PRELIMINARY

UPBLEDLPxx

HIGH BRIGHTNESS BLUE LED

PRODUCT PREVIEW

The UPBLEDLPxx blue LED product series incorporates Microsemi's unique, low profile packaging concept. Ideally suited for high density circuitry used in a variety of telecomunication lighting applications. The product offers robust packaging, and low forward voltage for high efficiency as well as modest junction temperature rise.

IMPORTANT: For the most current data, consult *MICROSEMI*'s website: **http://www.microsemi.com**

KEY FEATURES

- Luminous Efficiency
- Rugged Optomite package
- Low profile (15mils)
- Dual wire bond
- High Brightness
- Broad angular Emission

APPLICATIONS/BENEFITS

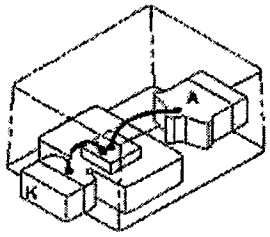
- Mobil Phone Keypad
- Panel, button, switch indicators.
- Backlighting
- Signage
- Signals and Marker Lights

ABSOLUTE MAXIMUM RATINGS AT 25° C (UNLESS OTHERWISE SPECIFIED)

Parameters	Symbol	Value	Unit DC
Forward Drive Current	I_F	30	mA
Peak Forward Current	I_{FP}	100	mA
LED Operating Junction Temperature	Tj	-40 to +140	°C
Reverse Voltage	V_R	8	V
Power Dissipation	P_D	125	mW
Operating Temperature	T_{OPR}	-40 to +125	°C
Storage Temperature	T_S	-45 to +140	°C
Electrostatic Discharge	ESD	1000	V
ESD classification		Class 2	

THERMAL CHARACTERISTICS (UNLESS OTHERWISE SPECIFIED)

Thermal Response	Symbol	Value	Units
Junction Temperature rise at 20ma dc	TJ_{mx}	15	°C



The first "x" of the postscript designates the Intensity bin , i.e. H highest, G lower, F lowest
The second "x" of the postscript designates the forward voltage category L, lowest, S, Standard
See pg. 2 for details.

For operation of these LEDs in pulse mode applications, devices may be used in conjunction with the Microsemi LX1992LED Drivers

UPBLEDLPXX

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Microsemi
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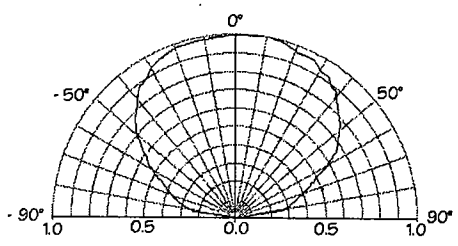
ELECTRICAL PARAMETERS @ 25°C & ID=20 mA (unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ.	Max	Units
Radiant Intensity	I_E	"F" DC Drive Current = 20ma "G" DC Drive Current = 20ma "H" DC Drive Current = 20ma		550 750 900		µW/sr
Luminous Intensity	I_V	"F" DC Drive Current = 20ma "G" DC Drive Current = 20ma "H" DC Drive Current = 20ma	35 45 55			mcd
Dominant Wavelength	λ_{DOM}	DC Drive Current = 20ma	460		480	nm
Peak Wavelength	λ_{PK}	DC Drive Current = 20ma		465		nm
Chrom x Chrom y		"F", "G", "H" DC Drive Current = 20ma		0.13 0.07		
Angle Coverage to 50% points	α1/2	DC Drive Current = 20ma to 50ma	125	135		deg.
Radiant Flux	Φ_E	"F" DC Drive Current = 20ma "G" DC Drive Current = 20ma "H" DC Drive Current = 20ma		1.25 1.75 2.0		mW
Luminous Flux	Φ_V	"F" DC Drive Current = 20ma "G" DC Drive Current = 20ma "H" DC Drive Current = 20ma		125 150 175		mlm
Forward Voltage	V_F	"S" DC Drive Current 5ma "L" DC Drive Current 5ma "S" DC Drive Current 10ma "L" DC Drive Current 10ma "S" DC Drive Current 20ma "L" DC Drive Current 20ma		3.4 2.95 3.5 3.0 3.7 3.15	3.5 3.05 3.7 3.125 3.9 3.25	V
Reverse Leakage Current	I_R	Reverse Voltage = 5 V			10	µA

- Change in Radiant Intensity with temperature −1.4µW/sr/°C (25°C < temp< 85°C)
- Change in Radiant Intensity with temperature 0.7µW/sr/°C (25°C < temp< -40°C)



Relative Angular Intensity
Typical UPBLEDLPxx

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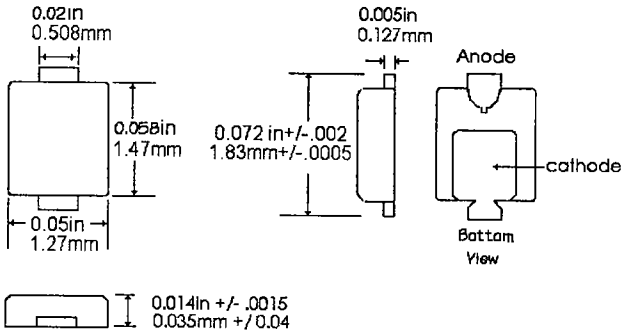
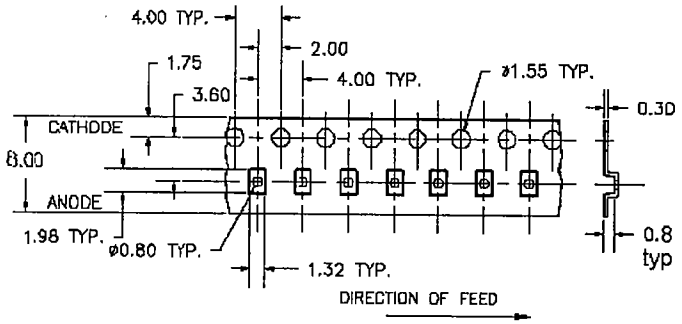
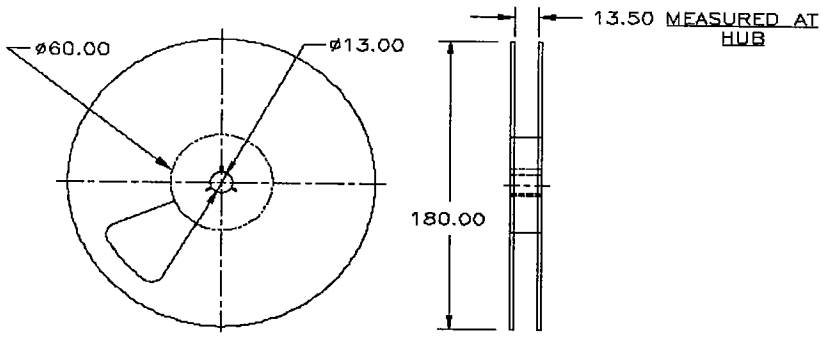


Notes: Anode is identified by observing the underside of the LED.
(Anode is the smaller of the two base pads)
Mount to circuit board using 60/40 Pb/Sn or equivalent.
Maximum solder melt exposure temperature is 260°C for 10 seconds.

TAPE AND REEL

3,000 units/reel Notes: Dimensions is shown in metric.





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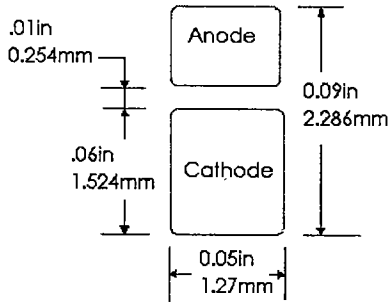
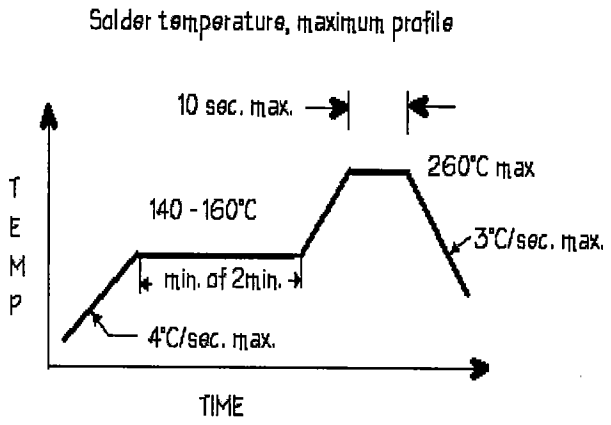
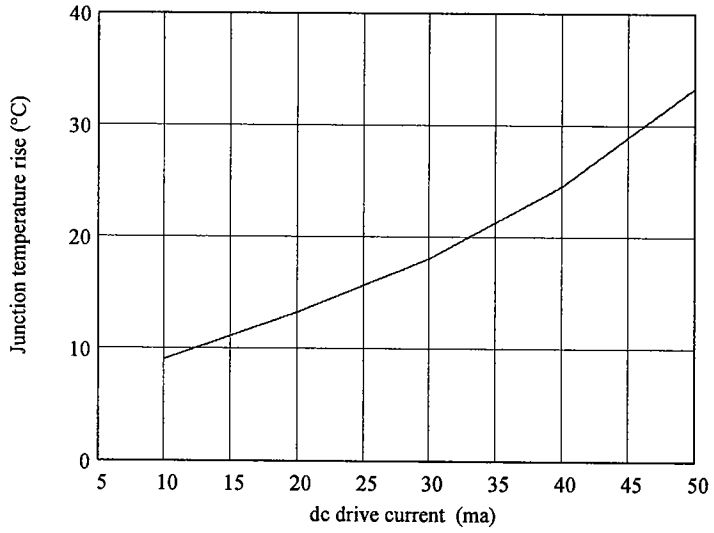




60%pb - 40% sn liquidus = 238°C, solidus = 183°C
50%pb - 50% sn, liquidus = 216°C, solidus = 183°C

Mounting footprint, Copper (note: Silver plating will enhance Luminous Intensity)

JUNCTION TEMPERATURE RISE



THERMAL

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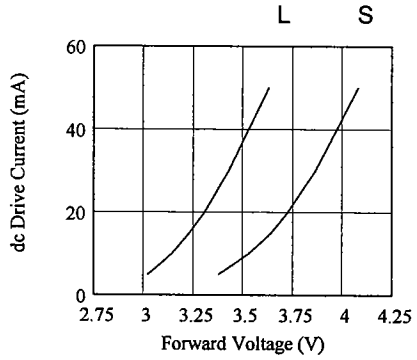

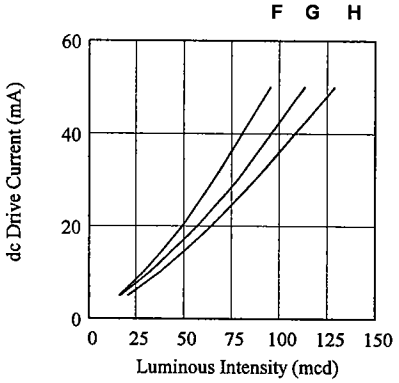

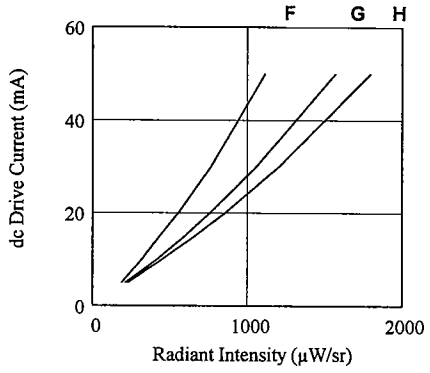

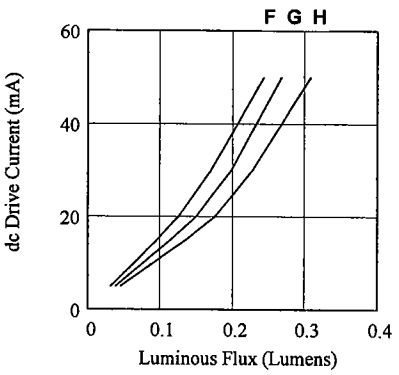

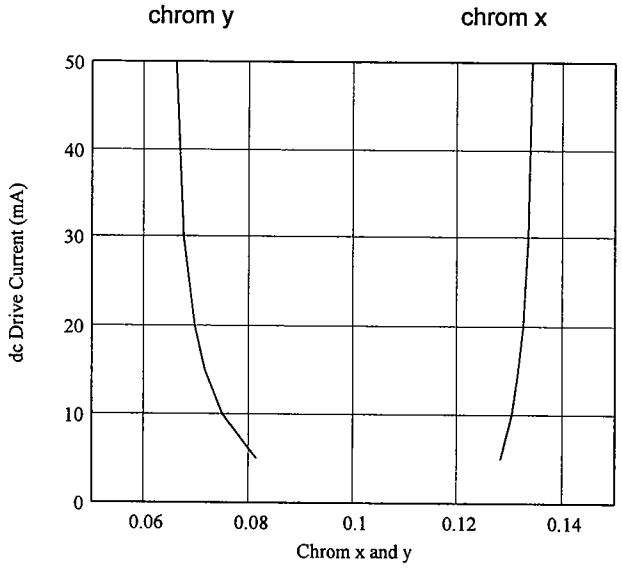

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SAFE OPERATION ABOVE THE MAXIMUM dc RATING:

The power dissipation must be held at a level to maintain the junction below the maximum specified operating temperature.

Duty cycle control may be used to establish the safe operating condition using a train of pulses.

LED Junction temperature for dc operation is illustrated in the Junction Temperature Rise graph (see page 5).

Conversion of 1931 x y coordinates to 1960 *u v* coordinates:

$u = 4x/(-2x + 12y + 3)$, $v = 6y/(-2x + 12y + 3)$

Conversion of 1960 *u v* coordinates to 1931 *x y* coordinates:

$x = 3u/(2u - 8v + 4)$, $y = 2v/(2u - 8v + 4)$.

* UPBLEDLPxx SPICE MODEL (typical)

```
.model UPBLEDLPxx  D(Is=2.6f N=4.02 Rs=5.83 Ikf=60.9k  Xti=5 Eg=3 Cjo=39p
+                  M=5.17k Vj=86k Fc=.5 Isr=1.04p Nr=3.3 Bv=14  Ibv=10m
+                  Tt=36n )
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