

Features

- 1.6 mm x 0.8 mm SMD LED
- Package height: 0.5 mm
- IR-reflow compatible
- Standard Package: 2,000 pcs / Reel
- MSL (Moisture Sensitivity Level): 3
- Halogen-free
- RoHS compliant

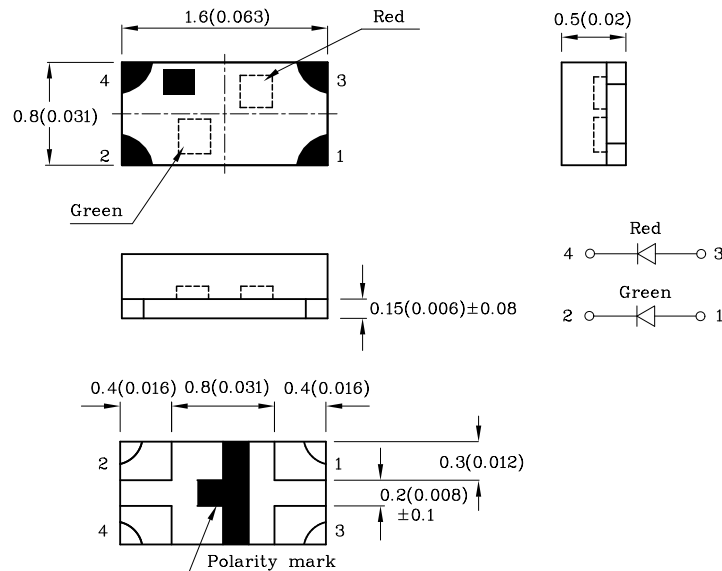


ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Applications

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

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)	Luminous Intensity CIE127-2007* (I _F =2mA) mcd			Lens-color	Viewing Angle [1]
		Code.	Min.	Max.		
XZCDGKMDK53W-9HTA2	Green (InGaN)	U	50	80	Water Clear	2 θ 1/2 130°
		V	80	120		
		W	120	180		
		U*	50*	80*		
		V*	80*	120*		
		W*	120*	180*		
	Red (AlGaInP)	R	15	20		
		S	20	30		
		T	30	50		
		N*	4*	6*		
		P*	6*	10*		
		Q*	10*	15*		

- Notes:
1. θ1/2 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.
 2. Listed bin codes represent the possible range for this LED. Actual bin codes received will be based upon production yields.

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Value		Unit
		Green	Red	
Power Dissipation	P _D	82	75	mW
Reverse Voltage	V _R	5	5	V
Junction Temperature	T _J	115	115	°C
Operating Temperature	T _{op}	-40 ~ +110		°C
Storage Temperature	T _{stg}	-40 ~ +110		°C
DC Forward Current	I _F	20	30	mA
Peak Forward Current [2]	I _{FP}	100	185	mA
Electrostatic Discharge Threshold (HBM)		450	3000	V
Thermal Resistance (Junction/Ambient) [1]	R _{th j-a}	630	640	°C/W
Thermal Resistance (Junction/Solder point) [1]	R _{th j-s}	450	490	°C/W

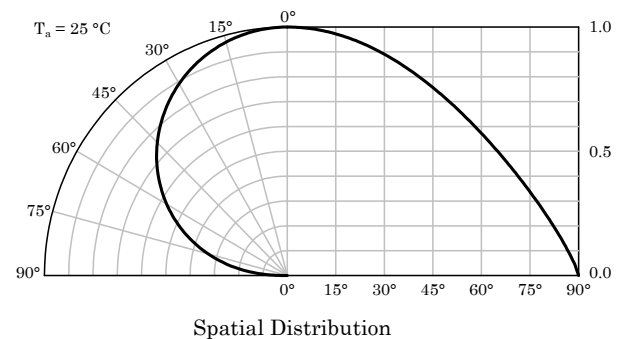
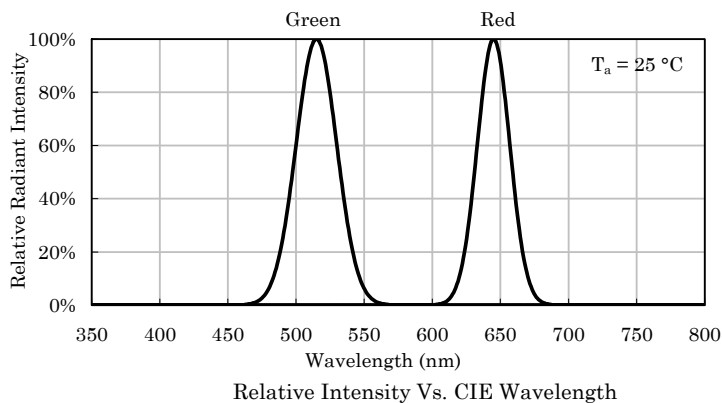
- Notes:
1. R_{th(j-a)}, R_{th(j-s)} Results from mounting on PC board FR4 (pad size ≥ 16 mm² per pad).
 2. 1/10 Duty Cycle, 0.1ms Pulse Width.
 3. A Relative Humidity between 40% and 60% is recommended in ESD-protected work areas to reduce static build up during assembly process (Reference JEDEC/JESD625-A and JEDEC/J-STD-033).

Electrical / Optical Characteristics at Ta=25°C

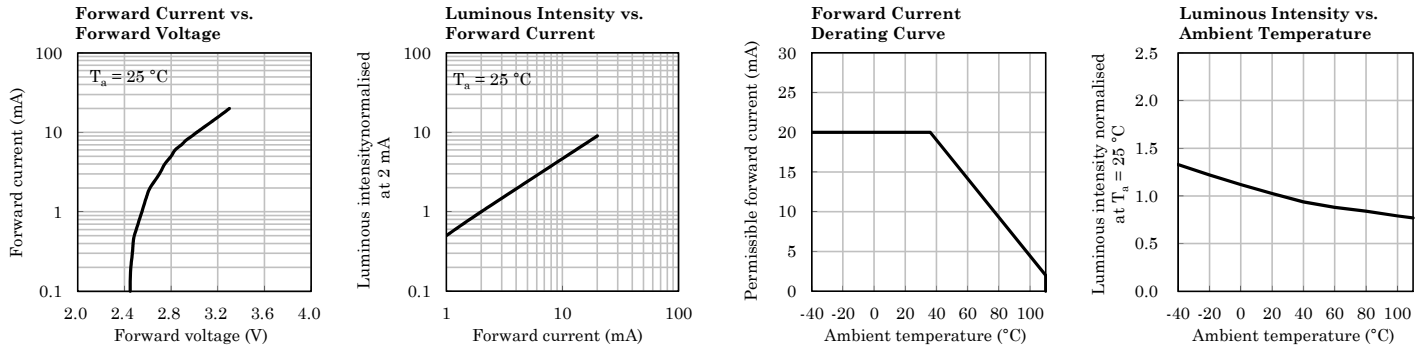
Parameter	Symbol	Chip	Value				Unit
			Code.	Min.	Typ.	Max.	
Wavelength at Peak Emission CIE127-2007* IF = 2mA	λ_{peak}	Green Red	-	-	515* 645*	-	nm
Dominant Wavelength CIE127-2007* IF = 2mA	λ_{dom} [1]	Green	3*	525*	-	530*	nm
			4*	530*	-	535*	
			5*	535*	-	540*	
		Red	-	620*	-	640*	
Spectral Bandwidth at 50% $\Phi_{REL MAX}$ IF = 2mA	$\Delta\lambda$	Green Red	-	-	35 28	-	nm
Forward Voltage IF = 2mA	V _F [2]	Green Red	-	-	2.65 1.75	3.1 2.2	V
Reverse Current (V _R = 5V)	I _R	Green Red	-	-	-	50 10	μ A
Temperature Coefficient of λ_{peak} IF = 2mA, -10°C ≤ T ≤ 110°C	TC λ_{peak}	Green Red	-	-	0.05 0.14	-	nm/°C
Temperature Coefficient of λ_{dom} IF = 2mA, -10°C ≤ T ≤ 110°C	TC λ_{dom}	Green Red	-	-	0.03 0.05	-	nm/°C
Temperature Coefficient of V _F IF = 2mA, -10°C ≤ T ≤ 110°C	TC _V	Green Red	-	-	-3.0 -1.9	-	mV/°C

Notes:

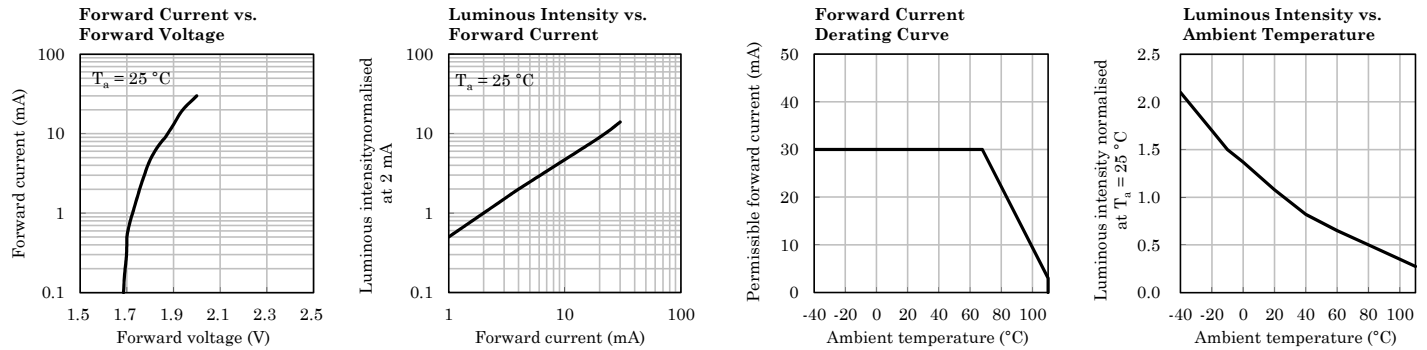
1. Wavelength : + / - 1nm.
2. Forward Voltage: +/-0.1V.
- * Wavelength value is in accordance with CIE127-2007 standards.
3. Listed bin codes represent the possible range for this LED. Actual bin codes received will be based upon production yields.



❖ Green

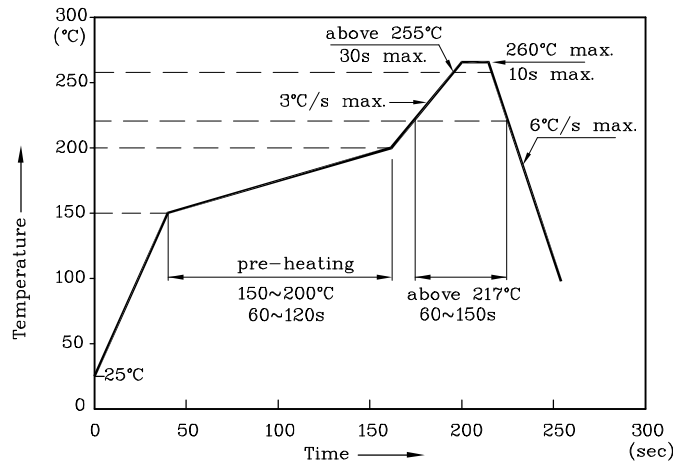


❖ Red



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

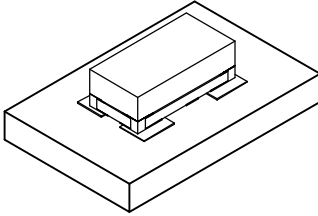
Reflow Soldering Profile for SMD Products (Pb-Free Components)



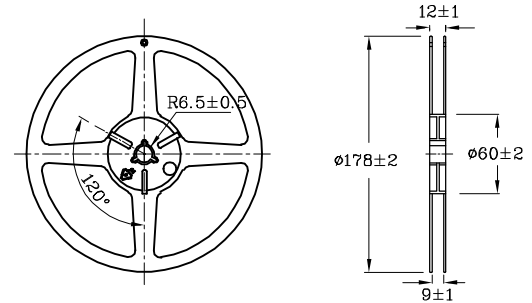
Notes:

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

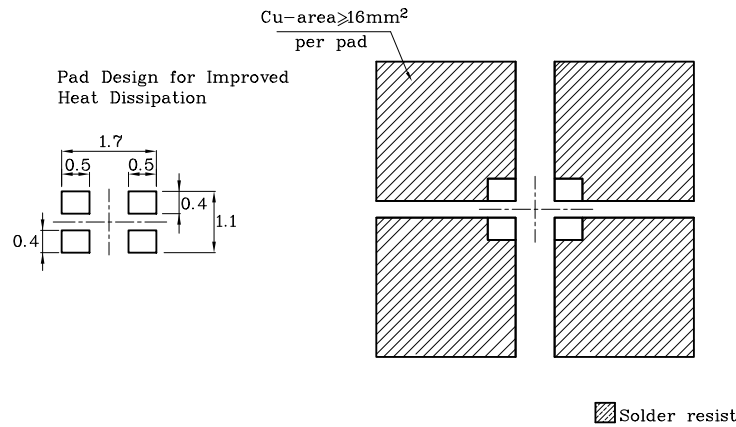
- ❖ The device has a single mounting surface.
The device must be mounted according to the specifications.



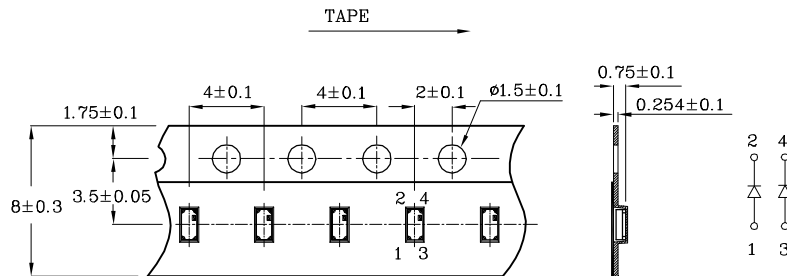
- ❖ Reel Dimension (Units : mm)



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



- ❖ Tape Specification (Units : mm)



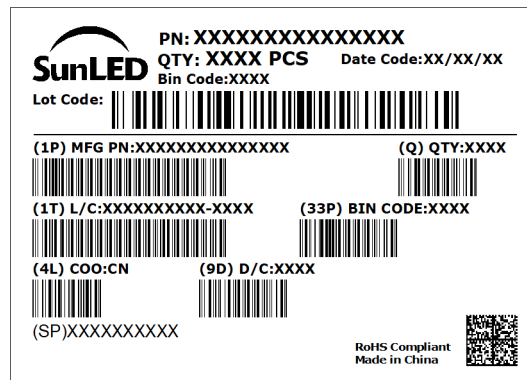
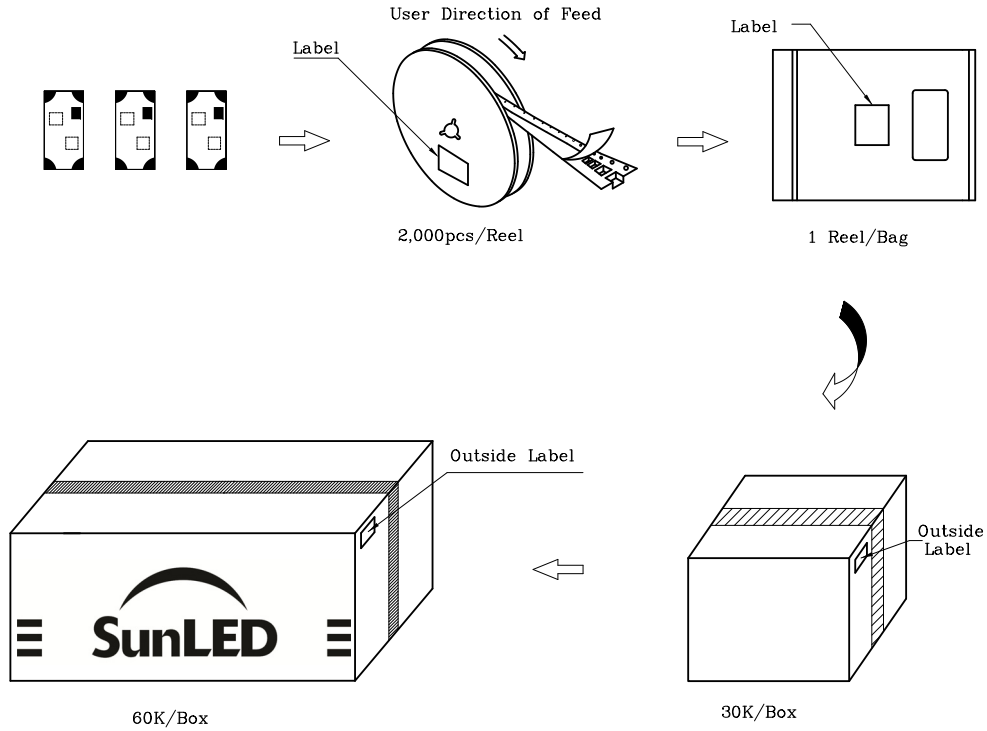
Remarks:

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: +/-1nm
2. Luminous Intensity / Luminous Flux: +/-15%
3. Forward Voltage: +/-0.1V

Note: Accuracy may depend on the sorting parameters.

Packing & Label Specifications



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)	$T_a = 110^{\circ}\text{C}$, $I_F =$ 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) $\sim$ 110°C (15min) $I_F =$ derated current at 110°C	1,000 cycles	0 / 22
10	Thermal shock test	-	$T_a = -40^{\circ}\text{C}$ (15min) $\sim$ maximum rated Storage temperature(15min)	1,000 cycles	0 / 22
11	Electric Static Discharge (ESD)	EIAJ ED-4701/100(304)	$C = 100\text{pF}$, $R_2 = 1.5\text{K}\Omega$ $V = 450\text{V}$ (Green) $V = 3000\text{V}$ (Red)	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	$I_F = 2\text{mA}$	Testing Min. Value $<$ Spec.Min.Value x 0.5
Forward Voltage	V_F	$I_F = 2\text{mA}$	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

TERMS OF USE

- Data presented in this document reflect statistical figures and should be treated as technical reference only.
- Contents within this document are subject to improvement and enhancement changes without notice.
- 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.
- 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.
- The performance of the product(s) should be evaluated and verified by the customer to ensure it can meet the customer's application requirements.
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- Additional technical notes are available at <https://www.SunLEDusa.com/TechnicalNotes.asp>