HSMR-C280
Miniature ChipLED
Data Sheet

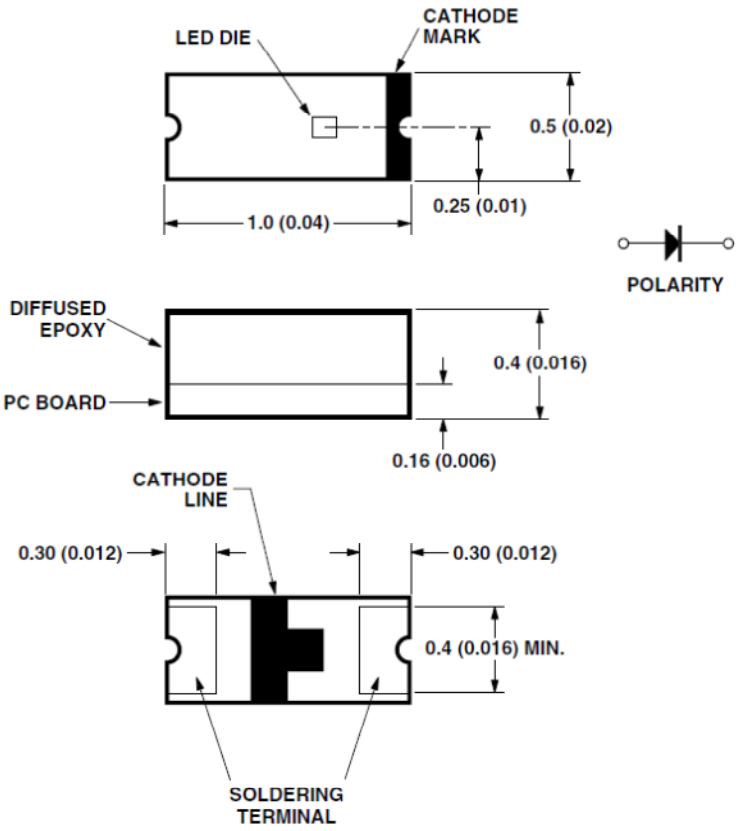
Lead (Pb) Free
RoHS 6 fully
compliant



Features
- LED with InGaN die
- Surface mount device 0402 footprint
- PCB package
- Compatible with reflow soldering
- Tape in 8mm carrier tape on a 7 inch diameter reel

Applications
- Backlighting
- Indicator

Package Dimensions



Note:
1. All dimensions are in millimeters (inches).
2. Tolerance ±0.1mm (±0.004in) unless otherwise specified.

Caution: LEDs are ESD sensitive device. Please observe appropriate precautions during handling and processing.

Absolute Maximum Value at T_A = 25°C

Parameter	InGaN Blue	Unit
Forward Current[1]	20	mA
Peak Pulsing Current[2]	100	mA
Power Dissipation	78	mW
LED Junction Temperature	95	°C
Operating Temperature Range	-30 to 85	°C
Storage Temperature Range	-40 to 85	°C

Note:

1. Derate as shown in Figure 5.
2. Pulse condition of 1/10 duty and 0.1ms width.

Optical Characteristics at T_A = 25°C, I_F=20mA

Color	Luminous Intensity Iv (mcd)[1]		Peak Wavelength λp(nm)	Dominant Wavelength λd(nm)[2]	Viewing Angle 2θ1/2[3]
	Min	Typ	Typ	Typ	Typ
Blue	28.5	80.0	459	465	130

Note:

1. The luminous intensity is measured at the peak of the spatial radiation pattern which may not be aligned with the mechanical axis of the lamp package.
2. The dominant wavelength is derived from the CIE Chromaticity Diagram and represents the perceived color of the device.
3. Viewing angle is the off axis angle where the luminous intensity is ½ the peak intensity.

Electrical Characteristics at T_A = 25°C, I_F=20mA

Color	Forward Voltage Vf (V)[1]		Reverse Voltage Vr(V) @Ir=100μA[2]	Thermal Resistance Rthj-pin(°C/W)
	Min	Max	Min	Typ
Blue	2.7	3.9	5	300

Note:

1. Forward voltage tolerance is ±0.1V.
2. Reverse voltage Indicates product final testing, long terms reverse bias is not recommended.

Luminous Intensity Bin Limits

Bin ID	Luminous Intensity (mcd)	
	Min	Max
N	28.5	45.0
P	45.0	71.5
Q	71.5	112.5
R	112.5	180.0
S	180.0	285.0
T	285.0	450.0
U	450.0	715.0
V	715.0	1125.0
W	1125.0	1800.0
X	1800.0	2850.0
Y	2850.0	4500.0

Tolerance ±15%

Blue Color Bin Limits

Bin ID	Dominant Wavelength (nm)	
	Min	Max
A	460	465
B	465	470
C	470	475
D	475	480

Tolerance ±1nm

Forward Voltage Bin Limits

Bin ID	Forward Voltage (V)	
	Min	Max
Z	2.7	2.9
1	2.9	3.1
2	3.1	3.3
3	3.3	3.5
4	3.5	3.7
5	3.7	3.9

Tolerance ±0.1V

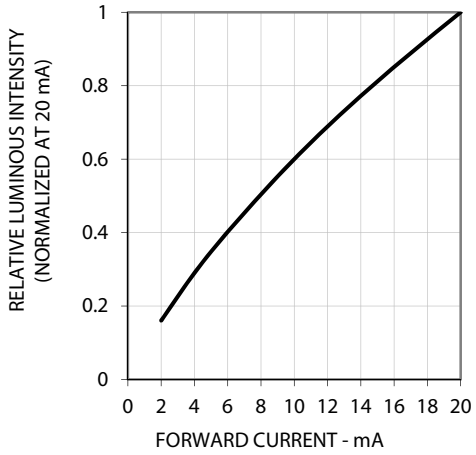


Figure 1. Luminous Intensity vs Forward Current

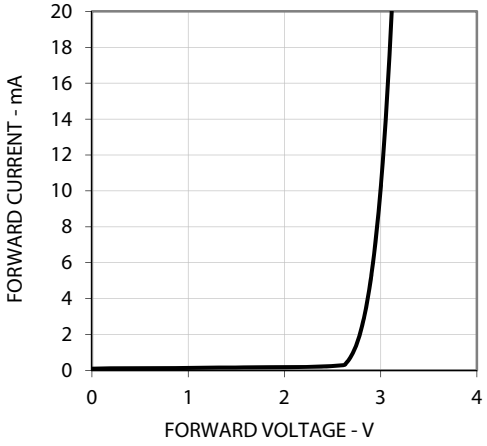


Figure 2. Forward Current vs Forward Voltage

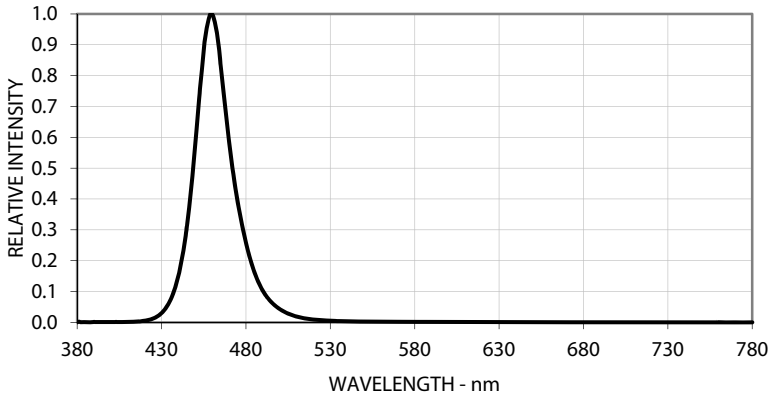


Figure 3. Spectrum

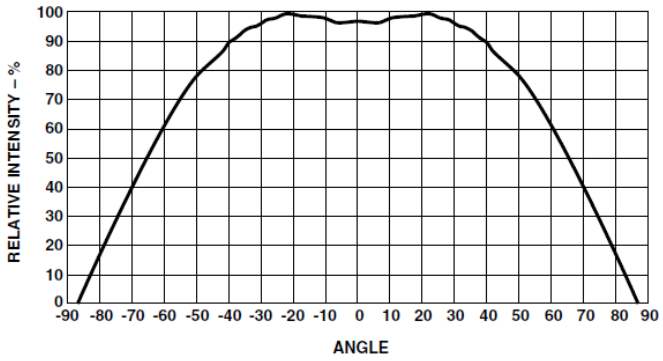


Figure 4. Radiation pattern

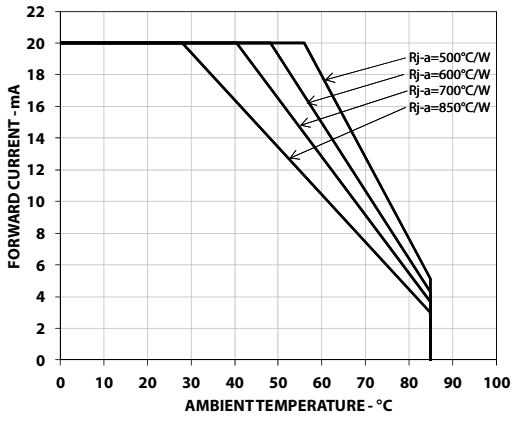


Figure 5. Derating curve

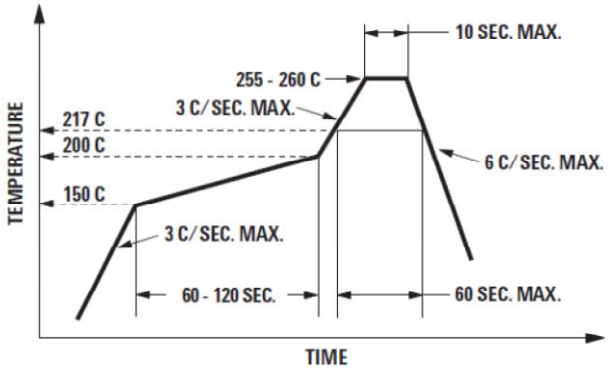


Figure 6. Recommended Pb free reflow solder profile

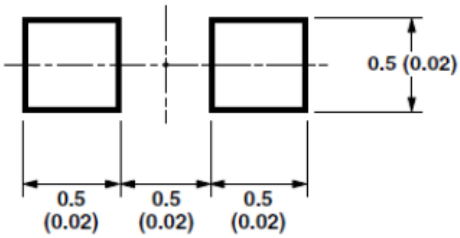


Figure 7. Recommended solder pad

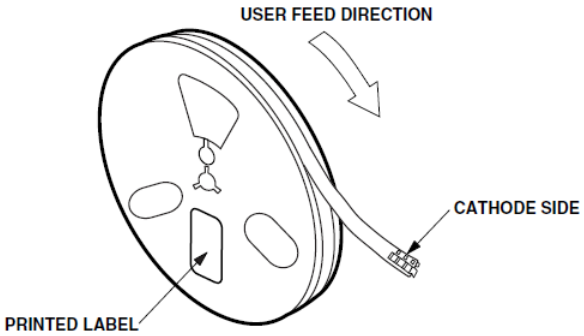
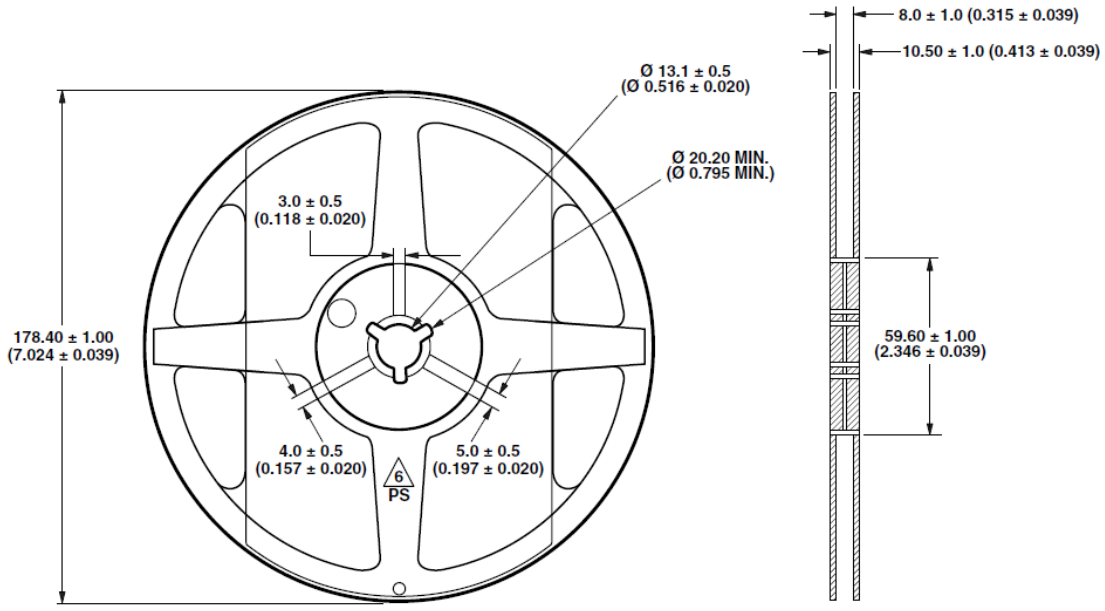


Figure 8. Reel orientation



NOTE:
1. ALL DIMENSIONS IN MILLIMETERS (INCHES).

Figure 9. Reel dimensions

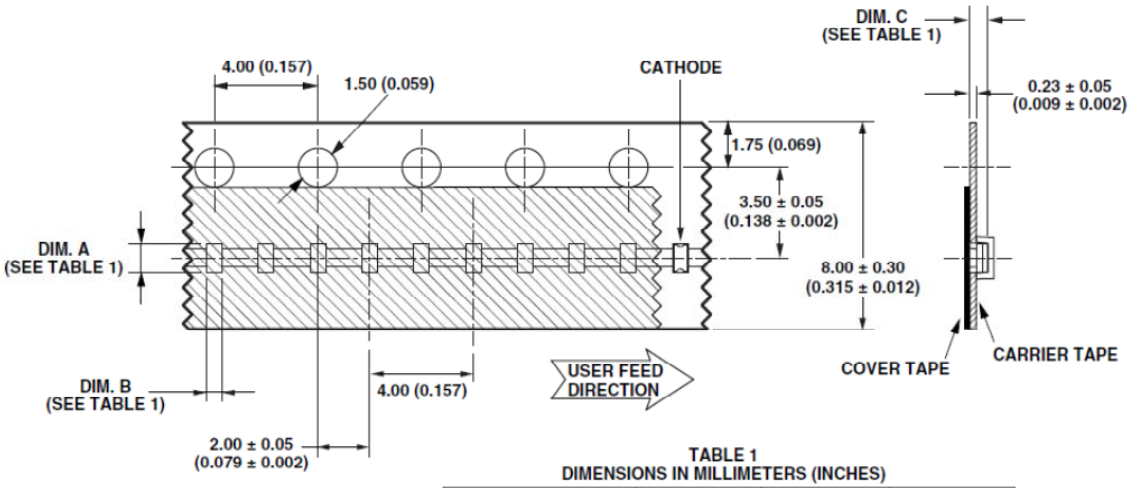


TABLE 1
DIMENSIONS IN MILLIMETERS (INCHES)

PART NUMBER	DIM. A ± 0.10 (± 0.004)	DIM. B ± 0.10 (± 0.004)	DIM. C ± 0.10 (± 0.004)
HSMx-C280 SERIES	1.10 (0.043)	0.60 (0.024)	0.66 (0.026)

Figure 10. Tape dimensions

PRECAUTIONARY NOTES

1. Handling of moisture sensitive device

This product has a Moisture Sensitive Level 2a rating per JEDEC J-STD-020. 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°C/90%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°C / 60%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%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%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°C / 60% RH at any time.
- The LED floor life exceeded 672hrs.

The recommended baking condition is: 60±5°C for 20hrs
Baking should only be done once.

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