HEWLETT® PACKARD

Reverse Surface Mount Flip Chip LEDs

Technical Data

HSMS-H630/H730
HSMD-H630/H730
HSMY-H630/H730
HSMG-H630/H730

Features

- **Reverse Mountable Surface Mount LED**
- **Breakthrough Reliability through Elimination of Internal Wire Bond**
- **-40°C to +85°C Operating Temperature Range**
- **Small 3.2 x 1.25 mm Footprint**
- **Low Profile**
- **Diffused Optics**
- **Compatible with Reflow or Through-the-Wave Solder Processes**
- **Available on 7" (178 mm) or 13" (330 mm) Diameter Reels**

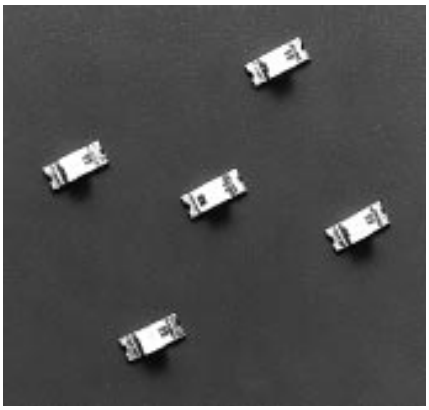
Applications

- **Keypad Backlighting**
- **Symbol Backlighting**
- **Status Indication**
- **Front Panel Indicator**

Description

The HSMx-H630/H730 is a reverse mountable chip-type LED for lighting the non-component side of a PC board. In this reverse mounting configuration, this LED is designed to emit light through a small hole in the PC board.

The HSMx-H630/H730 uses a flip chip construction that eliminates the wire bond between the chip and substrate. As a result of this robust construction, product reliability is greatly improved.

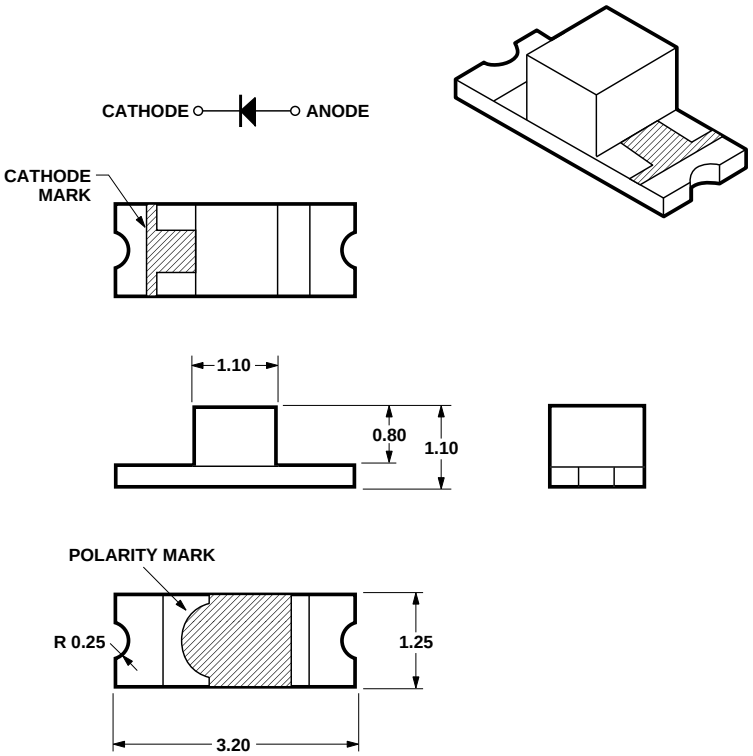


This device is available in four colors. The small size, narrow footprint, and low profile make these LEDs excellent for backlighting, status indication, and front panel illumination applications. All the above parts are compatible with IR / convective reflow and through the wave soldering processes.

Device Selection Guide

Part Number	Color	Parts/Reel
HSMS-H630 HSMS-H730	High Efficiency Red	3000 12000
HSMD-H630 HSMD-H730	Orange	3000 12000
HSMY-H630 HSMY-H730	Yellow	3000 12000
HSMG-H630 HSMG-H730	Green	3000 12000

Package Dimensions



Notes:
1. Dimensions in mm.
2. Tolerance ± 0.1 mm unless otherwise noted.

Absolute Maximum Ratings at T_A = 25°C

Parameter	HSMx-H630/H730	Units
DC Forward Current[1]	20	mA
Power Dissipation	50	mW
Reverse Voltage (I_R = 100 μA)	5	V
Operating Temperature Range	-40 to +85	°C
Storage Temperature Range	-40 to +85	°C

Note:
1. Derate Linearly as shown in Figure 4.

Optical Characteristics at T_A = 25°C

Part No.	Color	Luminous Intensity I_v (mcd) @ I_F = 20 mA Min.	Luminous Intensity I_v (mcd) @ I_F = 20 mA Typ.	Peak Wavelength λ_{peak} (nm) Typ.	Color Dominant Wavelength λ_d[1] (nm) Typ.	Viewing Angle $2\theta_{1/2}$ (degrees)[2] Typ.	Luminous Efficacy η_v (lm/W)[3]
HSMS-H630 HSMS-H730	High Efficiency Red	1.6	5.0	639	626	165	145
HSMD-H630 HSMD-H730	Orange	1.6	4.0	606	604	165	380
HSMY-H630 HSMY-H730	Yellow	1.6	5.0	584	586	165	500
HSMG-H630 HSMG-H730	Green	4.0	9.0	566	571	165	595

Notes:
1. The dominant wavelength, λ_d, is derived from the CIE chromaticity diagram and represents the perceived color of the device with respect to standard illuminant D65.
2. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is $^1/_2$ the peak intensity.
3. The luminous efficacy, η_v, is the ratio of luminous flux to radiant flux, ϕ_v/ϕ_e.

Optical Characteristics at T_A = 25°C

Part No.	Color	Forward Voltage V_F (Volts) @ I_F = 20 mA Typ.	Forward Voltage V_F (Volts) @ I_F = 20 mA Max.	Reverse Breakdown V_R (Volts) @ I_R = 100 μA Min.	Capacitance C (pF) V_F = 0, f = 1 MHz Typ.	Thermal Resistance $R\theta_{J\text{-}PIN}$ (°C/W)
HSMS-H630 HSMS-H730	High Efficiency Red	2.0	2.6	5	6	250
HSMD-H630 HSMD-H730	Orange	2.0	2.6	5	5	250
HSMY-H630 HSMY-H730	Yellow	2.1	2.6	5	5	250
HSMG-H630 HSMG-H730	Green	2.3	2.6	5	5	250

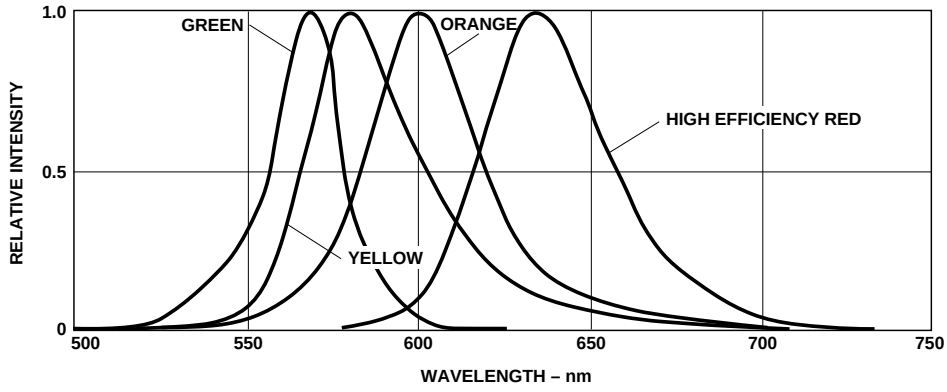


Figure 1. Relative Intensity vs. Wavelength.

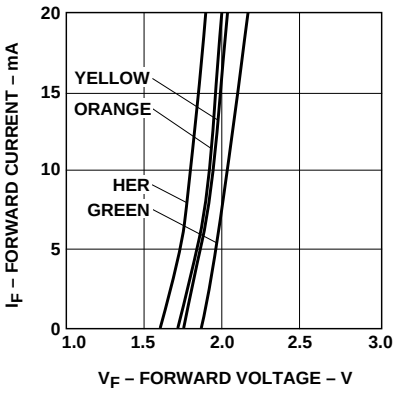


Figure 2. Forward Current vs. Forward Voltage.

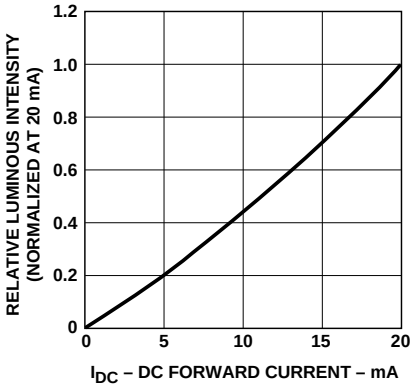


Figure 3. Relative Luminous Intensity vs. DC Forward Current.

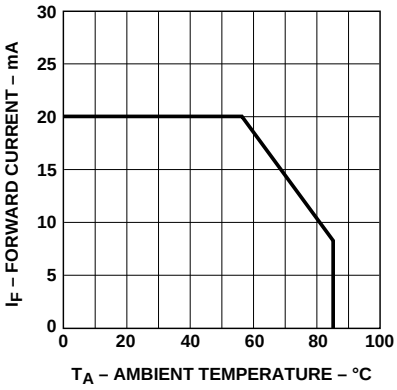


Figure 4. Maximum DC Current vs. Ambient Temperature.

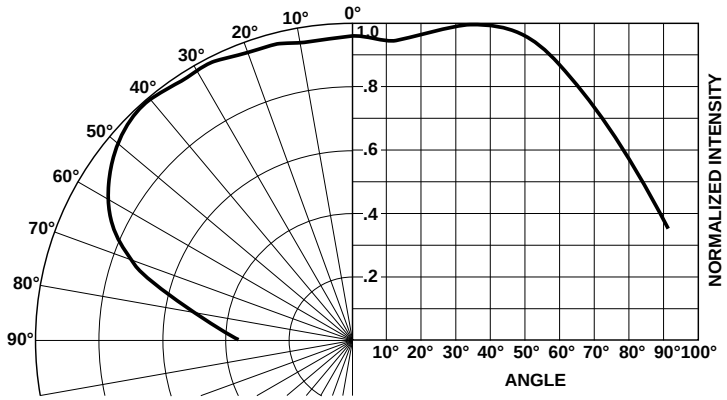


Figure 5. Intensity vs. Angle.

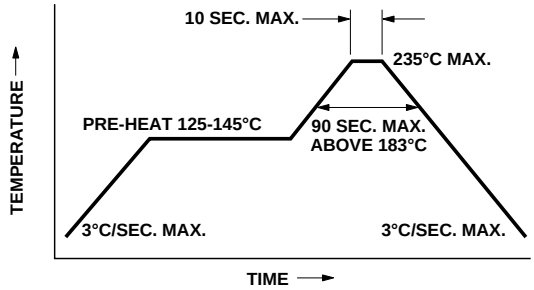


Figure 6. Recommended Reflow Soldering Profile.

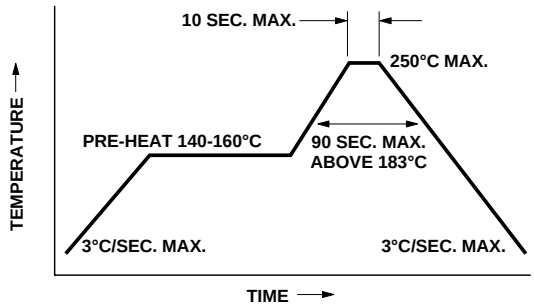


Figure 7. Recommended Wave Solder Profile.

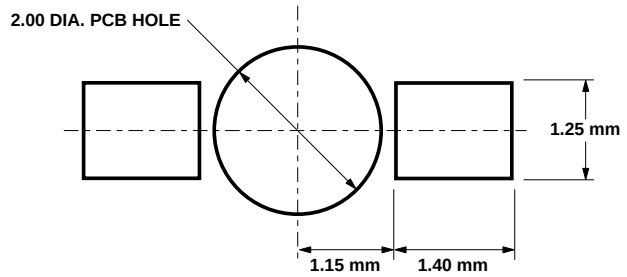


Figure 8. Recommended Solder Pads.

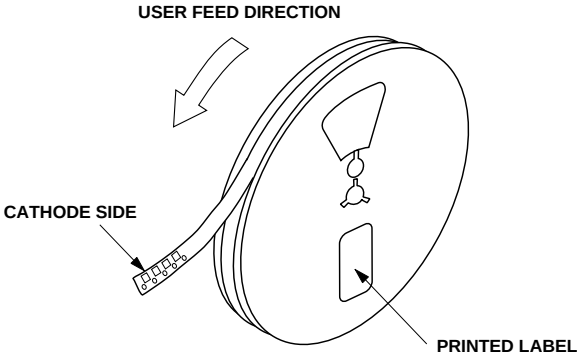
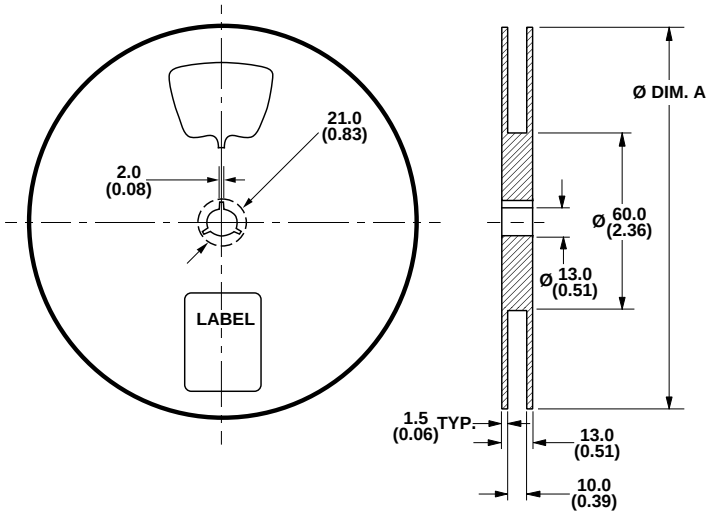


Figure 9. Reeling Orientation.



Part Number	Dimension A
HSMx-H630	178 mm (7")
HSMx-H730	330 mm (13")

Figure 10. Reel Dimensions.

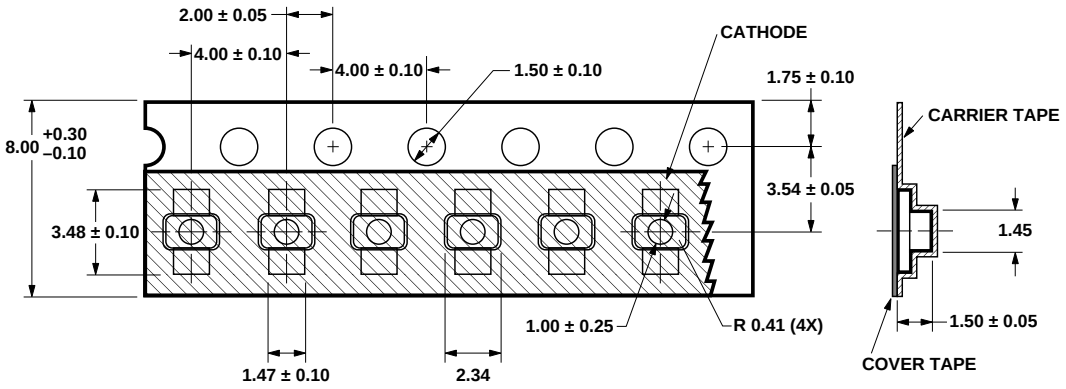


Figure 11. Tape Dimensions.

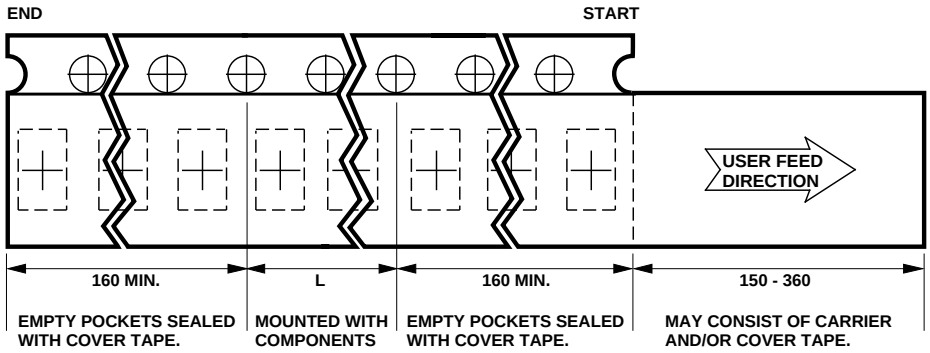


Figure 12. Tape Leader and Trailer Dimensions.

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Data subject to change.

Obsoletes 5968-1793E (9/98)

5968-3199E (1/99)