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MULTI-COLOR

SPECIFICATION FOR SMD 3535WSA

MC-S3535WSA

FEATURES:

- Size (mm):3.5×3.5×2.8
- Surface not reflective
- High Luminous Intensity (mcd)
- High reliability
- Good UV resistance performance
- High Waterproofness(IPX6, IPX8)
- Pb-free Reflow soldering Application
- RoHS Compliant

1. SPECIFICATIONS

1.1 Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Absolute Maximum Rating			Unit
		Red	Green	Blue	
Forward Current	I_F	30	30	30	mA
Pulse Forward Current	I_{FP}	100	100	100	mA
Reverse Voltage	V_R	5	5	5	V
Power dissipation	P_D	62.4	99.9	100.5	mW
Operating Temperature	T_{opr}	-30 to +85	-30 to +85	-30 to +85	°C
Storage Temperature	T_{stg}	-40 to +100	-40 to +100	-40 to +100	°C

* I_{FP} conditions with pulse width ≤10ms and duty cycle ≤10%.

1.2 Optical and Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	Red		Green		Blue		Unit
			Min	Max	Min	Max	Min	Max	
Forward Voltage	V_F	I_F=20mA	1.75	2.45	2.75	3.65	2.75	3.65	V
Reverse Current	I_R	V_R=5V	--	1	--	1	--	1	μA
Wavelength	λ_D	I_F=20mA	615	630	515	535	460	480	nm
			3nm per Bin		3nm per Bin		3nm per Bin		
Luminous Intensity	I_V	I_F=20mA	650	950	1250	1800	280	480	mcd
			Typ. 750		Typ. 1500		Typ. 350		

* A: Not Reflective Surface.

* Each Bin: I_V(Max):I_V(Min) ≤1.2.

* Tolerance of measurements of the Forward Voltage is ±0.05V.

* Tolerance of measurements of the Luminous Intensity is ±5%.

* Tolerance of measurements of the Wavelength is ±0.5nm.

2. RELIABILITY

2.1 Test Items and Results

Test Item	Standard Test Method	Test Conditions	Test Duration	Units Failed/Tested
Resistance to Soldering Heat (Reflow Soldering)	JEITA ED-4701 300 301	Tsld=260°C,10sec. Precondition:30°C 70%RH,168hrs	2times	0/100
Temperature Cycle		-65°C～150°C 15min. 15min. (30min./cycle)	200cycles	0/100
Temperature Cycle	JEITA ED-4701 100 105	-40°C～25°C～100°C～25°C 30min. 5min. 30min. 5min	100cycles	0/100
Moisture Resistance (Cyclic)	JEITA ED-4701 200 203	25°C～65°C～-10°C 90%RH, 24hr per cycle	10cycles	0/100
High Temperature Storage	JEITA ED-4701 200 201	Ta=100°C	500hrs	0/100
Temperature Humidity Storage		Ta=85°C,RH=85%	500hrs	0/100
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40°C	500hrs	0/100
Room Temperature Operating Life		Ta=25°C, I_F=15mA	1000hrs	0/10
Temperature Humidity Operating Life		Ta=85°C,RH=85% I_F=15mA	500hrs	0/10
Low Temperature Operating Life		Ta=-30°C, I_F=15mA	1000hrs	0/10
IPX6	IEC60529:2001	Distance of nozzle to specimen :3m Water Flow:100L/min (Remark: The sample was powered on during the test)	3min	0/512
IPX7	IEC60529:2001	Water Depth:1m (Remark: LED should be powered on during the test)	30min	0/512
IPX8	IEC60529:2001	Soaking Depth:2m (Remark: The sample was powered off during the test)	60min	0/512

NOTES:

Measurements are performed after allowing the LEDs to return to room temperature.

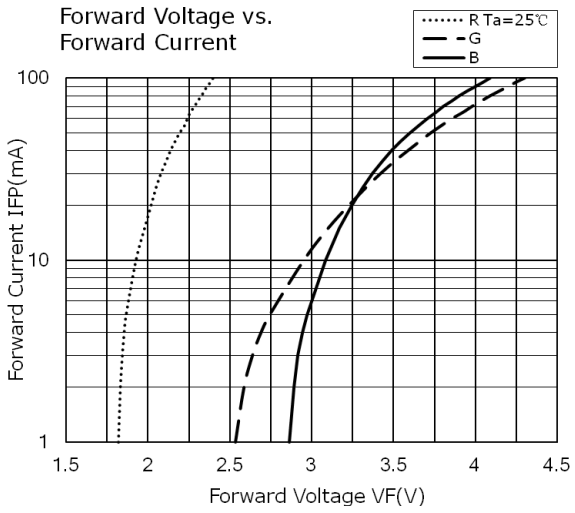
2.2 Criteria for Judging Damage

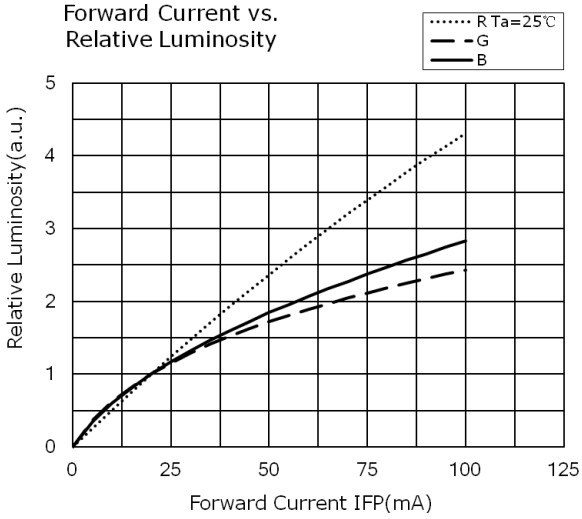
Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	V_F	I_F =20mA	-	U.S.L.×1.1
Reverse Current	I_R	V_R=5V	-	U.S.L.×2.0
Luminous Intensity	I_V	I_F=20mA	L.S.L. ×0.8	-

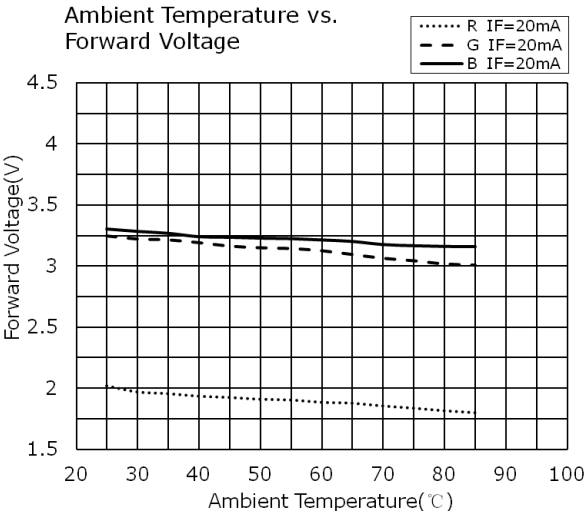
U.S.L.: Upper Standard Level L.S.L.: Lower Standard Level

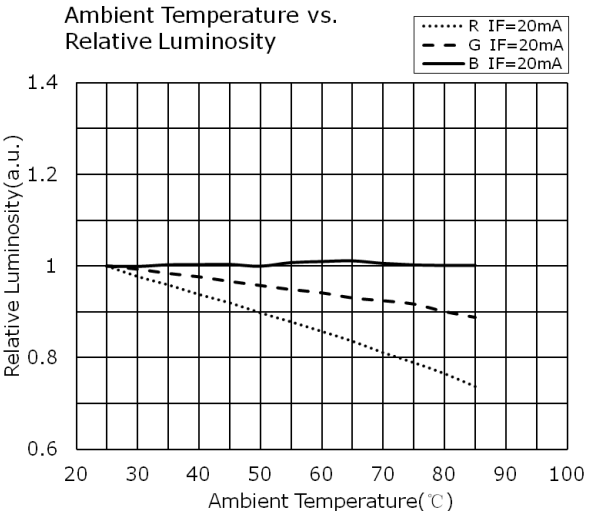
3. TYPICAL ELECTRICAL CHARACTERISTICS CURVES

All characteristics shown are for reference only and are not guaranteed.





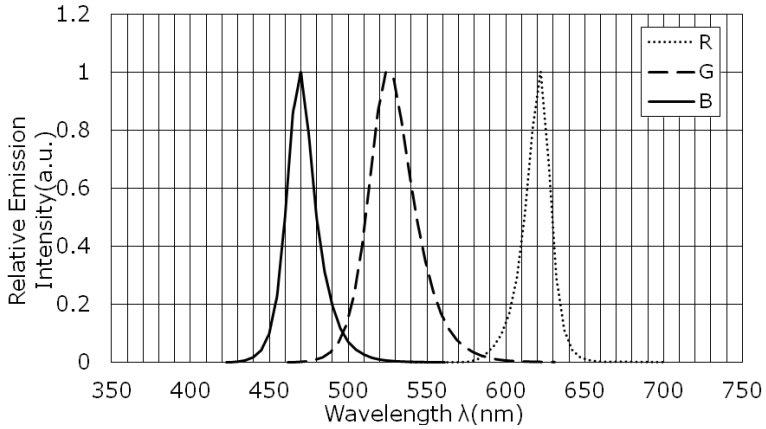




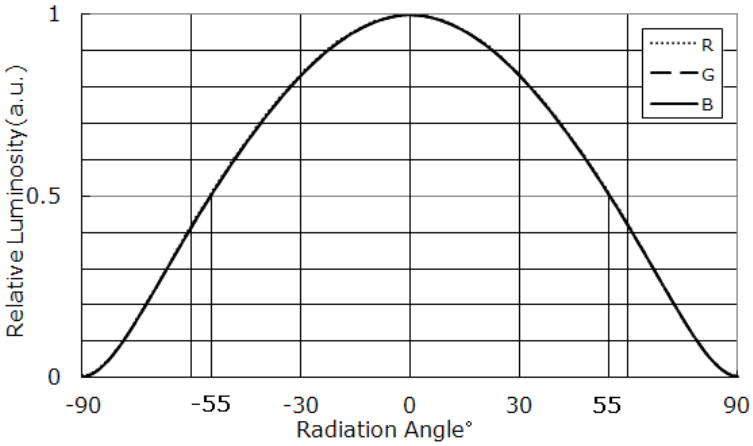
4. TYPICAL OPTICAL CHARACTERISTICS CURVES

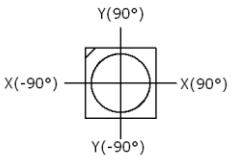
All characteristics shown are for reference only and are not guaranteed.

Spectrum

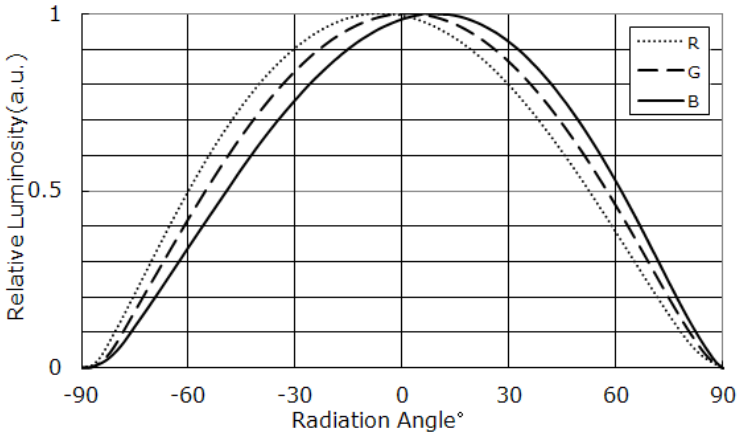


Directivity X-X





Directivity Y-Y



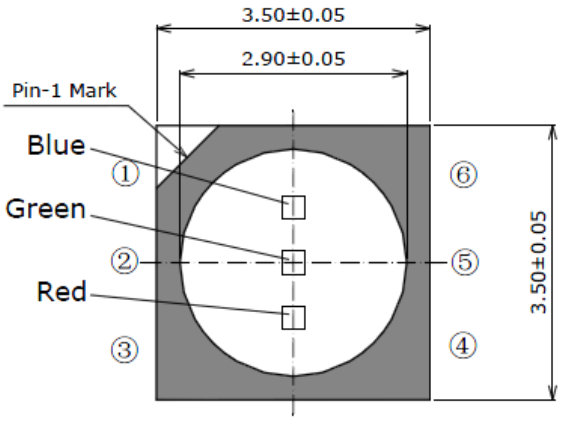
* Monochromatic Relative Intensity Profile was controlled ≤±10%

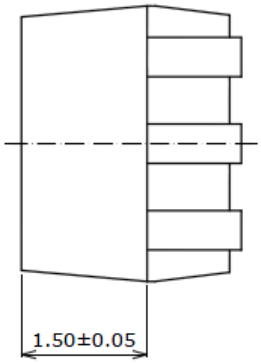
* RGB Relative Intensity Profile was controlled ≤±5%

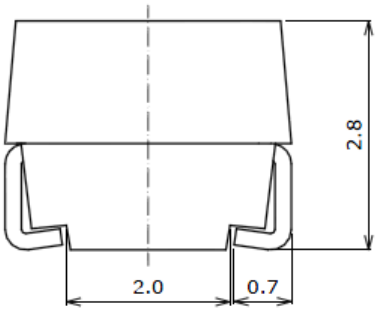
5. OUTLINE DIMENSIONS AND MATERIALS

This product complies with RoHS Directive.

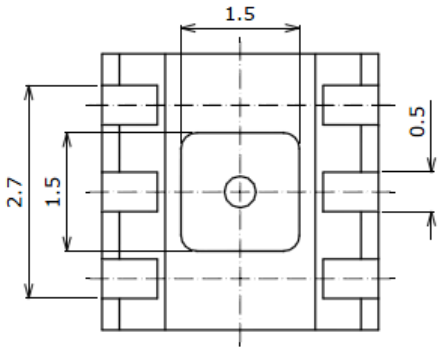
(Unit: mm, Tolerance: ±0.2)

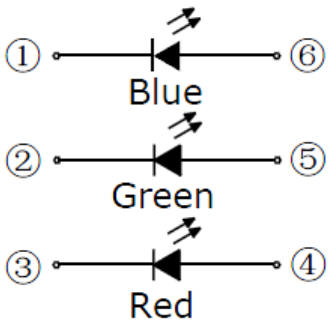






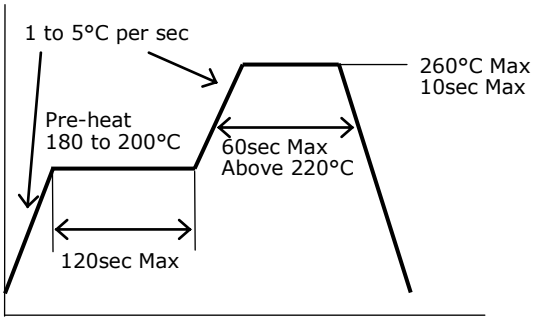
Item	Description
Package Materials	White Heat-Resistant Polymer
Package Upper Surface Color	Black
Encapsulating Resin Materials	Epoxy Resin(With diffuser)
Electrodes Materials	Ag-plated Copper Alloy





6. SOLDERING

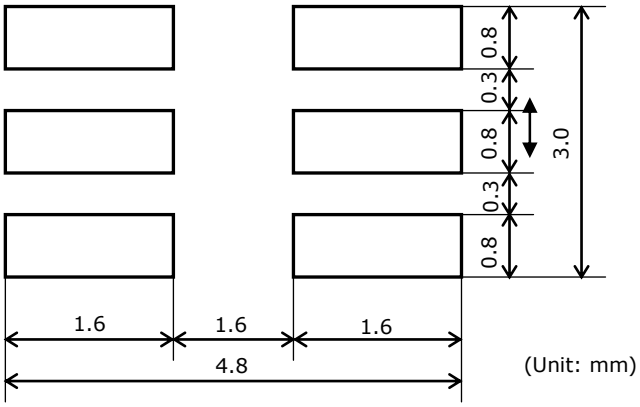
- Recommended Reflow Soldering Condition(Lead-free Solder)



- Recommended Hand Soldering Condition

Temperature	350°C Max
Soldering Time	3sec Max

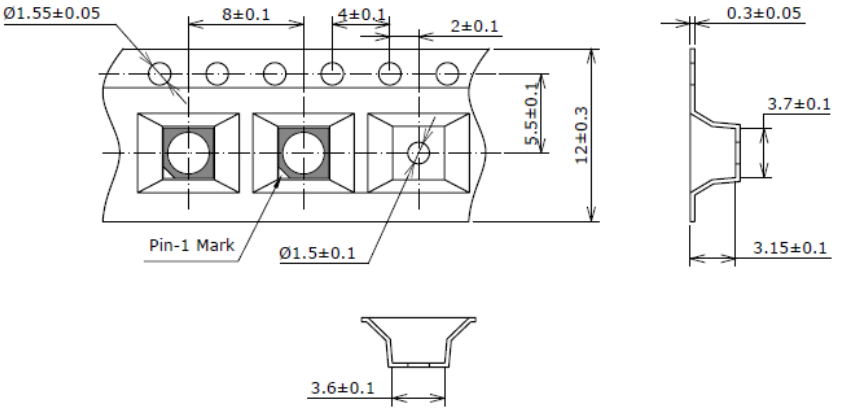
- Recommended Soldering Pad Pattern



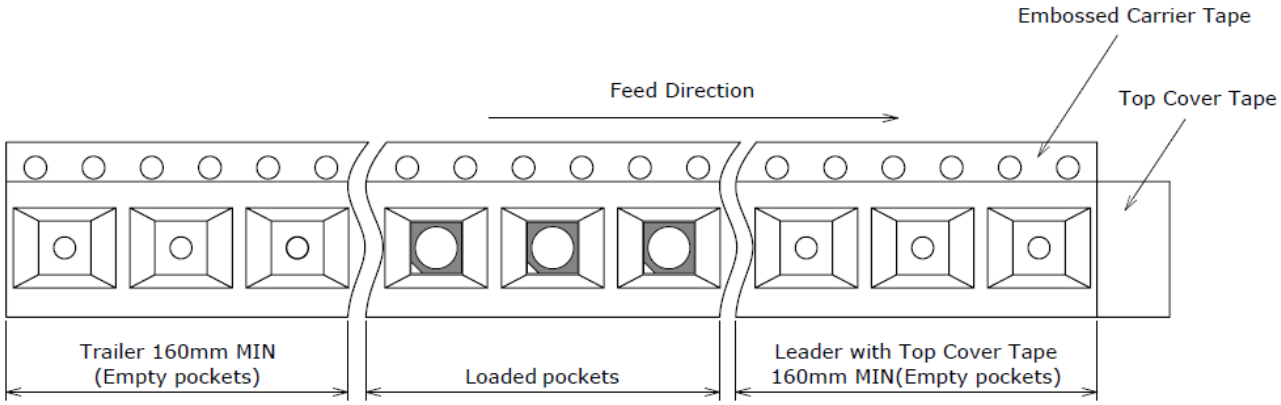
* This LED is designed to be reflow soldered on to a PCB. If dip soldered, Multi Color cannot guarantee its reliability.
* Reflow soldering must not be performed more than twice. Hand soldering must not be performed more than once.
* Avoid rapid cooling. Ramp down the temperature gradually from the peak temperature.
* Nitrogen reflow soldering is recommended. Air flow soldering conditions can cause optical degradation, caused by heat and/or atmosphere.
* Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-heat soldering iron should be used.
  It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.
* When soldering, do not apply stress to the LED while the LED is hot.
* This product can differ in optical characteristics depending on the number of reflow cycles.
  In a single display, only LEDs with same number of reflow cycles should be used regardless of the application type, such as rental and/or permanent installations.

7. TAPE AND REEL DIMENSIONS

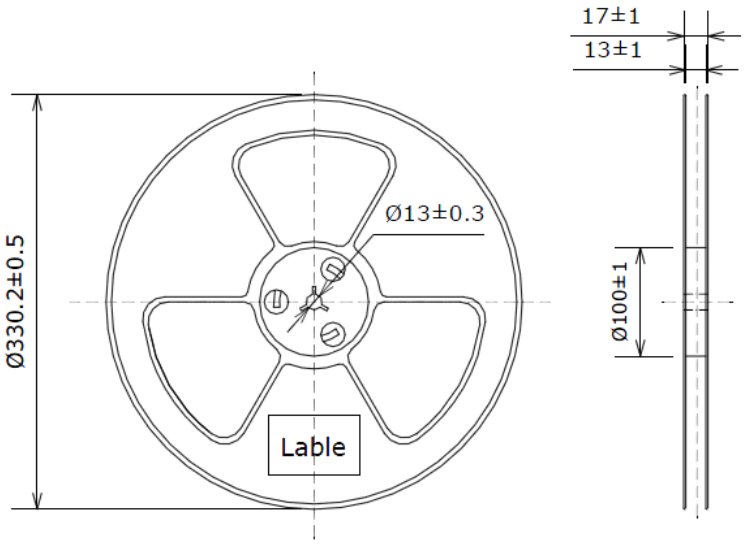
Tape: (Unit: mm)



Trailer and Leader:



Reel:

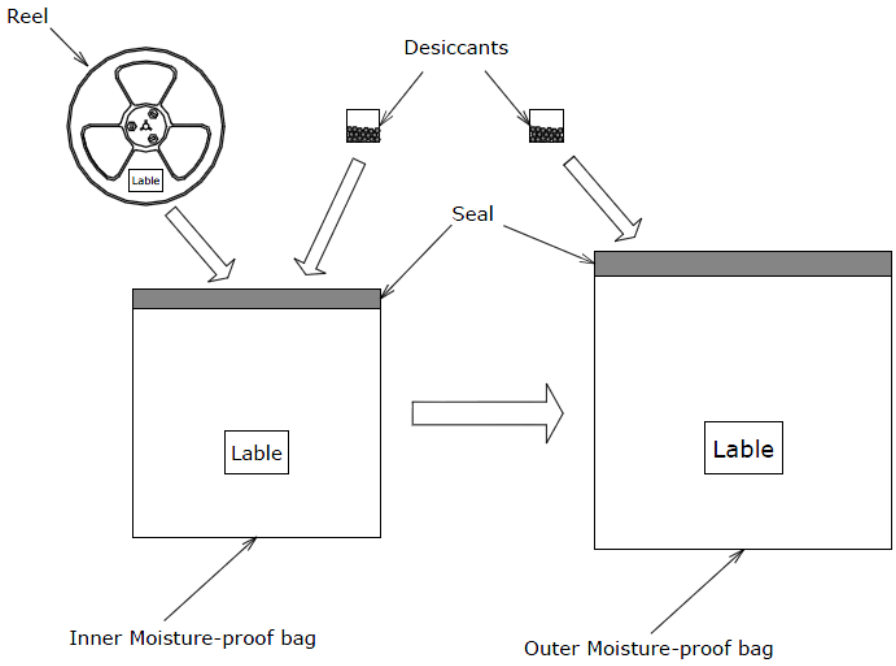


Quantity per reel=2500pcs

8. PACKAGING – TAPE & REEL

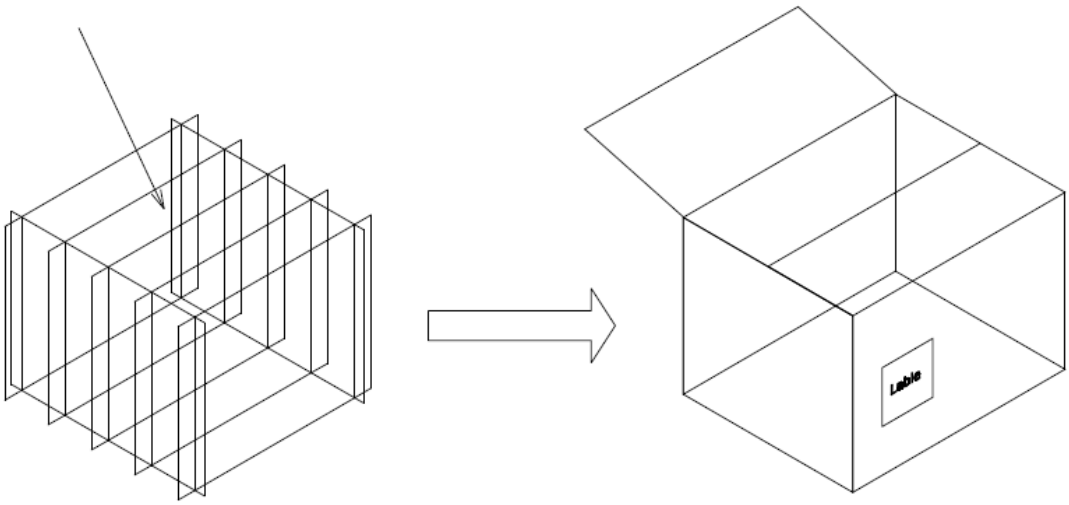
Reels are shipped with desiccants in heat-sealed inner moisture-proof bags.

Inner moisture-proof bags are shipped with desiccants in heat-sealed outer moisture-proof bags.



Outer moisture-proof bags are packed in

cardboard boxes with corrugated partitions.



* The Label shows: P/O NO., TYPE, QTY, IV, VF, WLD,BATCH CODE.
* Products shipped on tape and reel are packed in moisture-proof bag.
  They are shipped in cardboard boxes to protect them from external forces during transportation.
* Do not drop or shock the box. It may damage the products.
* Do not expose to water, the box is not water-resistant.
* Using an original packaging material or equivalent in transit is recommended.

9. MOISTURE PROOF PACKAGE

- When moisture is absorbed into the SMT package it may vaporize and expand during soldering. There is a possibility that this can cause exfoliation of the contacts and damage the optical characteristics of the LEDs. For this reason, the moisture proof package is used to keep moisture to a minimum in the package.
- The moisture proof package is made absorbent material (silica gel desiccants) is inserted into the aluminium moisture proof bag.
- The silica gel desiccants change from blue to red if moisture had penetrated bags.

10. STORAGE CONDITIONS

●Before opening the package, must check if the package bag is well packaged or damaged.
If the package is damaged, please return back to Multi-Color.

●After opening the package:
After this bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing Must be:

a) Mounted within 24 hours at factory condition of ≤30°C /60%RH.

b) If unused LEDs remain, please return these LEDs back to Multi-Color.

●The LEDs must be used within 6 months.
The LEDs should be kept at less than 30°C and less than 60%RH.

11.STATIC ELECTRICITY

- Static electricity or surge voltage damages the LEDs.
It is recommended that a wrist band or an anti-electrostatic glove be used when handing the LEDs.
- All devices equipment and machinery must be properly grounded. It is recommended that precautions be taken against surge voltage to the equipment that mounts the LEDs.