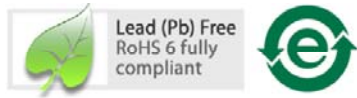


HSMF-C142

Side View SMT ChipLED

Data Sheet



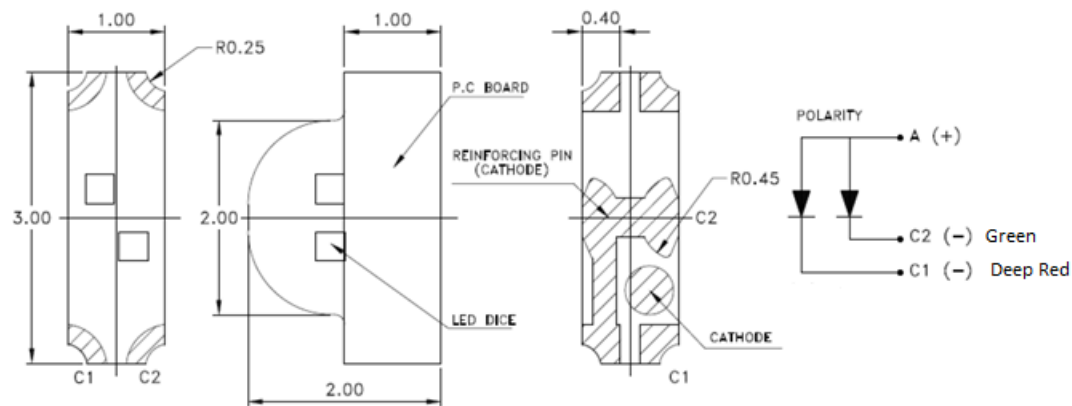
Features:

- LED with AlInGaP die
- Bicolor right angle chipLED
- Compatible with reflow soldering
- Tape in 8mm carrier tape on a 7 inch diameter reel

Applications:

- Backlighting
- Status indicator
- Front panel indicator
- Office automation, home appliances, industrial equipment

Package Dimensions



Notes:

1. All dimensions are in mm.
2. Tolerance ± 0.1 mm unless otherwise specified.

CAUTION: This LED is class 1A ESD sensitive per ANSI/ESDA/JEDEC JS-001. Please observe appropriate precautions during handling and processing. Refer to application note AN-1142 for additional details.

Absolute Maximum Value at $T_A = 25^\circ\text{C}$

Parameter	AlInGaP	Unit
Forward current ¹	30	mA
Power dissipation	72	mW
Operating temperature	-30 to 85	$^\circ\text{C}$
Storage temperature	-40 to 85	$^\circ\text{C}$

Note:

1. Derate as shown in Figure 5.

Optical Characteristics at $T_A = 25^\circ\text{C}$, $I_F = 20\text{mA}$

Color	Luminous Intensity (mcd) ¹		Peak Wavelength (nm)	Dominant Wavelength (nm) ²	Viewing Angle ($^\circ$) ³
	Min.	Typ.	Typ.	Typ.	Typ.
Deep Red	18.0	66.0	660.0	639.0	120
Green	18.0	33.0	571.0	570.0	120

Notes:

1. The luminous intensity is measured at the mechanical axis of the LED package. The actual peak of the spatial radiation pattern may not be aligned with the axis.
2. The dominant wavelength is derived from the CIE chromaticity diagram and represents the perceived color of the device.
3. $\theta_{1/2}$ is the off axis angle where the luminous intensity is $\frac{1}{2}$ the peak intensity.

Electrical Characteristics at $T_A = 25^\circ\text{C}$, $I_F = 20\text{mA}$

Color	Forward Voltage (V) ¹		Reverse Voltage (V) ² at 100 μA
	Min.	Max.	Min.
Deep Red	1.6	2.4	5
Green	1.6	2.4	5

Notes:

1. Forward voltage tolerance $\pm 0.1\text{V}$.
2. Reverse voltage indicates product final test. Long term reverse bias is not recommended.

Bin Information

Intensity Bin (CAT)

Bin ID	Luminous Intensity (mcd)	
	Min.	Max.
M	18.0	28.5
N	28.5	45.0
P	45.0	71.5
Q	71.5	112.5
R	112.5	180.0

Tolerance $\pm 15\%$

Color Bin (BIN) – Deep Red

Bin ID	Dominant Wavelength (nm)	
	Min.	Max.
-	630.0	650.0

Tolerance $\pm 1\text{nm}$

Color Bin (BIN) – Green

Bin ID	Dominant Wavelength (nm)	
	Min.	Max.
A	561.5	564.5
B	564.5	567.5
C	567.5	570.5
D	570.5	573.5
E	573.5	576.5

Tolerance $\pm 1\text{nm}$

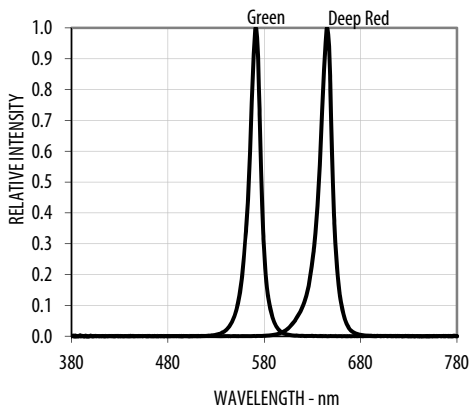


Figure 1. Spectrum

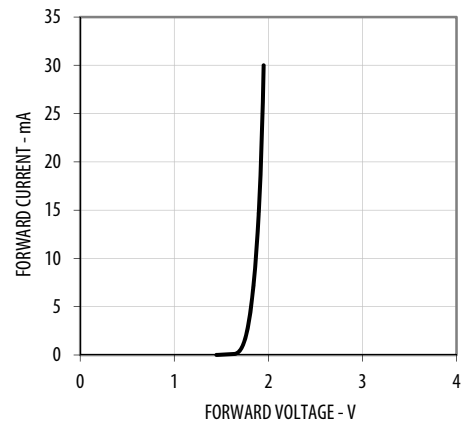


Figure 2. Forward current vs Forward voltage

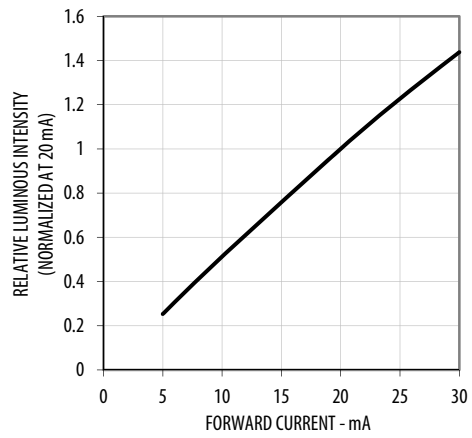


Figure 3. Relative intensity vs Forward current

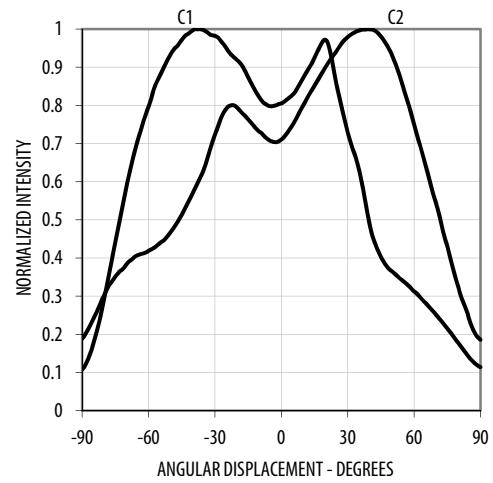


Figure 4. Radiation pattern

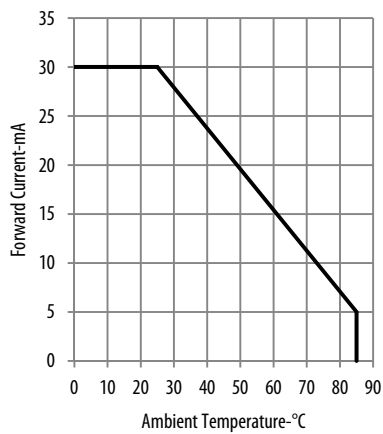


Figure 5. Derating curve

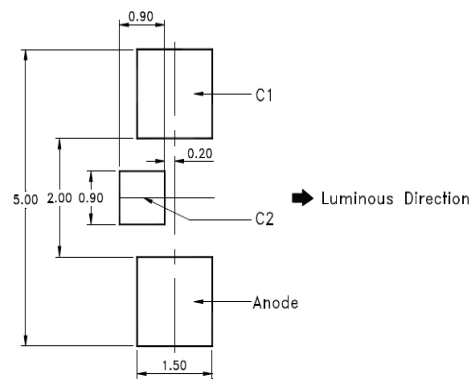


Figure 6. Recommended solder pad

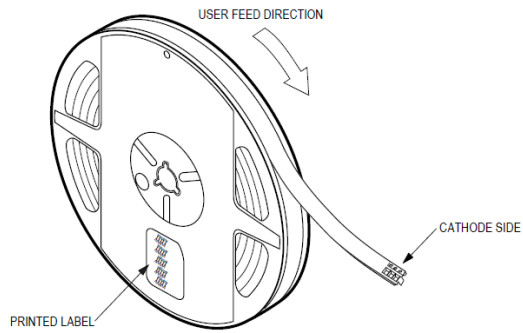


Figure 7. Reel orientation

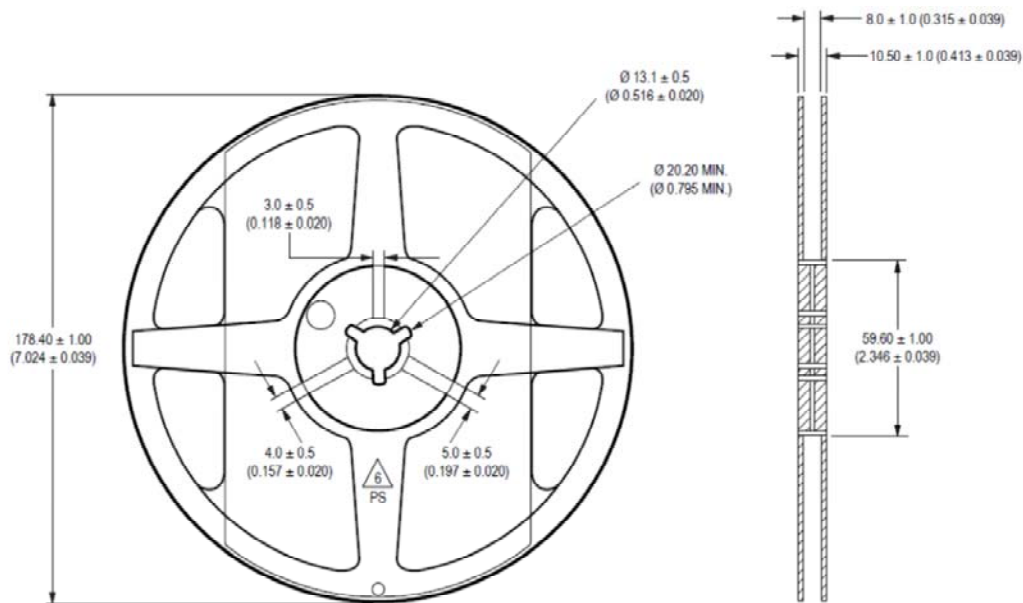


Figure 8. Reel dimensions

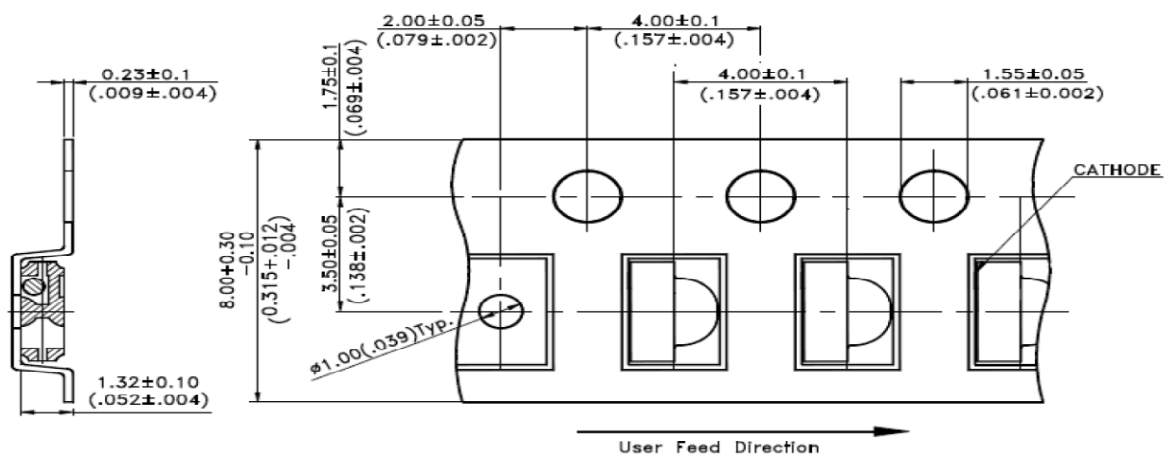
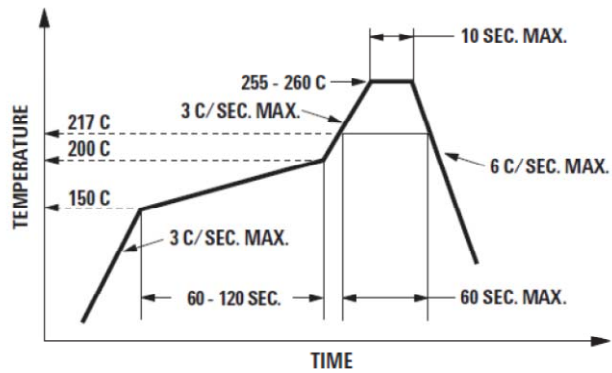


Figure 9. Carrier tape dimensions

Soldering

Recommended reflow soldering condition:



- (a) Reflow soldering must not be done more than 2 times. Do observe necessary precautions of handling moisture sensitive device as stated in below section.
- (b) Do not apply any pressure or force on the LED during reflow and after reflow when the LED is still hot.
- (c) It is preferred to use reflow soldering to solder the LED. But if unavoidable (such as rework), manual hand soldering can be used but must be strictly controlled to condition below:
 - Soldering iron tip temperature = 310°C max
 - Soldering duration = 2sec max
 - Number of cycle = 1 only
 - Power of soldering iron = 50W max
- (d) Do not touch the LED package body with the soldering iron except for the soldering terminals as it may cause damage to the LED.
- (e) User is advised to confirm beforehand whether the functionality and performance of the LED is affected by hand soldering.

PRECAUTIONARY NOTES

1. Handling of moisture sensitive device

This product has a Moisture Sensitive Level 2a rating per JEDEC J-STD-020. Do refer to Avago Application Note AN5305, *Handling of Moisture Sensitive Surface Mount Devices*, for additional details and a review of proper handling procedures.

- (a) Before use
 - An unopened moisture barrier bag (MBB) can be stored at $<40^{\circ}\text{C}/90\%\text{RH}$ for 12 months. If the actual shelf life has exceeded 12 months and the humidity Indicator Card (HIC) indicates that baking is not required, then it is safe to reflow the LEDs per the original MSL rating.
 - It is recommended that the MBB not be opened prior to assembly (e.g. for IQC).
- (b) Control after opening the MBB
 - The humidity indicator card (HIC) shall be read immediately upon opening of MBB.
 - The LEDs must be kept at $<30^{\circ}\text{C} / 60\%\text{RH}$ at all times and all high temperature related processes including soldering, curing or rework need to be completed within 672 hours.
- (c) Control for unfinished reel
 - Unused LEDs must be stored in a sealed MBB with desiccant or desiccator at $<5\%\text{RH}$.
- (d) Control of assembled boards
 - If the PCB soldered with the LEDs is to be subjected to other high temperature processes, the PCB need to be stored in sealed MBB with desiccant or desiccator at $<5\%\text{RH}$ to ensure that all LEDs have not exceeded their floor life of 672 hours.
- (e) Baking is required if:
 - The HIC indicator is not blue at 10% and is pink at 5%.
 - The LEDs are exposed to condition of $>30^{\circ}\text{C} / 60\%\text{RH}$ at any time.
 - The LED floor life exceeded 672hrs.

The recommended baking condition is: $60\pm5^{\circ}\text{C}$ for 20hrs
Baking should only be done once.

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June 10, 2014

