VCC | OPTOELECTRONICS
lighting:theway

SUPERBRIGHT 5050 SMD LED
VAOS-5050RGB136-ET

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.
- ESD protection.
- Pb-free.
- The product itself will remain within RoHS compliant version.

Descriptions

- Low power consumption and adjusting each color is possible thanks to serial connection by 6 terminal connection (Individual driving by each terminal) in case of using several number of LED. And makes it ideal for light pipe application.

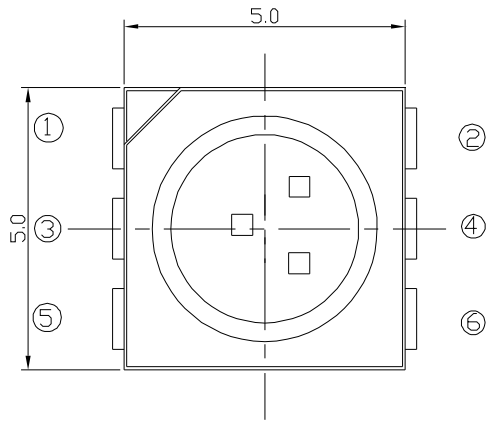
Applications

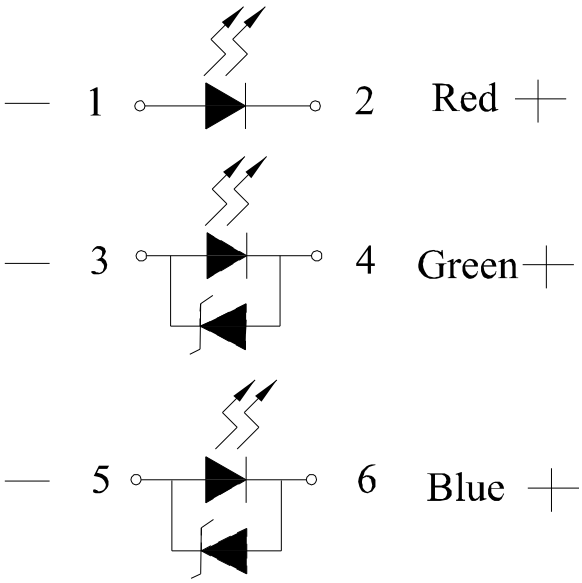
- Amusement equipment.
- Information boards.
- Flashlight for digital camera of cellular phone.

Device Selection Guide

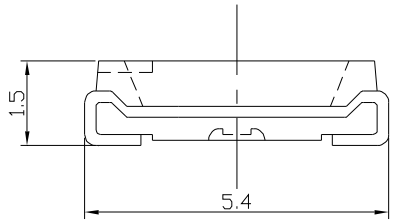
Chip			Lens Color
Type	Material	Emitted Color	
R	AlGaInP	Brilliant Red	Water Clear
G	InGaN	Brilliant Green	
B	InGaN	Blue	

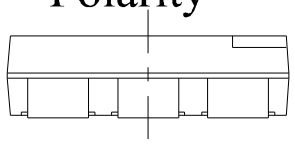
Package Outline Dimensions



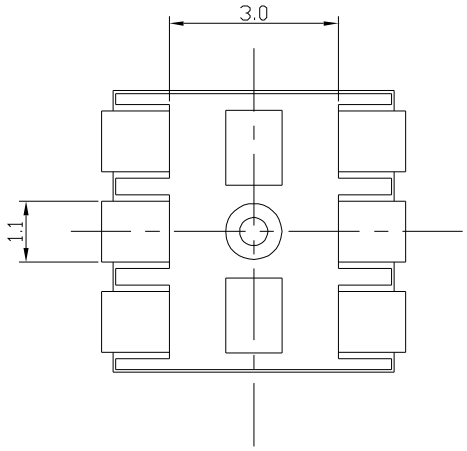


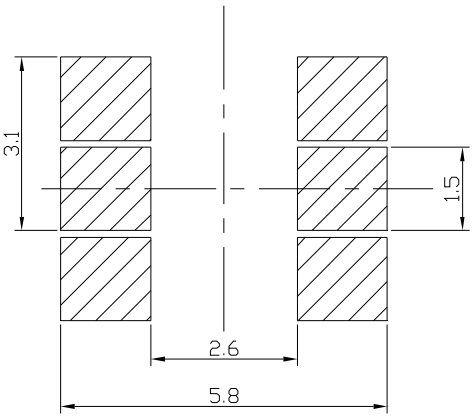
Polarity





Recommended soldering pad design





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

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating		Unit
Reverse Voltage	V_R	5		V
Forward Current	I_F	R	30	mA
		G	30	
		B	30	
Peak Forward Current (Duty 1/10 @ 1KHz)	I_{FP}	R	120	mA
		G	110	
		B	110	
Power Dissipation	Pd	R	80	mW
		G	110	
		B	110	
Electrostatic Discharge(HBM)	ESD	2000		V
Operating Temperature	Topr	-40 ~ +85		℃
Storage Temperature	Tstg	-40~ +90		℃
Soldering Temperature	Tsol	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.		

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol		Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	R	450	-----	715	mcd	I_F=20mA
		G	715	-----	1420		
		B	225	-----	450		
Viewing Angle	$2\theta_{1/2}$		-----	120	-----	deg	I_F=20mA
Peak Wavelength	λp	R	-----	632	-----	nm	I_F=20mA
		G	-----	518	-----		
		B	-----	468	-----		
Dominant Wavelength	λd	R	617.5	-----	633.5	nm	I_F=20mA
		G	523.5	-----	535.5		
		B	466	-----	472		
Spectrum Radiation Bandwidth	△λ	R	-----	20	-----	nm	I_F=20mA
		G	-----	35	-----		
		B	-----	35	-----		
Forward Voltage	V_F	R	1.75	-----	2.35	V	I_F=20mA
		G	2.75	-----	3.95		
		B	2.75	-----	3.95		
Reverse Current	I_R		-----	-----	10	μA	V_R=5V

Notes:

1.Tolerance of Luminous Intensity ±10%

2.Tolerance of Dominant Wavelength ±1 nm

3.Tolerance of Forward Voltage 0.1V

Bin Range Of Luminous Intensity

Symbol	Bin Code	Min.	Max.	Unit	Condition
R	U1	450	565	mcd	I_F =20mA
	U2	565	715		
G	V1	715	900		
	V2	900	1120		
	W1	1120	1420		
B	S2	225	285		
	T1	285	360		
	T2	360	450		

Bin Range Of Dominant Wavelength

Symbol	Groups	Bin Code	Min.	Max.	Unit	Condition
R	A	E4	617.5	621.5	nm	I_F =20mA
		E5	621.5	625.5		
		E6	625.5	629.5		
		E7	629.5	633.5		
G	B	B13	523.5	525.5		
		B14	525.5	527.5		
		B15	527.5	529.5		
		B16	529.5	531.5		
		B17	531.5	533.5		
		B18	533.5	535.5		
B	D	AA2	466	468		
		AA3	468	470		
		AA4	470	472		

Notes:

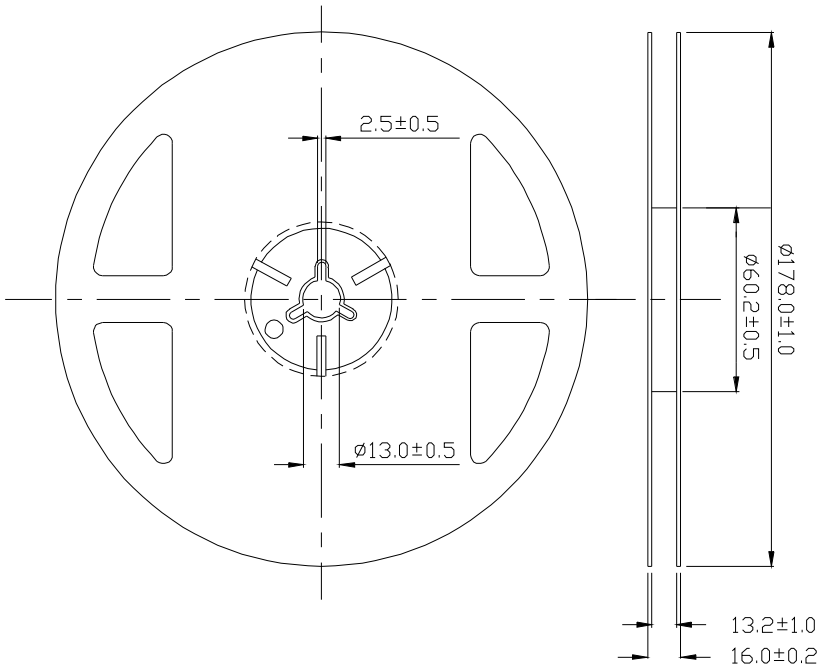
1.Tolerance of Luminous Intensity ±10%

2.Tolerance of Dominant Wavelength ±1 nm

Bin Range of Forward Voltage

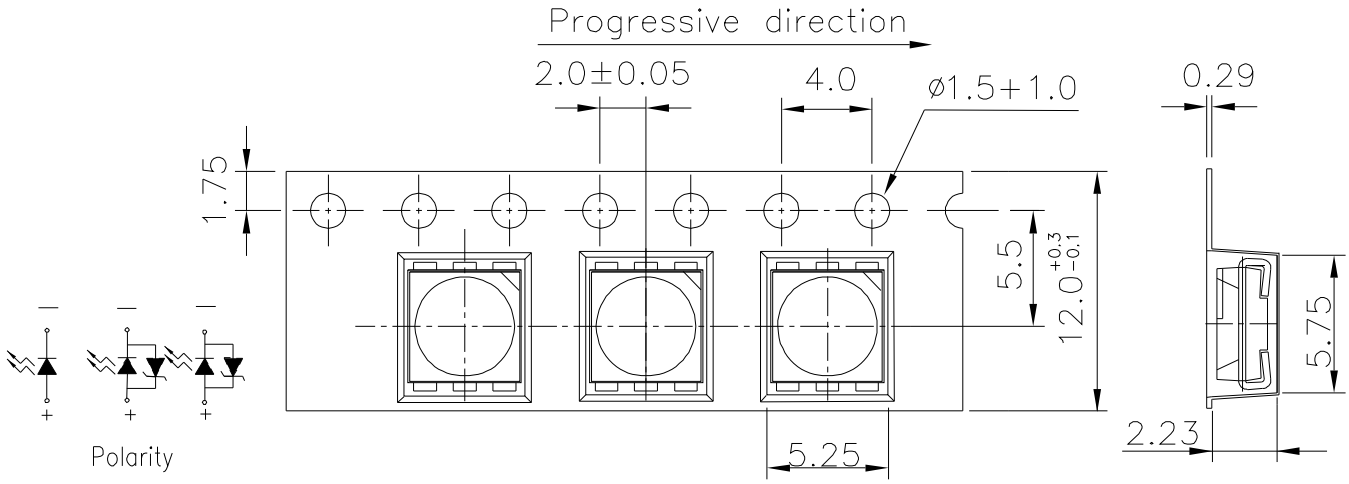
Symbol	Groups	Bin Code	Min.	Max.	Unit	Condition
R	B	1	1.75	1.95	V	I_F =20mA
		2	1.95	2.15		
		3	2.15	2.35		
G	M	5	2.75	3.05		
		6	3.05	3.35		
		7	3.35	3.65		
		8	3.65	3.95		
B	M	5	2.75	3.65		
		6	3.05	3.05		
		7	3.35	3.65		
		8	3.65	3.95		

Reel Dimensions



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

Carrier Tape Dimensions;Loaded quantity per reel 800 PCS/reel



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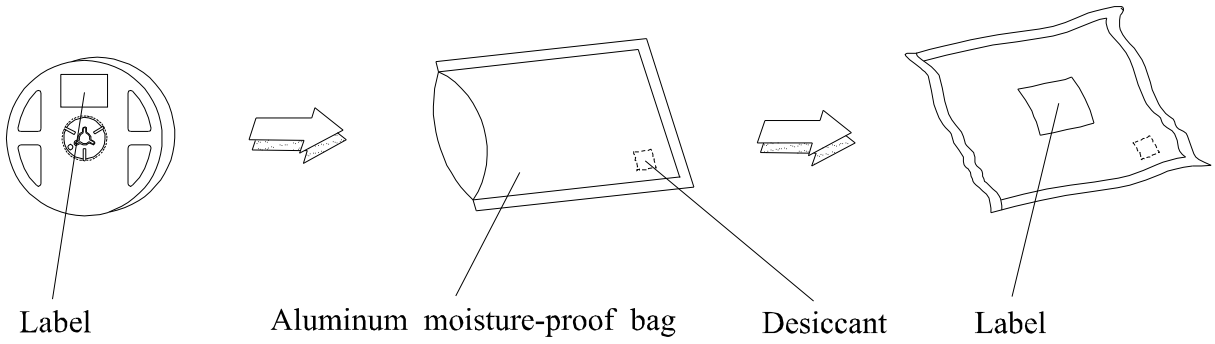
Moisture Resistant Packaging



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℃±5℃ Min. 5sec.	6 Min.	22 PCS.	0/1
2	Temperature Cycle	H : +100℃ 15min ∫ 5 min L : -40℃ 15min	300 Cycles	22 PCS.	0/1
3	Thermal Shock	H : +100℃ 5min ∫ 10 sec L : -10℃ 5min	300 Cycles	22 PCS.	0/1
4	High Temperature Storage	Temp. : 100℃	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Temp. : -40℃	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	I_F = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85℃/ 85%RH	1000 Hrs.	22 PCS.	0/1

* For each die

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 proof bag before the products are ready to use.

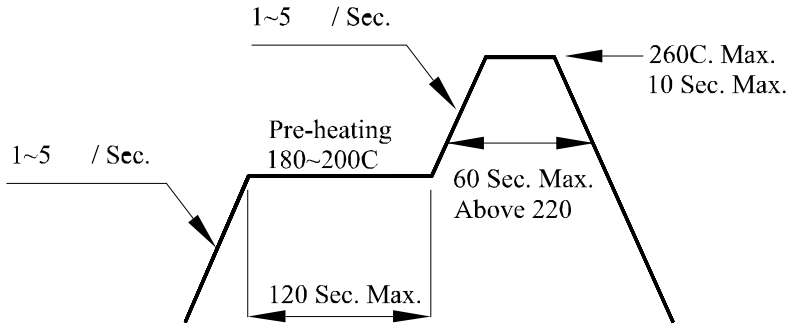
2.2 Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.

2.3 After opening the package: The LED's floor life is 1 year under 30℃ or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 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℃ 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 350℃ 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.