	2.6	28	63	

## SMD LED 1204-1.7T

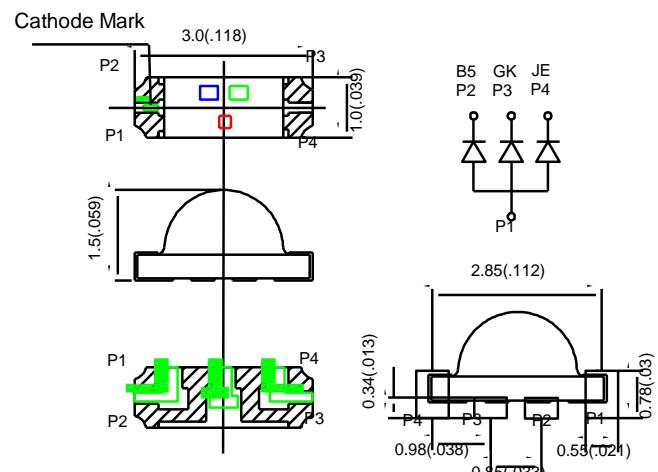


Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @I <sub>F</sub> =20mA		IV(mcd) @I <sub>F</sub> =20mA		Viewing Angle 2 θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-HZD34C-L21	White	0.3	0.28	Yellow Clear	3.2	3.6	210	400	105°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @I <sub>F</sub> =5mA		IV(mcd) @I <sub>F</sub> =5mA		Viewing Angle 2 θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB334C	Blue	460-475	Transparent	2.8	3.2	28	63	105°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @I <sub>F</sub> =20mA		IV(mcd) @I <sub>F</sub> =20mA		Viewing Angle 2 θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HG034C	Yellow Green	566-576	Transparent	2.2	2.6	3.7	8.2	105°
BL-HGE34C	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HKC34C	Yellow	584-594		2.2	2.6	63	120	
BL-HY034C	Yellow	584-594		2.2	2.6	3.7	8.2	
BL-HJB34C	Orange	610-620		2.2	2.6	42	80	
BL-HUB34C	Red	620-640		2.2	2.6	42	80	

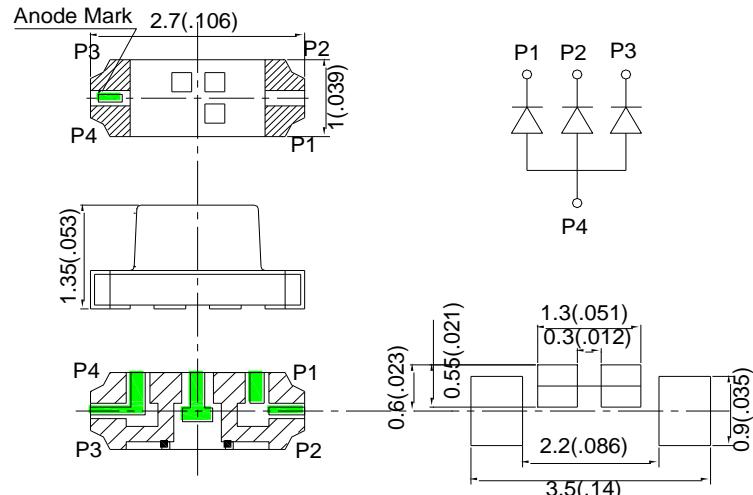
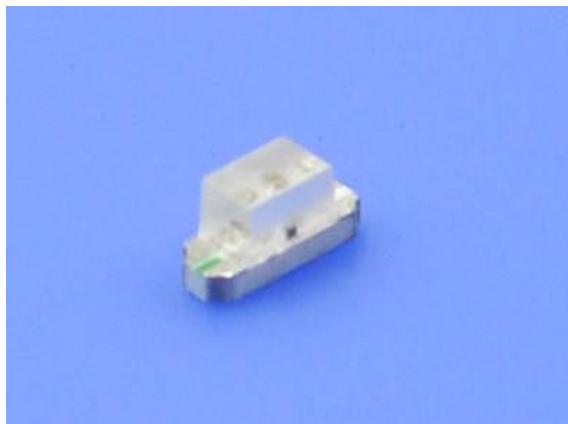
## SMD LED 1204-1.5T



Unit:mm (inch)

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=5mA		IV(mcd) @ If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEGKB534R	Orange red	615-625	Transparent	2.0	2.4	18.5	42	120°
	Green	520-535		2.8	3.2	94	317	
	Blue	465-475		2.8	3.2	28	63	
BL-HUBB534R	Red	620-640		2.0	2.4	18.5	42	
	Blue	465-475		2.8	3.2	28	63	

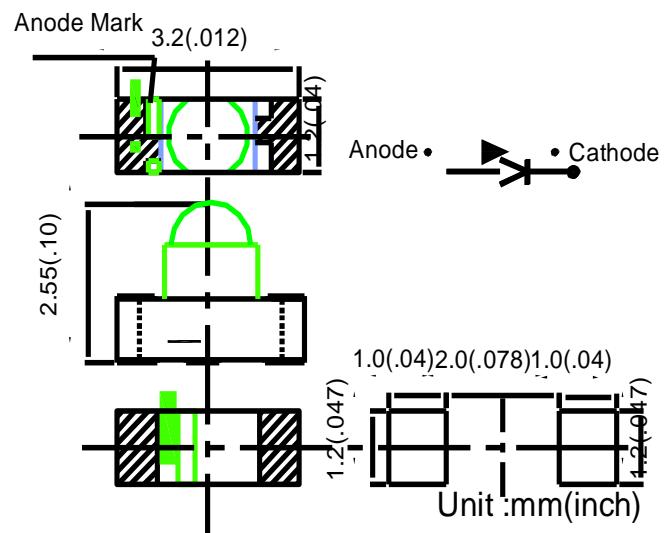
## SMD LED 1204-1.35T(Multi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20mA$		IV(mcd) @ $I_F=20mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJ7G6BH34S	Orange Red	620-630	Transparent	2.0	2.4	94	210	120°
	Green	515-530		3.2	3.6	317	475	
	Blue	460-475		3.2	3.6	42	140	
BL-HJEG6B534S	Orange red	620-635	Transparent	2.2	2.6	63	120	120°
	Green	520-540		3.2	3.6	317	475	
	Blue	460-475		3.2	3.6	94	210	
BL-HUBGE34S	Red	620-640	Transparent	2.2	2.6	28	42	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	

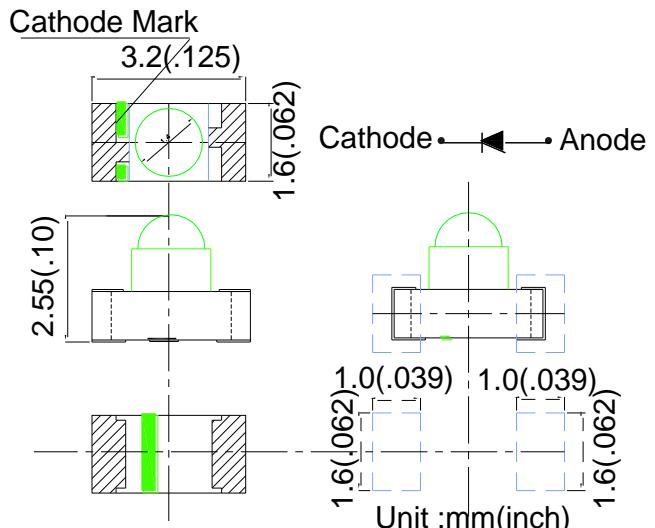
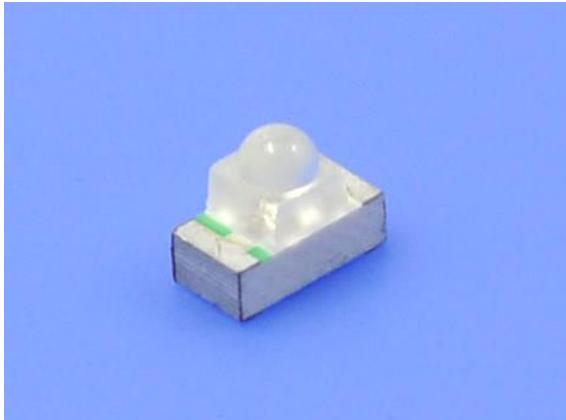
Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5mA$		IV(mcd) @ $I_F=5mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJEG6B534S	Orange red	620-635	Transparent	2.0	2.4	18.5	35	120°
	Green	520-540		2.8	3.2	63	120	
	Blue	460-475		2.8	3.2	28	63	

## SMD LED 1206-2.55T



Part No.	Emitted Color	$\lambda_p$ (nm)	Lens Appearance	Vf(V) @ If=50mA		Power(mw/sr) @ If=50mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HMC33K	IR	940	Transparent	1.6	1.8	19.42	38.08	30°

## SMD LED 1206-2.55T

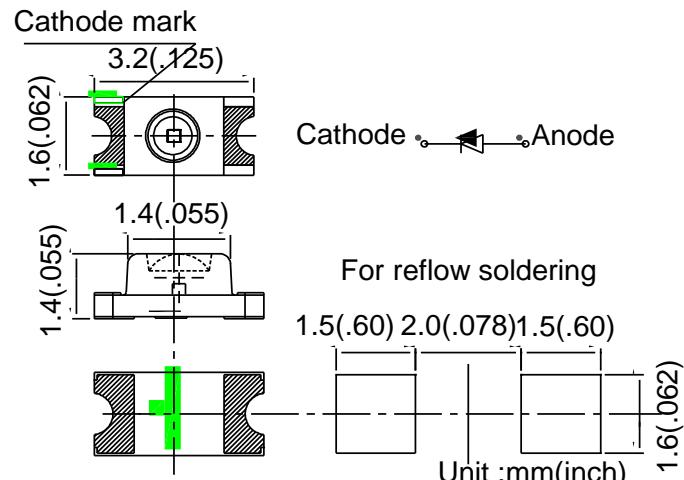


Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB33J	Blue	460-475	Transparent	2.8	3.2	140	317	30°

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=20mA		Iv(mcd) @If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGE33J	Yellow Green	566-576	Transparent	2.2	2.6	94	210	30°
BL-HJC33J	Amber	600-610		2.2	2.6	210	400	
BL-HUB33J	Red	620-640		2.2	2.6	475	1070	

Part No.	Emitted Color	$\lambda$ p(nm)	Lens Appearance	Vf(V) @If=50mA		Power(mw/sr) @If=50mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HM133J	IR	940	Transparent	1.2	1.8	3.6	7.07	30°
BIR-HM733J	IR	940		1.3	1.8	5.05	9.9	
BIR-HMD33J	IR	940		1.3	1.8	9.9	19.42	

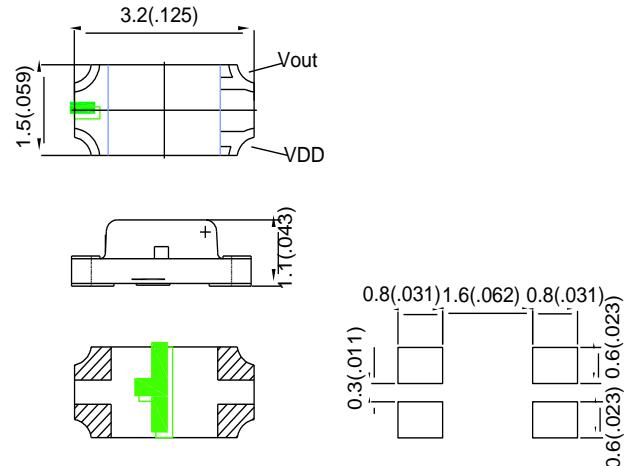
## SMD LED 1206-1.4T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20mA$		Iv(mcd) @ $I_F=20mA$		Viewing Angle 2 $\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB433A	Blue	460-475	Transparent	3.2	3.6	94	210	60°
BL-HX133A	Green	566-576		2.2	2.6	18.5	35	
BL-HGE33A	Yellow Green	566-576		2.2	2.6	42	94	
BL-HY033A	Yellow	584-594		2.2	2.6	8.2	18.5	
BL-HKD33A	Yellow	588-598		2.2	2.6	94	210	
BL-HJE33A	Orange Red	615-625		2.2	2.6	210	475	
BL-HUB33A	Red	620-640		2.2	2.6	63	140	
BL-HS133A	Red	638-648		2.2	2.6	12.3	28	

Part No.	Emitted Color	$\lambda$ p(nm)	Lens Appearance	Vf(V) @ $I_F=50mA$		Power(mw/sr) @ $I_F=50mA$		Viewing Angle 2 $\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HM133A	IR	940	Transparent	1.2	1.8	2.57	7.07	60°

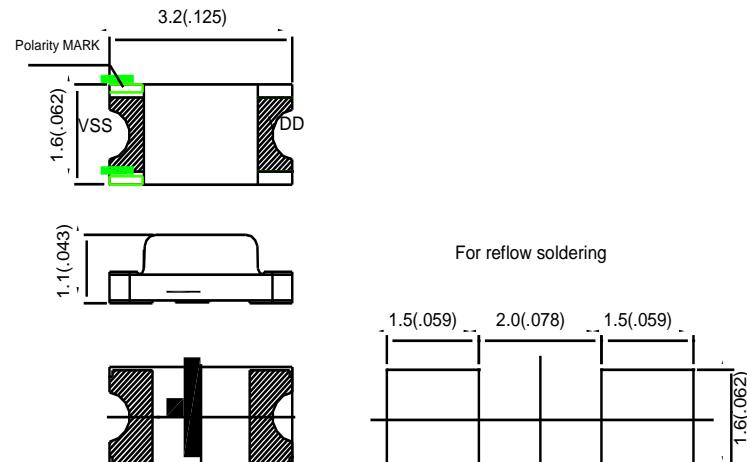
## SMD LED 1.1T



Unit:mm ( inch )

Part Number	Wavelength λ P	Lens Appearance	Light current(uA)@ Ev=100Lx VDD=3.0V	Supply Voltage(V)	Viewing Angle 2 θ 1/2
			Typ.		
BL-HALS1206	550(400-700)	Transparent	56	1.5-5.5	120°

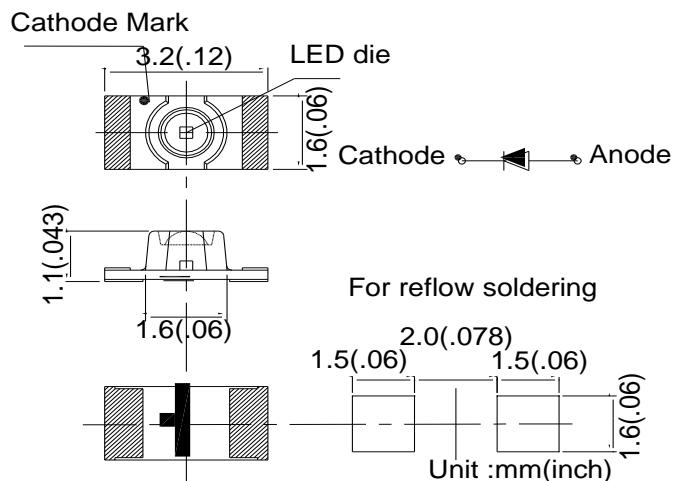
## SMD LED 1.1T



Unit:mm ( inch )

Part Number	Wavelength $\lambda$ P	Lens Appearance	Light current( $\mu$ A)@ Ev=100Lx VDD=3.0V	Supply Voltage(V)	Viewing Angle 2θ 1/2
			Typ.		
BL-HALSQ3	550(400-700)	Transparent	140	1.5-5.5	120°

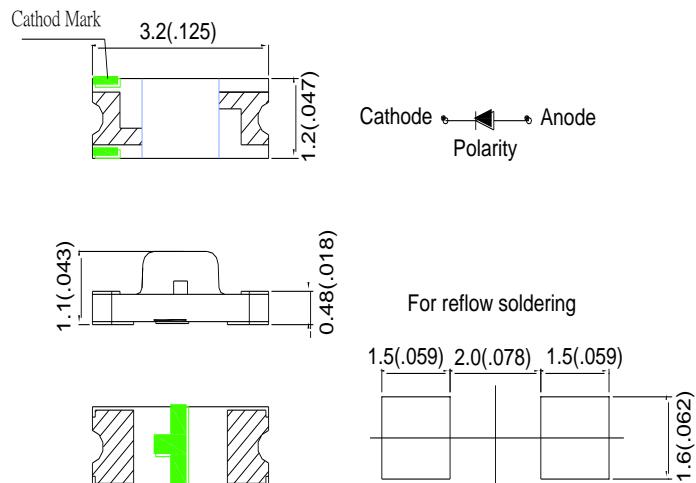
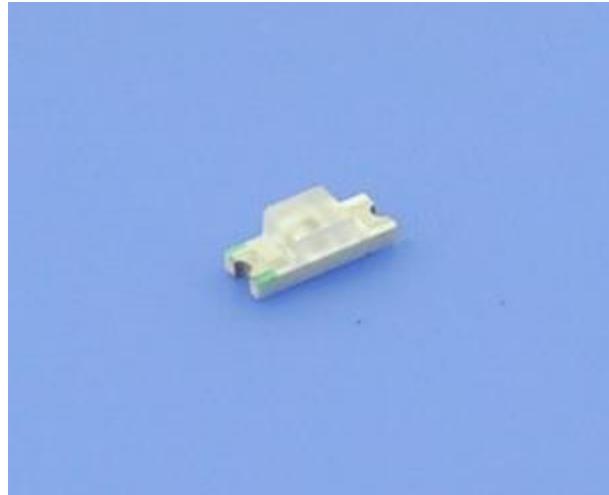
## SMD LED 1206-1.1T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=20mA$		Iv(mcd) @ $I_f=20mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB433C	Blue	460-475	Transparent	3.2	3.6	94	210	60°
BL-HGE33C	Yellow Green	566-576		2.2	2.6	42	94	
BL-HKC33C	Yellow	588-598		2.2	2.6	140	317	
BL-HUB33C	Red	620-640		2.2	2.6	94	210	

Part No.	Emitted Color	$\lambda$ p(nm)	Lens Appearance	Vf(V) @ $I_f=50mA$		Power(mw/sr) @ $I_f=50mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HO033C	IR	850	Transparent	1.35	1.7	3.6	8.0	60°

## SMD LED 1206-1.1T



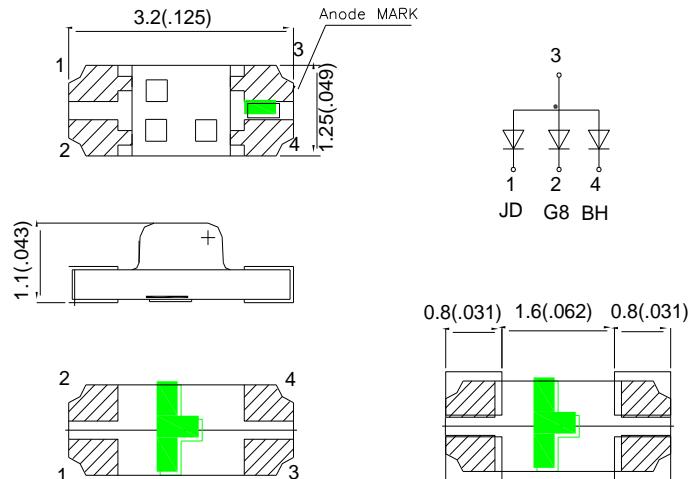
Unit:mm (inch)

Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-HZ333W-L21	White	0.28	0.29	Yellow Clear	2.8	3.2	42	80	120°

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB333W	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK33W	Green	520-535		2.8	3.2	63	140	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @If=20mA		Iv(mcd) @If=20mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HBH33W	Blue	460-475	Transparent	3.2	3.6	63	120	120°
BL-HGE33W	Yellow Green	564-576		2.2	2.6	18.5	42	
BL-HG033W	Yellow Green	566-576		2.2	2.6	3.7	8.2	
BL-HKC33W	Yellow	584-594		2.2	2.6	63	120	
BL-HUF33W	Red	625-635		2.2	2.6	42	94	

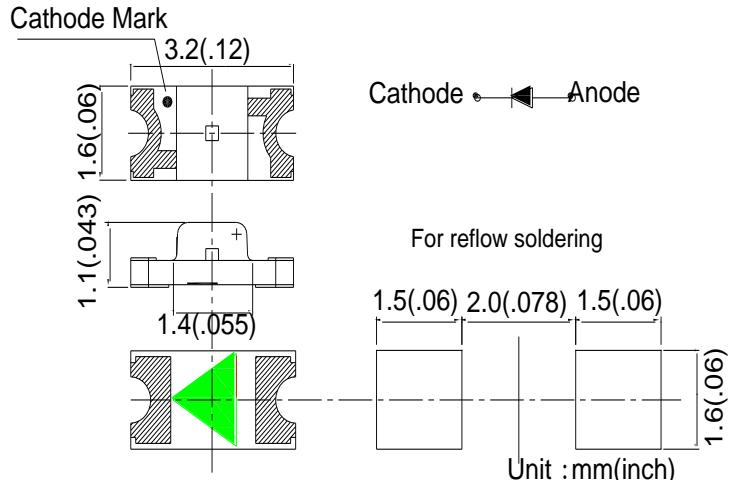
## SMD LED 1206-1.1T



Unit:mm (inch)

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		IV(mcd) @ If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJDG8BH33X-3	Orange Red	620-630	Transparent	2.2	2.6	42	94	120°
	Green	625-635		3.2	3.6	140	317	
	Blue	460-475		3.2	3.6	63	140	

## SMD LED 1206-1.1T

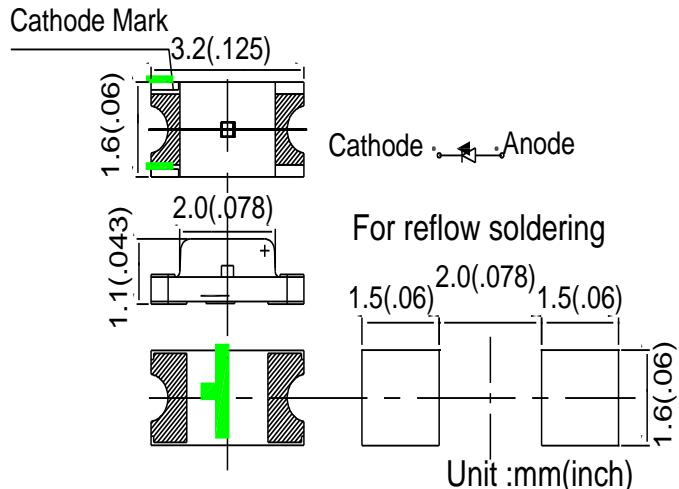
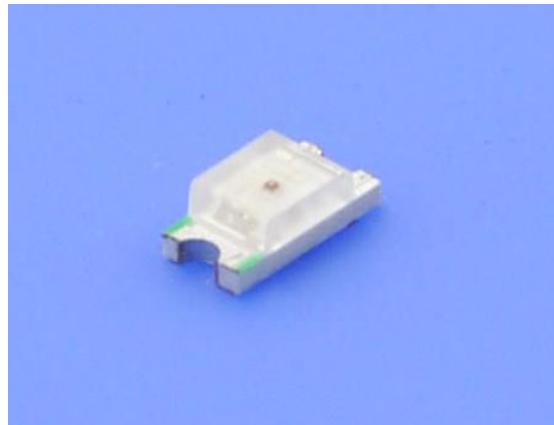


Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=5\text{mA}$		Iv(mcd) @ $I_f=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB33H	Blue	460-475	Transparent	2.8	3.2	28.0	63	120°
BL-HGK33H	Green	520-535		2.8	3.2	63	120	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=20\text{mA}$		Iv(mcd) @ $I_f=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGE33H	Yellow Green	566-576	Transparent	2.2	2.6	18.5	42	120°
BL-HKC33H	Yellow	584-594		2.2	2.6	63	120	
BL-HJC33H	Amber	600-610		2.2	2.6	63	120	
BL-HUB33H	Red	620-640		2.2	2.6	28	63	

Part No.	Emitted Color	$\lambda$ p(nm)	Lens Appearance	Vf(V) @ $I_f=50\text{mA}$		Power(mw/sr) @ $I_f=50\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HM133H	IR	940	Transparent	1.25	1.7	1.3	2.5	120°

## SMD LED 1206-1.1T



Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-HZ333-L21	White	0.28	0.29	Yellow Clear	2.8	3.2	42	80	120°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=20mA		Iv(mcd) @If=20mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HBH33	Blue	460-475	Transparent	3.2	3.6	63	120	120°
BL-HG033	Yellow Green	566-576		2.2	2.6	3.7	8.2	
BL-HUF33	Red	625-635		2.2	2.6	42	94	

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB333	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-HGK33	Green	520-535		2.8	3.2	63	140	

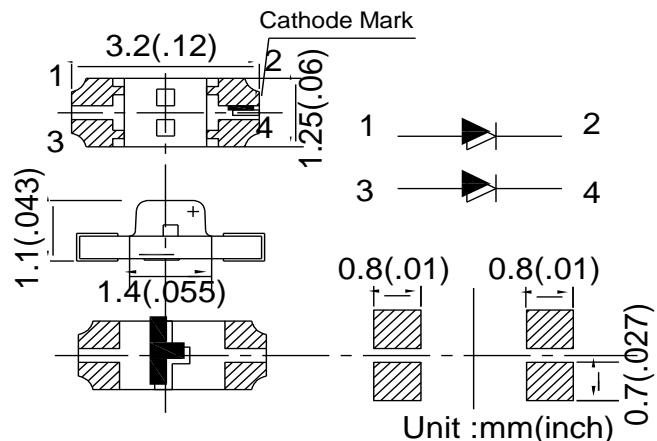
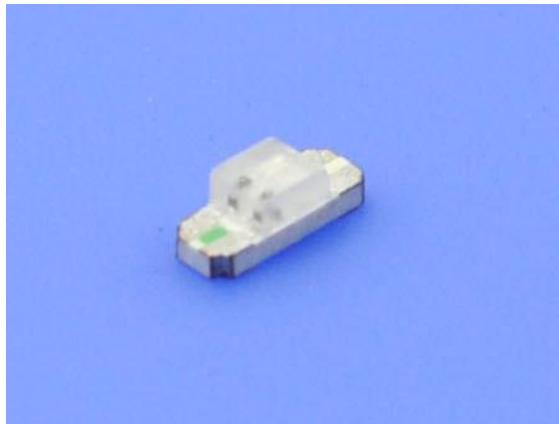
Part No.	Emitted Color	λ p(nm)	Lens Appearance	Vf(V) @If=50mA		Power(mw/sr) @If=50mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BIR-HM133	IR	940	Transparent	1.25	1.7	0.92	1.8	120°

Part No.	Emitted Color	λ p(nm)	Lens Appearance	Vf(V) @If=50mA		IC(mA) @If=50mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BPT-HPG33	PT	940	Transparent	<del>Diagonal</del>		<del>Diagonal</del>		0.8 1.66
BPT-HP233	PT			<del>Diagonal</del>		<del>Diagonal</del>		2.39 4.97 120°



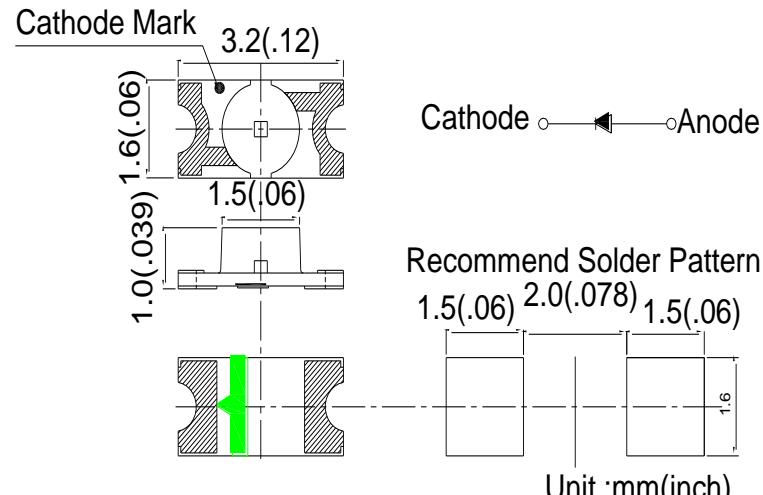
佰鴻工業股份有限公司  
BRIGHT LED ELECTRONICS CORP

## SMD LED 1206-1.1T(Bi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=5mA$		Iv(mcd) @ $I_f=5mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HUBGE33X	Red	620-640	Transparent	2.2	2.6	28	42	100°
	Yellow Green	566-576		2.2	2.6	18.5	35	

## SMD LED 1206-1.0T



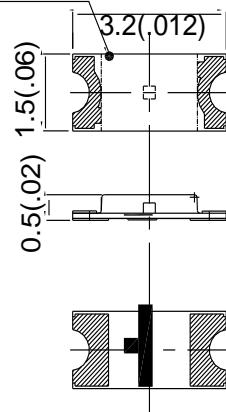
Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-HZX33D-L22	White	0.25	0.26	Yellow Clear	3.0	3.4	140	400	130°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB433D	Blue	460-475	Transparent	3.2	3.6	42	80	130°
BL-HGE33D	Yellow Green	566-576		2.2	2.6	18.5	42	
BL-HKB33D	Yellow	582-592		2.2	2.6	94	210	
BL-HJE33D	Orange Red	615-625		2.2	2.6	63	140	

## SMD LED 1206-0.5T

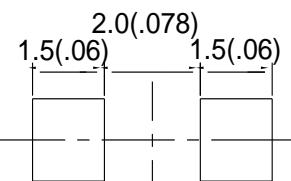


Cathode Mark



Cathode • Anode

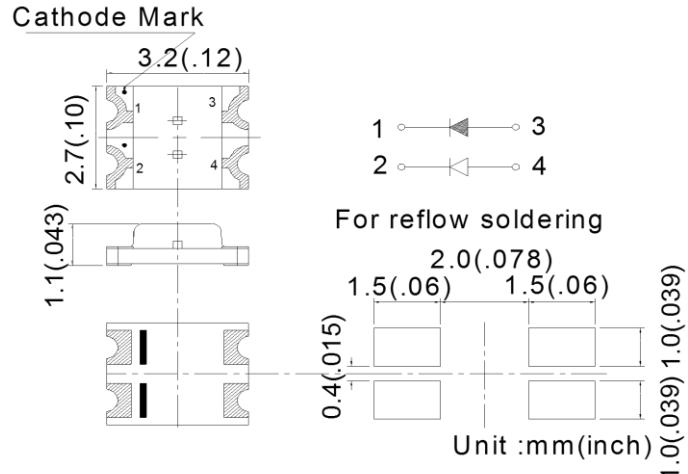
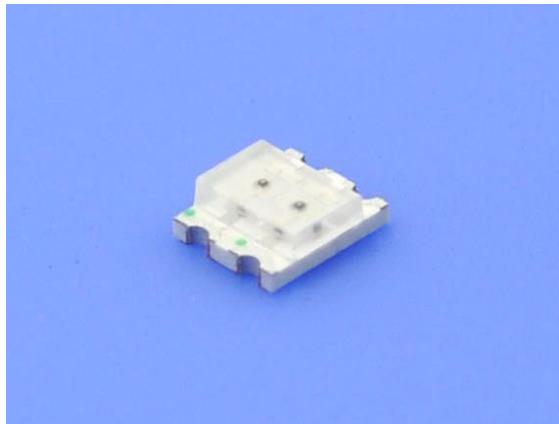
For reflow soldering



Unit : mm(inch)

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=20mA$		Iv(mcd) @ $I_f=20mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HGE33Q	Yellow Green	566-576	Transparent	2.2	2.6	18.5	42	120°
BL-HKB33Q	Yellow	582-592		2.2	2.6	28	63	
BL-HUF33Q	Red	620-640		3.2	3.6	28	63	

## SMD LED 1210-1.1T(Bi-color)

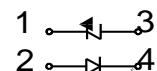
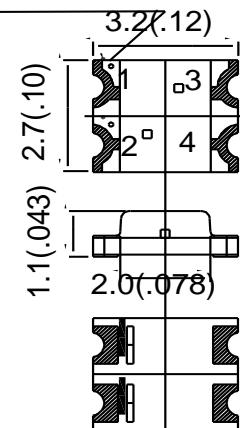


Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @I <sub>f</sub> =20mA		IV(mcd) @I <sub>f</sub> =20mA		Viewing Angle 2 $\theta$ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HKBGE33B	Yellow	582-592	Transparent	2.2	2.6	42	94	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HY0G033B	Yellow	584-594	Transparent	2.2	2.6	3.7	10	
	Yellow Green	566-576		2.2	2.6	3.7	10	
BL-HA1GE33B	Amber	600-615	Transparent	2.2	2.6	3.7	10	
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HUBGE33B	Red	620-640	Transparent	2.2	2.6	42	94	
	Yellow Green	566-576		2.2	2.6	18.5	35	
BL-HE1G033B	Red	626-636	Transparent	2.2	2.6	3.7	10	
	Yellow Green	566-576		2.2	2.6	3.7	10	
BL-HD1X133B	Red	638-648	Transparent	2.2	2.6	12.3	28	
	Green	566-576		2.2	2.6	8.2	20	

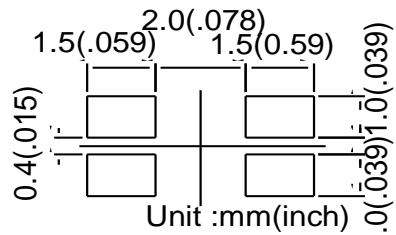
## SMD LED 1210-1.1T(Bi-color)



Cathode Mark

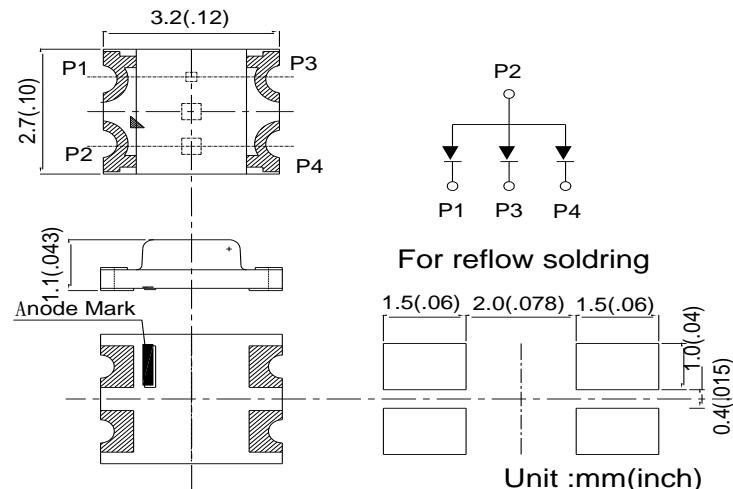
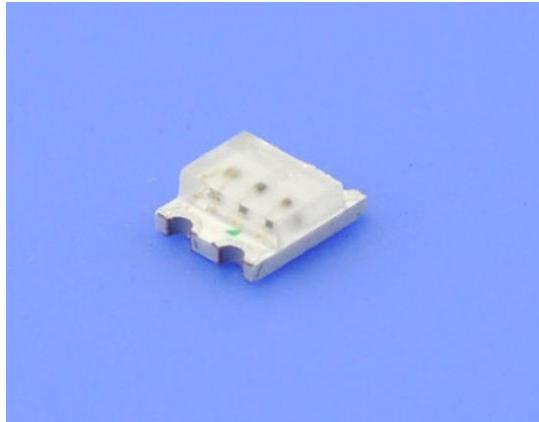


For reflow soldering



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=20mA$		IV(mcd) @ $I_f=20mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJZGJ33F	Orange	615-625	Transparent	2.2	2.6	317.0	600.0	120°
	Yellow Green	566-576		2.2	2.6	63.0	120.0	
BL-HSBGE33F	Red	638-648		2.2	2.6	5.5	15.0	
	Yellow Green	566-576		2.2	2.6	18.5	35.0	

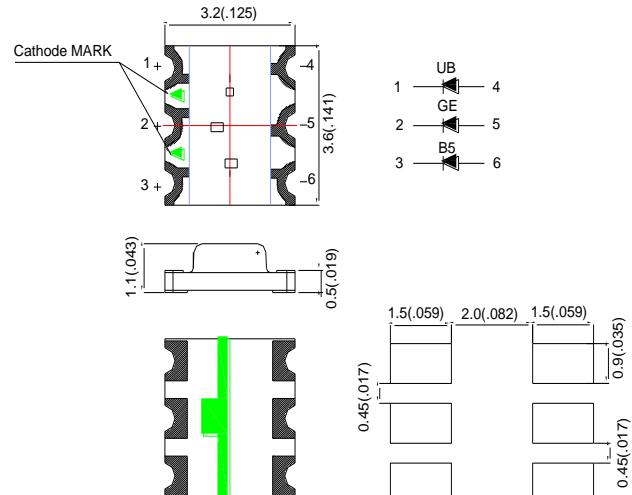
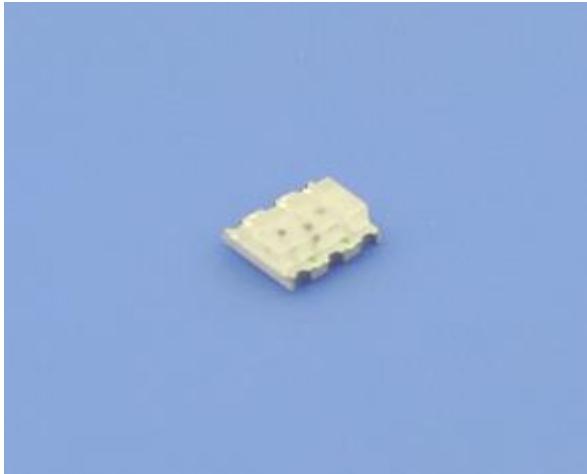
## SMD LED 1210-1.1T(Multi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5mA$		IV(mcd) @ $I_F=5mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HB5GEKB33T	Blue	460-475	Transparent	3.2	3.6	63	140	120°
	Yellow Green	566-576		2.2	2.6	18.5	35	
	Yellow	582-592		2.2	2.6	42	94	
BL-HUBGKB533T	Red	620-635	Transparent	2.0	2.4	8.2	20	120°
	Green	520-540		2.8	3.2	63	120	
	Blue	460-475		2.8	3.2	28	63	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20mA$		IV(mcd) @ $I_F=20mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-HE1G0Y033T	Red	626-636	Transparent	2.2	2.6	5.5	12.3	120°
	Yellow Green	566-576		2.2	2.6	3.7	10	
	Yellow	584-594		2.2	2.6	3.7	10	
BL-HD1X1KB33T	Red	638-648	Transparent	2.2	2.6	12.3	28	120°
	Green	566-576		2.2	2.6	8.2	20	
	Yellow	582-592		2.2	2.6	42	94	

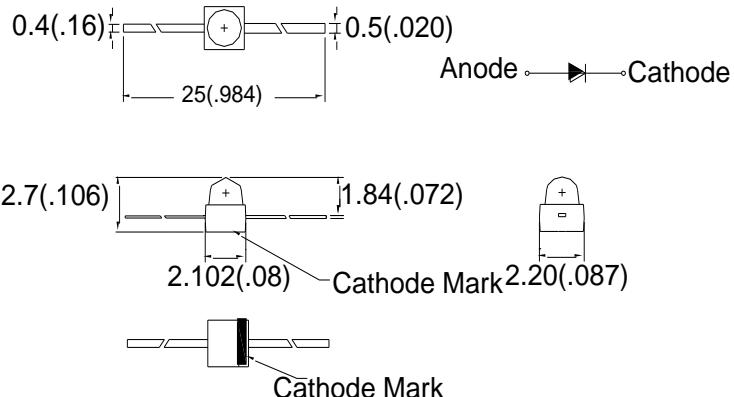
## SMD LED 1214-1.1T



Unit:mm (inch)

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=5mA		IV(mcd) @ If=5mA		Viewing Angle $2\theta$ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-HJZGKB333Y	Orange red	620-630	Transparent	2.2	2.6	63	140	120°
	Green	520-535		2.8	3.2	63	140	
	Blue	460-475		2.8	3.2	28	140	
BL-HUBGEB533Y	Red	620-640	Transparent	2.0	2.4	8.2	18.5	120°
	Yellow Green	566-576		2.0	2.4	5.5	12.3	
	Blue	465-475		2.6	3	28	63	

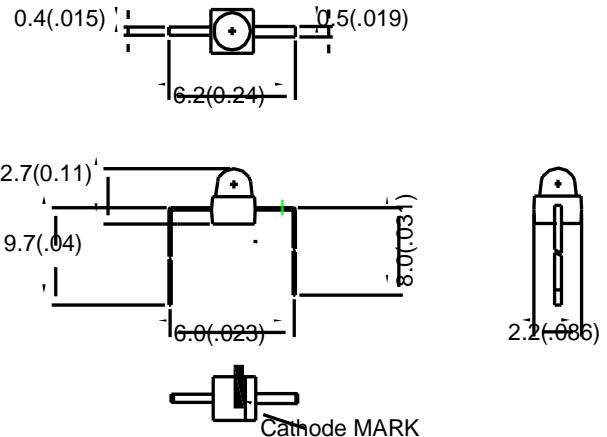
## AXIAL LED 361-2.7T



Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle 2 θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-XZD361-LB20	White	0.265	0.33	Yellow Clear	3.2	3.6	317	475	35°
BL-XZ3361-L21		0.265	0.33		3.2	3.6	94	200	

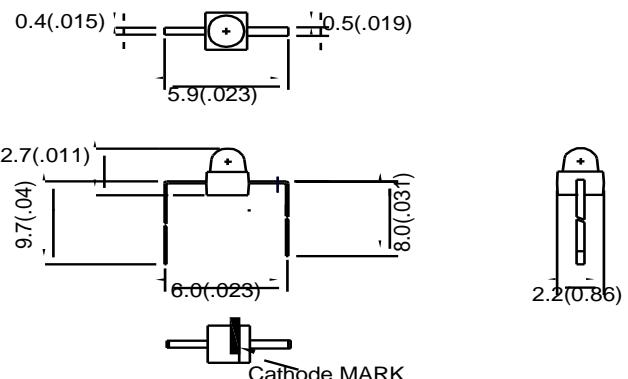
Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @ If=5mA		Iv(mcd) @ If=5mA		Viewing Angle 2 θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-XB3361	Blue	460-475	Transparent	3.2	3.6	210	400	35°
BL-XGE361	Yellow Green	566-576		2.2	2.6	94	210	
BL-XKC361	Yellow	584-594		2.2	2.6	210	400	
BL-XUF361	Red	620-640		2.2	2.6	140	317	

## AXIAL LED 361-F2 2.7T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-XBH361-F2	Blue	460-475	Transparent	3.2	3.6	317	600	35°
BL-X9361-F2	Pure Green	555-565		2.2	2.6	5.5	15	
BL-XX1361-F2	Hi-Eff Green	566-576		2.2	2.6	28	63	
BL-XGE361-F2	Yellow Green	566-576		2.2	2.6	94	210	
BL-XKC361-F2	Yellow	584-594		2.2	2.6	210	400	

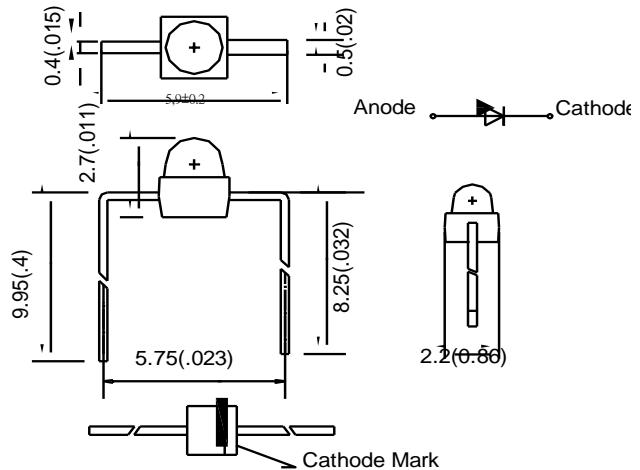
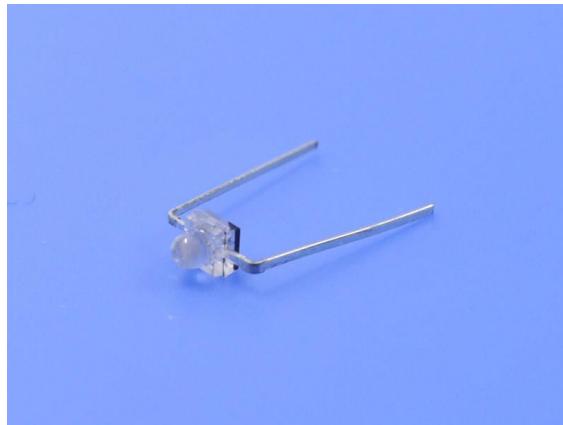
## AXIAL LED 361-F3 2.7T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=5mA		Iv(mcd) @ If=5mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-XB5361-F3	Blue	460-475	Transparent	2.8	3.2	210	400	35°
BL-XJC361-F3	Amber	600-610		2.2	2.6	317	715	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-XGEKC361-F3	Yellow Green	566-576	Transparent	2.0	2.4	1.0	2.0	35°
	Yellow	584-594		2.0	2.4	210	400	

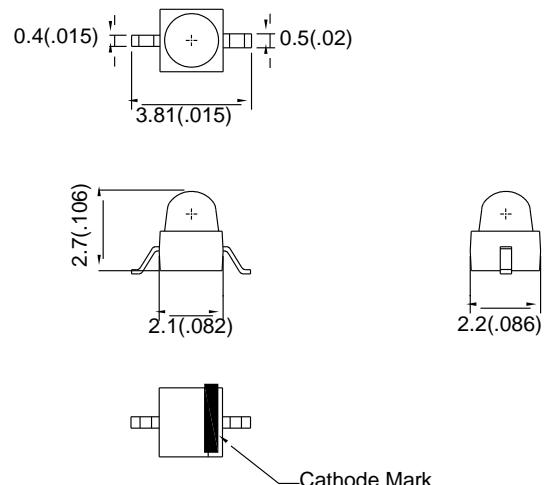
## AXIAL LED 361-F4 2.7T



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle 2 $\theta$ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-XKT361-F4	Yellow	584-594	Transparent	2.2	2.6	140	317	35°
BL-XJL361-F4	Orange Red	615-625		2.0	2.4	715	1600	

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle 2 $\theta$ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-XKCGF361-F4	Yellow	584-594	Transparent	2.2	2.6	715	1400	35°
	Yellow Green	566-576		2.2	2.6	94	210	

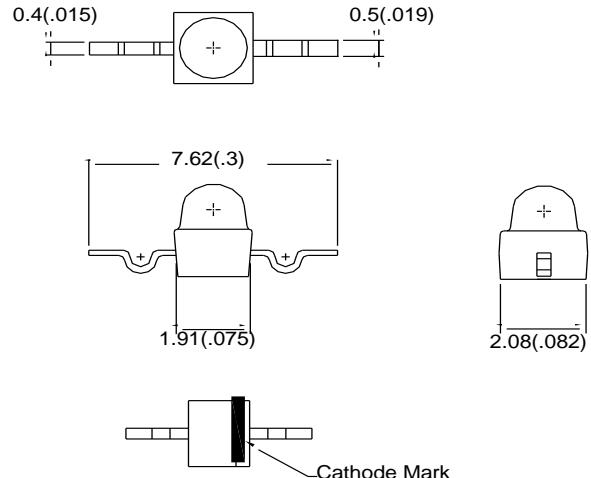
## AXIAL LED 361-TR7 2.7T



Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @If=20mA		Iv(mcd) @If=20mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-XZ3361-TR7	White	0.265	0.33	Yellow Clear	2.8	3.2	94	200	35°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=5mA		Iv(mcd) @If=5mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-XB3361-TR7	Blue	460-475	Transparent	3.2	3.6	210	400	35°
BL-XGE361-TR7	Yellow Green	566-576		2.2	2.6	94	210	
BL-XKC361-TR7	Yellow	584-594		2.2	2.6	210	400	
BL-XUF361-TR7	Red	620-640		2.2	2.6	140	317	
BL-XD0361-TR7	Red	638-648		2.2	2.6	140	317	

## AXIAL LED 361-TR8 2.7T



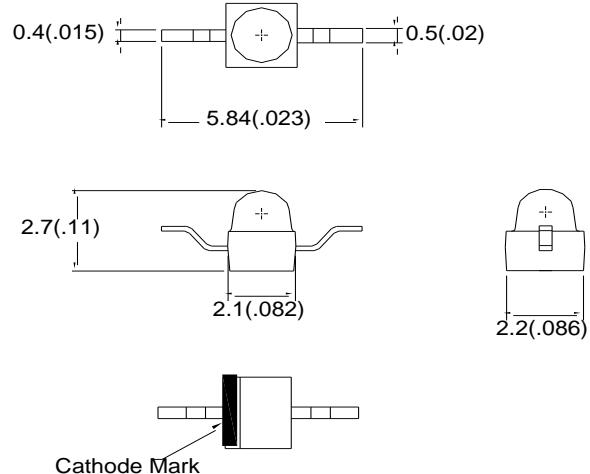
Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-XG0361-TR8	Yellow Green	566-576	Transparent	2.2	2.6	28	50	35°
BL-XY0361-TR8	Yellow	584-594		2.2	2.6	28	63	
BL-XS1361-TR8	Red	638-648		2.2	2.6	42	80	



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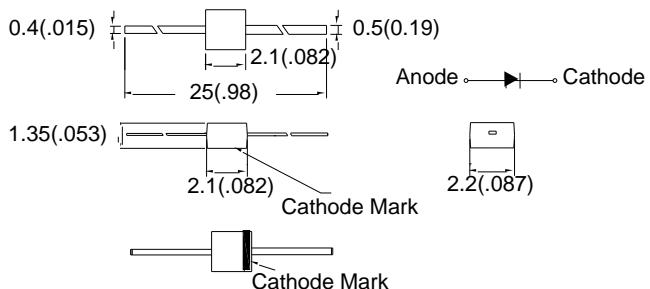
## AXIAL LED 361-TR9 2.7T



Part No.	Emitted Color	X	Y	Lens Appearance	Vf(V) @If=20mA		Iv(mcd) @If=20mA		Viewing Angle 2θ 1/2 (deg)
		Typ.	Typ.		Typ.	Max.	Min.	Typ.	
BL-XZ361-TR9	White	0.265	0.33	Yellow Clear	2.8	3.2	94	200	35°

Part No.	Emitted Color	λ d(nm)	Lens Appearance	Vf(V) @If=20mA		Iv(mcd) @If=20mA		Viewing Angle 2θ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-XG8361-TR9	Green	520-535	Transparent	3.2	3.6	1600	3000	35°
BL-XG0361-TR9	Yellow Green	566-576		2.2	2.6	28	50	
BL-XY0361-TR9	Yellow	584-594		2.2	2.6	28	63	
BL-XUB361-TR9	Red	620-640		2.2	2.6	140	317	
BL-XSB361-TR9	Red	638-648		2.2	2.6	42	82	

## AXIAL LED 362-1.35T(Multi-color)

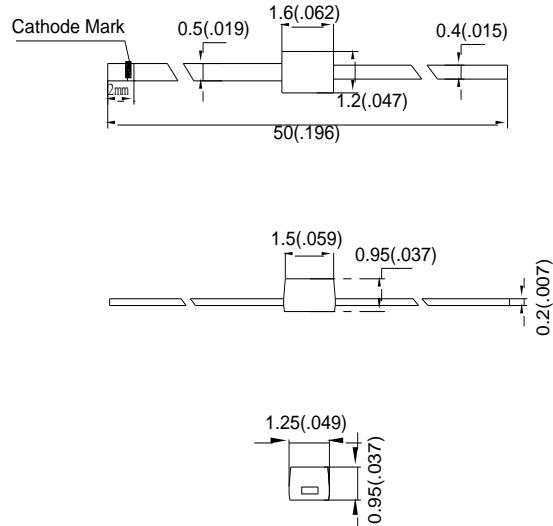


Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=5mA		Iv(mcd) @ If=5mA		Viewing Angle 2 $\theta$ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-XB5362	Blue	460-475	Transparent	3.2	3.6	42	100	35°

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		Iv(mcd) @ If=20mA		Viewing Angle 2 $\theta$ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BL-XUF362	Red	620-640	Transparent	2.2	2.6	140	317	120°

Part No.	Emitted Color	X	Y	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ If=20mA		IV(mcd) @ If=20mA		Viewing Angle 2 $\theta$ 1/2 (deg)
		Typ.	Typ.			Typ.	Max.	Min.	Typ.	
BL-XKCZ3362-L23	Yellow			584-594	Transparent	2.2	2.6	42.0	90.0	140°
	White	0.2	0.2			3.2	3.6	94.0	200.0	

## AXIAL LED 364 0.95T

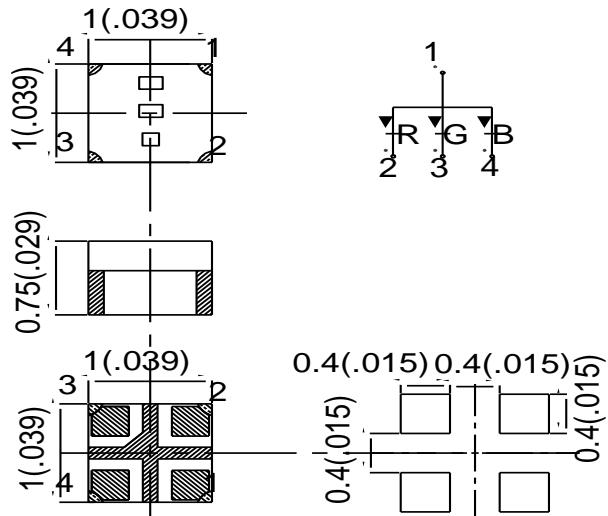
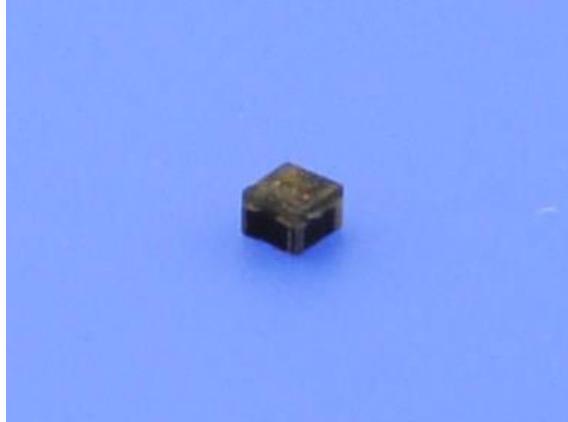


Unit:mm (inch)

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=5\text{mA}$		IV(mcd) @ $I_F=5\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-XB3364	Blue	460-475	Transparent	2.8	3.2	28	63	120°
BL-XGK364	Green	520-535		2.8	3.2	94	140	
BL-XGKKC364	Green	520-535		2.8	3.2	94	210	
	Yellow	584-594		2.0	2.4	18.5	42	

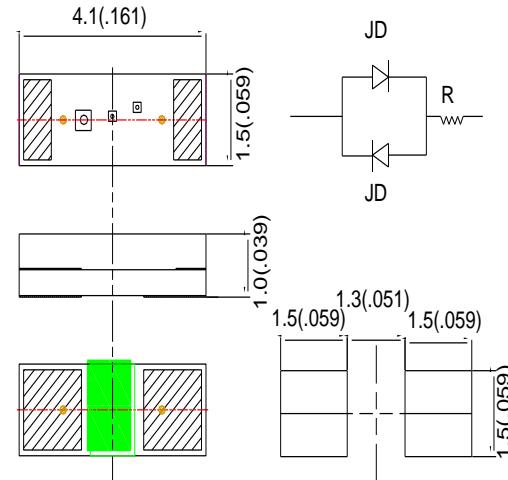
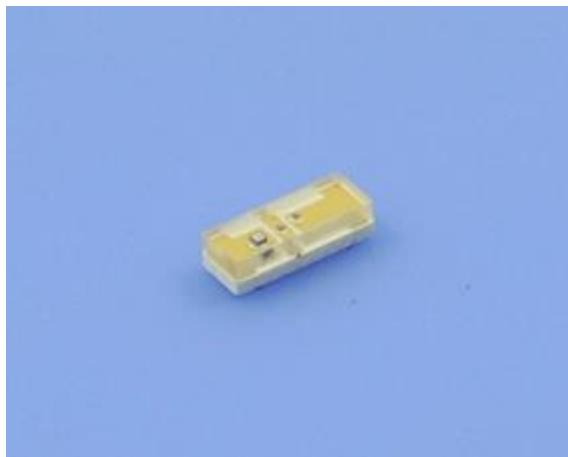
Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_F=20\text{mA}$		IV(mcd) @ $I_F=20\text{mA}$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-XKC364	Yellow	584-594	Transparent	2.0	2.4	12.3	28	120°
BL-XJC364	Amber	600-610		2.0	2.4	42	94	
BL-XUE364	Red	620-640		2.0	2.4	5.5	12.3	

## SMD LED 1010RGB-0.75T(Multi-color)



Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	Vf(V) @ $I_f=20mA$		IV(mcd) @ $I_f=20mA$		Viewing Angle $2\theta_{1/2}$ (deg)
				Typ.	Max.	Min.	Typ.	
BL-H1010RGB	Red	620-640	Transparent	2.0	2.4	18.5	35.0	120°
	Green	520-535		2.8	3.2	42.0	94.0	
	Blue	460-475		2.8	3.2	8.2	18.5	

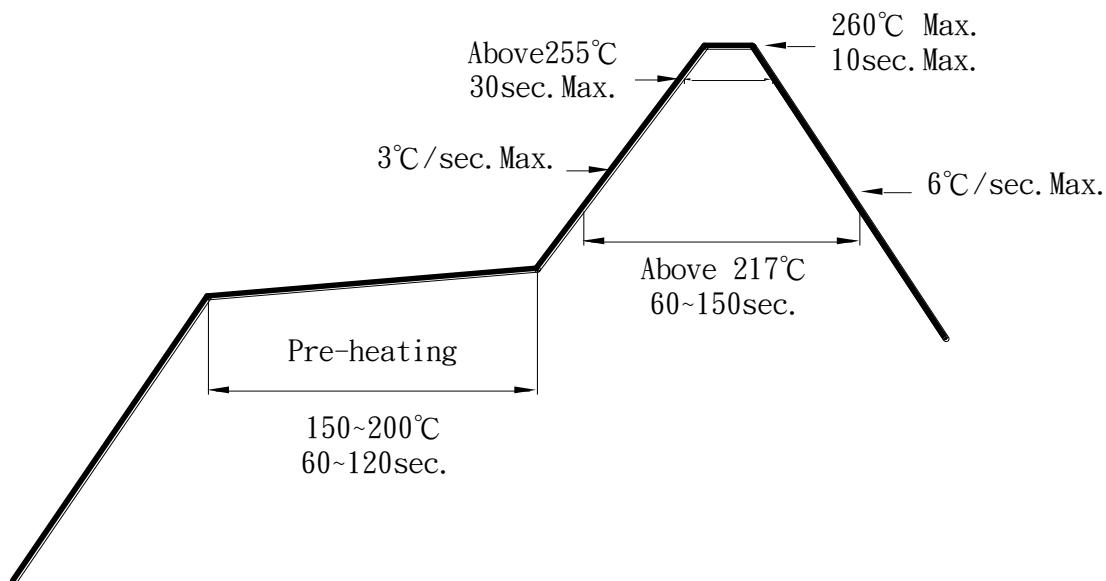
## SMD LED 1.0T



Unit:mm (inch)

Part No.	Emitted Color	$\lambda$ d(nm)	Lens Appearance	I(mA) @V= ±32V		IV(mcd) @V= ±12V		Viewing Angle 2 $\theta$ 1/2 (deg)
				Typ.	Max.	Min.	Typ.	
BR-H4115-32V-B	Blue	460-475	Transparent	4.0	6.0	12	/\	120°
BR-H4115-32V-G	Green	520-535		4.0	6.0	30	/\	
BR-H4115-32V-YG	Yellow Green	566-576		4.5	7.0	3	/\	
BR-H4115-32V-Y	Yellow	584-594		4.5	7.0	12	/\	
BR-H4115-32V	Red	615-630		4.5	7.0	9.0	/\	

### ● IR-Reflow Soldering



1. Avoid any external stress applied to the resin while the LEDs are at high temperature, especially during soldering .
2. Avoid rapid cooling or any excess vibration during temperature ramp-down process
3. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

### ● IRON Soldering

350°C Within 3 sec.,One time only.



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### ● Notes for designing:

Care must be taken to provide the current limiting resistor in the circuit so as to drive the BRIGHT LEDs within the rated figures. Also, caution should be taken not to overload BRIGHT LEDs with instantaneous voltage at the turning ON and OFF of the circuit.

When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as be subjected to reverse voltage when turning off the BRIGHT LEDs.

### ● Storage:

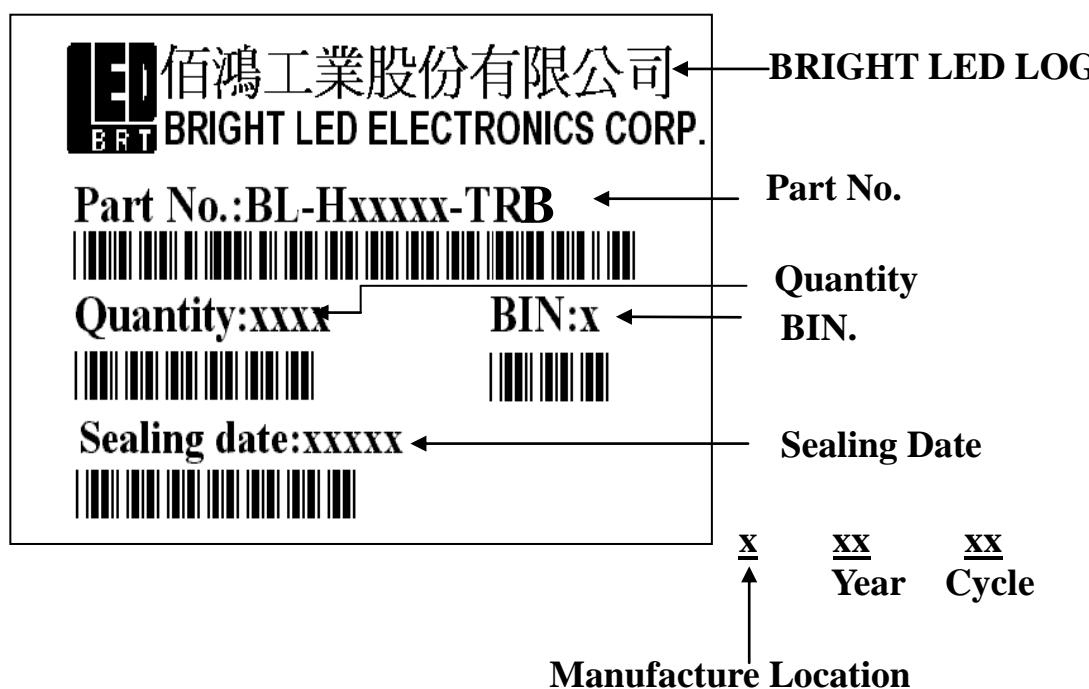
In order to avoid the absorption of moisture, it is recommended to solder BRIGHT LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following:

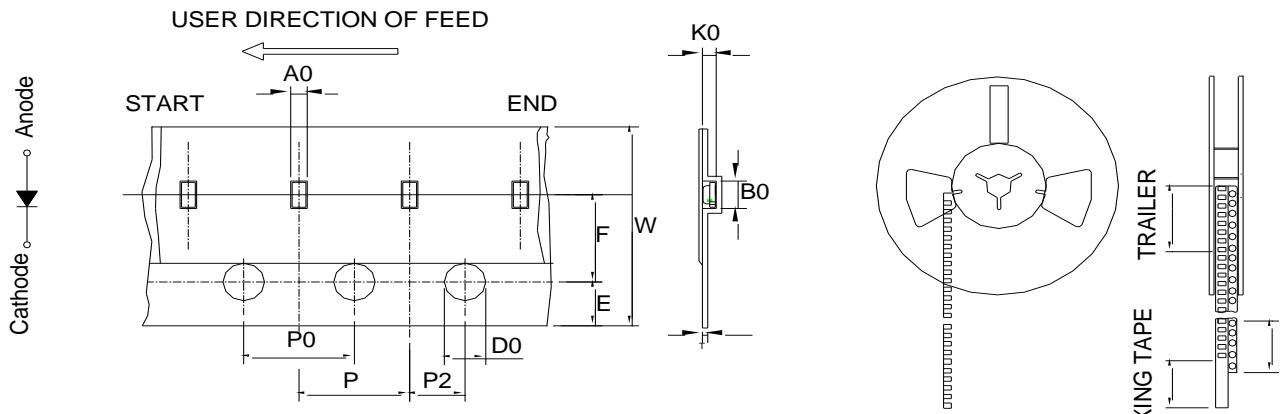
- (1) Temperature : 5°C -30°C (41°F) Humidity : RH 60% Max.
- (2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
  - a. Completed within 168 hours.
  - b. Stored at less than 30% RH.
- (3) Devices require baking before mounting, if:
  - (2) a or (2) b is not met.
- (4) If baking is required, devices must be baked under below conditions:  
48 hours at 60°C ±3°C.

### ● Package and Label of Products:

- (1) Package: Products are packed in one bag of 3000 pcs (one taping reel) and a label is attached on each bag.
- (2) Label:



## SMD LED 0402-Tapping



- DEVICE NUMBER:BL-Hxxx7A-TRB

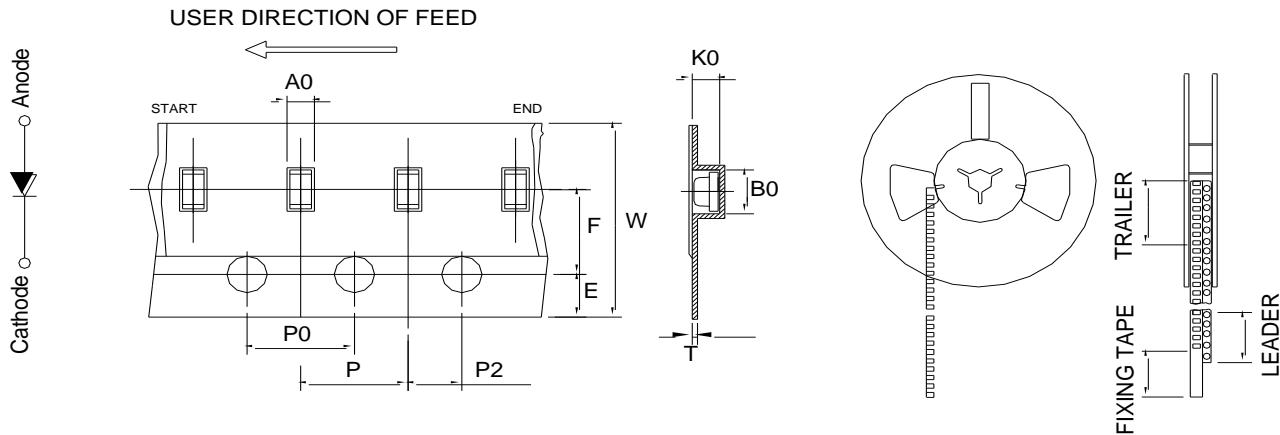
- FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

- TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	Minimun mm	Maximum Inch
Tape Feed Hole Diameter(DIA)	D0	1.40	0.05	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsons Ledgh Direction	F	3.00	0.12	4.00	1.60
Compartment Depth	K0	0.50	0.02	0.60	0.24
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsons Ledgh Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.30	3.31
Tape thickness	T	0.234	0.009	0.274	0.109
Compartment Length	A0	0.53	0.02	0.63	0.25
Compartment Width	B0	1.13	0.04	1.23	0.49

## SMD LED 0603-Tapping



● DEVICE NUMBER:BL-Hxxx6D-TRB/BL-Hxxx6R-TRB/BIR-Hxxx6D/BPT-Hxxx6D-TRB

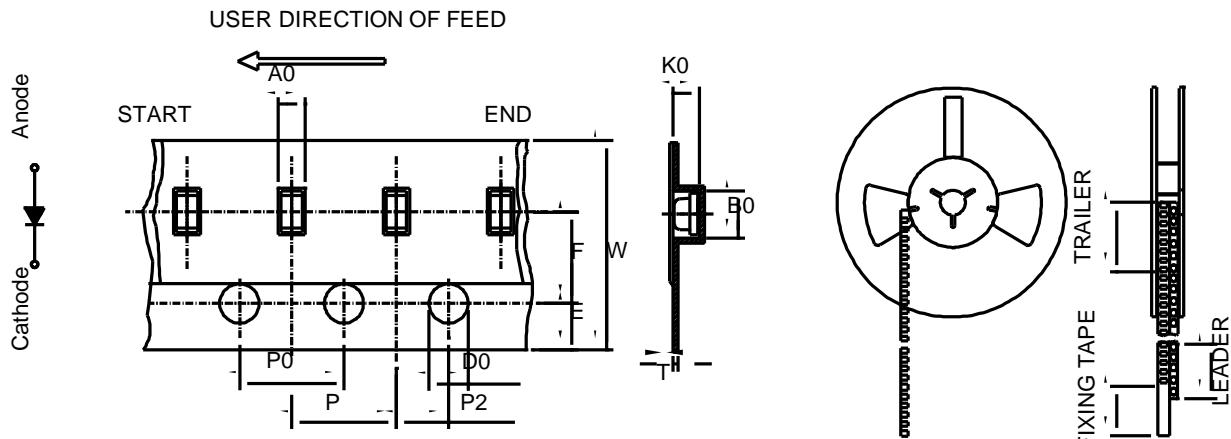
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun		Maximum	
		mm	Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	0.85	0.03	1.00	0.40
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	0.79	0.03	0.81	0.32
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	0.85	0.03	0.95	0.38
Compartment Width	B0	1.75	0.07	1.85	0.74

## SMD LED 0603-Tapping



- DEVICE NUMBER: BL-Hxxx6A-TRB/ BL-Hxxx6P-TRB/BIR-Hxxx6A-TRB  
BL-Hxxxxx6B-TRB/BL-Hxxxxx6F-TRB

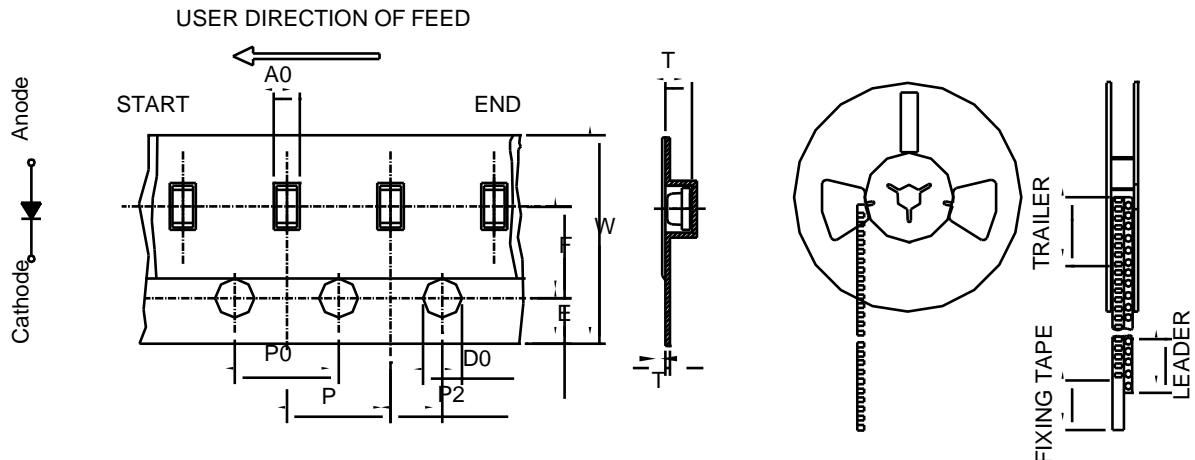
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun		Maximum	
		mm	Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	0.65	0.03	0.80	0.32
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	0.79	0.03	0.81	0.32
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	0.85	0.03	0.95	0.38
Compartment Width	B0	1.75	0.07	1.85	0.74

## SMD LED 0603-Tapping



- DEVICE NUMBER:BL-Hxxx6G-TRB/BL-Hxxx6N-TRB

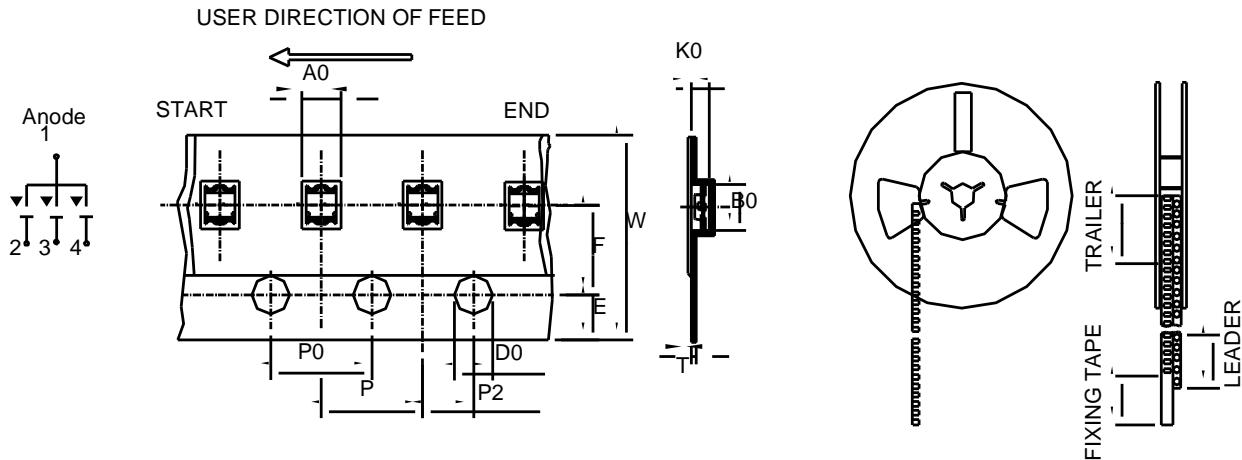
- FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

- TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun		Maximum	
		mm	Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	0.55	0.02	0.70	0.28
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	0.85	0.03	0.95	0.38
Compartment Width	B0	1.75	0.07	1.85	0.74

## SMD LED 0605-Tapping



● DEVICE NUMBER: BL-Hxxxxxx6E-TRB/ BL-Hxxxxx6J-TRB/ BL-Hxxxxxxxx6K-TRB

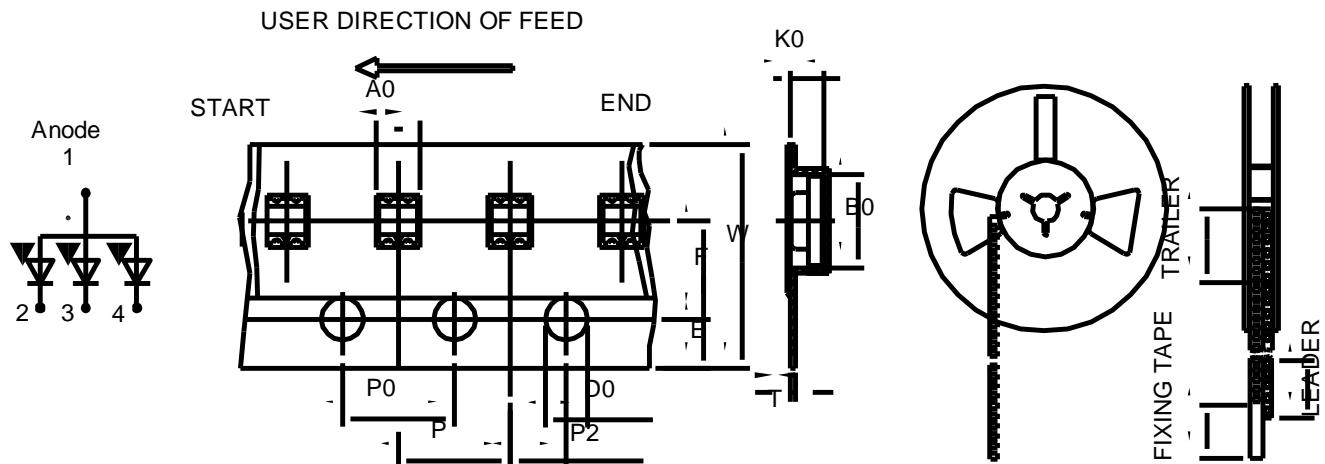
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun		Maximum	
		mm	Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	0.60	0.02	0.80	0.32
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	0.85	0.03	0.95	0.38
Compartment Width	B0	1.75	0.07	1.85	0.74

## SMD LED 0605-Tapping



- DEVICE NUMBER: BL-Hxxxxxx6T-TRB/BL-Hxxxxx6H-TRB

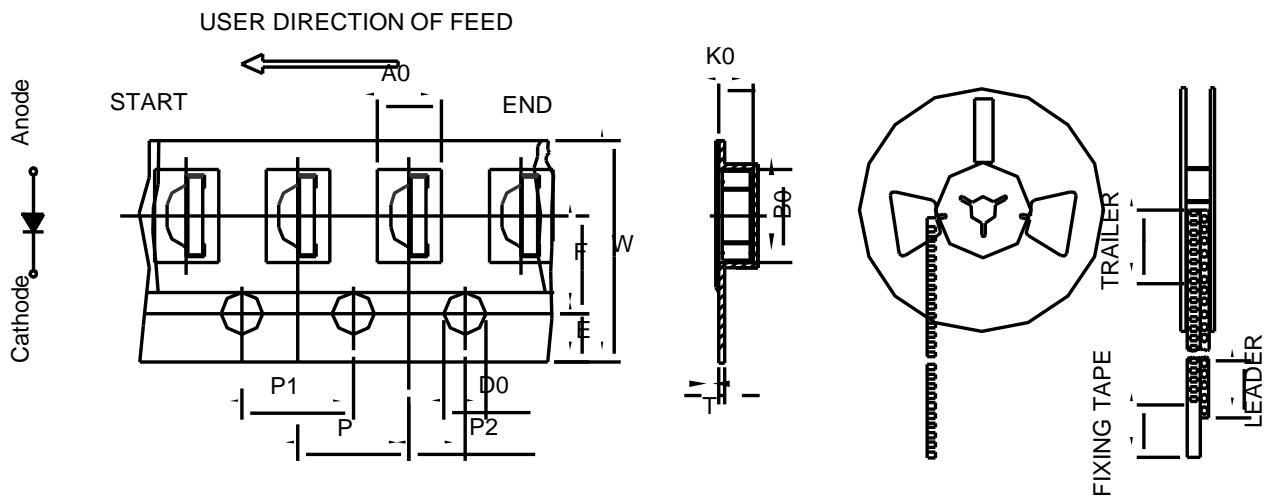
- FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

- TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun		Maximum	
		mm	Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	0.65	0.03	0.85	0.34
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	1.25	0.05	1.48	0.59
Compartment Width	B0	1.70	0.07	1.90	0.76

## SMD LED 0802-Tapping



### ● DEVICE NUMBER: BL-Hxxx4E-TRB

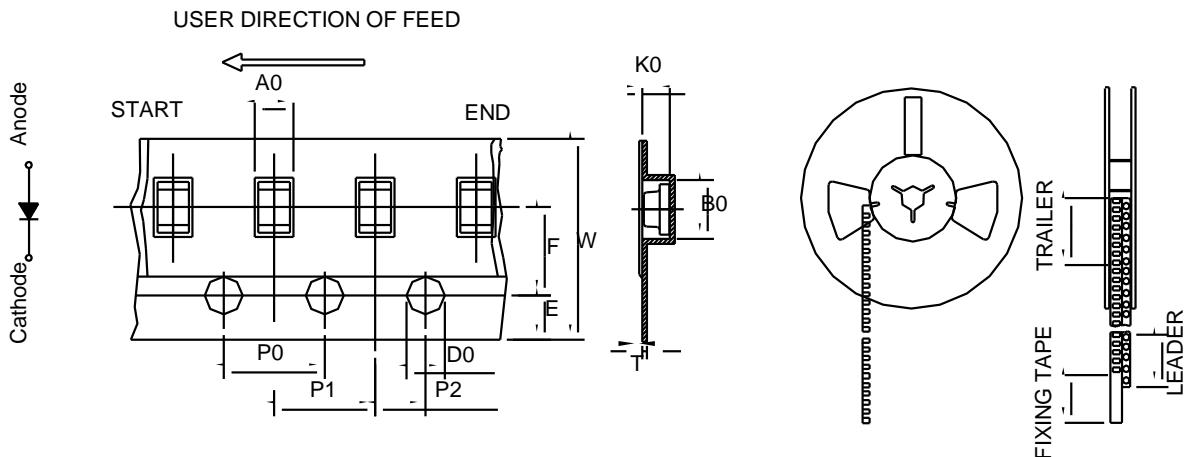
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	0.65	0.03	0.85	0.34
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	1.05	0.04	1.25	0.50
Compartment Width	B0	2.25	0.09	2.45	0.98

## SMD LED 0805-Tapping



- **DEVICE NUMBER: BL-Hxxx5A-TRB/ BL-Hxxx5B-TRB**

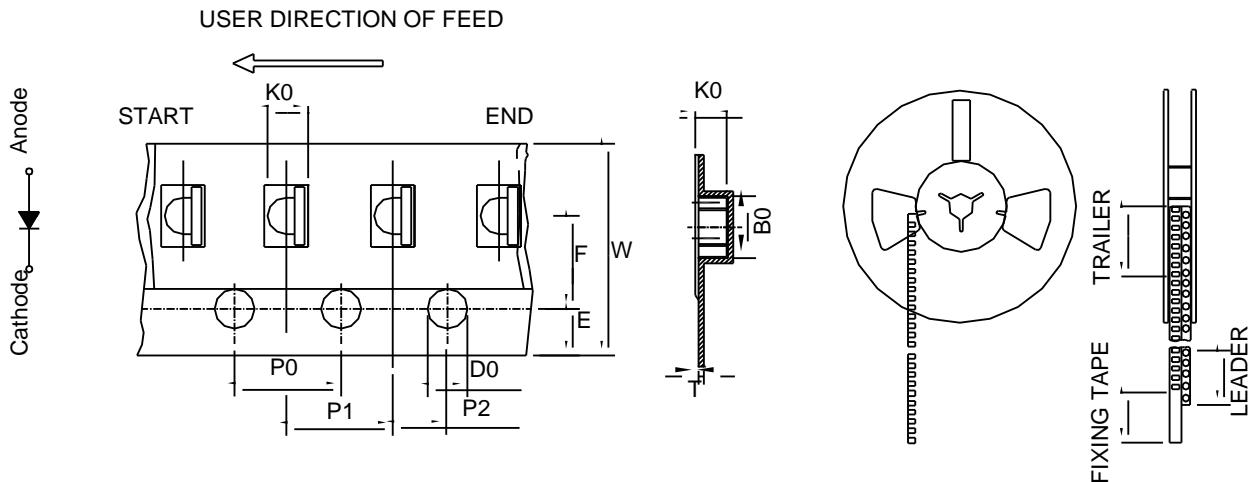
- **FEATURES:**

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

- **TAPPING AND PACKAGING SPECIFICATION**

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	1.08	0.04	1.28	0.51
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	1.32	0.05	1.52	0.61
Compartment Width	B0	2.15	0.08	2.35	0.94

## SMD LED 1204-Tapping



- **DEVICE NUMBER:** BL-Hxxx4A-TRB/BL-Hxxxxx4B-TRB/BL-Hxxxxx4J-TRB/BL-Hxxxxx4H-TRB

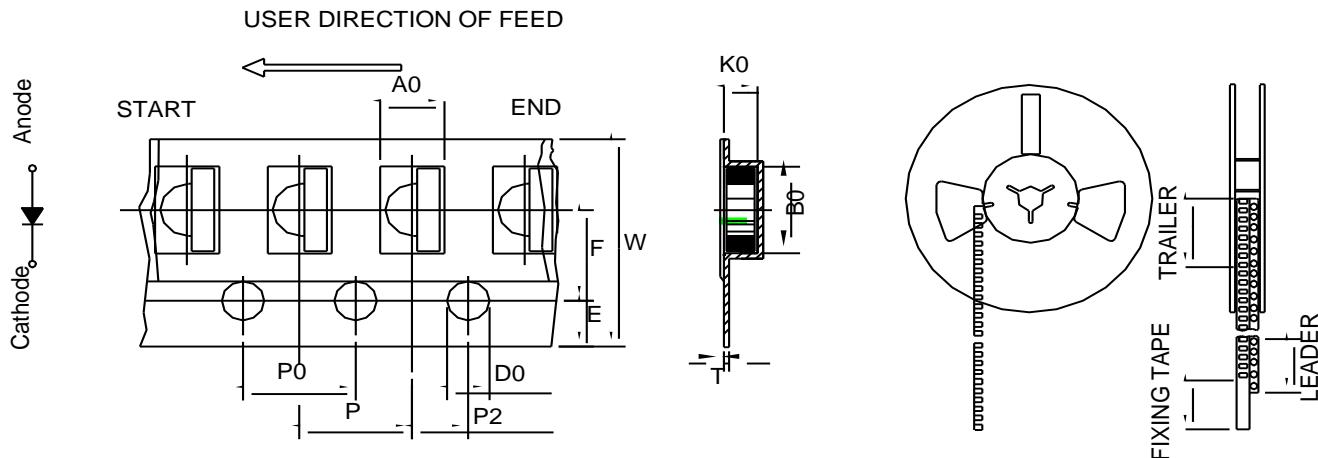
- **FEATURES:**

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

- **TAPPING AND PACKAGING SPECIFICATION**

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	1.10	0.04	1.30	0.52
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	2.05	0.08	2.25	0.90
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1204-Tapping



### ● DEVICE NUMBER: BL-Hxxx4C-TRB

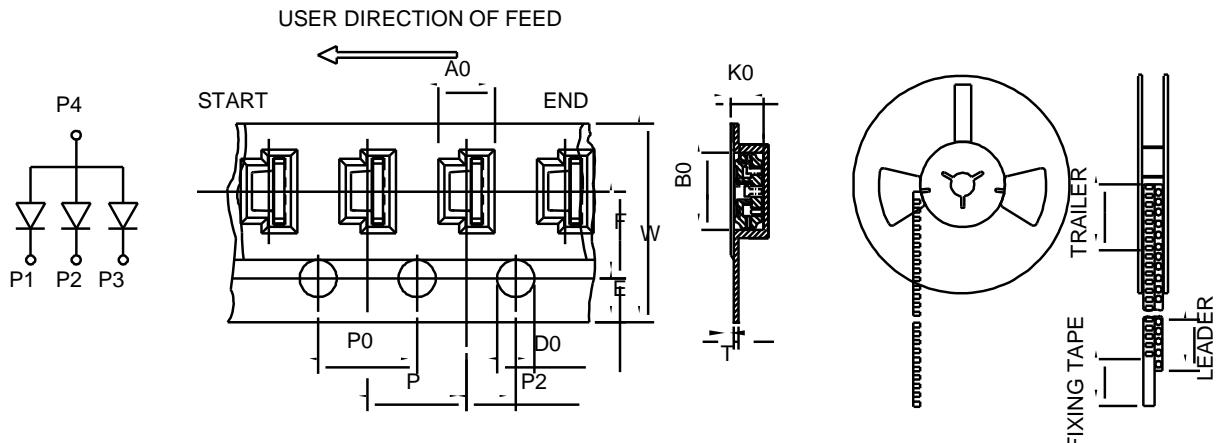
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	Minimun mm	Maximum Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	1.45	0.06	1.65	0.66
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	1.70	0.07	1.90	0.76
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1004-Tapping



### ● DEVICE NUMBER: BL-Hxxx4S-TRB

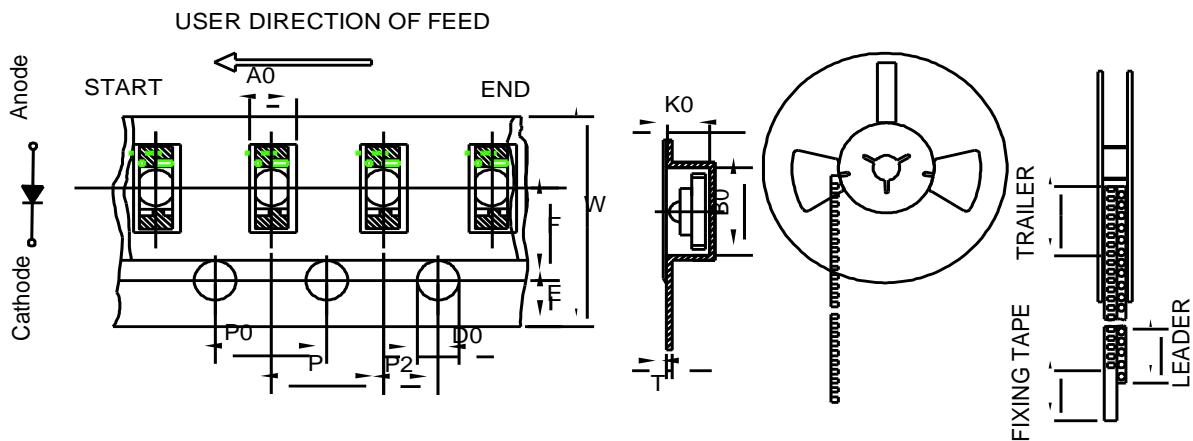
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	1.35	0.05	1.55	0.62
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.30	3.31
Tape thickness	T	0.23	0.01	0.27	0.11
Compartment Length	A0	1.38	0.05	1.58	0.63
Compartment Width	B0	2.80	0.11	3.00	1.20

## SMD LED 1206-Tapping



### ● DEVICE NUMBER: BL-Hxxx3K-TRB

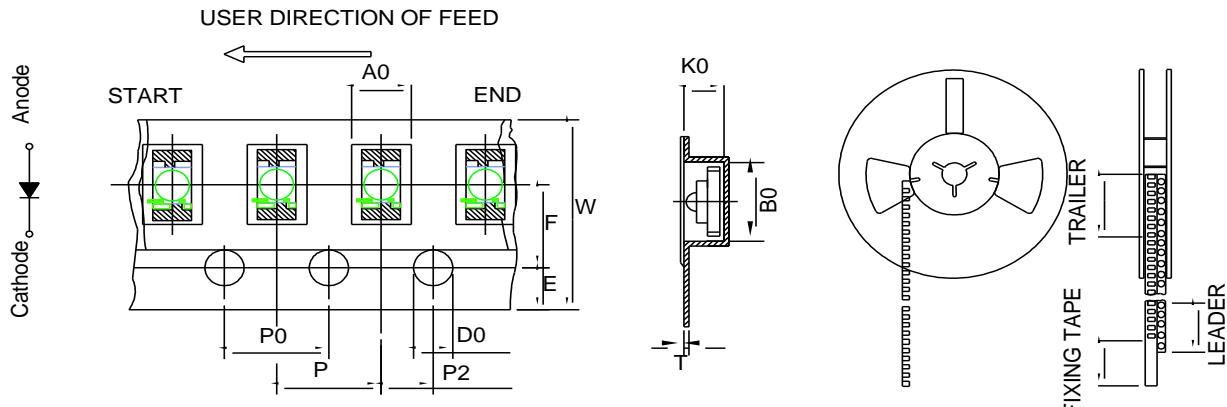
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	Minimun mm	Maximum Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	5.40	0.21	5.60	2.23
Compartment Depth	K0	2.55	0.10	2.75	1.10
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	11.90	0.46	12.10	4.83
Tape thickness	T	0.25	0.01	0.35	0.14
Compartment Length	A0	1.30	0.05	1.50	0.60
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1206-Tapping



● DEVICE NUMBER: BL-Hxxx3J-TRB/BIR-Hxxx3J-TRB/BPT-Hxxx3J-TRB/BPD-Hxxx3J-TRB

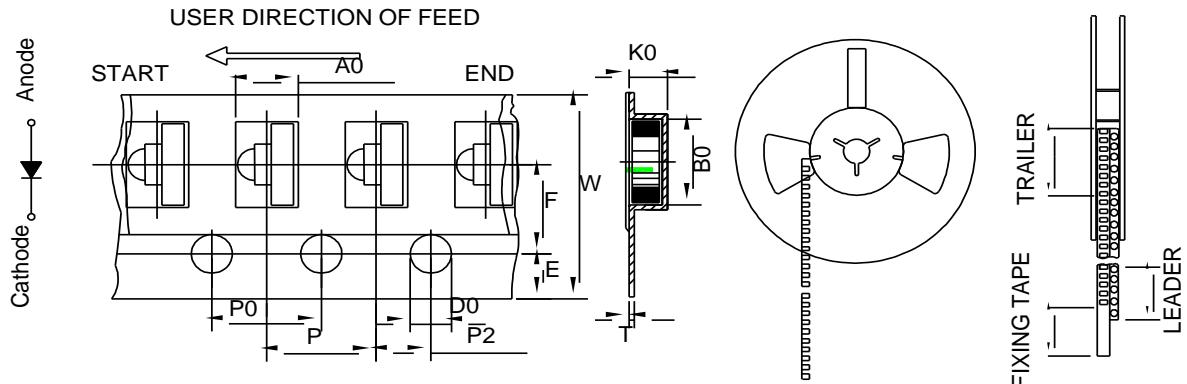
● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	5.40	0.21	5.60	2.23
Compartment Depth	K0	2.60	0.10	2.80	1.12
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	11.90	0.46	12.10	4.83
Tape thickness	T	0.25	0.01	0.35	0.14
Compartment Length	A0	1.70	0.07	1.90	0.76
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1206-Tapping



● DEVICE NUMBER: BL-Hxxx3J-TRC/BIR-Hxxx3J-TRC/BPT-Hxxx3J-TRC/BPD-Hxxx3J-TRC

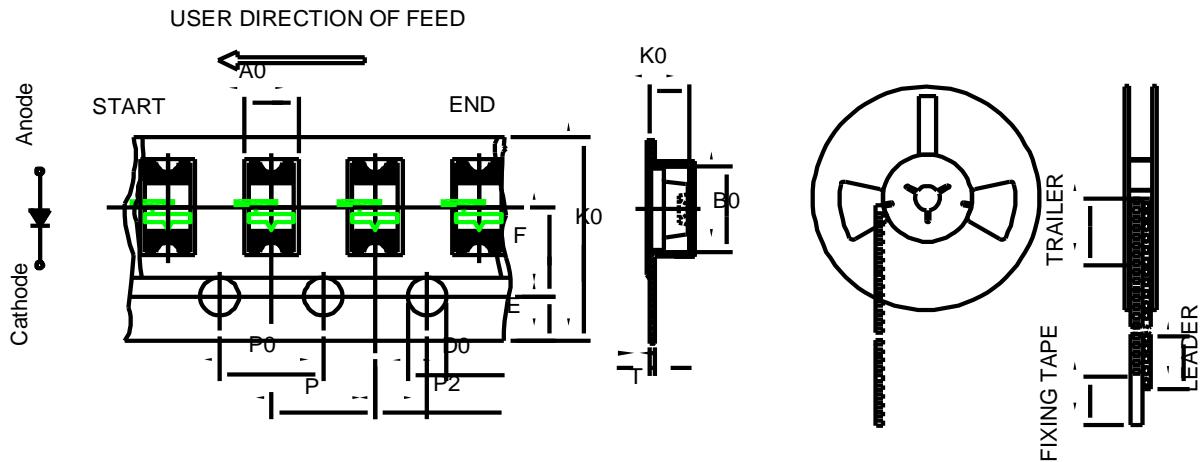
● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	5.40	0.21	5.60	2.23
Compartment Depth	K0	1.65	0.06	1.85	0.74
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	11.70	0.46	12.30	4.91
Tape thickness	T	0.25	0.01	0.35	0.14
Compartment Length	A0	2.90	0.11	2.70	1.08
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1206-Tapping



● DEVICE NUMBER: BL-Hxxx3X-TRE/ BL-Hxxx3C-TRE/ BL-Hxxx3D-TRE

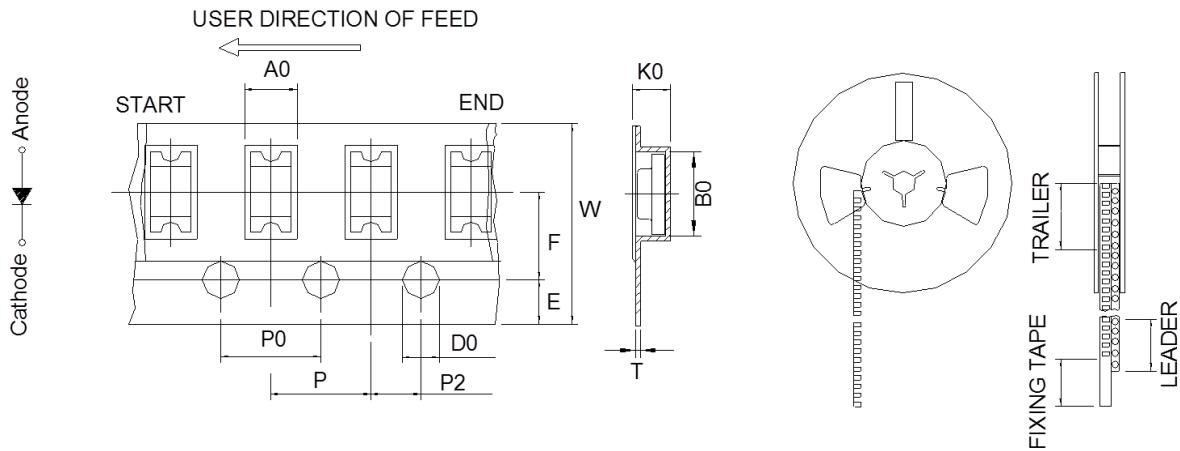
● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.25	0.13	3.55	1.42
Compartment Depth	K0	0.55	0.02	0.75	0.30
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.30	3.31
Tape thickness	T	0.20	0.01	0.30	0.12
Compartment Length	A0	1.75	0.07	1.95	0.78
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1206-Tapping



- DEVICE NUMBER: BL-Hxxx3H-TRB/BL-Hxxx3-TRB/BPD-HQxx3-TRB/ BL-Hxxx3A-TRB /BL-Hxxxxx3-TRB/BIR-Hxxx3-TRB/BPT-Hxxx3-TRB/ BIR-Hxxx3A-TRB

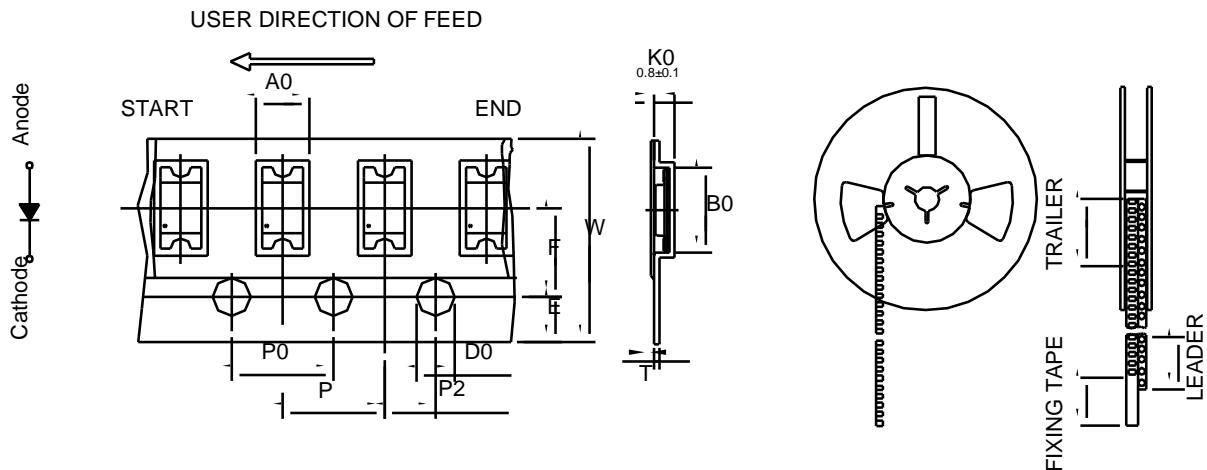
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	1.65	0.06	1.85	0.74
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	1.70	0.07	1.90	0.76
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1206-Tapping



- **DEVICE NUMBER: BL-Hxxx3Q-TRB**

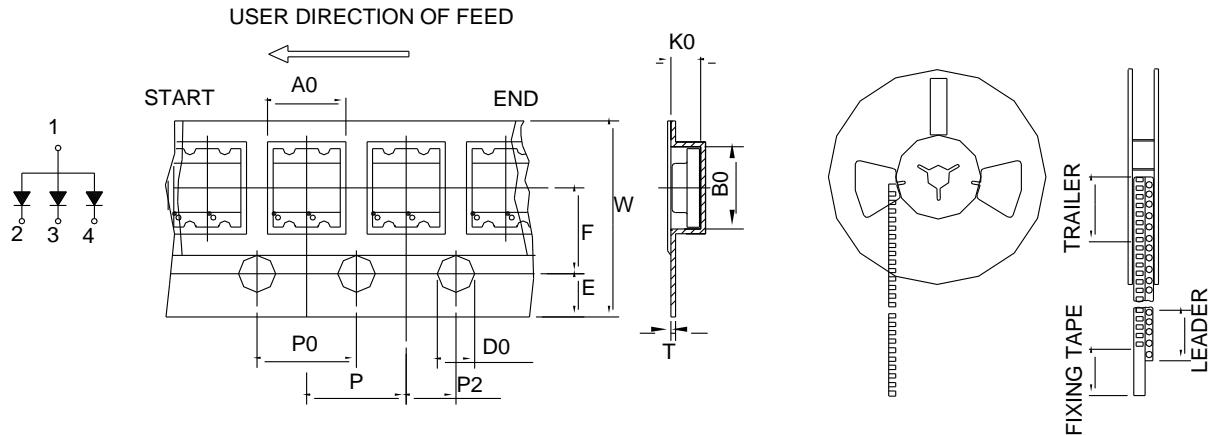
- **FEATURES:**

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

- **TAPPING AND PACKAGING SPECIFICATION**

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	0.64	0.02	0.84	0.34
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.30	3.31
Tape thickness	T	0.22	0.01	0.22	0.09
Compartment Length	A0	1.63	0.06	1.83	0.73
Compartment Width	B0	3.30	0.13	3.50	1.40

## SMD LED 1210-Tapping



- DEVICE NUMBER: BL-Hxxxxxx3T-TRB/BL-Hxxxxxx3F-TRB/BL-Hxxxxx3B-TRB

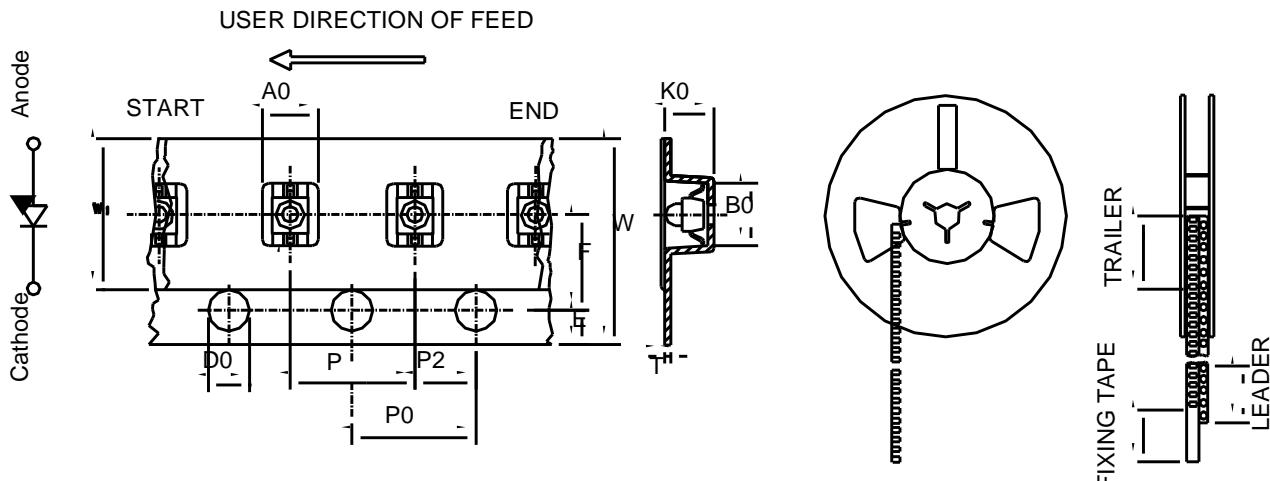
- FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

- TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	3.45	0.13	3.55	1.42
Compartment Depth	K0	1.15	0.04	1.35	0.54
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	7.90	0.31	8.10	3.23
Tape thickness	T	0.15	0.01	0.25	0.10
Compartment Length	A0	2.80	0.11	3.00	1.20
Compartment Width	B0	3.30	0.13	3.50	1.40

## AXIAL LED TR7-Tapping



### ● DEVICE NUMBER: BL-Hxxx61-TR7

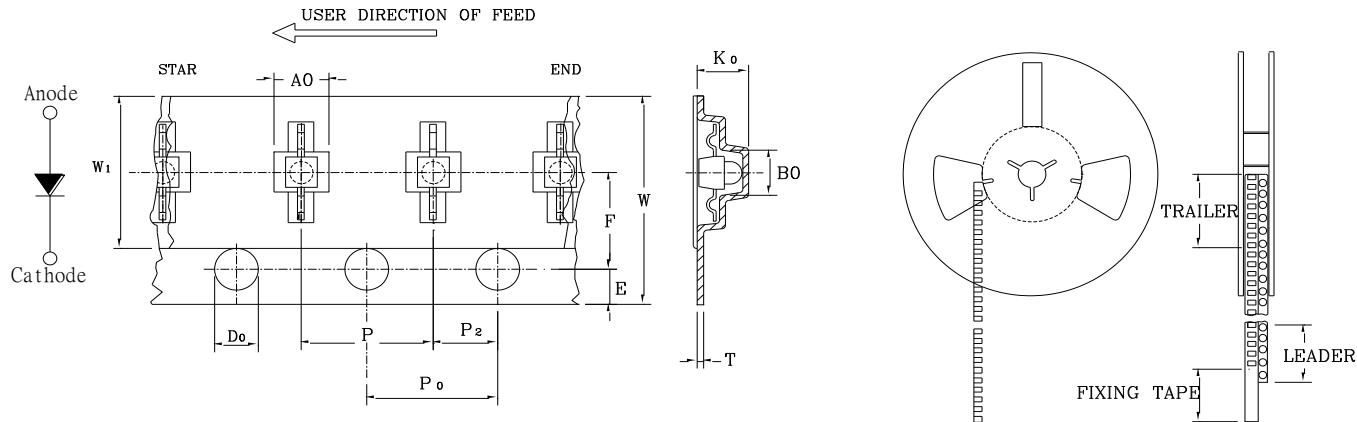
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	5.40	0.21	5.60	2.23
Compartment Depth	K0	2.75	0.11	2.95	1.18
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	11.70	0.46	12.30	4.91
Tape thickness	T	0.35	0.01	0.45	0.18
Compartment Length	A0	2.45	0.10	2.65	1.06
Compartment Width	B0	2.50	0.10	2.70	1.08

## AXIAL LED TR8-Tapping



### ● DEVICE NUMBER: BL-Hxxx61-TR8

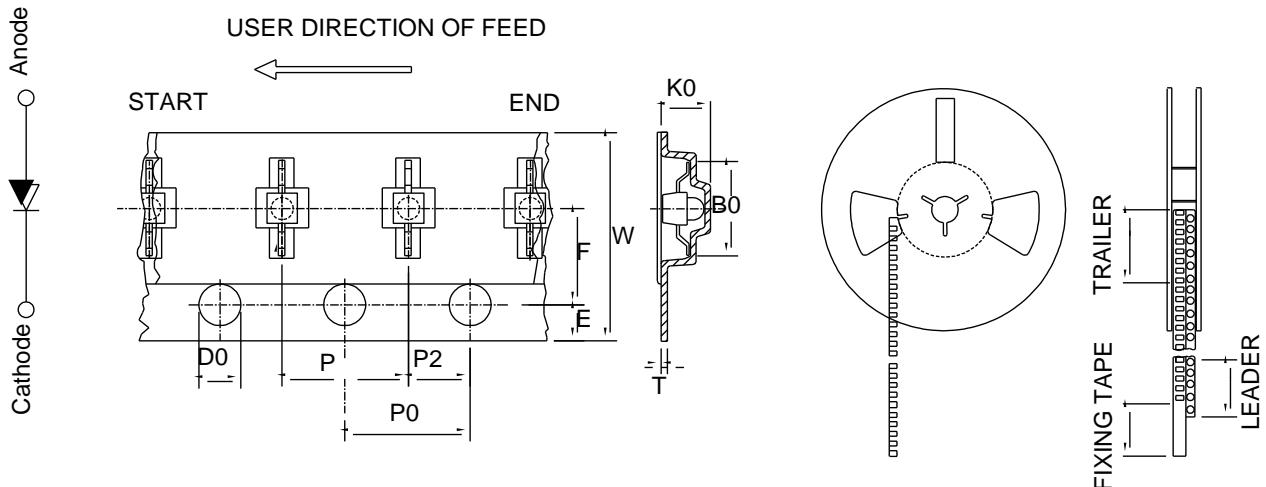
### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	5.45	0.21	5.55	2.21
Compartment Depth	K0	3.02	0.12	3.22	1.28
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	12.00	0.47	12.30	4.91
Tape thickness	T	16.00	0.62	18.40	7.34
Compartment Length	A0	2.29	0.09	2.49	0.99
Compartment Width	B0	7.62	0.30	7.82	3.12

## AXIAL LED TR9-Tapping



### ● DEVICE NUMBER: BL-Hxxx61-TR9

### ● FEATURES:

- Compatible with automatic placement equipment
- Surface Mount assembly lamp
- High efficiency low power consumption
- Long life solid state reliability

### ● TAPPING AND PACKAGING SPECIFICATION

ITEM	SYMBOL	SPECIFICATION			
		Minimun mm	Maximum Inch	mm	Inch
Tape Feed Hole Diameter(DIA)	D0	1.50	0.06	1.60	0.62
Feed Hole Location	E	1.65	0.06	1.85	0.74
Centers Line Dimedsions Ledgth Direction	F	5.40	0.21	5.60	2.23
Compartment Depth	K0	3.20	0.12	3.40	1.36
Compartment Pitch	P	3.90	0.15	4.10	1.64
Sprocket Hole Diameter	P0	3.90	0.15	4.10	1.64
Centers Line Dimedsions Ledgth Direction	P2	1.95	0.08	2.05	0.82
Carrier Tape Width	W	11.97	0.47	12.30	4.91
Tape thickness	T	0.35	0.01	0.45	0.18
Compartment Length	A0	2.45	0.10	2.65	1.06
Compartment Width	B0	2.15	0.08	2.35	0.94



佰鴻工業股份有限公司  
BRIGHT LED ELECTRONICS CORP

## LED使用注意事項

**BRIGHT  
LED**

## LED使用注意事項

使用注意事項	說明
電壓跟電流	1.LED的VF值會隨電流大小而改變 2.並聯使用的注意事項 3.定電流使用注意事項
環境溫度	1.環溫過高對於LED的影響 2.環境溫度與驅動電流
ESD問題	LED對於ESD的敏感程度
LED鋸接	1.烙鐵鋸接 2.DIP鋸接 3.IR REFLOW鋸接

## 電流與電壓

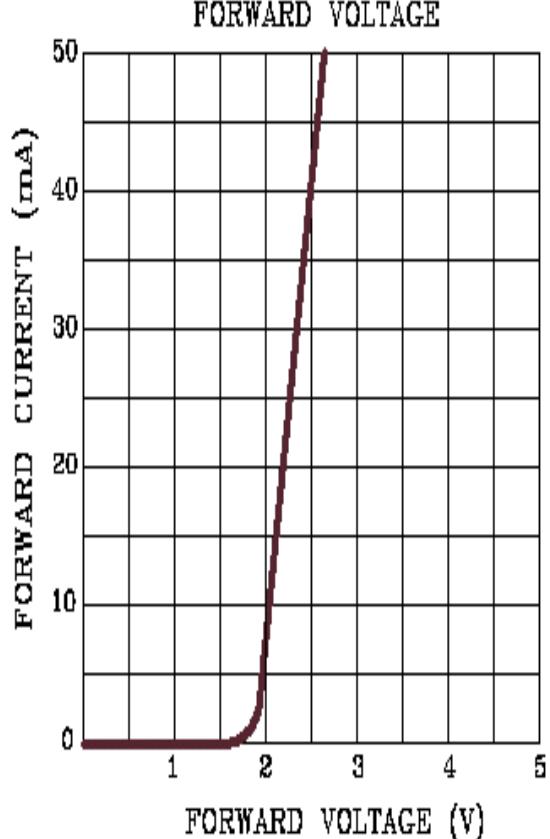
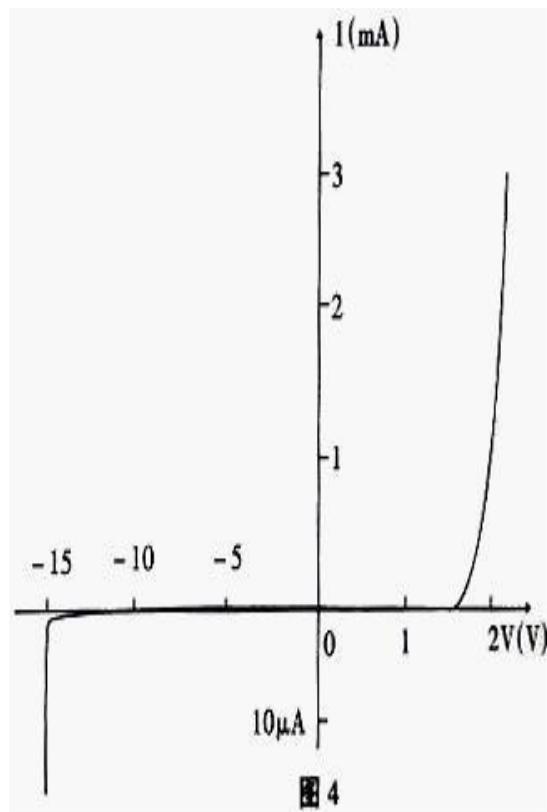
R(GaAsP/GaAs)低紅:Vf(typ.):1.7V Vf(max.):2.0V

電壓跟電流

Bx(GaInN/GaN)藍色:Vf(typ.):3.5V Vf(max.):4.0V

其他:Vf(typ.):2.0V Vf(max.):2.6V

FORWARD CURRENT VS.  
FORWARD VOLTAGE

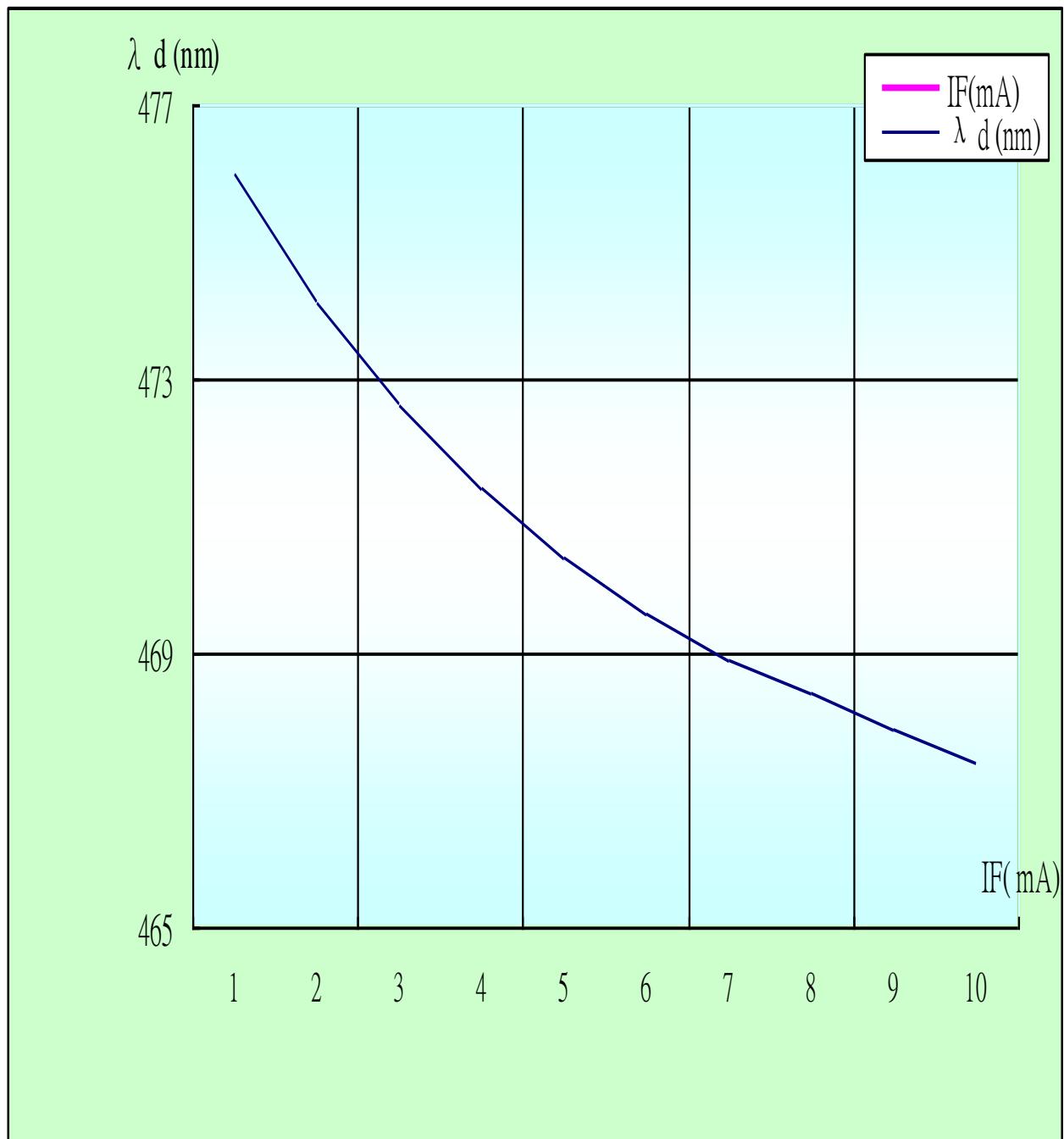


## 藍色晶片 波長與電流之關係

藍色晶片波長會隨電流變化而改變,電流高時,波長變短  
此種變化對於客戶應用時的影響:

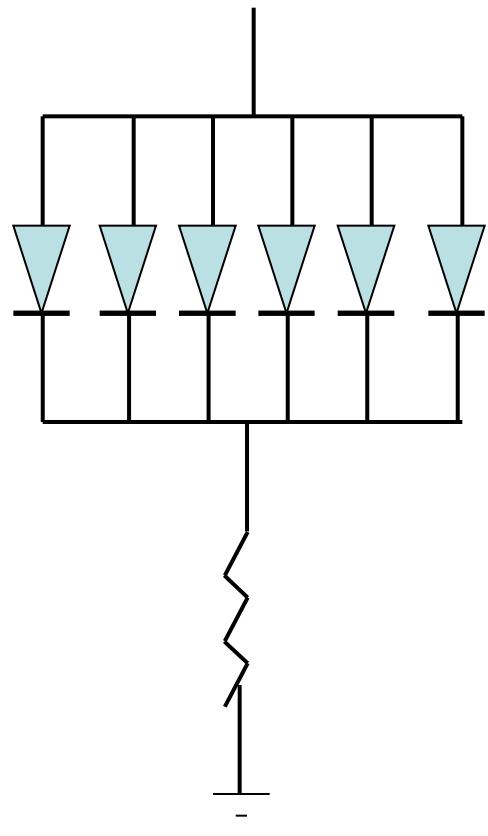
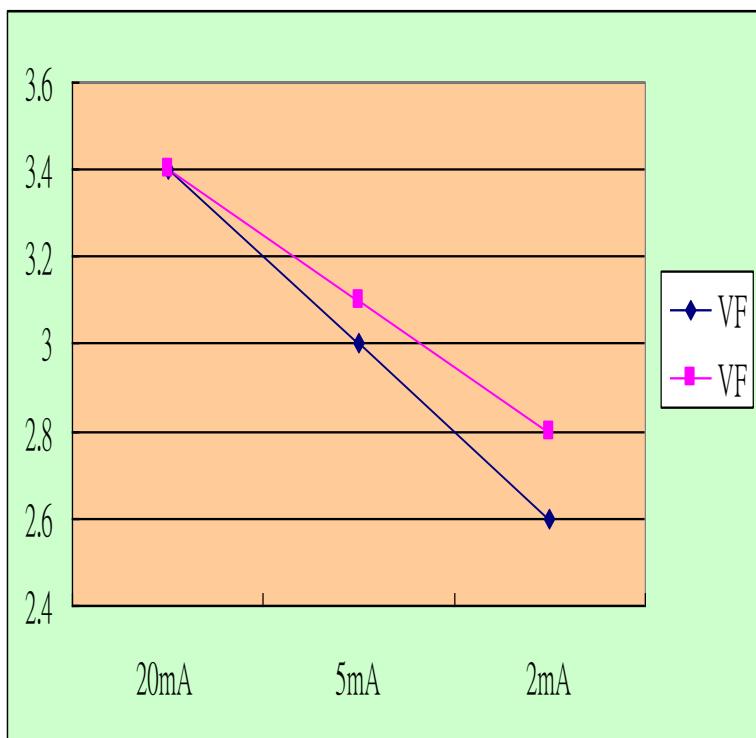
電壓跟電流

- 1.藍光色差
- 2.白光色差



## 藍色晶片 波長與電流之關係

電壓跟電流



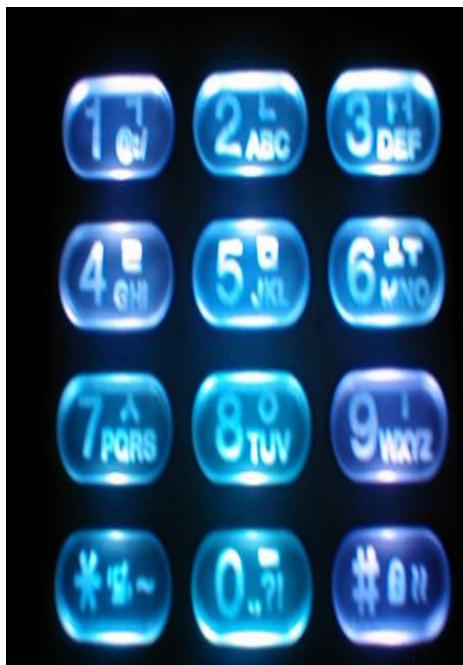
LED Vf BIN SELECTION					
BIN CODE	Forward Voltage (Vf : V)		BIN CODE	Forward Voltage (Vf : V)	
	min	max		min	max
A	1.60	1.80	G	2.80	3.00
B	1.80	2.00	H	3.00	3.20
C	2.00	2.20	J	3.20	3.40
D	2.20	2.40	K	3.40	3.60
E	2.40	2.60	L	3.60	3.80
F	2.60	2.80	M	3.80	4.00

應用電流造成VF變化後產生差異  
造成6pcs LED 電壓不同,同時也  
造成波長變化  
如果以分BIN臨界值來考量,則容易  
出現顏色不均的問題

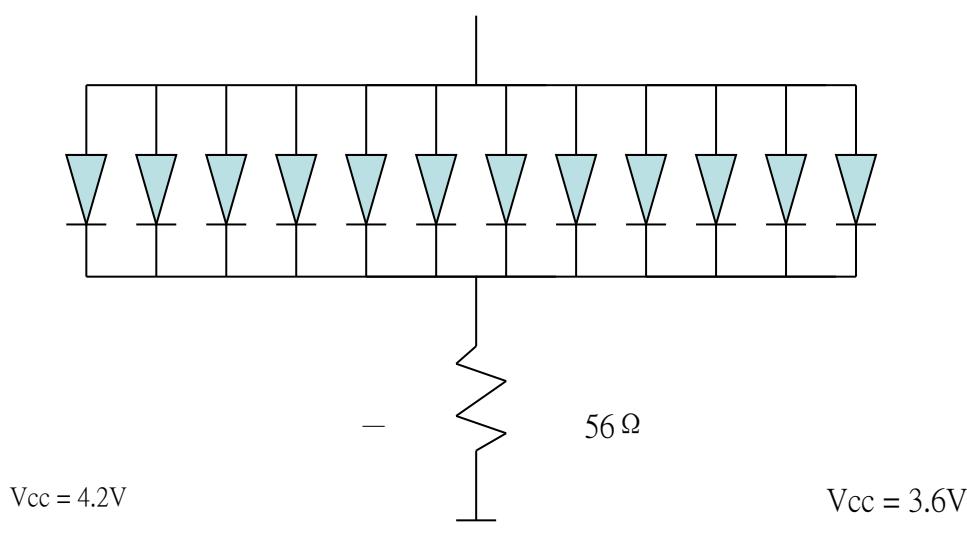
## 藍色晶片 波長與電流之關係

舉例: 手機Keypad應用,客戶規格為 1.7mA,但是首批出貨時測試電流為5mA  
造成客戶組裝後出現色差  
經實際計算客戶應用電流 實際約為1.7~2mA 經重新分BIN後即改善

電壓跟電流



+ 3.6~4.2 V



$$4.2 - 2.8 \text{ (Led Vf)} = I \text{ (Led If)} \times 56$$

$$I = 1.4 \div 56 \times 1000$$

$$I = 25\text{mA} \text{ (12 pcs)}$$

One pcs LED current is  $25\text{mA} \div 12 = 2.08 \text{ mA}$  (Max)

$$3.6 - 2.7 \text{ (Led Vf)} = I \text{ (Led If)} \times 56$$

$$I = 0.9 \div 56 \times 1000$$

$$I = 16.07 \text{ mA} \text{ (12 pcs)}$$

One pcs LED current is  $16.07\text{mA} \div 12 = 1.339 \text{ mA}$  (Min)



## 藍色晶片 波長與電流之關係

環境溫度

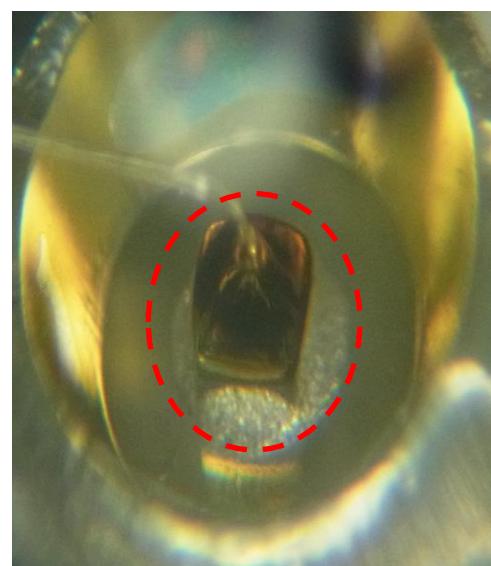
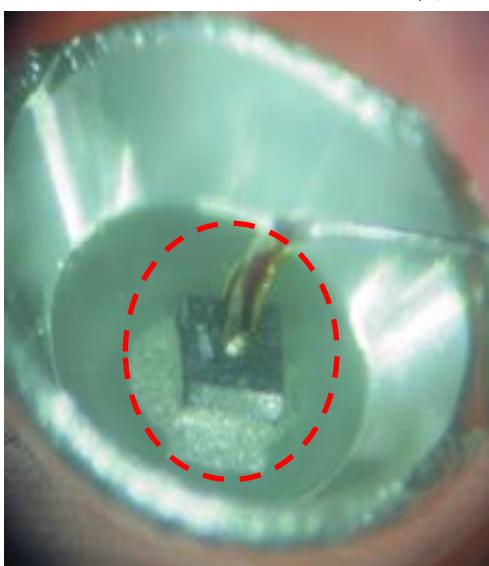
驅動方法	定電壓 (驅動電壓12V)	定電流 (A/單顆)	定電流 (A/單顆)
溫度	常溫	加熱	常溫
點亮時間 24H	LED表面溫度： <span style="color:blue;">84.8°C</span>	LED表面溫度： <span style="color:blue;">82.3°C</span>	LED表面溫度： <span style="color:blue;">49.3°C</span>
	LED通過電流： <span style="color:blue;">90.7mA</span>	LED通過電流： <span style="color:blue;">50mA</span>	LED通過電流： <span style="color:blue;">50mA</span>
	點亮狀況： <span style="color:red;">1串變暗</span>	點亮狀況： <span style="color:blue;">点亮正常</span>	點亮狀況： <span style="color:blue;">点亮正常</span>
點亮時間 48H	LED表面溫度： <span style="color:blue;">82.3°C</span>	LED表面溫度： <span style="color:blue;">76.2°C</span>	LED表面溫度： <span style="color:blue;">48.8°C</span>
	LED通過電流： <span style="color:blue;">87.8 mA</span>	LED通過電流： <span style="color:blue;">50mA</span>	LED通過電流： <span style="color:blue;">50mA</span>
	點亮狀況： <span style="color:red;">1串變暗</span>	點亮狀況： <span style="color:blue;">点亮正常</span>	點亮狀況： <span style="color:blue;">点亮正常</span>
點亮時間 72H	LED表面溫度： <span style="color:blue;">101°C</span>	LED表面溫度： <span style="color:blue;">80.2°C</span>	LED表面溫度： <span style="color:blue;">57°C</span>
	LED通過電流： <span style="color:blue;">89.2mA</span>	LED通過電流： <span style="color:blue;">50mA</span>	LED通過電流： <span style="color:blue;">50mA</span>
	點亮狀況： <span style="color:red;">兩串變暗</span>	點亮狀況： <span style="color:blue;">点亮正常</span>	點亮狀況： <span style="color:blue;">点亮正常</span>
點亮時間 120H	LED表面溫度： <span style="color:blue;">100.37°C</span>	LED表面溫度： <span style="color:blue;">79.6°C</span>	LED表面溫度： <span style="color:blue;">57.6°C</span>
	LED通過電流： <span style="color:blue;">86.4mA</span>	LED通過電流： <span style="color:blue;">50mA</span>	LED通過電流： <span style="color:blue;">50mA</span>
	點亮狀況： <span style="color:red;">兩串變暗</span>	點亮狀況： <span style="color:blue;">点亮正常</span>	點亮狀況： <span style="color:blue;">点亮正常</span>

## 紅外線燈 溫度與電流之關係

LED經過高溫以及過高的電流點亮

- 1.線材周圍的樹脂膠已經被燒黑
- 2.如繼續高溫點亮
- a.晶片周圍樹脂膠也將開始黃化,最後出現亮度衰減

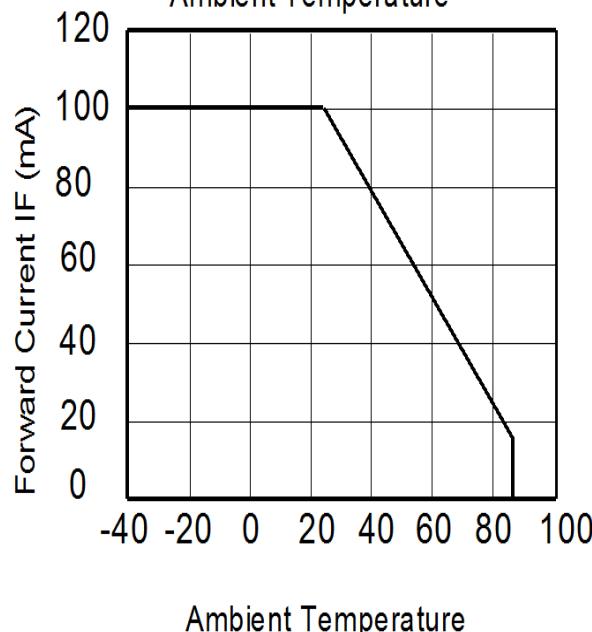
環境溫度



環境溫度增加,LED會出現以下的一些變化

- 1.溫度上升, LED VF會下降 (輕微變化)
- 2.VF下降會造成 定電壓設計支電路出現IF上升的現象
- 3.散熱良好,LED的電流與溫度最後會平衡
- 4.散熱不佳,LED最後會出現過載現象(LED失效)

Fig.2 Forward Current Vs  
Ambient Temperature



## 靜電

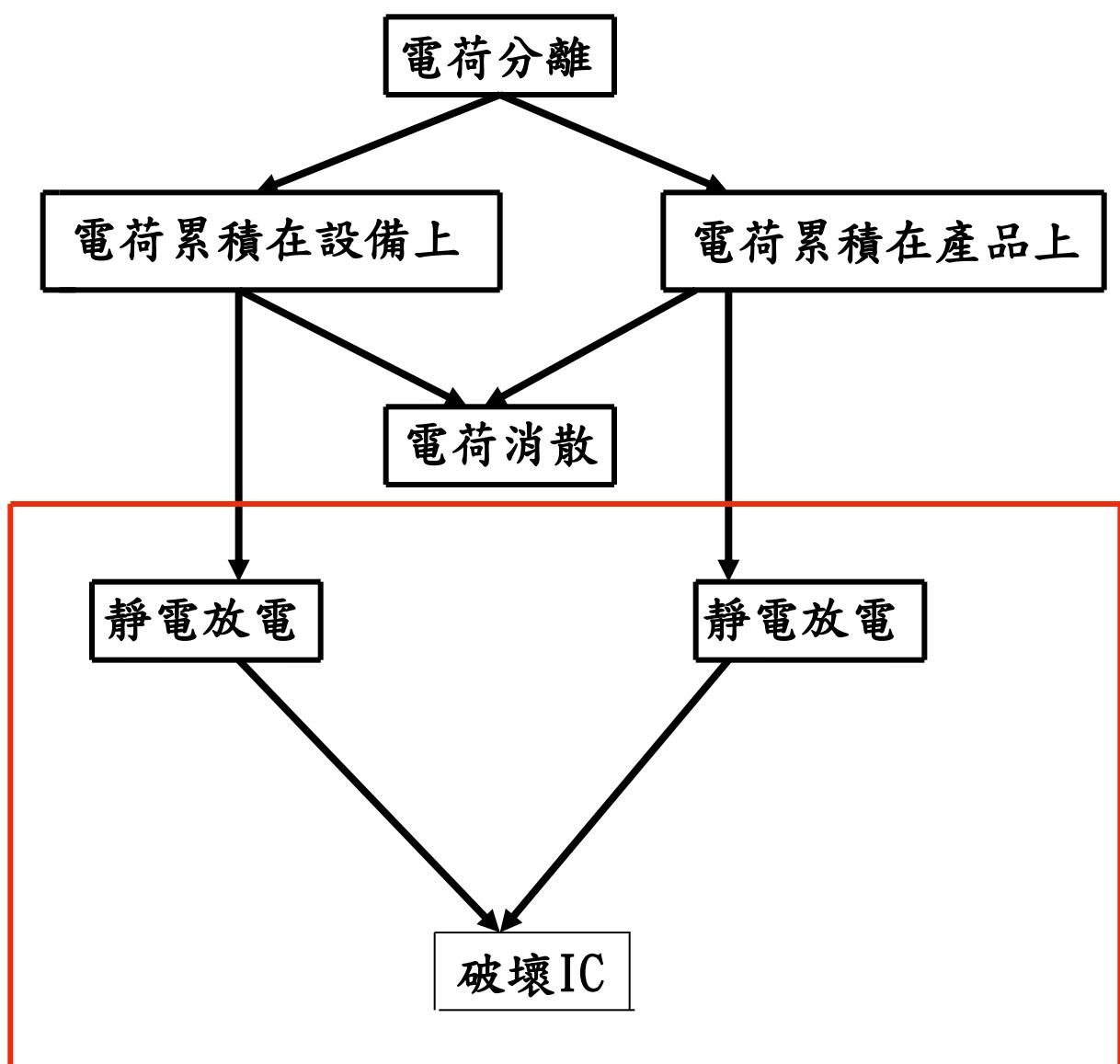
1) HBM: Human Body Model

ESD

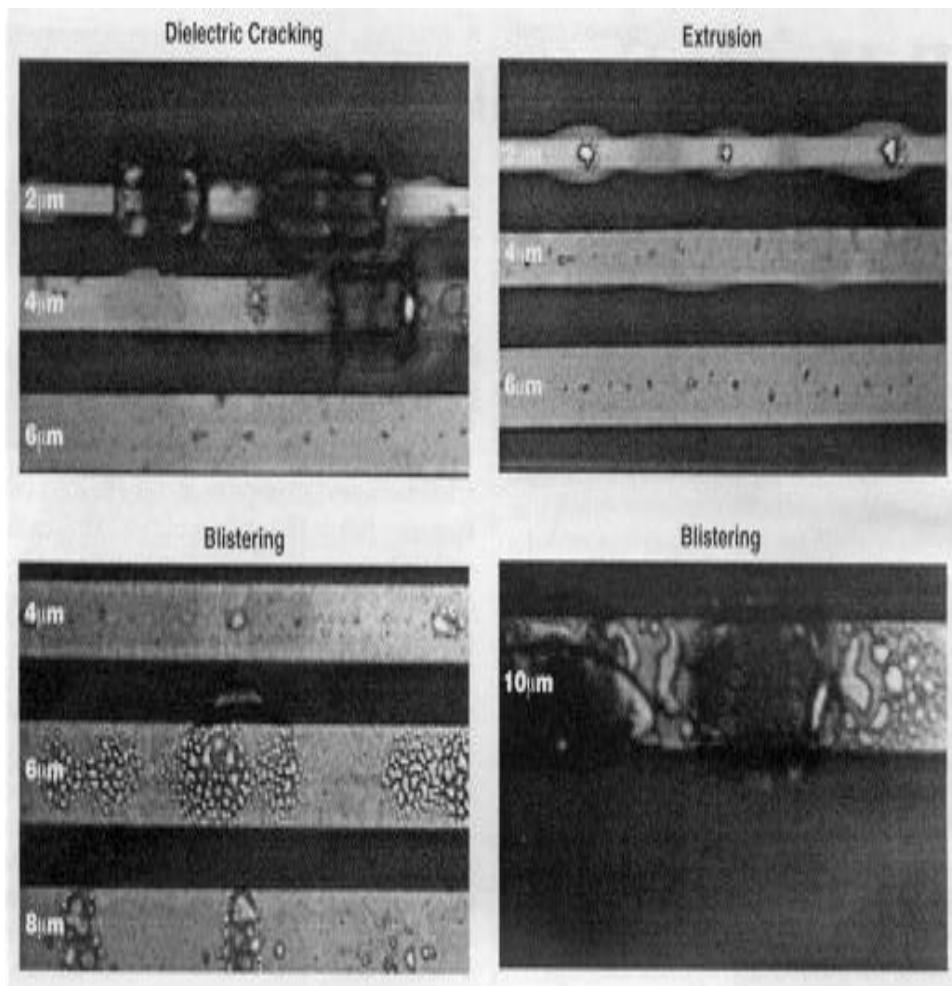
2) MM: Machine Model

3) CDM: Charged Device Model

## 靜電危害產生過程



## 靜電對IC造成的傷害



ESD

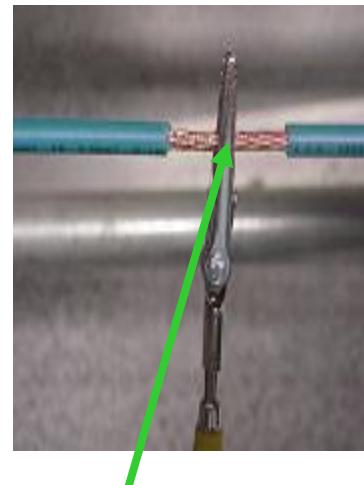
## 溼度與靜電的關係

產生源	濕度 10-20%	濕度 65-90%
走過地毯	35,000 伏	1,500 伏
在乙烯塑料地板上行走	12,000 伏	250 伏
在工作檯工作	6,000 伏	100 伏
拿出塑膠條中的 DIP 晶片	2,000 伏	200 伏
拿起一只塑膠套	20,000 伏	1,200 伏
有尿胺泡沫墊的工作椅子	18,000 伏	1,500 伏

\*本表節錄自美國國防部,軍規手冊 263.1980,表 2 及表 3

## 防靜電手環正確之使用法

ESD



手環連接線要扣牢端子扣.

連接線另一端要夾在接地線金屬位置.

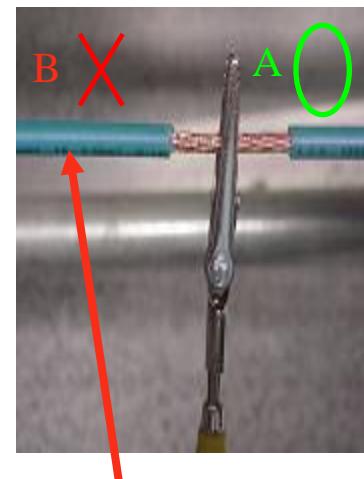
腕帶鬆緊適中，手環金屬面接觸皮膚.



腕帶太鬆，手環金屬面未接觸皮膚.



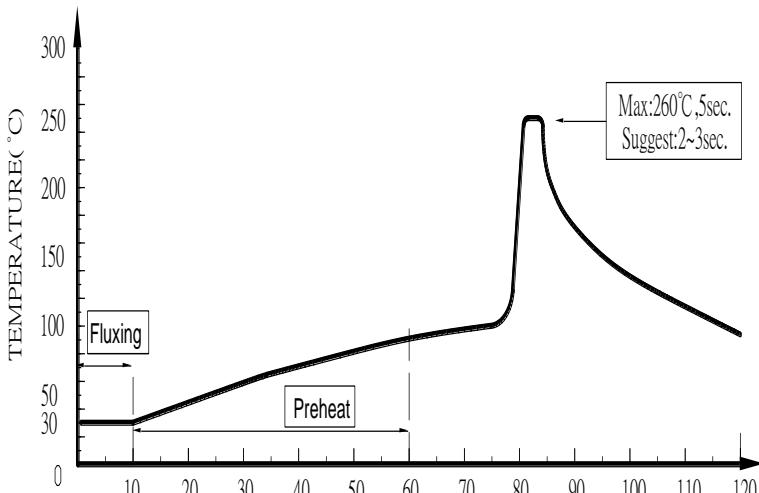
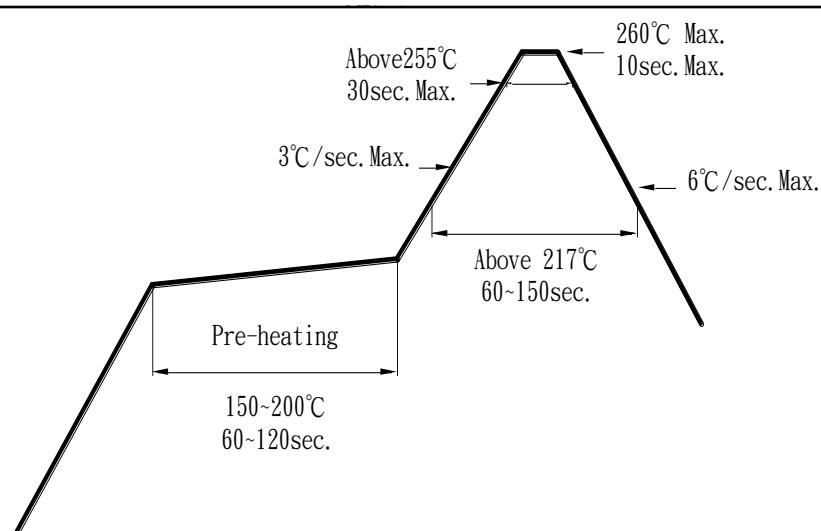
腕帶繫在  
袖套外



連接線另一端夾在接地線外皮位置.

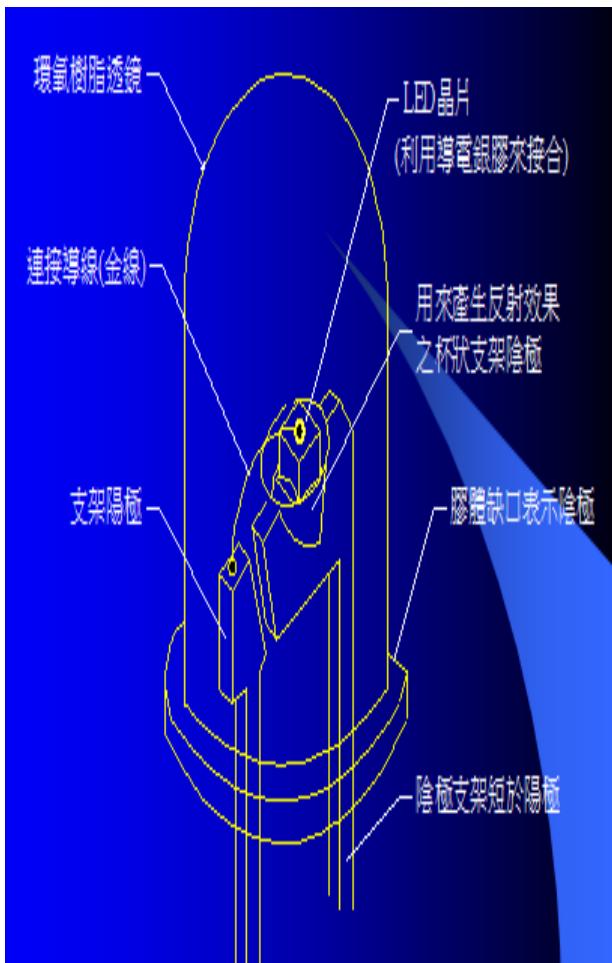
手環連接線未扣牢端子扣.

## LED鋸接

焊接方式	使用條件
烙鐵鋸接	350度 3秒以內
DIP鋸接	 <p>The graph shows Temperature (°C) on the y-axis (0 to 300) and Time (sec) on the x-axis (0 to 120). It includes two stages: 'Fluxing' (0-10 sec) and 'Preheat' (10-60 sec). The temperature rises slowly during preheat and then sharply to a peak of 260°C at approximately 80 seconds, which is labeled as 'Max: 260°C, 5sec.' and 'Suggest: 2~3sec.'</p>
IR REFLOW鋸接	 <p>The graph shows Temperature (°C) on the y-axis and Time (sec) on the x-axis. It includes a 'Pre-heating' stage (0-60 sec) where the temperature rises from 150-200°C over 60-120 seconds. The temperature then rises sharply to a peak of 260°C at 10 seconds, which is labeled as '260°C Max.' and '10sec. Max.'. The peak is limited by 'Above 255°C 30sec. Max.'. The cool-down stage is labeled with a maximum rate of 6°C/sec.</p>

## LED結構

LED鋸接



原料	功能	溫度影響
支架	導電 固定晶片	變色
銀膠	接著晶片	軟化
晶片	發光本體	--
線	連接正負極	--
環氧樹脂	包覆支架晶片以及線材	軟化,燒黑

## TG點

玻璃轉移溫度 (Glass Transition Temperature , Tg)  
環氧樹脂材料重要的特性之一，

溫度低於玻璃轉移溫度(Tg)時，會呈現出剛性具硬脆特性之玻璃態類似玻璃的特性，堅硬但容易脆裂。

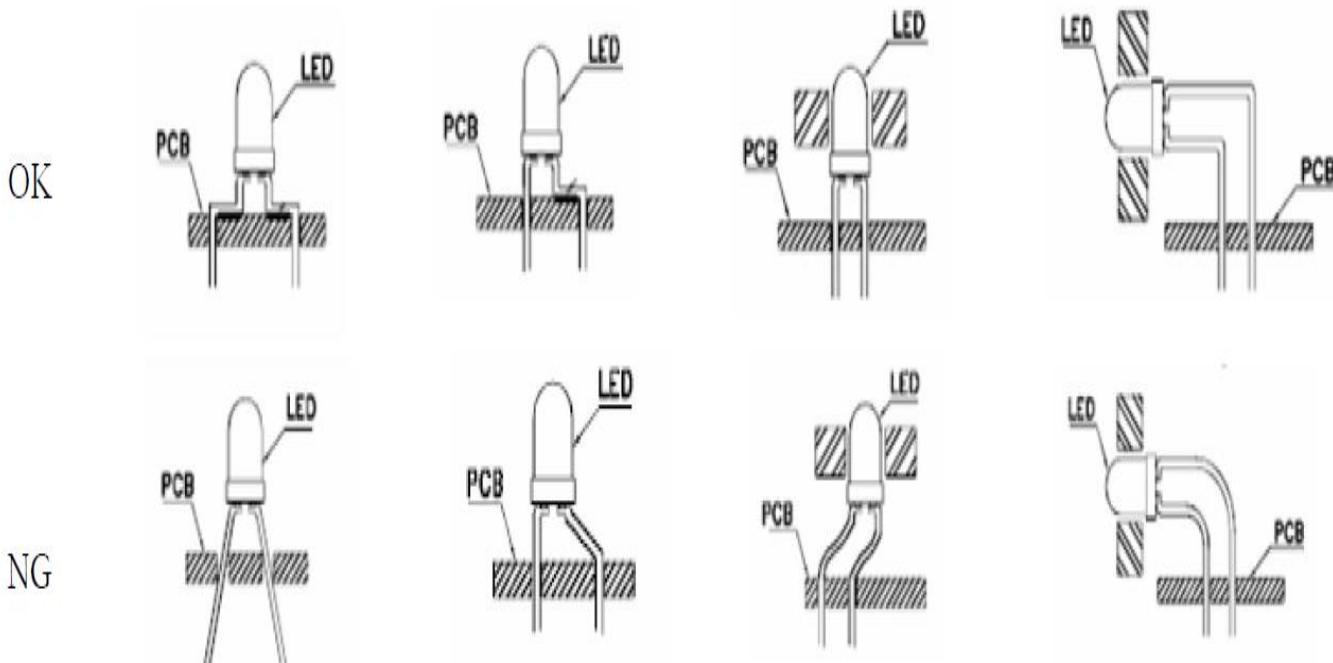
溫度高於玻璃轉移溫度(Tg)時，會呈現軟的狀態

- 1.LED包覆的樹脂膠,如果加熱時間過長,則包覆在膠體當中的零件容易出現位移或是受到外力拉扯時候,焊接點或是銀膠接著處會被拉扯開,造成LED失效
- 2.DIP產品鋸接時候如果出現彎腳方式錯誤,或是孔距不對也會出現類似外力影響造成不良

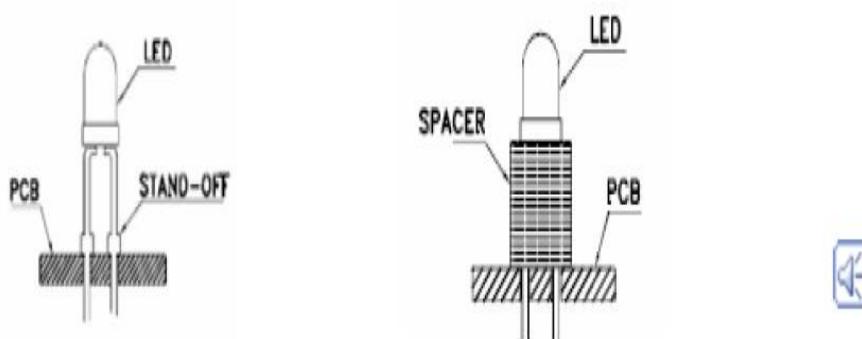
## 折彎腳

LED鉗接

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 the figure below for proper lead forming procedures



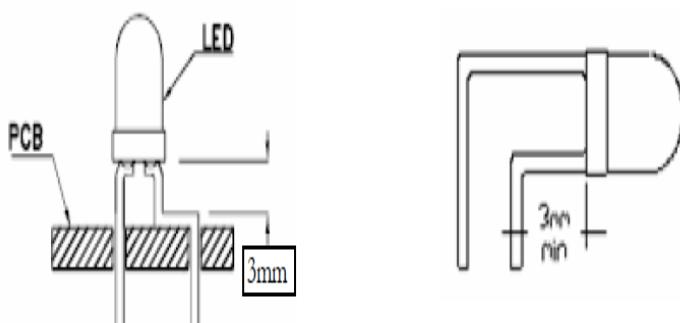
2. Use stand-offs or spacers to securely position the LED above the PCB



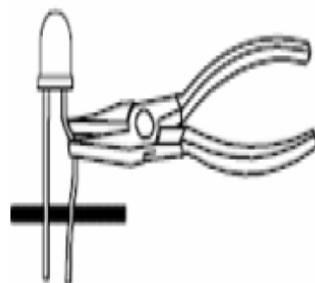
## 折彎腳

LED鉗接

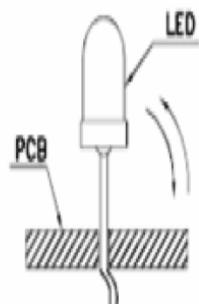
3. Maintain a minimum of 3mm clearance between the base of the LED lens and the first lead bend



4 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



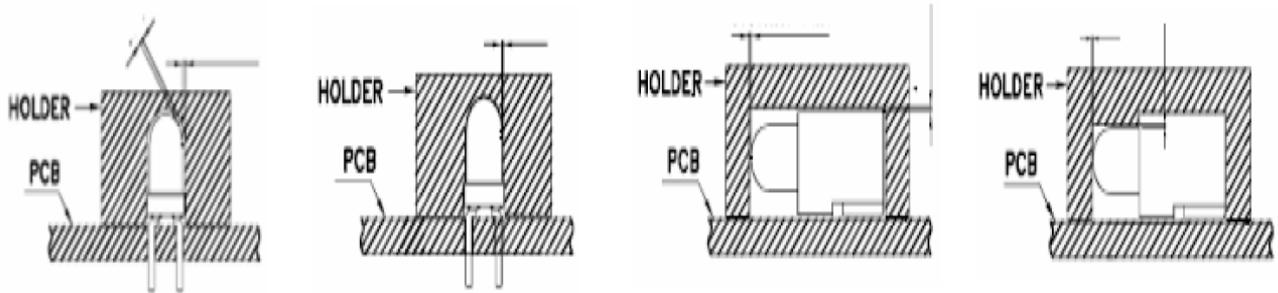
5. Do not bend the leads more than twice



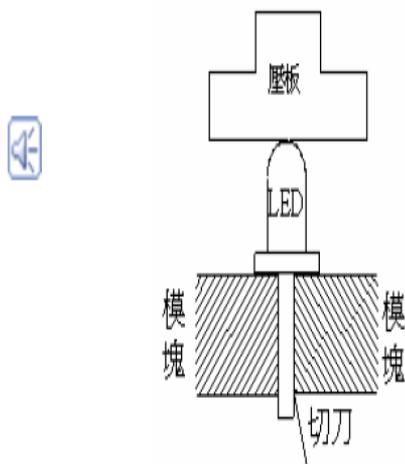
## 折彎腳

LED鉗接

6. During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering



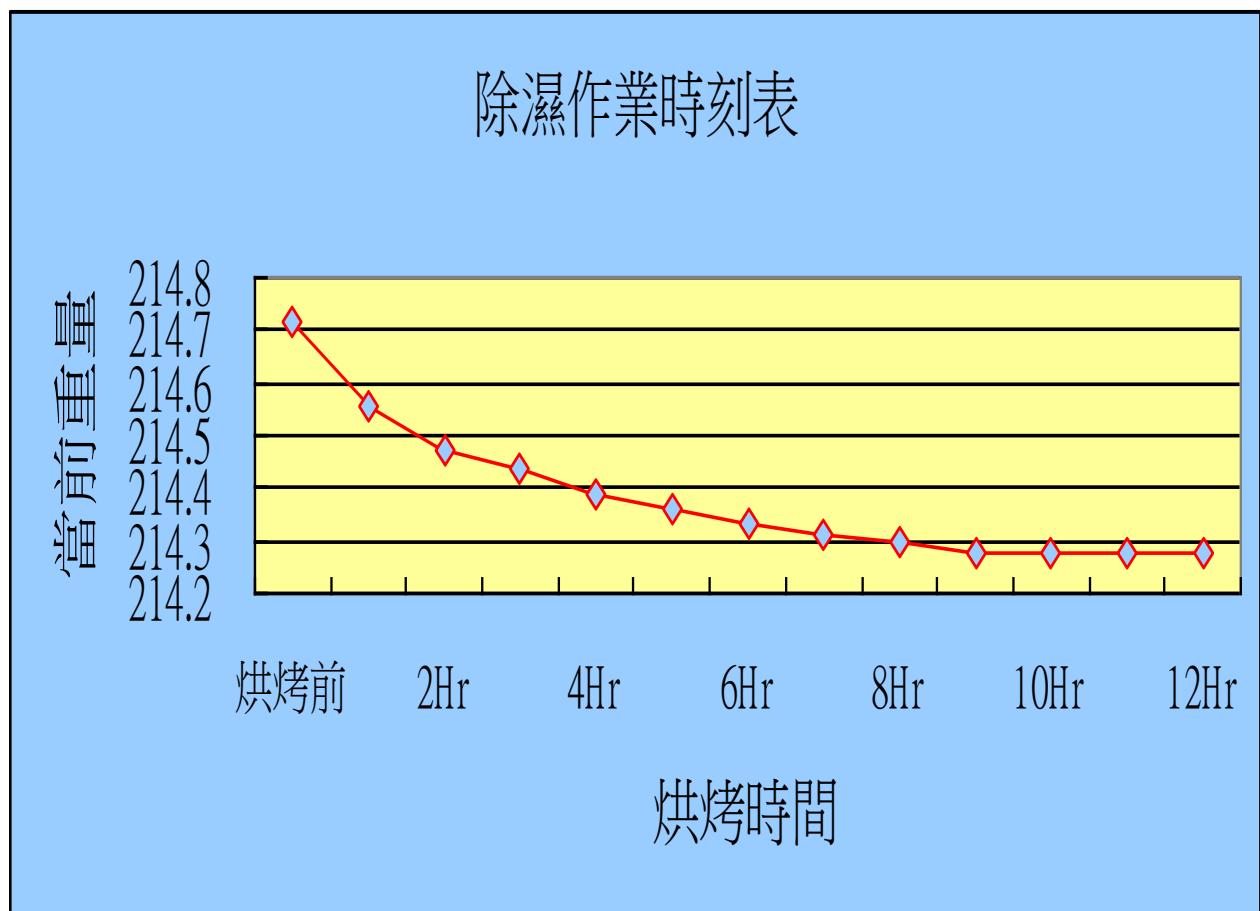
7. LED cut short feet during machine operation, it must be PIN feet are fixed, and then by the knife.



## LED鉀接

LED鉀接

- (1) Temperature : 5°C -30°C (41°F) Humidity : RH 60% Max.
- (2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
  - a. Completed within 24 hours.
  - b. Stored at less than 30% RH.
- (3) Devices require baking before mounting, if:(2) a or (2) b is not met.
- (4) If baking is required, devices must be baked under below conditions: 12 hours at 60°C±3°C.



## LED鉀接

濕度對SMD LED鉀接時候出現

爆米花現象之影響

產生原因: PCB板當中的溼氣再經過回流鉀時候 溫度迅速拉升造成溼氣迅速散出, 散出時候的水蒸氣力量十分強大足夠將LED的膠體從PCB上推開, 膠體剝離PCB時候, 將晶片以及金線拉斷, 造成LED損壞

LED鉀接

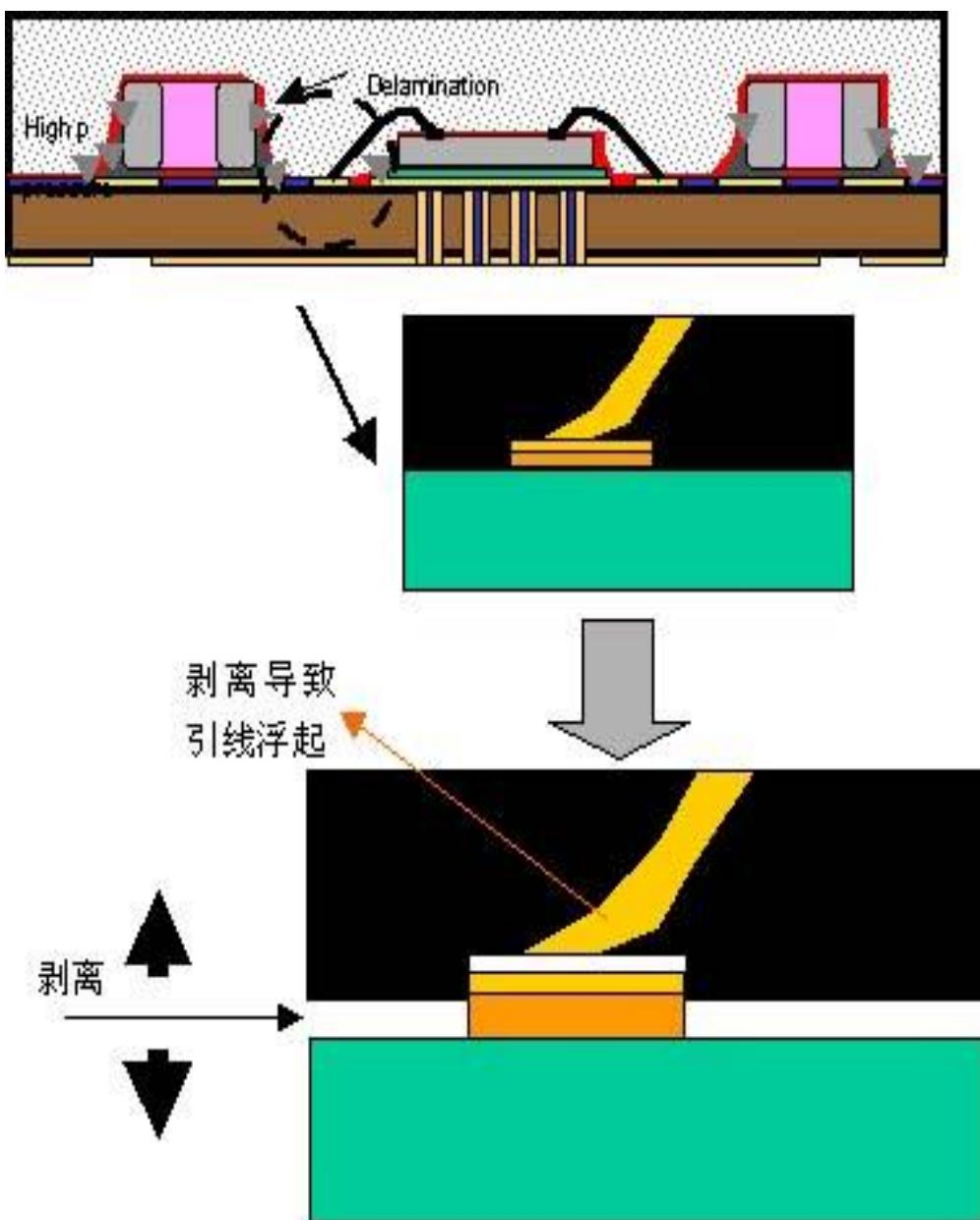


图 (2) 引线剥离放大示意图

## 焊接參數

LED鉀接

回流鉀時候,要有標準溫度曲線目的

- 1.避免LED表面有水汽時,容易產生墓碑現象
- 2.可預先加溫鉀接元件,避免冷鉀現象

