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.

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:

1. Derate linearly as shown in Figure 4.

Electrical Characteristics at T_A = 25°C

	Forward Voltage V_F (Volts) [1] @ I_F = 20mA		Reverse Breakdown V_R (Volts) @ I_R = 100μA	Capacitance C(pF), @ V_F = 0V, f = 1MHz	Thermal Resistance $R\theta_{J\text{-}PIN}$ (°C/W)
Part Number	Typical	Max.	Min.	Typ.	Typ.
HSMG-C111 / C151 HSMG-C171 / C192	2.2	2.6	5	9	400 250
HSMH-C111 / C151 HSMH-C171 / C192	1.8	2.6	5	18	460 300
HSMS-C151	2.1	2.6	5	5	400
HSMY-C111 / C151 HSMY-C171 / C192	2.1	2.6	5	6	400 250

Notes:

1. Vf tolerance : ±0.1V

Optical Characteristics at T_A = 25°C

Part Number	Luminous Intensity I_V [1] (mcd) @ 20mA Min.	Typ.	Peak Wavelength λ_{peak} (nm) Typ.	Dominant Wavelength λ_d [2] (nm) Typ.	Viewing Angle $2\theta_{1/2}$ [3] (Degrees) Typ.
HSMG-C111	4.5	15.0	570	572	130
HSMG-C151 / C171 / C192					170
HSMH-C111	7.2	17.0	660	639	130
HSMH-C151 / C171 / C192					170
HSMS-C151	2.8	10.0	630	626	170
HSMY-C111	2.8	8.0	589	586	130
HSMY-C151 / C171 / C192					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 ½ the peak intensity.

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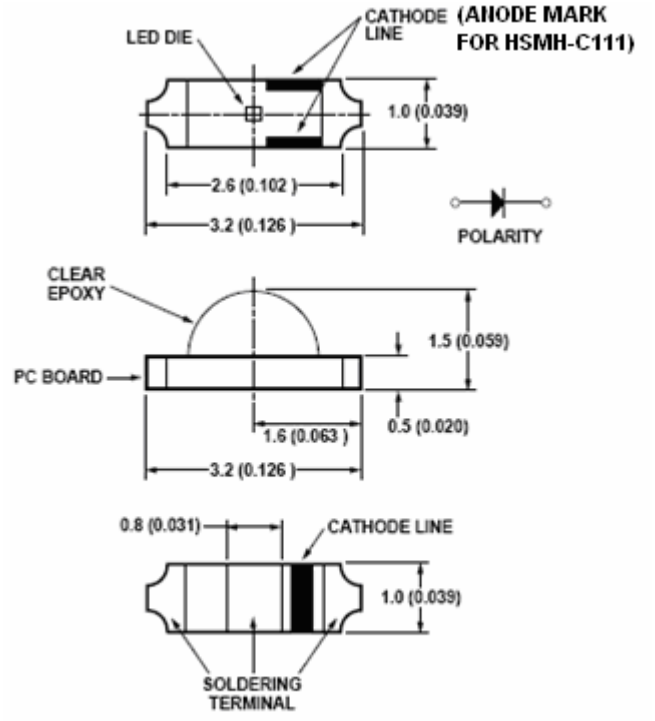
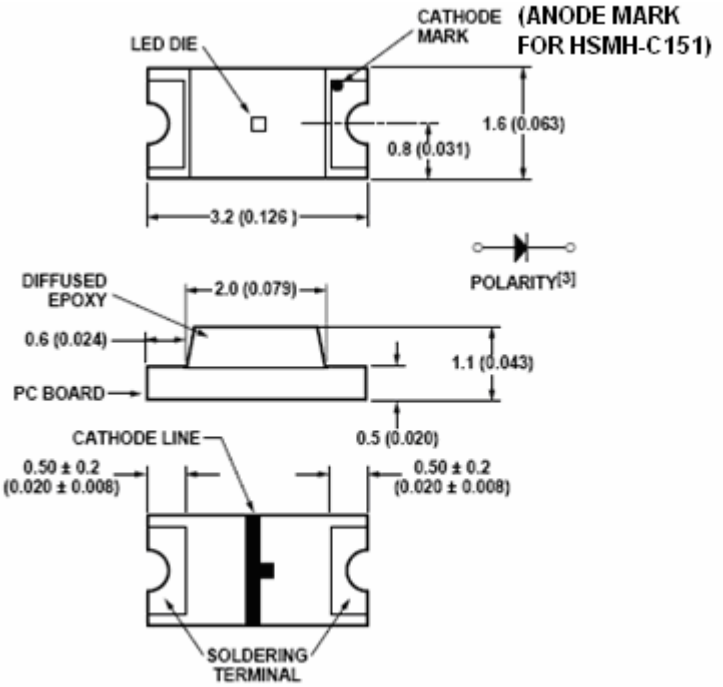
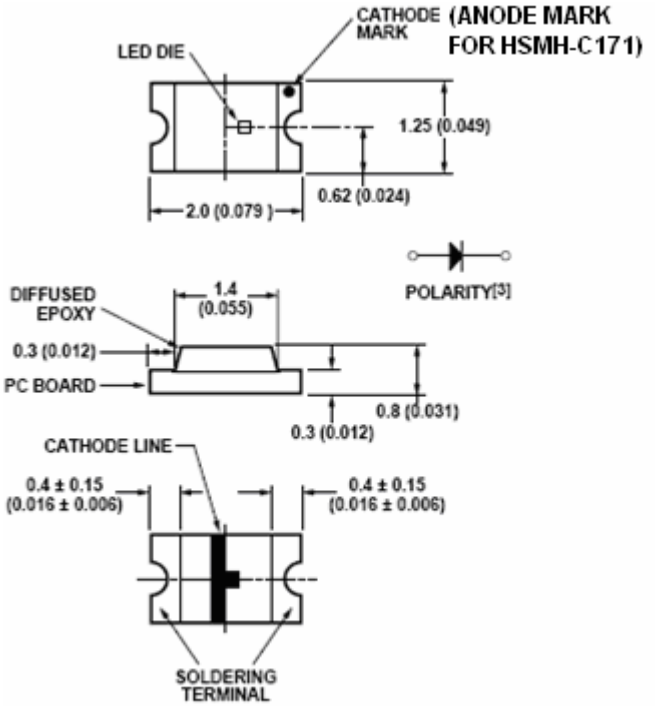
Package Dimensions



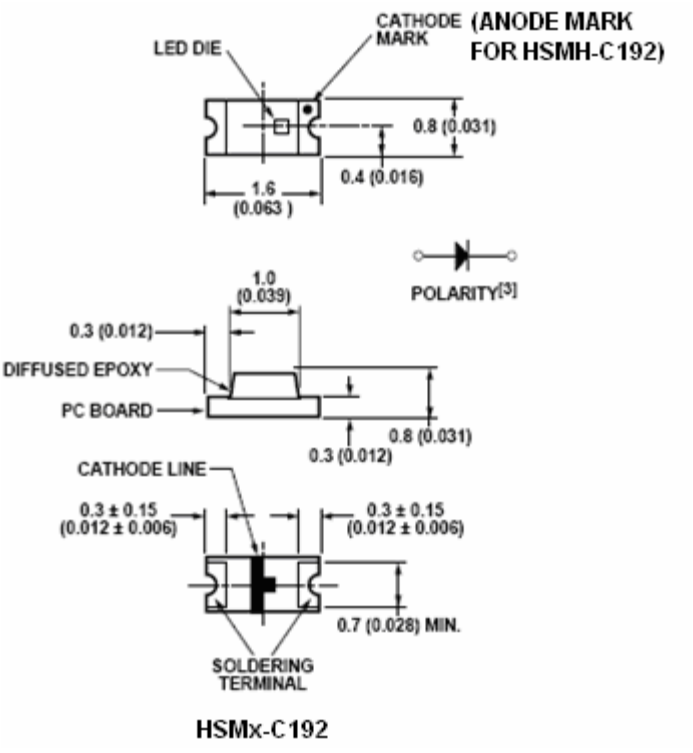
HSMx-C111



HSMx-C151



HSMx-C171



HSMx-C192

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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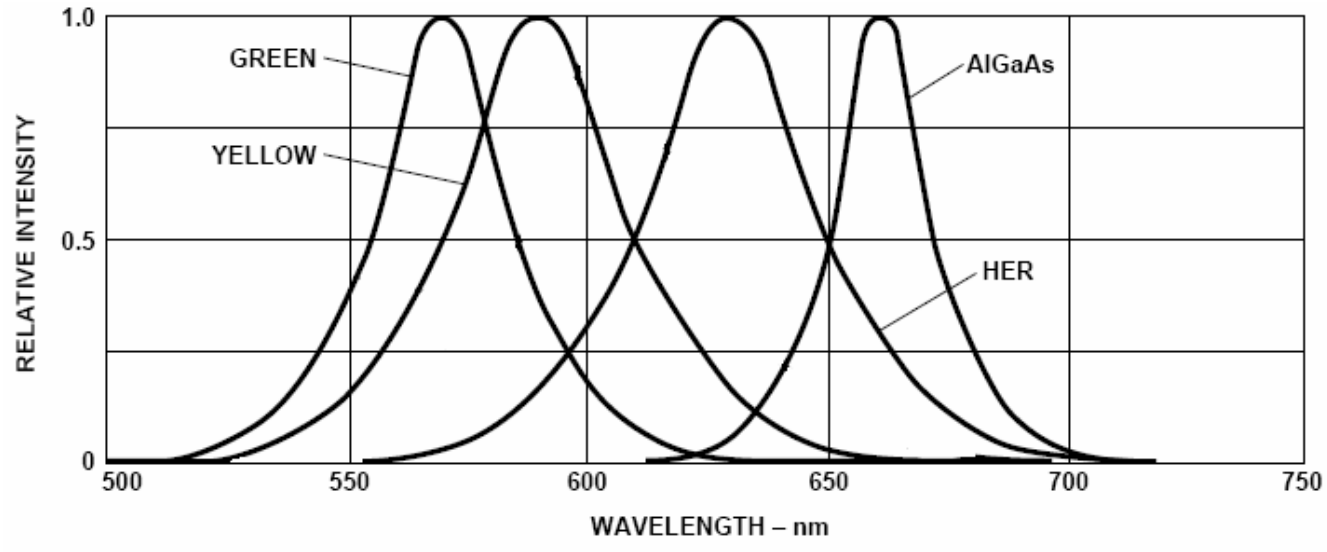

Figure 1. Relative intensity vs. wavelength.

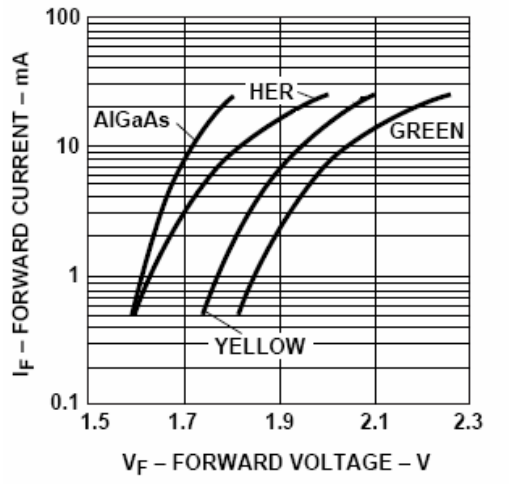

Figure 2. Forward current vs. forward voltage.

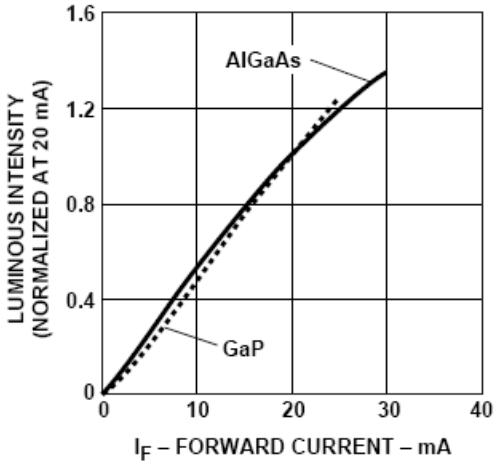

Figure 3. Luminous intensity vs. forward current.

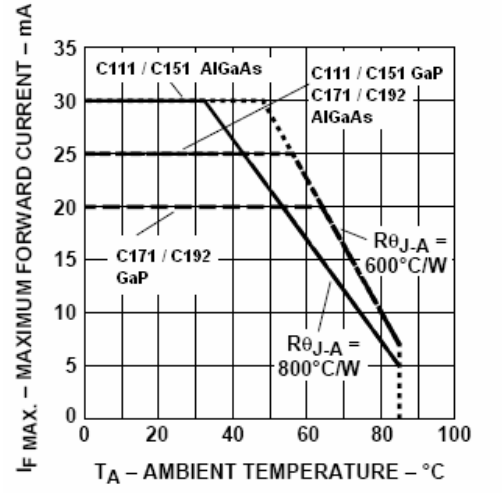

Figure 4. Maximum forward current vs. ambient temperature.

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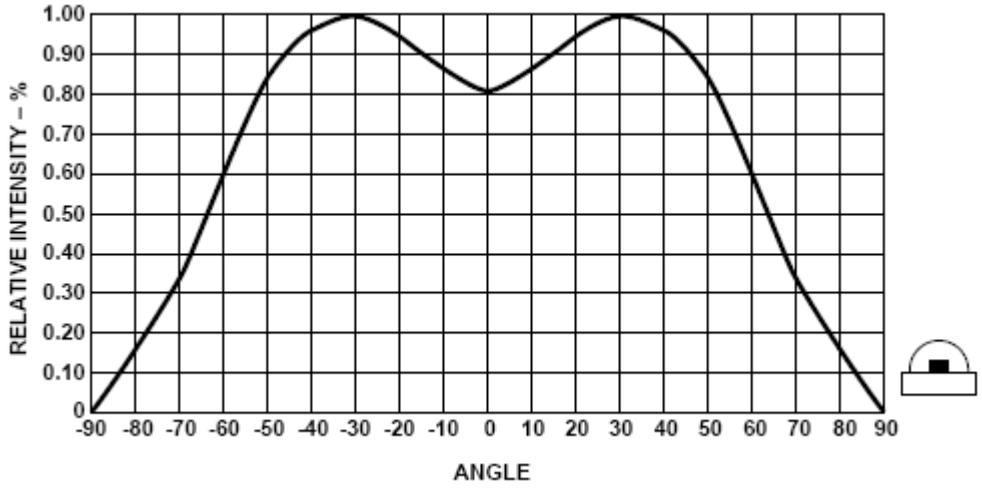

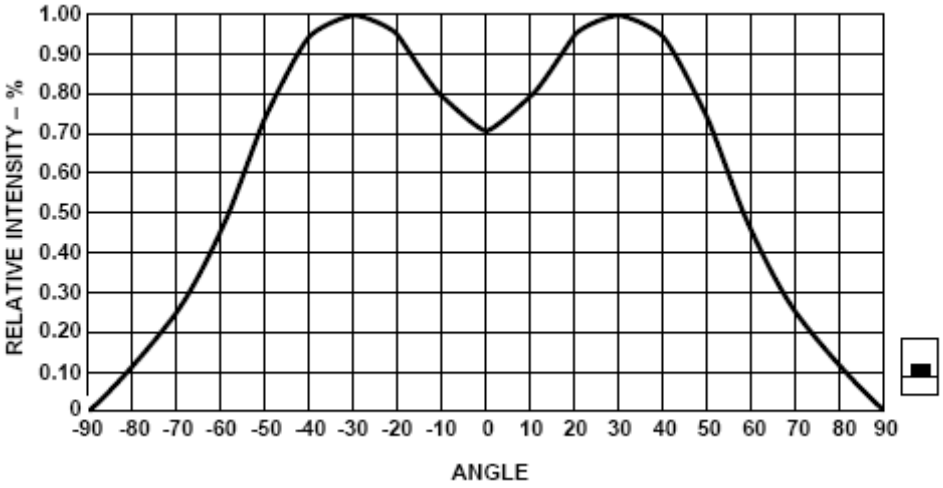

Figure 5. Relative intensity vs. angle for HSMx-C111

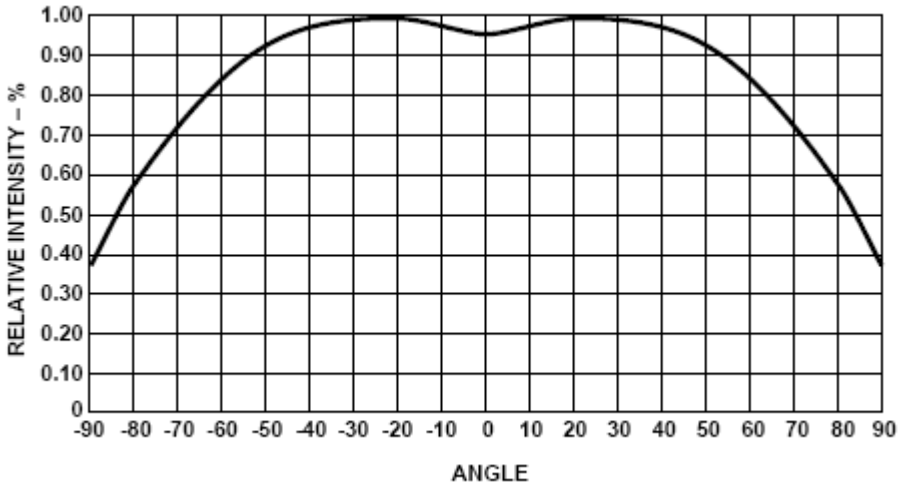

Figure 6. Relative intensity vs. angle for HSMx-C151, C171, C192

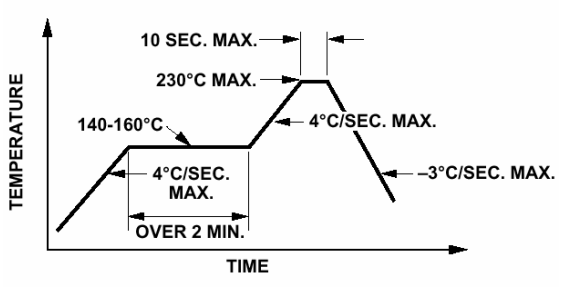

Figure 7. Recommended reflow soldering profile.

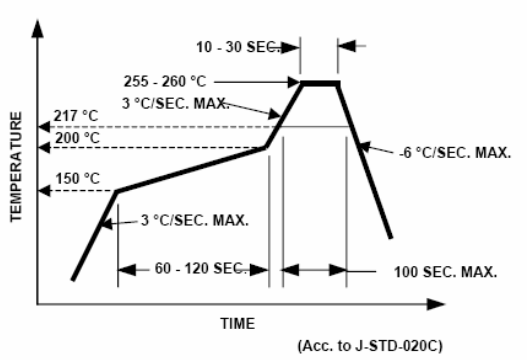

Figure 8. Recommended Pb-free reflow soldering profile.

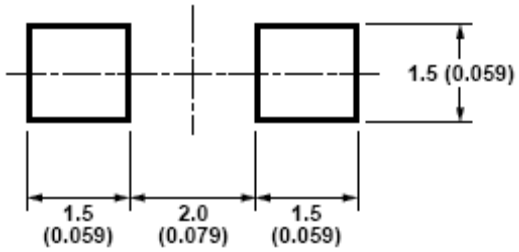

Figure 9. Recommended soldering pattern for HSMx-C151.

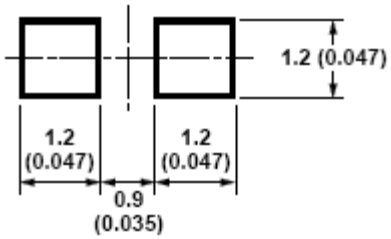

Figure 10. Recommended soldering pattern for HSMx-C171.

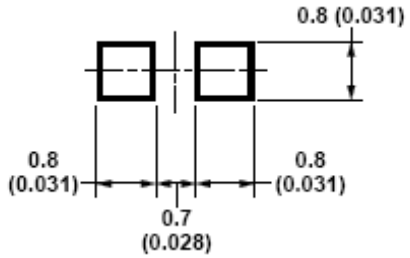

Figure 11. Recommended soldering pattern for HSMx-C192.

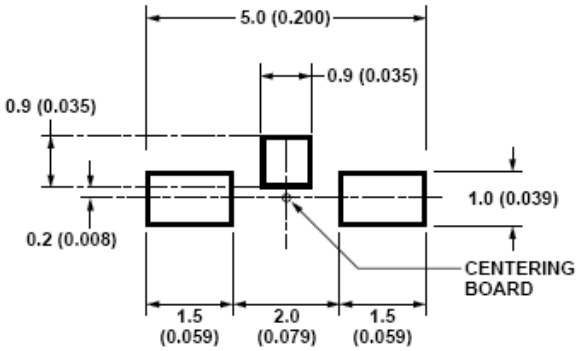

Figure 12. Recommended soldering pattern for HSMx-C111.

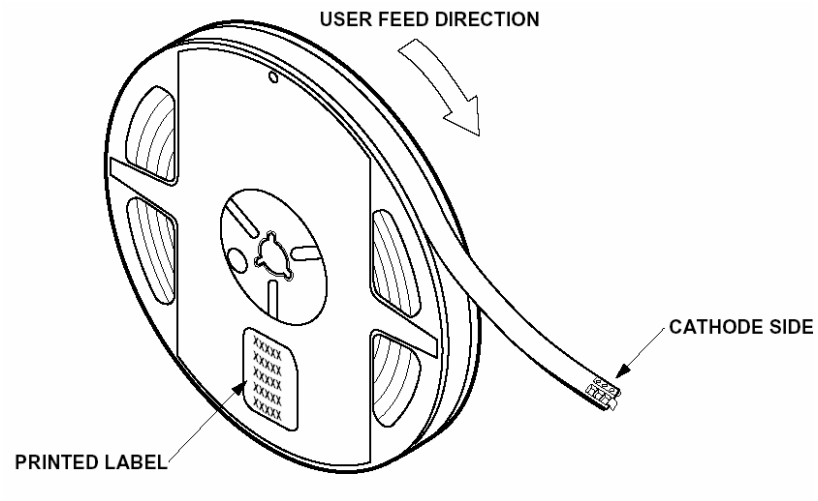

Figure 13. Reeling orientation.

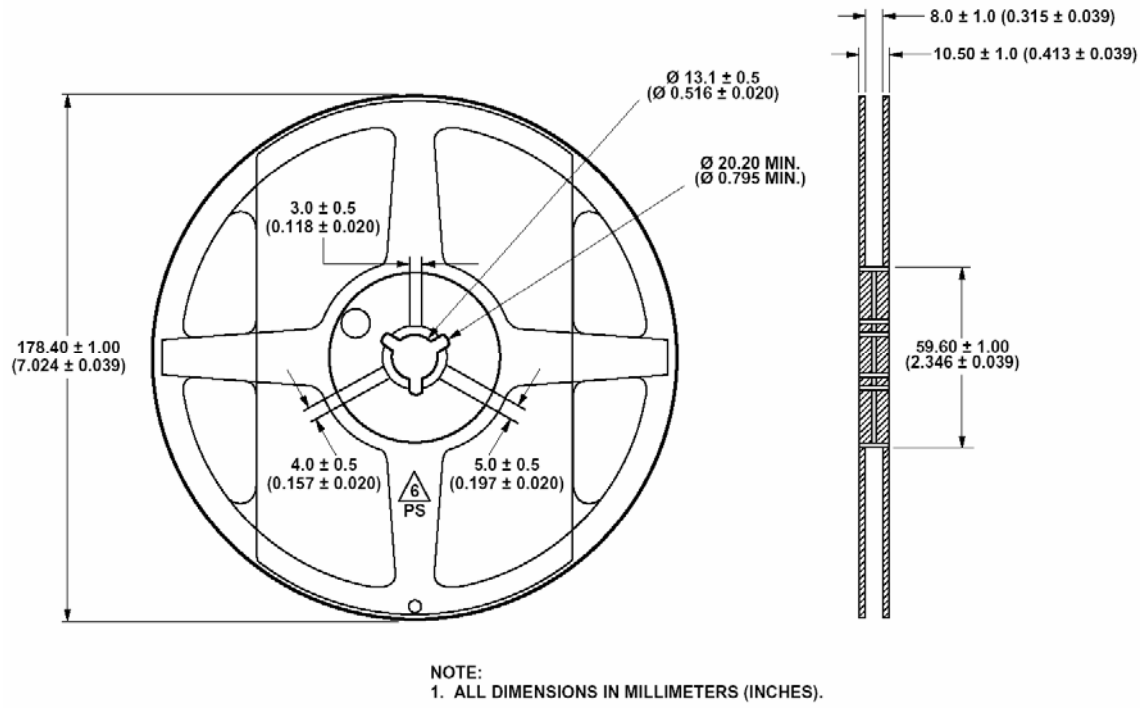

Figure 14. Reel dimensions.

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

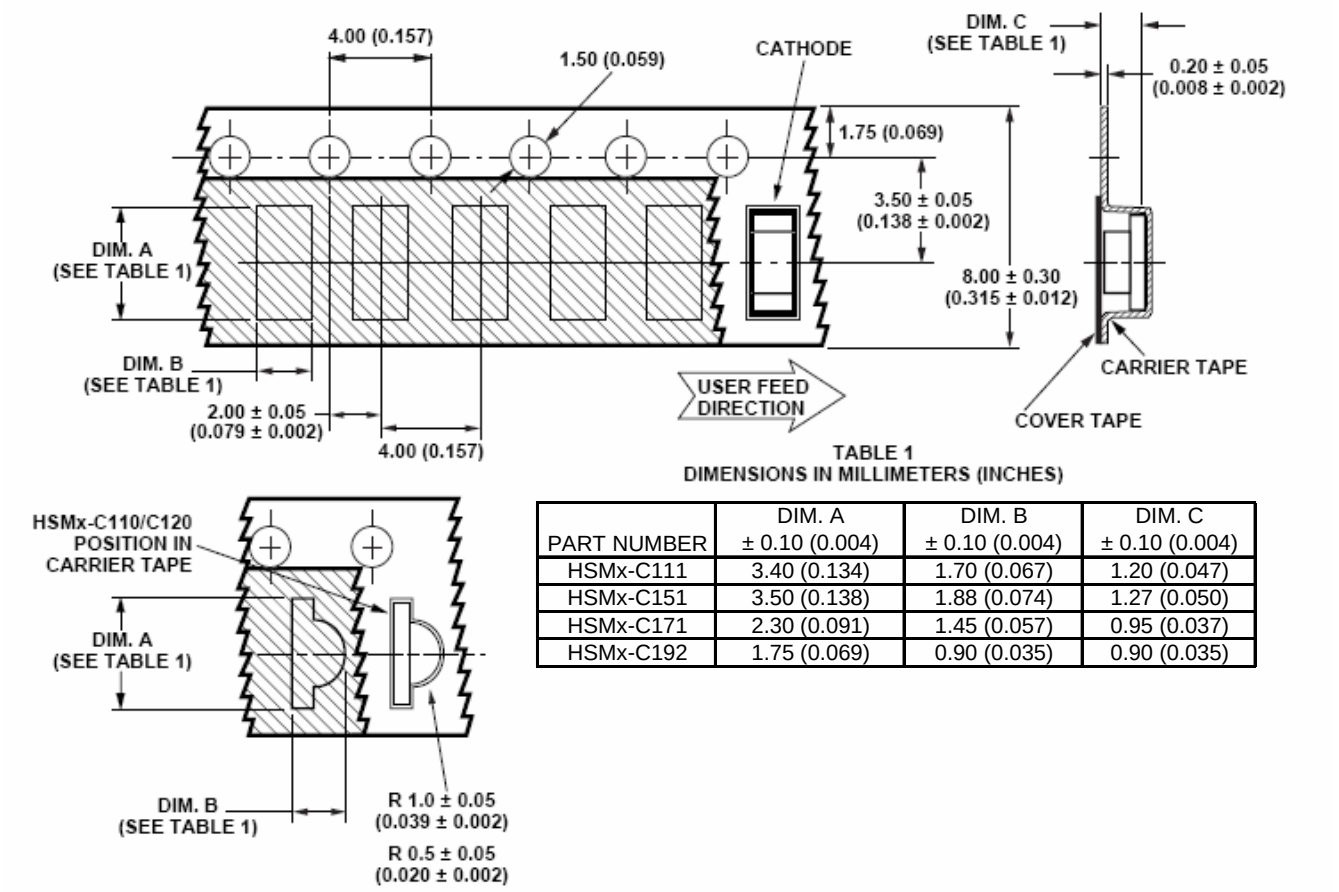

TABLE 1
DIMENSIONS IN MILLIMETERS (INCHES)

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 ±0.1mm (±0.004in.) unless otherwise specified.

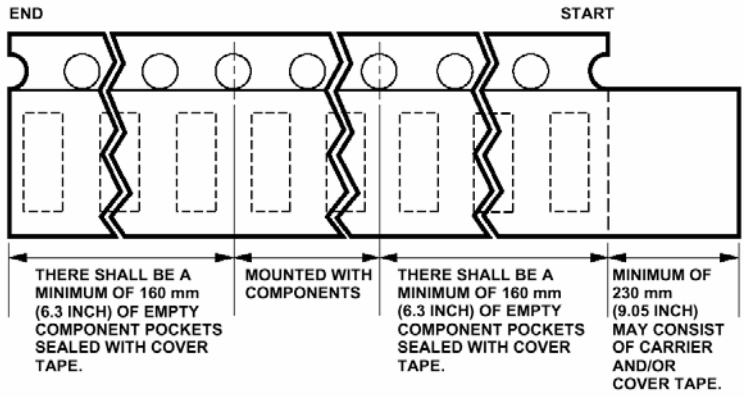

Figure 16. Tape leader and trailer dimensions.

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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