

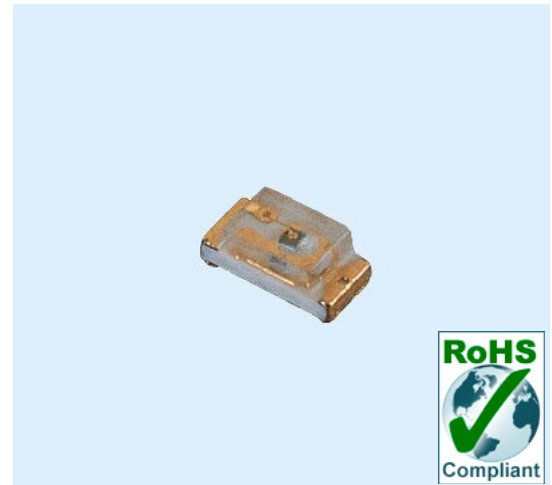
0603 Package Chip LED (0.6mm Height)

Features

- Package in 8mm tape on 7" diameter reel
- Compatible with automatic placement equipment
- Compatible with infrared and vapor phase reflow solder process
- Mono-color type
- RoHS Compliant

Applications

- Backlighting in dashboard and switch
- Telecommunication: indicator and backlighting in telephone and fax
- Flat backlight for LCD, switch and symbol
- General use



QSLP1BF1

Descriptions

- The TSP1 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

Device Selection Guide

Part No.	Chip		Lens Color
	Material	Emitted Color	
TSP1-BF1608H6-L1M2Y	InGaN	Blue	Water Clear

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TSP1-BF1608H6-L1M2Y

Absolute Maximum Ratings ($T_{amb}=25^{\circ}C$)

Parameter	Symbol	Value	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	25	mA
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +90	°C
Soldering Temperature	T_{sol}	Reflow soldering: 260 (for 10 seconds)	°C
		Hand soldering: 350 (for 3 seconds)	
Electrostatic Discharge (HBM)	ESD	150	V
Power Dissipation	P_d	110	mW
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	100	mA

Electro-Optical Characteristics ($T_{amb}=25^{\circ}C$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I_v	11.5	----	28.5	mcd	I _F =5mA
Viewing Angle	2θ1/2	----	120	----	deg	
Peak Wavelength	λ_p	----	468	----	nm	
Dominant wavelength	λ_d	465	----	475	nm	
Spectrum Radiation Bandwidth	$\Delta\lambda$	----	25	----	nm	
Forward Voltage	V_F	2.5	----	3.1	V	
Reverse Current	I_R	----	----	50	μ A	V _R =5V

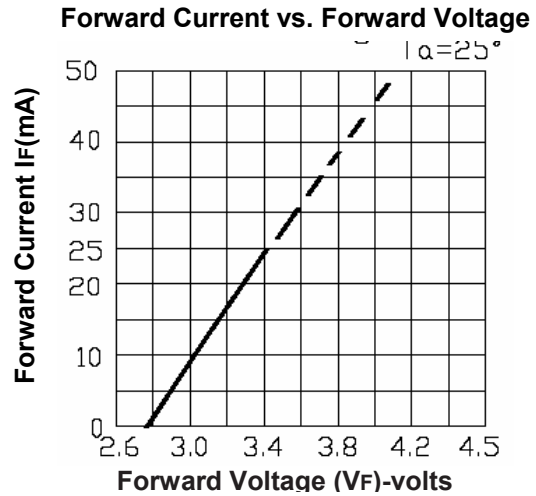
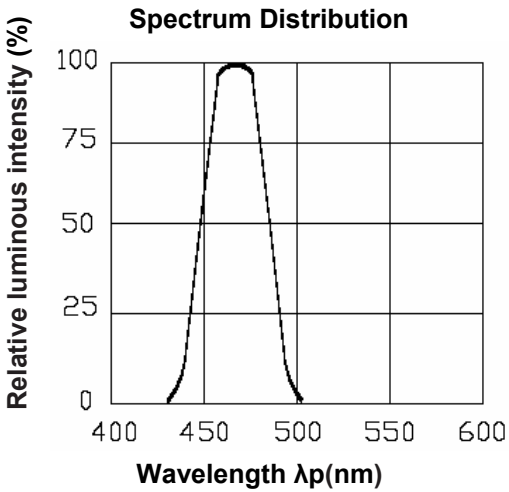
Notes:

1. Tolerance of Luminous Intensity is $\pm 10\%$
2. Tolerance of Dominant Wavelength is $\pm 1nm$
3. Tolerance of Forward Voltage is $\pm 0.1V$

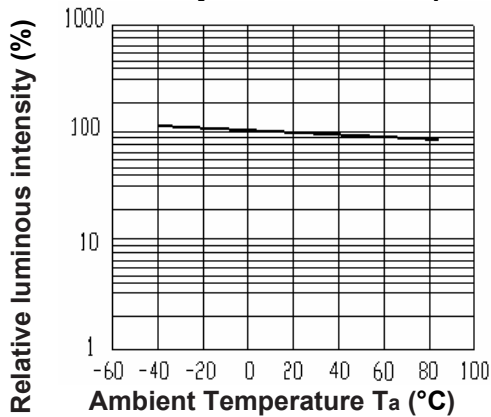
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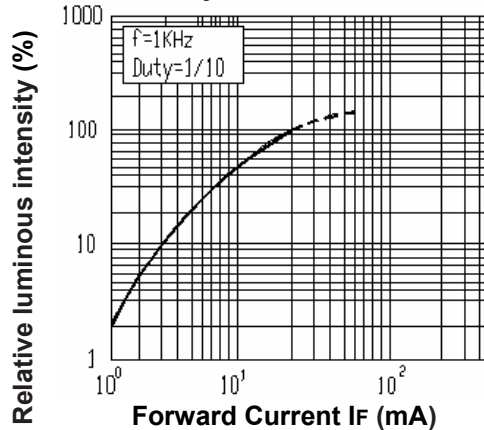
Typical Electro-Optical Characteristics Curves



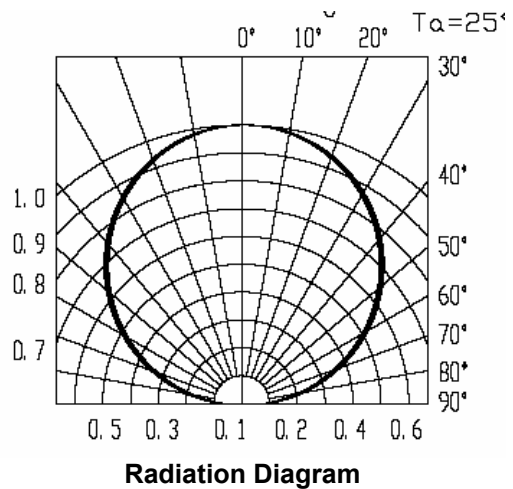
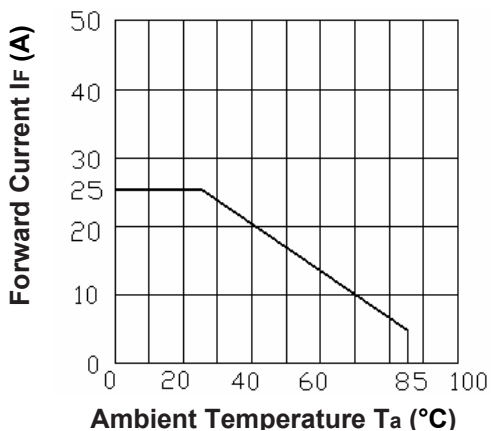
Luminous Intensity vs. Ambient Temperature



Luminous Intensity vs. Forward Current ($T_a = 25^\circ$)



Forward Current Derating Curve



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Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

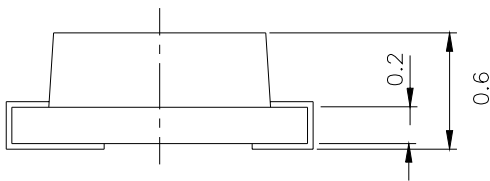
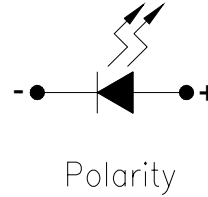
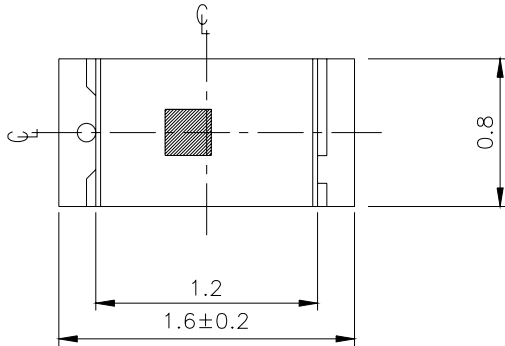
LTPD : 10%

No.	Items	Test Condition	Test Hours / Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp.: 260°C ±5°C Min. 5sec.	6 Min.	22 PCS.	0/1
2	Temperature Cycle	H: +100°C 15min ┆ 5 min L: -40°C 15min	300 Cycles	22 PCS.	0/1
3	Thermal Shock	H: +100°C 5min ┆ 10 sec L: -10°C 5min	300 Cycles	22 PCS.	0/1
4	High Temperature Storage	Temp.: 100°C	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Temp.: -40°C	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	IF = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C / 85%RH	1000 Hrs.	22 PCS.	0/1

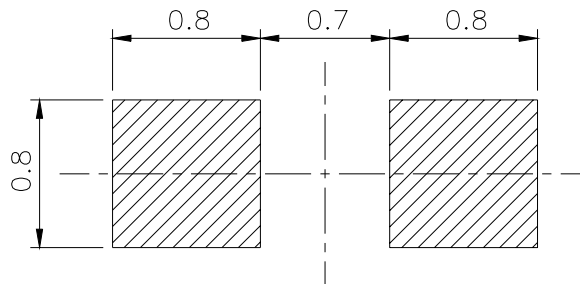
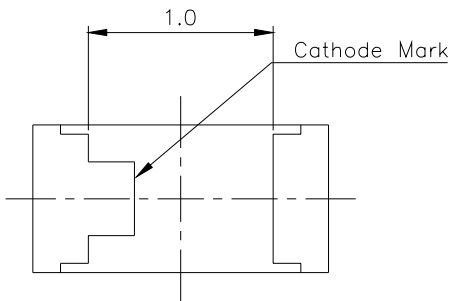
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TSP1-BF1608H6-L1M2Y

Package Dimensions (In mm)



For reflow soldering (Propose)

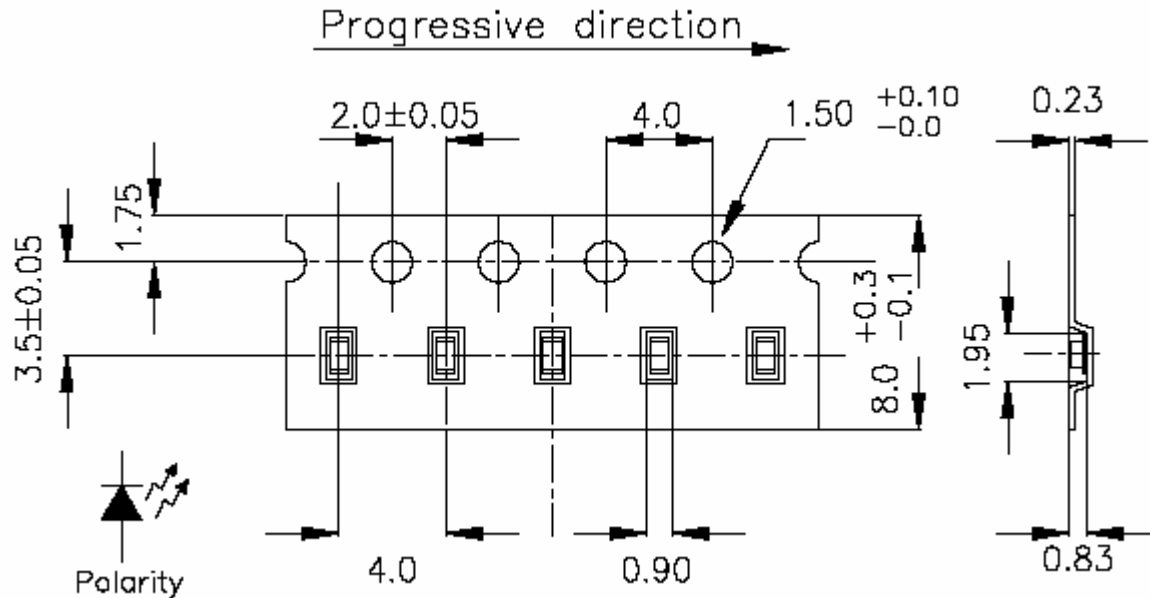


Note: The tolerances unless mentioned is ± 0.1 mm

0603 Package Chip LED (0.6mm Height)

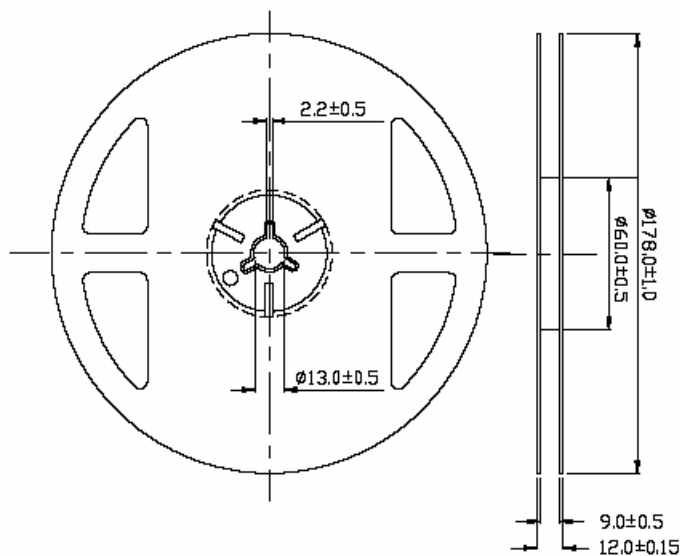
TSP1-BF1608H6-L1M2Y

Carrier Tape Dimensions: Loaded quantity 3000 PCS per reel



Note: The tolerances unless mentioned is ± 0.1 mm, Unit = mm

Reel Dimensions

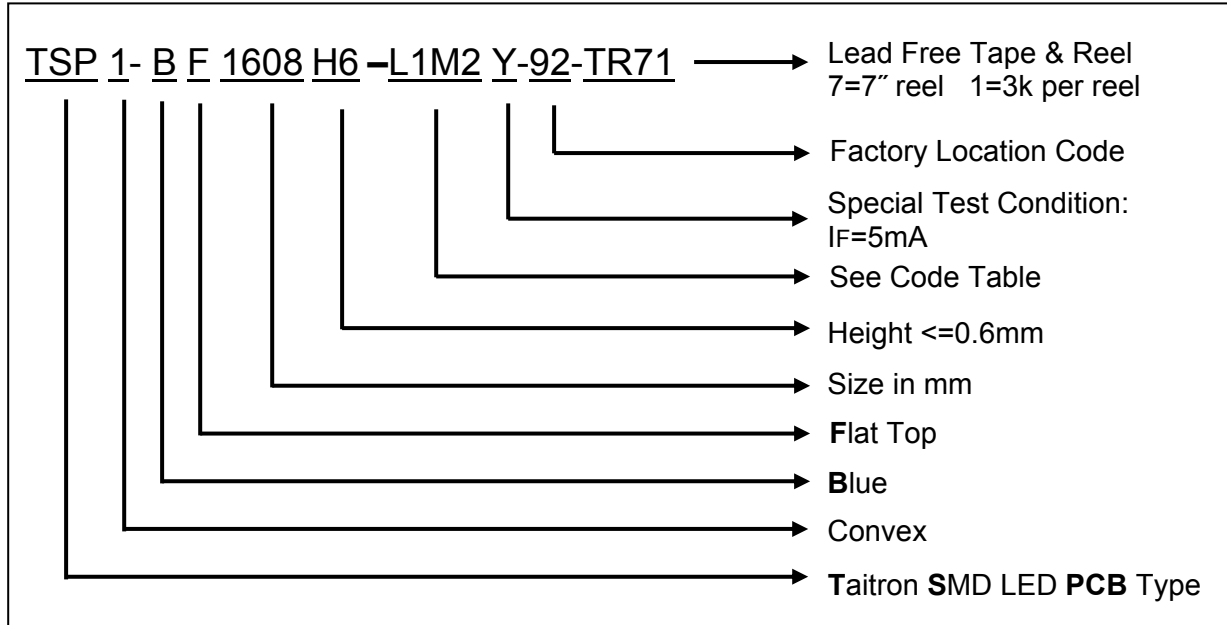


Note: The tolerances unless mentioned is ± 0.1 mm, Unit = mm

0603 Package Chip LED (0.6mm Height)

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Ordering Information



Code Range of Dominant Wavelength

Code	Min.	Max.	Unit	Condition
X	465.0	470.0	nm	IF=5mA
Y	470.0	475.0		

Code Range of Luminous Intensity

Code	Min.	Max.	Unit	Condition
L1	11.5	14.5	mcd	IF=5mA
L2	14.5	18.0		
M1	18.0	22.5		
M2	22.5	28.5		

Code Range of Forward Voltage

Code	Min.	Max.	Unit	Condition
9	2.5	2.7	V	IF=5mA
10	2.7	2.9		
11	2.9	3.1		

Notes:

1. Tolerance of Luminous Intensity is $\pm 10\%$
2. Tolerance of Dominant Wavelength is $\pm 1\text{nm}$
3. Tolerance of Forward Voltage is $\pm 0.1\text{V}$

Precautions for Use

1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 Do not open moisture proofs bag before the products are ready to use.

2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90% RH or less.

2.3 The LEDs should be used within a year.

2.4 After opening the package, The LEDs should be kept at 30°C or less and 70% RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

2.6 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5°C for 24 hours.

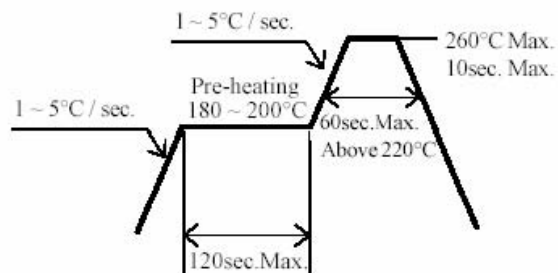
3. Soldering Condition

3.1 Pb-free solder temperature profile.

3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

3.4 After soldering, do not warp the circuit board.



4. Soldering Iron

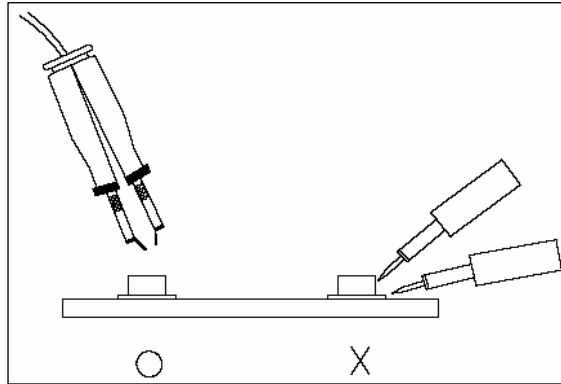
Each terminal is to go to the tip of soldering iron temperature less than 280°C for 3 seconds within. Once in less than the soldering iron capacity 25W, leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

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