

Full Color Top View LED

Features

- Super-luminosity chip LED.
- White SMT package.
- Built in red, green and blue chips
- Lead frame package with individual 6 pins.
- Wide viewing angle
- Soldering methods: IR reflow soldering.
- RoHS compliance.



PLCC-6



Descriptions

- The SMD series have wide viewing angle, low power consumption and adjusting each color is possible thanks to serial connection by 6 terminal connection in case of using several number of LED. And makes it ideal for light pipe application.

Applications

- Amusement equipment.
- Information boards.
- Flashlight for digital camera of cellular phone.

Device Selection Guide

Part No.	Chip			Lens Color
	Color Code	Material	Emitted Color	
TFRJ-QTBHT5050CG-B2	Q	AllnGaP	Super Red	Water Clear
	T	InGaN	True Green	
	B	InGaN	Super Blue	

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Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	Super Red:50	mA
		True Green:30	
		Super Blue:30	
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	Super Red:100	mA
		True Green:100	
		Super Blue:100	
Power Dissipation	P_d	Super Red:120	mW
		True Green:110	
		Super Blue:110	
Electrostatic Discharge (HBM)	ESD	Super Red:1000	V
		True Green:1000	
		Super Blue:1000	
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +90	°C
Soldering Temperature	T_{sol}	Reflow Soldering: 260 °C for 10 seconds Hand Soldering: 350 °C for 3 seconds	

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Electro-Optical Characteristics:

Parameter	Symbol	Emitted Color	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	IV	Super Red	450	-----	900	mcd	IF =20mA
		True Green	900	-----	1800		
		Super Blue	225	-----	450		
Viewing Angle	2θ1/2	-----	-----	120	-----	deg	
Peak Wavelength	λp	Super Red	-----	632	-----	nm	
		True Green	-----	518	-----		
		Super Blue	-----	468	-----		
Dominant Wavelength	λd	Super Red	617.5	-----	629.5	nm	
		True Green	525.0	-----	535.0		
		Super Blue	465.0	-----	475.0		
Spectrum Radiation Bandwidth	Δλ	Super Red	-----	20	-----	nm	
		True Green	-----	35	-----		
		Super Blue	-----	35	-----		
Forward Voltage	VF	Super Red	1.75	-----	2.55	V	
		True Green	2.75	-----	3.65		
		Super Blue	2.75	-----	3.65		
Reverse Current	IR	Super Red	-----	-----	10	uA	VR =5V
		True Green	-----	-----	50		
		Super Blue	-----	-----	50		

Notes: Tolerance of Luminous Intensity: ±10%

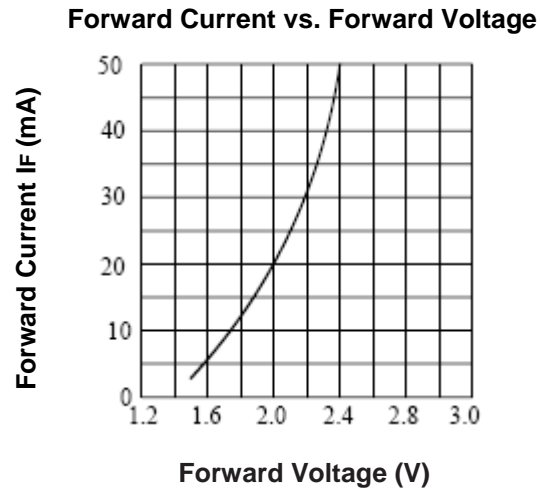
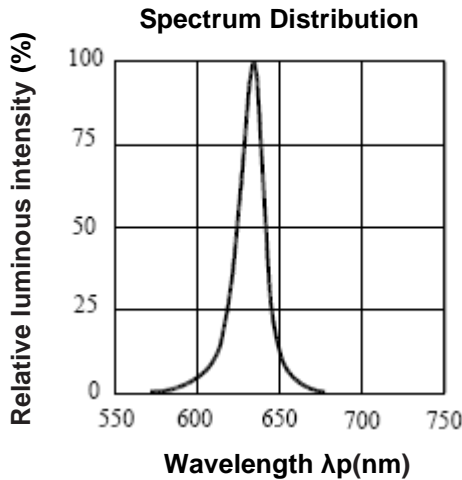
Tolerance of Dominant wavelength: ±1.0nm

Tolerance of Forward Voltage: ±0.1V

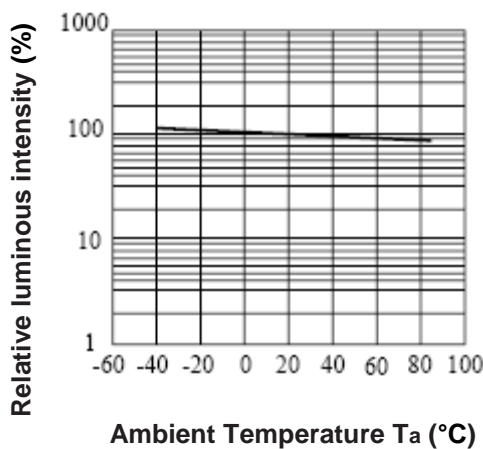
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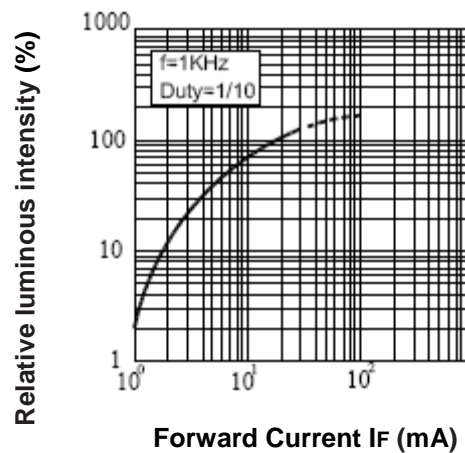
Typical Electro-Optical Characteristics Curves (Ta=25 °C) Super Red



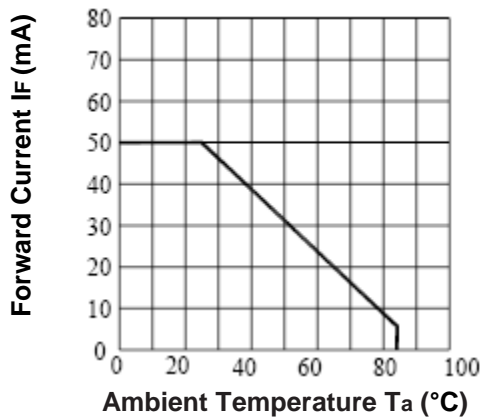
Luminous Intensity vs. Ambient Temperature



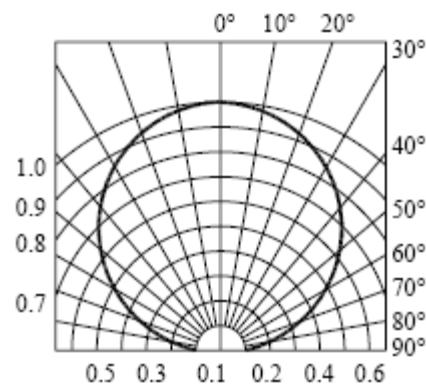
Luminous Intensity vs. Forward Current



Forward Current Derating Curve



Radiation Diagram

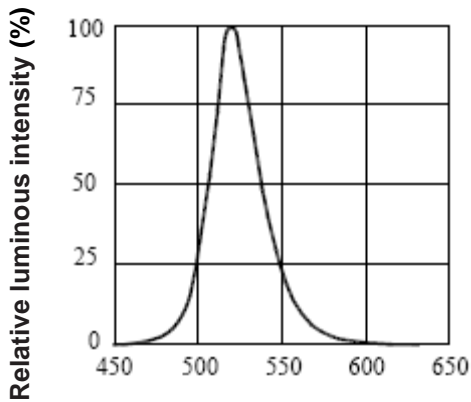


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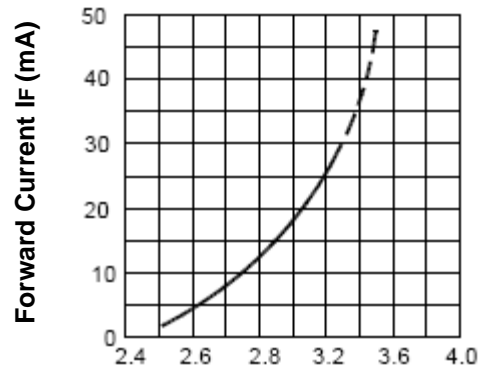
Typical Electro-Optical Characteristics Curves (Ta=25 °C) True Green

Spectrum Distribution



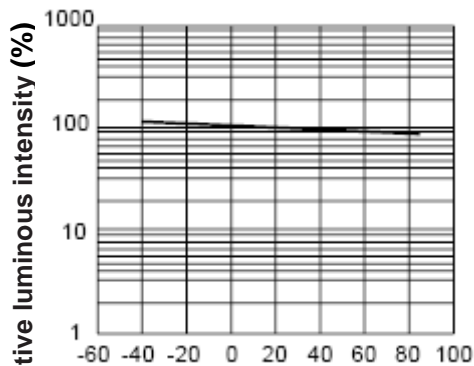
Wavelength λ_p (nm)

Forward Current vs. Forward Voltage



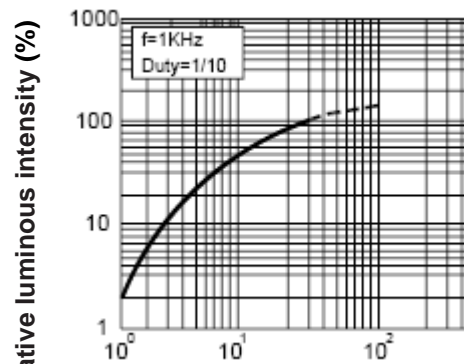
Forward Voltage (V)

Luminous Intensity vs. Ambient Temperature



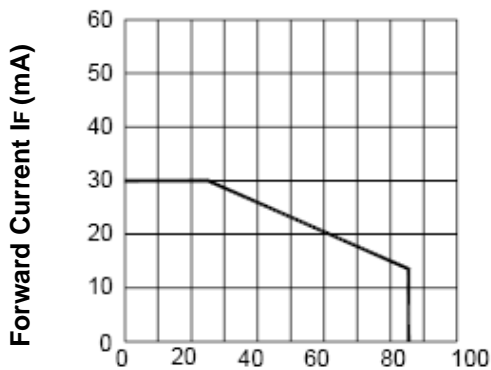
Ambient Temperature T_a (°C)

Luminous Intensity vs. Forward Current



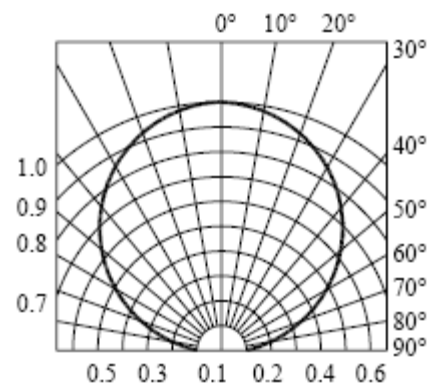
Forward Current I_F (mA)

Forward Current Derating Curve



Ambient Temperature T_a (°C)

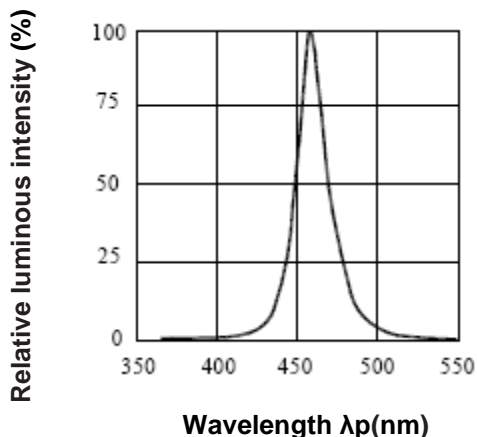
Radiation Diagram



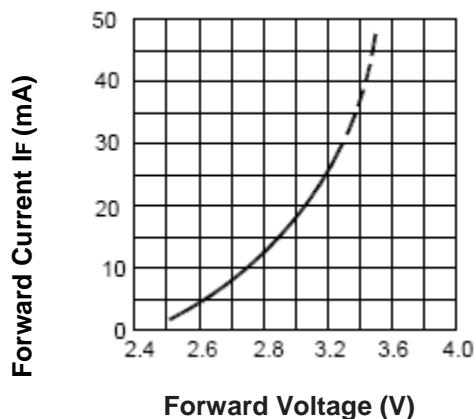
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Typical Electro-Optical Characteristics Curves (Ta=25 °C) Super Blue

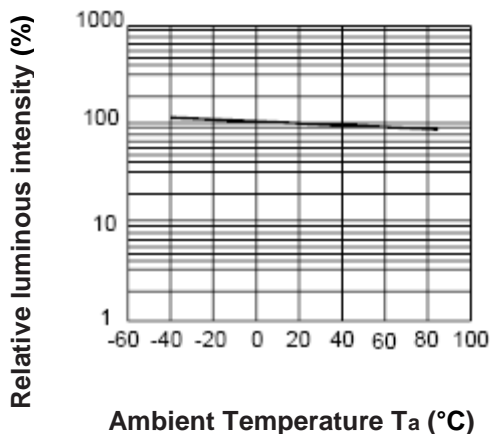
Spectrum Distribution



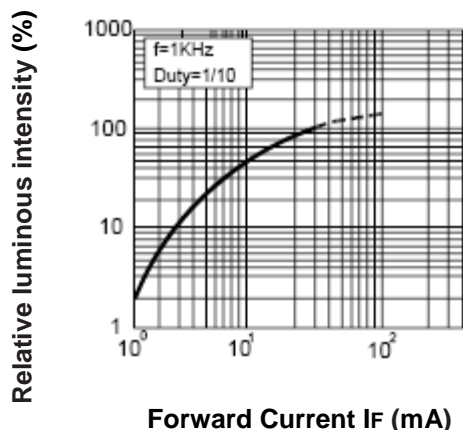
Forward Current vs. Forward Voltage



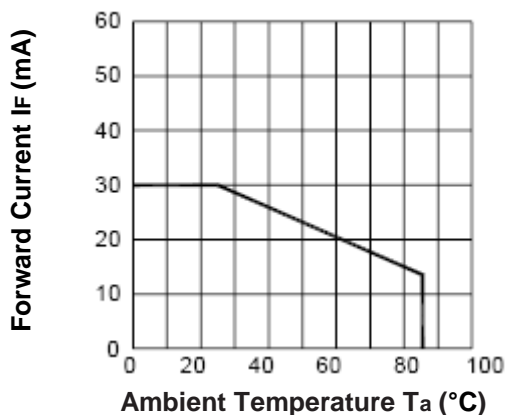
Luminous Intensity vs. Ambient Temperature



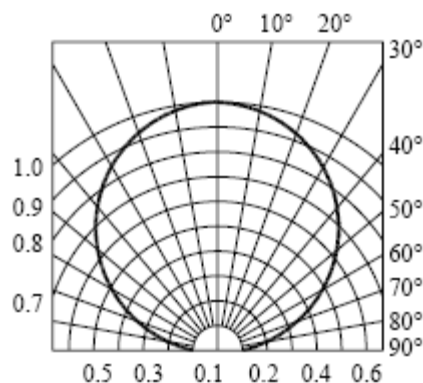
Luminous Intensity vs. Forward Current



Forward Current Derating Curve



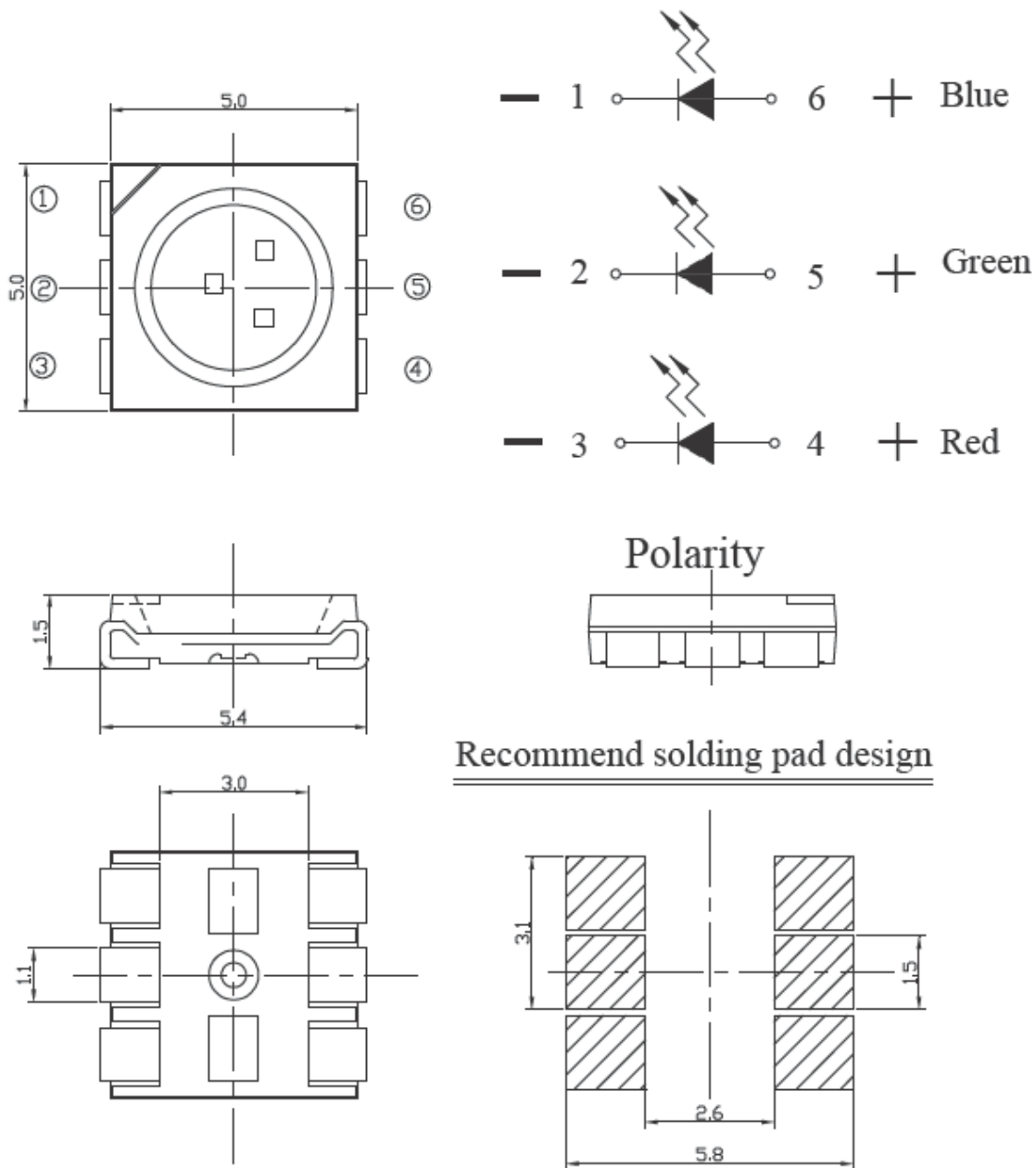
Radiation Diagram



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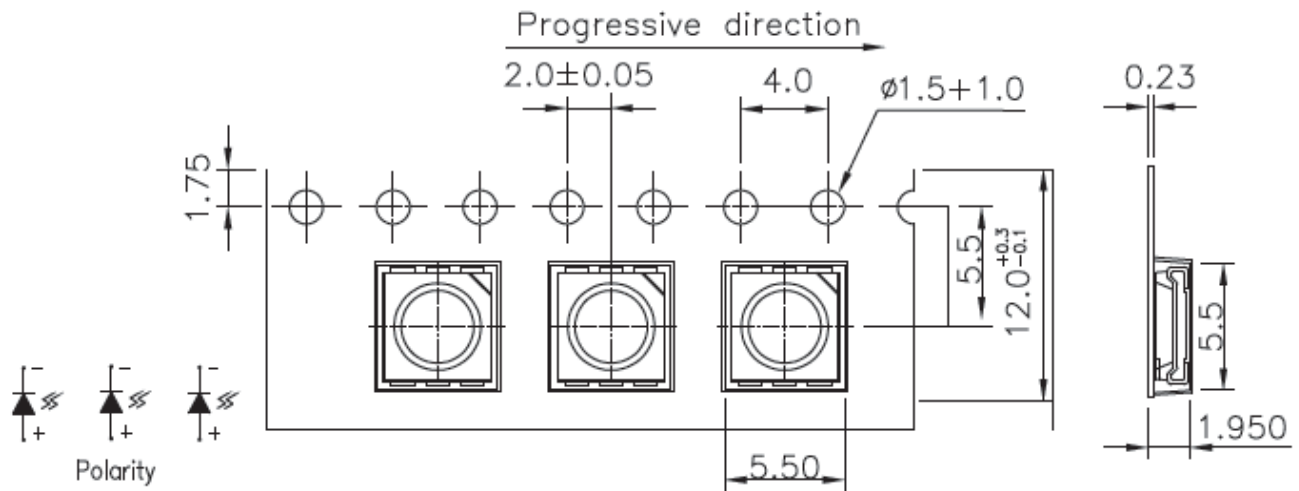
Package Outline Dimensions



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

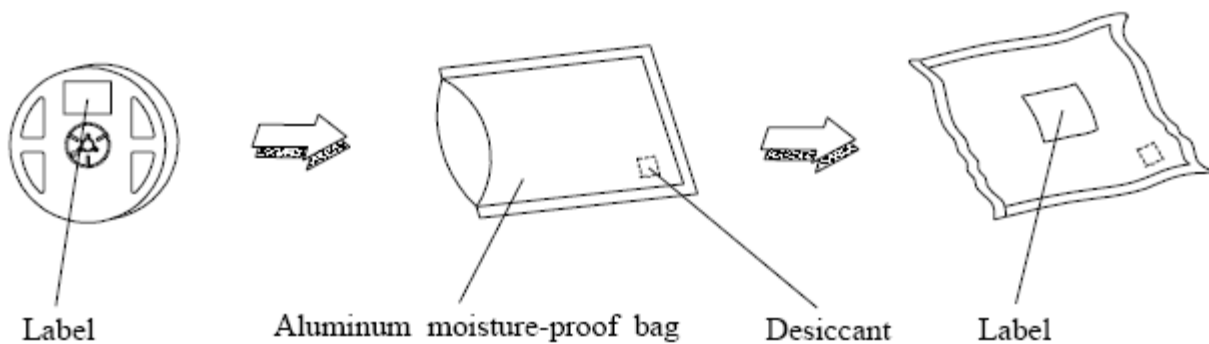
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Carrier Tape Dimensions: Loaded quantity 800pcs per reel



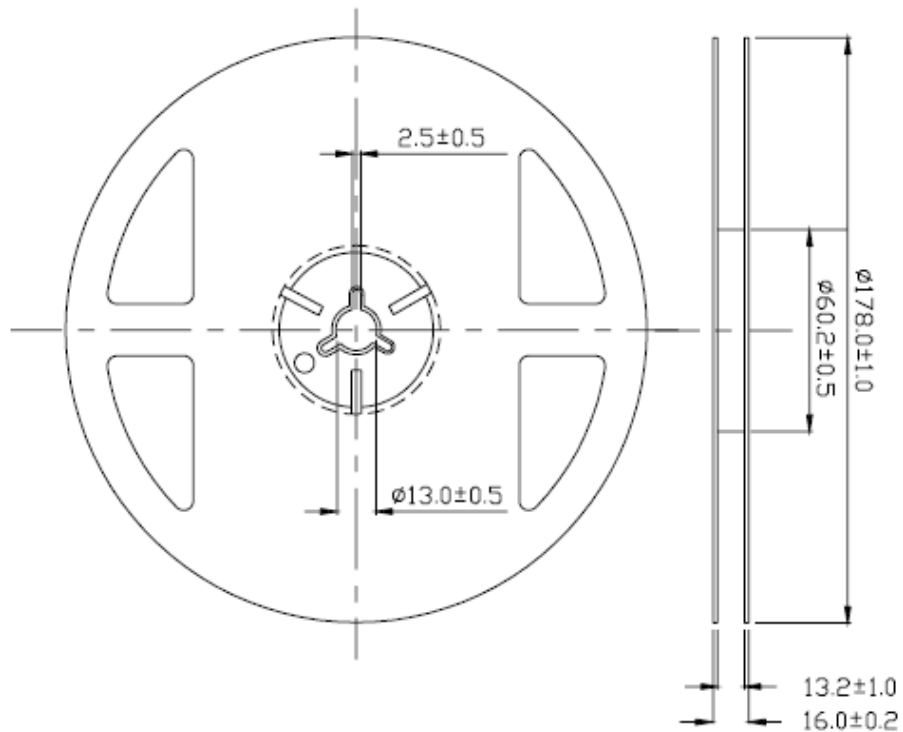
Note: The tolerances unless mentioned is ± 0.1 mm, Unit = mm

Moisture Resistant Packaging



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Reel Dimensions:

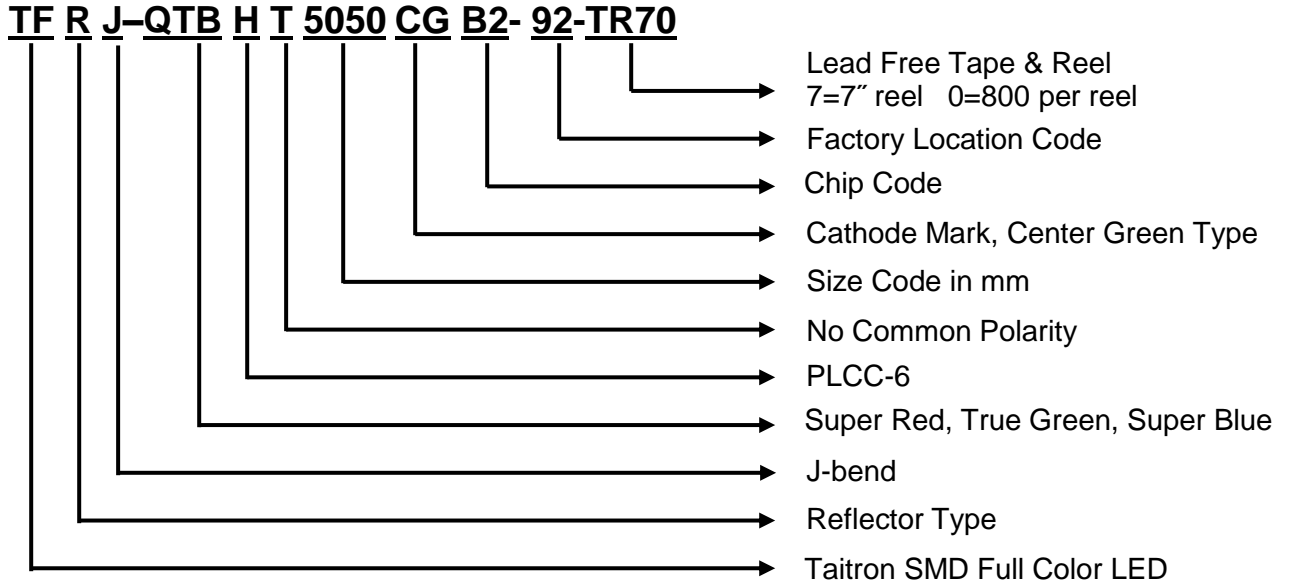


Note: The tolerances unless mentioned is ± 0.1 mm, Unit = mm

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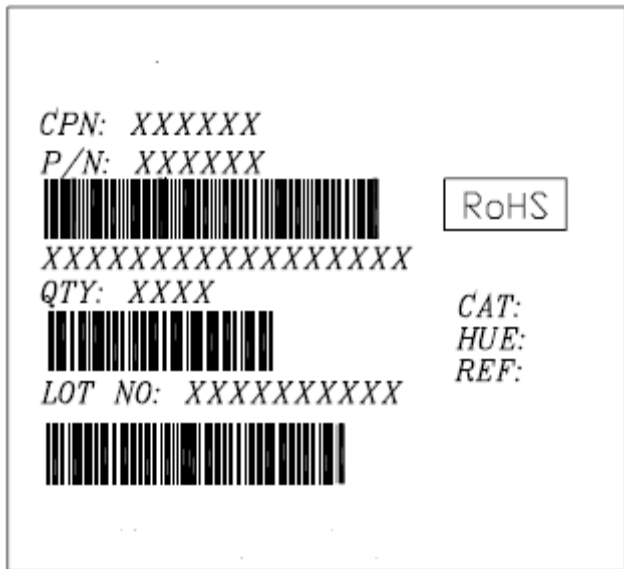
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Ordering Information



Label Explanation

- CAT:** Luminous Intensity Rank
- HUE:** Dominant Wavelength Rank
- REF:** Forward Voltage Rank



Rank Combination

Bin Range of Luminous Intensity

Emitted Color	Bin Code	Min.	Max.	Unit	Condition
Super Red	U1	450	565	mcd	If=20mA
	U2	565	715		
	V1	715	900		
True Green	V2	900	1120		
	W1	1120	1420		
	W2	1420	1800		
Super Blue	S2	225	285		
	T1	285	360		
	T2	360	450		

Bin Range of Dominant Wavelength

Emitted Color	Bin Code	Min.	Max.	Unit	Condition
Super Red	E4	617.5	621.5	nm	If=20mA
	E5	621.5	625.5		
	E6	625.5	629.5		
True Green	Y	525	530		
	Z	530	535		
Super Blue	X	465	470		
	Y	470	475		

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Bin Range of Forward Voltage

Emitted Color	Bin Code	Min.	Max.	Unit	Condition
Super Red	0	1.75	1.95	V	IF=20mA
	1	1.95	2.15		
	2	2.15	2.35		
	3	2.35	2.55		
True Green	5	2.75	3.05		
	6	3.05	3.35		
	7	3.35	3.65		
Super Blue	5	2.75	3.05		
	6	3.05	3.35		
	7	3.35	3.65		

Note: Tolerance of Luminous Intensity: $\pm 10\%$
Tolerance of Dominant wavelength: $\pm 1.0\text{nm}$
Tolerance of Forward Voltage: $\pm 0.1\text{V}$

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