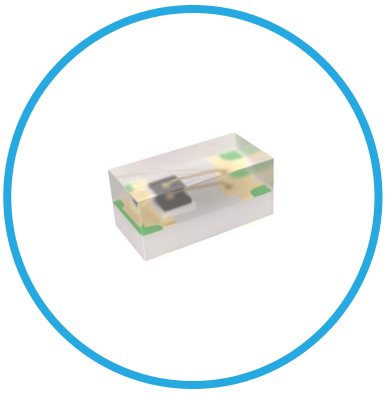
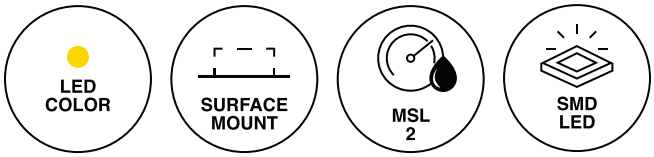
VAOL-S4YP4
0402 Package Size
Surface Mount Technology LED



VAOL-S4YP4 Yellow SMD LED. Low Profile Surface Mount LED with High intensity light output and low power consumption.



Applications

- Storage Servers
- Status Indicator
- Wearable Device
- Navigaion Systems
- Backlit Keypads
- Medical Devices
- Home and Smart Appliance
- Industrial Control Systems
- IoT

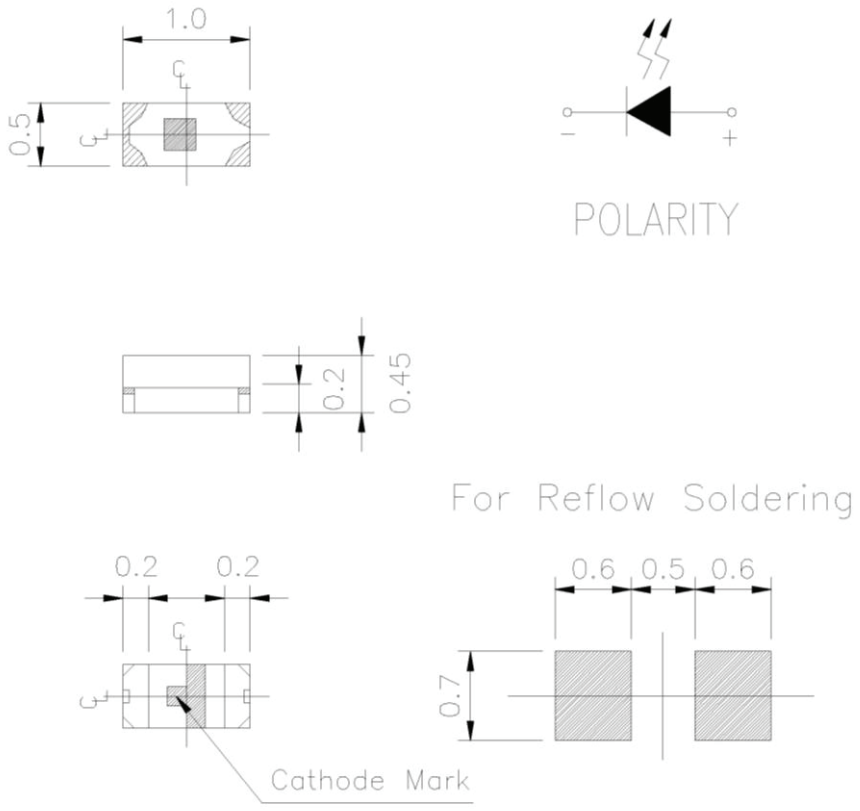
Key Features

- 1.0 x 0.5 mm [.039 x .019 in] (0402 package) Chip SMD LED
- 0.45 mm [.017 in] in thickness
- Emitting color: Yellow
- Viewing angle: 120˚
- Chip material: aluminium gallium indium phosphide (AlGaInP)
- Low power consumption
- Top emitting package
- Small 0402 LED package, flexible application with small space required
- Fit automatic placement equipment
- Fit Compatible with infrared and vapor phase reflow solder process
- Ideal for special configurations for automated PC board assembly and space-sensitive applications
- Pb-free
- Packaged 3000 pieces per reel
- For custom LED color contact VCC
- RoHS and REACH Compliant

Ordering Data

Series	Description
VAOL-S4YP4	Yellow 0402 Package Size Surface Mount Technology LED

Product Dimensions



Notes:
1. All dimensions are in mm
2. Tolerance is ± 0.1mm unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

Product Specifications

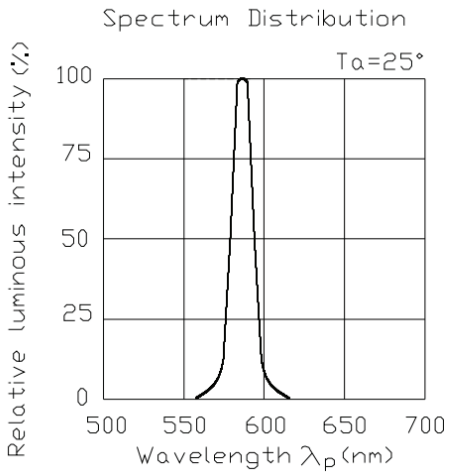
Absolute Maximum Ratings at Ta= 25°C

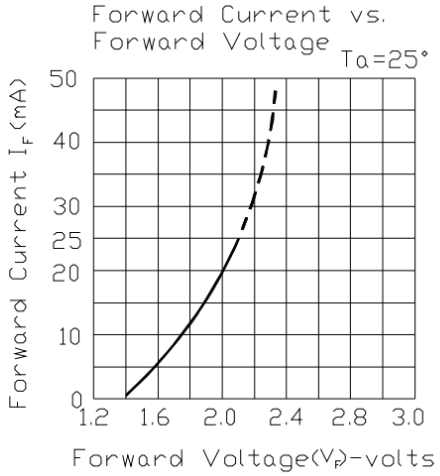
Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	25	mA
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +90	°C
Soldering Temperature	Tsol	260 (for 5 seconds)	°C
Electrostatic Discharge (HBM)	ESD	2000	V
Power Dissipation	Pd	60	mW
Peak Forward Current (Duty 1/10 @ 1KHZ)	I_{FP}	60	mA
Soldering Temperature	Tsol	Reflow Soldering: 260˚C for 10 sec. Hand Soldering: 350˚C for 3 sec.	

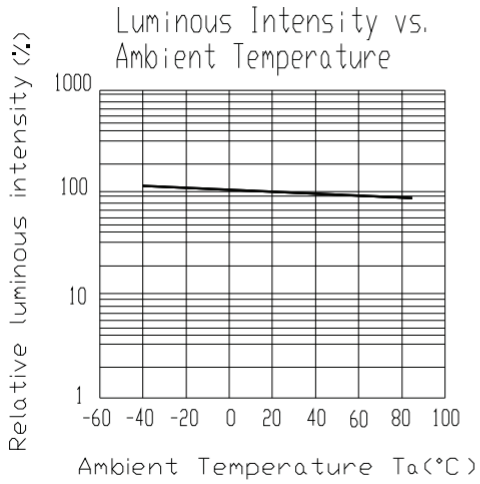
Electrical-Optical Characteristics

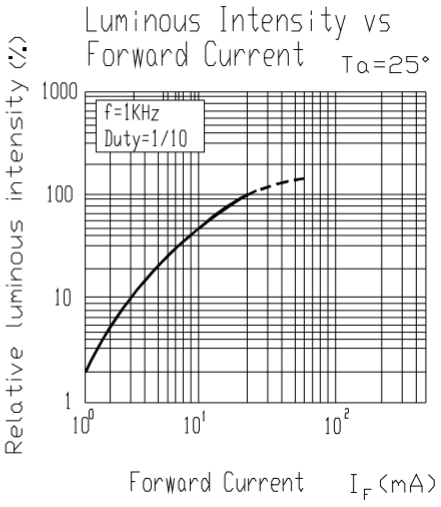
Parameter	Symbol	Chip Rank	Min	Typ.	Max.	Unit	Condition
Luminous Intensity	I_V	A2	15	38	--	mcd	IF=20mA
		A3	25	40	--		
		A4	35	50	--		
		A5	50	70	--		
		A6	60	89	--		
Viewing Angle	$2\theta_{1/2}$	--	--	--	120	Deg	
Peak Wavelength	λp	--	--	--	591	nm	
Dominant Wavelength	λd	--	--	--	589	nm	
Spectrum Radiation Bandwidth	Δλ	--	--	15	--	nm	
Forward Voltage	V_F	--	1.7	2.0	2.4	V	
Reverse Current	I_R	--	--	--	10	μA	V_R=5V

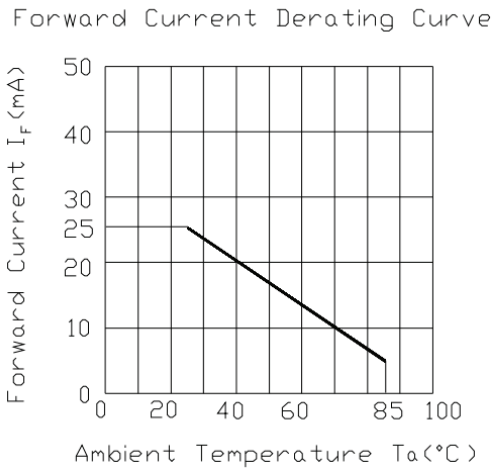
Typical Electro-Optical Characteristics Curve

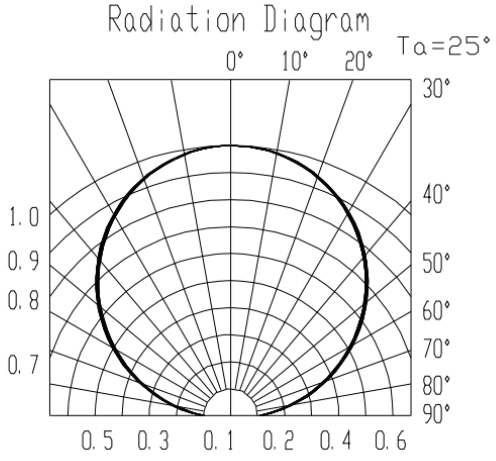












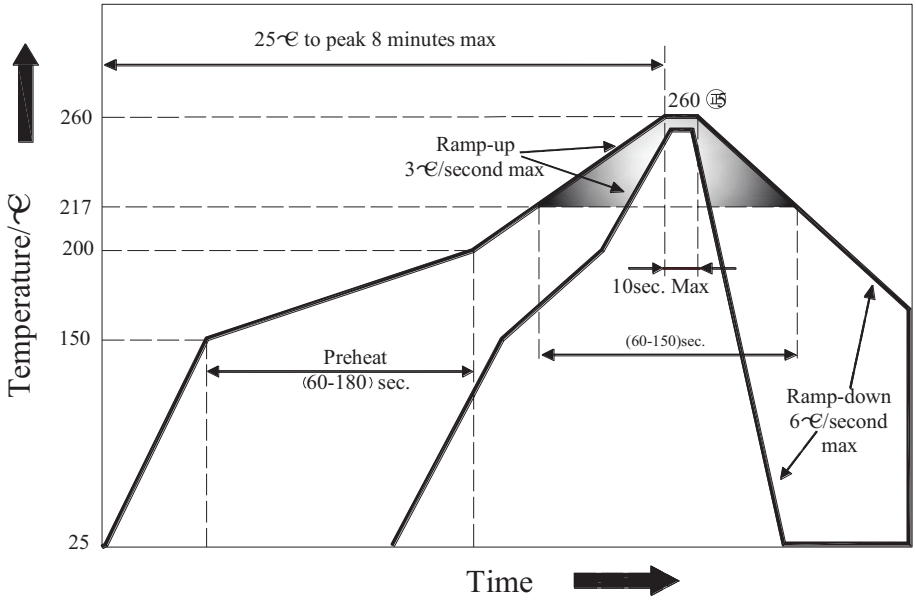
Recommended Reflow Soldering Profile

Hand Soldering

• A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the soldering iron under 360°C while soldering. Each terminal of the LED is to go for less than 3 second and for one time only.
• Be careful because the damage of the product is often started at the time of the hand soldering.

Reflow Soldering

• Use the conditions shown in the under Figure of Pb-Free Reflow Soldering.



• Reflow soldering should not be done more than two times.
• Stress on the LEDs should be avoided during heating in soldering process.
• After soldering, do not touch with the product before its temperature drop down to room temperature.

Cleaning

• It is recommended that alcohol be used as a solvent for cleaning after soldering. Cleaning is to go under 30°C for 3 minutes or 50°C for 30 seconds. When using other solvents, it should be confirmed before hand whether the solvents will dissolve the package and the resin or not.
• Ultrasonic cleaning is also an effective way for cleaning. But the influence of Ultrasonic cleaning on LED depends on factors such as ultrasonic power. Generally, the ultrasonic power should not be higher than 300W. Before cleaning, a pre-test should be done to confirm whether any damage to LEDs will occur.

Precautions

Storage

• Moisture proof and anti-electrostatic package with moisture absorbent material is used to keep moisture to a minimum.
• Before opening the package, the product should be kept at 30°C or less and humidity less than 80% RH, and be used within a year.
• After opening the package, the product should be stored at 30°C or less and humidity less than 10%RH, and be soldered within 24 hours (1day). It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60%RH..
• If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition: (80±5)°C for 24 hours

Static Electricity

• Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual Characteristic such as the forward voltage becomes lower, or the LEDs do not light at the low current even not light.
• All devices, equipment and machinery must be properly grounded. At the same time, it is recommended that wristbands or anti-electrostatic gloves, anti-electrostatic containers be used when dealing with the LEDs.

Vulcanization

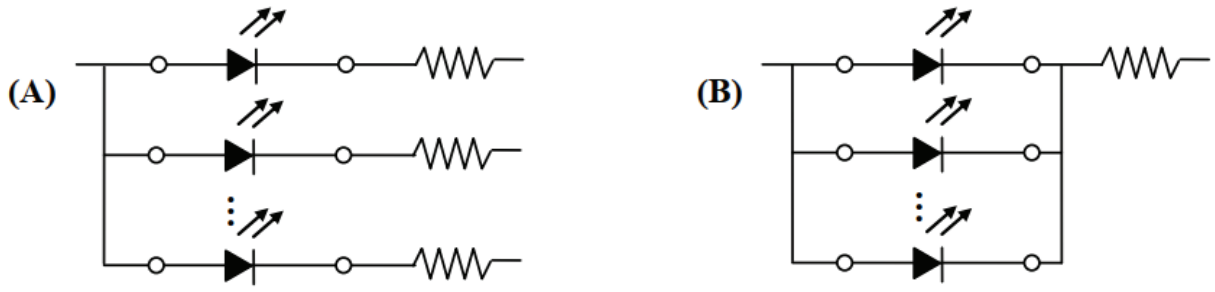
• LED curing is due to sulfur being in bracket and the +1 price of silver in the chemical reaction generated Ag 2 Sin the process. It will lead to the capacity of reflecting of silver layer reducing, light color temperature drift and serious decline, seriously affecting the performance of the product.So we should take corresponding measures to avioding vulcanization, such as to a void using sulphur volatile substance sand keeping away from high sulphur content of the material

Safety Advice For Human Eyes

• Viewing direct to the light emitting center of the LEDs, especially those of great Luminous Intensity will cause great hazard to human eyes. Please be careful.

Design Consideration

• In designing a circuit, the current through each LED must not exceed the absolute maximum rating specified for each LED. In the meanwhile, resistors for protection should be applied, otherwise slight voltage shift will cause big current change, burn out may happen.
• It is recommended to use Circuit A which regulates the current flowing through each LED rather than Circuit B. When driving LEDs with a constant voltage in Circuit B, the current through the LEDs may vary due to the variation in Forward Voltage (VF) of the LEDs. In the worst case, some LED may be subjected to stresses in excess of the Absolute Maximum Rating.

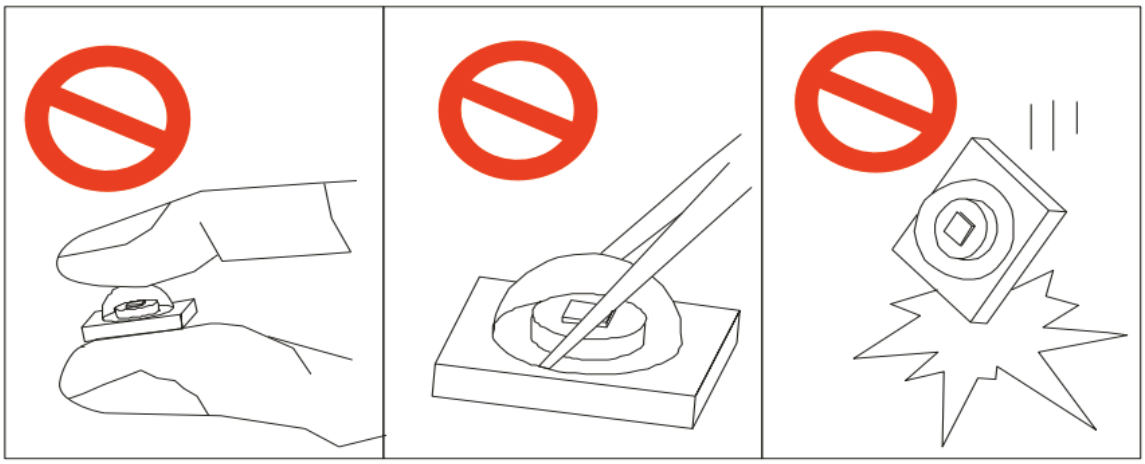


• Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color changed and so on. Please consider the heat generation of the LEDs when making the system design.

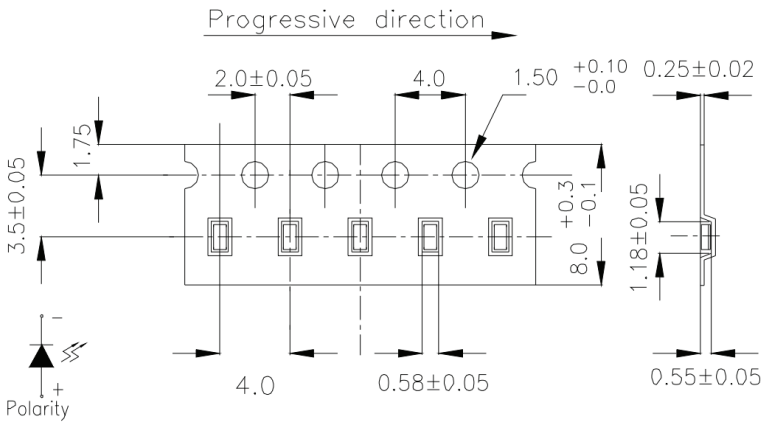
Precautions

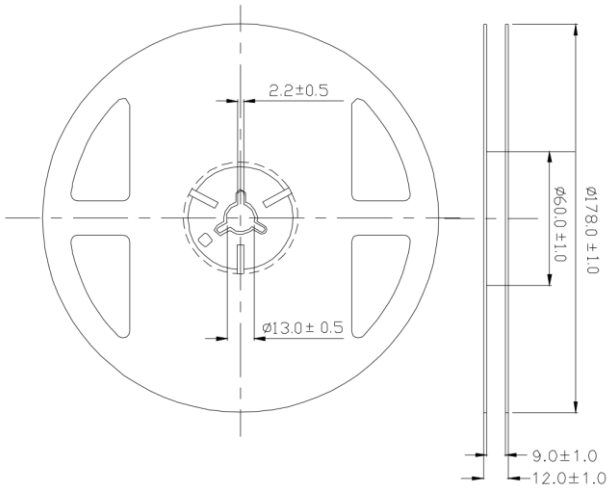
Others

• When handling the product, touching the encapsulate with bare hands will not only contaminate its surface, but also affect on its optical characteristic. Excessive force to the encapsulate might result in catastrophic failure of the LEDs due to die breakage or wire deformation. For this reason, please do not put excessive stress on LEDs, especially when the LEDs are heated such as during Reflow Soldering.



Tape and Reel Specifications





3000 pieces per reel

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Compliances and Approvals