

Features

- Ideal for indication light on hand held products
- Long life and robust package
- Standard Package: 2,000pcs/ Reel
- MSL (Moisture Sensitivity Level): 3
- Halogen-free
- RoHS compliant

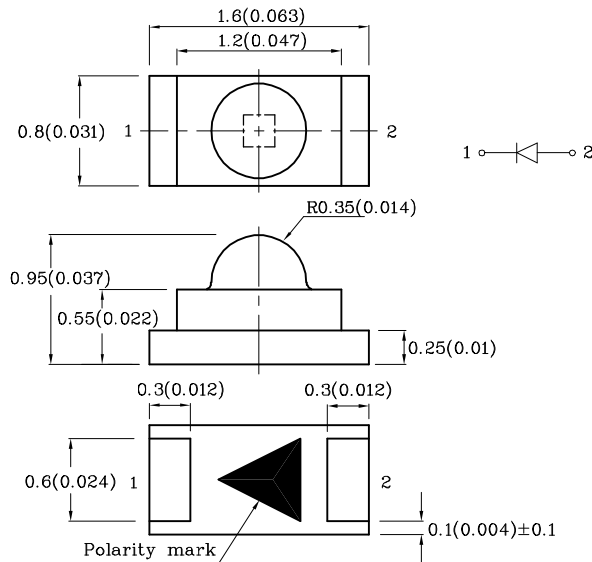
Applications

- Backlighting for tell-tale indicators
- Dashboard lighting
- Interior lighting (footwell, dome light, accent lighting, etc.)
- Exterior lighting (turn signals, side markers, CHMSL, etc.)
- Signs and signals
- Various applications requiring high temperature rating



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Package Schematics



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.15(0.006)$ unless otherwise noted.
3. Specifications are subject to change without notice.

Part Number	Emitting Color (Material)	Lens-color	Luminous Intensity CIE127-2007* (If=20mA) mcd			Viewing Angle 2θ 1/2
XZMDK53W-8HTA	Red (AlGaInP)	Water Clear	Code.	Min.	Max.	60°
			S	500	700	
			T	700	1000	
			U	1000	1300	
			V	1300	1600	
			P*	200*	300*	
			Q*	300*	400*	
			R*	400*	500*	
			S*	500*	700*	

Notes:

1. $\theta_{1/2}$ is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.

*Luminous intensity value is in accordance with CIE127-2007 standards.

Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

Parameter	Symbol	Value	Unit
Power dissipation	P_D	75	mW
Reverse Voltage	V_R	5	V
Junction temperature	T_J	115	$^\circ\text{C}$
Operating Temperature	T_{op}	-40 ~ +100	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +115	$^\circ\text{C}$
DC Forward Current [1]	I_F	30	mA
Electrostatic Discharge Threshold (HBM)		3000	V
Peak Forward Current [2]	I_{FM}	185	mA
Thermal Resistance (Junction/ambient) [1]	$R_{th\ j-a}$	640	$^\circ\text{C/W}$
Thermal Resistance (Junction/ambient) [1]	$R_{th\ j-s}$	470	$^\circ\text{C/W}$

Notes:

1. $R_{th(j-a)}$ Results from mounting on PC board FR4 (pad size $\geq 16\text{ mm}^2$ per pad),

2. 1/10 Duty Cycle, 0.1ms Pulse Width.

3. A Relative Humidity between 40% and 60% is recommended in ESD-protected work areas to reduce static build up during assembly process

(Reference JEDEC/JESD625-A and JEDEC/J-STD-033)

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

Parameter	Symbol	Value	Unit
Wavelength at peak emission CIE127-2007* $I_F = 20\text{mA}$ [Typ.]	λ_{peak}	645*	nm
Dominant Wavelength CIE127-2007* $I_F = 20\text{mA}$ [Min.]	λ_{dom}	620*	nm
Dominant Wavelength CIE127-2007* $I_F = 20\text{mA}$ [Max.]	λ_{dom}	640*	nm
Spectral bandwidth at 50% $\Phi_{REL\ MAX}$ $I_F = 20\text{mA}$ [Typ.]	$\Delta\lambda$	28	nm
Forward Voltage $I_F = 20\text{mA}$ [Typ.]	V_F [1]	1.95	V
Forward Voltage $I_F = 20\text{mA}$ [Max.]		2.5	
Reverse Current ($V_R = 5\text{V}$) [Max.]	I_R	10	μA
Temperature coefficient of λ_{peak} $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ [Typ.]	$TC\lambda_{peak}$	0.14	nm/ $^\circ\text{C}$
Temperature coefficient of λ_{dom} $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ [Typ.]	$TC\lambda_{dom}$	0.05	nm/ $^\circ\text{C}$
Temperature coefficient of V_F $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ [Typ.]	TCV	-1.9	mV/ $^\circ\text{C}$

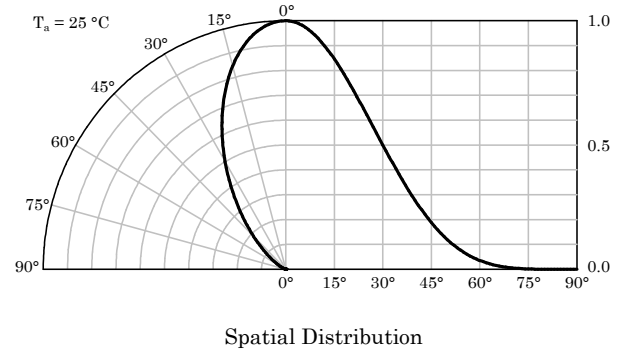
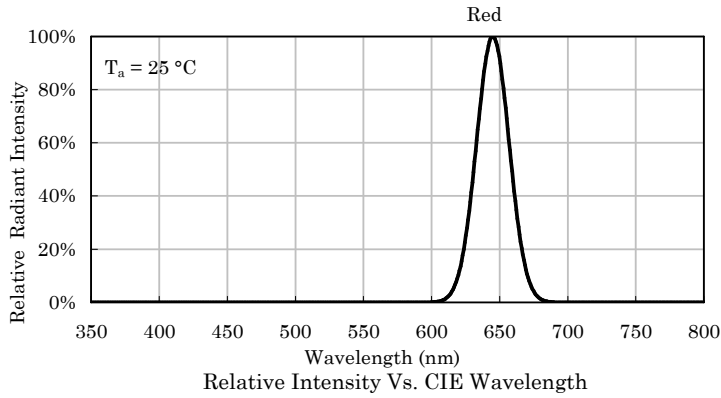
Note:

1. Forward Voltage: $\pm 0.1\text{V}$.

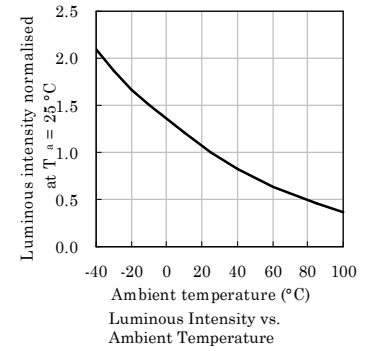
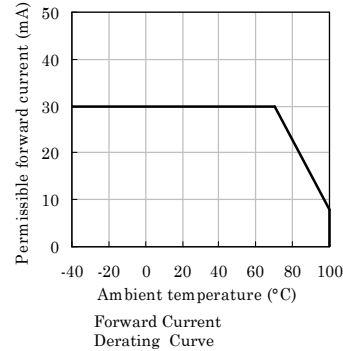
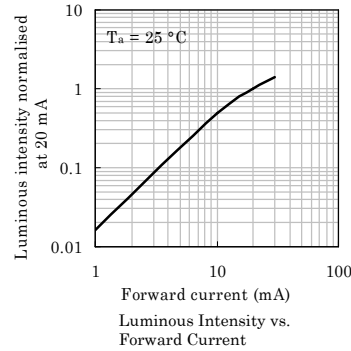
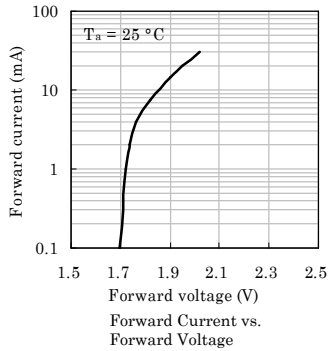
* Wavelength value is in accordance with CIE127-2007 standards.

Dec 11, 2020

XDSB6997 V3-X Layout: Maggie L.

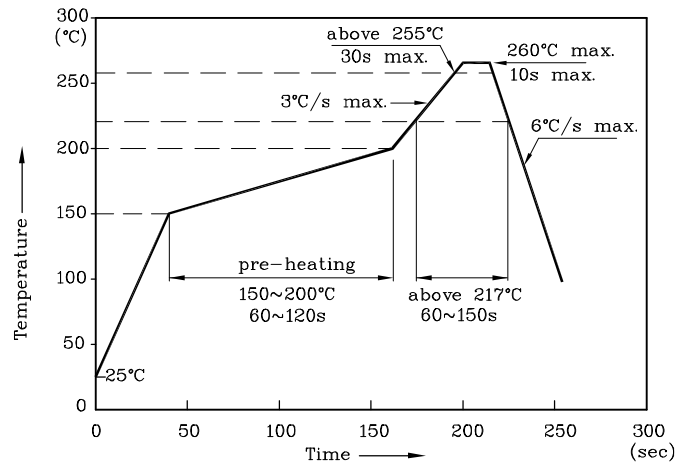


❖ Red



LED is recommended for reflow soldering and soldering profile is shown below.

Reflow Soldering Profile for SMD Products (Pb-Free Components)

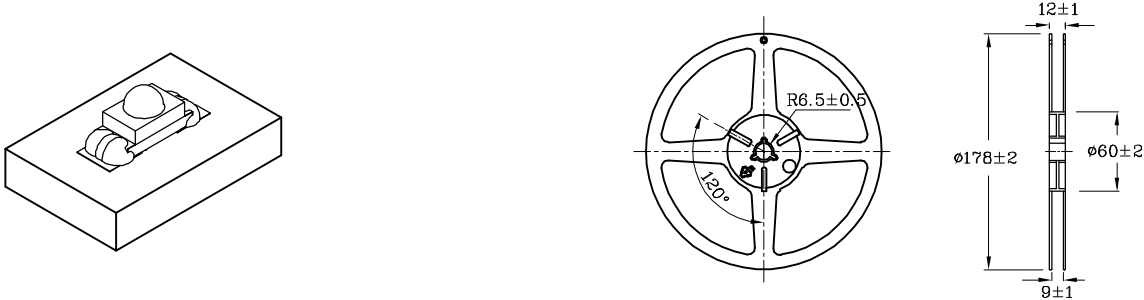


Notes:

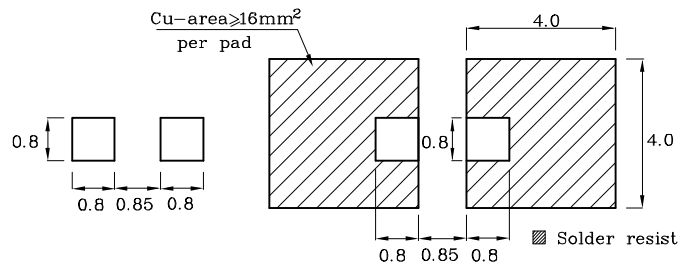
1. All temperatures refer to the center of the package, measured on the package body surface facing up during reflow.
2. Do not apply any stress to the LED during high temperature conditions.
3. Maximum number of soldering passes: 2

❖ The device has a single mounting surface.
The device must be mounted according to the specifications.

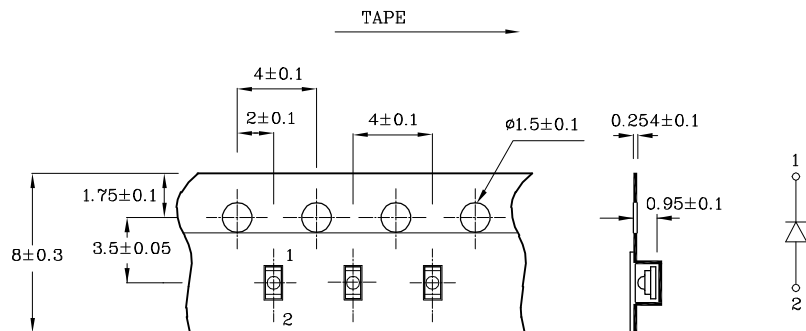
❖ Reel Dimension (Units : mm)



❖ Recommended Soldering Pattern
(Units : mm; Tolerance: ± 0.1)



❖ Tape Specification (Units : mm)



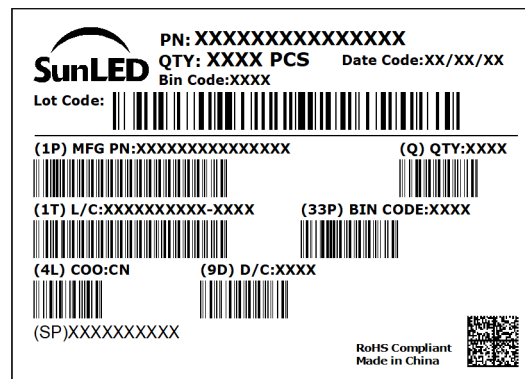
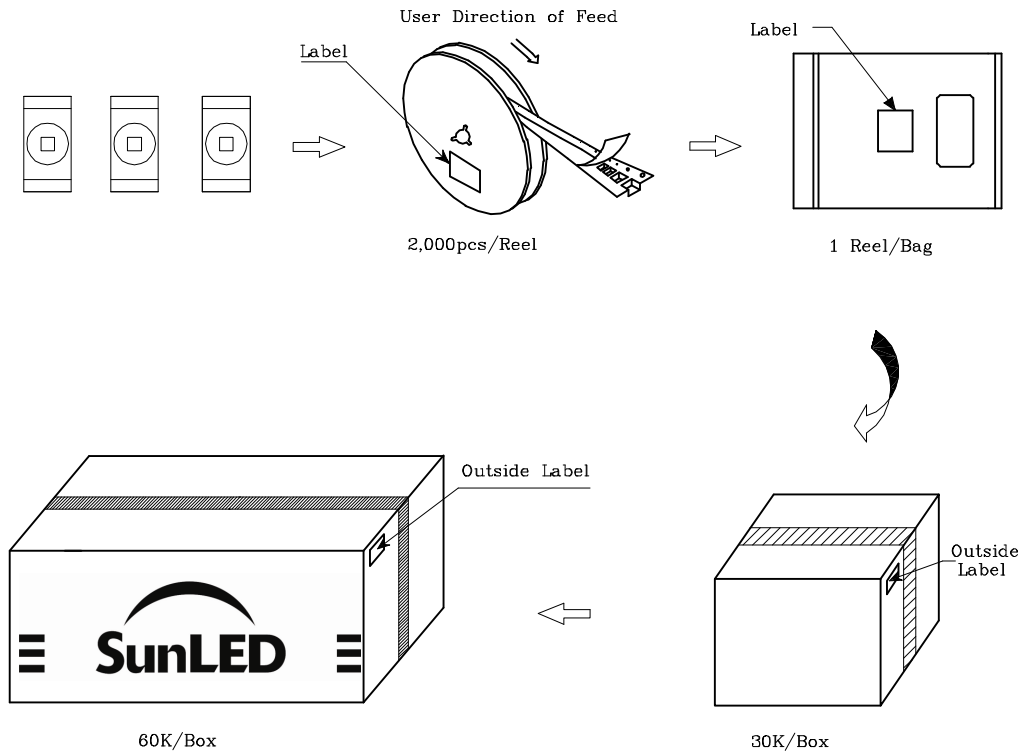
Remarks:

If special sorting is required (e.g. binning based on forward voltage, Luminous intensity / luminous flux, or wavelength), the typical accuracy of the sorting process is as follows:

1. Wavelength: $\pm 1 \text{ nm}$
2. Luminous intensity / luminous flux: $\pm 15\%$
3. Forward Voltage: $\pm 0.1 \text{ V}$

Note: Accuracy may depend on the sorting parameters.

PACKING & LABEL SPECIFICATIONS



TERMS OF USE

1. Data presented in this document reflect statistical figures and should be treated as technical reference only.
2. Contents within this document are subject to improvement and enhancement changes without notice.
3. The product(s) in this document are designed to be operated within the electrical and environmental specifications indicated on the datasheet. User accepts full risk and responsibility when operating the product(s) beyond their intended specifications.
4. The product(s) described in this document are intended for electronic applications in which a person's life is not reliant upon the LED. Please consult with a SunLED representative for special applications where the LED may have a direct impact on a person's life.
5. The contents within this document may not be altered without prior consent by SunLED.
6. Additional technical notes are available at <https://www.SunLEDusa.com/TechnicalNotes.asp>

Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below

Lot Tolerance Percent Defective (LTPD) : 10%

No.	Test Item	Standards	Test Condition	Test Times / Cycles	Number of Damaged
1	Continuous operating test	-	$T_a = 25^{\circ}\text{C}$, I_F = maximum rated current *	1,000 h	0 / 22
2	High Temp. operating test	EIAJ ED-4701/100 (101)	$T_a = 100^{\circ}\text{C}$, I_F = maximum rated current *	1,000 h	0 / 22
3	Low Temp. operating test	-	$T_a = -40^{\circ}\text{C}$, I_F = maximum rated current *	1,000 h	0 / 22
4	High temp. storage test	EIAJ ED-4701/100 (201)	T_a = maximum rated storage temperature	1,000 h	0 / 22
5	Low temp. storage test	EIAJ ED-4701/100 (202)	$T_a = -40^{\circ}\text{C}$	1,000 h	0 / 22
6	High temp. & humidity storage test	EIAJ ED-4701/100 (103)	$T_a = 60^{\circ}\text{C}$, RH = 90%	1,000 h	0 / 22
7	High temp. & humidity operating test	EIAJ ED-4701/100 (102)	$T_a = 60^{\circ}\text{C}$, RH = 90% I_F = maximum rated current *	1,000 h	0 / 22
8	Soldering reliability test	EIAJ ED-4701/100 (301)	Moisture soak: 30°C , 70% RH, 72h Preheat: $150\sim 180^{\circ}\text{C}$ (120s max.) Soldering temp: 260°C (10s)	2 times	0 / 18
9	Thermal shock operating test	-	$T_a = -40^{\circ}\text{C}$ (15min) ~ 100°C (15min) I_F = derated current at 100°C	1,000 cycles	0 / 22
10	Thermal shock test	-	$T_a = -40^{\circ}\text{C}$ (15min) ~ maximum rated Storage temperature(15min)	1,000 cycles	0 / 22
11	Electric Static Discharge (ESD)	EIAJ ED-4701/100 (304)	$C = 100\text{pF}$, $R_2 = 1.5\text{K}\Omega$ $V = 3000\text{V}$	Once each Polarity	0 / 22
12	Vibration test	-	$a = 196\text{m/s}^2$, $f = 100\sim 2\text{KHz}$, $t = 48\text{min}$ for all xyz axes	4 times	0 / 22

* : Refer to forward current vs. derating curve diagram

Criteria for Judging Damage

Items	Symbols	Conditions	Failure Criteria
luminous Intensity	I_v	$I_F = 20\text{mA}$	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V_F	$I_F = 20\text{mA}$	Testing Max. Value $\geq$ Spec. Max. Value x 1.2
Reverse Current	I_R	V_R = Maximum Rated Reverse Voltage	Testing Max. Value $\geq$ Spec. Max. Value x 2.5
High temp. storage test	-	-	Occurrence of notable decoloration, deformation and cracking