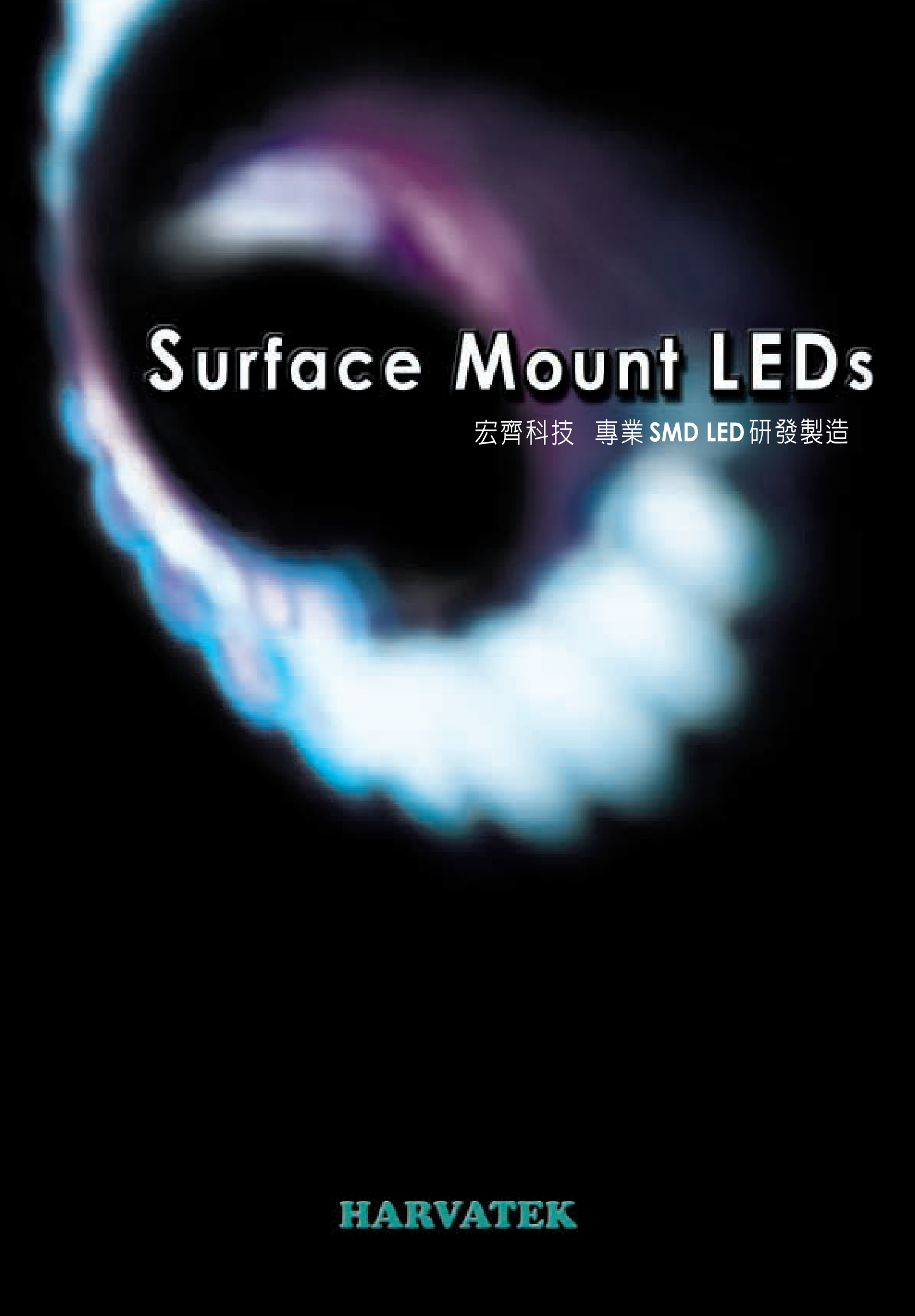

Surface Mount LEDs

宏齊科技　專業 **SMD LED** 研發製造

HARVATEK

HARVATEK

Company Profile

- Established: March 1995
- Employees: 450
- Capital: US$ 50 Million
- Major Shareholders:
  UMC Group
  Sunplus Technology
  Youngtek Corp.
- Manufacturing Base:
  Hsinchu, Taiwan

Bily Wang/President

Important Events

03/1995	Establised
02/1996	Mass production
07/1996	Frist SMD Chip LED package patent (Taiwan) granted
07/1996	Mass production started
04/1997	Capital-in from UMC group & Sunplus Corp.
01/1998	First SMD LD package patent (US) granted
11/1998	OEM business awarded
11/1998	New plant inaugurated
05/1999	Delivery of OEM projects began
08/1999	ISO 9002 certified
11/1999	Frist high effiicient SMD chip LED package patent granted
05/2000	Capacity reached 100KK/M
01/2002	QS 9000 certified
03/2002	Publicly traded on OTC market
10/2003	ISO 14001 certified
02/2004	Capacity reached 300KK/M
11/2004	White LED liense granted from Osram
02/2006	Sony GP certified

Headquarters and Factory
/ Taiwan, Hsinchu

OUR VISION – To be the world's leading specialized SMD optoelectronic component manufacturer innovative solutions provider and best -in - class service provider.

While most attention has been drawn to the development of super bright AlInGaP and InGaN based RGB full color and white LED lamps, Harvatek has been researching new ways to lead SMD manufacturing in the 21st century.

Team members have helped to foster a series of new products based on numerous patents, which are unique even among the Intelligent Properties of SMD LED packages.

Some of the new products include (1) the smallest commercial SMD LEDs (1.0x0.5x0.4 mm), (2) the most compact 3-in-1 RGB SMD LEDs, (3) the most efficient high-current SMD LEDs (over 1A), and (4) Hybrid SMD LEDs with embedded control ICs.

Aside from technological excellence, Harvatek also takes pride in its manufacturing efficiency. Striving to constantly provide the most cost-effective quality products to the marketplace in the shortest time possible is our testimony to the total solution.

Best-in-class customer satisfaction derivers from (1) mature mass-production process, (2) stafe of the art equipment, (3) know-how in utilizing cost effective raw materials, and (4) versatility in adapation for new products. Such efficacy keeps us one step ahead of our competition. These are only a few reasons Harvatek has become the number-one choice of major SMD LED users throughout the world.

"We pack small things to do big wonders" is Harvatek's motto in its pursuit of self-fulfillment and excellence. We believe SMD components are the impetus for the future world of portable (3C-based) products. In addition to attending current needs, we focus even more on creating trend-setting innovations through synergistic cooperation with customers.

With a newly built facility, state-of-the-art fully-automated systems, and a library of package-related patents, our R&D and engineering staff are ready to take on challenges and turn them into another market winner for you. If you are seeking solutions in the forefront of SMD LED technologies and products, you cannot find a better partner than Harvatek.

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Description of Part No.

Visible LED

H	T	-		1	5	0	N	B	-	D	T

	Series Name	Emitting Color	Resin Color	Packaging
☐ : PCB Type F: Lead Frame Type V: Lead Frame Type (with Zener)	.... 150: 3.2x1.6x1.1mm 170: 2.0x1.3x0.8mm 191: 1.6x0.8x0.6mm F195: 1.6x0.8x0.4mm ...	NB: InGaN Blue FCH / FDH: Full Color	D: Diffused C: Water Clear	T: Taped Reel ☐ : Bulk

Flash LED

H	T	-	V	2	5	3	B	P	-	D	T

	Series Name	Emitting Color	Resin Color	Packaging
V: Lead Frame Type (with Zener)	V253: 3.2x2.7x0.8mm	BP: White	D: Diffused C: Water Clear	T: Taped Reel ☐ : Bulk

HARVATEK

Product Description Table

Series	Dimension (LxWxH) Unit: mm	Lens Shape	Resin	Description
HT-150	3.2x1.6x1.1 (1206)	Flat	Diffused	Mono Color
HT-159	3.2 x 1.6 x 1.85 (1206)	Flat	Clear	Mono Color
HT-170	2.0x1.3x0.8 (0805)	Flat	Diffused	Mono Color
HT-191	1.6x0.8x0.6 (0603)	Flat	Diffused	Mono Color
HT-193	1.6x0.8x0.4 (0603)	Flat	Diffused	Mono Color
HT-260	3.2x1.2x1.1 (1205)	Flat	Diffused	Mono Color
HT-261 *NEW !*	1.6x1.5x0.55 (0606)	Flat	Diffused	Bi-Color
HT-155	3.2x2.7x1.1 (1210)	Flat	Diffused	Bi-Color
HT-297	1.6x0.8x0.5 (0603)	Flat	Diffused	Bi-Color
HT-E358	3.2x2.7x1.1 (1210)	Flat	Diffused	Tri-Color
HT-E372	2.0x1.3x0.5 (0805)	Flat	Diffused	Tri-Color
HT-E374	2.0x1.3x0.5 (0805)	Flat	Diffused	Tri-Color
HT-380	1.6x1.6x0.4 (0606)	Flat	Clear	Tri-Color
HT-110	3.2x1.5x1.0 (1206)	Oval (Right Angle)	Clear	Mono Color
HT-121	1.6x1.0x0.6 (0604)	Oval (Right Angle)	Clear	Mono Color

✻ For further information, please contact our offices listed on the back cover.

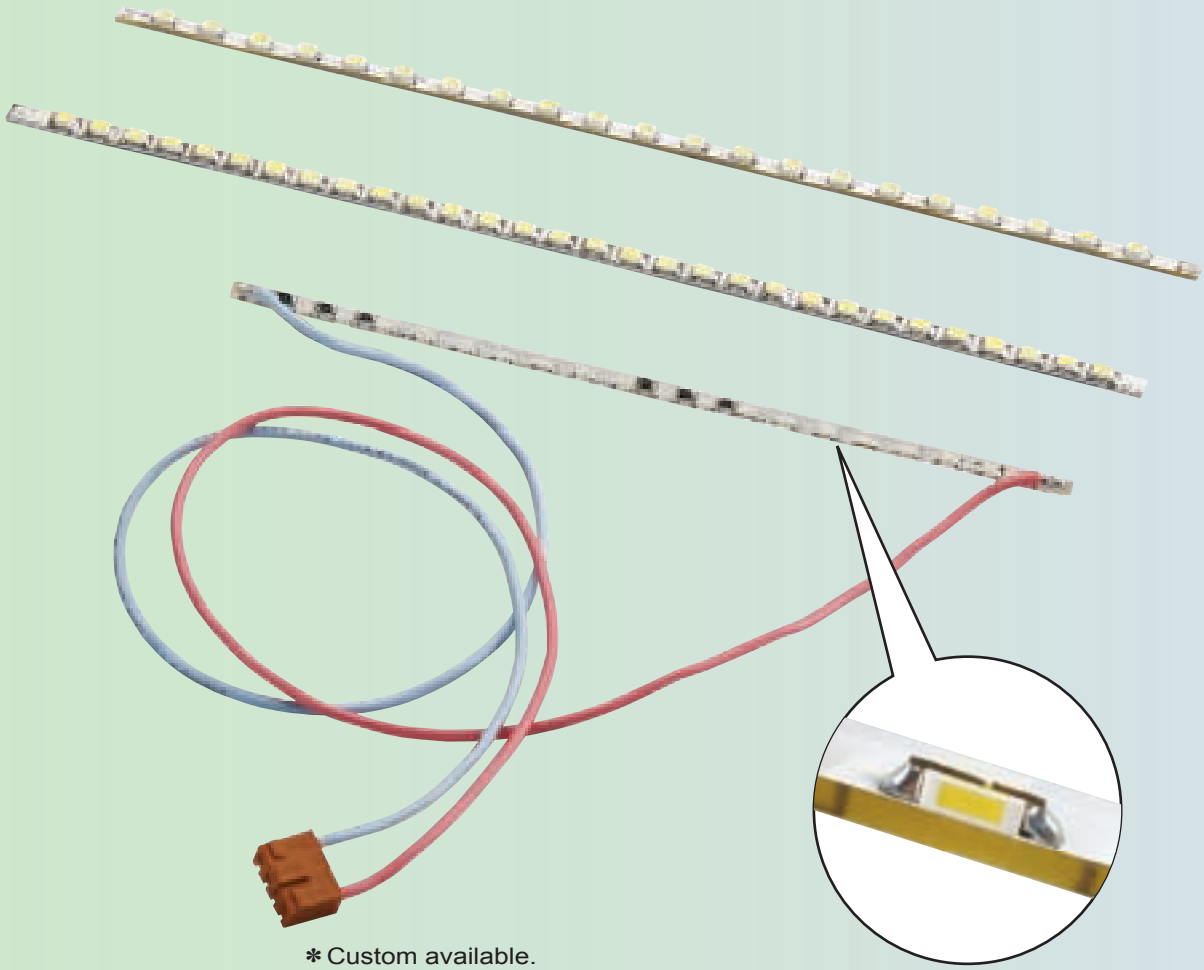
Product Description Table

Series	Dimension (LxWxH) Unit: mm	Lens Shape	Resin	Description
HT-210	3.2x1.5x1.0 (1206)	Oval (Right Angle)	Clear	Bi-Color
HT-E311	3.2x1.5x1.0 (1206)	Oval (Right Angle)	Diffused	Tri-Color
HT-V114 *NEW !*	4.0x1.2x0.4 (1604)	Flat	Diffused	Mono Color
HT-V116 *NEW !*	4.0x1.2x0.6 (1204)	Flat	Diffused	Mono Color
HT-V118	3.2x1.1x0.8 (1204)	Flat	Diffused	Mono Color
HT-F150	3.2x1.6x1.3 (1206)	Flat	Diffused	Mono Color
HT-V158 *NEW !*	3.0x2.0x0.5 (1208)	Flat	Diffused	Mono Color
HT-F158 *NEW !*	3.0x2.0x0.5 (1208)	Flat	Diffused	Mono Color
HT-U158 *NEW !*	3.0x2.0x1.2 (1208)	Flat	Clear	Mono Colo
HT-V171	2.0x1.2x0.45 (0805)	Flat	Diffused	Mono Color
HT-F195	1.6x0.8x0.4 (0603)	Flat	Diffused	Mono Color
HT-F196	1.6x0.8x0.35 (0603)	Flat	Diffused	Mono Color
HT-F199 *NEW !*	1.6x0.8x0.3 (0603)	Flat	Diffused	Mono Color
HT-V350	3.2x2.7x1.1 (1210)	Flat	Diffused	Flash LED
HT-V253	3.2x2.7x0.8 (1210)	Flat	Diffused	Flash LED

* For further information, please contact our offices listed on the back cover.

Product Description Table

Series	Dimension (LxWxH) Unit: mm	LED Quantity	Input	Description
HT-057A	105x2.5x1.8	15ea	12V	5.7” Backlight
HT-066B	120.8x2.5x1.8	18ea	12V	6.6” Backlight
HT-070X	158x2.6x2.2	21ea	9.6V ; 140mA (constant)	7” Backlight
HT-110A	275.5x4.3x1.0	40ea	32V	11.1” Backlight
HT-121D	273.5x3.0x1.1	44ea	35V	12.1” Backlight



✻ Custom available.

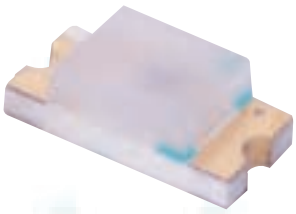
✻ For further information, please contact us directly offices listed on the back cover.

Iv Bin Table

Bin	Range (mcd)		Bin	Range (mcd)		Bin	Range (mcd)	
	Min.	Max.		Min.	Max.		Min.	Max.
A	0.11	0.18	A1	0.11	0.14	A2	0.14	0.18
B	0.18	0.29	B1	0.18	0.23	B2	0.23	0.29
C	0.29	0.45	C1	0.29	0.36	C2	0.36	0.45
D	0.45	0.72	D1	0.45	0.56	D2	0.56	0.72
E	0.72	1.12	E1	0.72	0.90	E2	0.90	1.12
F	1.12	1.80	F1	1.12	1.40	F2	1.40	1.80
G	1.80	2.85	G1	1.80	2.25	G2	2.25	2.85
H	2.85	4.50	H1	2.85	3.60	H2	3.60	4.50
J	4.50	7.15	J1	4.50	5.60	J2	5.60	7.15
K	7.15	11.25	K1	7.15	9.00	K2	9.00	11.25
L	11.25	18.00	L1	11.25	14.00	L2	14.00	18.00
M	18.00	28.50	M1	18.00	22.50	M2	22.50	28.50
N	28.50	45.00	N1	28.50	36.00	N2	36.00	45.00
P	45.00	71.50	P1	45.00	56.00	P2	56.00	71.50
Q	71.50	112.50	Q1	71.50	90.00	Q2	90.00	112.50
R	112.50	180.00	R1	112.50	140.00	R2	140.00	180.00
S	180.00	285.00	S1	180.00	226.00	S2	226.00	285.00
T	285.00	360.00	T1	285.00	320.00	T2	320.00	360.00
U	360.00	450.00	U1	360.00	400.00	U2	400.00	450.00
V	450.00	560.00	V1	450.00	500.00	V2	500.00	560.00
W	560.00	715.00	W1	560.00	630.00	W2	630.00	715.00
X	715.00	900.00	X1	715.00	800.00	X2	800.00	900.00
Y	900.00	1125.00	Y1	900.00	1000.00	Y2	1000.00	1125.00
Z	1125.00	1440.00	Z1	1125.00	1270.00	Z2	1270.00	1440.00
AA	1440.00	1800.00	AA1	1440.00	1610.00	AA2	1610.00	1800.00
AB	1800.00	2250.00	AB1	1800.00	2010.00	AB2	2010.00	2250.00
AC	2250.00	2850.00	AC1	2250.00	2530.00	AC2	2530.00	2850.00
AD	2850.00	3600.00	AD1	2850.00	3200.00	AD2	3200.00	3600.00
AE	3600.00	4500.00	AE1	3600.00	4000.00	AE2	4000.00	4500.00
AF	4500.00	5600.00	AF1	4500.00	5000.00	AF2	5000.00	5600.00
AG	5600.00	7150.00	AG1	5600.00	6300.00	AG2	6300.00	7150.00
AH	7150.00	9000.00	AH1	7150.00	8000.00	AH2	8000.00	9000.00
AJ	9000.00	11250.00	AJ1	9000.00	10000.00	AJ2	10000.00	11250.00

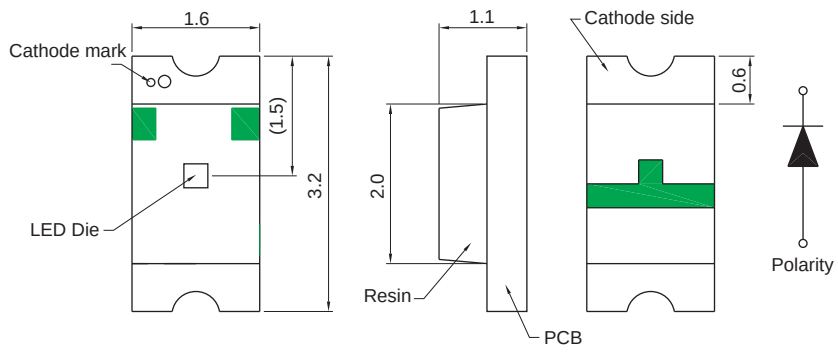
Features

- Chip LED (3.2x1.6x1.1)
- Super compact



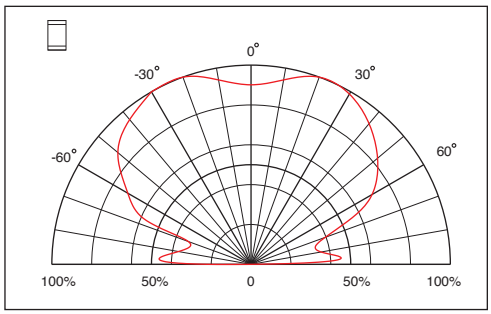
Package Outline Dimensions

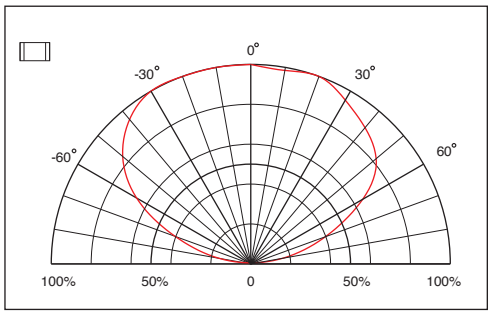
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

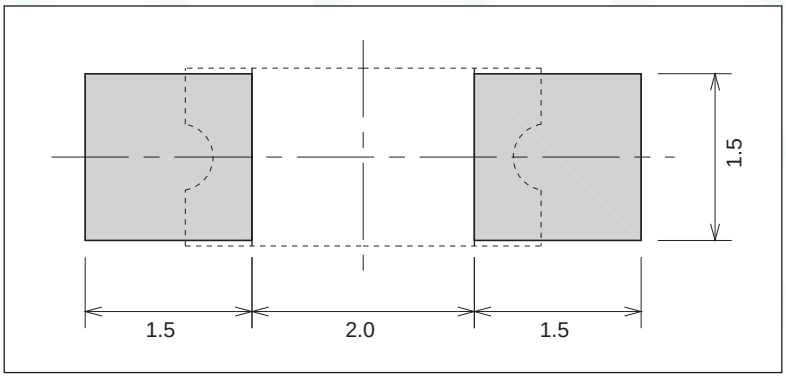
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25 ℃)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

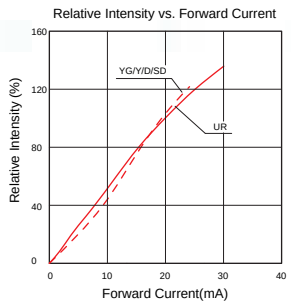
* 0.1msec pulse, 10% duty cycle.

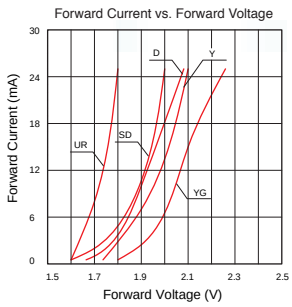
Electrical / Optical Characteristics

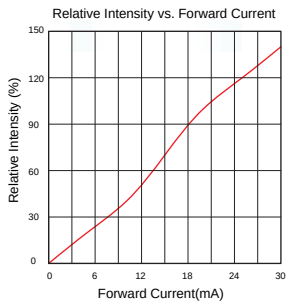
(Ta=25 °C)

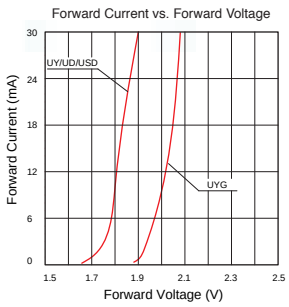
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-150YG	Yellow Green	GaP	2.2	2.6	573	568	30	9	20	20	140
HT-150Y	Yellow	GaAsP	2.1	2.6	590	589	35	3.6	9	20	140
HT-150D	Amber	GaAsP	2.1	2.6	608	610	35	6.2	9	20	140
HT-150SD	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	5.6	14	20	140
HT-150UR	Super Bright Red	AlGaAs	1.8	2.2	643	660	20	9	21	20	140
HT-150UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	35	60	20	140
HT-150UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	591	593	15	40	90	20	140
HT-150UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	50	120	20	140
HT-150USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	50	120	20	140
HT-150NB	Blue	InGaN	3.3	3.9	470	468	40	25	70	20	140
HT-150NG	Green	InGaN	3.3	3.9	527	520	40	65	160	20	140
HT-150BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	140	220	20	140
HT-150NB5	Blue	InGaN	2.8	3.15	472	470	40	9	25	5	140
HT-150NG5	Green	InGaN	2.8	3.15	529	522	40	15	45	5	140
HT-150BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	25	60	5	140

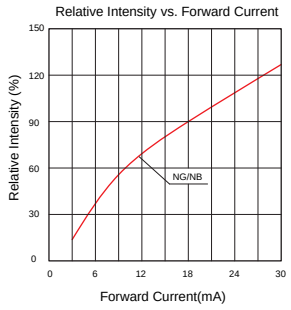
*Per NIST standards

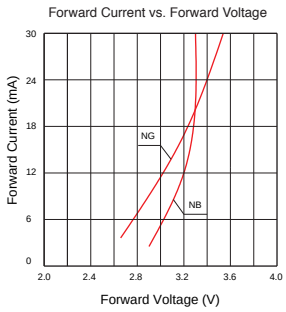


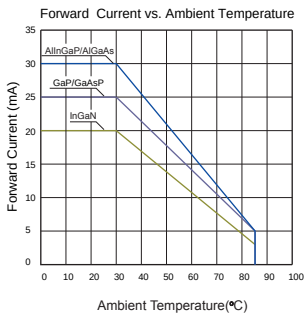










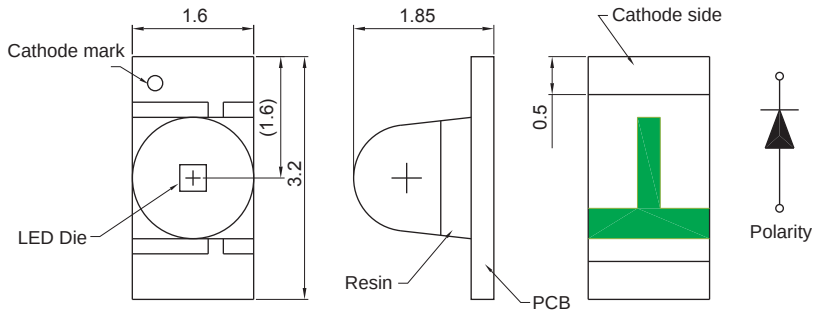


Features

- Chip LED (3.2 x 1.6 x 1.85)
- Super compact
- Reverse mountable

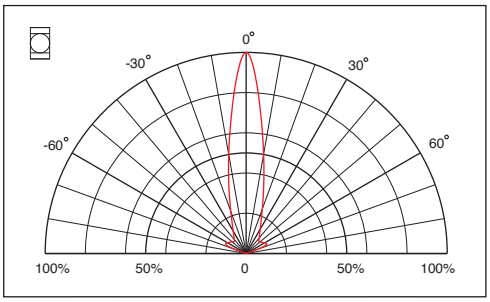
Package Outline Dimensions

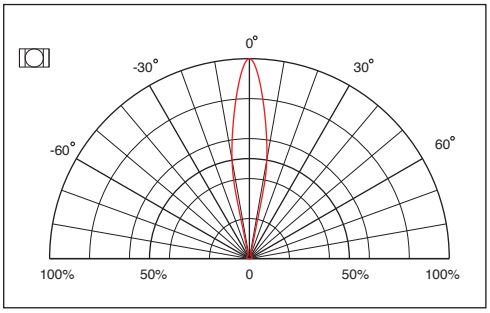
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

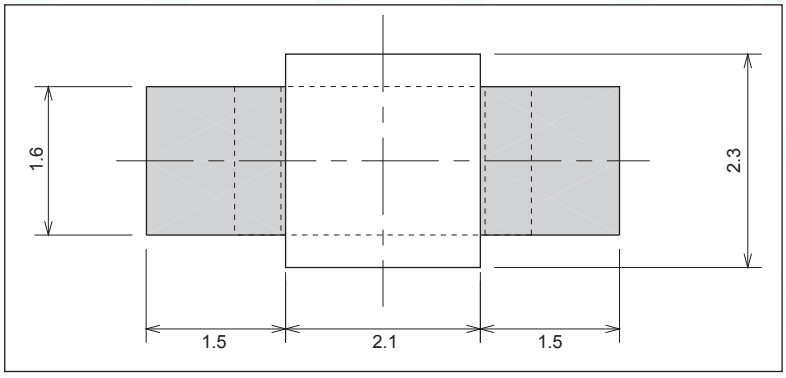
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

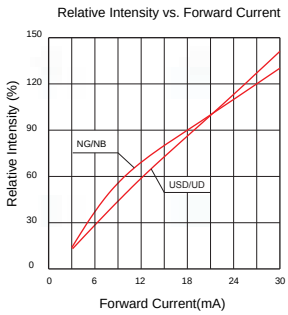
* 0.1msec pulse, 10% duty cycle.

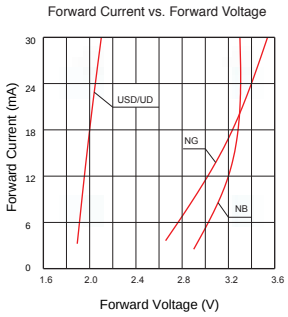
Electrical / Optical Characteristics

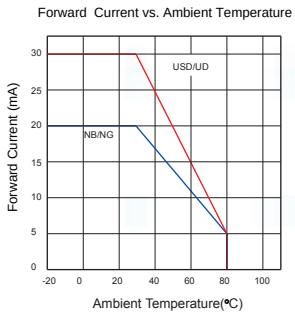
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-159YG	Yellow Green	GaP	2.2	2.6	573	568	30	45	100	20	20
HT-159Y	Yellow	GaAsP	2.1	2.6	590	589	35	45	100	20	20
HT-159D	Amber	GaAsP	2.1	2.6	608	610	35	45	100	20	20
HT-159SD	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	45	100	20	20
HT-159UR	Super Bright Red	AlGaAs	1.8	2.2	643	660	20	45	100	20	20
HT-159UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	180	600	20	20
HT-159UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	180	500	20	20
HT-159UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	180	700	20	20
HT-159USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	180	900	20	20
HT-159URO	Ultra Bright Red	AlInGaP	1.9	2.4	632	645	22	180	1000	20	20
HT-159NB	Blue	InGaN	3.3	3.9	470	468	40	500	850	20	20
HT-159NG	Green	InGaN	3.3	3.9	527	520	40	900	2000	20	20
HT-159BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	1000	2500	20	20

*Per NIST standards

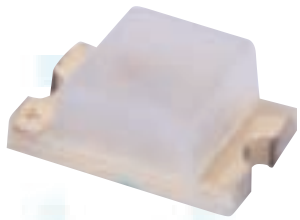






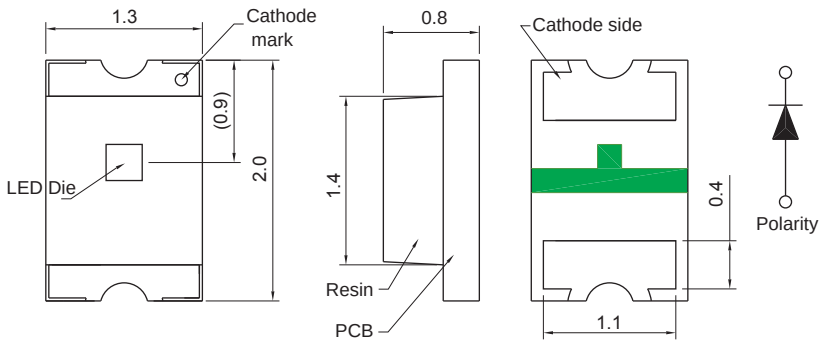
Features

- Chip LED (2.0x1.3x0.8)
- Super compact



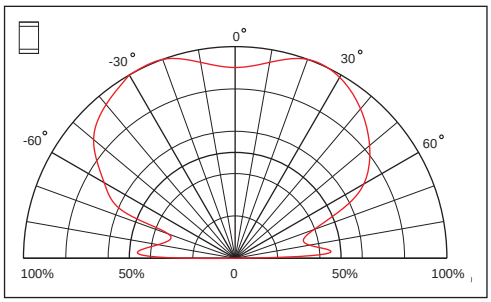
Package Outline Dimensions

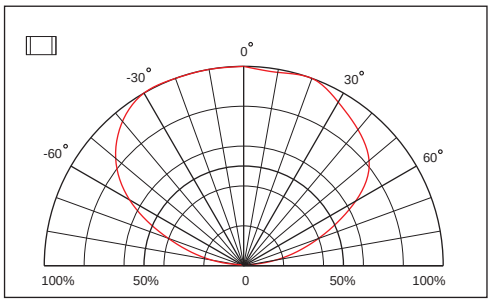
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

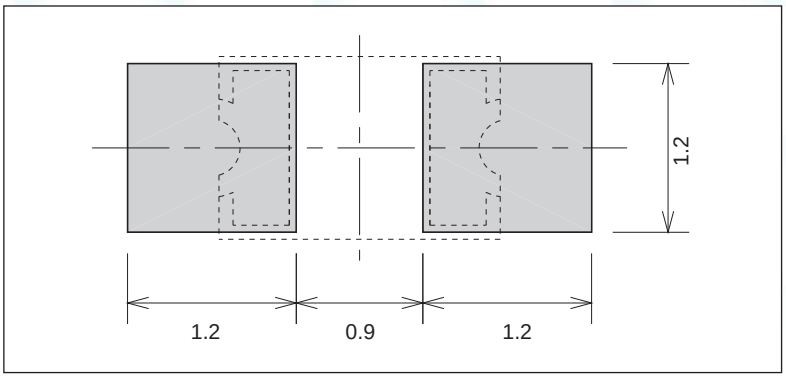
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

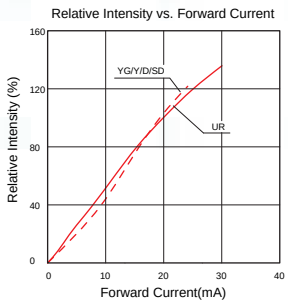
* 0.1msec pulse, 10% duty cycle.

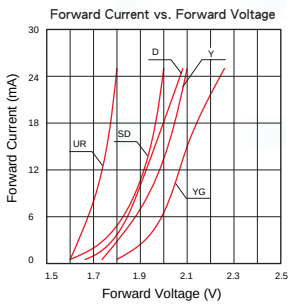
Electrical / Optical Characteristics

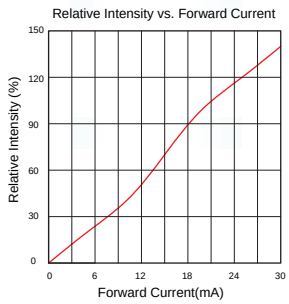
(Ta=25 °C)

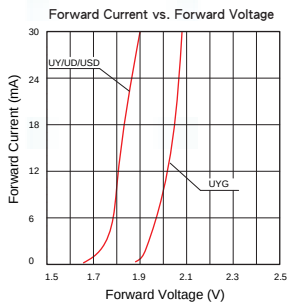
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta\frac{1}{2}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-170YG	Yellow Green	GaP	2.2	2.6	573	568	30	9	18	20	140
HT-170Y	Yellow	GaAsP	2.1	2.6	590	589	35	3.6	9	20	140
HT-170D	Amber	GaAsP	2.1	2.6	608	610	35	5.6	9	20	140
HT-170SD	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	6.2	14	20	140
HT-170UR	Super Bright Red	AlGaAs	1.8	2.2	643	660	20	9	21	20	140
HT-170UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	25	50	20	140
HT-170UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	591	593	15	25	90	20	140
HT-170UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	25	90	20	140
HT-170USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	25	60	20	140
HT-170NB	Blue	InGaN	3.3	3.9	470	468	40	35	80	20	140
HT-170NG	Green	InGaN	3.3	3.9	527	520	40	90	140	20	140
HT-170BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	100	220	20	140
HT-170NB5	Blue	InGaN	2.8	3.15	472	470	40	9	25	5	140
HT-170NG5	Green	InGaN	2.8	3.15	529	522	40	15	45	5	140
HT-170BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	25	60	5	140

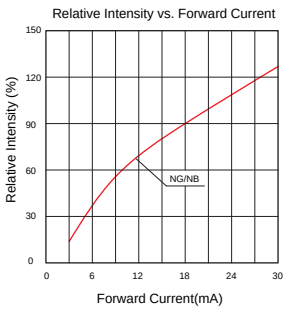
*Per NIST standards

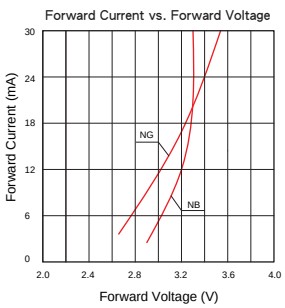


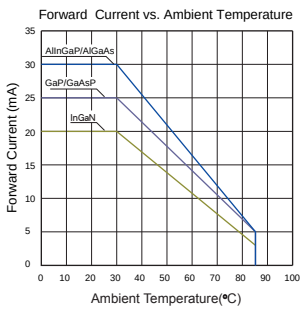










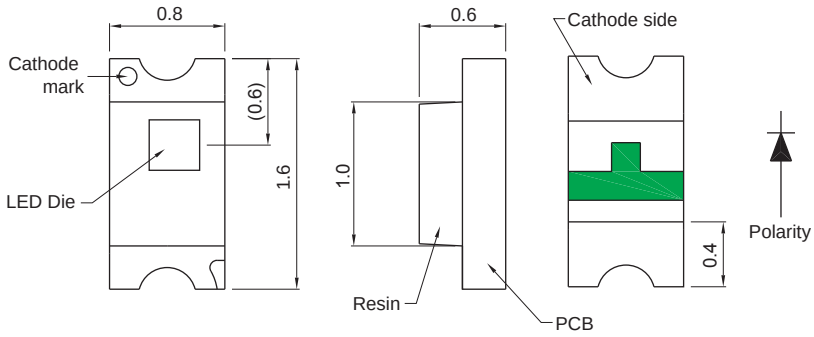


Features

- Chip LED (1.6 x 0.8 x 0.6)
- Super compact

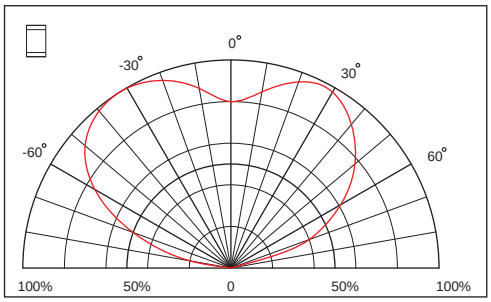
Package Outline Dimensions

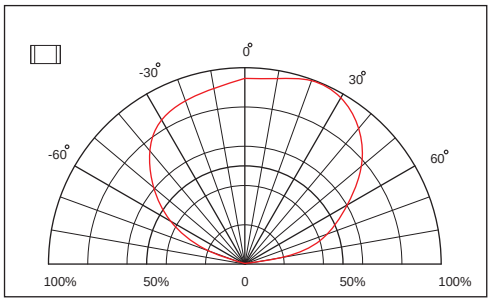
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

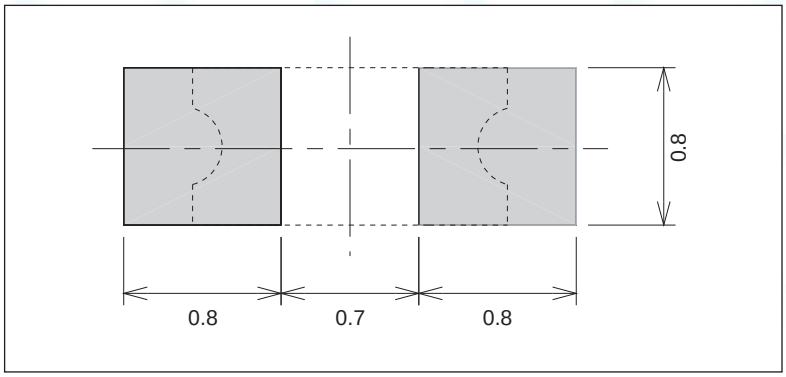
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

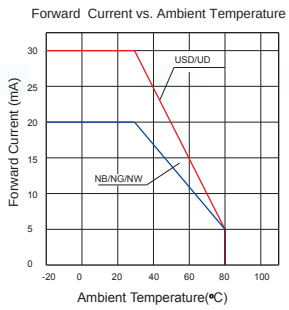
* 0.1msec pulse, 10% duty cycle.

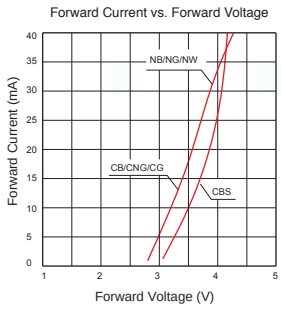
Electrical / Optical Characteristics

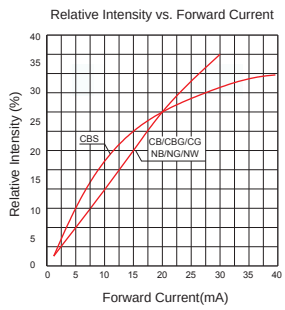
(Ta=25 °C)

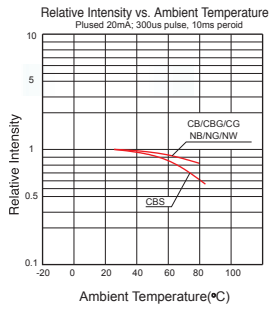
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta\frac{1}{2}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-191YG	Yellow Green	GaP	2.2	2.6	573	568	30	4.5	12	20	140
HT-191Y	Yellow	GaAsP	2.1	2.6	590	589	35	7.2	9	20	140
HT-191D	Amber	GaAsP	2.1	2.6	608	610	35	2.5	9	20	140
HT-191SD	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	4	11	20	140
HT-191UR	Super Bright Red	AlGaAs	1.8	2.2	643	660	20	6.3	16	20	140
HT-191UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	25	50	20	140
HT-191UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	40	95	20	140
HT-191UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	40	95	20	140
HT-191USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	40	95	20	140
HT-191URO	Ultra Bright Red	AlInGaP	1.9	2.4	632	645	22	25	50	20	140
HT-191NB	Blue	InGaN	3.3	3.9	470	468	40	25	40	20	140
HT-191NG	Green	InGaN	3.3	3.9	527	520	40	60	140	20	140
HT-191BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	140	285	20	140
HT-191NB5	Blue	InGaN	2.8	3.15	472	470	40	9	25	5	140
HT-191NG5	Green	InGaN	2.8	3.15	529	522	40	15	45	5	140
HT-191BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	25	60	5	140

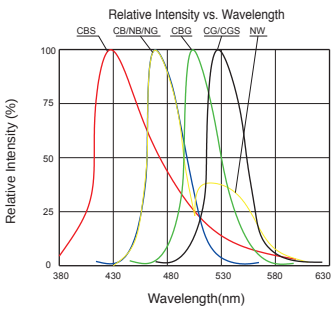
*Per NIST standards

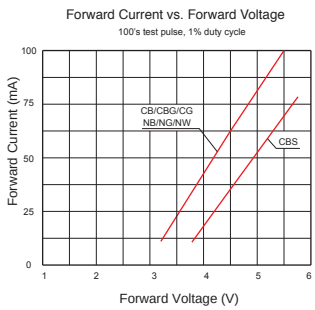










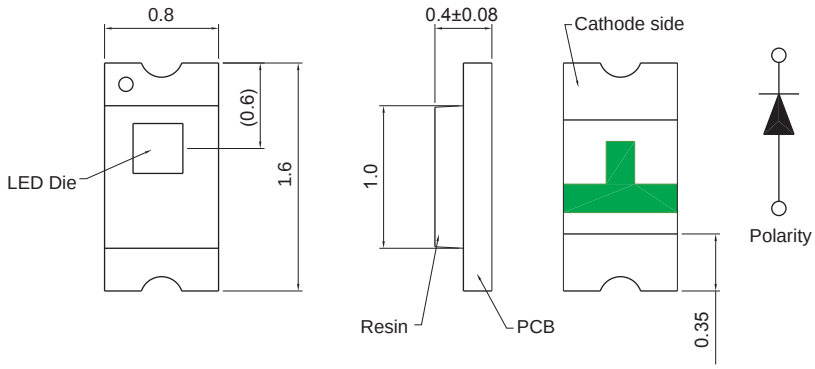


Features

- Chip LED (1.6 x 0.8 x 0.4)
- Super compact

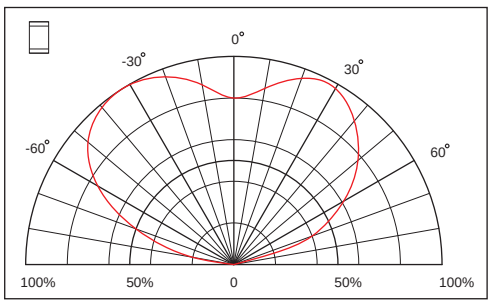
Package Outline Dimensions

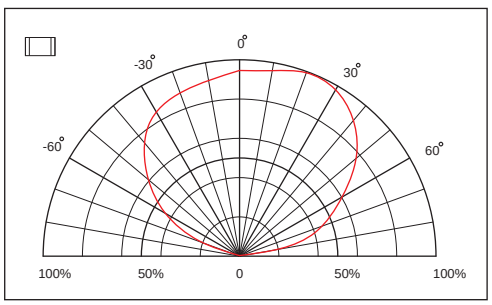
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

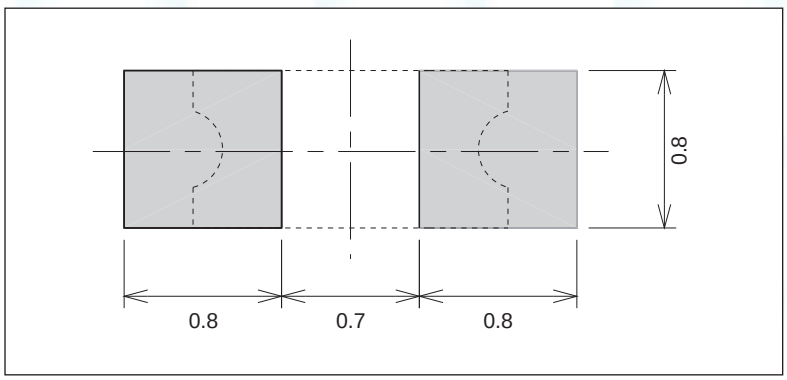
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

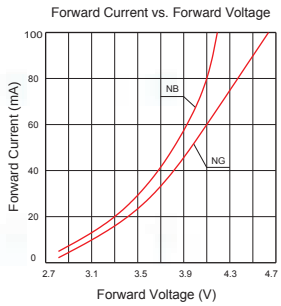
* 0.1msec pulse, 10% duty cycle.

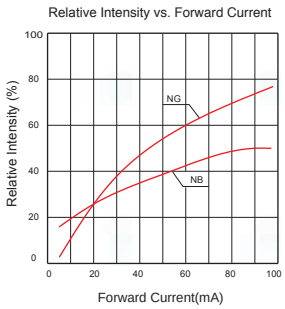
Electrical / Optical Characteristics

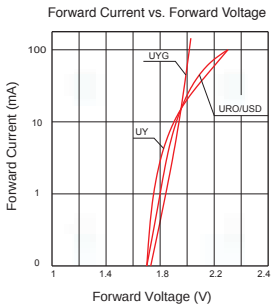
(Ta=25 °C)

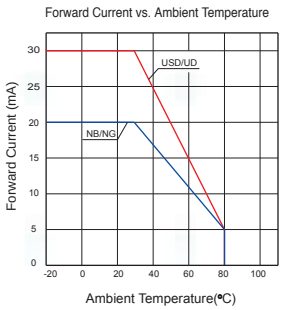
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta\frac{1}{2}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-193UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	30	50	20	140
HT-193UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	30	45	20	140
HT-193UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	30	45	20	140
HT-193USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	30	45	20	140
HT-193URO	Ultra Bright Red	AlInGaP	1.9	2.4	632	645	22	30	45	20	140
HT-193NB	Blue	InGaN	3.3	3.9	470	468	40	28	40	20	140
HT-193NG	Green	InGaN	3.3	3.9	527	520	40	70	100	20	140
HT-193BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	70	90	20	140
HT-193NB5	Blue	InGaN	2.8	3.15	472	470	40	10	18	5	140
HT-193NG5	Green	InGaN	2.8	3.15	529	522	40	20	35	5	140
HT-193BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	40	70	5	140

*Per NIST standards



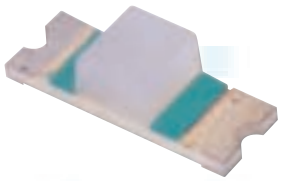






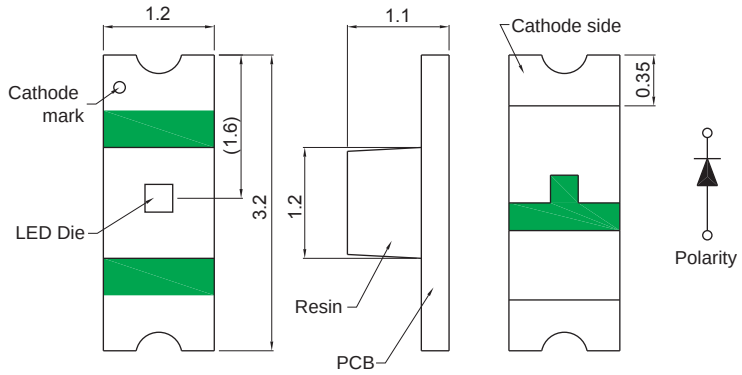
Features

- Chip LED (3.2 x 1.2 x 1.1)
- Super compact
- Reverse mountable



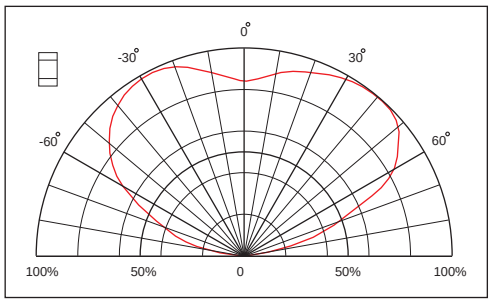
Package Outline Dimensions

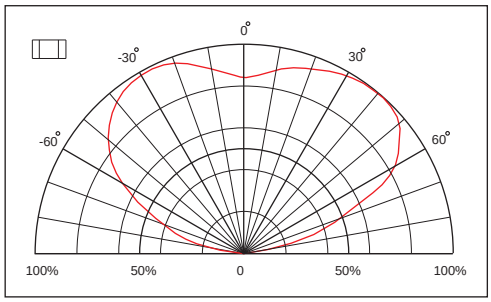
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

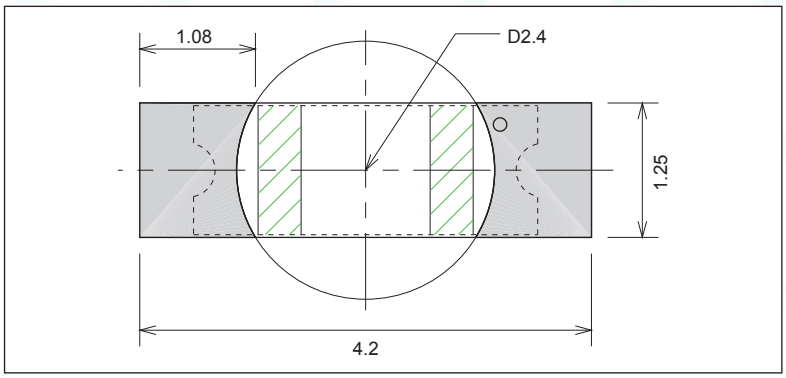
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

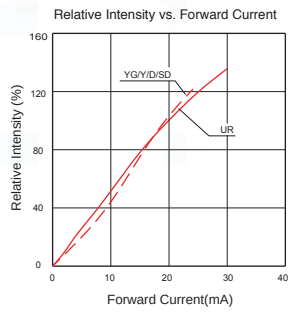
* 0.1msec pulse, 10% duty cycle.

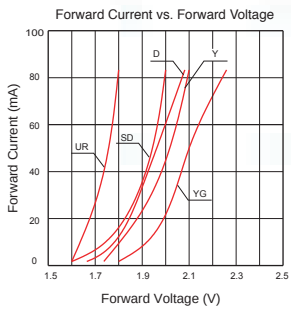
Electrical / Optical Characteristics

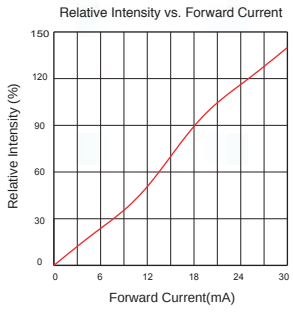
(Ta=25 °C)

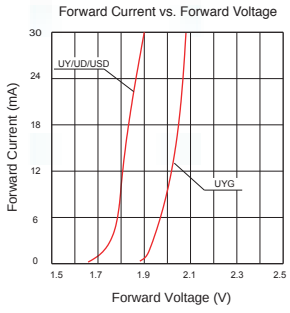
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-260YG	Yellow Green	GaP	2.2	2.6	573	568	30	9	14	20	140
HT-260Y	Yellow	GaAsP	2.1	2.6	590	589	35	3.6	9	20	140
HT-260D	Amber	GaAsP	2.1	2.6	608	610	35	3.6	9	20	140
HT-260SD	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	3.6	14	20	140
HT-260UR	Super Bright Red	AlGaAs	1.8	2.2	643	660	20	3.6	14	20	140
HT-260UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	25	50	20	140
HT-260UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	25	83	20	140
HT-260UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	35	90	20	140
HT-260USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	35	60	20	140
HT-260NB	Blue	InGaN	3.3	3.9	470	468	40	35	90	20	140
HT-260NG	Green	InGaN	3.3	3.9	527	520	40	60	150	20	140
HT-260BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	100	220	20	140
HT-260NB5	Blue	InGaN	2.8	3.15	472	470	40	9	25	5	140
HT-260NG5	Green	InGaN	2.8	3.15	529	522	40	15	45	5	140
HT-260BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	40	60	5	140

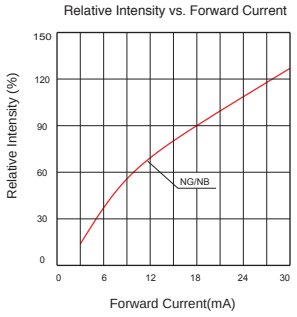
*Per NIST standards

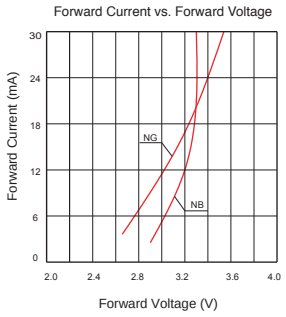


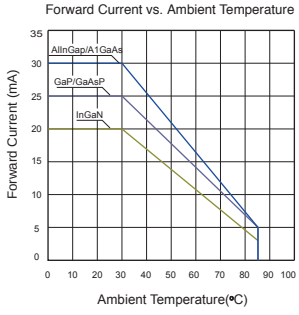










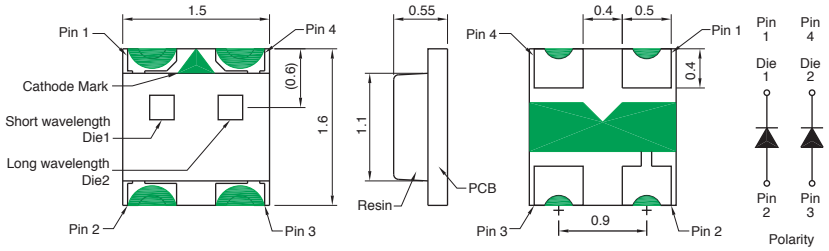


Features

- Chip LED (1.6x1.5x0.55)
- Super compact
- Bi-color

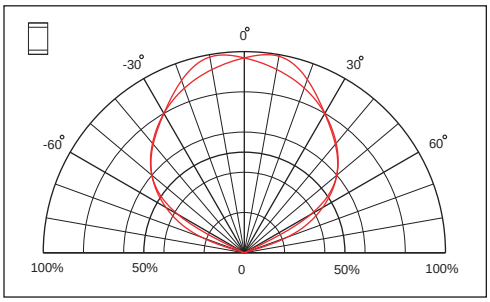
Package Outline Dimensions

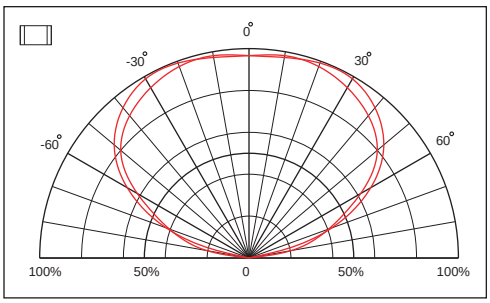
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

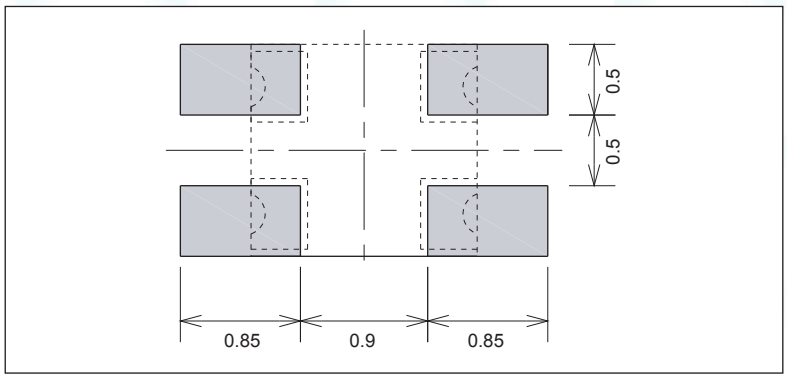
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	78	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

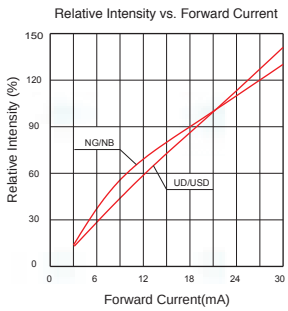
* 0.1msec pulse, 10% duty cycle.

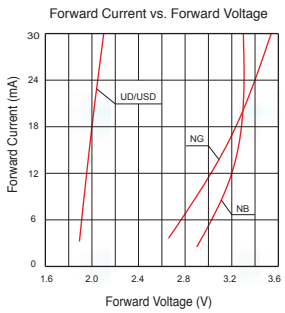
Electrical / Optical Characteristics

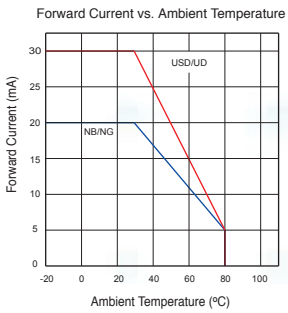
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-261USD/UYG	Ultra Bright Orange	AlInGaP	2.0	2.4	622	636	17	40	60	20	x=140 y=120
	Ultra Bright Yellow Green	AlInGaP	1.9	2.4	573	574	20	40	60	20	x=140 y=120
HT-261UYG/NB	Ultra Bright Yellow Green	AlInGaP	1.9	2.4	573	574	20	40	60	20	x=140 y=120
	Blue	InGaN	3.3	3.9	470	468	40	40	50	20	x=140 y=120
HT-261USDZ/UYGZ	Ultra Bright Orange	AlInGaP	1.8	2.1	622	636	17	7	20	2	x=140 y=120
	Ultra Bright Yellow Green	AlInGaP	1.8	2.1	573	574	20	7	20	2	x=140 y=120
HT-261UYGZ/NBZ	Ultra Bright Yellow Green	AlInGaP	1.8	2.1	573	574	20	7	20	2	x=140 y=120
	Blue	InGaN	2.7	2.9	470	468	40	5	15	2	x=140 y=120

*Per NIST standards

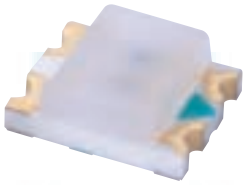






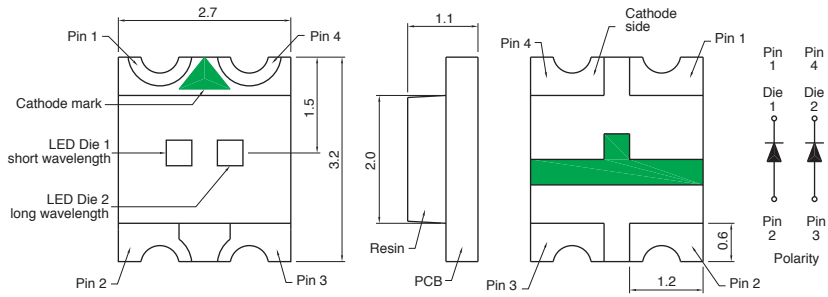
Features

- Chip LED (3.2 x 2.7 x 1.1)
- Super compact
- Bi-color



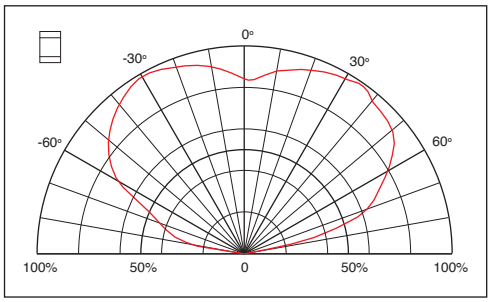
Package Outline Dimensions

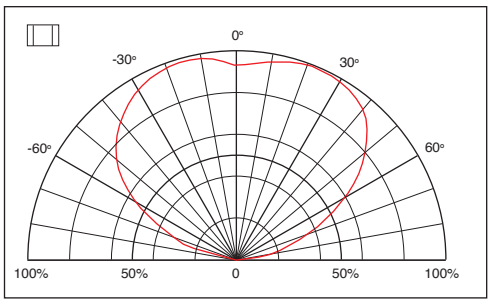
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

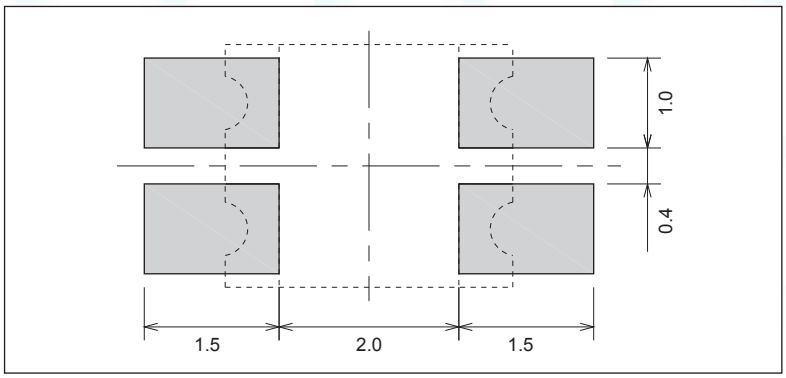
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

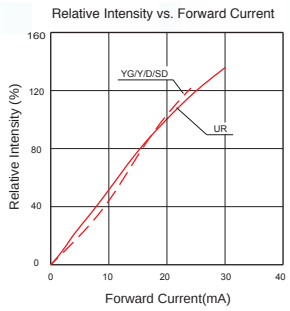
* 0.1msec pulse, 10% duty cycle.

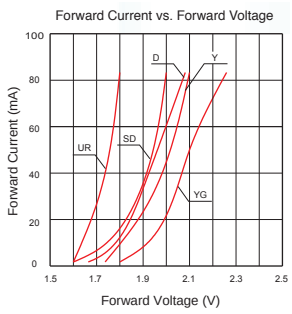
Electrical / Optical Characteristics

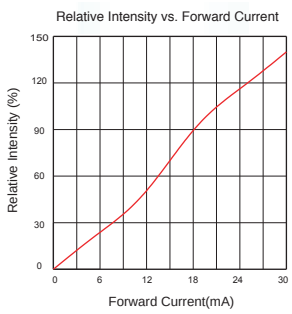
(Ta=25 °C)

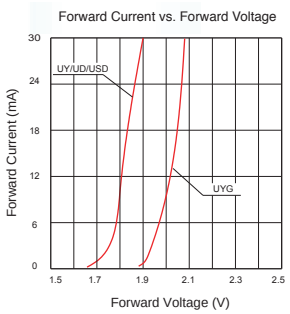
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-155SD/YG	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	5.6	14	20	140
	Yellow Green	GaP	2.2	2.6	573	568	30	9	20	20	140
HT-155Y/YG	Yellow	GaAsP	2.1	2.6	590	589	35	5.6	9	20	140
	Yellow Green	GaP	2.2	2.6	573	568	30	9	20	20	140
HT-155D/YG	Amber	GaAsP	2.1	2.6	608	610	35	5.6	12	20	140
	Yellow Green	GaP	2.2	2.6	573	568	30	9	20	20	140
HT-155USD/UYG	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	50	120	20	140
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	90	20	140
HT-155UY/UYG	Ultra Bright Yellow	AlInGaP	1.9	2.4	591	593	15	40	90	20	140
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	90	20	140
HT-155UD/UYG	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	40	90	20	140
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	90	20	140
HT-155USD/NB	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	50	120	20	140
	Blue	InGaN	3.3	3.9	470	468	40	36	56	20	140
HT-155UY/NB	Ultra Bright Yellow	AlInGaP	1.9	2.4	591	593	15	40	90	20	140
	Blue	InGaN	3.3	3.9	470	468	40	36	56	20	140
HT-155UD/NB	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	40	90	20	140
	Blue	InGaN	3.3	3.9	470	468	40	36	56	20	140

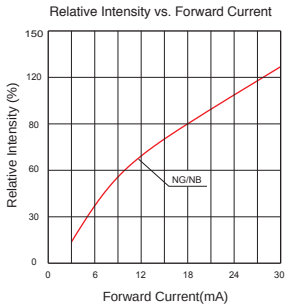
*Per NIST standards

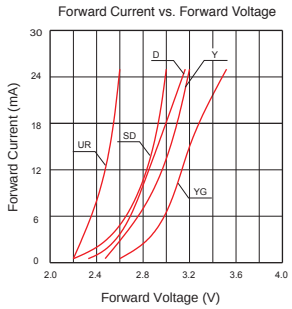


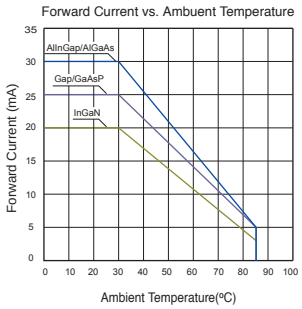










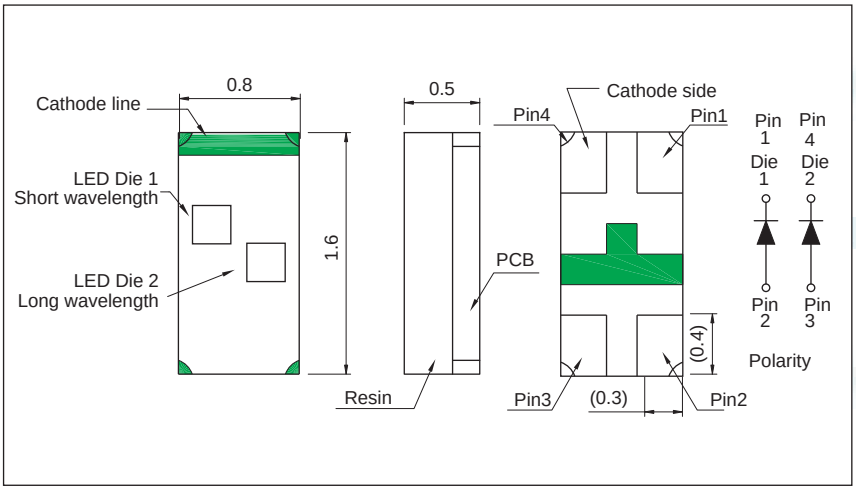


Features

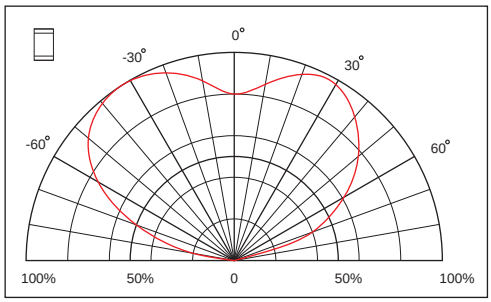
- Chip LED (1.6x0.8x0.5)
- Super compact
- Bi-color

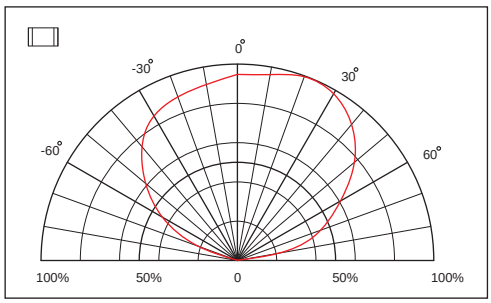
Package Outline Dimensions

(Unit:mm Tolerance:+/-0.1)



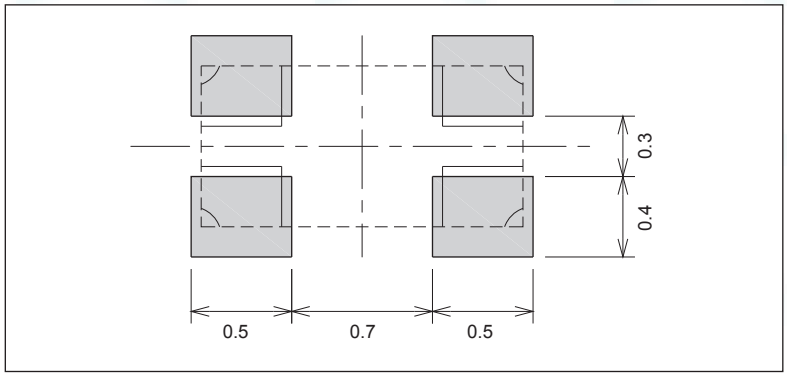
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	78	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

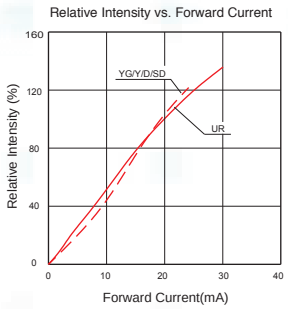
* 0.1msec pulse, 10% duty cycle.

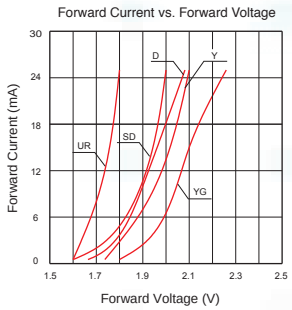
Electrical / Optical Characteristics

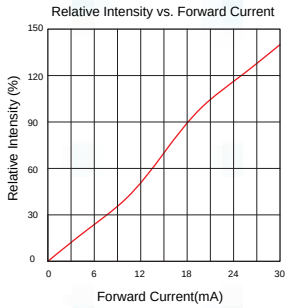
(Ta=25 °C)

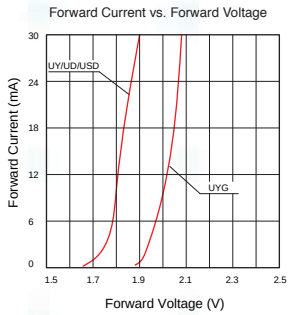
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-297USD/UYG	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	50	120	20	140
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	90	20	140
HT-297UY/UYG	Ultra Bright Yellow	AlInGaP	1.9	2.4	591	593	15	36	60	20	140
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	90	20	140
HT-297UD/UYG	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	40	90	20	140
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	90	20	140
HT-297USD/NB	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	50	120	20	140
	Blue	InGaN	3.3	3.9	470	468	40	36	80	20	140
HT-297USD/NG	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	50	120	20	140
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	140

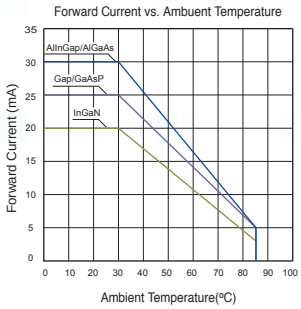
*Per NIST standards





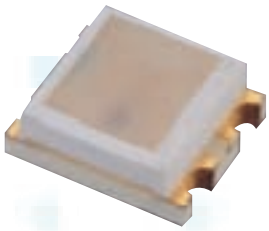






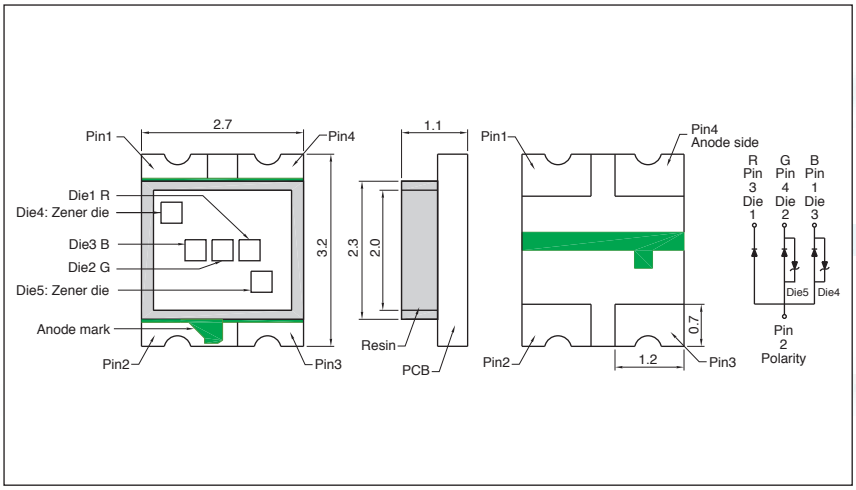
Features

- Chip LED (3.2x2.7x1.1)
- Super compact
- Full color

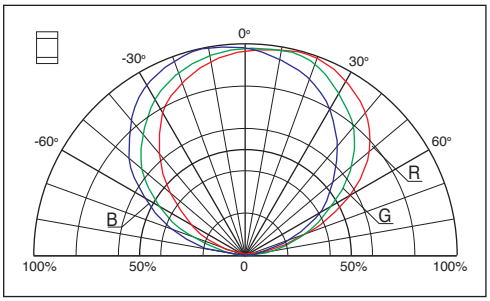


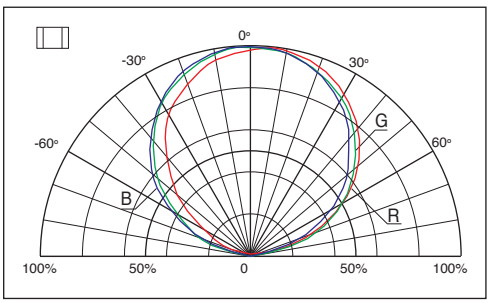
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



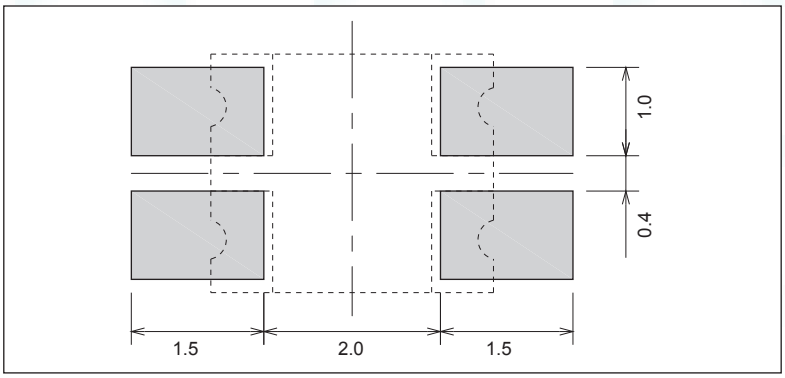
Directive Characteristics





Recommended Soldering Pattern

(Unit: mm)



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	78	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

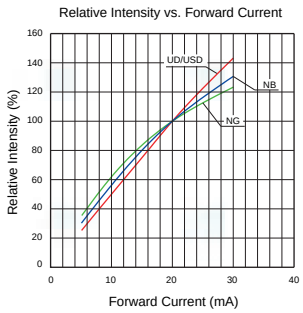
* 0.1msec pulse, 10% duty cycle.

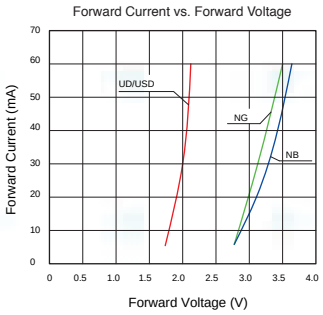
Electrical / Optical Characteristics

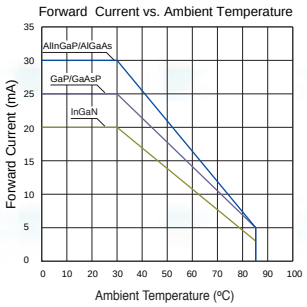
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-E358FCH	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	90	140	20	x=100 y=120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	x=100 y=120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	x=100 y=120
HT-E358FDH	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	90	140	20	x=100 y=120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	x=100 y=120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	x=100 y=120

*Per NIST standards

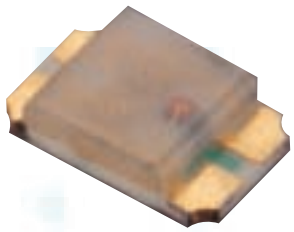






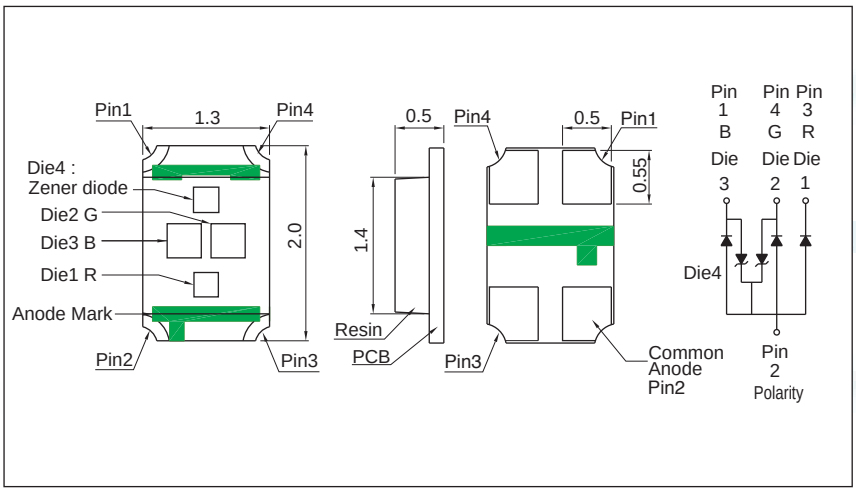
Features

- Chip LED (2.0x1.3x0.5)
- Super compact
- Full color

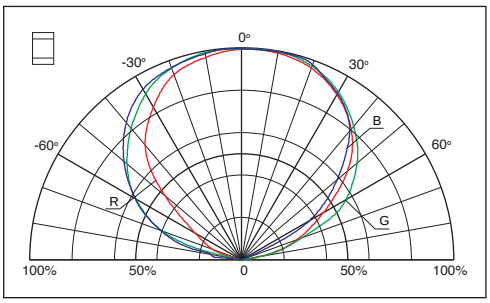


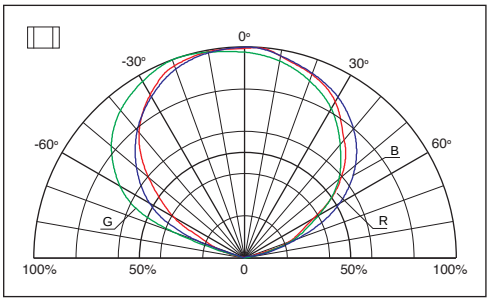
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



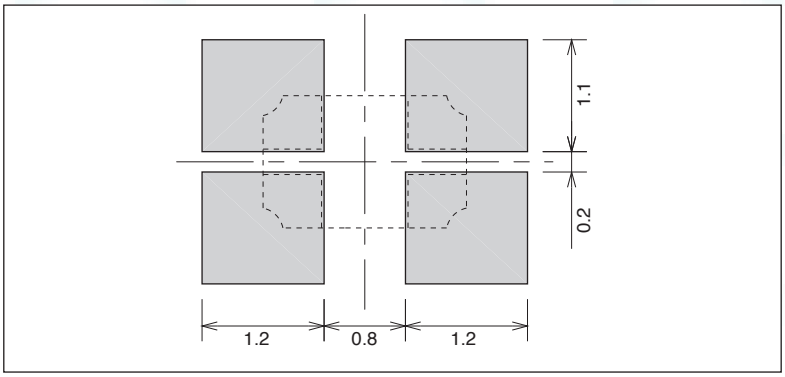
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	78	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

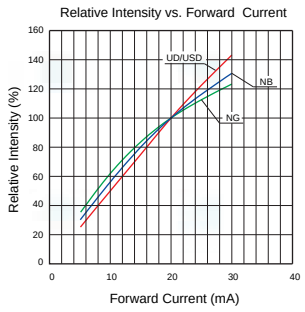
* 0.1msec pulse, 10% duty cycle.

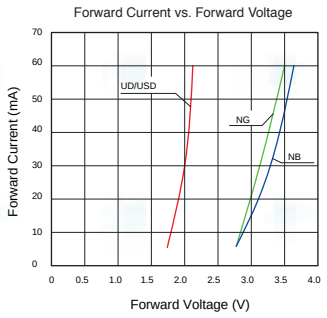
Electrical / Optical Characteristics

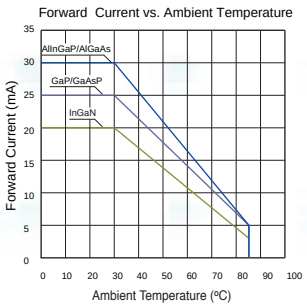
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-E372FCH	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	56	120	20	120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	120
HT-E372FDH	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	56	120	20	120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	120

*Per NIST standards

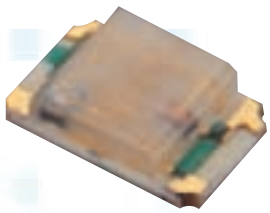






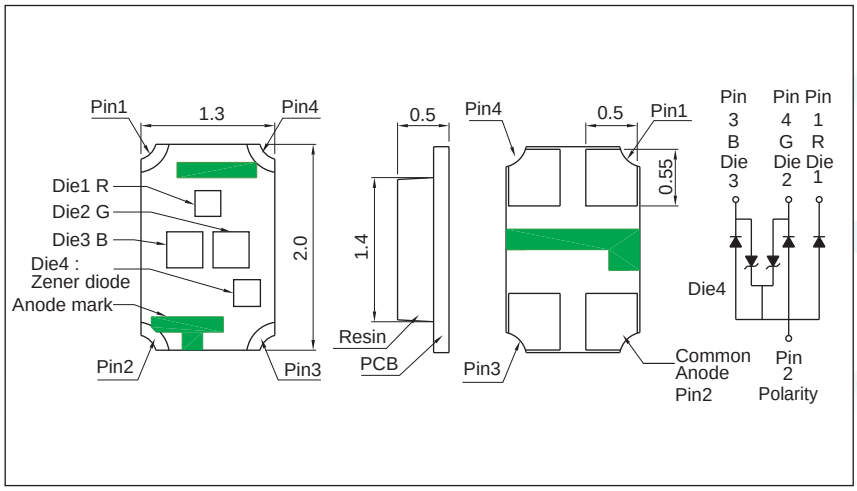
Features

- Chip LED (2.0x1.3x0.5)
- Super compact
- Full color

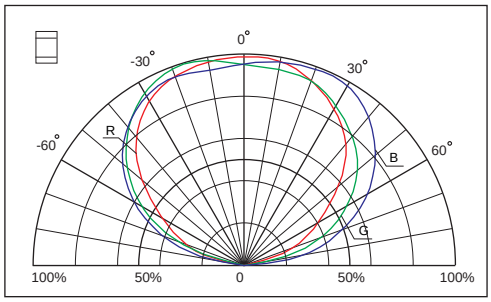


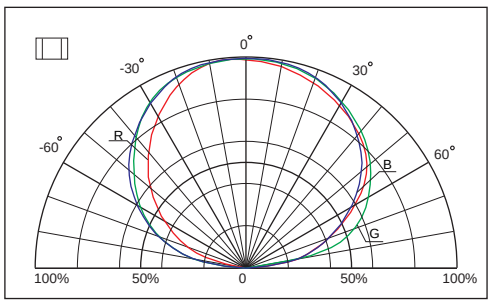
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



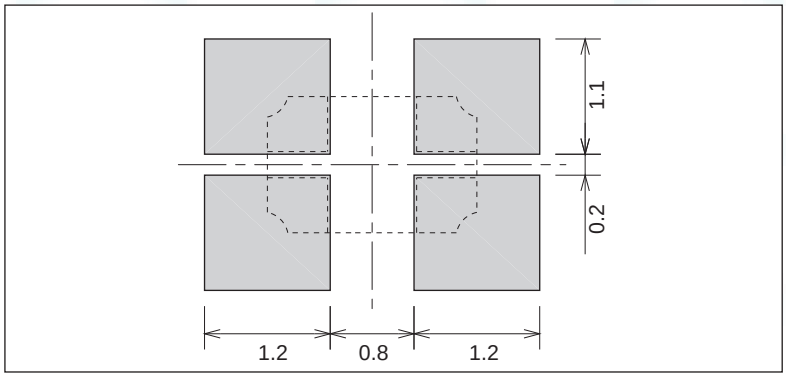
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	78	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

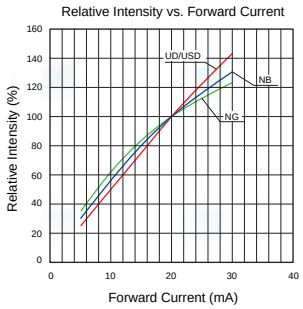
* 0.1msec pulse, 10% duty cycle.

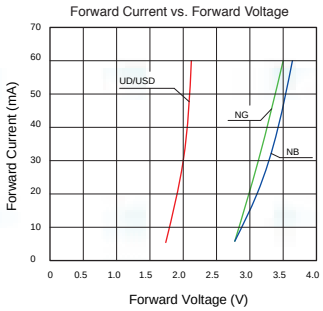
Electrical / Optical Characteristics

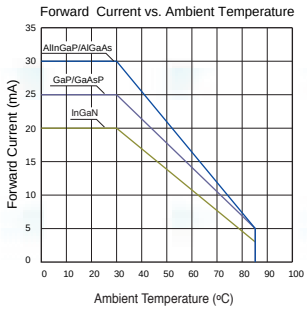
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-E374FCH	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	56	120	20	120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	120
HT-E374FDH	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	56	120	20	120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	120

*Per NIST standards

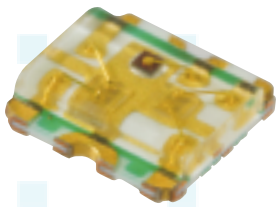






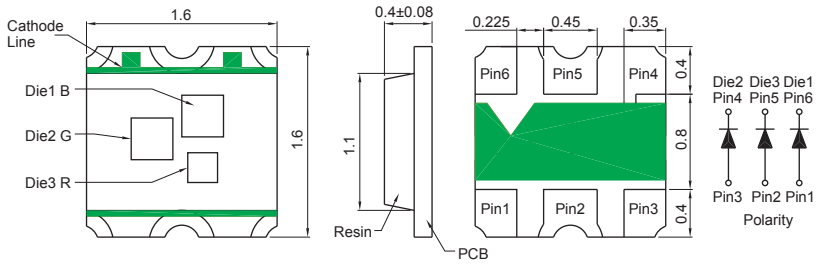
Features

- Chip LED (1.6x1.6x0.4)
- Super compact
- Full color

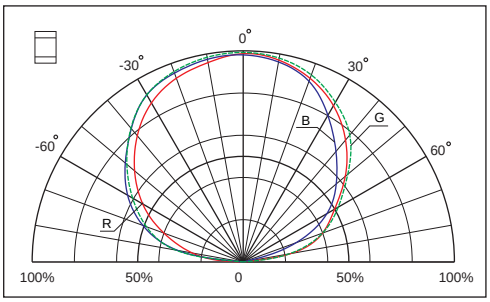


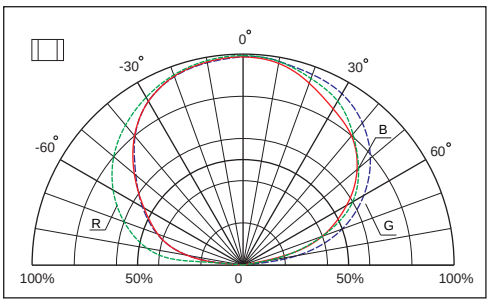
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



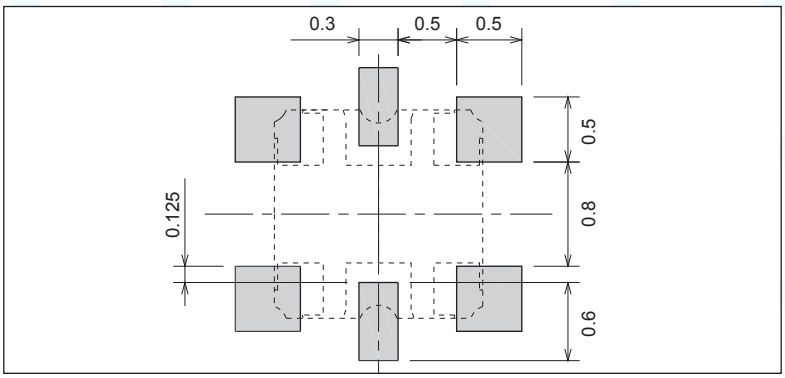
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	78	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

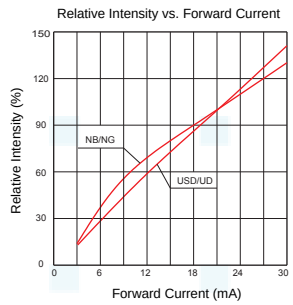
* 0.1msec pulse, 10% duty cycle.

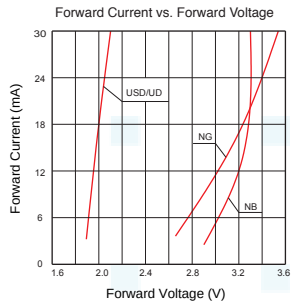
Electrical / Optical Characteristics

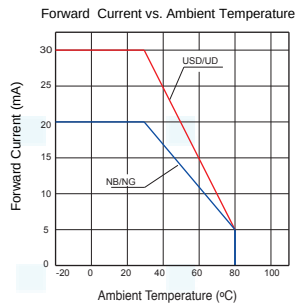
(Ta=25 °C)

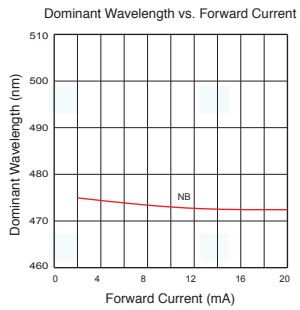
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-380FCH	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	70	120	20	120
	Green	InGaN	3.3	3.9	527	520	40	110	200	20	120
	Blue	InGaN	3.3	3.9	470	468	40	45	90	20	120

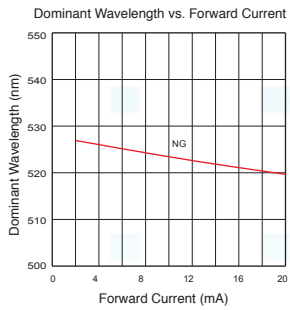
*Per NIST standards

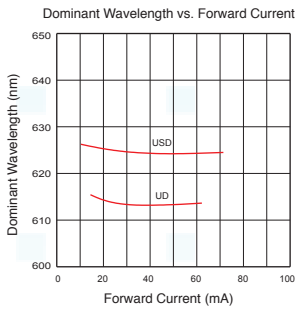










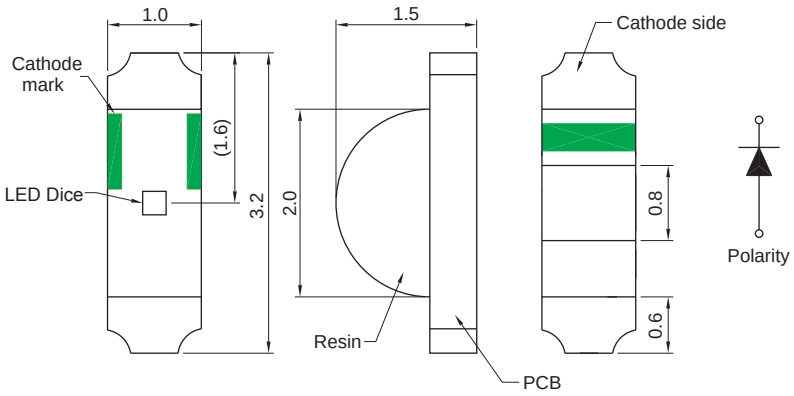


Features

- Chip LED (3.2x1.5x1.0)
- Super compact

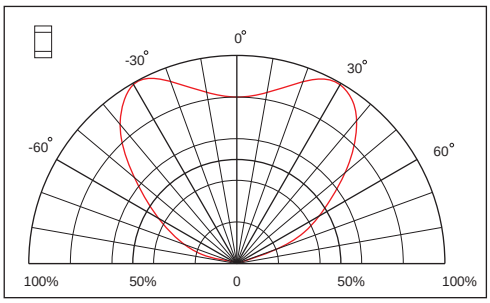
Package Outline Dimensions

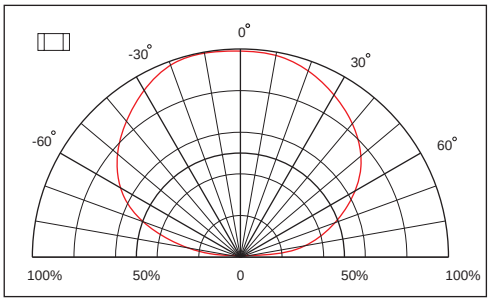
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

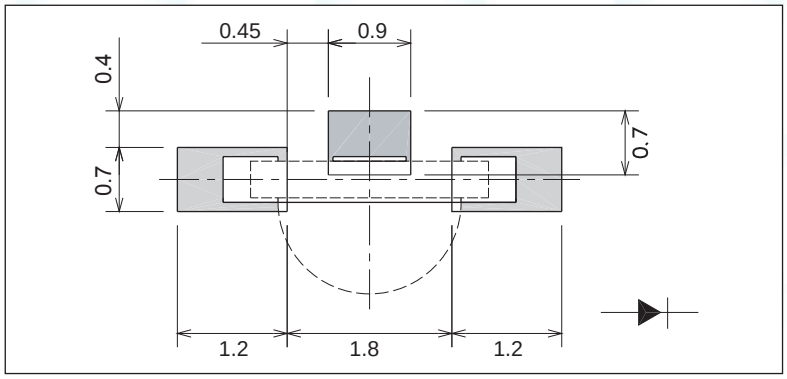
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	GaP	GaAsP	AlGaAs	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	66	72	78	mW
DC Forward Current	I_F	25	25	30	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	100	80	mA
Reverse Voltage	V_R	5					V
Operating Temperature	T_{OP}	-30 to 80					°C
Storage Temperature	T_{ST}	-40 to 85					°C

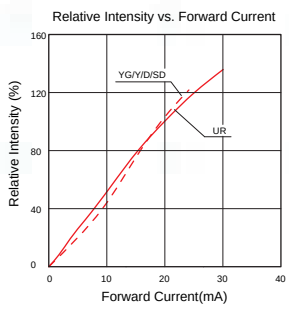
* 0.1msec pulse, 10% duty cycle.

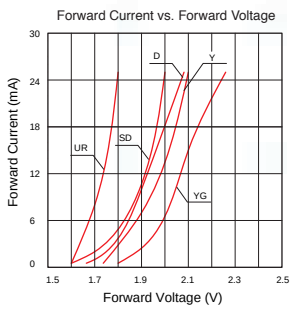
Electrical / Optical Characteristics

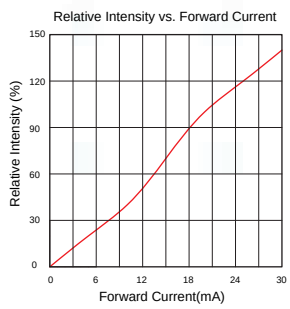
(Ta=25 °C)

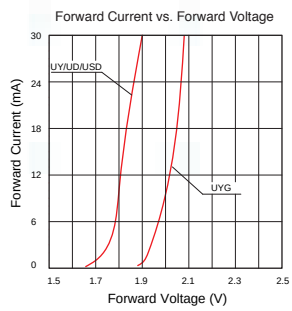
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta\frac{1}{2}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-110YG	Yellow Green	GaP	2.2	2.6	573	568	30	9	16	20	x=140 y=120
HT-110Y	Yellow	GaAsP	2.1	2.6	590	589	35	5.6	9	20	x=140 y=120
HT-110D	Amber	GaAsP	2.1	2.6	608	610	35	5.6	9	20	x=140 y=120
HT-110SD	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	3.6	9	20	x=140 y=120
HT-110UR	Super Bright Red	AlGaAs	1.8	2.2	643	660	20	9	20	20	x=140 y=120
HT-110UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	60	20	x=140 y=120
HT-110UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	36	120	20	x=140 y=120
HT-110UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	56	160	20	x=140 y=120
HT-110USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	56	120	20	x=140 y=120
HT-110NB	Blue	InGaN	3.3	3.9	470	468	40	36	60	20	x=140 y=120
HT-110NG	Green	InGaN	3.3	3.9	527	520	40	140	226	20	x=140 y=120
	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	90	180	20	x=140 y=120
HT-110NB5	Blue	InGaN	2.8	3.15	472	470	40	9	26	5	x=140 y=120
HT-110NG5	Green	InGaN	2.8	3.15	529	522	40	25	50	5	x=140 y=120
HT-110BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	40	70	5	x=140 y=120

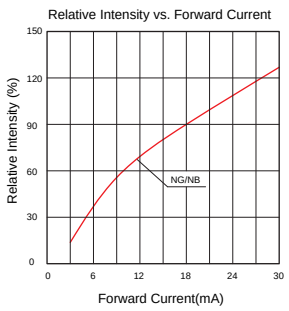
*Per NIST standards

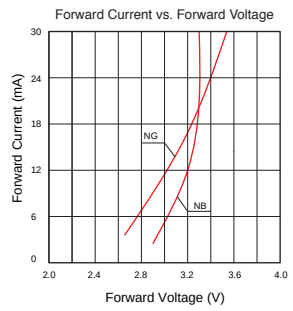


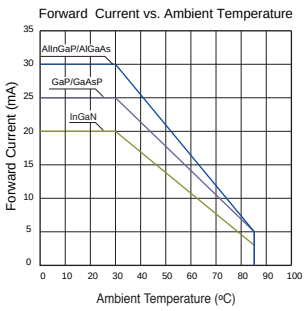










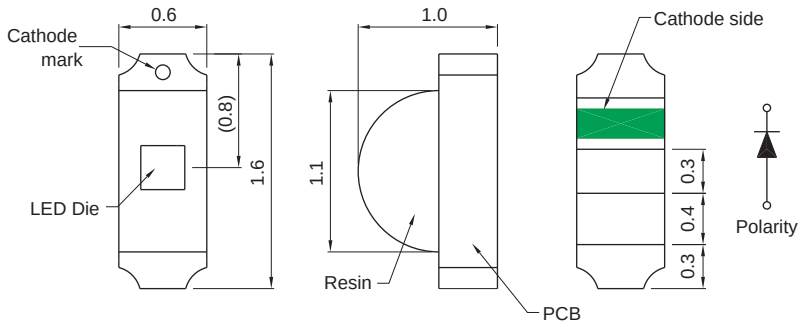


Features

- Chip LED (1.6x1.0x0.6)
- Super compact

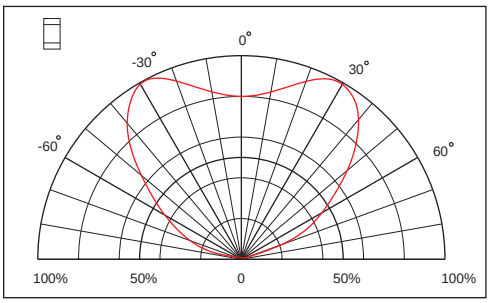
Package Outline Dimensions

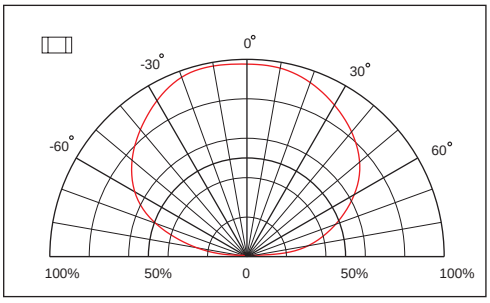
(Unit: mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

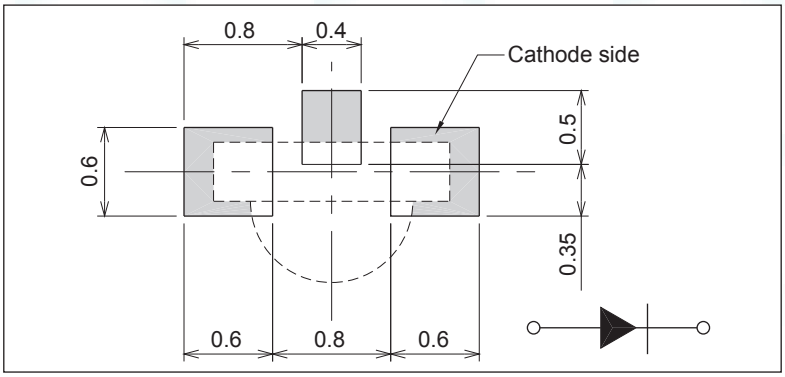
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	80	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

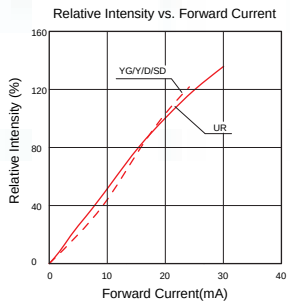
* 0.1msec pulse, 10% duty cycle.

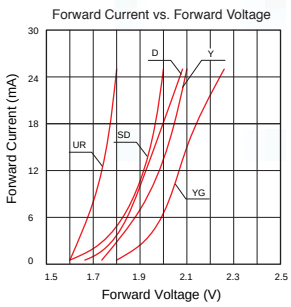
Electrical / Optical Characteristics

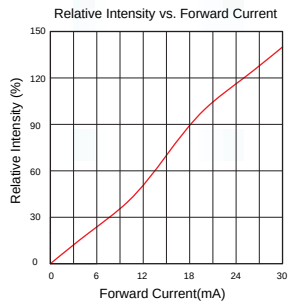
(Ta=25 °C)

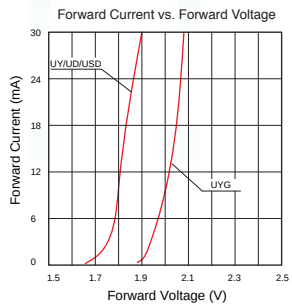
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-121YG	Yellow Green	GaP	2.2	2.6	573	568	30	9	16	20	x=140 y=120
HT-121Y	Yellow	GaAsP	2.1	2.6	590	589	35	5.6	9	20	x=140 y=120
HT-121D	Amber	GaAsP	2.1	2.6	608	610	35	5.6	9	20	x=140 y=120
HT-121SD	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	3.6	9	20	x=140 y=120
HT-121UR	Super Bright Red	AlGaAs	1.8	2.2	643	660	20	9	20	20	x=140 y=120
HT-121UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	90	20	x=140 y=120
HT-121UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	56	120	20	x=140 y=120
HT-121UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	56	120	20	x=140 y=120
HT-121USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	56	140	20	x=140 y=120
HT-121NB	Blue	InGaN	3.3	3.9	470	468	40	36	60	20	x=140 y=120
HT-121NG	Green	InGaN	3.3	3.9	527	520	40	63	130	20	x=140 y=120
HT-121BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	90	180	20	x=140 y=120
HT-121NB5	Blue	InGaN	2.8	3.15	472	470	40	9	26	5	x=140 y=120
HT-121NG5	Green	InGaN	2.8	3.15	529	522	40	25	50	5	x=140 y=120
HT-121BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	40	70	5	x=140 y=120

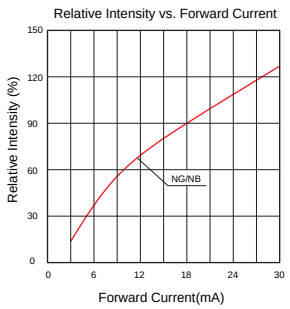
*Per NIST standards

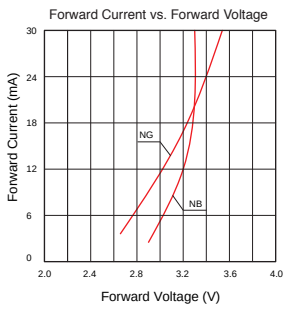


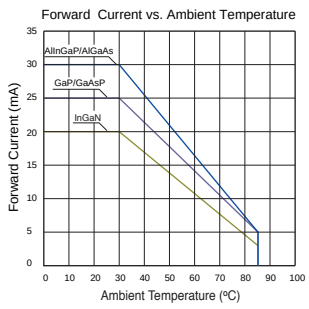










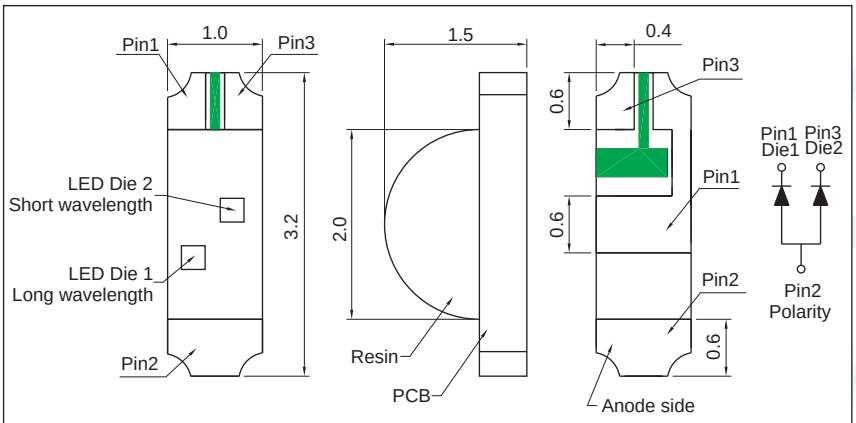


Features

- Chip LED (3.2x1.5x1.0)
- Super compact
- Bi-color

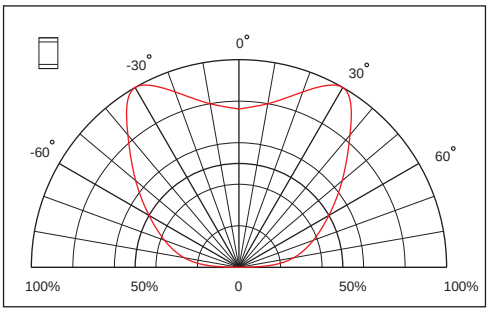
Package Outline Dimensions

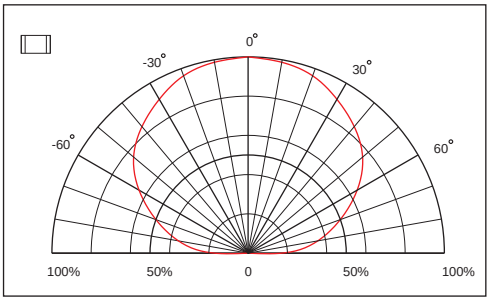
(Unit:mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

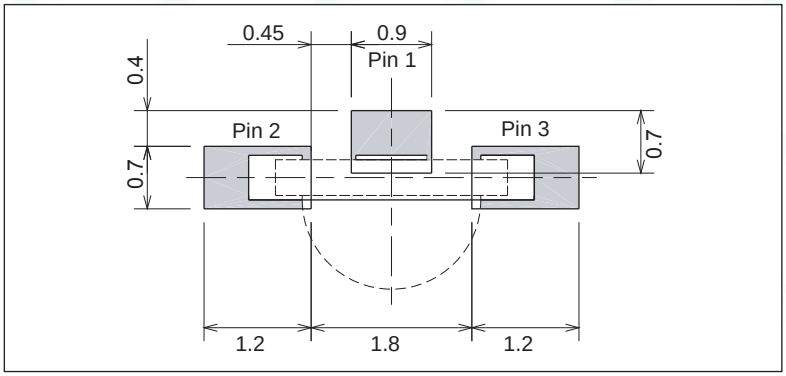
Directive Characteristics





Recommended Soldering Pattern

Unit: mm



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	GaP	GaAsP	AlInGaP	InGaN	Unit
Power Dissipation	P_D	65	65	72	78	mW
DC Forward Current	I_F	25	25	30	20	mA
Pulsed Forward Current	I_{FP}*	100	100	100	80	mA
Reverse Voltage	V_R	5				V
Operating Temperature	T_{OP}	-30 to 80				°C
Storage Temperature	T_{ST}	-40 to 85				°C

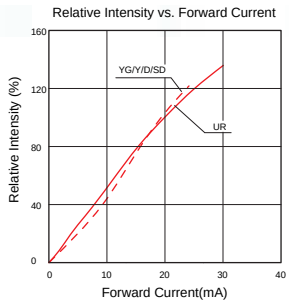
* 0.1msec pulse, 10% duty cycle.

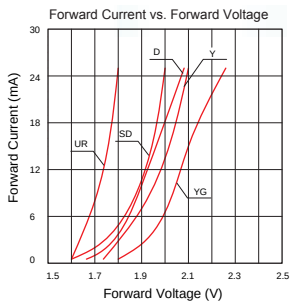
Electrical / Optical Characteristics

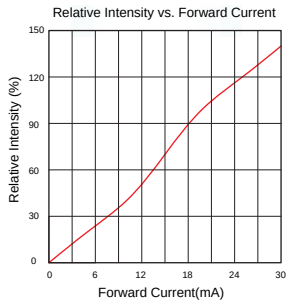
(Ta=25 °C)

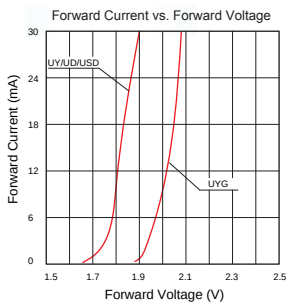
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-210SD/YG	Super Bright Orange	GaAsP	2.1	2.6	629	642	35	3.6	9	20	x=140 y=120
	Yellow Green	GaP	2.2	2.6	573	568	30	9	16	20	x=140 y=120
HT-210Y/YG	Yellow	GaAsP	2.1	2.6	590	589	35	5.6	9	20	x=140 y=120
	Yellow Green	GaP	2.2	2.6	573	568	30	9	16	20	x=140 y=120
HT-210D/YG	Amber	GaAsP	2.1	2.6	608	610	35	3.6	9	20	x=140 y=120
	Yellow Green	GaP	2.2	2.6	573	568	30	9	16	20	x=140 y=120
HT-210USD/UYG	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	56	120	20	x=140 y=120
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	25	60	20	x=140 y=120
HT-210UY/UYG	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	36	120	20	x=140 y=120
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	25	60	20	x=140 y=120
HT-210UD/UYG	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	56	120	20	x=140 y=120
	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	25	60	20	x=140 y=120
HT-210USD/NB	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	56	120	20	x=140 y=120
	Blue	InGaN	3.3	3.9	470	468	40	36	60	20	x=140 y=120
HT-210UY/NB	Ultra Bright Yellow	AlInGaP	1.9	2.4	589	593	15	36	120	20	x=140 y=120
	Blue	InGaN	3.3	3.9	470	468	40	36	60	20	x=140 y=120
HT-210UD/NB	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	56	120	20	x=140 y=120
	Blue	InGaN	3.3	3.9	470	468	40	36	60	20	x=140 y=120

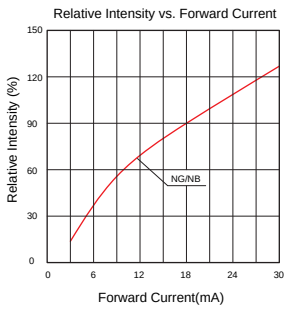
*Per NIST standards

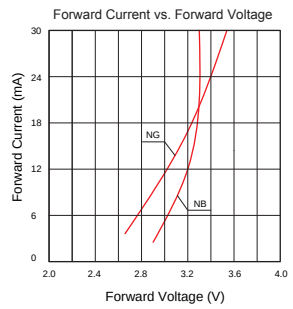


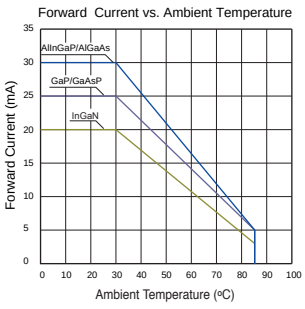










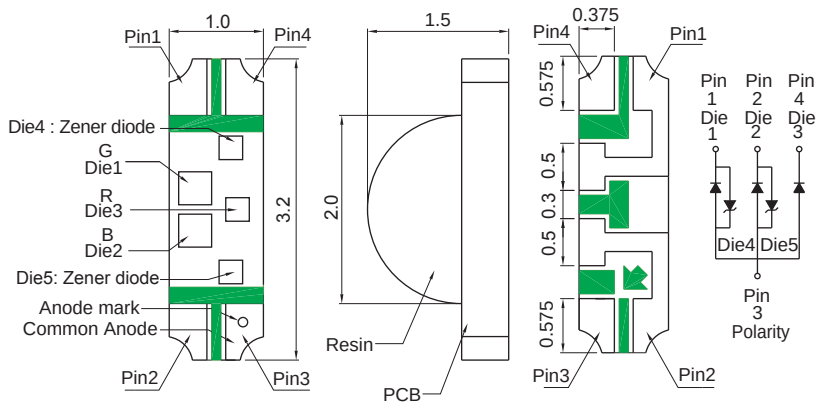


Features

- Chip LED (3.2x1.5x1.0)
- Super compact
- Full color

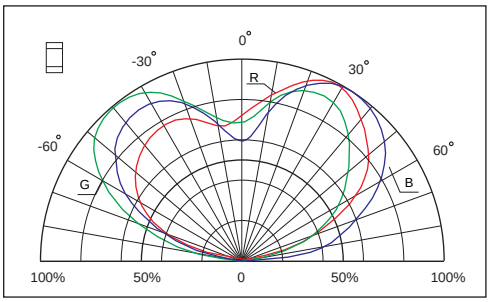
Package Outline Dimensions

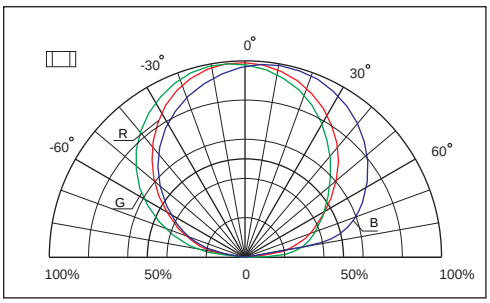
(Unit: mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

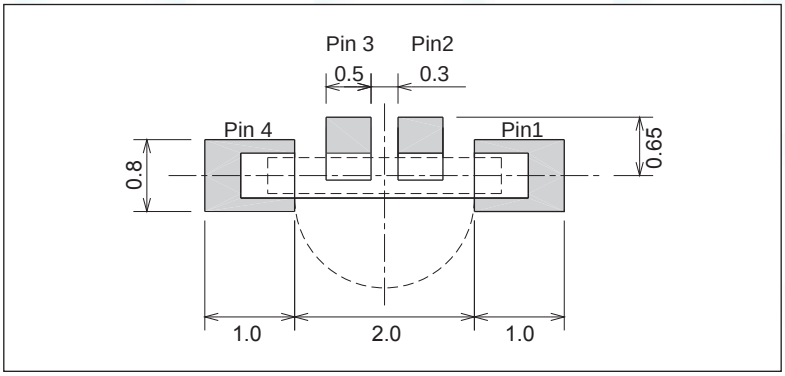
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	78	mW
DC Forward Current	I_F	30	20	mA
Pulsed Forward Current	I_{FP}*	100	80	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

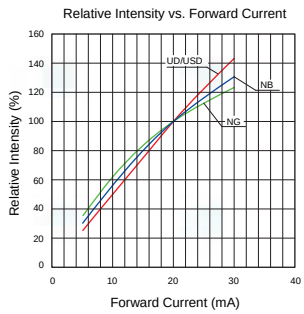
* 0.1msec pulse, 10% duty cycle.

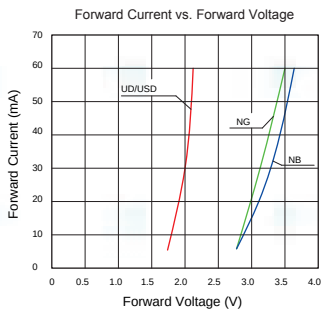
Electrical / Optical Characteristics

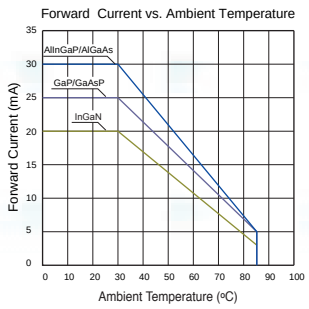
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-E311FCH	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	56	120	20	140
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	140
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	140
HT-E311FDH	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	90	140	20	140
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	140
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	140

*Per NIST standards

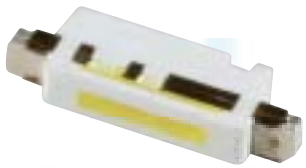






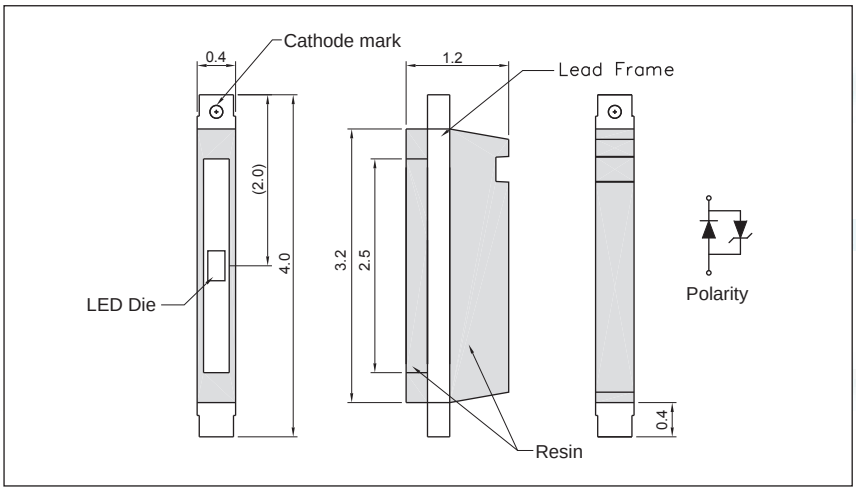
Features

- Chip LED (4.0x1.2x0.4)
- Super compact

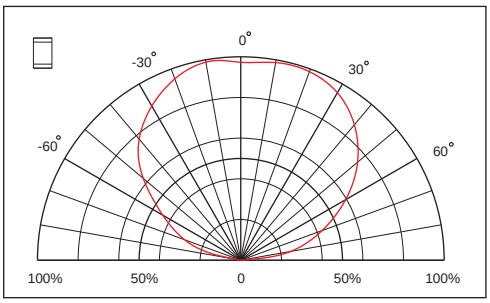


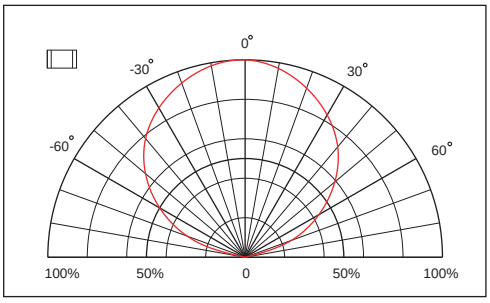
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



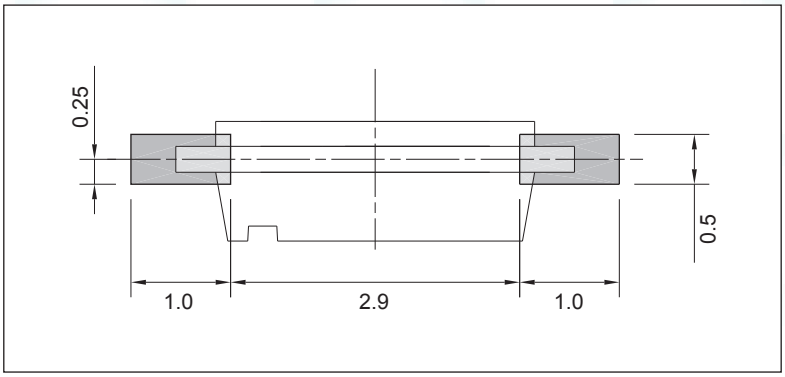
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	InGaN	Unit
Power Dissipation	P_D	117	mW
DC Forward Current	I_F	30	mA
Pulsed Forward Current	I_{FP*}	120	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{OP}	-30 to 80	°C
Storage Temperature	T_{ST}	-40 to 85	°C

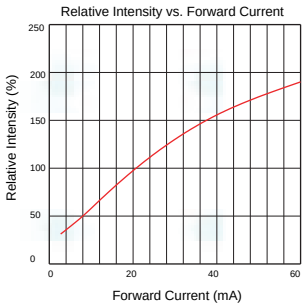
* 0.1msec pulse, 10% duty cycle.

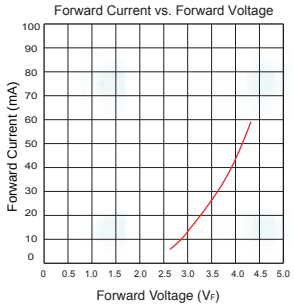
Electrical / Optical Characteristics

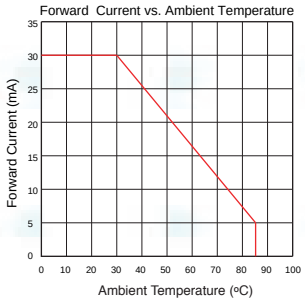
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-V114BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	800	1000	20	120

*Per NIST standards

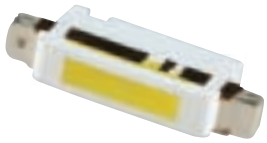






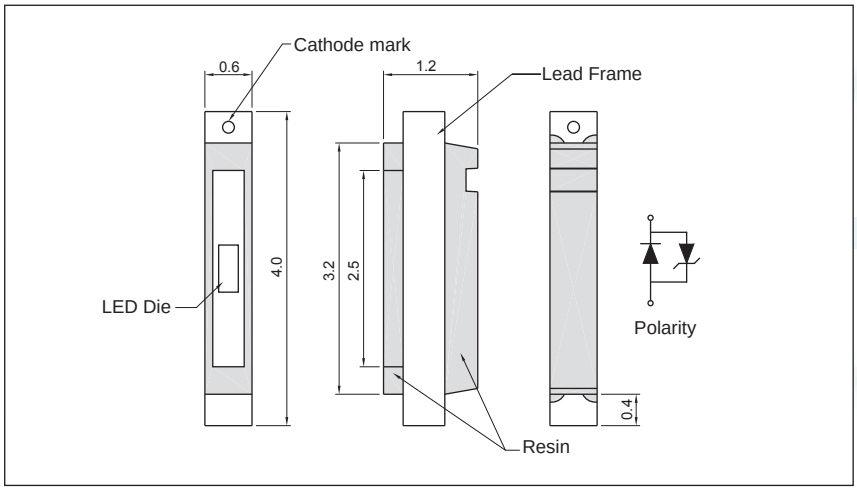
Characters

- Chip LED (4.0x1.2x0.6)
- Super compact

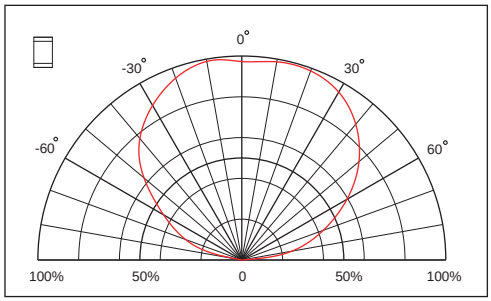


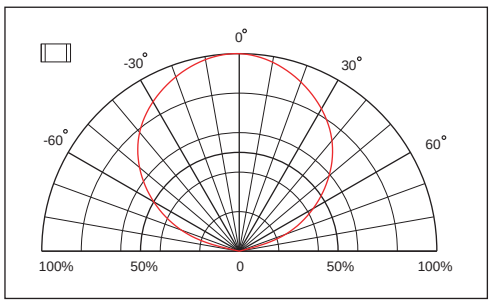
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



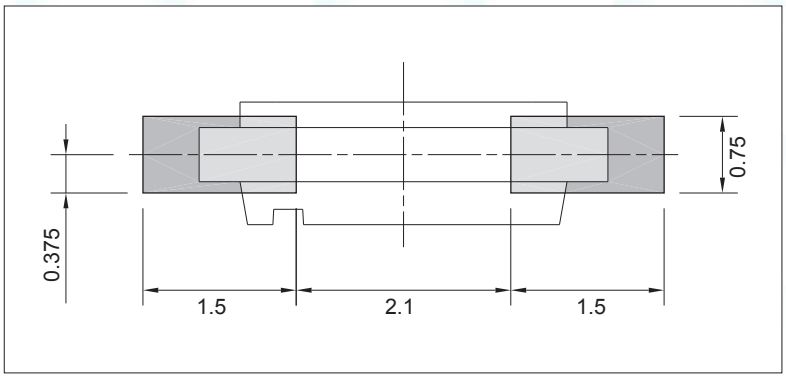
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	InGaN	Unit
Power Dissipation	P_D	117	mW
DC Forward Current	I_F	30	mA
Pulsed Forward Current	I_{FP}*	120	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{OP}	-30 to 80	°C
Storage Temperature	T_{ST}	-40 to 85	°C

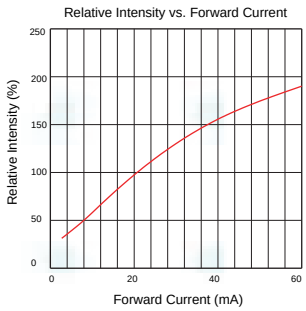
* 0.1msec pulse, 10% duty cycle.

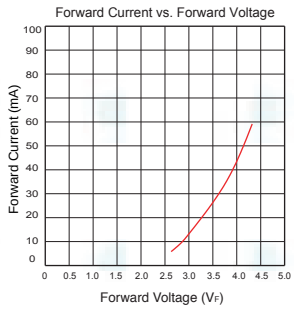
Electrical / Optical Characteristics

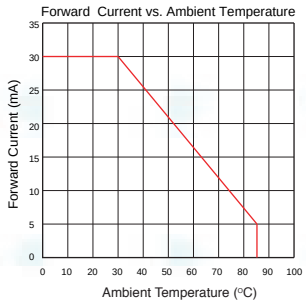
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-V116BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	900	1100	20	120

*Per NIST standards

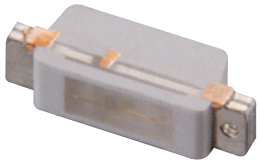






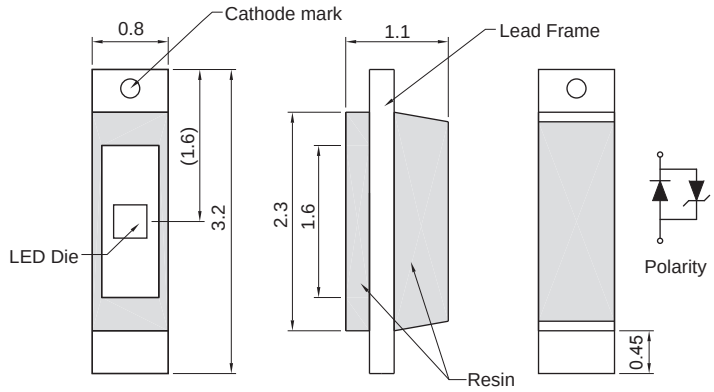
Characters

- Chip LED (3.2x1.1x0.8)



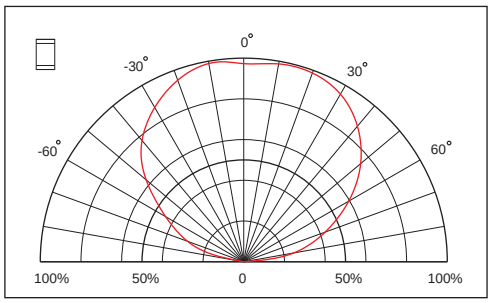
Package Outline Dimensions

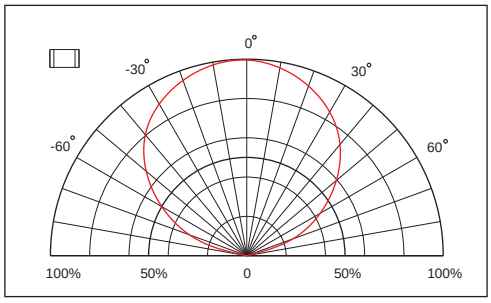
(Unit: mm Tolerance:+/-0.1)



Polarity reference for cathode mark is reversed for UR.

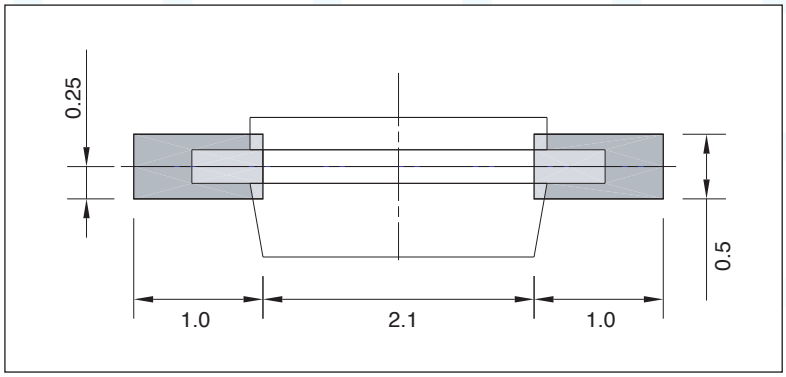
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	InGaN	Unit
Power Dissipation	P_D	117	mW
DC Forward Current	I_F	30	mA
Pulsed Forward Current	I_{FP}*	120	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{OP}	-30 to 80	℃
Storage Temperature	T_{ST}	-40 to 85	℃

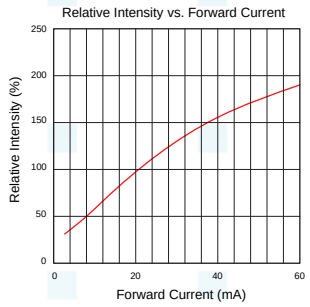
* 0.1msec pulse, 10% duty cycle.

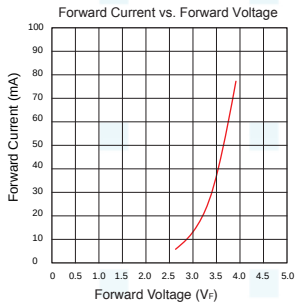
Electrical / Optical Characteristics

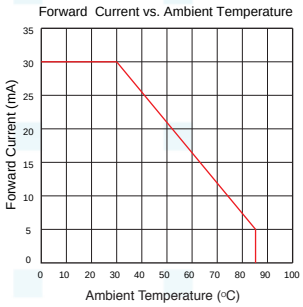
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-V118NB	Blue	InGaN	3.3	3.9	470	468	40	80	180	20	120
HT-V118NG	Green	InGaN	3.3	3.9	527	520	40	150	300	20	120
HT-V118BP	White	InGaN	3.3	3.9	x=0.29 y=0.32	-	-	1000	1200	20	120

*Per NIST standards

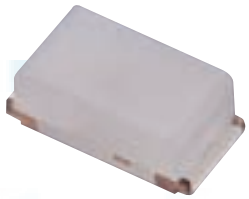






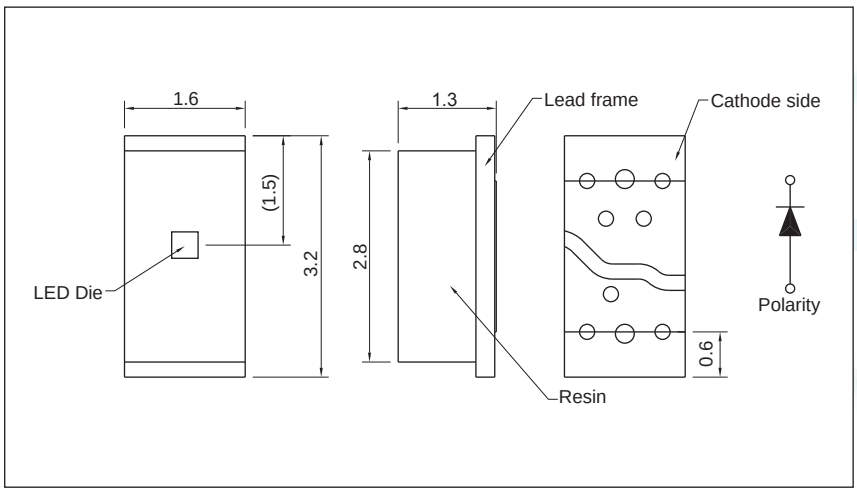
Characters

- Chip LED (3.2x1.6x1.3)
- Super compact

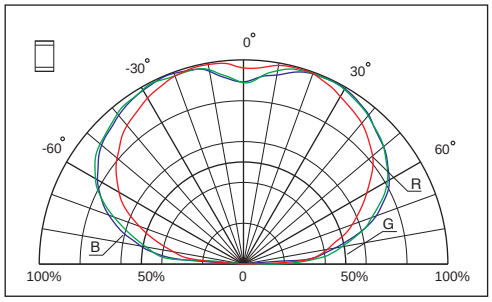


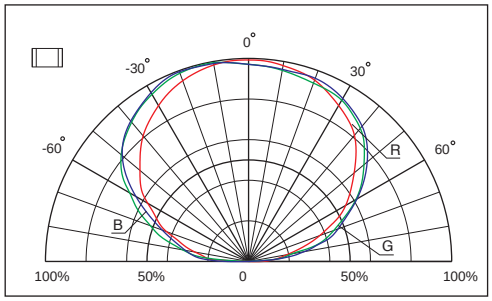
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



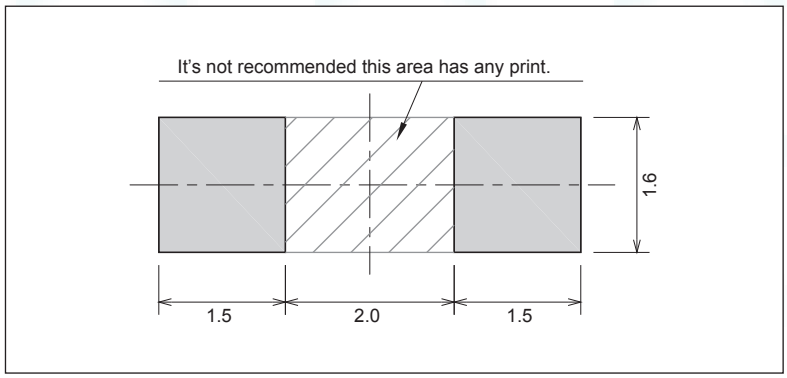
Directive Characteristics





Recommended Soldering Pattern

(Unit: mm)



Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	117	mW
DC Forward Current	I_F	30	30	mA
Pulsed Forward Current	I_{FP}*	120	120	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		℃
Storage Temperature	T_{ST}	-40 to 85		℃

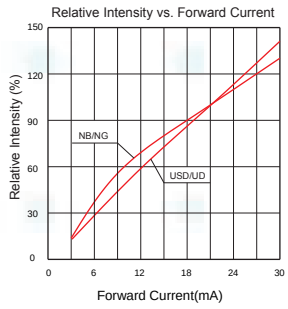
* 0.1msec pulse, 10% duty cycle.

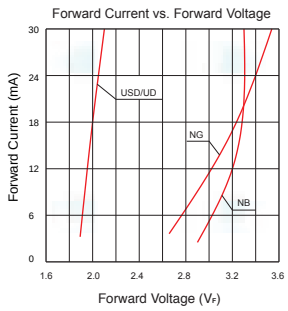
Electrical / Optical Characteristics

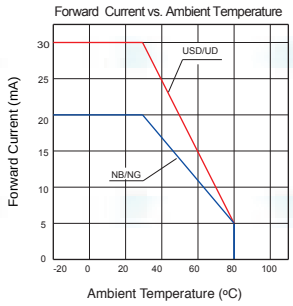
(Ta=25 °C)

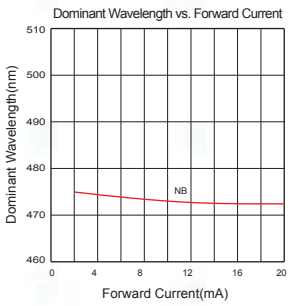
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-F150USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	112.5	180	20	140
HT-F150NB	Blue	InGaN	3.3	3.9	470	468	40	71.5	100	20	140
HT-F150NG	Green	InGaN	3.3	3.9	527	520	40	226.5	280	20	140
HT-F150BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	500	800	20	140

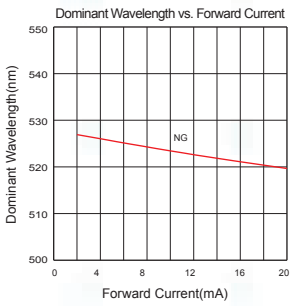
*Per NIST standards

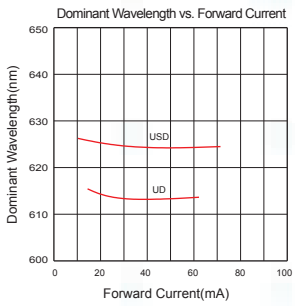








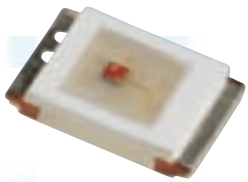




Features

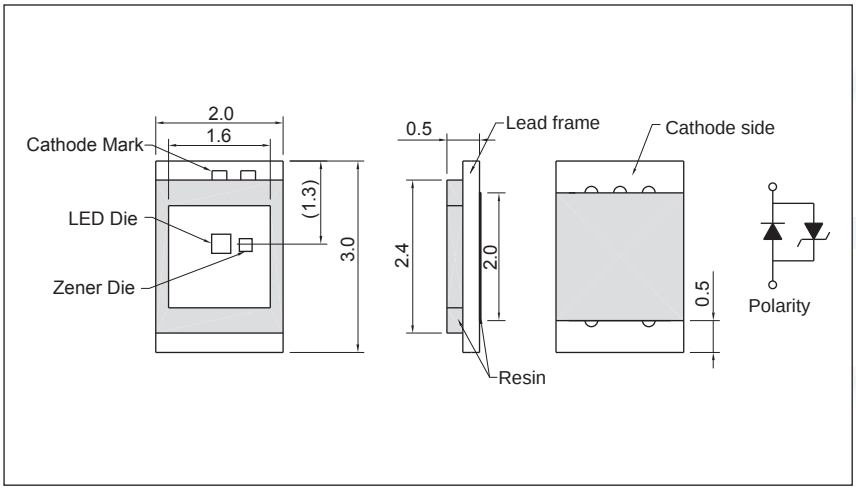
- Chip LED (3.0x2.0x0.5)
- Super compact

HT-F158/V158

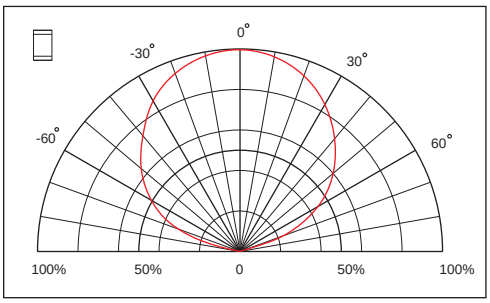


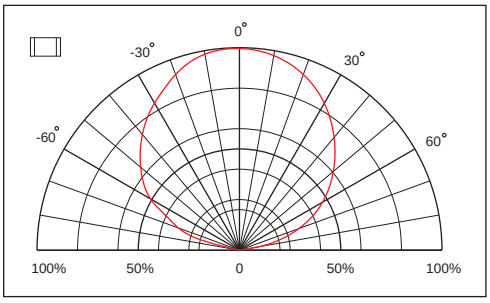
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



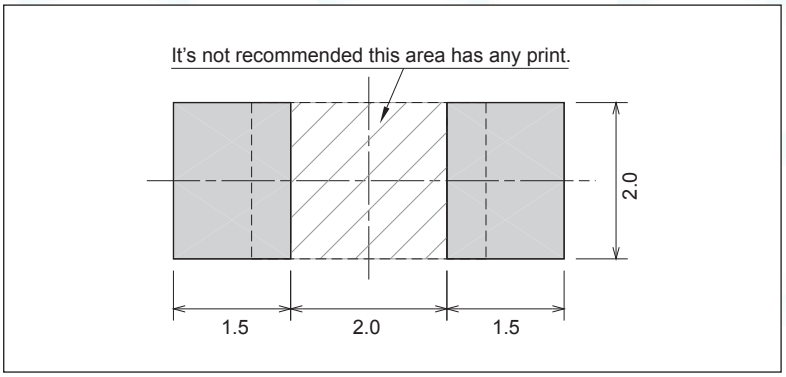
Directive Characteristics





Recommended Soldering Pattern

(Unit: mm)



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	117	mW
DC Forward Current	I_F	30	30	mA
Pulsed Forward Current	I_{FP*}	100	120	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

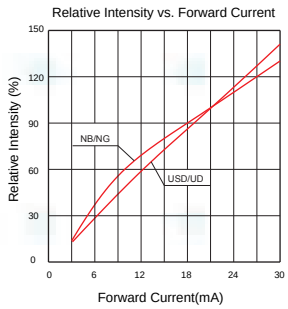
* 0.1msec pulse, 10% duty cycle.

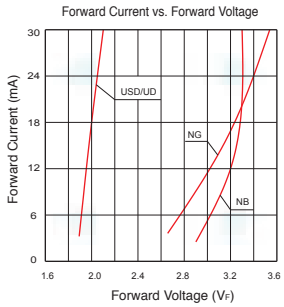
Electrical / Optical Characteristics

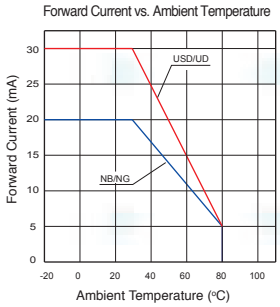
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-F158USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	40	120	20	120
HT-V158NG	Green	InGaN	3.3	3.9	527	520	40	120	250	20	120
HT-V158NB	Blue	InGaN	3.3	3.9	470	468	40	70	150	20	120
HT-V158BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	700	1000	20	120

*Per NIST standards





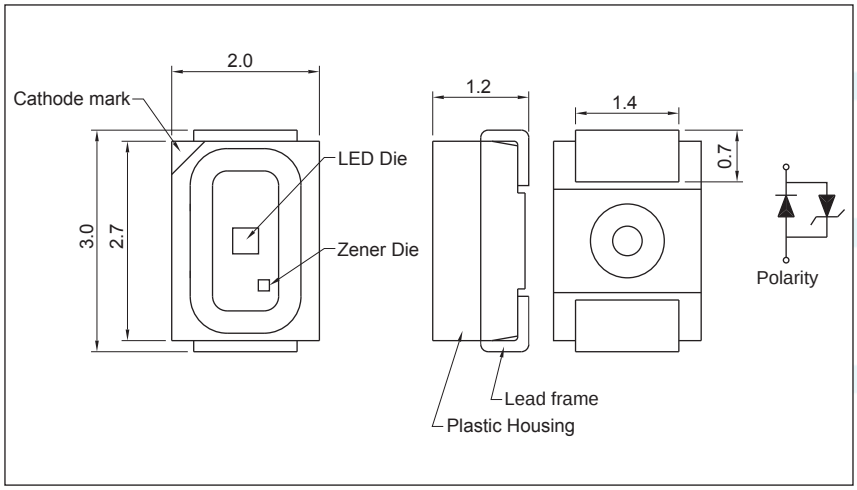


Characters

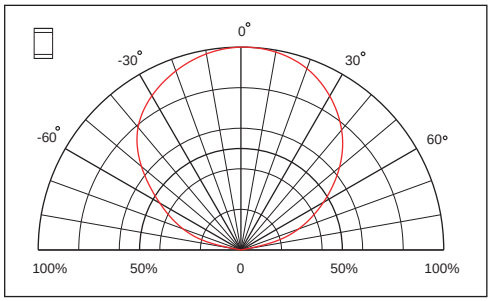
- Chip LED (3.0x2.0x1.2)
- Super compact

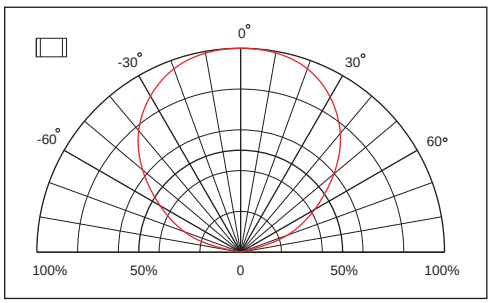
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



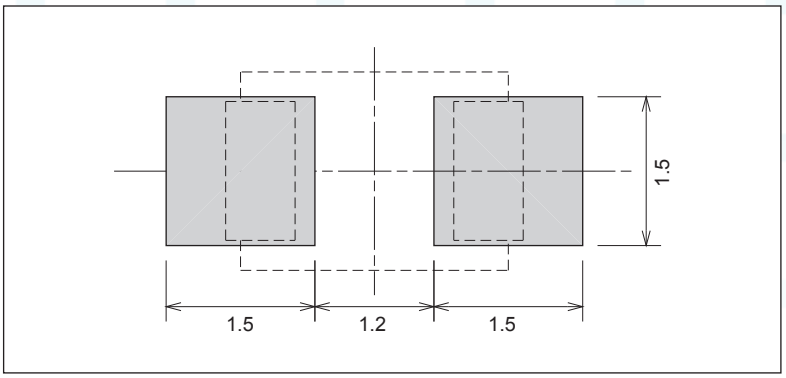
Directive Characteristics





Recommended Soldering Pattern

(Unit: mm)



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	117	mW
DC Forward Current	I_F	30	30	mA
Pulsed Forward Current	I_{FP*}	120	120	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		°C
Storage Temperature	T_{ST}	-40 to 85		°C

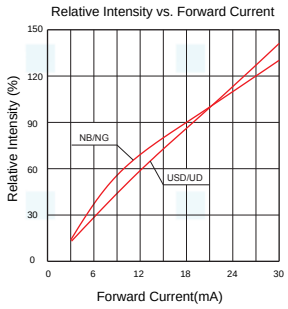
* 0.1msec pulse, 10% duty cycle.

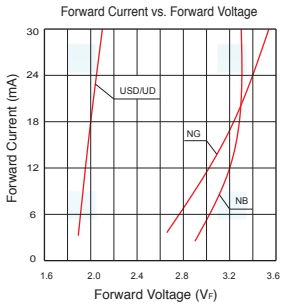
Electrical / Optical Characteristics

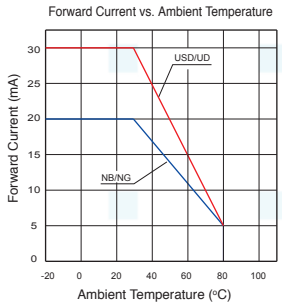
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-T158USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	120	200	20	120
HT-U158NG	Green	InGaN	3.3	3.9	527	520	40	200	350	20	120
HT-U158NB	Blue	InGaN	3.3	3.9	470	468	40	120	250	20	120
HT-U158BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	700	1000	20	120

*Per NIST standards

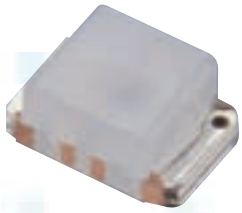






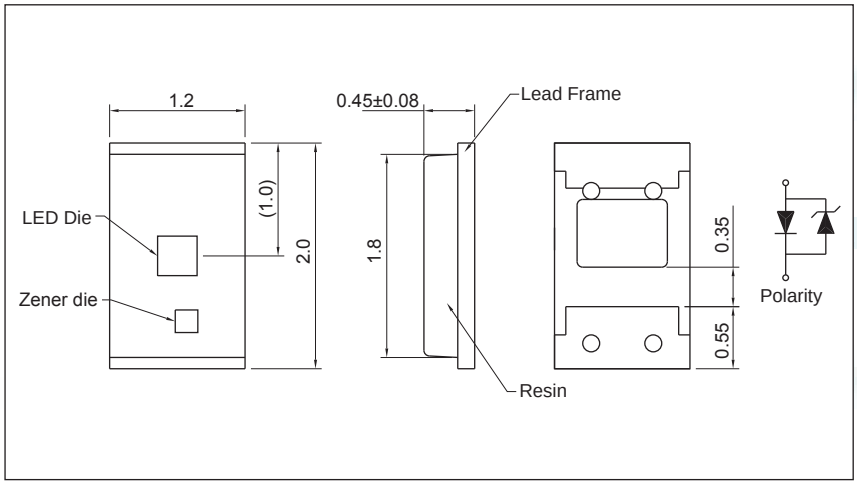
Characters

- Chip LED (2.0x1.2x0.45)
- Flash LED

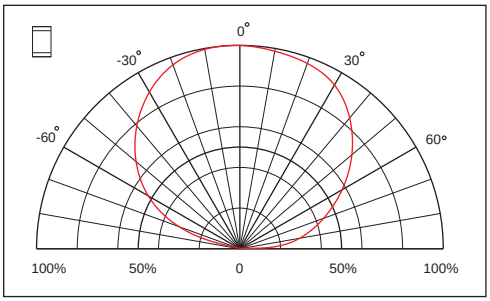


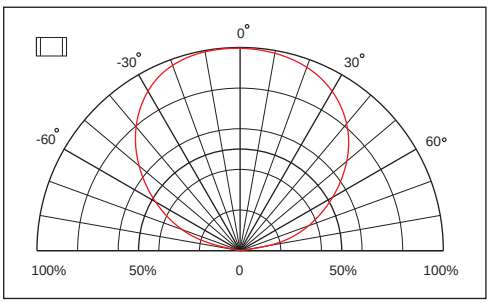
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



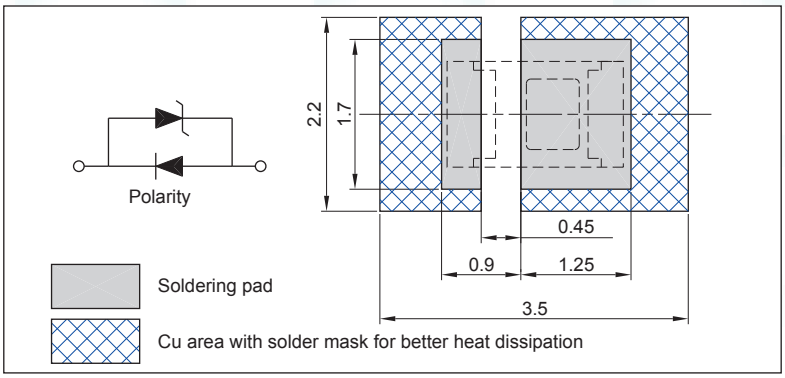
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	InGaN	Unit
Power Dissipation	P_D	585	mW
DC Forward Current	I_F	150	mA
Pulsed Forward Current	I_{FP*}	1000	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{OP}	-30 to 80	°C
Storage Temperature	T_{ST}	-40 to 85	°C

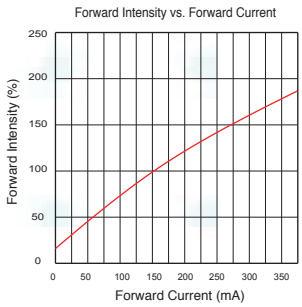
* 0.1msec pulse, 10% duty cycle.

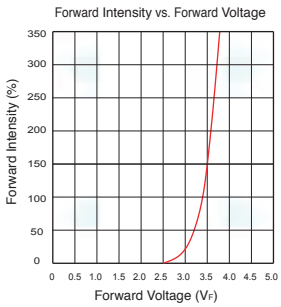
Electrical / Optical Characteristics

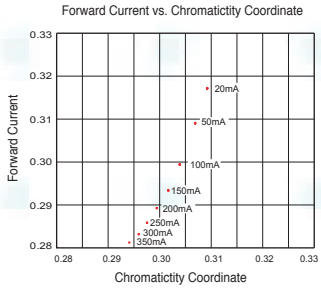
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-V171BPH	White	InGaN	3.4	3.9	x=0.29 y=0.31	-	-	3600	4000	150	120

*condition:2 sec on,5 sec off
*Per NIST standards





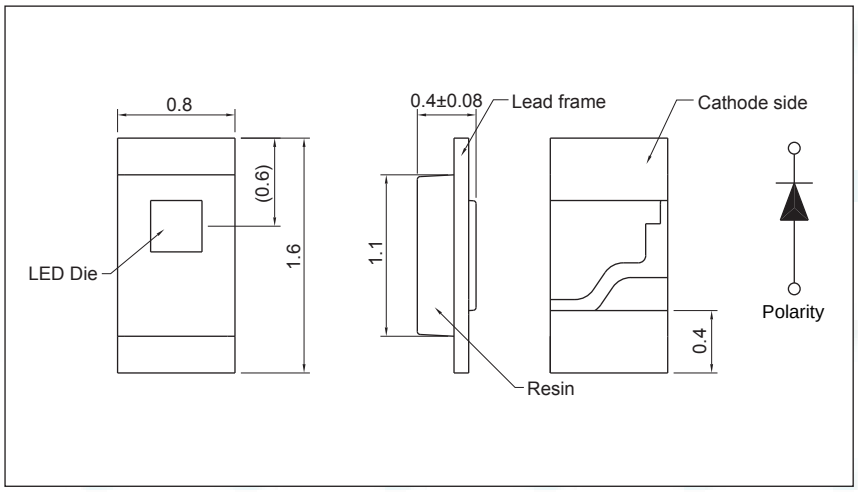


Features

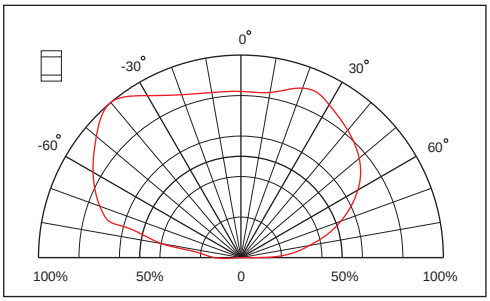
- Chip LED (1.6x0.8x0.4)
- Super compact

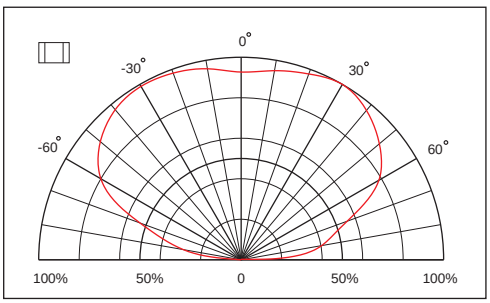
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



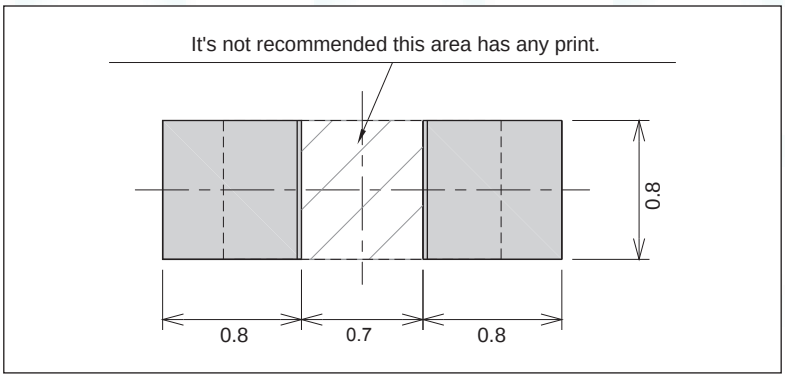
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	117	mW
DC Forward Current	I_F	30	30	mA
Pulsed Forward Current	I_{FP}*	120	120	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		℃
Storage Temperature	T_{ST}	-40 to 85		℃

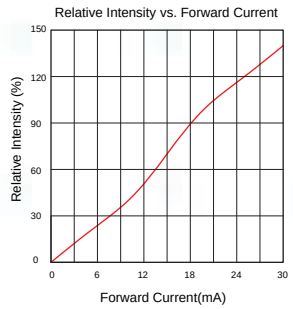
* 0.1msec pulse, 10% duty cycle.

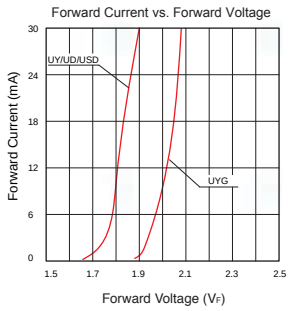
Electrical / Optical Characteristics

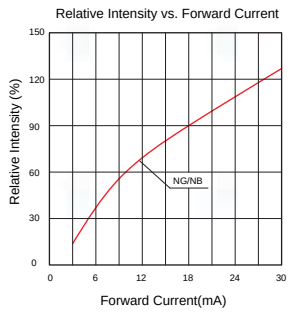
(Ta=25 °C)

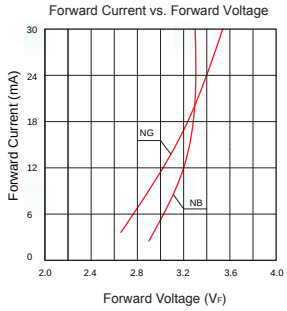
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-F195UYG	Ultra Bright Yellow Green	AlInGaP	2.0	2.4	573	574	20	36	60	20	140
HT-F195UY	Ultra Bright Yellow	AlInGaP	1.9	2.4	591	593	15	40	90	20	140
HT-F195UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	50	120	20	140
HT-F195USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	50	120	20	140
HT-F195NB	Blue	InGaN	3.3	3.9	470	468	40	36	90	20	140
HT-F195NG	Green	InGaN	3.3	3.9	527	520	40	90	160	20	140
HT-F195BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	140	250	20	140
HT-F195NB5	Blue	InGaN	2.8	3.15	472	470	40	14	30	5	140
HT-F195NG5	Green	InGaN	2.8	3.15	529	522	40	25	50	5	140
HT-F195BP5	White	InGaN	2.8	3.15	x=0.29 y=0.32	-	-	36	90	5	140

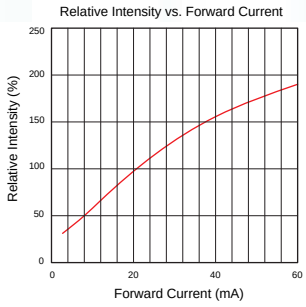
*Per NIST standards

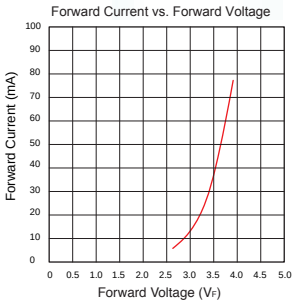


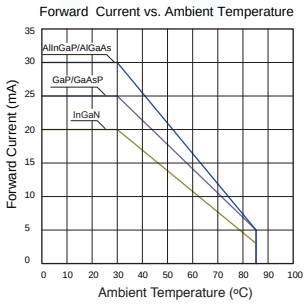










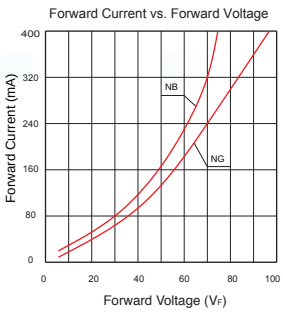


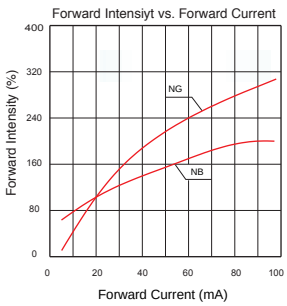
Electrical / Optical Characteristics

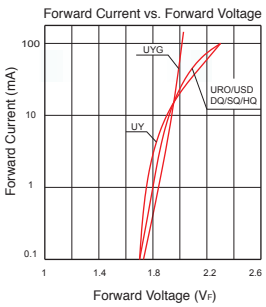
(Ta=25 °C)

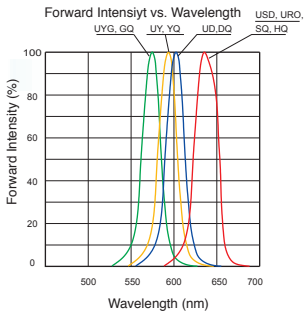
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-F196UD	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	40	95	20	140
HT-F196USD	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	40	95	20	140
HT-F196NB	Blue	InGaN	3.3	3.9	470	468	40	40	55	20	140
HT-F196NG	Green	InGaN	3.3	3.9	527	520	40	100	150	20	140
HT-F196BP	White	InGaN	3.3	3.9	x=0.29 y=0.31	-	-	180	250	20	140
HT-F196NBA	Blue	InGaN	3.1	3.3	470	468	40	20	25	10	140
HT-F196NGA	Green	InGaN	3.1	3.3	527	520	40	40	60	10	140
HT-F196BPA	White	InGaN	3.1	3.3	x=0.29 y=0.32	-	-	80	100	10	140
HT-F196NB5	Blue	InGaN	2.8	3.15	470	468	40	10	20	5	140
HT-F196NG5	Green	InGaN	2.8	3.15	527	520	40	25	28	5	140
HT-F196BP5	White	InGaN	2.8	3.15	x=0.29 y=0.31	-	-	35	60	5	140
HT-F196NBZ	Blue	InGaN	2.7	2.95	470	468	40	7	9	2	140
HT-F196NGZ	Green	InGaN	2.7	2.95	527	520	40	18	22	2	140
HT-F196BPZ	White	InGaN	2.7	2.95	x=0.29 y=0.32	-	-	18	28	2	140

*Per NIST standards







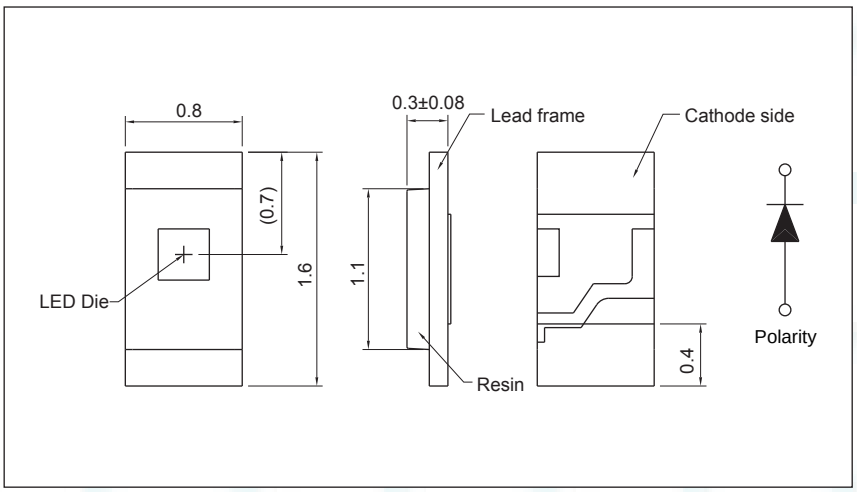


Features

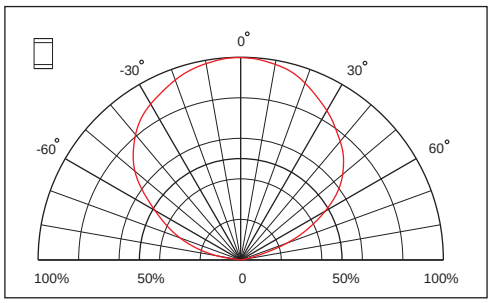
- Chip LED (1.6x0.8x0.3)
- Super compact

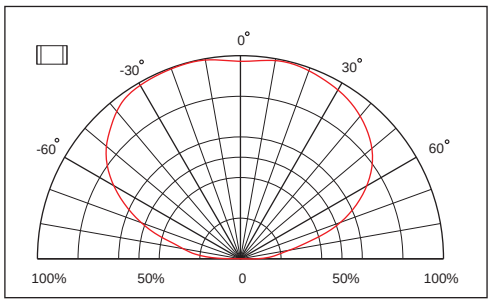
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



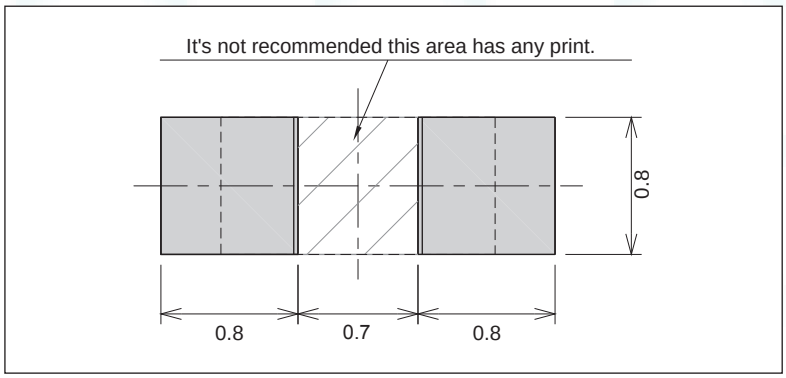
Directive Characteristics





Recommended Soldering Pattern

(Unit:mm)



Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	117	mW
DC Forward Current	I_F	30	30	mA
Pulsed Forward Current	I_{FP}*	100	120	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		℃
Storage Temperature	T_{ST}	-40 to 85		℃

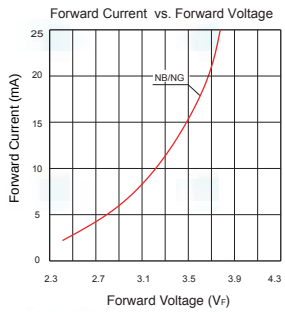
* 0.1msec pulse, 10% duty cycle.

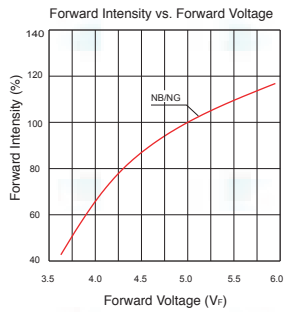
Electrical / Optical Characteristics

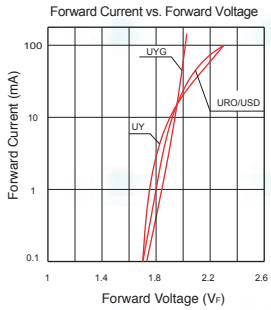
(Ta=25°C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-F199UYG5	Ultra Bright Yellow Green	AlInGaP	1.8	2.0	573	574	20	18	28	5	x=140 y=120
HT-F199USD5	Ultra Bright Orange	AlInGaP	1.8	2.0	622	636	17	18	28	5	x=140 y=120
HT-F199NB5	Blue	InGaN	2.8	3.15	470	468	40	18	28	5	x=140 y=120
HT-F199NG5	Green	InGaN	2.8	3.15	527	520	40	50	70	5	x=140 y=120
HT-F199BP5	White	InGaN	2.8	3.15	x=0.29 y=0.31	-	-	40	50	5	x=140 y=120

*Per NIST standards

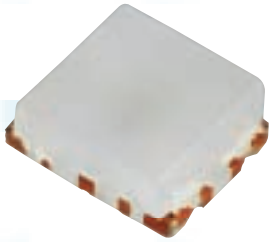






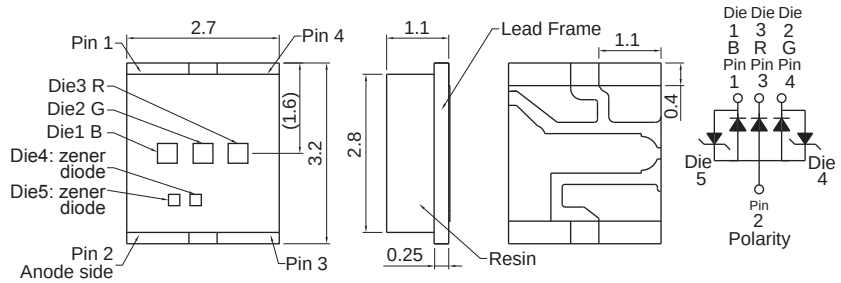
Features

- Chip LED (3.2x2.7x1.1)
- Full color

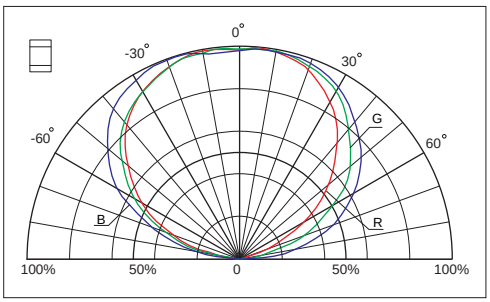


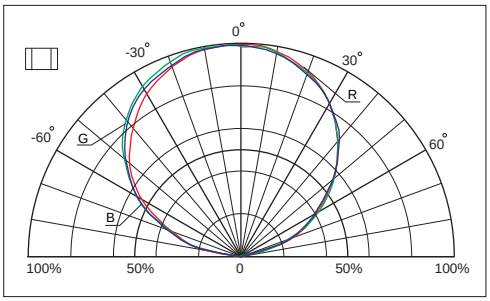
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



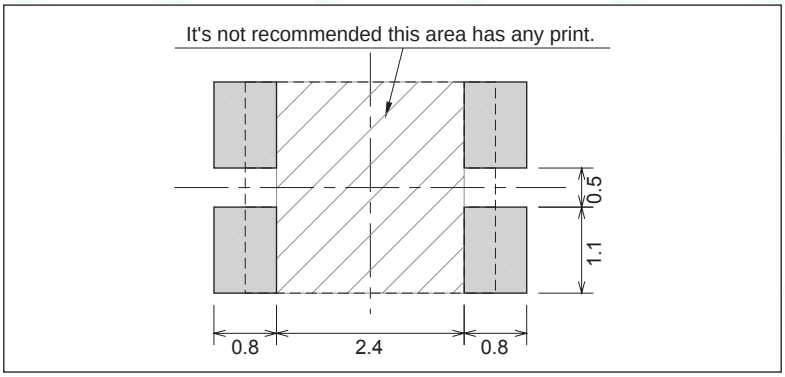
Directive Characteristics





Recommended Soldering Pattern

(Unit: mm)



Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P_D	72	117	mW
DC Forward Current	I_F	30	30	mA
Pulsed Forward Current	I_{FP}*	120	120	mA
Reverse Voltage	V_R	5		V
Operating Temperature	T_{OP}	-30 to 80		℃
Storage Temperature	T_{ST}	-40 to 85		℃

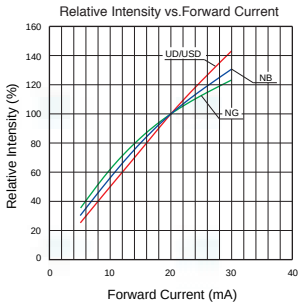
* 0.1msec pulse, 10% duty cycle.

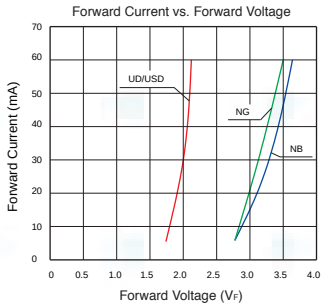
Electrical / Optical Characteristics

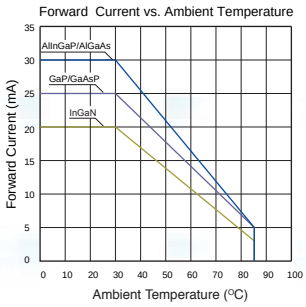
(Ta=25 °C)

Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta_{\frac{1}{2}}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-V350FCH	Ultra Bright Orange	AlInGaP	1.9	2.4	622	636	17	90	140	20	120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	120
HT-V350FDH	Ultra Bright Amber	AlInGaP	1.9	2.4	605	609	17	90	140	20	120
	Green	InGaN	3.3	3.9	527	520	40	90	200	20	120
	Blue	InGaN	3.3	3.9	470	468	40	56	90	20	120

*Per NIST standards

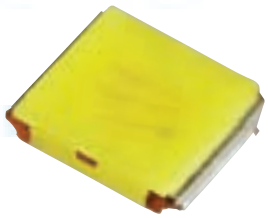






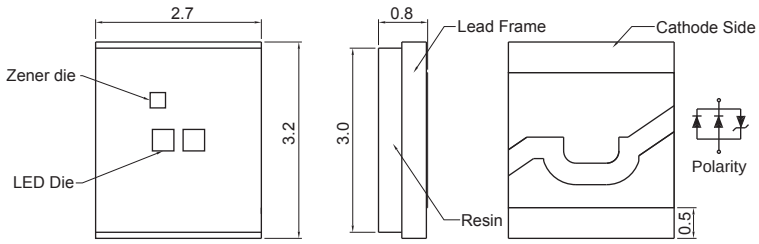
Characters

- Chip LED (3.2x2.7x0.8)
- Flash LED

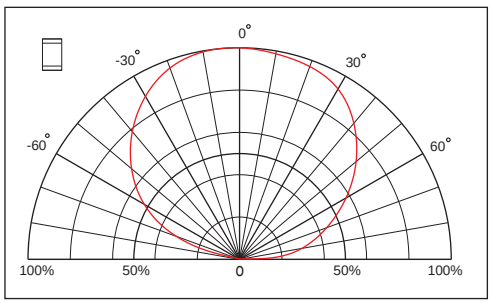


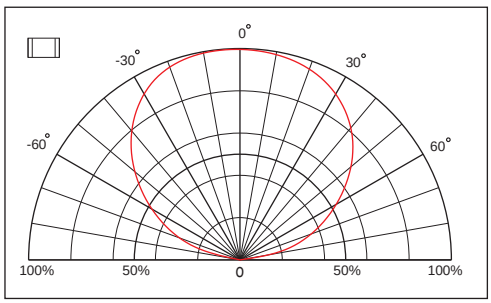
Package Outline Dimensions

(Unit: mm Tolerance:+/-0.1)



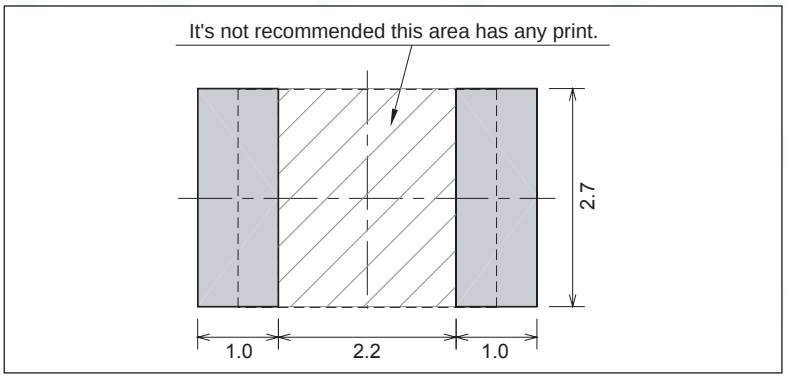
Directive Characteristics





Recommended Soldering Pattern

(Unit: mm)



Absolute Maximum Ratings

(Ta=25 °C)

Item	Symbol	InGaN	Unit
Power Dissipation	P_D	234	mW
DC Forward Current	I_F	60	mA
Pulsed Forward Current	I_{FP}*	120	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{OP}	-30 to 80	°C
Storage Temperature	T_{ST}	-40 to 85	°C

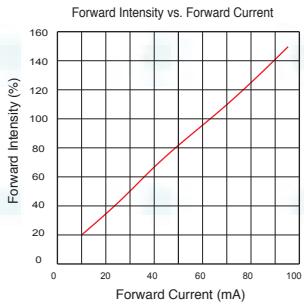
* 0.1msec pulse, 10% duty cycle.

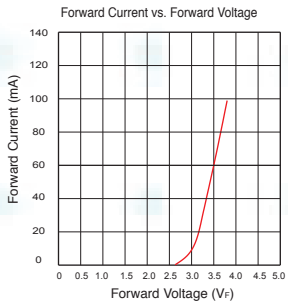
Electrical / Optical Characteristics

(Ta=25 °C)

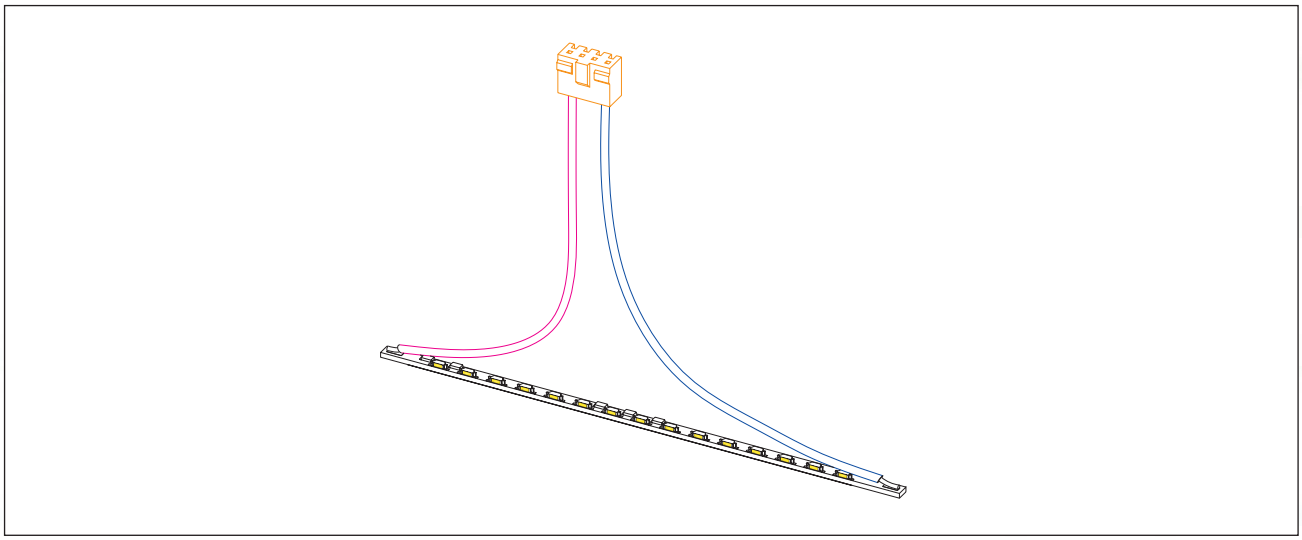
Part Number	Emitting color	Material	Forward Voltage(V_F)		Wavelength (nm) typ.			Luminous Intensity (mcd)*		I_F (mA)	Viewing Angle $2\theta\frac{1}{2}$
			typ.	max.	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-V253BPK	White	InGaN	3.4	3.9	x=0.29 y=0.31	-	-	1800	2000	60	120

*Per NIST standards
*per chip current 30mA



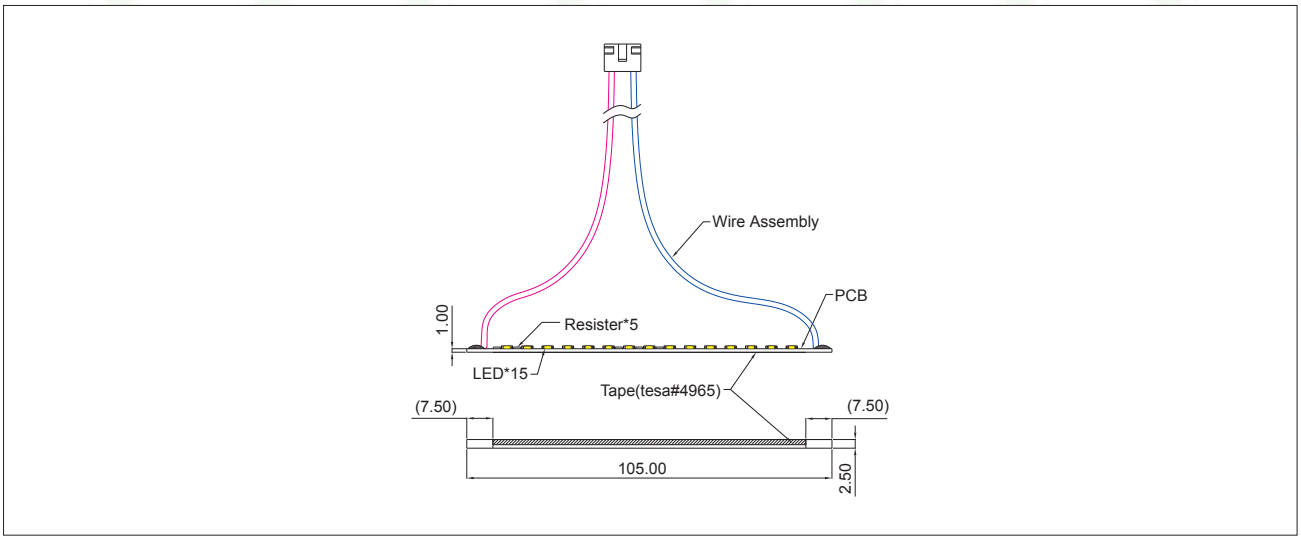


3D Outline



Outline Dimensions

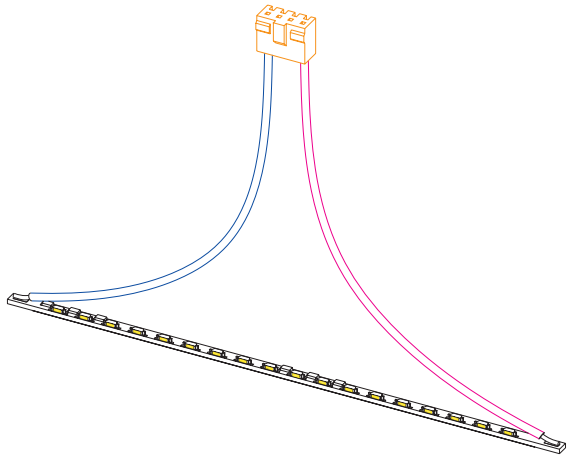
Unit: mm



Features

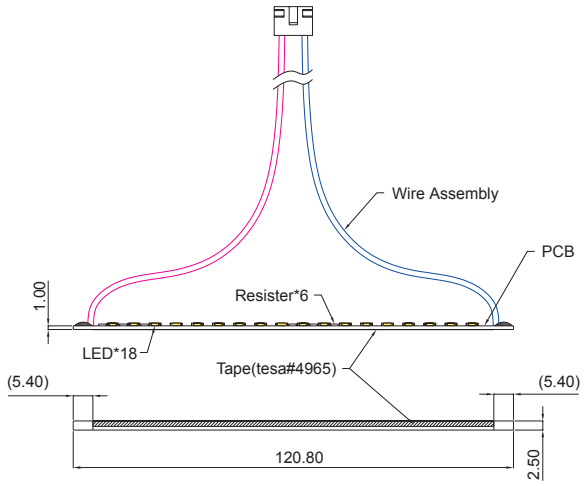
Item	Description
Driving Condition	12.0 V (DC)
Connecter	JWT A2507H02-4P or JAE IL-G-4S-S3C2
Base board	PCB FR4
LED type	Side View
LED chip	15ea
Application	Backlight Module

3D Outline



Outline Dimensions

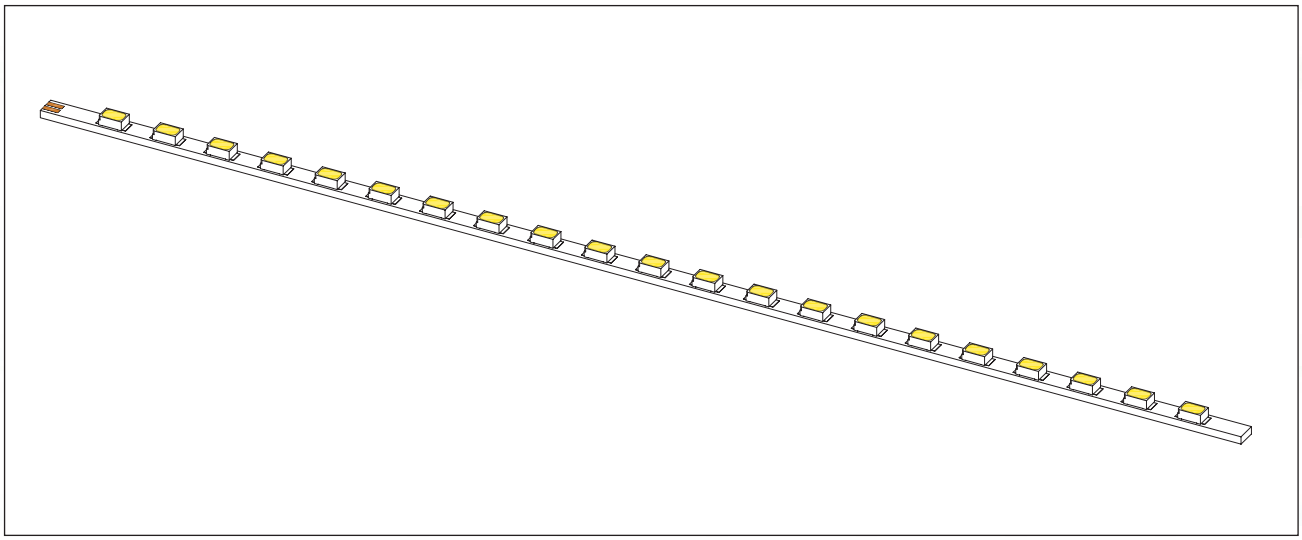
Unit: mm



Features

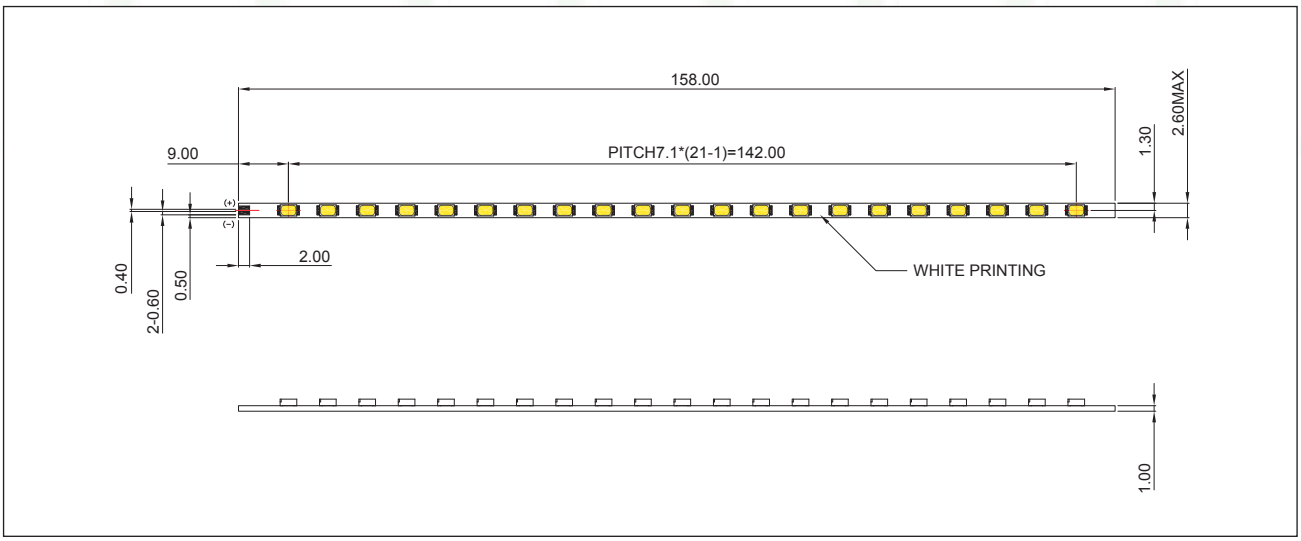
Item	Description
Driving Condition	12.0 V (DC)
Connecter	JWT A2507H02-4P or JAE IL-G-4S-S3C2
Base board	PCB FR4
LED type	Side View
LED chip	18ea
Application	Backlight Module

3D Outline



Outline Dimensions

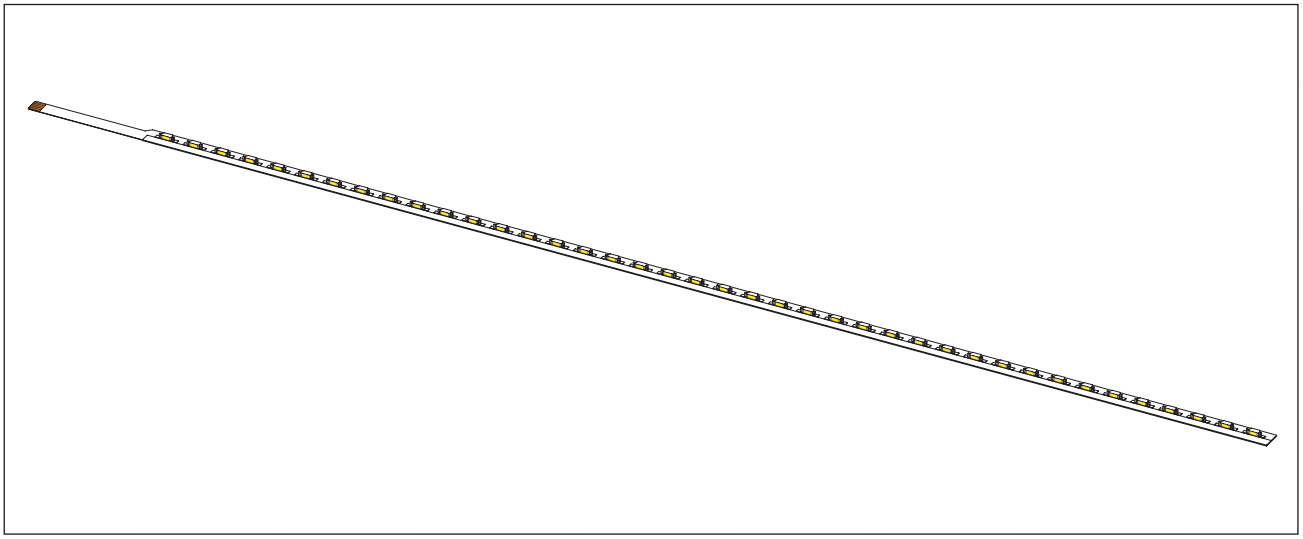
Unit: mm



Features

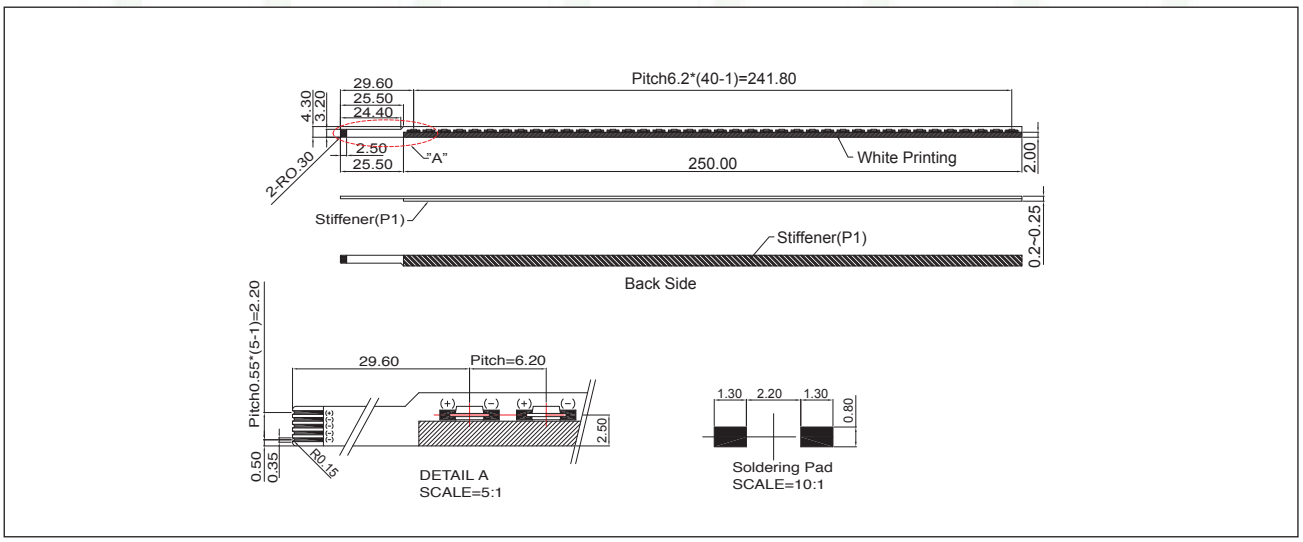
Item	Description
Driving Condition	9.6 V (DC) Ref.; 140mA
Base board	PCB FR4
LED type	Top View
LED chip	21ea
Application	Backlight Module

3D Outline



Outline Dimensions

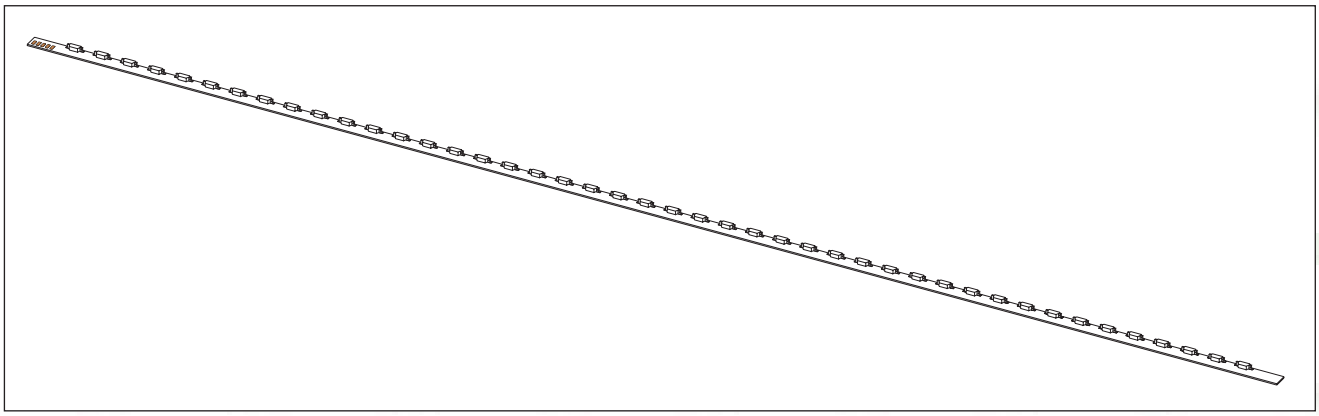
Unit: mm



Features

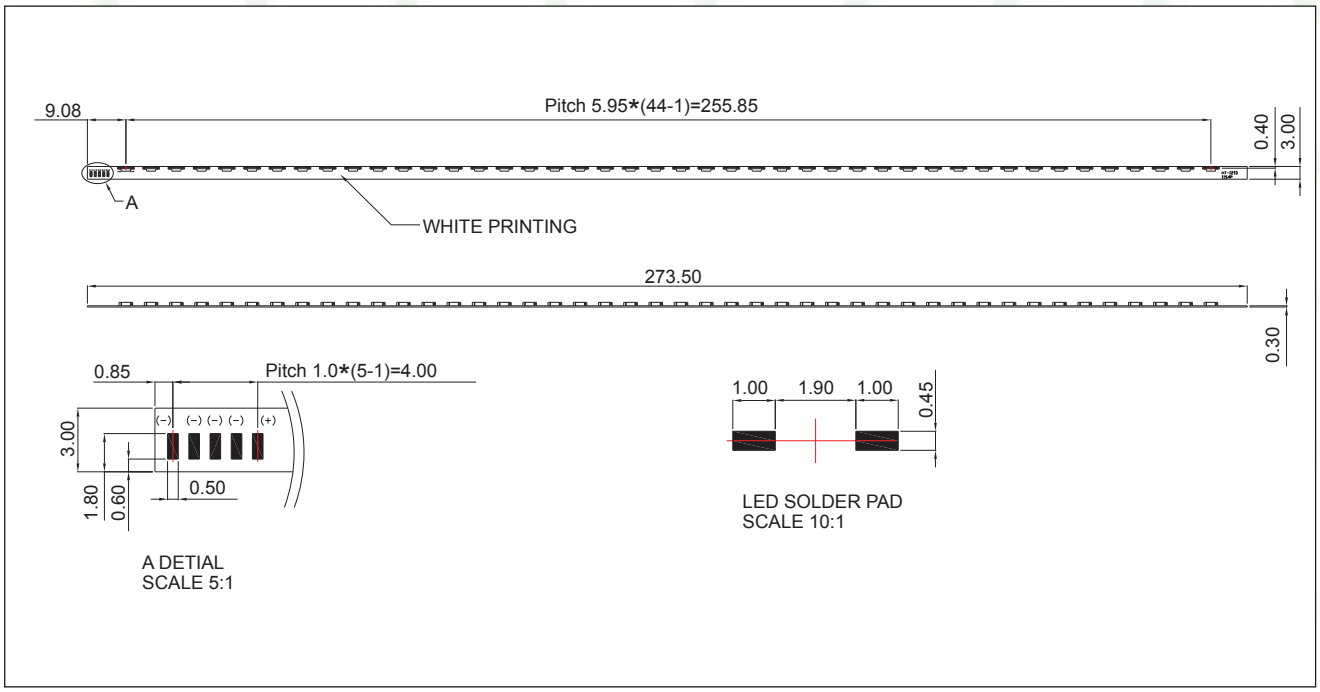
Item	Description
Driving Condition	32.0 V (DC) Ref.
Base board	FPC
LED type	Side View
LED chip	40ea
Application	Backlight Module

3D Outline



Outline Dimensions

(Unit:mm)

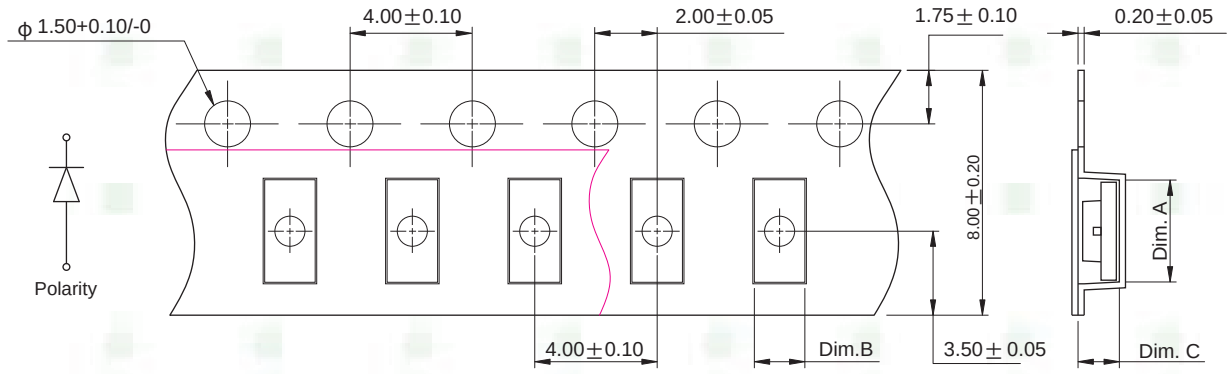


Features

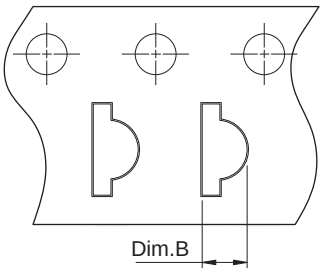
Item	Description
Driving Condition	35.0 V (DC) Ref.
Base board	AI
LED type	Side View
LED chip	44ea
Application	Backlight Module

For All Series

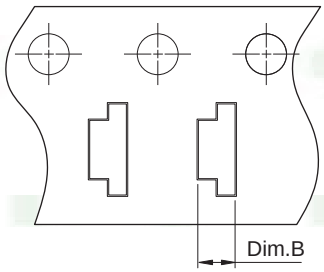
All Series Carrier Tape Dimensions (Unit: mm)



HT-110/121/210/311 series



HT-V118 series

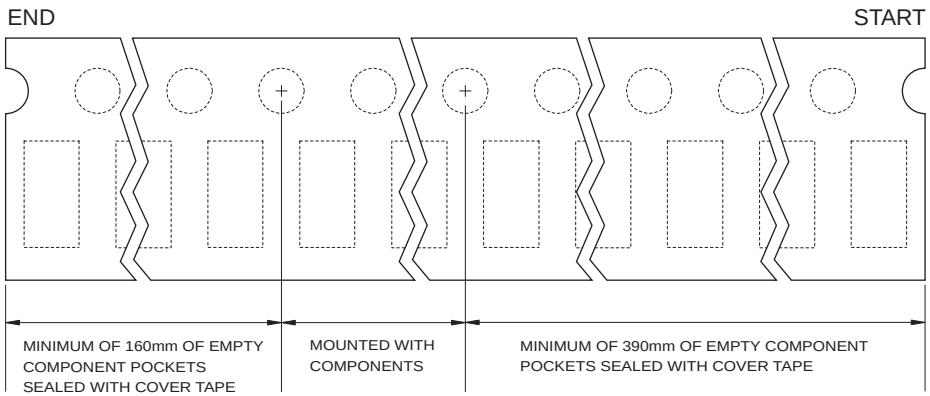


1. Polarity referring to the cathode mark is reversed on the UR (N side-up chips).
2. The carrier tape and components loading specifications meet the EIA 481-1A Standard.

Unit:mm

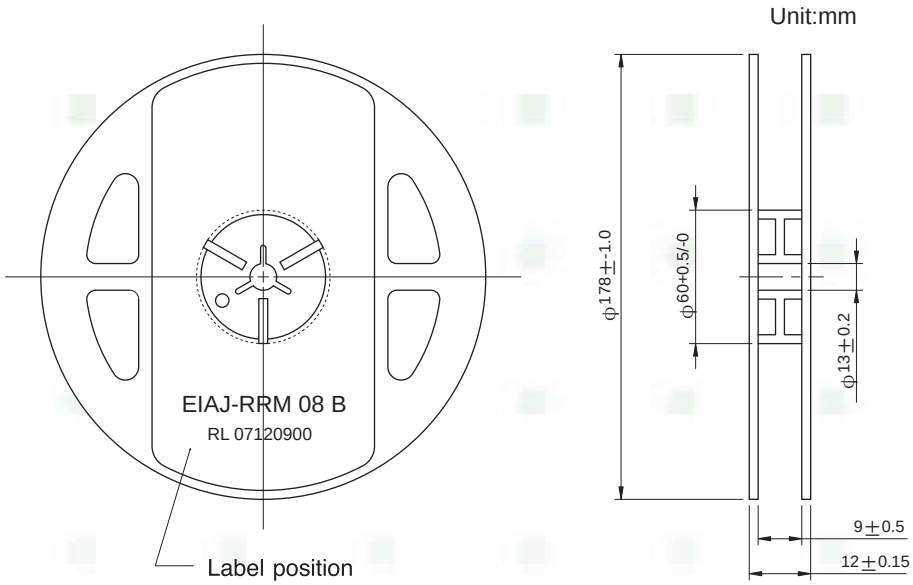
Part No.	Dim.A	Dim.B	Dim.C	Q`ty/Reel	Part No.	Dim.A	Dim.B	Dim.C	Q`ty/Reel
HT-150	3.50±0.10	1.88±0.10	1.27±0.10	3K	HT-E311	3.40±0.10	1.70±0.10	1.20±0.10	1K
HT-159	3.43±0.10	1.80±0.10	2.20±0.10	2K	HT-V114	4.20±0.10	1.20±0.10	0.50±0.10	2K
HT-170	2.30±0.10	1.45±0.10	0.95±0.10	4K	HT-V116	4.20±0.10	1.20±0.10	0.75±0.10	2K
HT-191	1.86±0.10	0.89±0.10	0.87±0.10	4K	HT-V118	3.40±0.10	1.20±0.10	0.95±0.10	2K
HT-193	1.80±0.10	0.95±0.10	0.60±0.10	4K	HT-V150	3.50±0.10	1.78±0.10	1.58±0.10	3K
HT-260	3.80±0.10	1.45±0.10	1.20±0.10	3K	HT-F150	3.50±0.10	1.78±0.10	1.58±0.10	3K
HT-261	1.75±0.10	1.65±0.10	0.55±0.10	4K	HT-V158	3.23±0.10	2.18±0.10	0.65±0.10	2K
HT-155	3.52±0.10	3.02±0.10	1.40±0.10	3K	HT-F158	3.23±0.10	2.18±0.10	0.65±0.10	2K
HT-297	1.75±0.10	0.90±0.10	0.60±0.10	4K	HT-T158	3.30±0.10	2.25±0.10	1.65±0.10	2K
HT-E358	3.52±0.10	3.02±0.10	1.40±0.10	2K	HT-U158	3.30±0.10	2.25±0.10	1.65±0.10	2K
HT-E372	2.30±0.10	1.40±0.10	0.60±0.10	2K	HT-V171	2.30±0.10	1.40±0.10	0.60±0.10	2K
HT-E374	2.30±0.10	1.40±0.10	0.60±0.10	2K	HT-F195	1.75±0.10	0.90±0.10	0.60±0.10	4K
HT-380	1.75±0.10	1.75±0.10	0.55±0.10	0.5K	HT-F196	1.75±0.10	0.90±0.10	0.50±0.10	4K
HT-110	3.40±0.10	1.70±0.10	1.20±0.10	3K	HT-F199	1.75±0.10	0.88±0.10	0.50±0.10	4K
HT-121	1.72±0.10	1.05±0.10	0.85±0.10	4K	HT-V350	3.52±0.10	3.02±0.10	1.40±0.10	2K
HT-210	3.40±0.10	1.70±0.10	1.20±0.10	3K	HT-V253	3.45±0.10	2.92±0.10	0.83±0.10	2K

Tape Leader and Trailer Dimensions

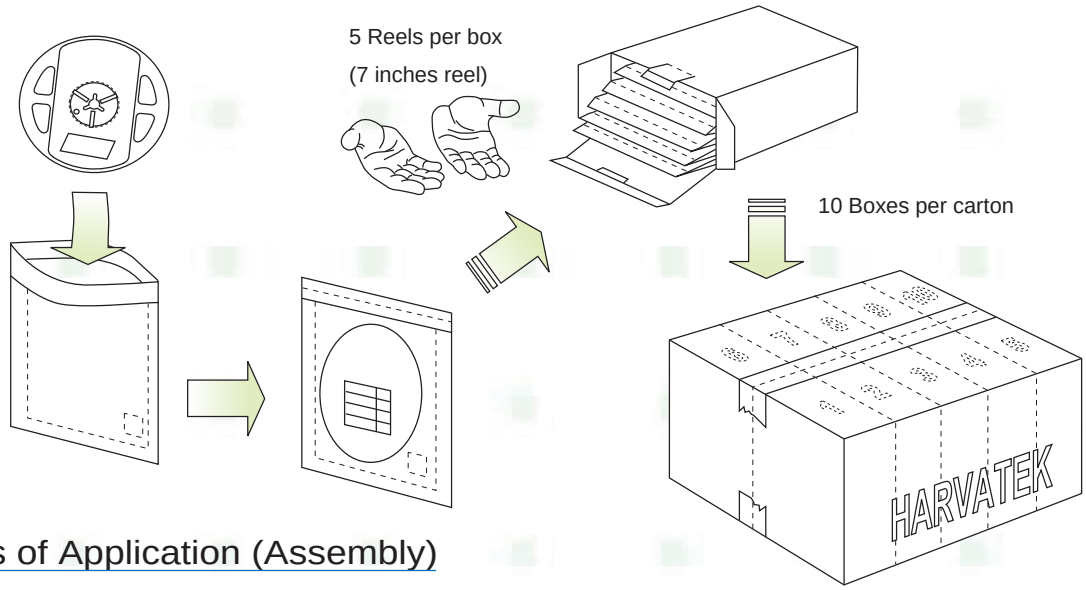


For All Series

Plastic Reel Dimensions



The Reel Box and Shipping Carton



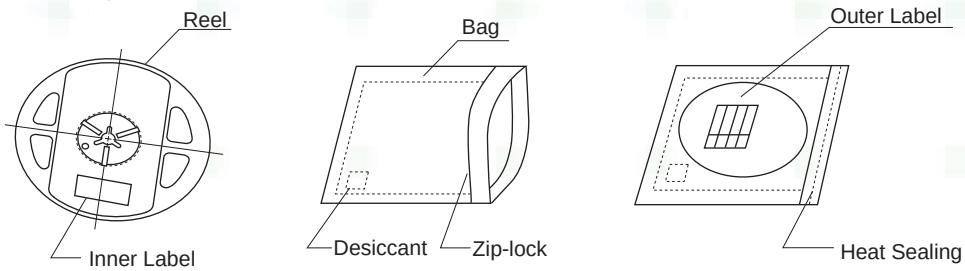
Cautions of Application (Assembly)

1) Dry Pack

1.1) Avoid absorbing moisture at any time during transportation or storage.

1.2) Every reel will be packaged in the moisture barrier anti-static bag (Specific bag material will depend upon customers' requirement or selection) and well sealed before shipment.

1.3) The package is the following:



2) Storage

2.1) Store products in the following recommended conditioons:

Humidity: 60% RH Max.

Temperature: 5°C~30°C (41°F~86°F)

2.2) Shelf life in sealed bag: 12 months at <40°C and <90% RH.

2.3) After the bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be:

Mounted within 72 hours at factory conditions of ≤ 30°C / 60°C RH, or

Stores at ≤ 20°C RH with zip-lock seal.

3) Baking

Baking before soldering is recommended when the package has been unsealed for 15 days.

The conditions are as followings:

a) 60 ± 3°C x (12~24hrs) and < 5% RH, taped reel type.

b) 100±3℃×(45min~1hr), bulk type
c) 130±3℃×(15~30min), bulk type

4) Application (Soldering)

4.1) Manual soldering (We strongly do not recommend this method.)

4.1.1) Soldering tin material: tin 6/4 alloy or contained Ag.

4.1.2) To prevent cracking, please bake before manual soldering.

4.1.3) Keep the temperature on the edge of iron at 300°C ± 5°C Max.(25W) and apply for 3 seconds. If the temperature becomes higher, apply for a shorter time (1 sec per 10°C).

4.1.4) In manual soldering, careful not to damage the package, especially the terminal or resin. (Do not apply stress to the product when soldering.)

4.1.5) Do not reuse previously soldered product.

4.1.6) Using an iron with a temperature control is recommended.

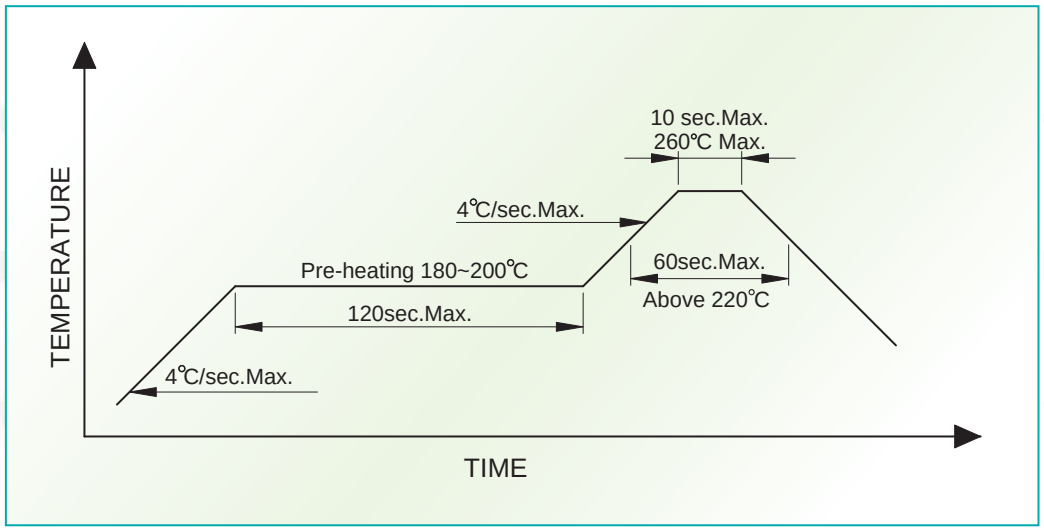
4.2) Reflow Soldering

4.2.1) Recommend tin glue specifications:
Operating temp: Above 220°C, 60sec
Peak temp: 260°C, max., 10sec

4.2.2) Never attempt next process until the component is cooled down to room temperature after reflow.

4.2.3) The recommended reflow soldering profile (measured on the surface of the LED resin) is as follows:

Lead-free Solder Profile



4.3) Rework

4.3.1) Rework must be finished within 3 sec under 350ºC.

4.3.2) The head of iron cannot touch copper foil.

4.3.3) Twin-head type is preferred.

5) Cleaning

The conditions of cleaning after soldering:

a) An alcohol-baseed solvent such as Isoproply Alcohol (IPA) is recommended.

b) Temperature x Time: <50ºC x 30sec, or <30ºC x3min

c) Ultrasonic cleaning: < 15W / bath; Bath volume: 1liter max.

d) Curing: 100ºC max, <3min

6) Cautions of Pick and Place

6.1) Load stress on the resin should be avoided during high temperature.

6.2) Avoid rubbing or scraping the resin.

6.3) Static electricity may cause damage to the component. Please confirm that the equipment is grounded well. Using an ionizer fan is recommended.

7) Cautions of Design and Applications

7.1) A current-limiting serial resistor should be connected. Avoid driving a reverse voltage over the specifications on LED when ON/OFF.

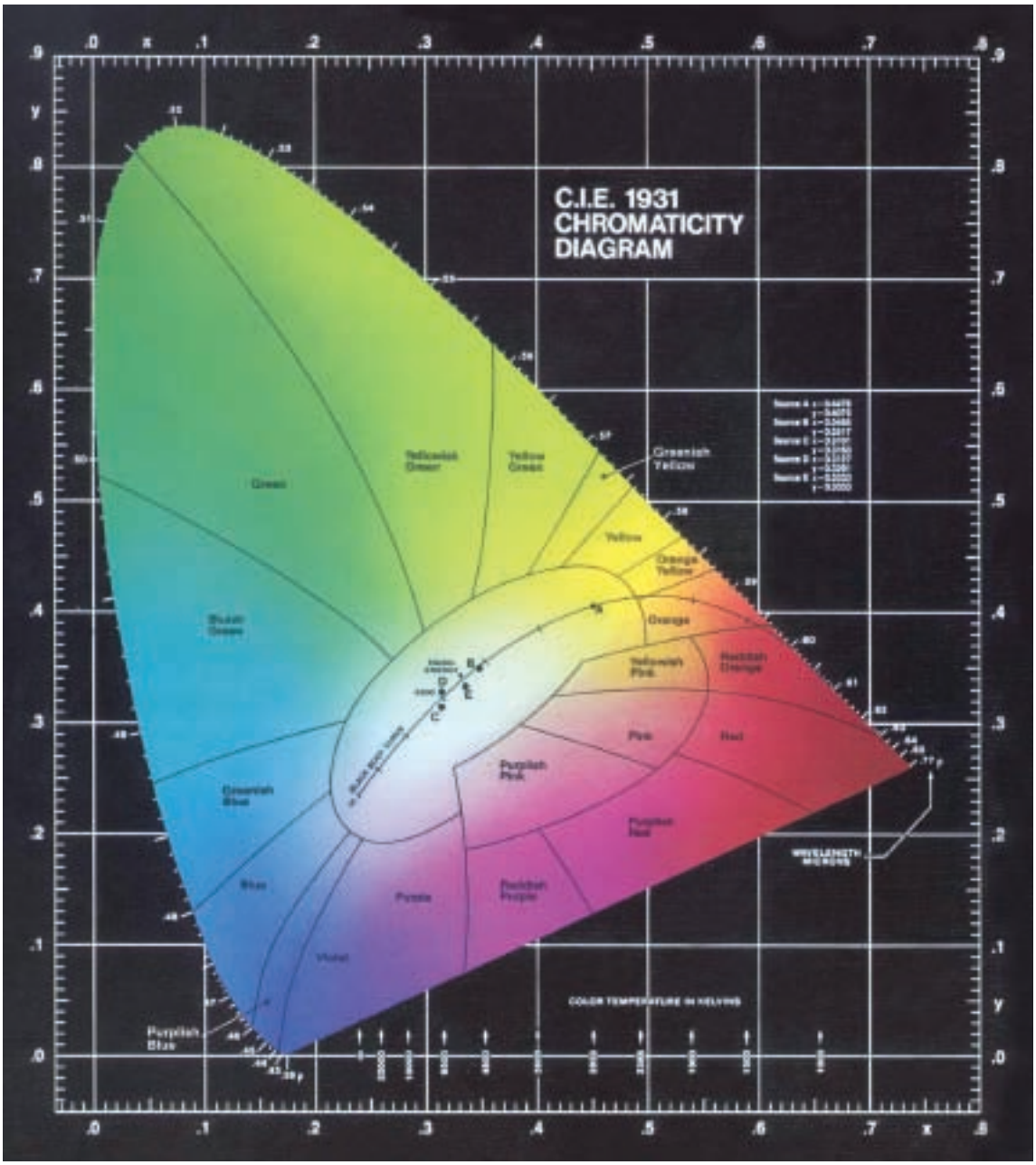
7.2) Any application should be limited to the specifications of the absolute maximum ratinings.

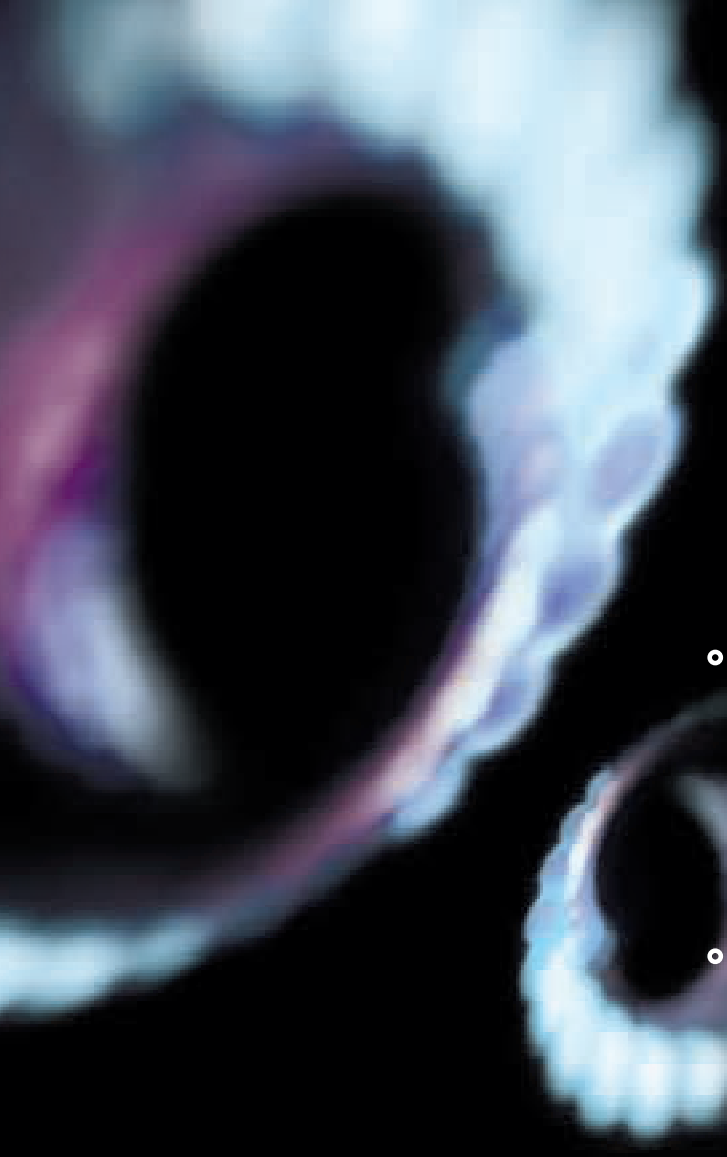
7.3) The dimensions of the recommended soldering pattern may not be suitable for all applications. Please research and confirm before designing the soldering pattern to obtain the best results.

7.4) Do not make contact with any component on the assembly board.

For All Series

C.I.E.





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