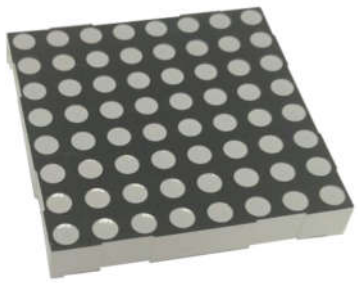
KWM-50884ARGBB/KWM-50884CRGBB

2.4 inch (60.2mm), Multi-Color

Φ5.0mm 8×8 Dot Matrix LED Display

Technical Data Sheet

Features:



- 2.4 inch (60.2mm) Matrix height
- 8 × 8 dot matrix font
- Low power consumption
- Categorized for luminous intensity
- Choice of face paint colors: Gray or black
- Design flexibility: Common row anode or common row cathode
- RoHS Compliant.

Descriptions:

- The KWM-50884ARGBB/ KWM-50884CRGBB is a 2.4 inch (60.2mm) height dot matrix display.
- The display provides excellent reliability in bright ambient light.
- The device is made with white dots and black surface.

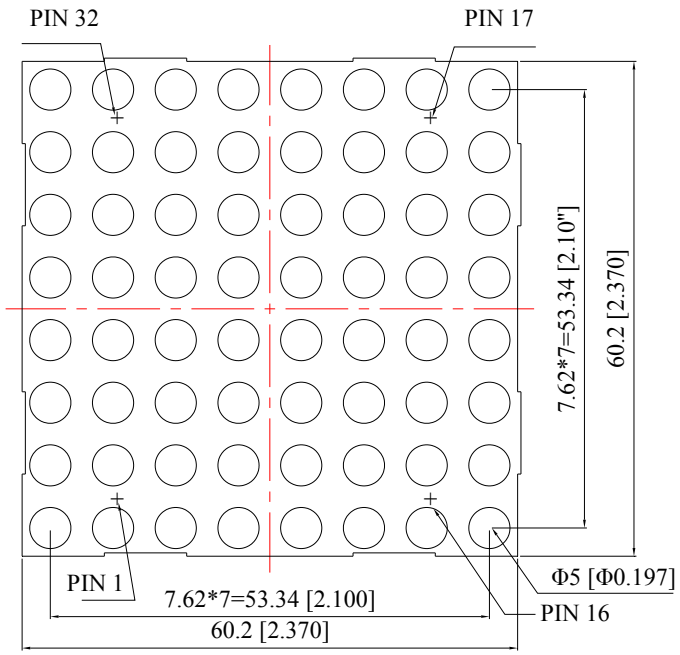
Applications:

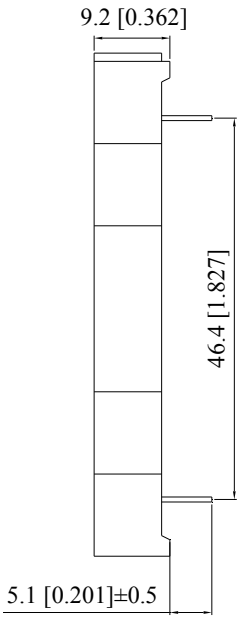
- Indoor Multi-Color display applications, used in variable message signs and static massage panels
- Airport, train and bus station display panels
- Electronic message centers---Stock market, department stores, stadiums, banks and cafes
- Safety Signage---Factories and Hospitals

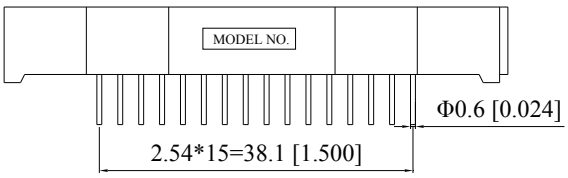
Device Selection Guide:

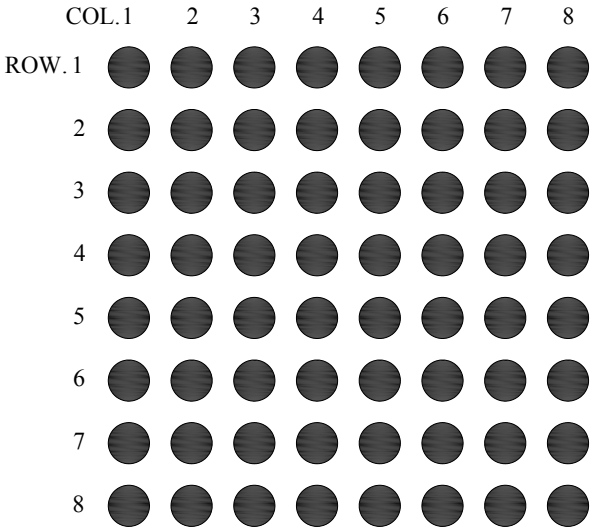
Part No.	Emitting Color		Polarity
KWM-50884ARGBB	R	Red	Common Row Anode
	G	Pure Green	
	B	Blue	
KWM-50884CRGBB	V	Red	Common Row Cathode
	PG	Pure Green	
	B	Blue	

Package Dimension:







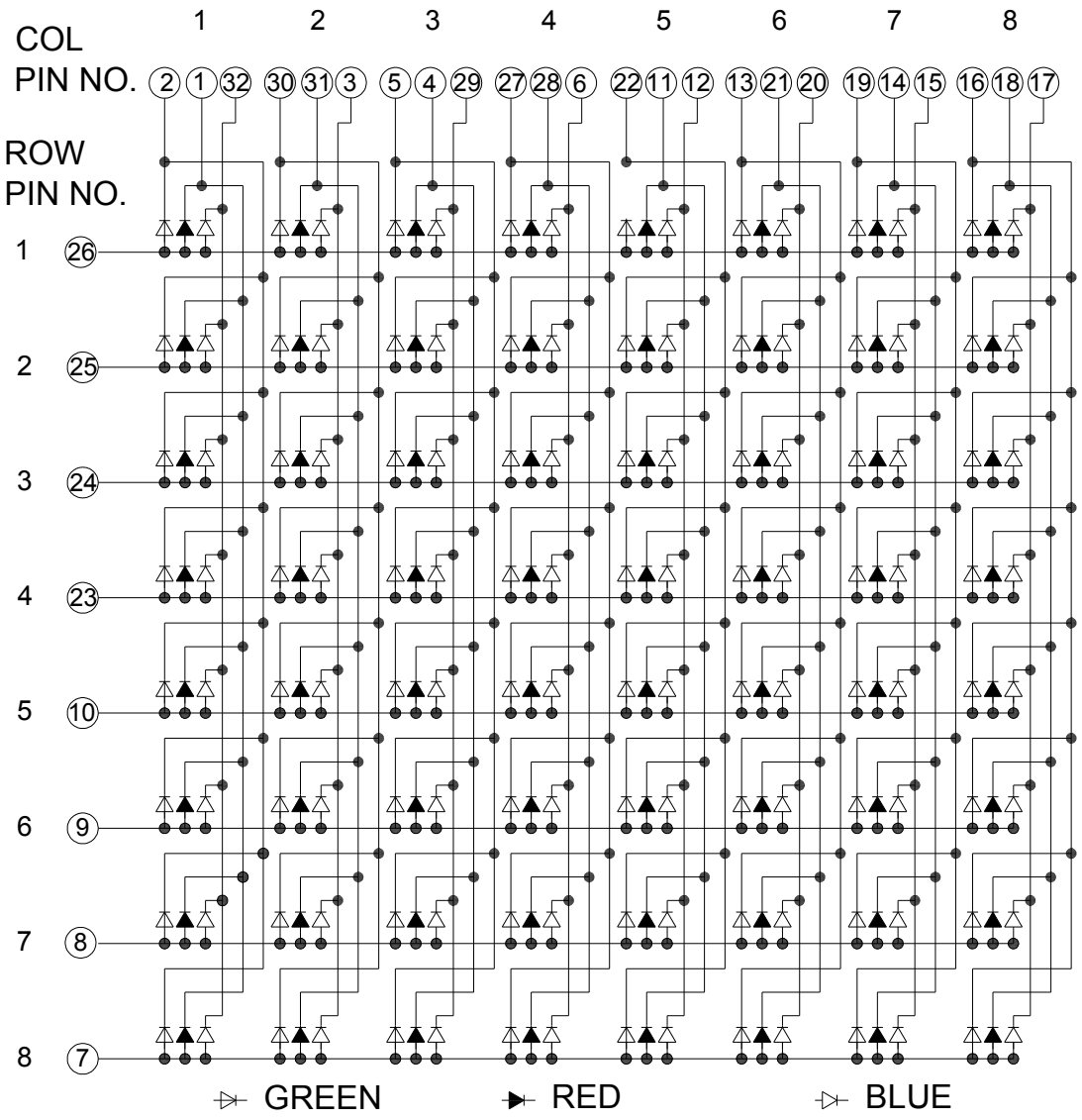


Notes:

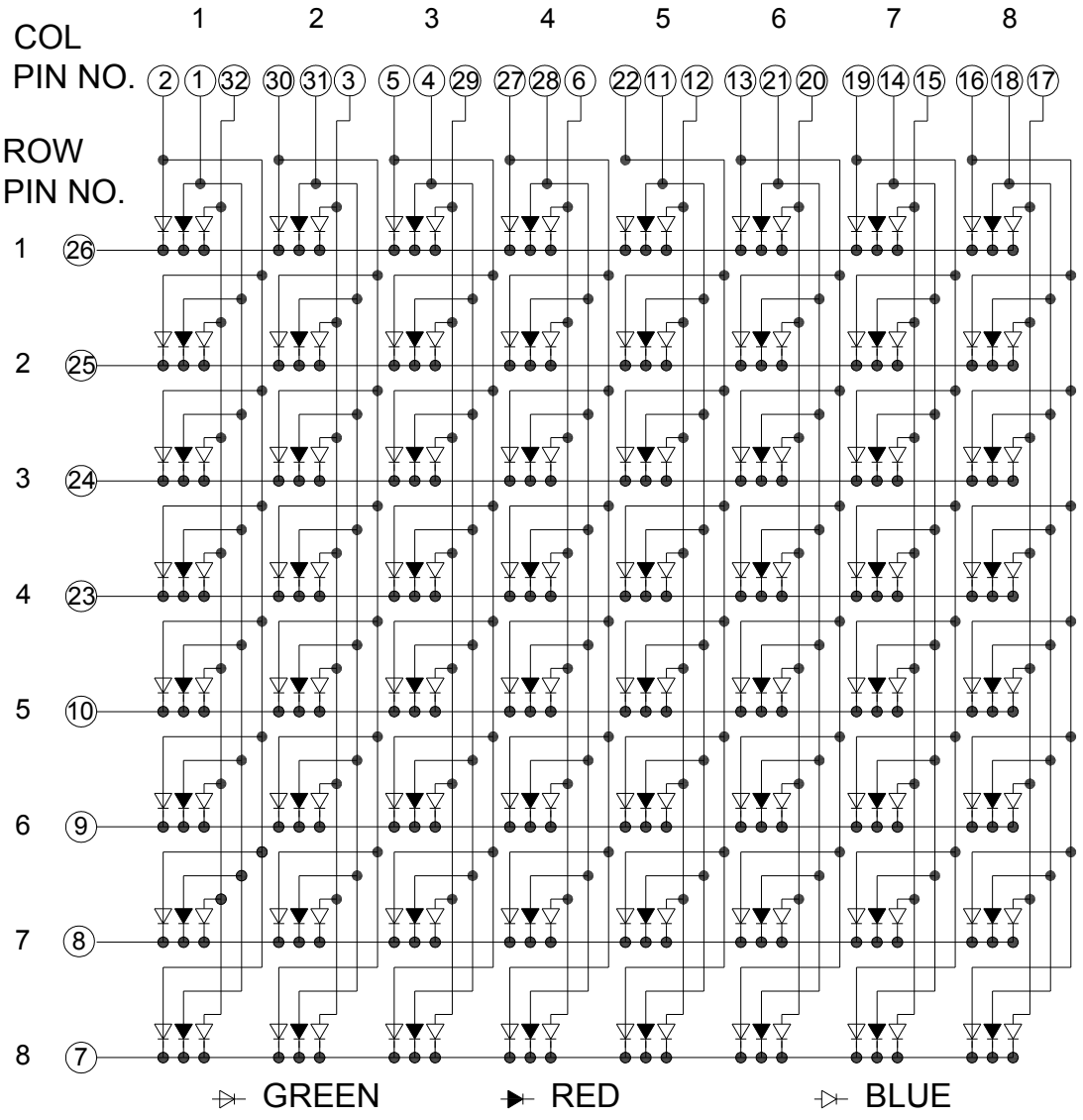
1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25 mm (.010″) unless otherwise noted.

Internal Circuit Diagram:

Common Row Anode: KWM-50884ARGBB



Common Row Cathode: KWM-50884CRGBB



Technical Data Sheet

Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Red	Pure Green / Blue	Unit
Power Dissipation Per dot	P_d	25	35	mW
Peak Forward Current Per dot (1/10 Duty Cycle, 0.1ms Pulse Width)	I_{FP}	50	50	mA
Forward Current Per dot	I_F	10	10	mA
Reverse Voltage Per dot	V_R	5	5	V
Operating Temperature Range	T_{opr}	-40℃ to +80℃		
Storage Temperature Range	T_{stg}	-40℃ to +85℃		
Soldering Temperature	T_{sld}	260℃ for 5 Seconds		

Electrical Optical Characteristics at Ta=25℃

Parameters	Symbol	Color	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	Iv	Red	20	40	---	mcd	IF=10mA (Note a)
		Pure Green	75	150	---		
		Blue	15	30	---		
Luminous Intensity Matching Ratio	I_{v-m}		---	---	2:1		IF=10mA
Peak Emission Wavelength	λp	Red	---	632	---	nm	IF=10mA
		Pure Green	---	520	---		
		Blue	---	468	---		
Dominant Wavelength	λd	Red	---	624	---	nm	IF=10mA (Note b)
		Pure Green	---	525	---		
		Blue	---	470	---		
Spectral Line Half-Width	△λ		---	20	---	nm	IF=10mA
Forward Voltage Per dot	V_F	Red	---	1.8	2.0	V	IF=10mA
		Pure Green	---	2.9	3.1		
		Blue	---	2.9	3.1		
Reverse Current Per dot	I_R		---	---	50	μA	VR=5V

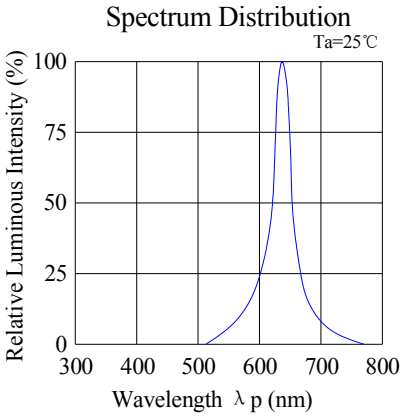
Notes:

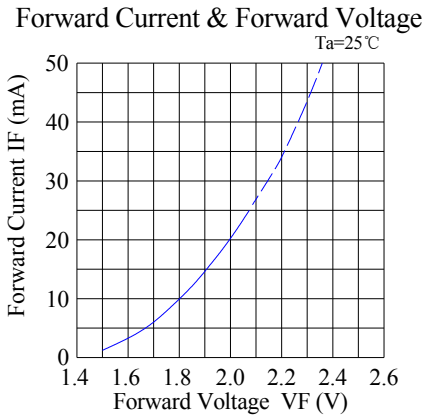
a. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

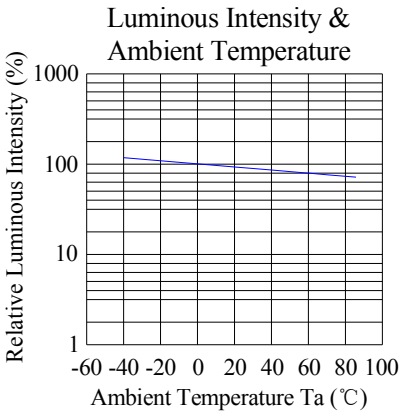
b. The dominant wavelength (λd) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

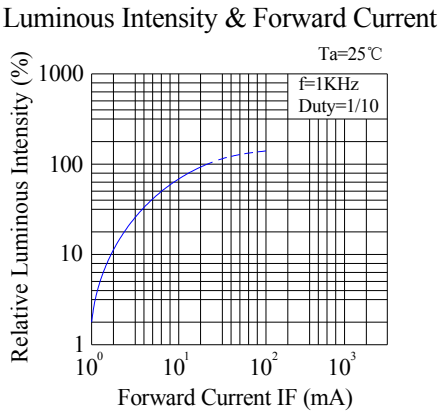
Typical Electrical / Optical Characteristics Curves
(25℃ Ambient Temperature Unless Otherwise Noted)

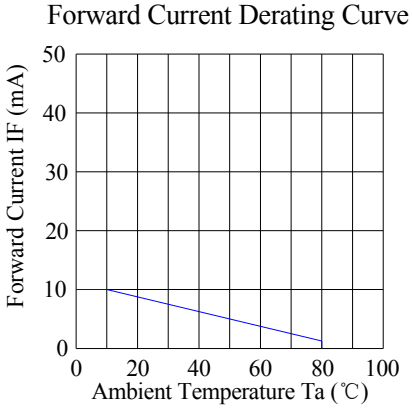
Red



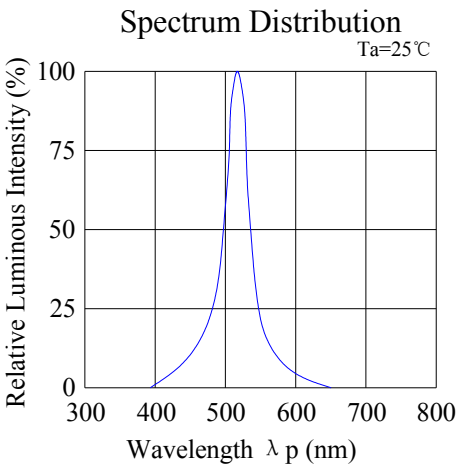


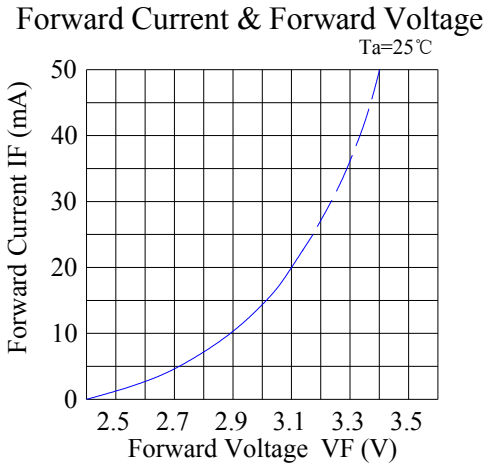


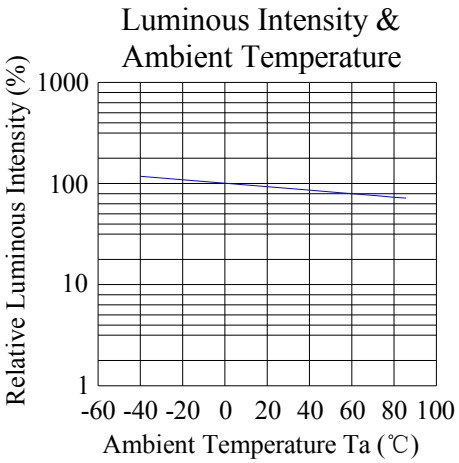


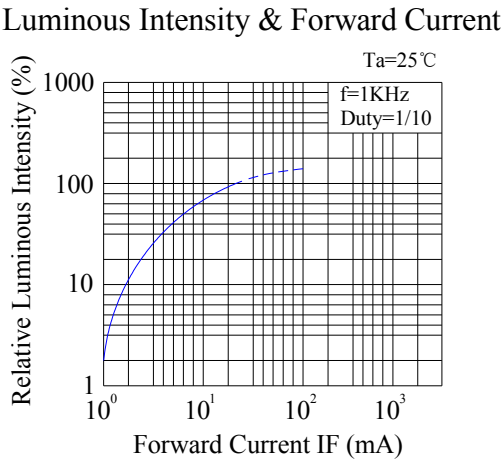


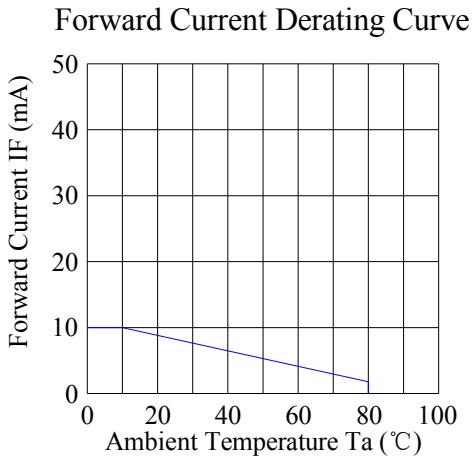
Pure Green





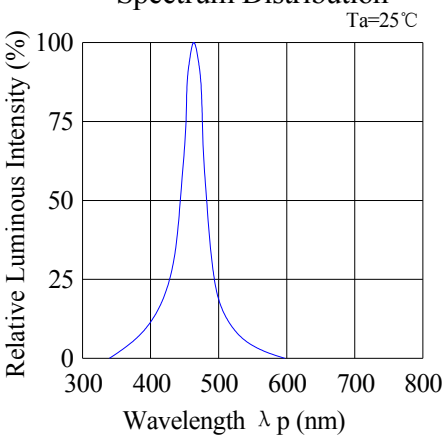




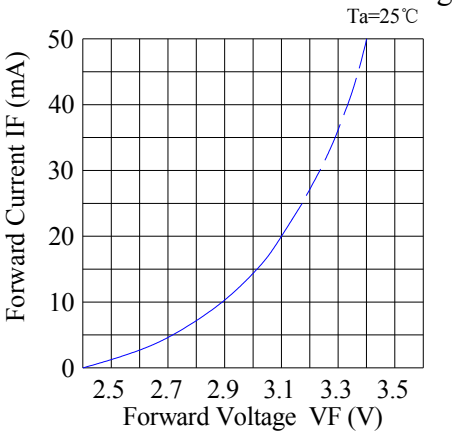


Blue

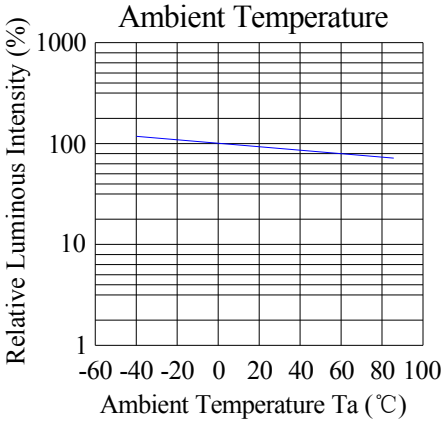
Spectrum Distribution



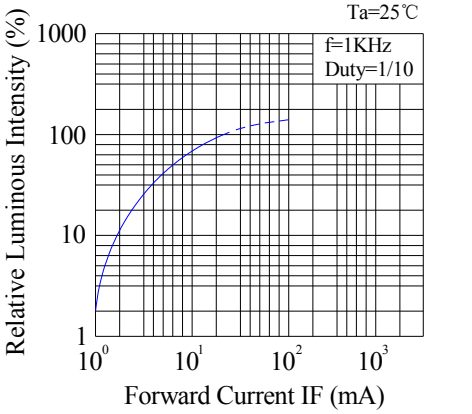
Forward Current & Forward Voltage



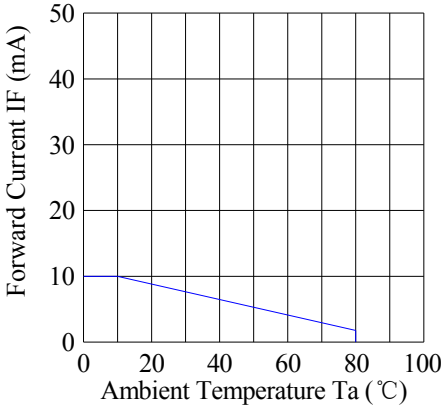
Luminous Intensity & Ambient Temperature



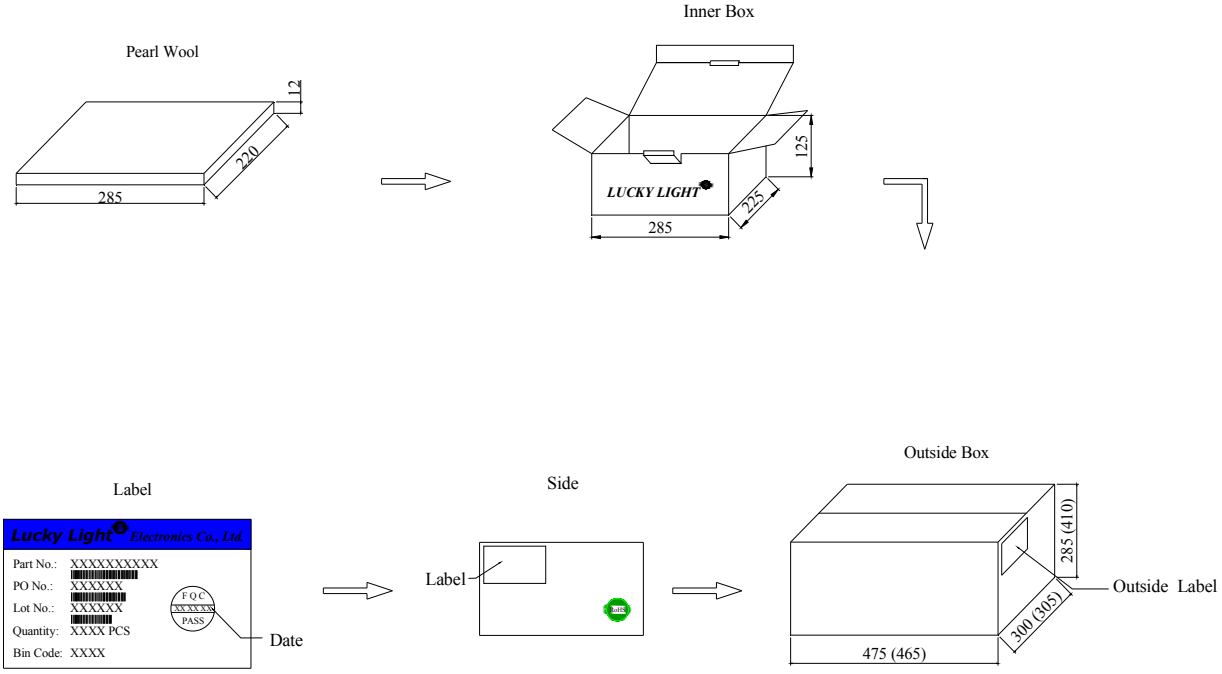
Luminous Intensity & Forward Current



Forward Current Derating Curve



Packing & Label Specifications:



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f. Over-current-proof

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

g. Storage

1. Before opening the package, the LEDs should be kept at 30℃or less and 80%RH or less.
2. The LEDs should be used within a year.
3. After opening the package, the LEDs should be kept at 30℃or less and 60%RH or less.

h. ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

lUse of a conductive wrist band or anti-electrostatic glove when handling these LEDs.

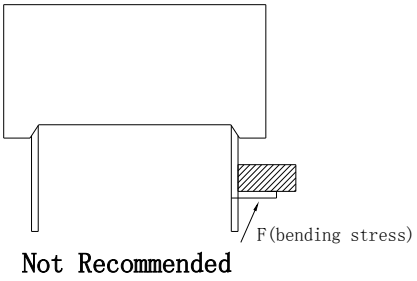
lAll devices, equipment, and machinery must be properly grounded.

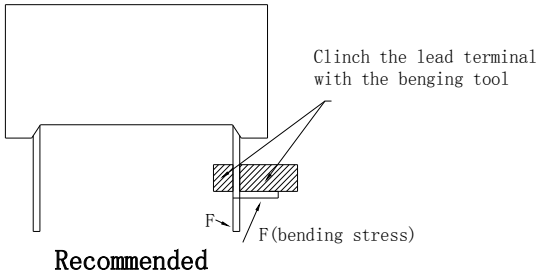
lWork tables, storage racks, etc. should be properly grounded.

Through Hole Display Mounting Method

Lead Forming:

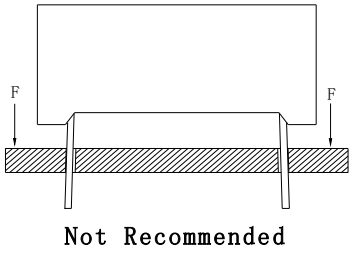
1. Do not bend the component leads by hand without proper tools.
2. The leads should be bent by clinching the upper part of the lead firmly such that the bending force Is not exerted on the plastic body.

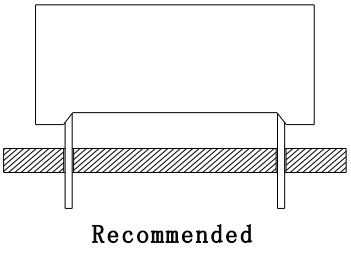




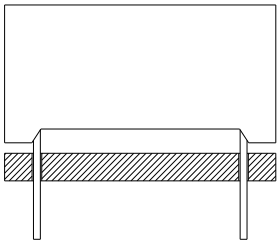
Installation:

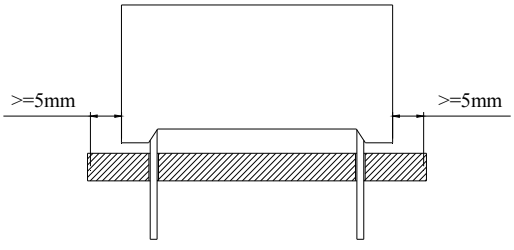
1. The installation process should not apply stress to the lead terminals.
2. When inserting for assembly, ensure the terminal pitch matches the substrate board's hole pitch to prevent spreading or pinching the lead terminals.



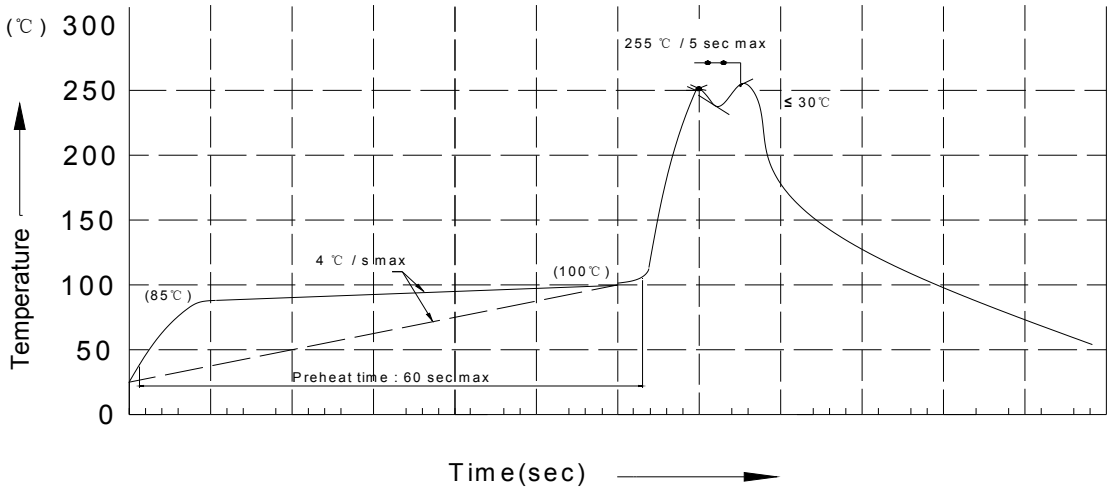


3. The component shall be placed at least 5mm from edge of PCB to avoid damage caused excessive heat during wave soldering.





Recommended Wave Soldering Profiles



Notes:

1. Recommend pre-heat temperature of 105℃ or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260℃.
2. Peak wave soldering temperature between 245℃～255℃ for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85℃.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.
7. During wave soldering, the PCB top-surface temperature should be kept below 105℃.

Soldering General Notes:

1. Through-hole displays are incompatible with reflow soldering.
2. If components will undergo multiple soldering processes, or other processes where the omponents may be subjected to intense heat, please check with luckylight for compatibility.

Cleaning:

1. Mild “no-clean” fluxes are recommended for use in soldering.
2. If cleaning is required, luckylight recommends to wash components with water only.

Do not use harsh organic solvents for cleaning because they may damage the plastic parts.

3. The cleaning process should take place at room temperature and the devices should not be washed for more than one minute.
4. When water is used in the cleaning process, immediately remove excess moisture from the component with forced-air drying afterwards.

Circuit Design Notes:

1. Protective current-limiting resistors may be necessary to operate the LEDs within the specified range.
2. LEDs mounted in parallel should each be placed in series with its own current-limiting resistor.

3. The driving circuit should be designed to protect the LED against reverse voltages and transient voltage spikes when the circuit is powered up or shut down.
4. The safe operating current should be chosen after considering the maximum ambient temperature of the operating environment.
5. Prolonged reverse bias should be avoided, as it could cause metal migration, leading to an increase in leakage current or causing a short circuit.