

2T21Y6GX00038SAA

Ultra high reliability and luminous efficacy ,PLCC LED Series are optimized to be used as lighting for automotive signal lighting designs or signboard.



Automotive
Lighting

Applications :

- Automotive Interior Lighting

Features :

- Package: Ag Plated 2 pad design package with silicone resin
- Dimension: 2.2 mmx1.4 mm
- Chip technology: GaN
- View Angle: 120°
- Color: $\lambda_{\text{dom}}=525$ nm(Green)
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- MSL: Level 2
- Qualifications: The product qualification test based on the guidelines of AEC-Q102

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General Information

Ordering Code Format

2 T 21 Y6 GX 00 03 8 S A A
 X1 X2 X3-X4 X5-X6 X7-X8 X9-X10 X11-X12 X13 X14 X15 X16

X1		X2		X3-X4		X5-X6		X7-X8	
Type		Component		Series		Wattage		Color/CCT	
2	Emitter	T	PLCC	21	2214	Y6	0.06W	GX	Green

X9-X10		X11-X12		X13		X14		X15	
CRI(Ra)		Voltage		Leadframe Mode		Leadframe Plating		Model	
00	-	03	3V	8	PPA 1.3H 2Pin	S	Silver	A	Automotive

X16	
Serial Number	
-	-

Absolute Maximum Ratings

Absolute maximum ratings

Parameter		Symbol	Values
Operating Temperature	min. max.	T_{op}	-40 °C 100 °C
Storage Temperature	min. max.	T_{stg}	-40 °C 100 °C
Junction Temperature	max.	T_j	115 °C
Forward current $T_j = 25\text{ °C}$	min. max.	I_F	5 mA 30 mA
Surge Current $t \leq 10\text{ }\mu\text{s}; D = 0.005; T_j = 25\text{ °C}$	max.	I_{FS}	100 mA
Reverse voltage $T_j = 25\text{ °C}$	max.	V_R	Not designed for reverse operation
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)		V_{ESD}	2 kV

Notes: Proper current derating must be observed to maintain junction temperature below the maximum at all time.

Characteristics

$I_F = 20\text{ mA}; T_j = 25\text{ °C}$

Parameter		Symbol	Values
Peak Wavelength	typ.	λ_{Peak}	517 nm
Dominant Wavelength	min. typ. max.	λ_{dom}	520 nm 525 nm 530 nm
Viewing angle	typ.	ϕ	120 °
Forward Voltage	min. typ. max.	V_F	2.70 V 2.88 V 3.10 V
Reverse current $V_R = 5\text{ V}$	typ. max.	I_R	0.01 μA 10 μA
Real thermal resistance junction/solder point	typ. max.	$R_{thJS\text{ real}}$	260 K / W 264 K / W
Electrical thermal resistance junction/ solder point with efficiency $\eta_e = 23\%$	typ. max.	$R_{thJS\text{ elec.}}$	130 K / W 134 K / W

Luminous Intensity Characteristic

Luminous Intensity Characteristics, $I_f=20\text{mA}$, $T_j=25^\circ\text{C}$

Symbol	Group	Min. Luminous Intensity(mcd)	Max. Luminous Intensity(mcd)	Typ. Luminous Flux(mlm)
I _v	V2	900	1120	3151
	AA	1120	1400	3931
	AB	1400	1800	4992

Note:

The luminous intensity performance is guaranteed within published operating conditions. Edison Opto maintains a tolerance of $\pm 10\%$ on intensity measurements.

Voltage Bin Structure

Voltage Bin Structure, $I_f=20\text{mA}$, $T_j=25^\circ\text{C}$

Symbol	Group	Min. Voltage (V)	Max. Voltage (V)
V _F	B70	2.70	2.90
	B90	2.90	3.10

Note:

Forward voltage measurement allowance is $\pm 0.1\text{V}$.

Wavelength Bin Structure

Wavelength Bin Structure, $I_f=20\text{mA}$, $T_j=25^\circ\text{C}$

Symbol	Group	Min. Wd (nm)	Max. Wd (nm)
λ_{dom}	G20	520	525
	G25	525	530

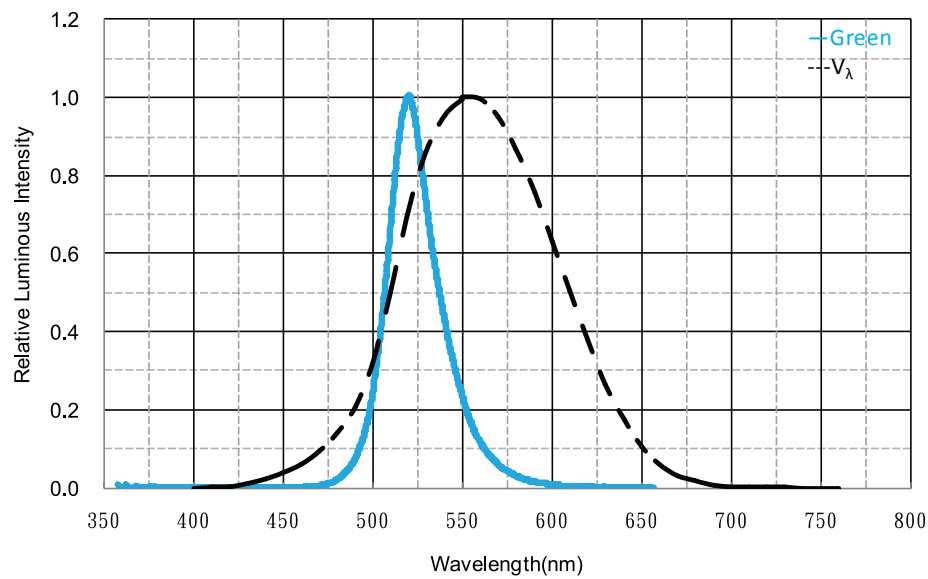
Note:

Dominant wavelength measurement allowance is $\pm 1\text{nm}$.

Characteristic Curves

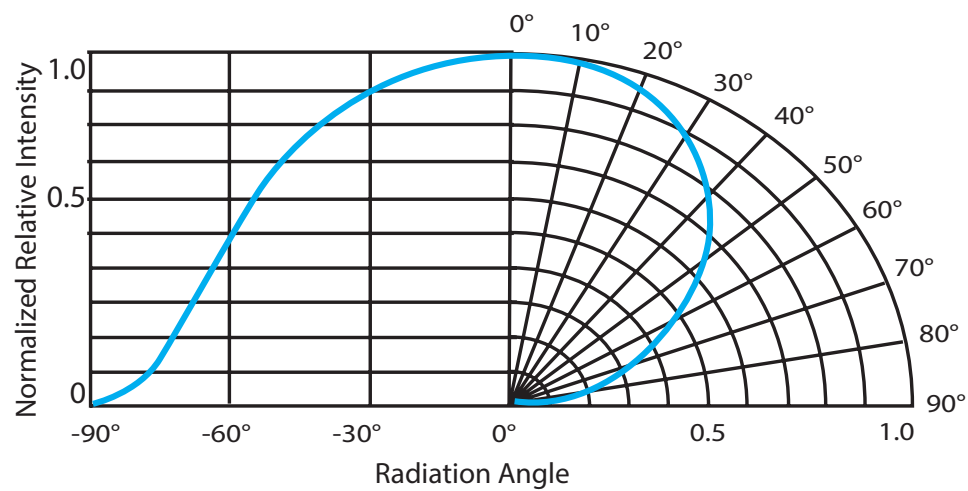
Color Spectrum

$I_f = 20 \text{ mA}$; $T_j = 25^\circ \text{C}$



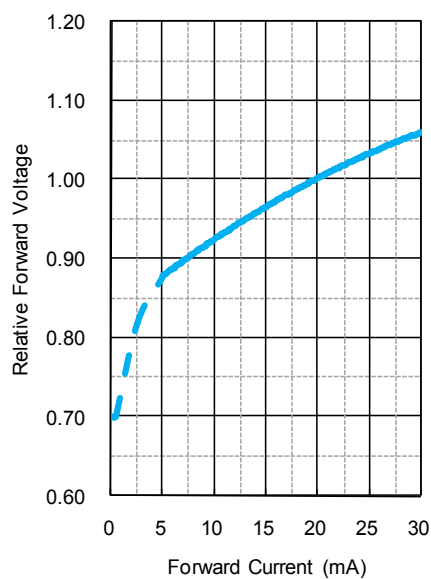
Beam Pattern

$I_f = 20 \text{ mA}$; $T_j = 25^\circ \text{C}$



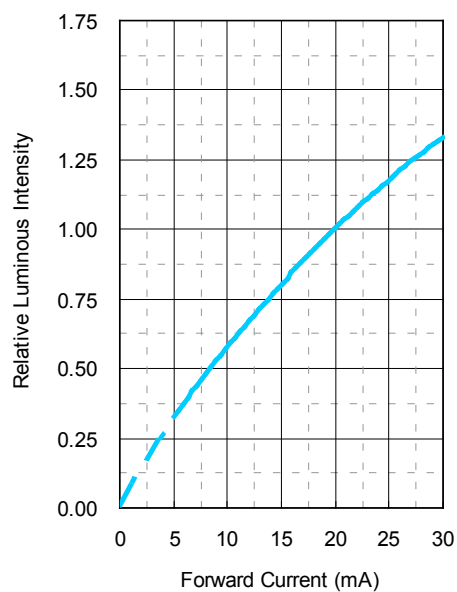
Relative Forward Voltage

$$V_F/V_F(20 \text{ mA}) = f(I_F); T_J = 25^\circ\text{C}$$



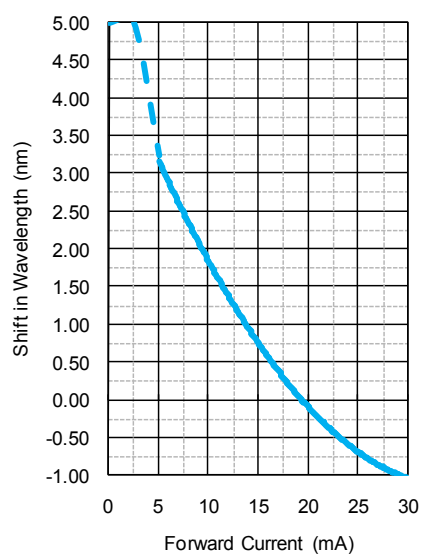
Relative Luminous Intensity

$$I_v/I_v(20 \text{ mA}) = f(I_F); T_J = 25^\circ\text{C}$$



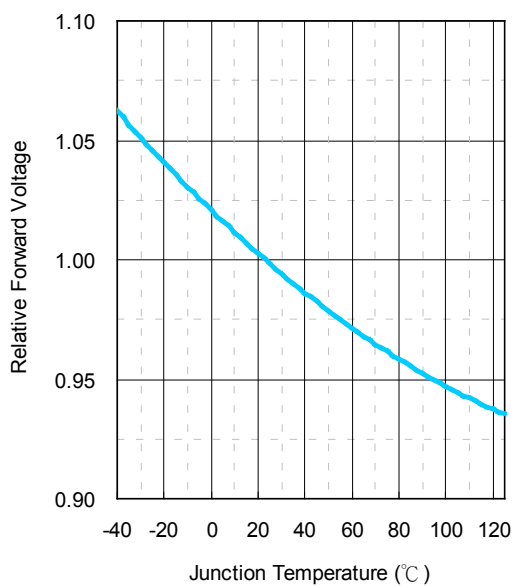
Shift in Dominant Wavelength

$$\Delta\lambda_{\text{dom}} = \lambda_{\text{dom}} - \lambda_{\text{dom}}(20 \text{ mA}); T_J = 25^\circ\text{C}$$



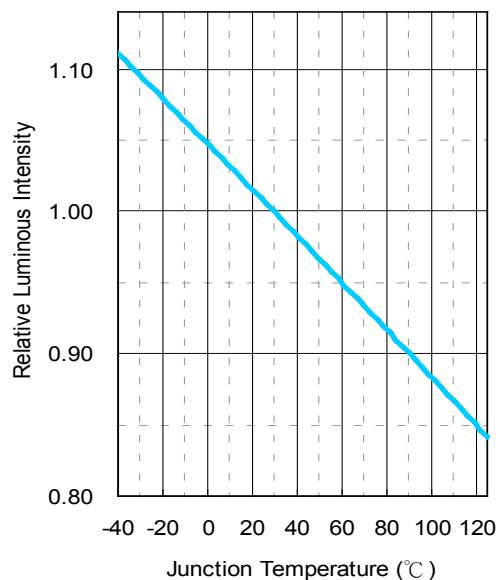
Relative Forward Voltage

$$V_F/V_F(25^\circ\text{C}) = f(T_J); I_F = 20\text{ mA}$$



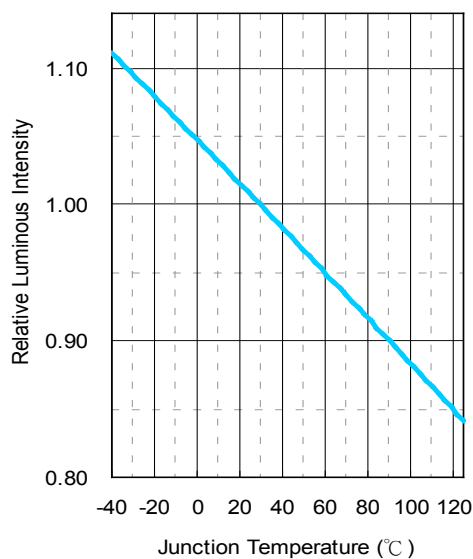
Relative Luminous Intensity

$$I_v/I_v(25^\circ\text{C}) = f(T_J); I_F = 20\text{ mA}$$



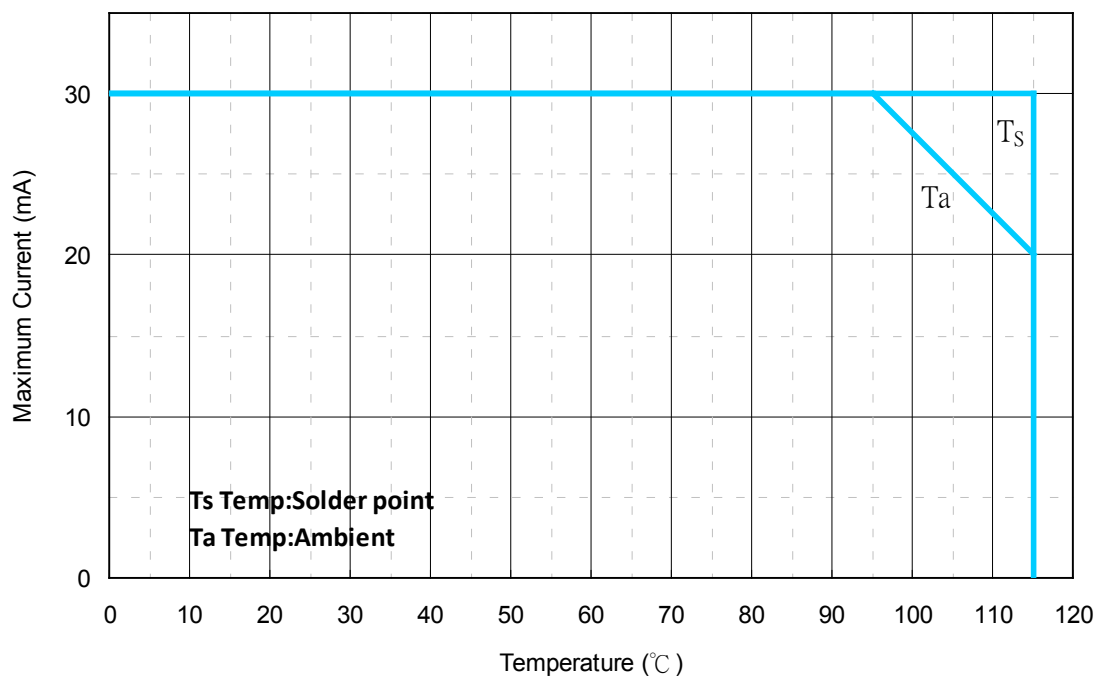
Shift in Dominant Wavelength

$$\Delta\lambda_{\text{dom}} = \lambda_{\text{dom}} - \lambda_{\text{dom}}(25^\circ\text{C}); I_F = 20\text{ mA}$$



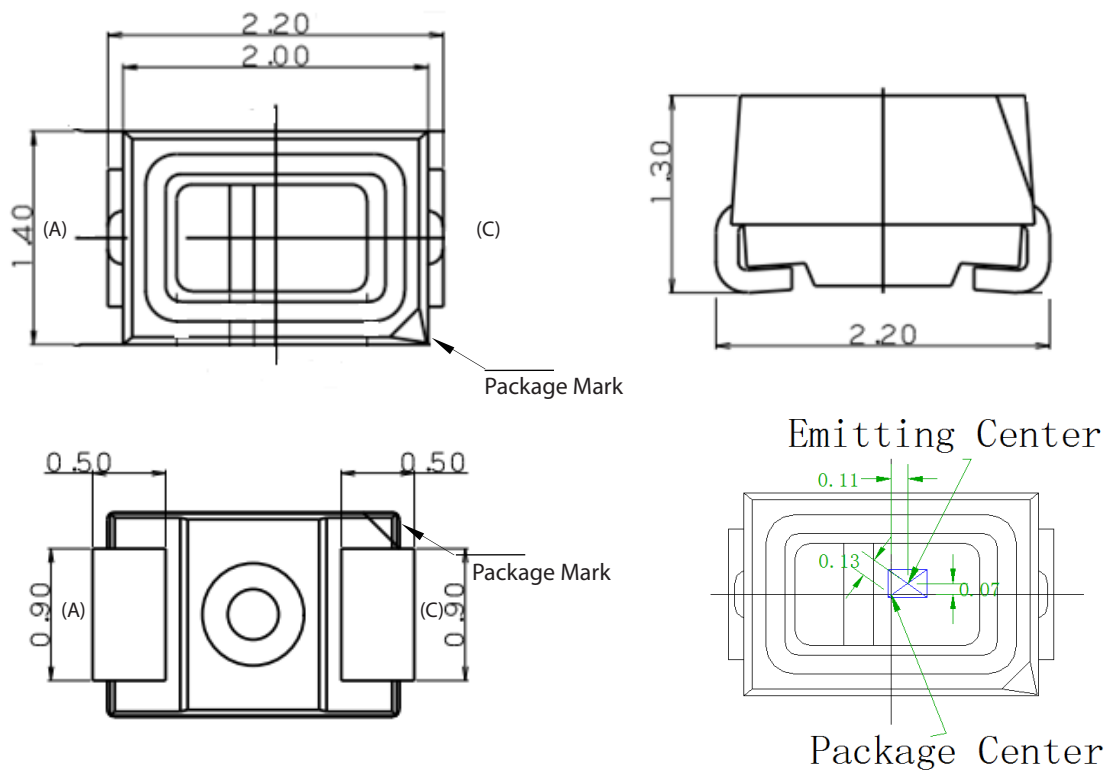
Max. Permissible Forward Current

$$I_F = f(T)$$

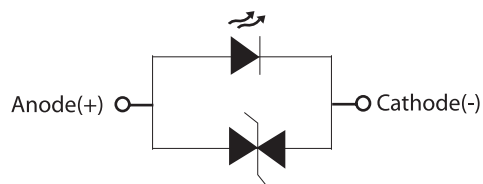


Mechanical Dimensions

Dimensional Drawing



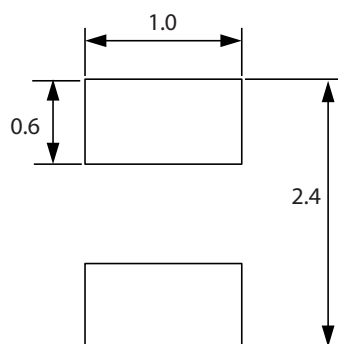
Circuit



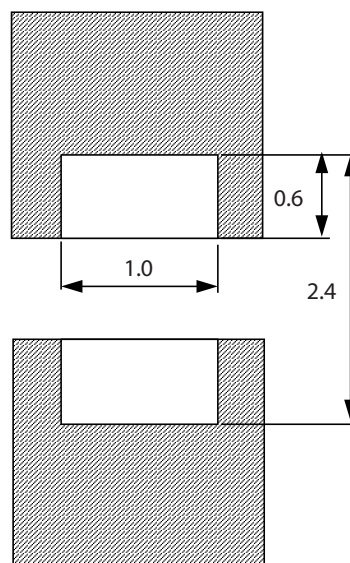
Notes:

1. All dimensions are measured in mm.
2. Tolerance : ± 0.1 mm
3. Approximate Weight : 10.0 mg

Recommended Solder Pad



Pad design for improved heat dissipation



Solder resist

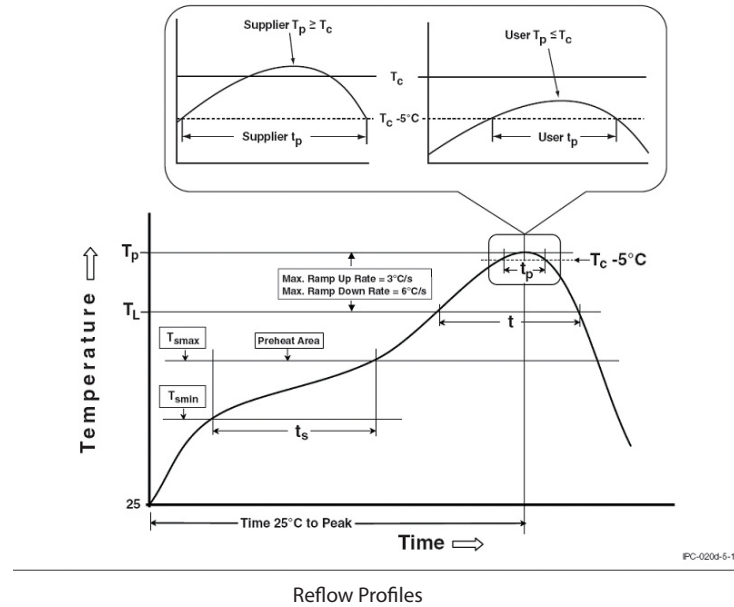
Cu-area > 16mm²

Notes:

1. All dimensions are measured in mm.
2. Tolerance : ± 0.1 mm

Reflow Profile

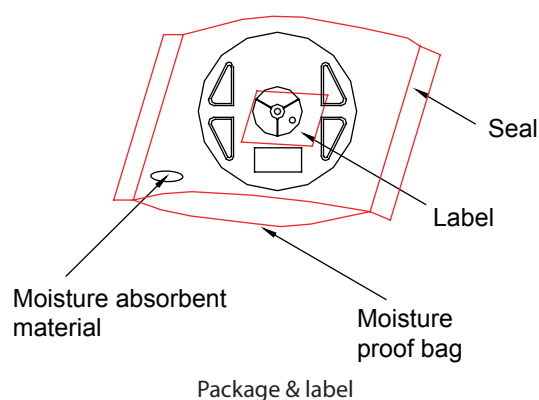
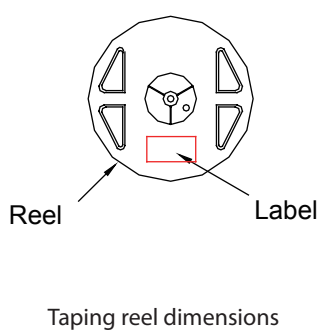
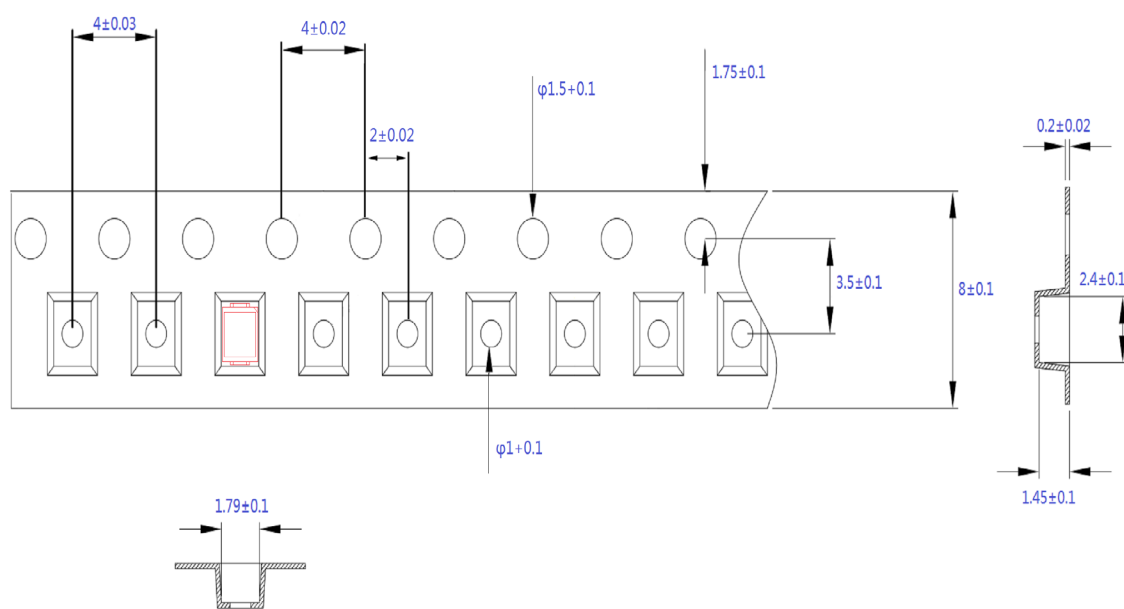
The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



Classification Reflow Profiles

Profile Feature	Pb-Free Assembly
Preheat & Soak	
Temperature min (T_{min})	150 °C
Temperature max (T_{max})	200 °C
Time (T_{min} to T_{max}) (t_s)	60-120 seconds
Average ramp-up rate (T_{max} to T_p)	3 °C/second max.
Liquidous temperature (T_L)	217 °C
Time at liquidous (t_L)	60-150 seconds
Peak package body temperature (T_p)	255 °C ~260 °C
Classification temperature (T_c)	260 °C
Time (t_p) within 5 °C of the specified classification temperature (T_c)	30 seconds
Average ramp-down rate (T_p to T_{max})	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Product Packaging Information



Item	Quantity	Total	Dimensions(mm)
Reel	3,000pcs	3,000pcs	R=178
Starting with 100pcs empty, and 200pcs empty at the last			

Cautions

- (1) Moisture monitoring is vital during the storage of LEDs for if too much moisture is absorbed, interface delamination and optical performance degradation will occur. Therefore, products should be packed in moisture-proof aluminum bags so as to reduce moisture absorption to the lowest degree during transportation and storage. Included moisture-proof aluminum bag are the key indicators that they will change from brown to azure if bags are invaded by moisture.
- (2) Soldering process in compliance with the range of the conditions stated above should be conducted after opening the moisture-proof aluminum bag. The rest LEDs should be stored in a hermetically sealed container, silica gel desiccants included. And the original moisture-proof aluminum bags are recommended.
- (3) If the "Period After Opening" storage time is too long or silica gel desiccants don't maintain blue any more, baking process should be done once.

Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2022/11/02
2	Add Center Position	2023/6/20
3	Add Ta Temp	2023/11/14

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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