Technical Data
μSideLEDs
PRELIMINARY

MSL-510SB

09/09/2003

Features

- **Package :** white micro-sideview PLCC-2 package with clear silicon.
- **Feature of the device** : extremely wide viewing angle
  ideal for backlighting and coupling in
  light guides
- **Wavelength : Typical : 470nm**
- **Viewing angle** : Lambertian Emitter (X : 120° / Y : 120°)
- **Technology :** InGaN on **SiC with clear silicon**
- **Grouping parameter :** luminous intensity , Chromaticity
- **Assembly methods :** suitable for all SMT assembly methods
- **Soldering methods :** IR reflow soldering
- **Preconditioning : acc. to JEDEC Level 3**
- **Taping :** 8-mm tape with 3500/reel, ϕ180mm

Applications

- **Backlighting** : LCD Display, Key pads

Package Dimensions

Unit : mm (inch)

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

Recommended Solder Patterns

Method of Taping / Polarity and Orientation Packing unit 3500/reel

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

Selection Guide

Part Number	Luminous Intensity				Wavelength			Viewing Angle 2θ 1/2 (Degrees)	
	mcd				nm			x	y
	Bin	Min.	Typ.	Max.	Min.	Typ.	Max.	Typ.	Typ.
MSL-510SB	R	75	-	104	460	470	475	120	120
	S	104	-	150					
	T	150	-	213					
	U	213	-	300					

Device Type	Forward Voltage V_F (Volts) @IF = 20mA			Reverse Current I_R (uA) @ V_R = 5V			Thermal Resistance $R_{θJ-S}$ (°C/W)
	Min.	Typ.	Max	Min.	Typ.	Max	Max
MSL-510SB		3.1	4.0			50	50

Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Temp. range	T_{OP}	-30 ~ +85	°C
Storage Temp. range	T_{stg}	-40 ~ +100	°C
Forward current	I_F	30	mA
Peak forward current	I_{FM}	100	mA
Reverse Voltage	V_R	5	V
Power dissipation	P_{tot}	120	mW
Soldering Temperature	T_{sid}	Reflow Soldering : 260°C, for 10 sec	
		Hand Soldering : 350°C, for 3 sec	

IFP Conditions : Pulse Width $\leq$10msec and Duty $\leq$ 1/10

Relative Spectrum Emission $I_{rel} = f$ (l), $T_A = 25^oC$, $I_F = 20mA$

V(l) = Standard eye response curve

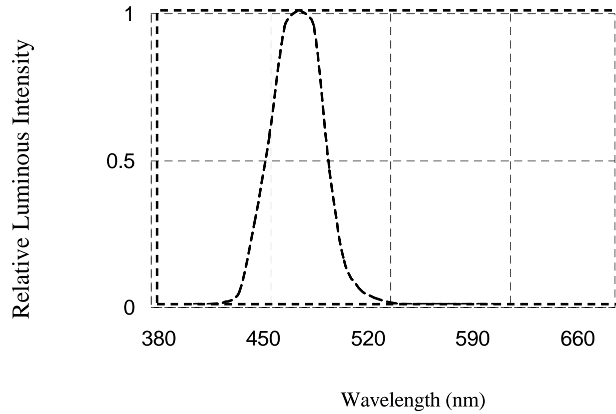


FIG.1 RELATIVE LUMINOUS INTERSITY

Forward Current $I_F = f(V_F)$

TA = 25°C

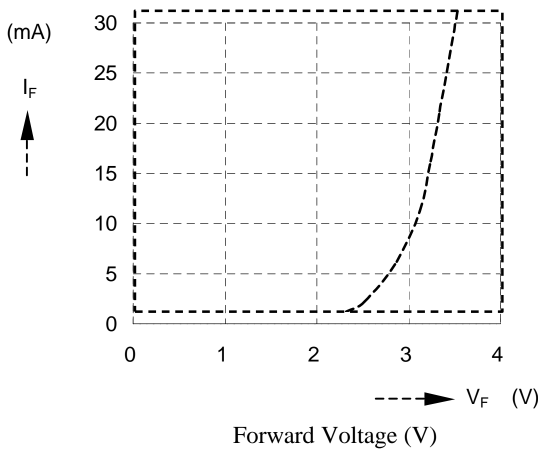


FIG.2 FORWARD CURRENT VS. FORWARD VOLTAGE

Relative Luminous Intensity I_V/I_V (20mA) = f (I_F)

TA = 25°C

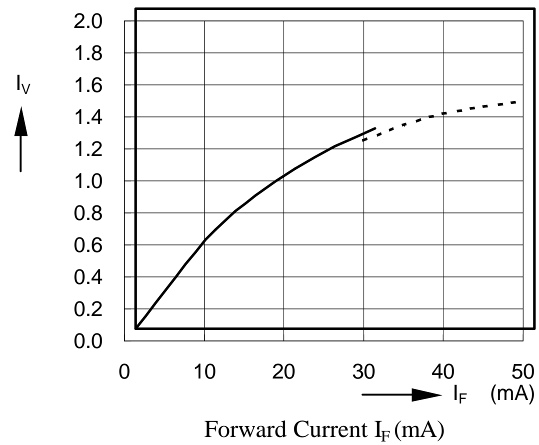


FIG.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

Ambient Temperature VS. Allowable Forward

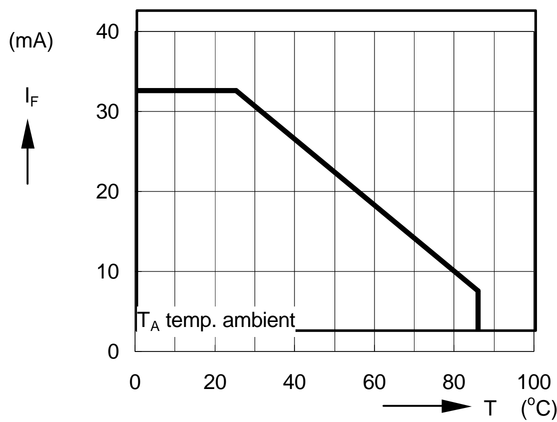


FIG.4 FORWARD CURRENT VS. AMBIENT TEMPERATURE

Radiation Characteristic I_{rel} = f (q)

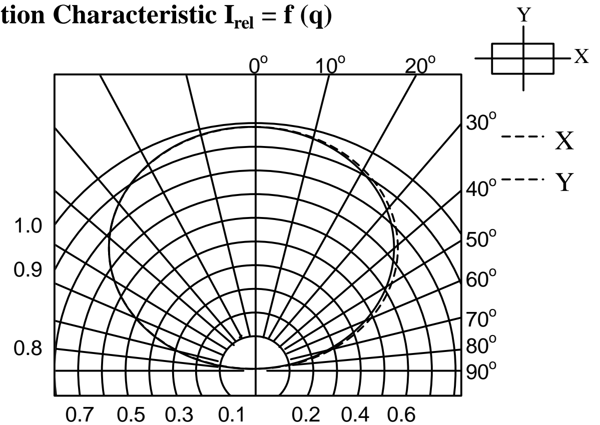
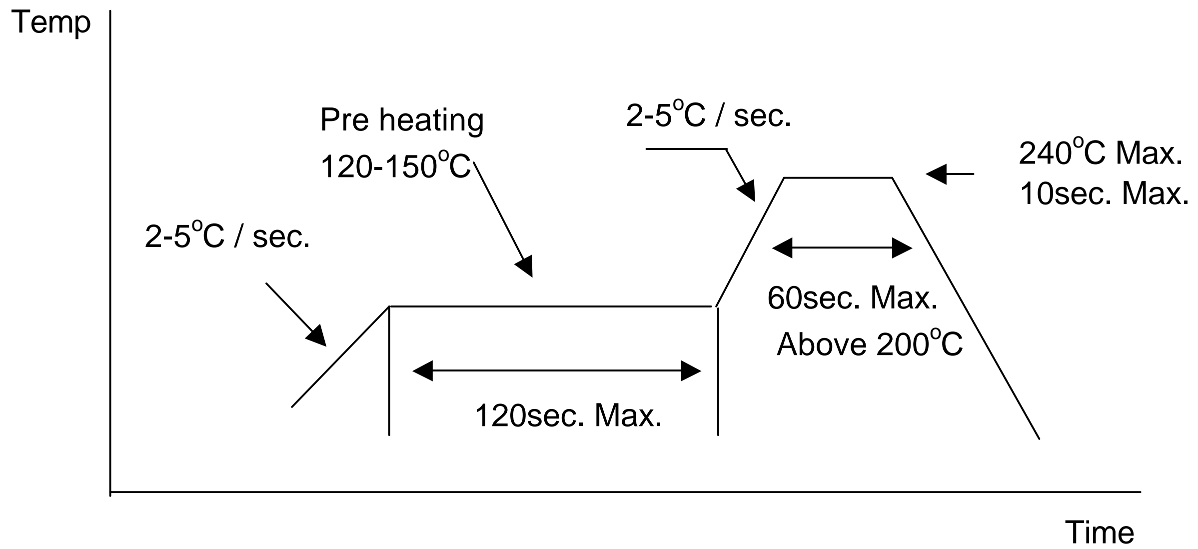


FIG.5 RADIATION DIAGRAM

IR Reflow Soldering Profile

Lead Solder



Unity mSideLEDs Bin Codes

Category Code	
T	B

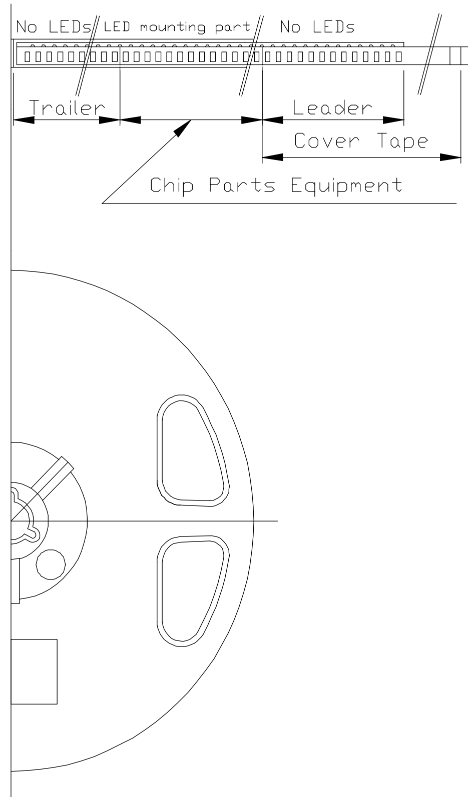
Luminous Intensity Group	
MSL-510SB	
R	**75-104**
S	**104-150**
T	**150-213**
U	**213-300**

Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of +/- 11%

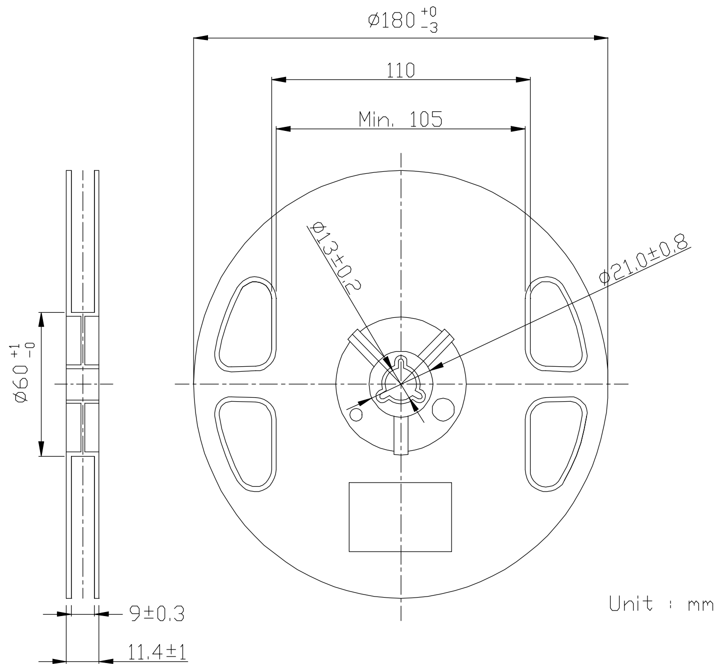
Dominant Wavelength (in nanometers) @ I_F=20mA						
BIN / P/N	A		B		C	
	minimum	maximum	minimum	maximum	minimum	maximum
SB	460	465	465	470	470	475

Wavelength groups are tested at a current pulse duration of 25 ms and an accuracy of ± 1nm

Tape Dimensions



REEL Dimensions



Items		Specifications	Remarks
Leader	Cover Tape	Cover tape shall be longer than 400mm without carrier tape	The end of the carrier tape shall be adhered on the cover t
	Carrier Tape	There shall be more than 40 empties	The orientation of tape shall be as shown
Trailer		There shall be more than 40 empties	The end of the tape shall be inserted into a slit of the hub

Surface Mount Moisture Sensitivity Specifications

1. Controlling Moisture

Unity Opto Technology, in its design of packing materials and packing methods, takes into consideration the susceptibility of some Unity packages to moisture induced damage. The risk of this damage is caused when the LED lens plastic encapsulation material is exposed to increases or decreases in the Relative Humidity of the surrounding environment.

Such damage may include delamination between the die and the LED lens plastic encapsulation material, which may result in open connections due to broken wire bonds. Moisture in the package having reached a critical level will fracture the package in order to escape when exposed to peak temperature conditions, typical in soldering practices.

Therefore, the control of moisture levels in the LED package is critical to reduce the risk of moisture-induced failures. Please follow JEDEC-STD-033A standards for handling moisture sensitive devices.

2. Packaging SMD devices:

Unity packages all SMD devices into dry pack bags (moisture barrier bags).

Unity includes a desiccant pouch in each bag. Testing confirms that the desiccant pouch greatly reduces the presence of moisture by maintaining the environment in the bag, thus protecting the devices during shipment and storage.

3. Handling Dry Packed Parts

Upon receipt, the bags should be inspected for damage to ensure that the bag's integrity has been maintained. Inspection should verify that there are no holes, gouges, tears, or punctures of any kind that may expose the contents of the bag.

To open the bag, simply cut across the top of the bag as close to the original seal as possible being careful not to damage the contents. Once open the desired quantity of units should be removed and the bag resealed. If the bag is left open longer than 2 hours, the desiccant pouch should be replaced with a dry desiccant and the bag should be sealed immediately to avoid moisture damage.