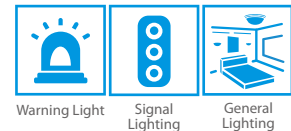


Federal Series

3535 3W LC

PC Amber

Datasheet



Features :

- High lumen performance
- High efficiency package
- Promising lumen maintenance characteristics
- Standard 3535 package with existing design
- Level 1 on JEDEC moisture sensitivity analysis
- Maximum drive current : 700 mA
- RoHS compliant

Typical Applications :

- Wash wall lights
- Warning lights
- Turn signal
- Warm dimming lights
- Signaling lights/Traffic signal
- LCD Backlights
- Daytime running lights
- Position lights/ Side marker lights

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General Information

Introduction

Federal 3535 is a surface mount, compact, high brightness LED that is built for various illumination needs. A single PC Amber Federal 3535 can deliver typical luminous flux of 90lm while driving at 350mA suitable for any kind of lighting sources, including automotive, entertainment, roadway, signaling, and wash wall light. The small physical dimension can free customers from any constraints or limitations in these fields of applications.

Compared to typical Amber LEDs, Edison Federal 3535 has much more light output and dramatically less color shift. Federal 3535 sets performance standards for color stability and light output performance. Furthermore, the reflow-solderable nature of Federal 3535 provides an easy path towards the optimum thermal management to achieve a promising reliability. In conclusion, Federal 3535 offers you an extraordinary LED experience.

Ordering Code Format

2
X1
F
X2
X0
X3
03
X4
AX
X5
xx
X6
F02
X7
xxx
X8

X1		X2		X3		X4		X5	
Type		Component		Series		Wattage		Color	
2	Emitter	F	Federal	X0	3535	03	3W	AX	PC Amber

X6		X7		X8	
Internal code		PCB Board		Serial Number	
-	-	F02	3535	-	-

Absolute Maximum Ratings

($T_J = 25^\circ\text{C}$)

Parameter	Symbol	Value	Units
DC Forward Current	I_F	700	mA
Reverse Voltage ^[1]	V_R	Note 1	V
LED Junction Temperature ^[2]	T_J	125	$^\circ\text{C}$
Operating Temperature	-	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	-	-40 ~ +85	$^\circ\text{C}$
ESD Sensitivity (HBM)	-	2,000	V
Allowable Reflow Cycles	-	3	cycles
Soldering Temperature	-	260	$^\circ\text{C}$

Notes:

- LEDs are not designed to drive in reverse bias.
- Proper current derating must be observed to maintain junction temperature below the maximum.

Characteristics

($I_F = 350\text{mA}; T_J = 25^\circ\text{C}$)

Parameter	Symbol	Value	Units
Viewing Angle (Typ.)	$2\Theta_{1/2}$	110	Degree
Thermal resistance	-	9	$^\circ\text{C}/\text{W}$
JEDEC Moisture Sensitivity	-	Level 1 Floor Life Conditions: $\leq 30^\circ\text{C} / 85\% \text{RH}$ Soak Requirements(Standard) Time (hours): 168+5/-0 Conditions: $85^\circ\text{C} / 85\% \text{RH}$	-

Note:

- Viewing angle is measured with accuracy of $\pm 10\%$.

Luminous Flux BIN Code

($T_j = 25^\circ\text{C}$)

Color	Group	Luminous Flux @350mA (lm)		Luminous Flux @700mA (lm)		Order Code
		min	max	min	max	
PC Amber	U3	100	110	181	199	2FX003AX70F02008
	V1	110	120	199	217	
	V2	120	130	217	235	
	V3	130	140	235	253	

Note:

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

Voltage BIN Code

($I_f = 350\text{mA}; T_j = 25^\circ\text{C}$)

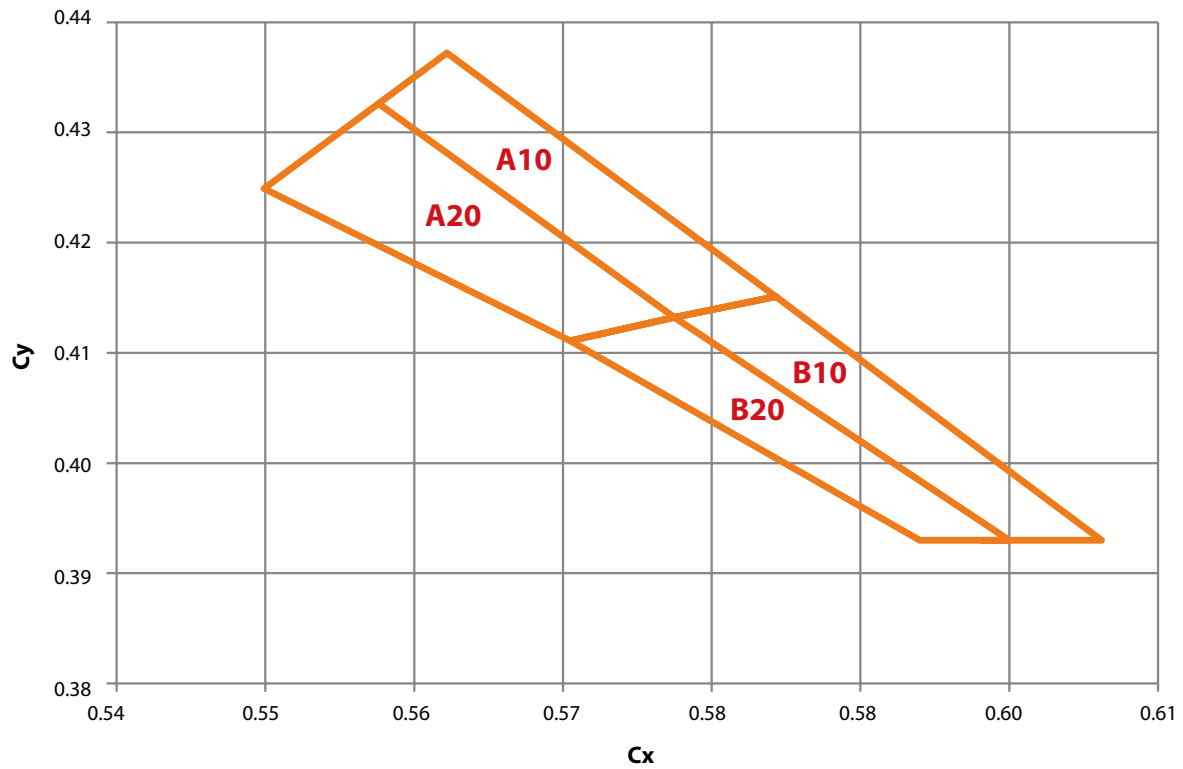
Group	Min. Voltage (V)	Max. Voltage (V)
V01	2.8	3.1
V02	3.1	3.4
V03	3.4	3.7

Note:

Forward voltage measurement allowance is $\pm 0.06\text{V}$.

Color BIN Code

($I_f = 350\text{mA}; T_j = 25^\circ\text{C}$)



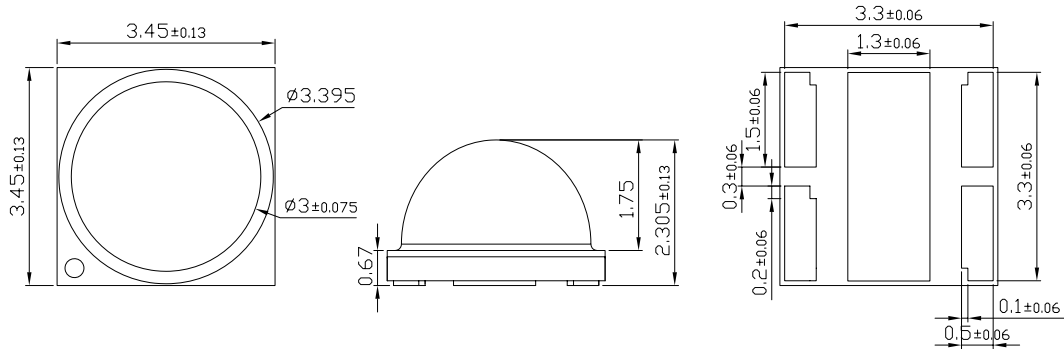
A10		B10		A20		B20	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.5775	0.4132	0.5775	0.4132	0.5705	0.4111	0.5705	0.4111
0.5843	0.4151	0.5843	0.4151	0.5775	0.4132	0.5775	0.4132
0.5622	0.4372	0.6062	0.3930	0.5576	0.4326	0.6000	0.3930
0.5576	0.4326	0.6000	0.3930	0.5499	0.4249	0.5940	0.3930

Note:

1. Cx / Cy tolerance: ± 0.005 .

Mechanical Dimensions

Component

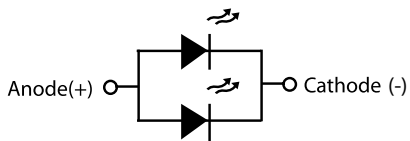


Unless otherwise specified tolerance: ± 0.1
Unit: mm

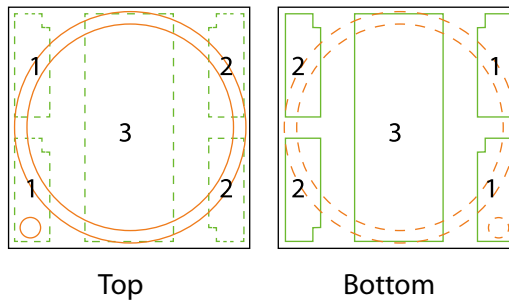
Note:

1. Drawings are not to scale.

Circuit



Ceramic Layout



Pad Configuration

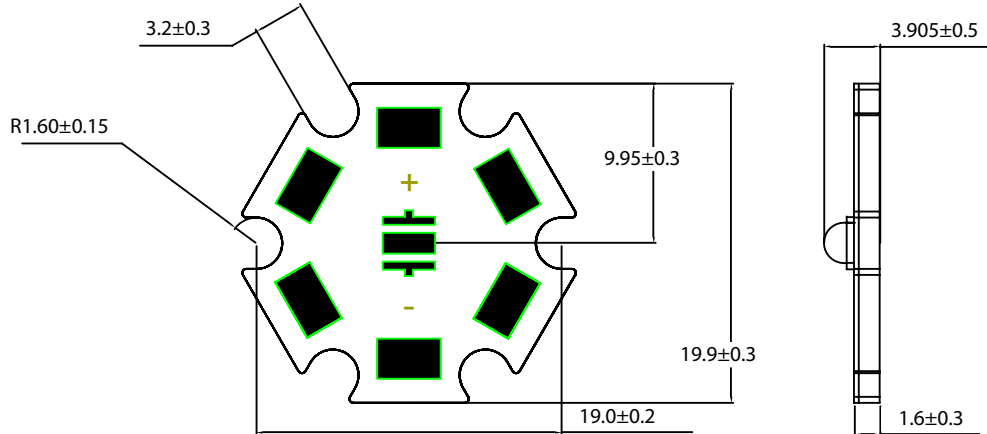
Pad	Function
1	Anode
2	Cathode
3	Thermal

Note:

The thermal pad is electrically isolated from anode and cathode.

Recommended PCB

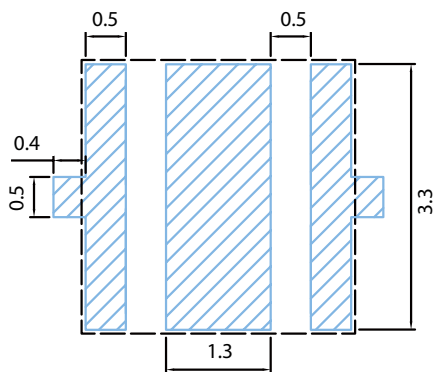
Recommended Star



Notes:

1. All dimensions are measured in mm.
2. Drawings are not to scale.

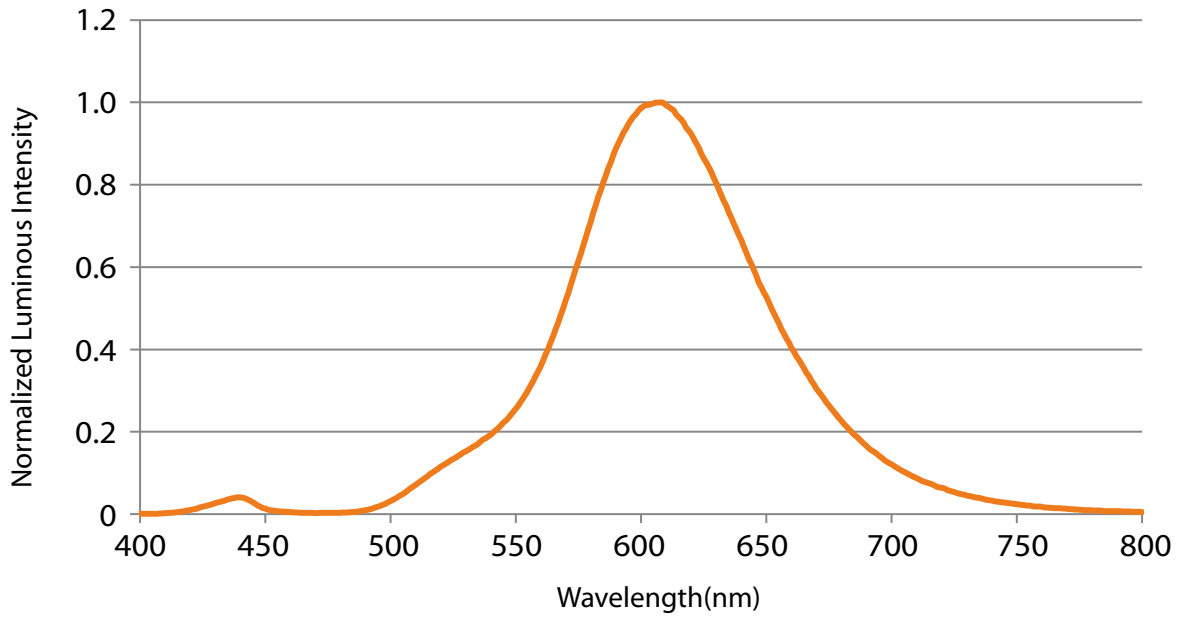
Recommended Solder Pad



Characteristic Curve

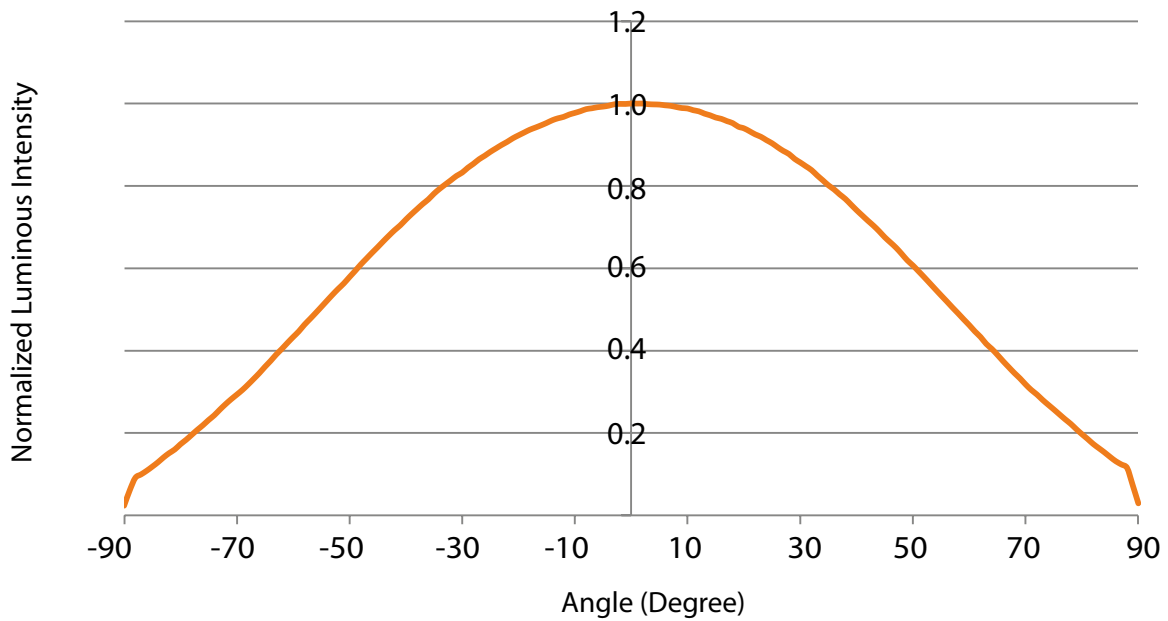
Color Spectrum

($I_{rel}=f(\lambda)$; $I_F = 350\text{mA}$; $T_J = 25^\circ\text{C}$)



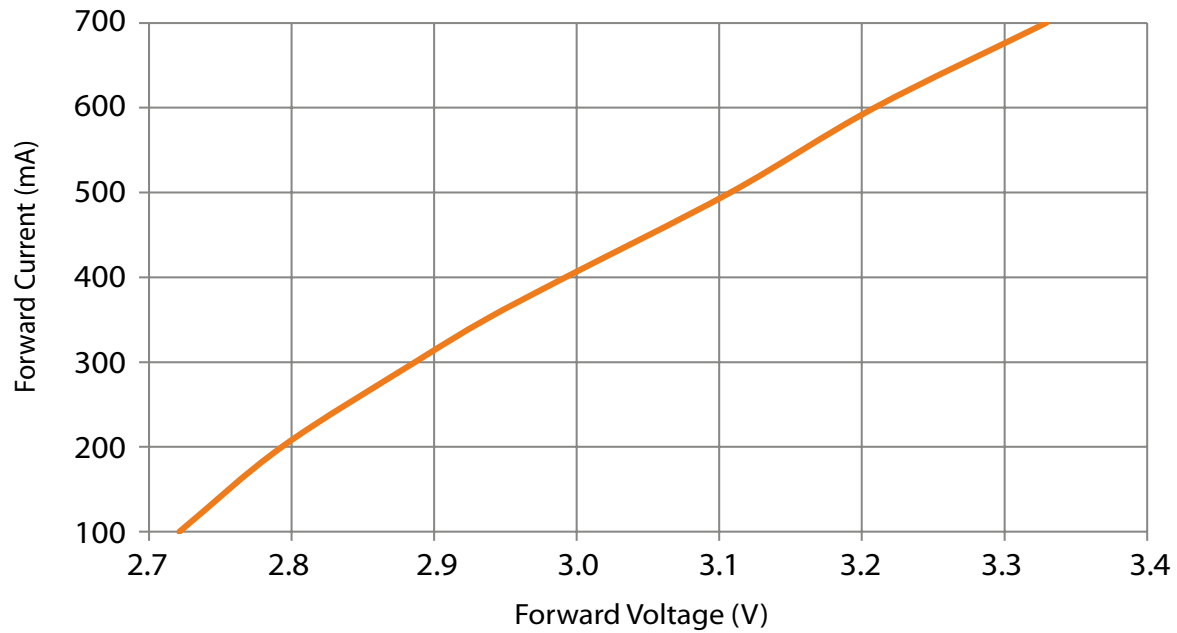
Beam Pattern

($I_F = 350\text{mA}$; $T_J = 25^\circ\text{C}$)



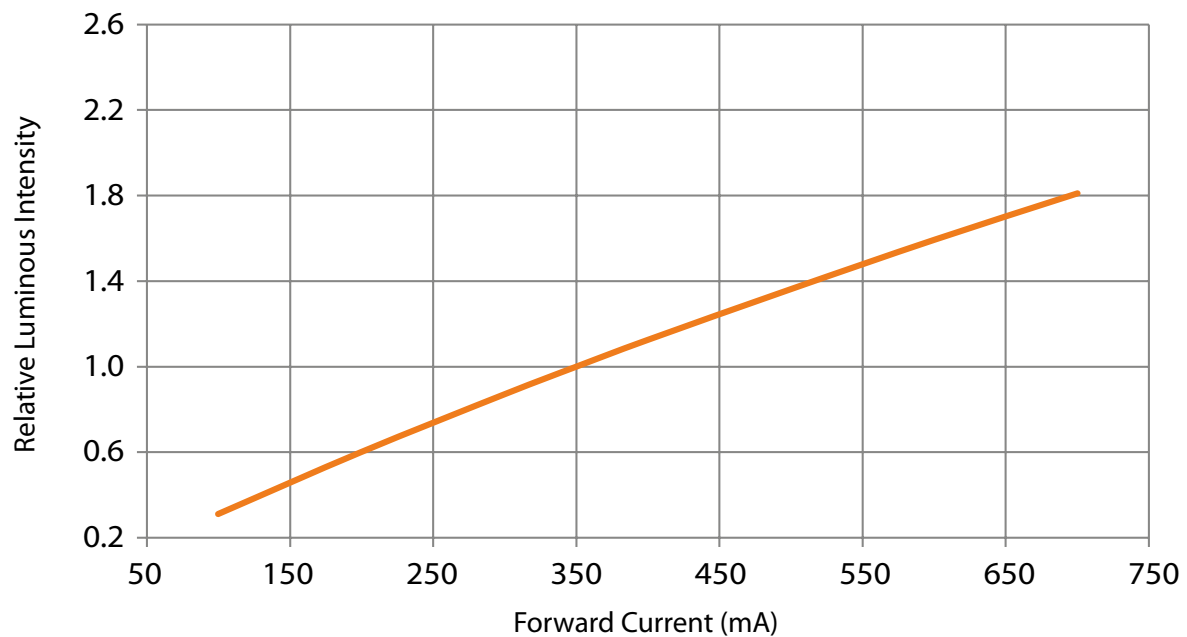
Forward Current vs. Forward Voltage

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



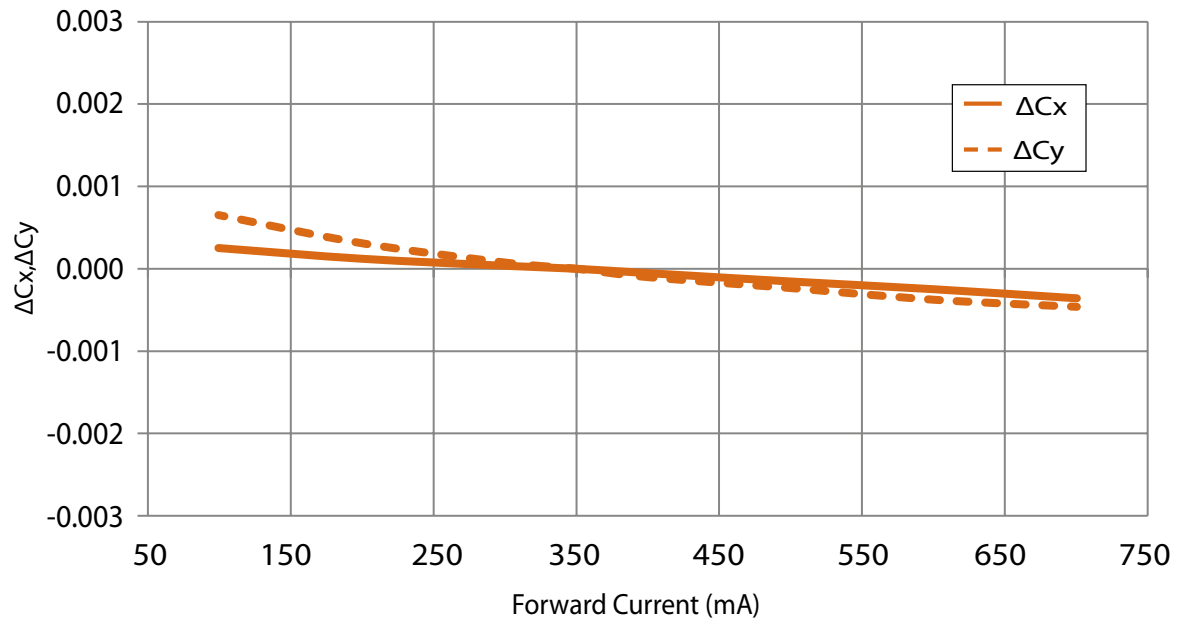
Relative Luminous Intensity vs. Forward Current

$(I_V/I_V(350\text{mA}) = f(I_F); T_J = 25^\circ\text{C})$



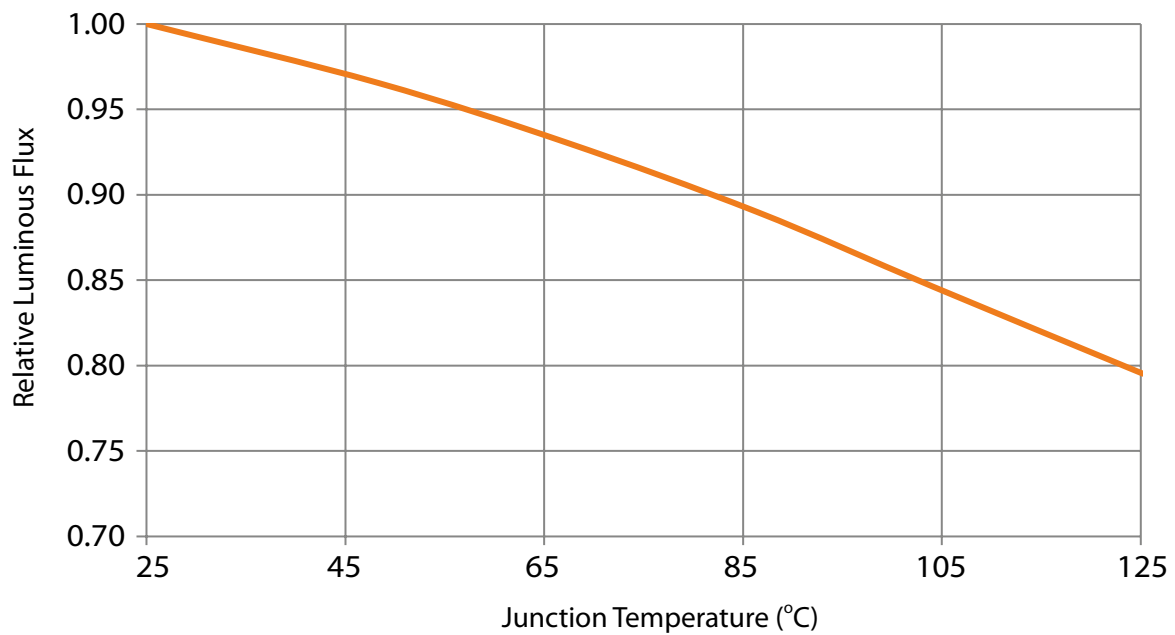
$\Delta C_x, \Delta C_y$ vs. Forward Current

$(\Delta C_x, \Delta C_y = f(I_f); T_j = 25^\circ\text{C})$



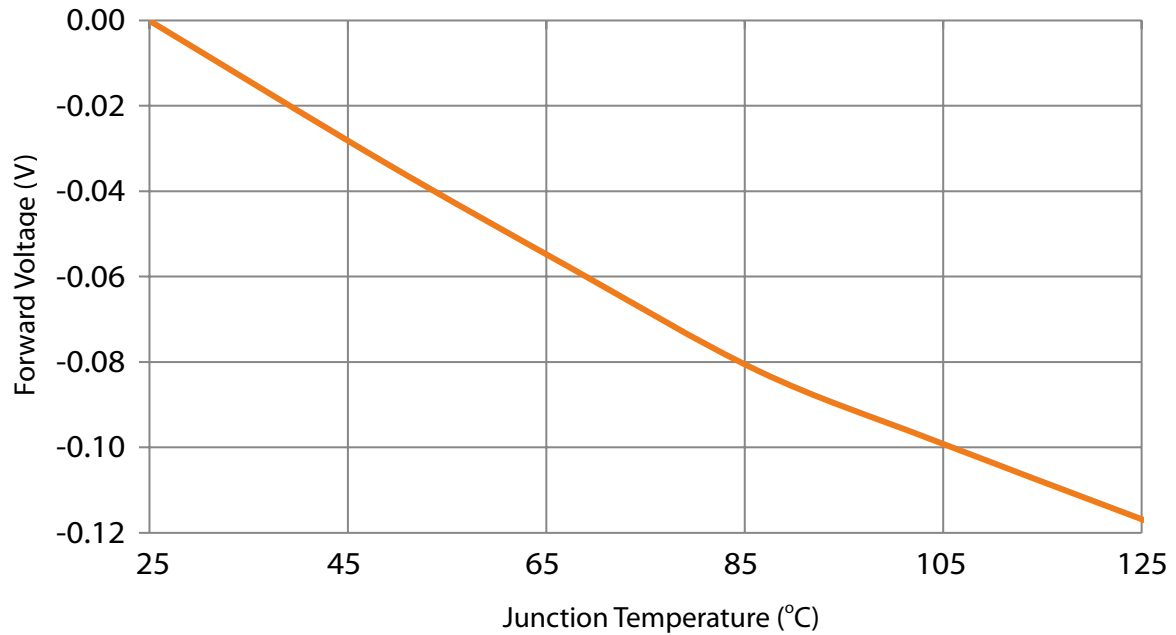
Relative Luminous Flux vs. Junction Temperature

$(I_V/I_V(25^\circ\text{C}) = f(T_j); I_f = 350\text{mA})$



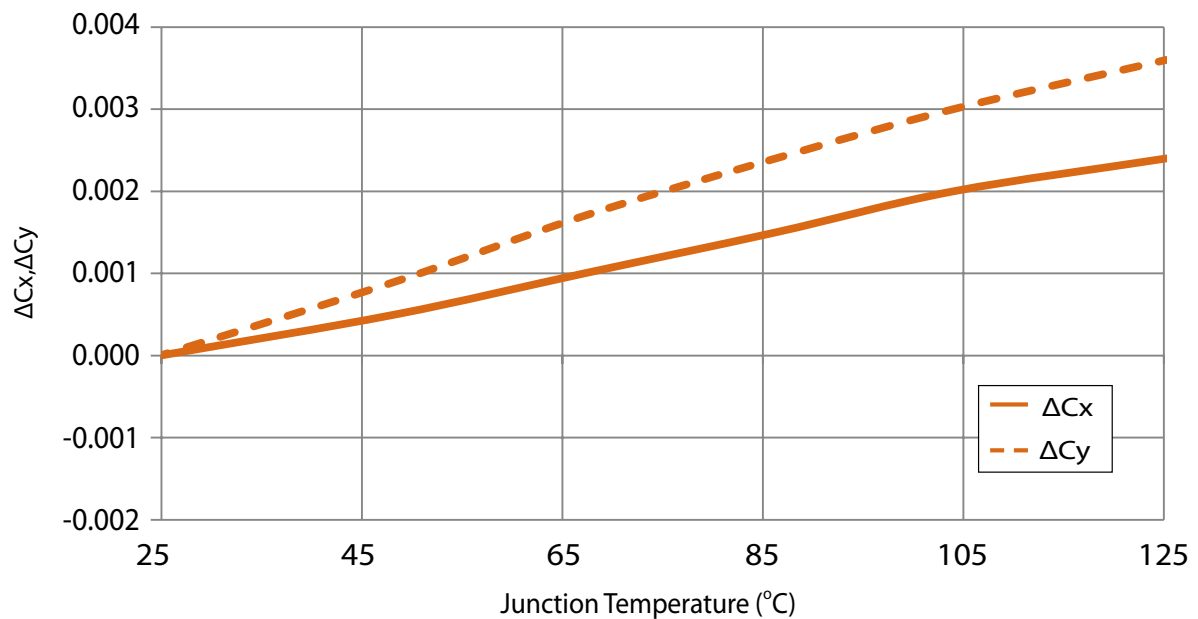
Forward Voltage vs. Junction Temperature

$(\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_J); I_F = 350\text{mA})$



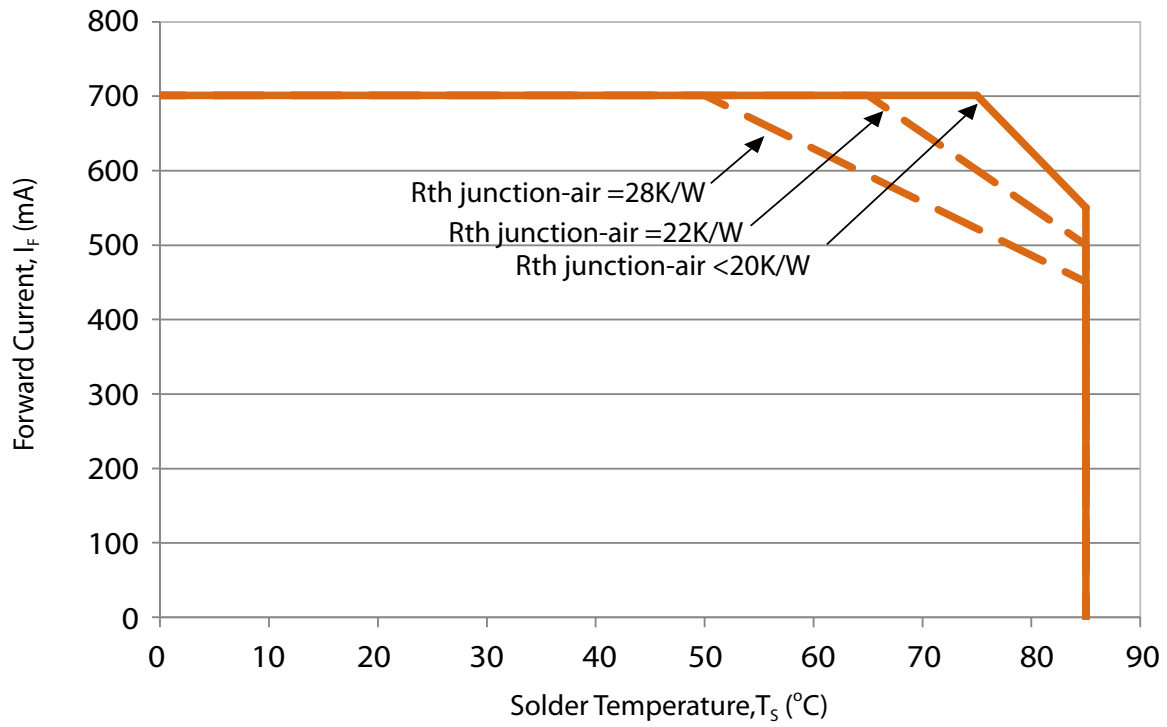
$\Delta C_x, \Delta C_y$ vs. Junction Temperature

$(\Delta C_x, \Delta C_y = f(T_J); I_F = 350\text{mA})$



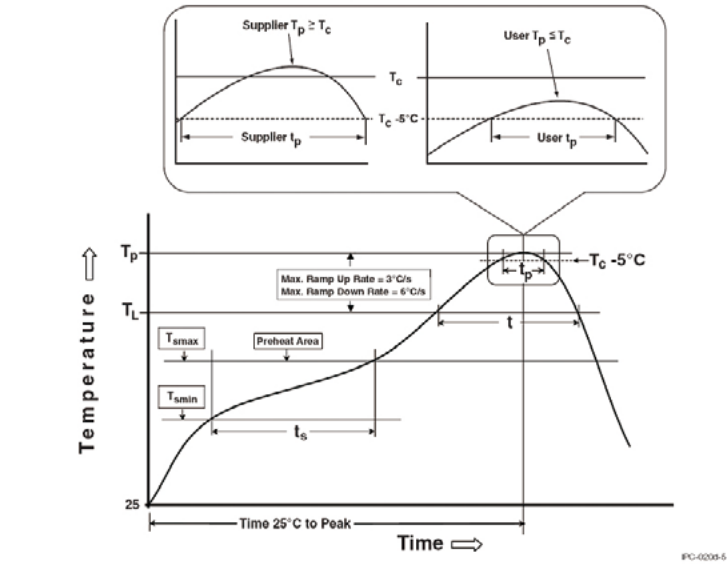
Forward Current vs. Solder Temperature

$I_f = f(T)$



Reflow Profile

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



Reflow Profiles

Classification Reflow Profiles

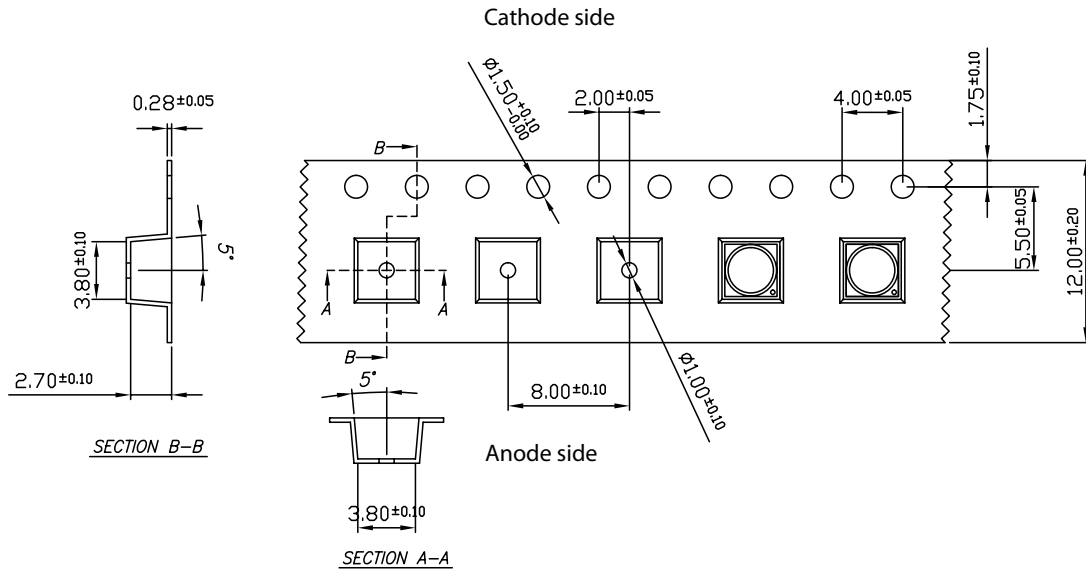
Profile Feature	Pb-Free Assembly
Preheat & Soak Temperature min (T_{smin}) Temperature max (T_{smax}) Time (T_{smin} to T_{smax}) (ts)	150 °C 200 °C 60-120 seconds
Average ramp-up rate (T_{smax} to T_p)	3 °C/second max.
Liquidous temperature (T_L) Time at liquidous (t_L)	217 °C 60-150 seconds
Peak package 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_{smax})	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Notes:


- * Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.
- ** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.




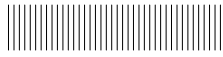
Product Packaging Information


Tapping




Product Label



P/N : XXXXXXXXXXXX

 Group : XXXXXXXXXXXX

 Lot No : XXXXXXXXXXXX


 MMMMMMMMMMMM

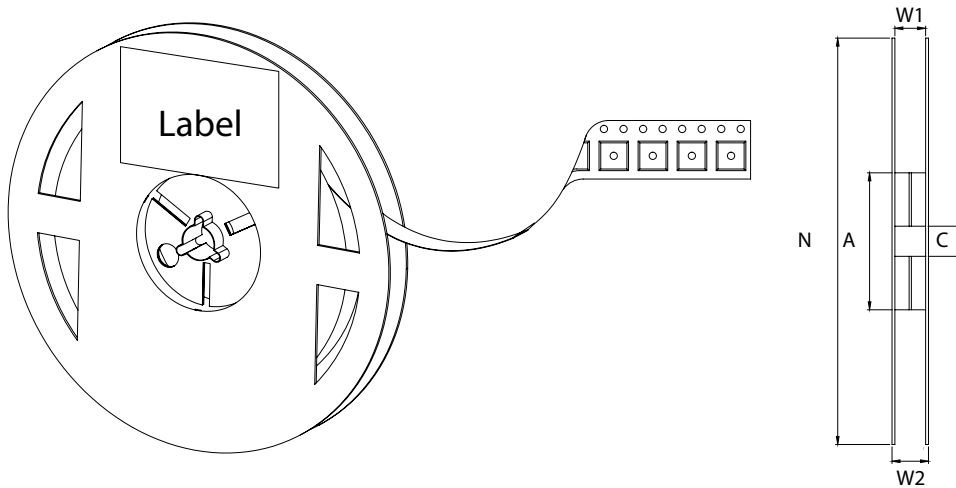


QTY : XXX

 QC : OQC1
 Color : XXXXXX

Label information

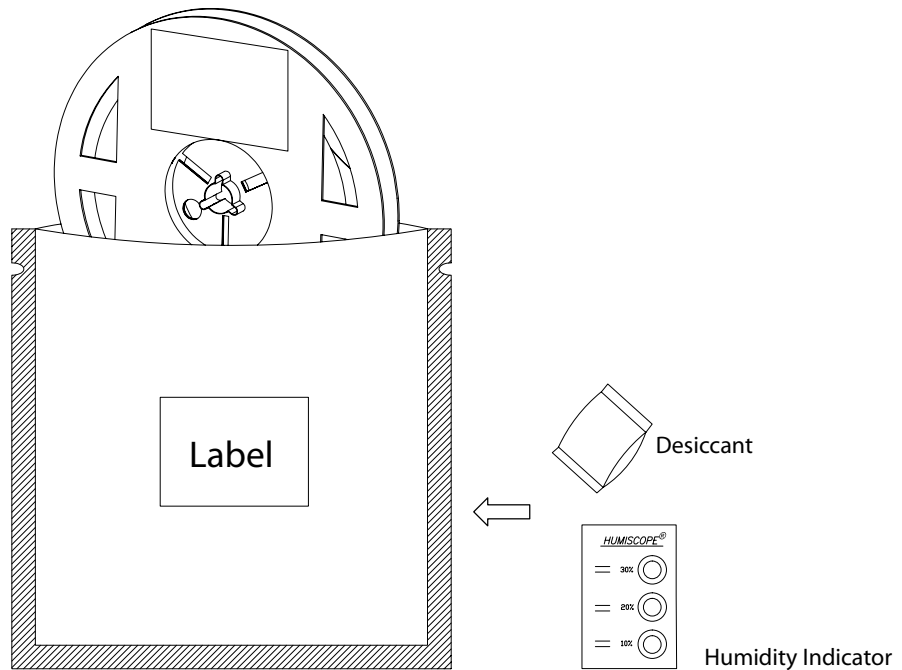
P/N : Order Code
 Group : BIN Code
 Lot No : Lot Number
 QTY : Packing Quantity

Tape and Reel



A	C	N	W1	W2	Pieces per Reel
178±1	13.2±0.2	60±0.5	13.5±0.5	16+0.5/-0	≤ 500
Starting with 50pcs empty, and 50pcs empty at the last.					

Static Bag



Revision History

Versions	Description	Release Date
1	Establish order code information	2020/07/10

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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