Bright View Electronics

SPECIFICATIONS FOR BRIGHT VIEW ELECTRONICS
TOP VIEW LED

MODEL : **BTV3528B2LN / BTV3528G2LN / BTV3528R2LN / BTV3528Y2LN**

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Content

Bright View Electronics

Description

The PLCC2 type BTV3528B2LN / BTV3528G2LN / BTV3528R2LN / BTV3528Y2LN TOP VIEW LED, with its light weight , enables smaller board size, higher packing density, reduced storage space and miniature applications.

TYPE	BTV3528B2LN	BTV3528G2LN	BTV3528R2LN	BTV3528Y2LN
Dice Material	InGaN	GaN	AlGaInP	AlGaInP
Light Color	Blue	Green	Orange Red	Yellow
Colloid Color	Water Transparent	Water Transparent	Water Transparent	Water Transparent

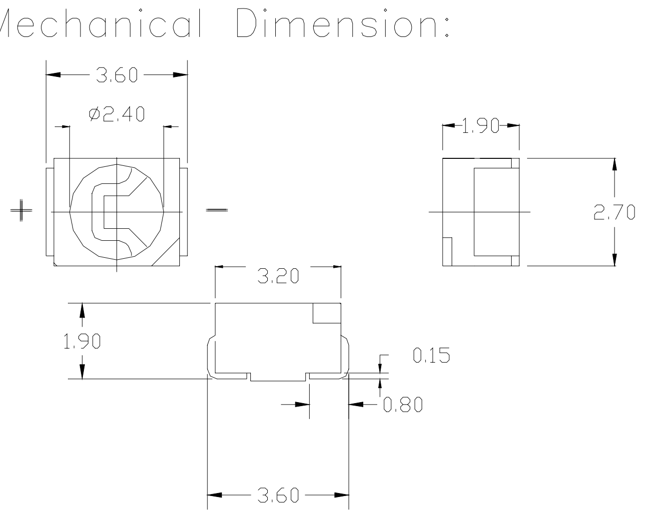
Features

- 1 chip package
- Compatible with automatic placement equipment
- Compatible with reflow soldering process
- Long operating life
- Low forward voltage operated
- Instant light
- Pb -free/ RoHS compliant
- Intellectual Property Licenced
- Encapsulating Resin : Silicone Resin

Applications

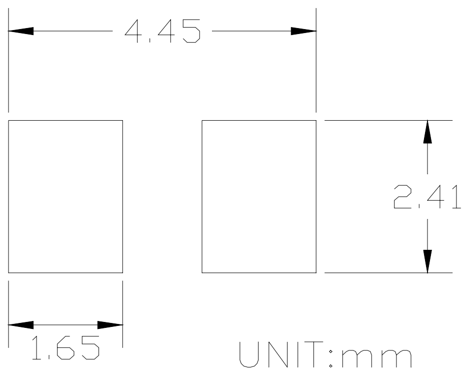
- General lighting
- Amusement equipment
- Lighting for small size device
- Information boards
- Light bar
- Decoration
- Marker lights

■ Package Dimensions



Unit：mm
Tolerance：± 0.1 mm

■ Recommended Soldering Pad Design



■ Part Numbering System

BTV		3528		W		2		L		N		
Product Code		**Outline Package Code**		**Color Code**		**L/F Code**		**Material Code**		**Zener Code**		Serial Code
BTV	TOP VIEW	3528	L:35 W:28	B	Blue	2	2 PIN	L	material code	N	Non-Zener	
				G	Green					Z	Zener	
				Y	Yellow							
				R	Orange Red							

■ Absolute Maximum Ratings (T_A = 25°C)

Parameter	Symbol	Max. Rating B	Max. Rating G	Max. Rating R	Max. Rating Y	Unit
Power Dissipation	P_D	120	123	78	75	mW
Continuous Forward Current	I_F	30	30	30	30	mA
Peak Forward Current*	I_{FP}	100	100	100	60	mA
Reverse Voltage	V_R	5	5	5	5	V
Operating Temperature Range	T_{opr}	−30 to ＋85				°C
Storage Temperature Range	T_{stg}	−40 to ＋100				°C
Reflow Soldering Condition 260℃ for 10 seconds	T_{sld}	2				times

* 1/10 Duty Cycle , 10 ms Pulse Width

■ Optical Characteristics (T_A = 25°C, I_F=20mA)

Part Nomber	Dominant Wavelength λD (nm) Min.	Dominant Wavelength λD (nm) Max.	Luminous Intensity, I_V (mcd) Min.	Luminous Intensity, I_V (mcd) Typ.	Luminous Intensity, I_V (mcd) Max.	View Angle 2θ 1/2 (degree) Typ.
BTV3528B2LN	450	475	220	---	448	110
BTV3528G2LN	518	530	600	---	1500	110
BTV3528R2LN	618	634	218	---	1100	110
BTV3528Y2LN	582	597	280	---	1100	110

■ Electrical Characteristics (T_A = 25°C)

Part Nomber	Forward Voltage, V_F (V) @ I_F = 20 mA Typ.	Forward Voltage, V_F (V) @ I_F = 20 mA Max.	Reverse Current, I_R (μA) @ V_R = 5 V Max.
BTV3528B2LN	3.2	4.0	10
BTV3528G2LN	3.3	4.1	10
BTV3528R2LN	2.2	2.6	10
BTV3528Y2LN	2.1	2.5	10

■ Luminous Intensity Bin Limits (I_F = 20 mA)

Bin Grade	Min. (mcd)	Max. (mcd)
A	100	130
B	130	168
C	168	218
D	218	280
E	280	360
F	360	465
G	465	600
H	600	780
I	780	1000
J	1000	1300
K	1300	1680
L	1680	2180

Note: Luminous Intensity measurement allowance is 10%.

■ Forward Voltage Bin Limits (I_F = 20 mA)

Bin Grade	Min. (V)	Max. (V)
18	1.8	2.0
20	2.0	2.2
22	2.2	2.4
24	2.4	2.6
26	2.6	2.8
28	2.8	3.0
30	3.0	3.2
32	3.2	3.4
34	3.4	3.6
36	3.6	3.8
38	3.8	4.0
40	4.0	4.2
42	4.2	4.4

Note: Forward Voltage measurement allowance is ±0.05 V

■ Dominant Wavelength Bin Limits (I_F = 20 mA)

Bin Grade		Min. (mn)	Max. (mn)
BTV3528B2LN	BK	450	455
	BL	455	460
	BM	460	465
	BN	465	470
	BO	470	475
BTV3528G2LN	PF	515	518
	PG	518	521
	PH	521	524
	PI	524	527
	PJ	527	530
BTV3528Y2LN	YC	582	585
	YD	585	588
	YE	588	591
	YF	591	594
	YG	594	597
BTV3528R2LN	QC	614	618
	QD	618	622
	QE	622	626
	QF	626	630
	QG	630	634

■ Characteristics Data-BTV3528B2LN

FIG. 1 Forward Current vs. Forward Voltage

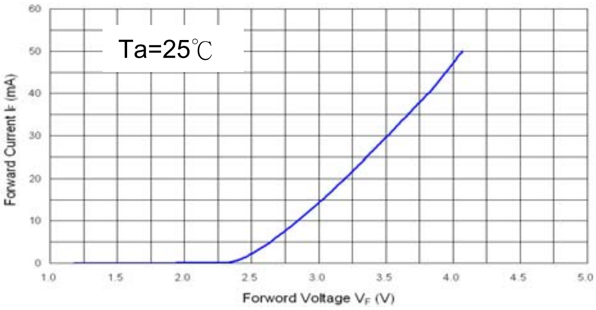


Fig. 2 Relative Intensity vs. Forward Current

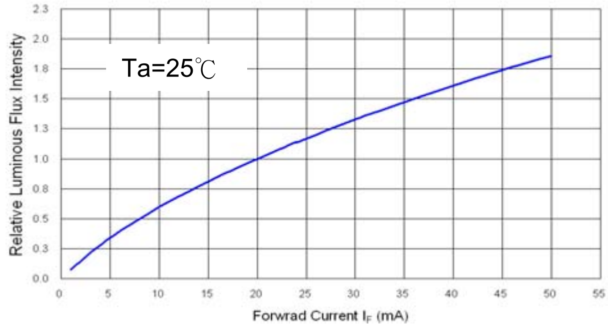


Fig. 3 Relative Voltage vs. Temperature

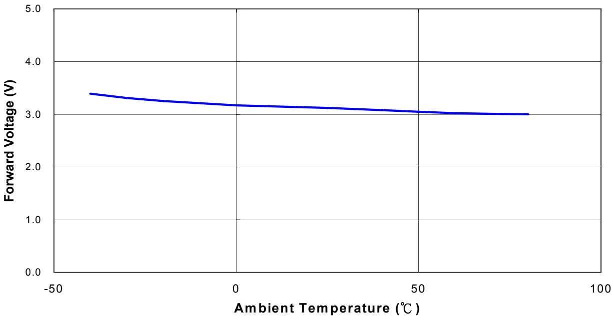


Fig. 4 Relative Intensity vs. Temperature

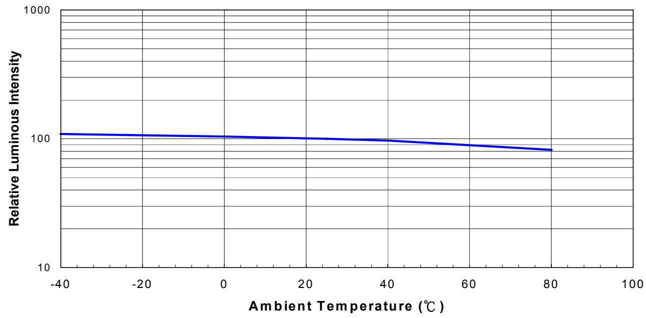


Fig. 5 Relative Intensity vs. Wavelength (λ_P)

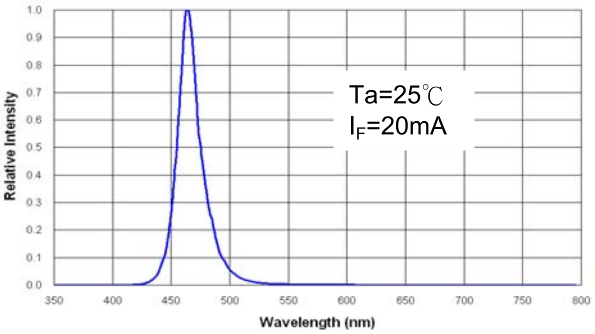


Fig. 6 Derating Curve

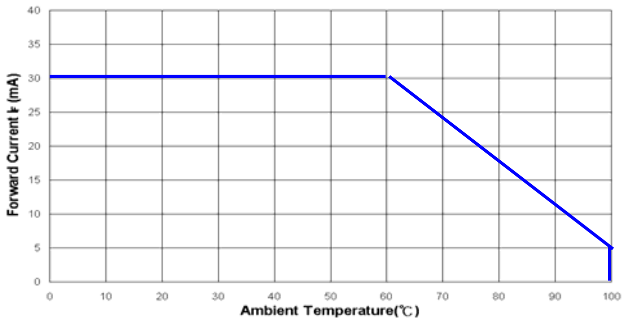
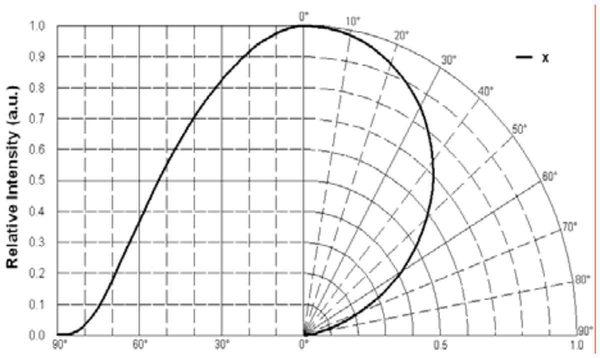


Fig. 7 Radiation Characteristic



■ Characteristics Data-BTV3528G2LN

FIG. 1 Forward Current vs. Forward Voltage

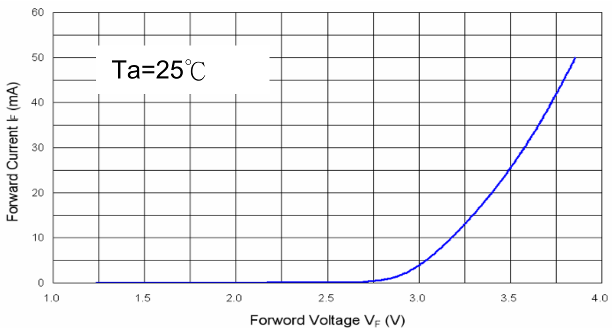


Fig. 2 Relative Intensity vs. Forward Current

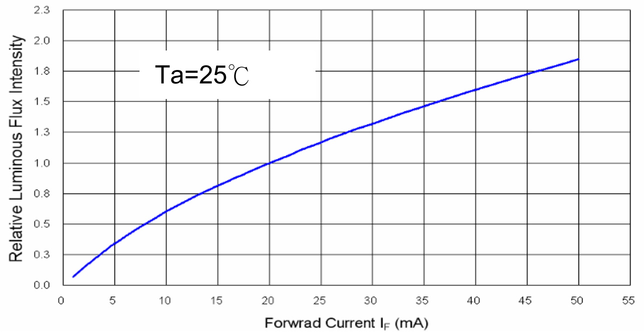


Fig. 3 Relative Voltage vs. Temperature

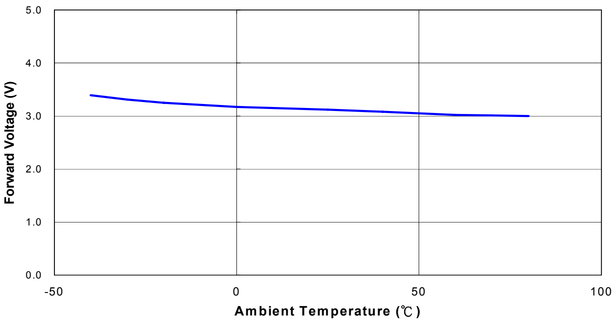


Fig. 4 Relative Intensity vs. Temperature

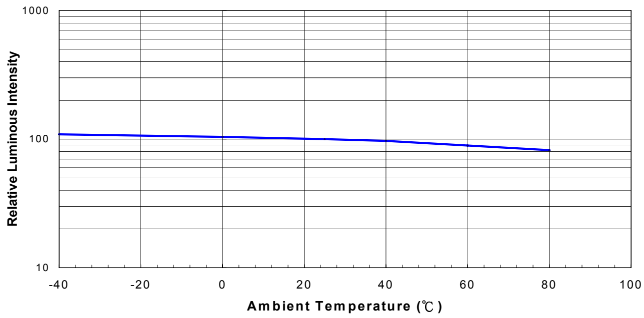


Fig. 5 Relative Intensity vs. Wavelength (λ_P)

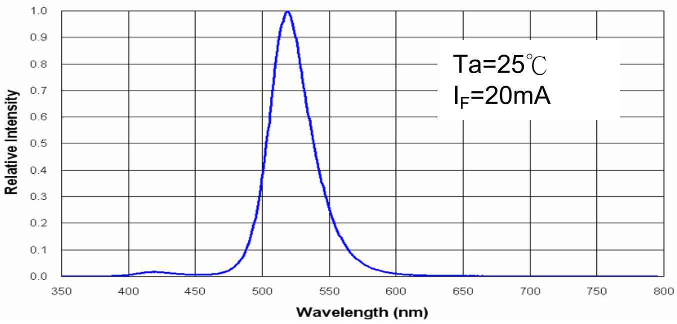


Fig. 6 Derating Curve

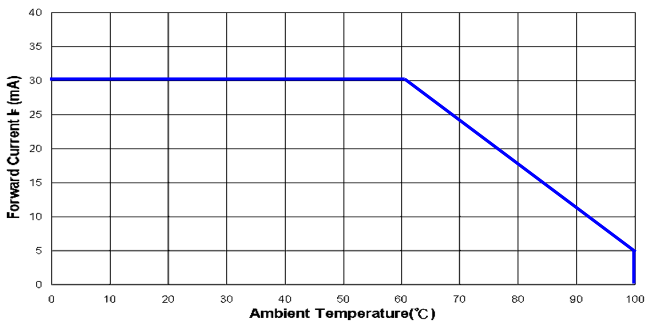
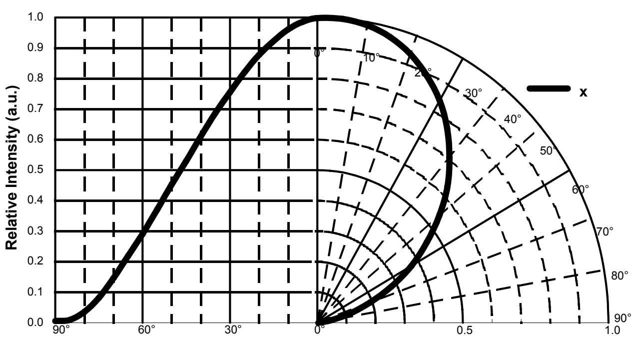


Fig. 7 Radiation Characteristic



■ Characteristics Data-BTV3528R2LN

FIG. 1 Forward Current vs. Forward Voltage

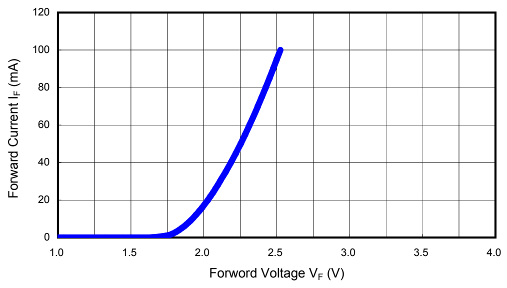


Fig. 2 Relative Intensity vs. Forward Current

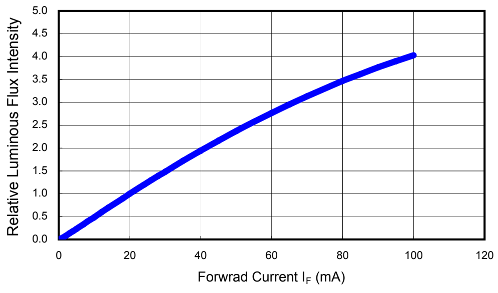


Fig. 3 Relative Voltage vs. Temperature

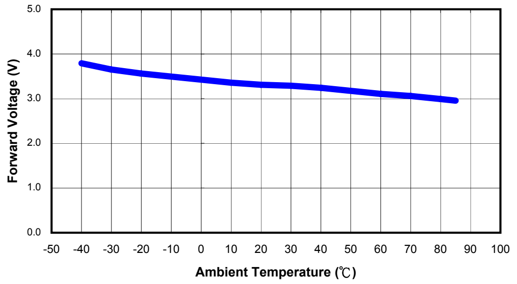


Fig. 4 Relative Intensity vs. Temperature

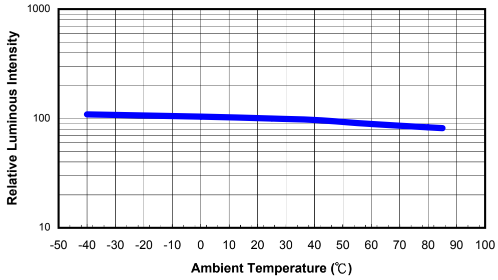


Fig. 5 Relative Intensity vs. Wavelength (λ_P)

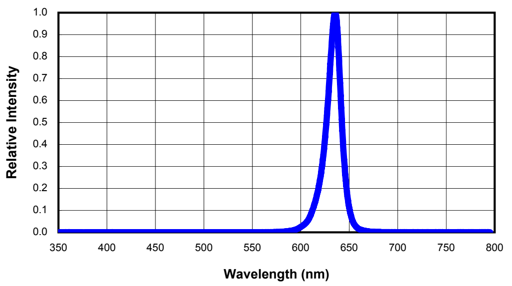


Fig. 6 Derating Curve

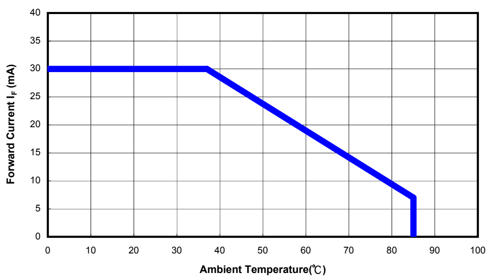
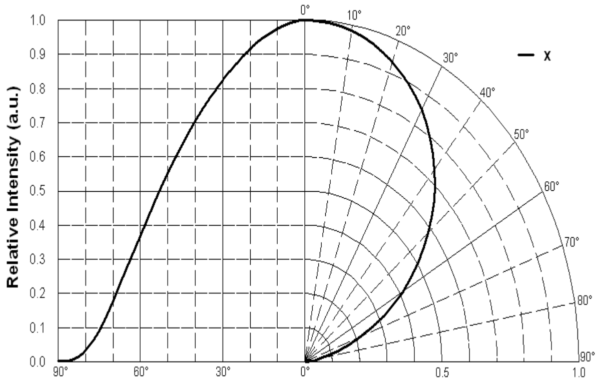


Fig. 7 Radiation Characteristic



■ Characteristics Data-BTV3528Y2LN

FIG. 1 Forward Current vs. Forward Voltage

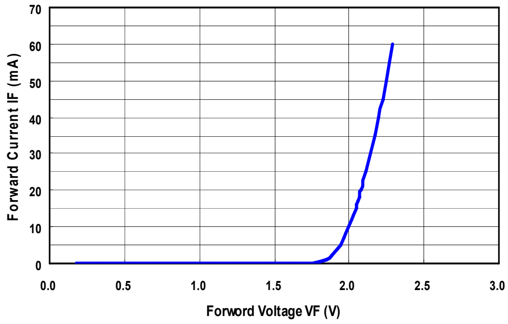


Fig. 2 Relative Intensity vs. Forward Current

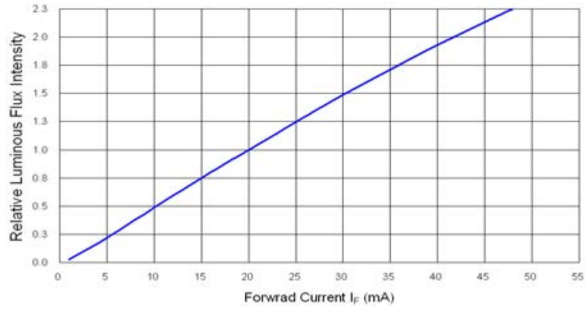


Fig. 3 Relative Voltage vs. Temperature

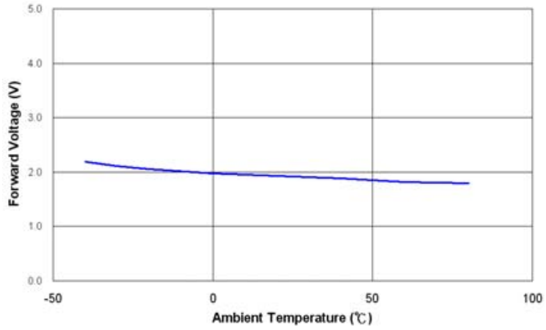


Fig. 4 Relative Intensity vs. Temperature

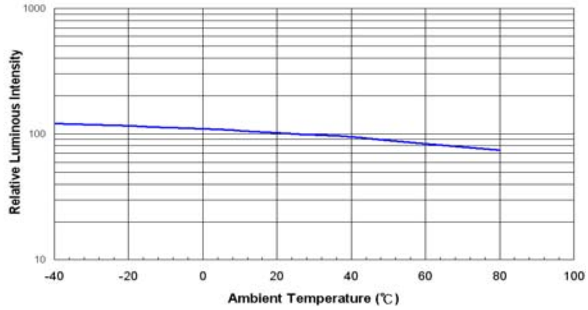


Fig. 5 Relative Intensity vs. Wavelength (λ_P)

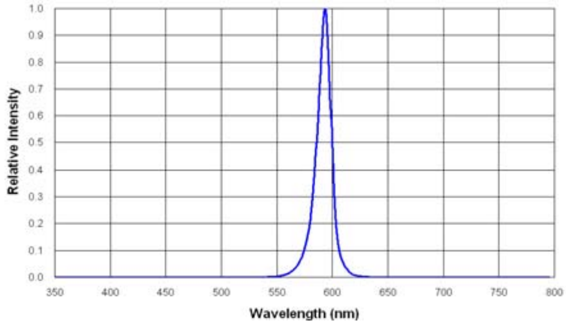


Fig. 6 Derating Curve

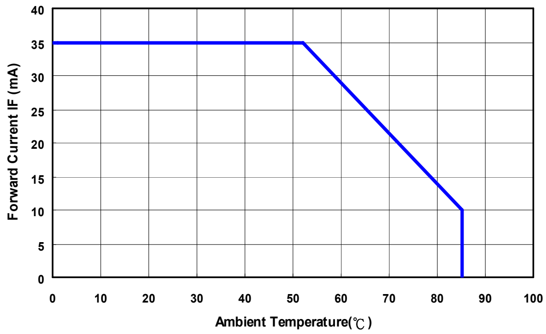
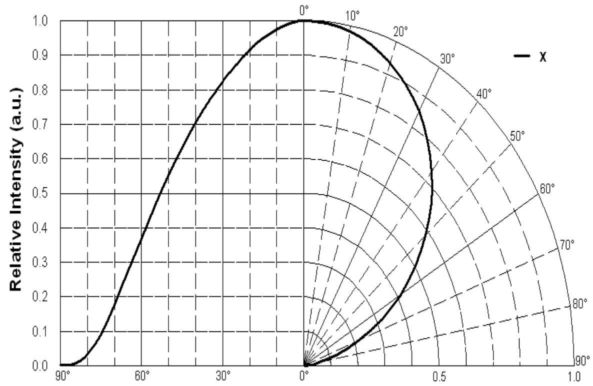
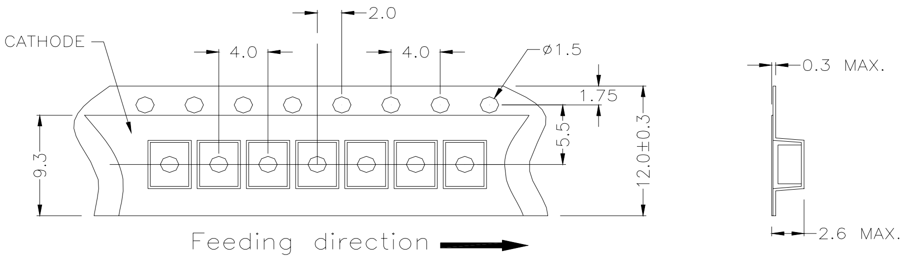


Fig. 7 Radiation Characteristic

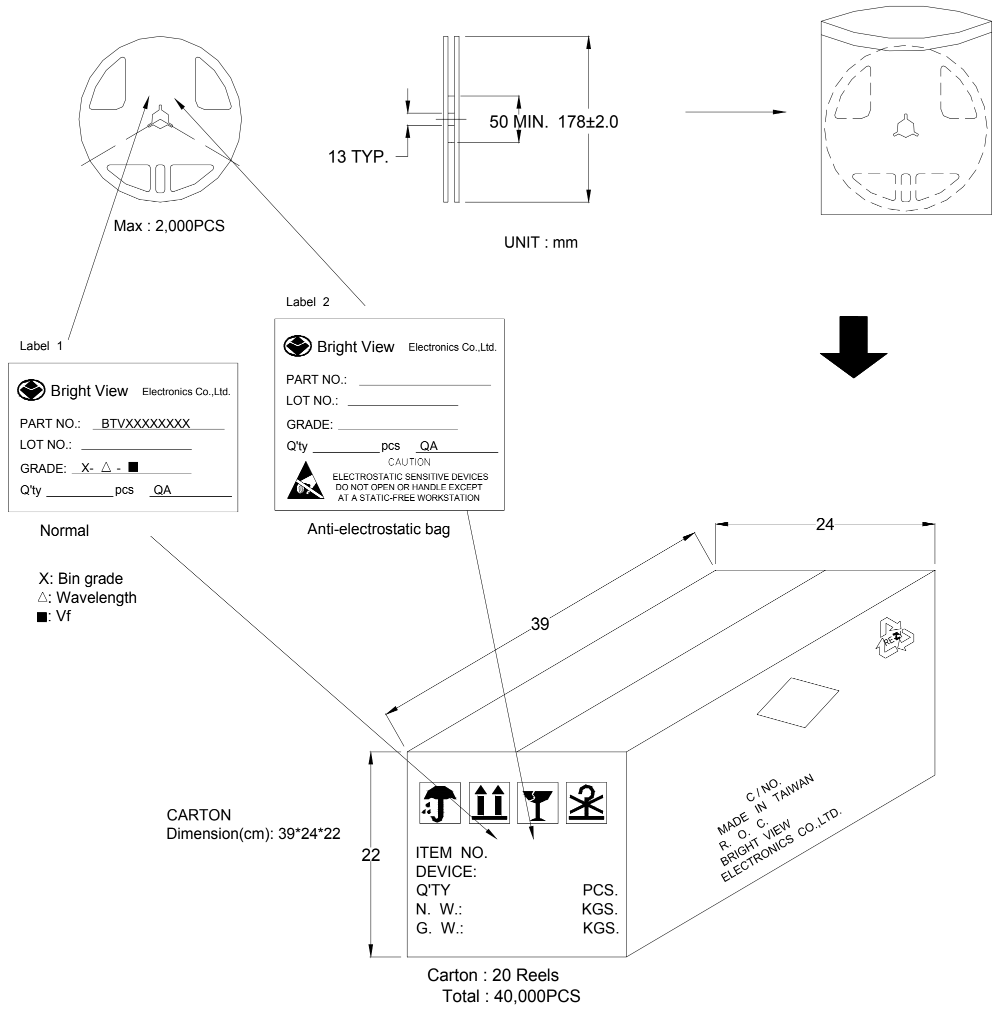


■ Package Carrier Tape Dimensions



Unit：mm
Tolerance：± 0.1 mm

■ Package Reel Dimensions



Reliability Test Items and Conditions

Test Item	Standard Test Method	Test Conditions	Note	Number of Damaged
Resistance to Soldering Heat (Reflow Soldering)	JEITA ED-4701 300 301	Tsd=260℃ , 10 secs (Pre treatment 30℃, 70%, 168hrs)	2 times	0/22
Thermal Shock	JEITA ED-4701 300 307	0℃ ~ 100℃ 5min. 5min.	100 cycles	0/22
Temperature Cycle	JEITA ED-4701 100 105	-40℃ ~ 25℃ ~ 100℃ ~ 25℃ 30min. 5min. 30min. 5min.	100 cycles	0/22
High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000 hrs.	0/22
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40℃	1000 hrs.	0/22
Steady State Operating Life Condition 1	Internal Reference	Ta=25℃, I_F=20mA, DC	1000 hrs.	0/22
Steady State Operating Life Condition 2	Internal Reference	Ta=25℃, I_F=30mA, DC	1000 hrs.	0/22
Steady State Operating Life of High Temperature	Internal Reference	Ta=85℃, I_F=10mA, DC	1000 hrs.	0/22
Steady State Operating Life of High Humidity Heat	Internal Reference	60℃, RH=90%, I_F=20mA, DC	1000 hrs.	0/22

CRITERIA FOR JUDGING DAMAGE

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min	Max
Forward Voltage	VF	IF=20mA	---	U.S.L.* x 1.2
Reverse Current	IR	VR=5V	---	10μA
Luminous Intensity	IV	IF=20mA	L.S.L.** x 0.7	---

*U.S.L.:Upper Standard Level **L.S.L.:Lower Standard Level

■ Cautions

(1) Moisture Proof Package

- The moisture proof package, a plastic bag with a zipper, is used to keep moisture to a minimum in the package.
- A package of a moisture absorbent material (silica gel) is also inserted into the plastic moisture proof bag and the silica gel changes its color from blue to pink as it absorbs moisture.
- The absorbed moisture in the SMT package may vaporize and expand during soldering. This may cause exfoliation of the contacts and damage to the optical characteristics of the LEDs.

(2) Storage Conditions

- Before opening the package：
  The LEDs should be kept at 30℃ or less and 45~60% RH or less and should be used within a year. When storing the LEDs, moisture proof package with absorbent material (silica gel) is recommended.
- After opening the package：
  The LEDs should be kept at 30℃ or less and 55% RH or less and should be soldered within 168 hours (7days) after opening the package. The unused LEDs should be stored in moisture proof packages.
- It’s also recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.
- If the moisture absorbent material (silica gel) has faded away or the SMD LEDs have exceeded the storage time, baking treatment（more than 24 hours at 65+/-5℃) should be performed before soldering.

(3) Heat Generation

- The thermal design of the end product is very important. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.
- The operating current should be decided after considering the ambient maximum temperature of LEDs.

(4) Cleaning

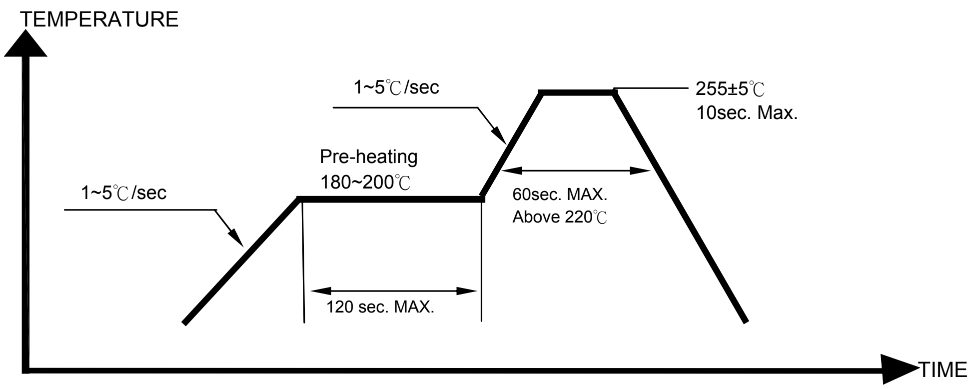
- Isopropyl alcohol is recommended to be used as a solvent for cleaning the LEDs.
- Before cleaning, a pre-test should be done to confirm whether any damage to the LEDs will occur.

(5) Soldering

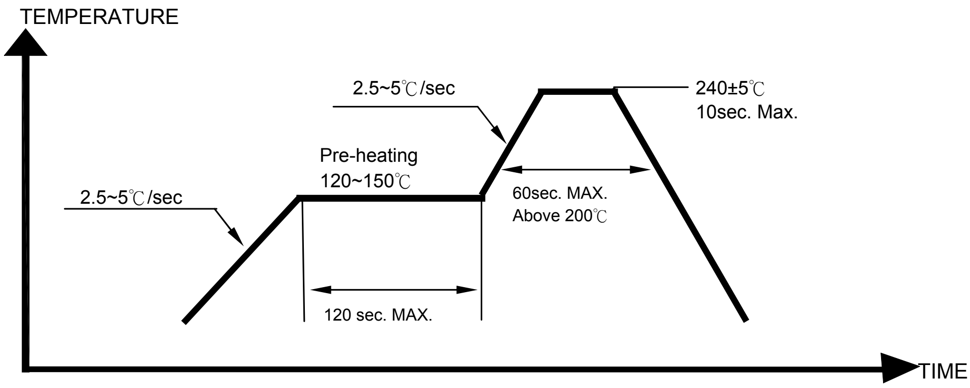
Reflow Soldering (recommended) :

- To prevent from cracking, please bake (65℃, 24hrs)before soldering.
- When soldering, do not load stress on the LEDs during heating.
- Never take next process until the component is cooled down to room temperature after reflow.
- After soldering, do not warp the circuit board.
- The recommended reflow soldering profile (measuring on the surface of the LED resin) is the following:

(a) Lead-Free Solder



(b) Lead Solder



Manual Soldering (not recommended) :

- To prevent from cracking, please bake (65℃, 24hrs) before soldering.
- Temperature at tip of iron: 250℃ Max. (25W).
- It's banned to load any stress on the resin during soldering.
- Soldering time: 3 sec. Max. (for one time only)

(6) ESD (eletrostatic discharge) protection (base on machine mode)

- The product is Gallium Nitride (GaN) based light emitting diode (LED) and is extremely sensitive to ESD. Users are strongly recommended to take necessary meter to test the static electricty and avoid ESD when handling this product.
- Proper grounding of machines (via 1MΩ), using static disspative mats, containers, working uniforms and shoes are considered to be effective against ESD.
- An ionizer is recommended in the facility or environment where ESD may be generated easily, and soldering iron with a grounded tip is also recommended.
- When inspecting the final products in which LEDs are assembled, it is recommended to check whether the assembled LEDs are damaged by ESD or not. It is simple to find damaged LEDs by light-on or VF test at lower current (below 1mA is recommended).
- ESD damaged LEDs will show some unusual characteristics such as the remarkable increasing of leak current, the decreasing of forward voltage, or the LEDs do not light on at the low current.

(7) Handling of Silica gel LEDs

- In process of using, mechanical stress should be avoided on the surface. Otherwise, sharp objects should not be used to damage the sealing material.(Fig. 1)

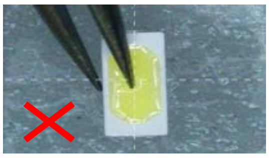


Fig. 1

- LEDs should be handled from the side due to soft sealant surface is easy to be damaged. (Fig. 2)

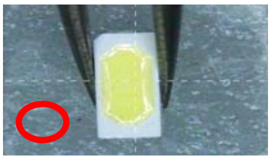


Fig. 2

- In the process of SMT, the mechanical pressure on the surface of resin must be prevented by using proper nozzle.We suggest choosing a nozzle that is larger than the LED's sealant area.

- Our encapsulated sealant of the LEDs is silicone-based material. The strong pressure on the encapsulated surface must be avoided on these LEDs. Therefore, the picking up nozzle could not affect the silicone resin when using the chip mounter.

(8) Other

- Care must be taken to ensure that the reverse voltage will not exceed the absolute maximum rating when using the LEDs with matrix drive.
- The LED light output is strong enough to injure human eyes. Precaution must be taken to prevent looking directly at the LEDs with unaided eyes for more than a few seconds.
- The LEDs described here are intended to be used for ordinary electronic equipment, please consult Bright View's sales department in advance for information on applications.
- Installing a protection device in the LED driving circuit to avoid surge current exceeding the max rating during on/off switching.
- The appearance and specifications of the product may be modified for improvement without notice.
- Please use the product within 168 hours after opening the seal and keep under 30 ℃ and 70% humidity.
- Bright View will not be responsible for any claim for damage if the user use the product without following the caution or instruction of the specification.