

AVAGO HSMG-Cxxx, HSMH-Cxxx, HSMS-Cxxx, HSMY-Cxxx Surface Mount ChipLEDs Datasheet



Device Selection Guide

GaP

Green	HER	Yellow	Description
HSMG-C111		HSMY-C111	Untinted, Non-Diffused
HSMG-C151	HSMS-C151	HSMY-C151	Untinted, Diffused
HSMG-C171		HSMY-C171	Untinted, Diffused
HSMG-C192		HSMY-C192	Untinted, Diffused

AS AlGaAs

Red	Description
HSMH-C111	Untinted, Non-Diffused
HSMH-C151	Untinted, Diffused
HSMH-C171	Untinted, Diffused
HSMH-C192	Untinted, Diffused

Absolute Maximum Ratings for GaP at T_A = 25°C

Parameter	HSMG-C111 / C151, HSMS-C151, HSMY-C111 / C151	HSMG-C171 / C192, HSMY-C171 / C192	Units
DC Forward Current ^[1]	25	20	mA
Power Dissipation	65	52	mW
Reverse Voltage (I _R = 100μA)	5	5	V
LED Junction Temperature	95	95	°C
Operating Temperature Range	-30 to +85	-30 to +85	°C
Storage Temperature Range	-40 to +85	-40 to +85	°C
Soldering Temperature	See reflow soldering profile (Figure 7 & 8)		

Notes:

1. Derate linearly as shown in Figure 4.

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Absolute Maximum Ratings for AlGaAs at T_A = 25°C

Parameter	HSMH-C111 / C151	HSMH-C171 / C192	Units
DC Forward Current ^[1]	30	25	mA
Power Dissipation	78	65	mW
Reverse Voltage (I _R = 100μA)	5	5	V
LED Junction Temperature	95	95	°C
Operating Temperature Range	-30 to +85	-30 to +85	°C
Storage Temperature Range	-40 to +85	-40 to +85	°C
Soldering Temperature	See reflow soldering profile (Figure 7 & 8)		

Notes:

- Derate linearly as shown in Figure 4.

Electrical Characteristics at T_A = 25°C

Part Number	Forward Voltage		Reverse Breakdown	Capacitance	Thermal Resistance R _{θJ-PIN} (°C/W)
	V _F (Volts) ^[1]		V _R (Volts)	C(pF),	
	Typical	Max.	Min.	@ V _F = 0V, f = 1MHz	
HSMG-C111 / C151	2.2	2.6	5	9	400
HSMG-C171 / C192					250
HSMH-C111 / C151	1.8	2.6	5	18	460
HSMH-C171 / C192					300
HSMS-C151	2.1	2.6	5	5	400
HSMY-C111 / C151	2.1	2.6	5	6	400
HSMY-C171 / C192					250

Notes:

- V_F tolerance : ±0.1V

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Optical Characteristics at $T_A = 25^\circ\text{C}$

Part Number	Luminous Intensity I_v ^[1] (mcd) @ 20mA			Peak Wavelength λ_{peak} (nm) Typ.	Dominant Wavelength λ_d ^[2] (nm) Typ.	Viewing Angle
	Min.	Typ.	Typ.			$2 \theta_{1/2}$ ^[3] (Degrees)
HSMG-C111 HSMG-C151 / C171 / C192	4.5	15.0	570	572	130 170	
HSMH-C111 HSMH-C151 / C171 / C192	7.2	17.0	660	639	130 170	
HSMS-C151	2.8	10.0	630	626	170	
HSMY-C111 HSMY-C151 / C171 / C192	2.8	8.0	589	586	130 170	

Notes:

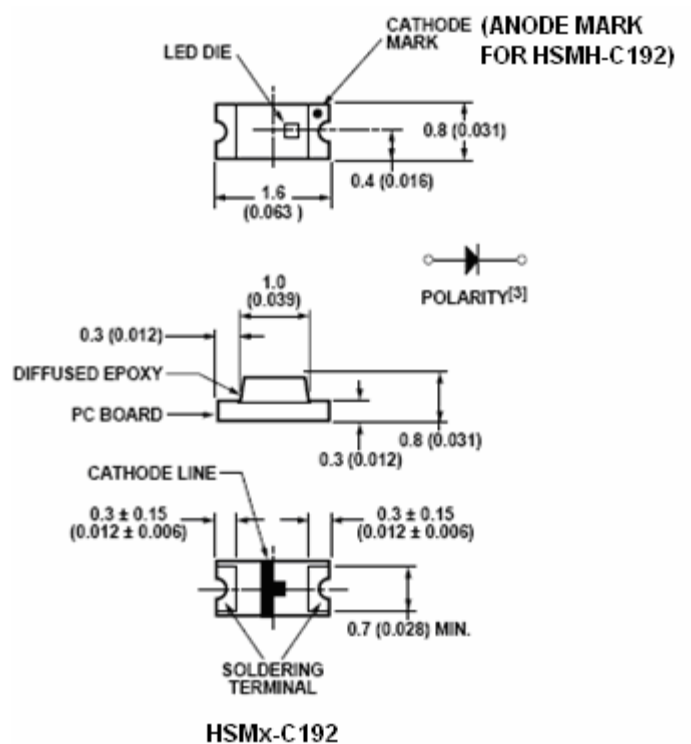
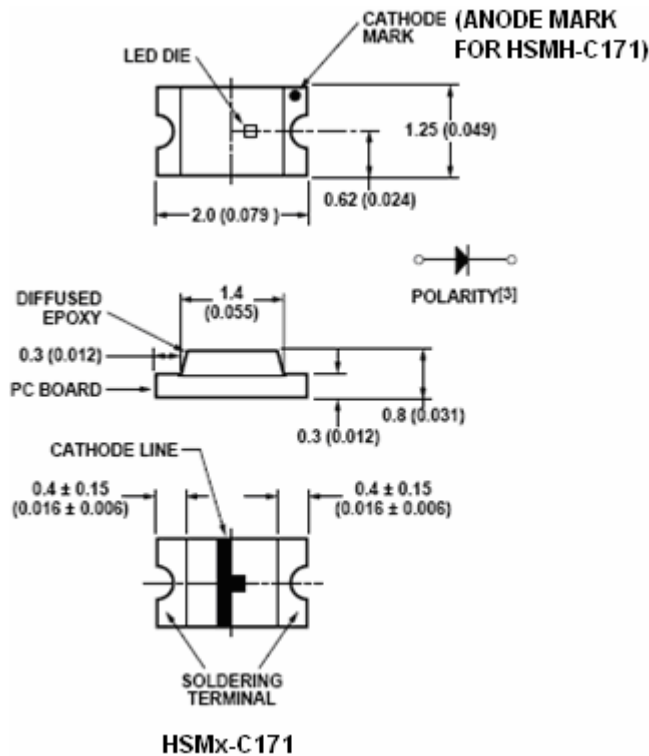
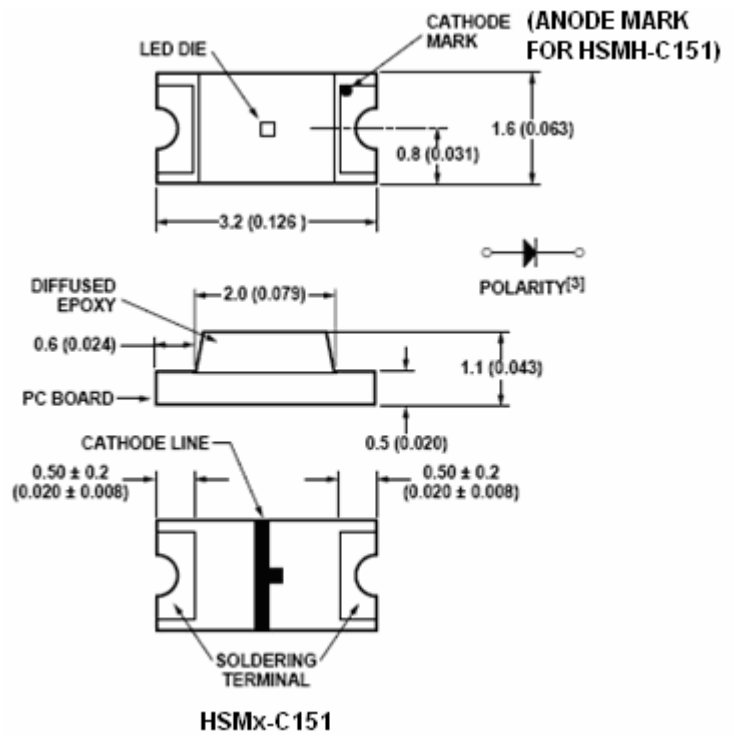
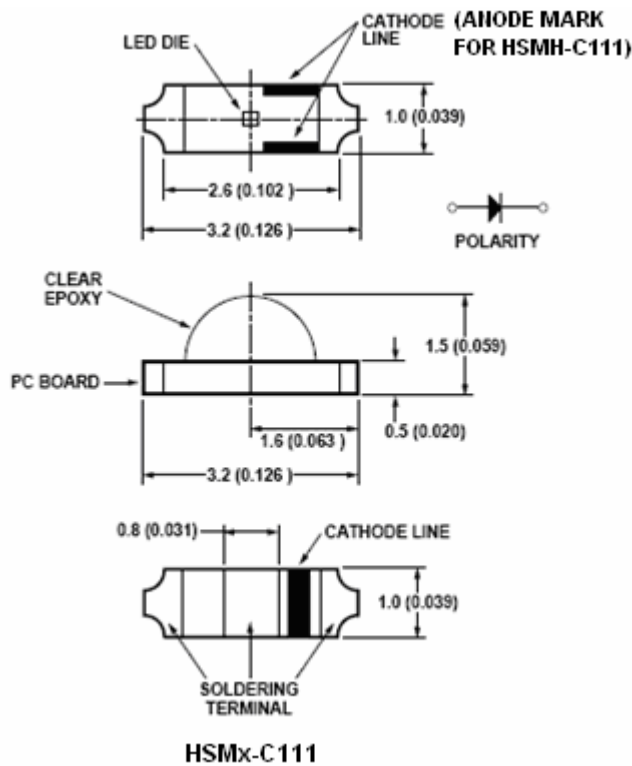
1. The luminous intensity I_v is measured at the peak of the spatial radiation pattern which may not be aligned with the mechanical axis of the LED package.
2. The dominant wavelength, λ_d , is derived from the CIE Chromaticity Diagram and represents the perceived color of the device.
3. $\theta_{1/2}$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

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Package Dimensions



Notes:

1. All dimensions in millimeters (inches).
2. Tolerance is ± 0.1 mm (± 0.004 in.) unless otherwise specified.
3. Polarity for HSMH-C1 xx will be the opposite of what is shown on above drawings.

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Light Intensity (I_v) Bin Limits

Bin ID	Intensity (mcd)	
	Minimum	Maximum
A	0.11	0.18
B	0.18	0.29
C	0.29	0.45
D	0.45	0.72
E	0.72	1.10
F	1.10	1.80
G	1.80	2.80
H	2.80	4.50
J	4.50	7.20
K	7.20	11.20
L	11.20	18.00
M	18.00	28.50

Bin ID	Intensity (mcd)	
	Minimum	Maximum
N	28.50	45.00
P	45.00	71.50
Q	71.50	112.50
R	112.50	180.00
S	180.00	285.00
T	285.00	450.00
U	450.00	715.00
V	715.00	1125.00
W	1125.00	1800.00
X	1800.00	2850.00
Y	2850.00	4500.00

Color Bin Limits

Green Color Bins^[1]

Bin ID	Dominant Wavelength (nm)	
	Minimum	Maximum
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 : ±1nm

Yellow Color Bins^[1]

Bin ID	Dominant Wavelength (nm)	
	Minimum	Maximum
A	582.0	584.5
B	584.5	587.0
C	587.0	589.5
D	589.5	592.0
E	592.0	594.5
F	594.5	597.0

Orange Color Bins^[1]

Bin ID	Dominant Wavelength (nm)	
	Minimum	Maximum
A	597.0	600.0
B	600.0	603.0
C	603.0	606.0
D	606.0	609.0
E	609.0	612.0
F	612.0	615.0

Tolerance : ±1nm

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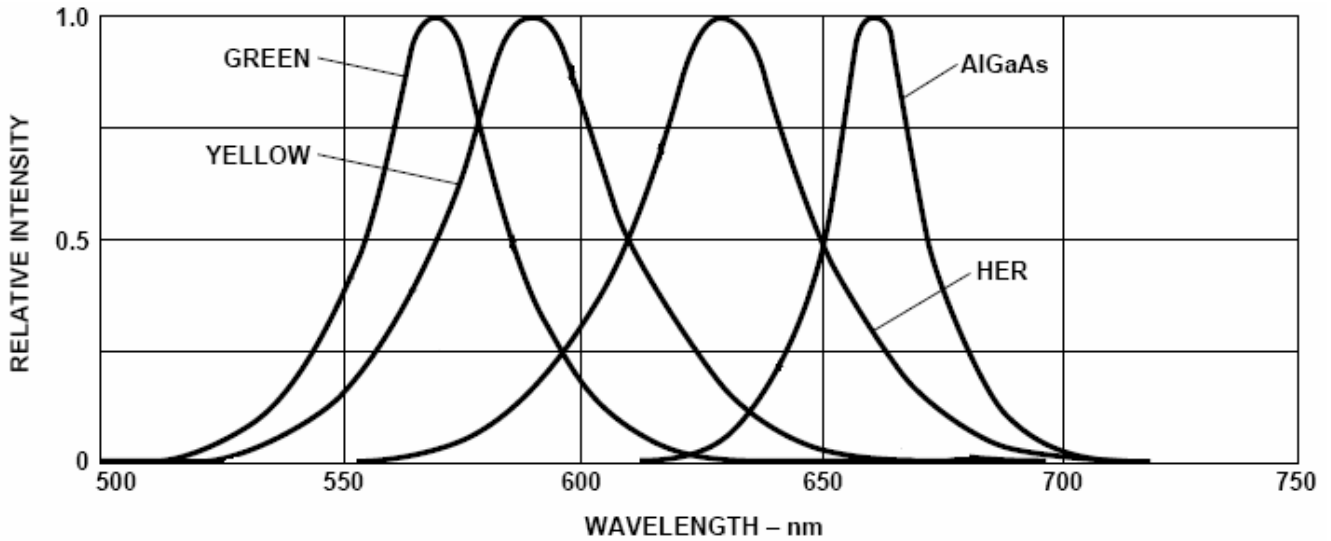


Figure 1. Relative intensity vs. wavelength.

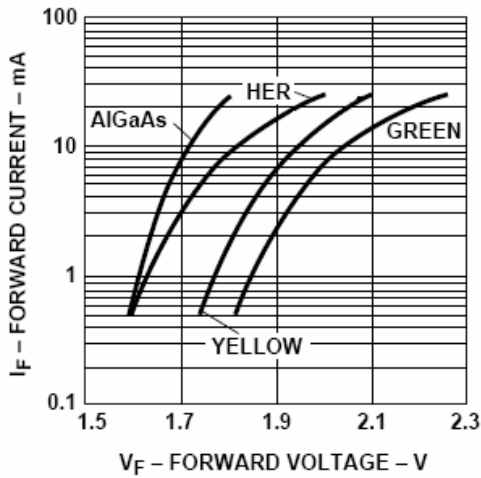


Figure 2. Forward current vs. forward voltage.

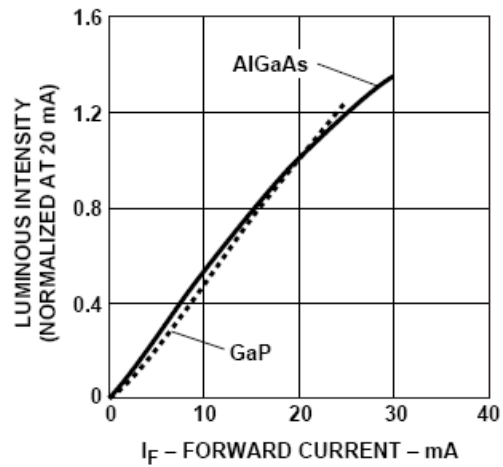


Figure 3. Luminous intensity vs. forward current.

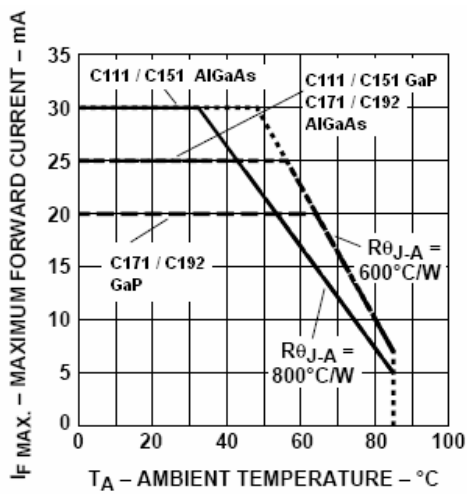


Figure 4. Maximum forward current vs. ambient temperature.

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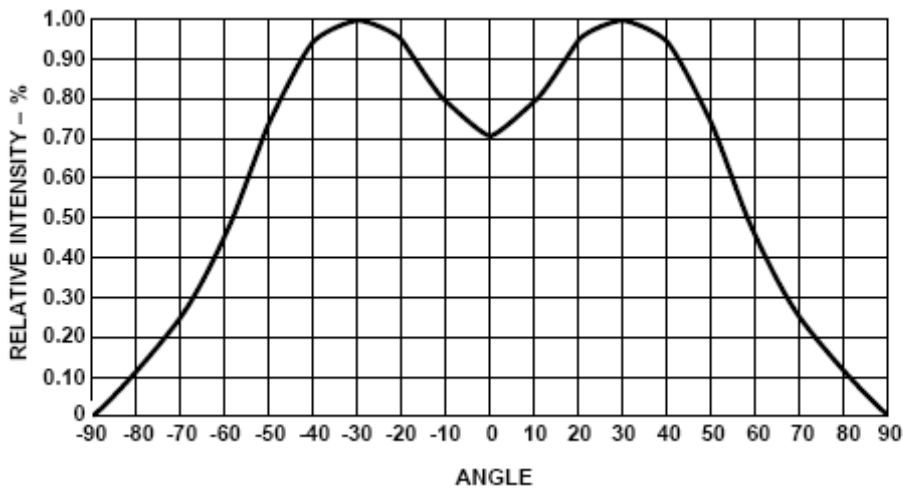
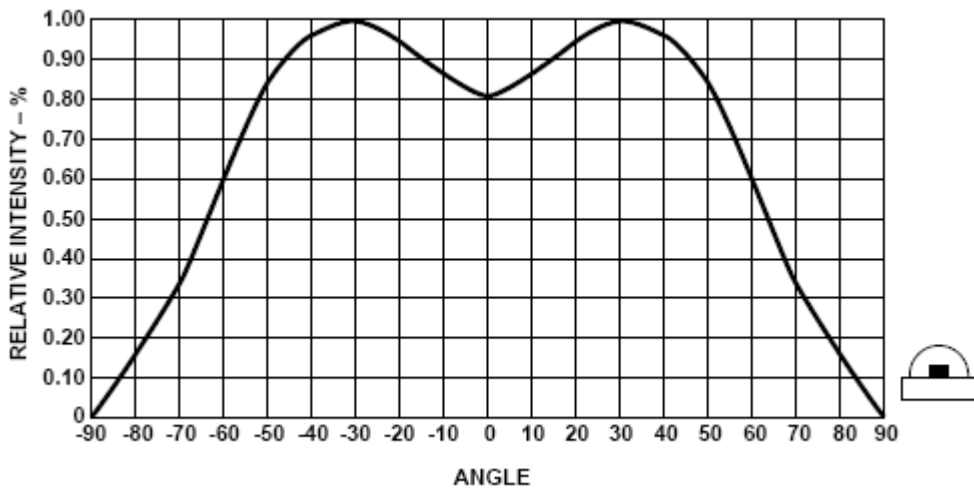


Figure 5. Relative intensity vs. angle for HSMx-C111

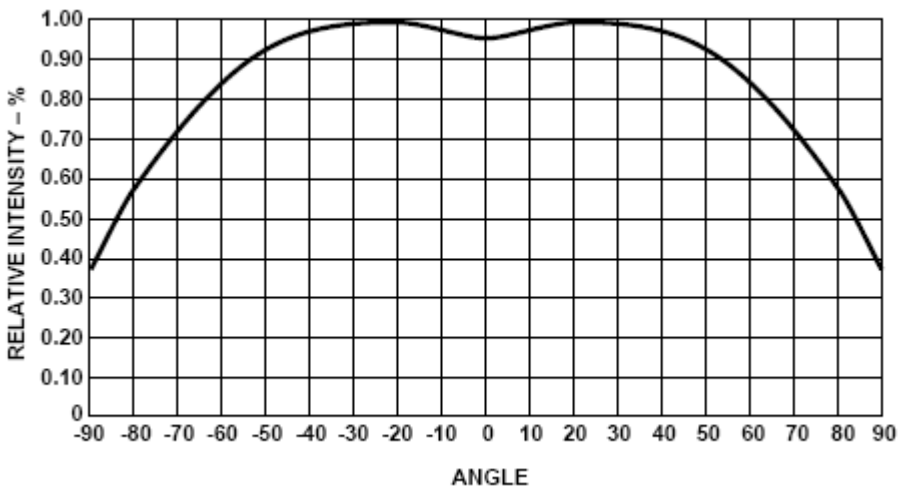


Figure 6. Relative intensity vs. angle for HSMx-C151, C171, C192

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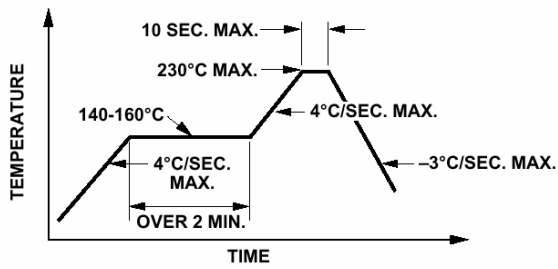


Figure 7. Recommended reflow soldering profile.

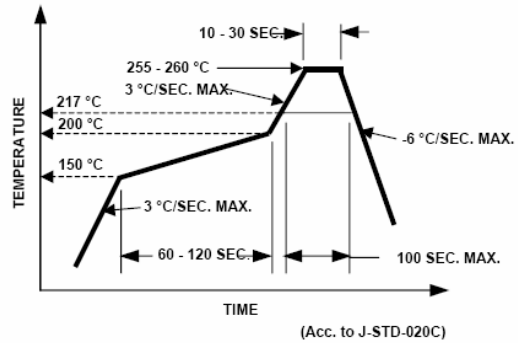


Figure 8. Recommended Pb-free reflow soldering profile.

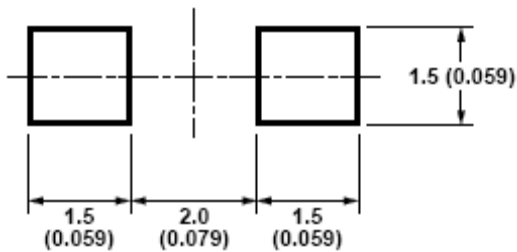


Figure 9. Recommended soldering pattern for HSMx-C151.

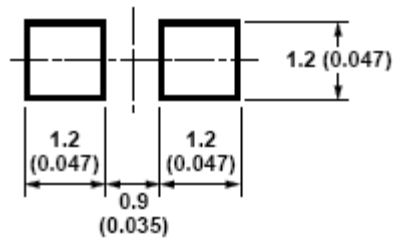


Figure 10. Recommended soldering pattern for HSMx-C171.

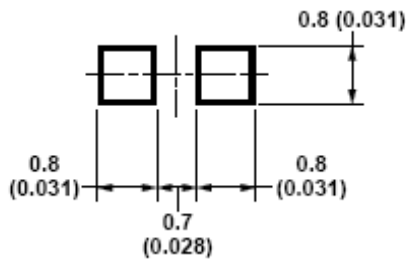


Figure 11. Recommended soldering pattern for HSMx-C192.

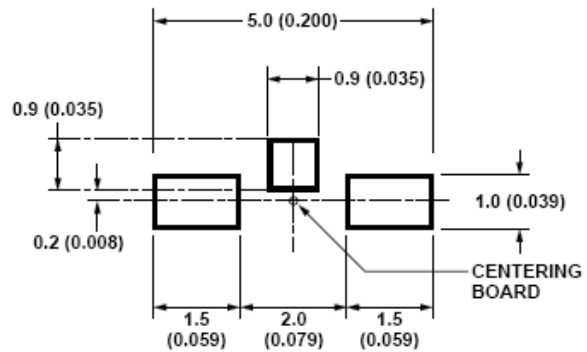


Figure 12. Recommended soldering pattern for HSMx-C111.

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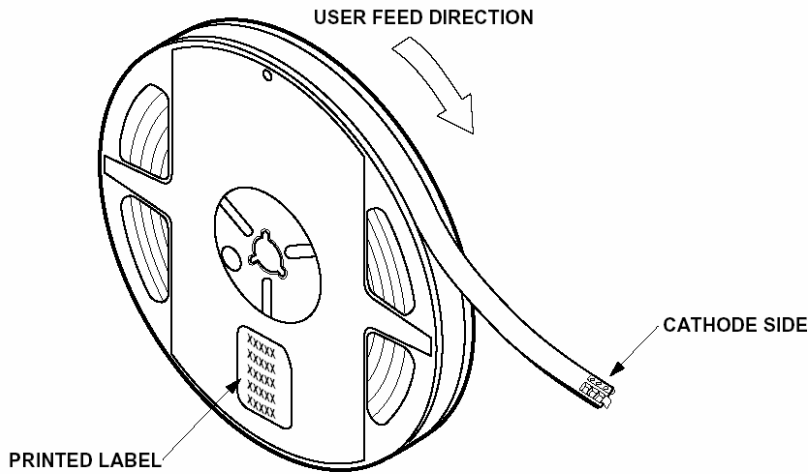
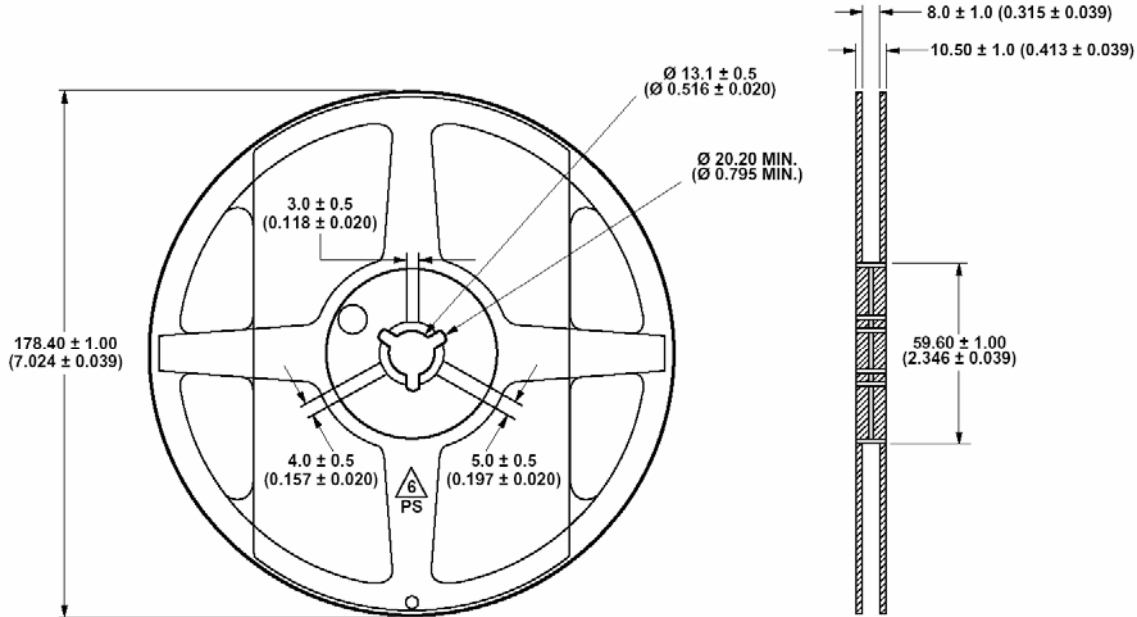


Figure 13. Reeling orientation.



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

Figure 14. Reel dimensions.

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.1\text{mm}$ ($\pm 0.004\text{in.}$) unless otherwise specified.

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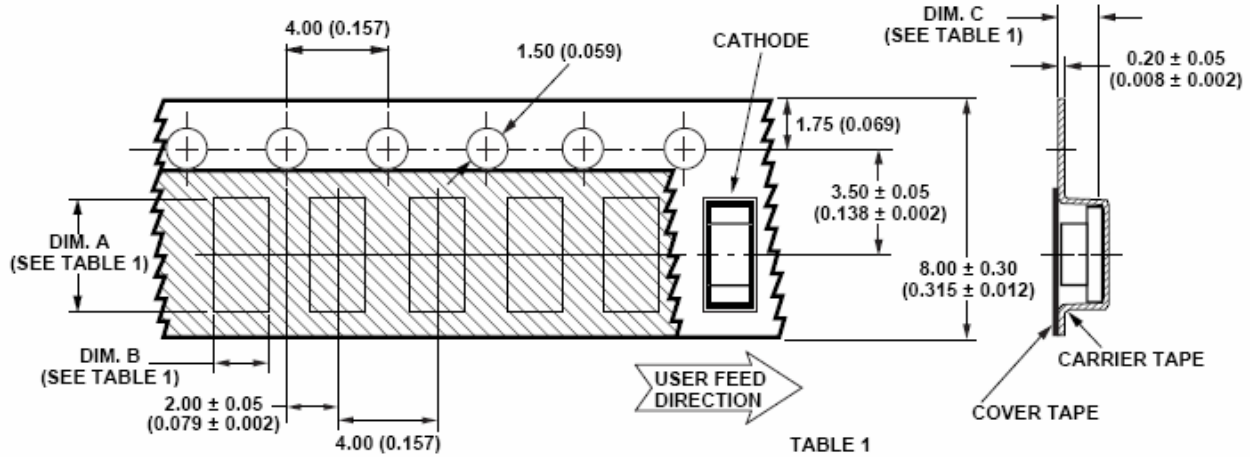


TABLE 1
DIMENSIONS IN MILLIMETERS (INCHES)

PART NUMBER	DIM. A ± 0.10 (0.004)	DIM. B ± 0.10 (0.004)	DIM. C ± 0.10 (0.004)
HSMx-C111	3.40 (0.134)	1.70 (0.067)	1.20 (0.047)
HSMx-C151	3.50 (0.138)	1.88 (0.074)	1.27 (0.050)
HSMx-C171	2.30 (0.091)	1.45 (0.057)	0.95 (0.037)
HSMx-C192	1.75 (0.069)	0.90 (0.035)	0.90 (0.035)

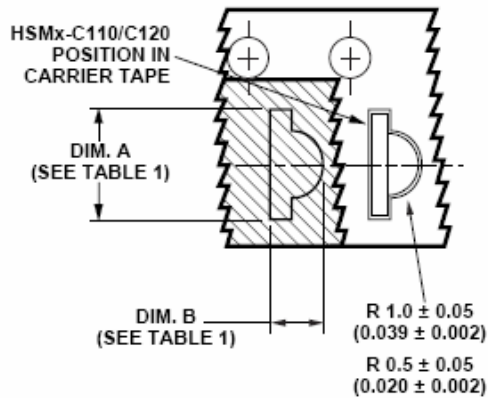


Figure 15. Tape dimensions.

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.1\text{mm}$ ($\pm 0.004\text{in.}$) unless otherwise specified.

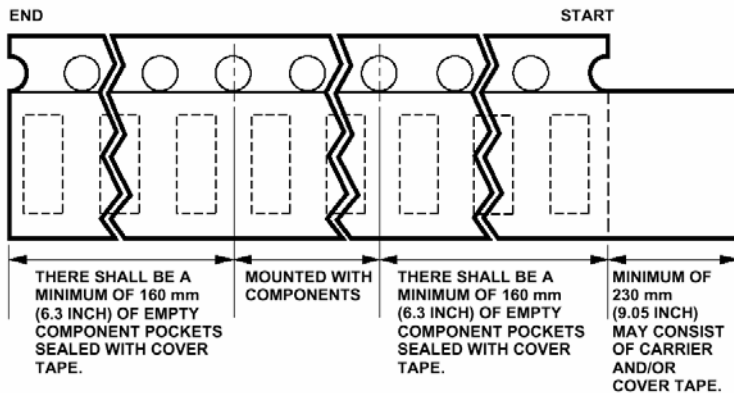


Figure 16. Tape leader and trailer dimensions.

Reflow Soldering:

For more information on reflow soldering, refer to Application Note AN-1060, *Surface Mounting SMT LED Indicator Components*.

Storage Condition:

5 to 30°C @ 60%RH max.

Baking is required before mounting, if:

1. Humidity Indicator Card is > 10% when read at 23 ± 5°C.
2. Device expose to factory conditions <30°C/60%RH more than 672 hours.

Recommended baking condition:

60±5°C for 20 hours.

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