

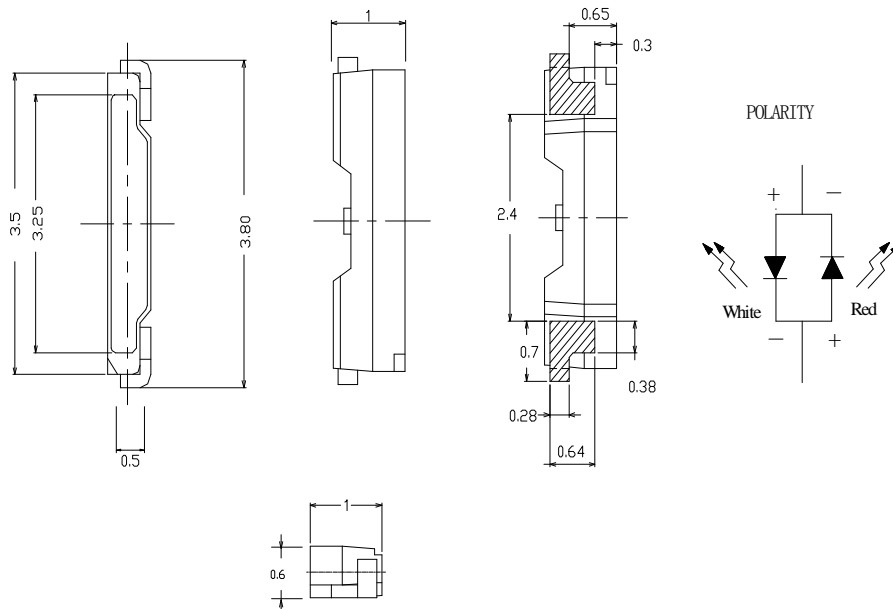
**Features**

- Package in 12mm tape on 7” diameter reels.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- I.C. compatible
- Meet green product and Pb-free(According to RoHS)
- Package : 2000pcs/Reel

**Applications**

- Backlight and Indicator

**Package Dimensions**



**Patent Protection**

**Notes:**

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.2\text{mm}(.0079\text{'})$  unless otherwise noted.
3. Specifications are subject to change without notice
4. This drawing is only for indication, not as a basis for the actual structure.



**Selection Guide**

Part No	Lens Type	Dice	Emitted Color
FSL-3810060WR-R2SNT2S2CJY	Yellow	InGaN AlInGaP	White Red

**Electrical / Optical Characteristics At Ta=25°C**

Symbol	Parameter		Red	White	Unit	Test Condition
Iv	Luminous Intensity	MIN.	112	1560	mcd	If=20mA
		TYP.	720	2300		
		MAX.	1120	2800		
2θ1/2	Viewing Angle	TYP.	130	130	deg	If=20mA
λ Peak(x)	Peak Emission Wavelength	TYP.	639	0.30	nm	If=20mA
λ d(y)	Dominant Wavelength	TYP.	631	0.30	nm	If=20mA
Δλ	Spectral Line Half-Width	TYP.	17	20	nm	If=20mA
VF	Forward Voltage	MIN.	1.8	2.8	V	If=20mA
		TYP.	2.0	3.1		
		MAX.	2.4	3.6		

Note:

1. The Luminous Intensity is measured with the led excluded the black lens cover.
2. The chromaticity coordinates(x,y) is derived form 1931 CIE chromaticity diagram.
3. The chromaticity coordinates(x,y) guarantee should be added±0.02 tolerance.

**Absolute Maximum Ratings At Ta=25°C**

Parameter	Red	White	Unit
Power Dissipation	75	95	mW
Peak Forward Current[1]	80	100	mA
Continuous Forward Current	25	25	mA
Derating Linear From 25°C	0.4	0.25	mA/°C
Reverse Voltage	5	5	V
Electrostatic Discharge Threshold(HBM)	2000		V
Operating Temperature Range	-55°C to + 85°C		
Storage Temperature Range	-55°C to + 85°C		
Soldering Condition	260°C For 5 Seconds		

Note:

1. 1/10DutyCycle,0.1msPulseWidth

**Electrical Optical Characteristics Curves At Ta=25°C**

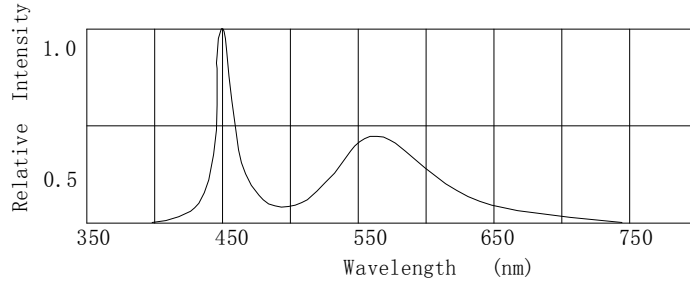


Fig.1 Relative Intensity VS. Wavelength

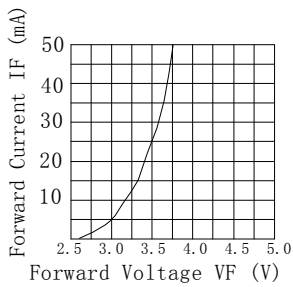


Fig.2 Forward Current vs. Forward Voltage

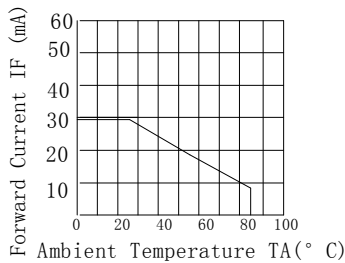


Fig.3 Forward Current Derating Curve

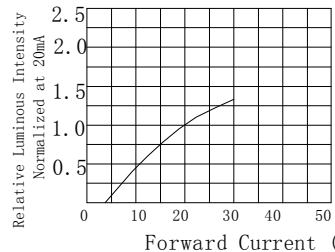


Fig.4 Relative Luminous Intensity vs. Forward Current

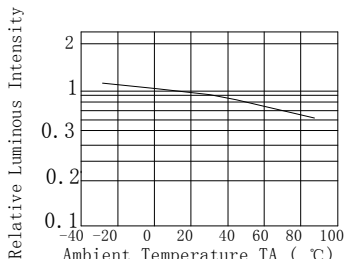


Fig.5 Luminous Intensity vs. Ambient Temperature

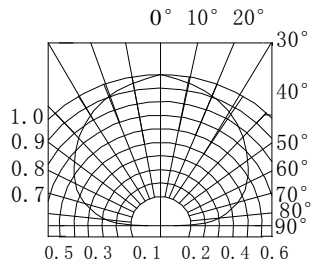


Fig.6 Spatial Distribution

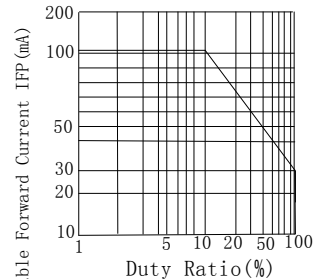


Fig.7 Duty Ratio vs. Allowable Forward Current

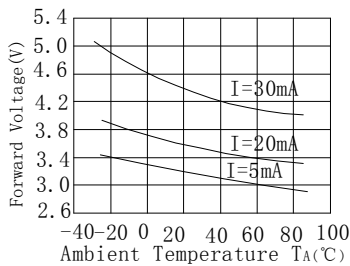


Fig.8 Ambient Temperature vs. Forward Voltage

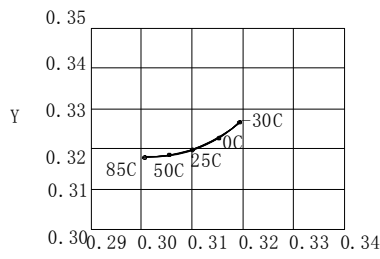


Fig.9 Ambient Temperature vs. Chromaticity Coordinate

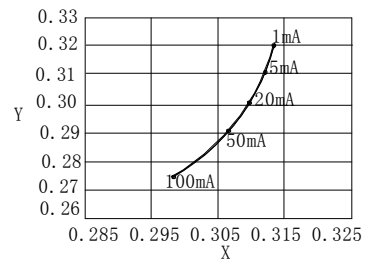


Fig.10 Forward Current vs. Chromaticity Coordinate

**Electrical Optical Characteristics Curves At Ta=25°C**

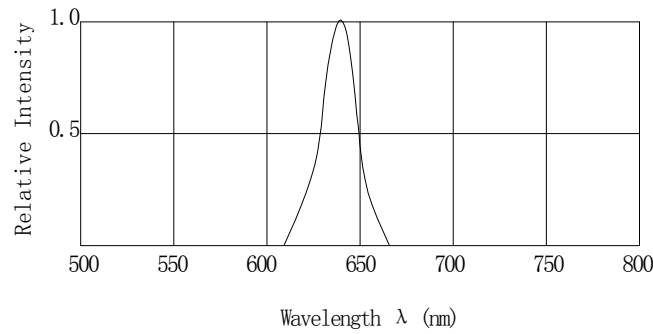


Fig. 1 Relative Intensity vs. Wavelength

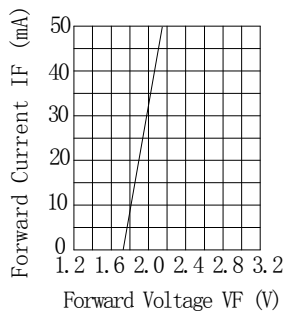


Fig. 2 Forward Current VS. Forward Voltage

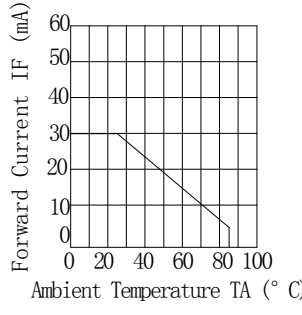


Fig. 3 Forward Current Derating Curve

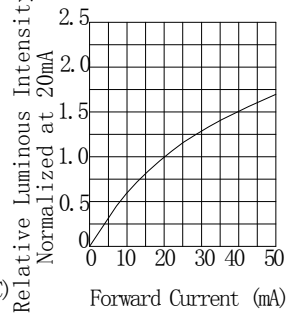


Fig. 4 Relative Luminous Intensity VS. Forward Current

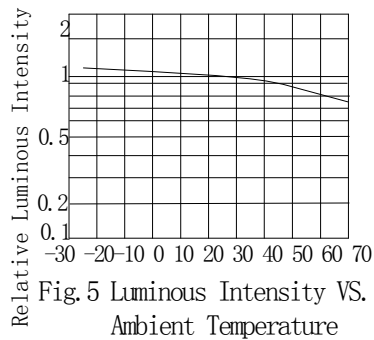


Fig. 5 Luminous Intensity VS. Ambient Temperature

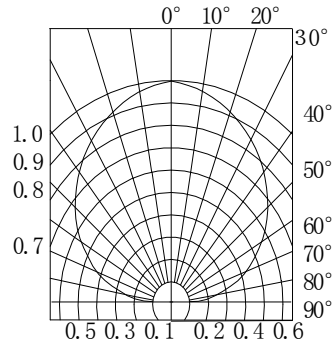


Fig. 6 Spatial Distribution



**Bin Range Of Luminous Intensity (+/-20%)**

Symbol	Bin Code	Min.	Max.	Unit	Condition
Iv (White)	LT2	1560	1800	mcd	IF=20mA
	LS1	1800	2250		
	LS2	2250	2800		

Symbol	Bin Code	Min.	Max.	Unit	Condition
Iv (Red)	R	112	180	mcd	IF=20mA
	S	180	280		
	T	280	450		
	U	450	720		
	V	720	1120		

**Bin Range Of Forward Voltage (+/-0.15)**

Symbol	Bin Code	Min.	Max.	Unit	Condition
VF (White)	VA	2.8	3.0	V	IF=20mA
	V1	3.0	3.2		
	V3	3.2	3.4		
	V5	3.4	3.6		

Symbol	Bin Code	Min.	Max.	Unit	Condition
VF (Red)	VR	1.8	2.4	V	IF=20mA



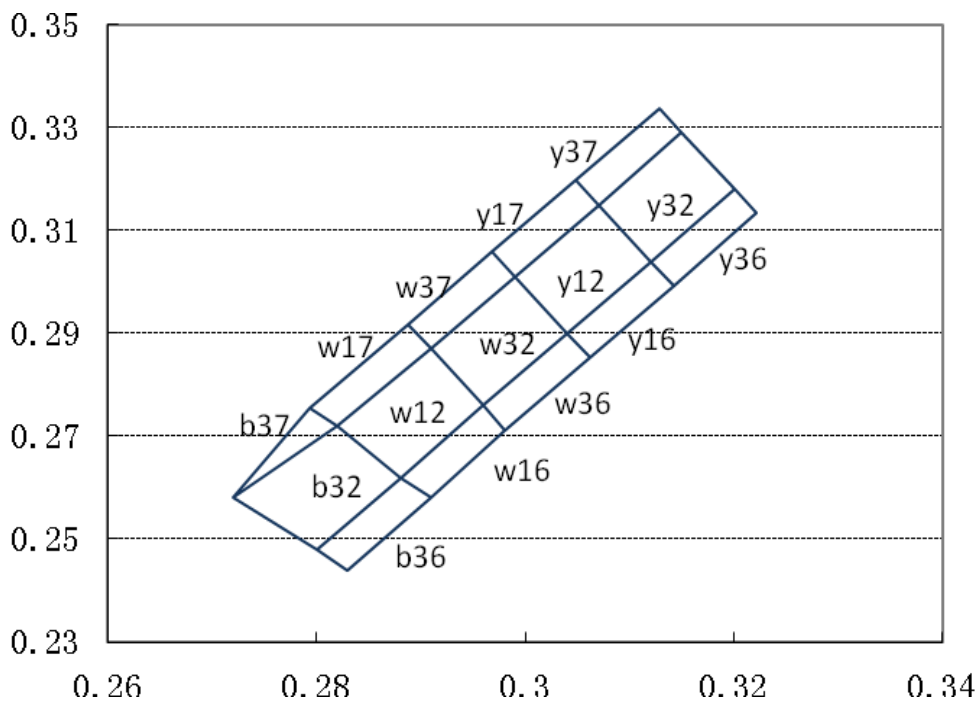
**Chromaticity Coordinates Specifications for Bin Grading (+/-0.02)**

IF=20mA

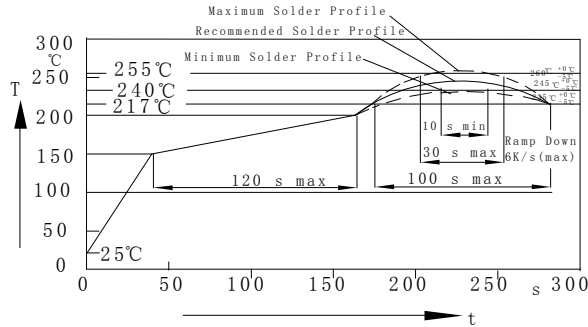
Bin	x	y	x	y	x	y	x	y
y37	0.3070	0.3150	0.3048	0.3198	0.3128	0.3338	0.3150	0.3290
y32	0.3120	0.3040	0.3070	0.3150	0.3150	0.3290	0.3200	0.3180
y36	0.3142	0.2993	0.3120	0.3040	0.3200	0.3180	0.3222	0.3133
y16	0.3062	0.2853	0.3040	0.2900	0.3120	0.3040	0.3142	0.2993
y17	0.2990	0.3010	0.2968	0.3058	0.3048	0.3198	0.3070	0.3150
y12	0.3040	0.2900	0.2990	0.3010	0.3070	0.3150	0.3120	0.3040
w37	0.2910	0.2870	0.2887	0.2916	0.2968	0.3058	0.2990	0.3010
w32	0.2960	0.2760	0.2910	0.2870	0.2990	0.3010	0.3040	0.2900
w36	0.2980	0.2710	0.2960	0.2760	0.3040	0.2900	0.3062	0.2853
w17	0.2820	0.2720	0.2793	0.2755	0.2887	0.2916	0.2910	0.2870
w12	0.2880	0.2620	0.2820	0.2720	0.2910	0.2870	0.2960	0.2760
w16	0.2910	0.2580	0.2880	0.2620	0.2960	0.2760	0.2980	0.2710
b37	0.2720	0.2580	0.2793	0.2755	0.2820	0.2720		
b32	0.2800	0.2480	0.2720	0.2580	0.2820	0.2720	0.2880	0.2620
b36	0.2830	0.2440	0.2800	0.2480	0.2880	0.2620	0.2910	0.2580

**CIE Chromaticity Diagram (+/-0.02)**

IF=20mA



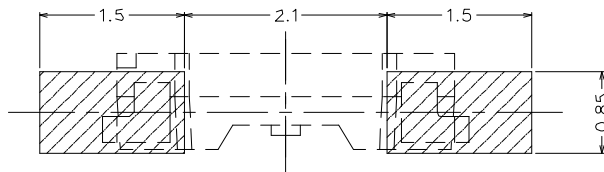
**SMT Reflow Soldering Instructions**



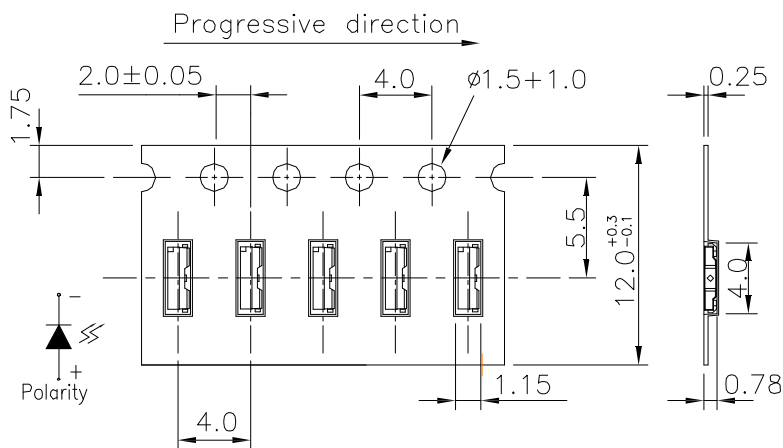
**Notes:**

1. Seller gives no other assurances regarding the ability of to withstand ESD. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.
2. Reflow soldering should not be done more than two times.
3. Do not stress LED when soldering, and do not warp the circuit board after soldering
4. While using Iron, Power dissipation of Iron should be smaller than 25W, and temperature should be controllable. The work should be finished within 2 sec under 320°C for once only.

**Recommended Soldering Pad Dimensions**



**Package Specifications (Units: mm(inches))**



**Notes:**

1. The LEDs should be used within a year.
2. The LEDs should be kept in 5~30°C and 60% RH for less.
3. The LEDs should be used within 24 hours, or else should be kept a 5~30°C and 30% RH or less. And LEDs should be used within 7 days after opening the package.

**Reliability Test Items Conditions**

Classification	Test Item	Test Conditions	Test hours	Result
Endurance Test	Operation Life	Connect with a power $I_F=20mA$ $T_a$ =Under room temperature	1000Hrs	0/20
	High Temperature High Humidity	$T_a=+65^{\circ}C \pm 5^{\circ}C$ RH=90%-95%	240Hrs	0/20
	High Temperature Storage	High $T_a=+85^{\circ}C \pm 5^{\circ}C$	1000Hrs	0/20
	Low Temperature Storage	Low $T_a=-35^{\circ}C \pm 5^{\circ}C$ Test time=1000hrs	1000Hrs	0/20
Environmental Test	Temperature Cycling	$-45^{\circ}C \sim +105^{\circ}C$ 15min 5min 15min	300 Cycles	0/20
	Thermal Shock	$-35^{\circ}C \sim \pm 5^{\circ}C \sim +85^{\circ}C \sim \pm 5^{\circ}C$ 5min 10sec 5min	300 Cycles	0/20
	Solder Resistance	Preheating: $120^{\circ}C - 150^{\circ}C$ , within 2 minutes. Operation heating : $260^{\circ}C$ (Max.), within 5 seconds (Max.)	5Cycles	0/20

**Judgment criteria of failure for the reliability**

Measuring items	Symbol	Measuring conditions	Judgment criteria for failure
Forward voltage	$V_F(V)$	$I_F=20mA$	Over $U \times 1.2$
Luminous intensity	$I_v(mcd)$	$I_F=20mA$	Below $S \times 0.5$

Note: 1.U means the upper limit of specified characteristics. S means initial value.

2.Measurment shall be taken between 2 hours after the test pieces have been returned to normal ambient conditions after completion of each test.