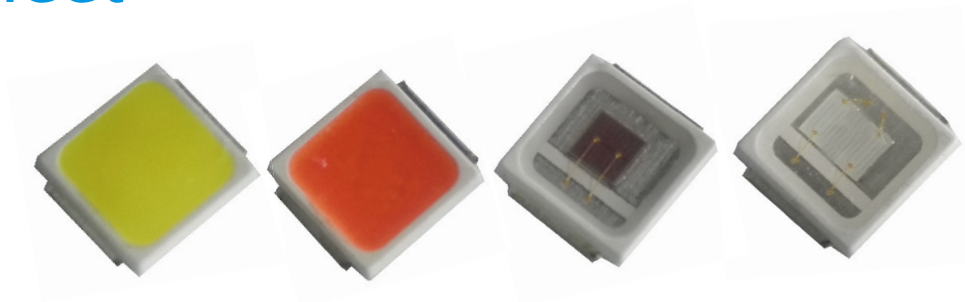


PLCC Series

EMC 3030 1W Horticulture Series

Datasheet



Typical Applications :

- Indoor Cultivation
- Vertical Farm/ Green Wall
- Replacement HPS in Greenhouse
- Home Farming/ Hydroponic Pot

Features :

- High Intensity and the color uniformity
- Beneficial for plant growth
- Reduce the cost of cultivation
- Superior ESD protection
- Level 1 on JEDEC moisture sensitivity analysis
- Easy to collocate the color spectrum
- RoHS compliant

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General Information

Ordering Code Format

2 T 1 2 0 1 FX H 0 0 0 3 x x x
 X1 X2 X3-X4 X5-X6 X7-X8 X9 X10-X11 X12-X13 X14-X16

X1		X2		X3-X4		X5-X6		X7-X8	
Type		Component		Series		Wattage		Color/CCT	
2	Emitter	T	PLCC	12	3030	01	1W	FX	Cherry Red
								EX	Deep Red
								BX	Blue
								LX	Lime
								A0	Blue 5%
								A1	Blue 10%
								A2	Blue 15%
								A3	Blue 20%
								A4	Blue 30%

X9		X10-X11		X12-X13		X14-X16	
BIN				Voltage		Serial Number	
H	Horticulture	00	-	03	3V	-	-

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Units
Forward Current	I_F	500	mA
Pulse Forward Current (tp≤100μs, Duty cycle=0.25)	I_{pulse}	1000	mA
Reverse Current	I_R	10	uA
Reverse Voltage	V_R	-	V
LED Junction Temperature	T_J	125	°C
Operating Temperature	-	-40 ~ +85	°C
Storage Temperature	-	-40 ~ +125	°C
ESD Sensitivity (HBM)	V_B	2,000	V
Soldering Temperature	T_s	Reflow Soldering : 255~260°C/10~30sec Manual Soldering : 350°C/3sec	

Notes:

1. Proper current derating must be observed to maintain junction temperature below the maximum at all time.
2. LEDs are not designed to be driven in reverse bias.

Characteristics

Parameter	Symbol	Value	Units
Viewing Angle (Typ.)	$2\theta_{1/2}$	115	Degree
Thermal resistance	-	10	°C/W
Wavelength	-	450-460(BX)(WP) 650-670(EX)(WP) 730-750(FX)(WP)	nm
x, y	center	LX: x=0.4077 y=0.5372	
		A0: x=0.5627 y=0.2471	
		A1: x=0.4820 y=0.2105	
		A2: x=0.4115 y=0.1700	
		A3: x=0.3705 y=0.1480	
		A4: x=0.3295 y=0.1260	
JEDEC Moisture Sensitivity	-	Level 2a Floor Life Conditions: ≤30°C / 60% RH Soak Requirements(Standard) Time (hours): 120+1/-0 Conditions: 60°C / 60% RH	-

Note:

1. $2\theta_{1/2}$ is the off-axis angle where the Radiometric Power intensity is half of the axial Radiometric Power intensity.
2. CIE_x/y tolerance: ±0.005

PPF Characteristic

Characteristics, $I_F=350\text{mA}$, $V_F = 5\text{V}$ and $T_J=25^\circ\text{C}$

Color	Group	Min. PPF (umol/s)	Max. PPF (umol/s)	Order Code
BX	D4	1.7	1.8	2T1201BXH0003001
	E1	1.8	1.9	
	E2	1.9	2	
EX	D1	1.4	1.5	2T1201EXH0003001
	D2	1.5	1.6	
	D3	1.6	1.7	
A0	C4	1.3	1.4	2T1201A0H0003001
	D1	1.4	1.5	
	D2	1.5	1.6	
A1	D2	1.5	1.6	2T1201A1H0003001
	D3	1.6	1.7	
	D4	1.7	1.8	
A2	D2	1.5	1.6	2T1201A2H0003001
	D3	1.6	1.7	
	D4	1.7	1.8	
A3	D3	1.6	1.7	2T1201A3H0003001
	D4	1.7	1.8	
	E1	1.8	1.9	
A4	D3	1.6	1.7	2T1201A4H0003001
	D4	1.7	1.8	
	E1	1.8	1.9	
LX	E1	1.8	1.9	2T1201LXH0003001
	E2	1.9	2	
	E3	2	2.1	
	E4	2.1	2.2	

Radiometric Power Characteristic

Characteristics, $I_F=350\text{mA}$, $V_F = 5\text{V}$ and $T_J=25^\circ\text{C}$

Color	Group	Min. Radiometric Power(mW)@350mA	Max. Radiometric Power(mW)@350mA	Order Code
FX	W03	100	150	2T1201FXH0003001
	W04	150	200	

Note:

1. The Radiometric Power/ PPF performance is guaranteed within published operating conditions. Edison Opto maintains a tolerance of $\pm 10\%$ on Radiometric Power measurements.

Wavelength Bin Structure

Color	Group	Min. Wp (nm)	Max. Wp (nm)
BX	CW0	445	450
	CX0	450	455
	CY0	455	460
EX	EX0	650	670
FX	FX0	730	750

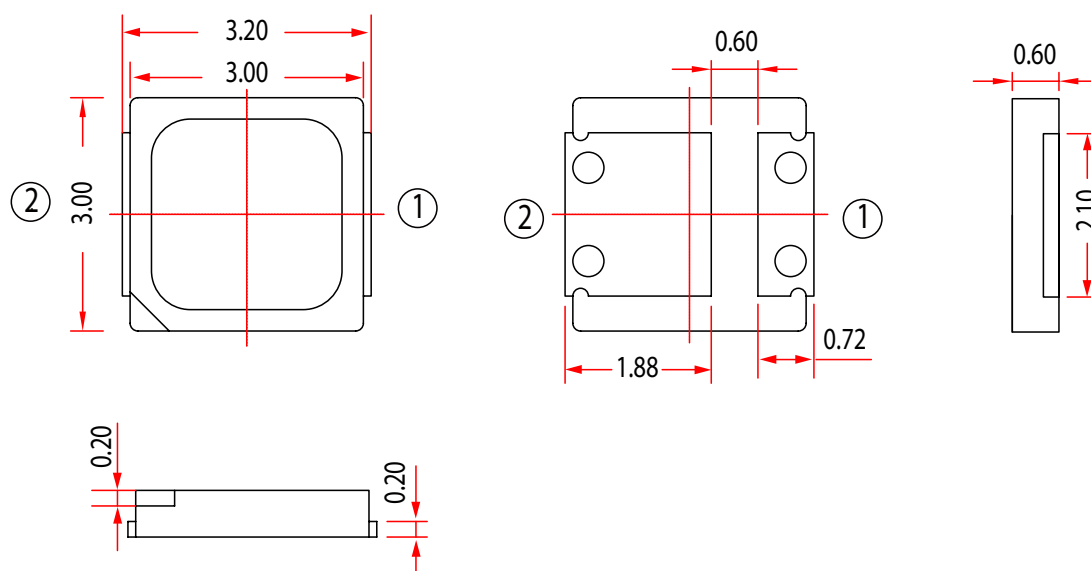
Note:
Peak wavelength Measurement Allowance is $\pm 2\text{nm}$.

Voltage Bin Structure

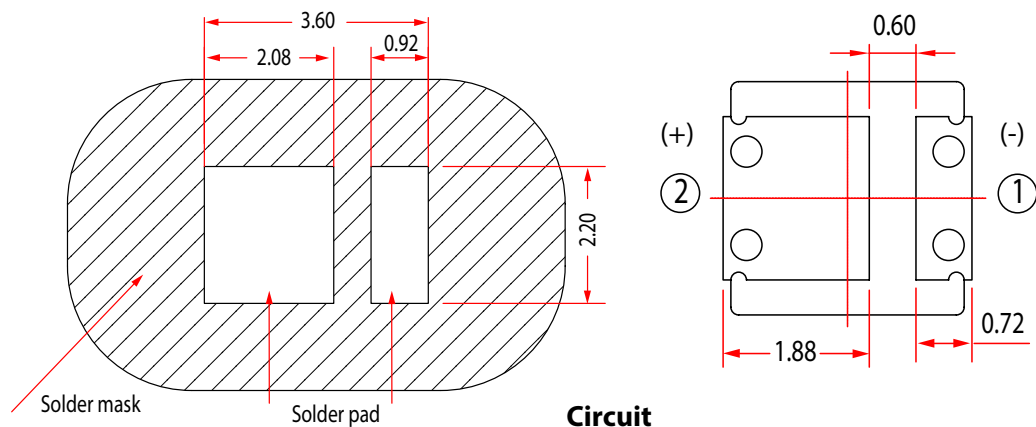
Color	Group	Min. Voltage (V)	Max. Voltage (V)
A0/A1/A2/A3/A4/LX	V02	3.1	3.4
BX	V01	2.8	3.1
	V02	3.1	3.4
EX	U04	1.9	2.2
	U05	2.2	2.5
FX	U03	1.6	1.9
	U04	1.9	2.2

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

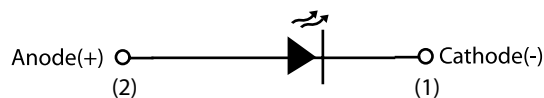
Mechanical Dimensions



Solder Pad



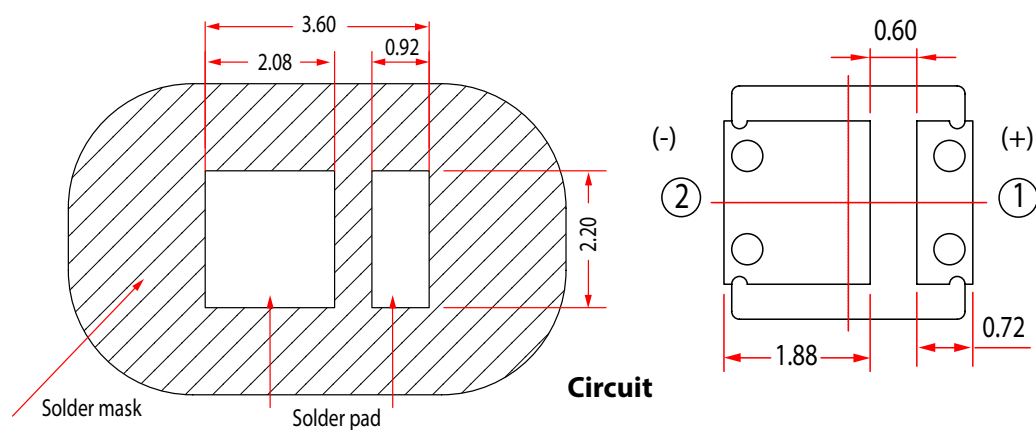
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2T1201FXH0003001



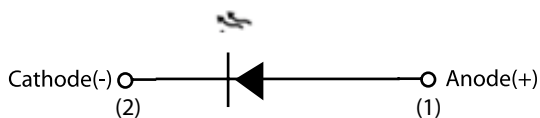
Notes:

1. All dimensions are measured in mm.
2. Tolerance : ± 0.20 mm

Solder Pad



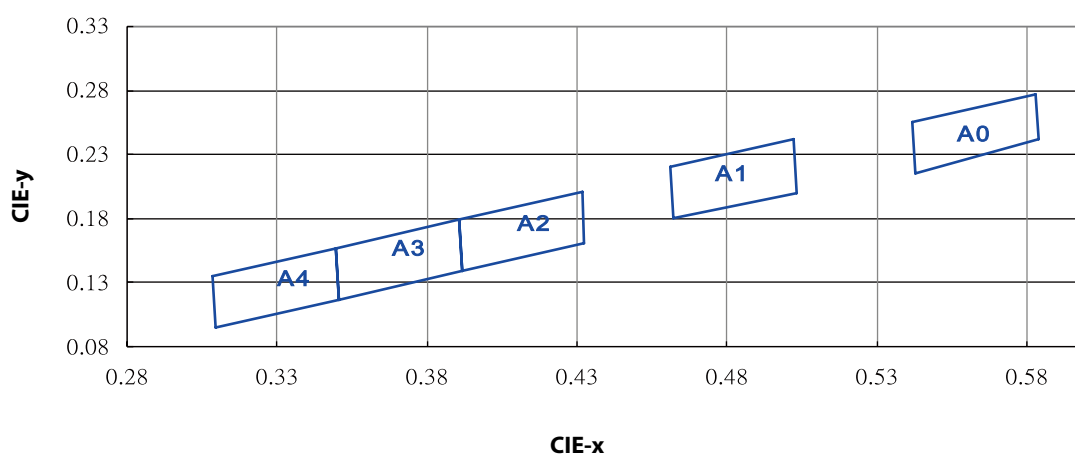
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2T1201A1H0003001
2T1201A2H0003001
2T1201A3H0003001
2T1201A4H0003001
2T1201LXH0003001
2T1201BXH0003001



Notes:

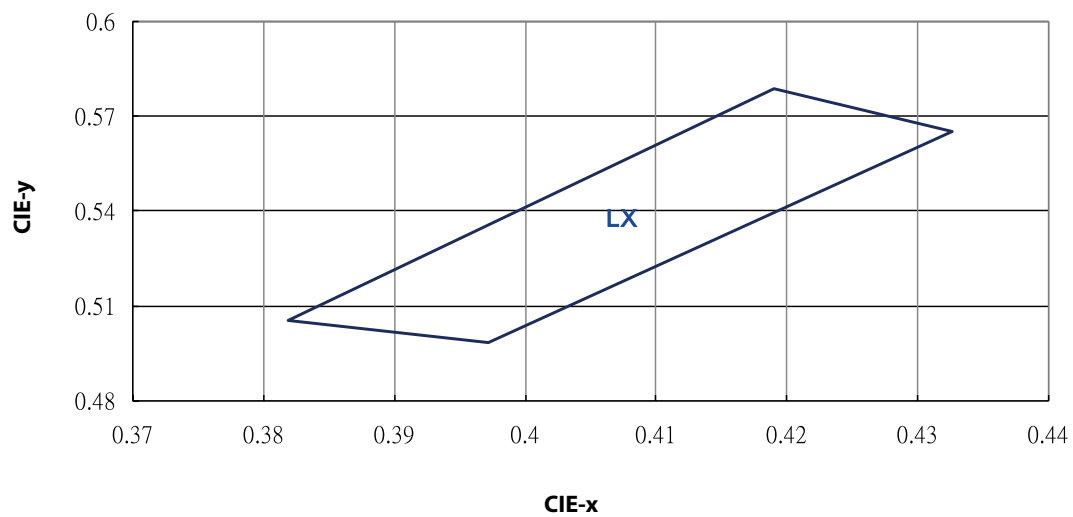
1. All dimensions are measured in mm.
2. Tolerance : ± 0.20 mm

Color BIN code



A0		A1	
X	Y	X	Y
0.5418	0.2550	0.4610	0.2200
0.5825	0.2770	0.5020	0.2420
0.5838	0.2415	0.5030	0.2000
0.5428	0.2150	0.4620	0.1800

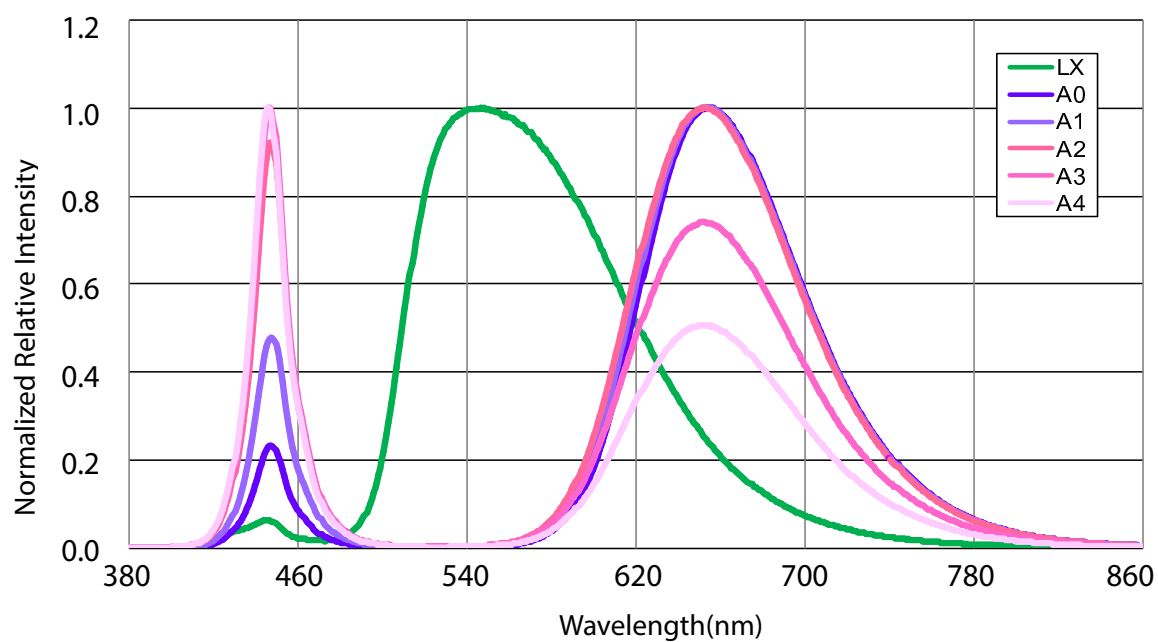
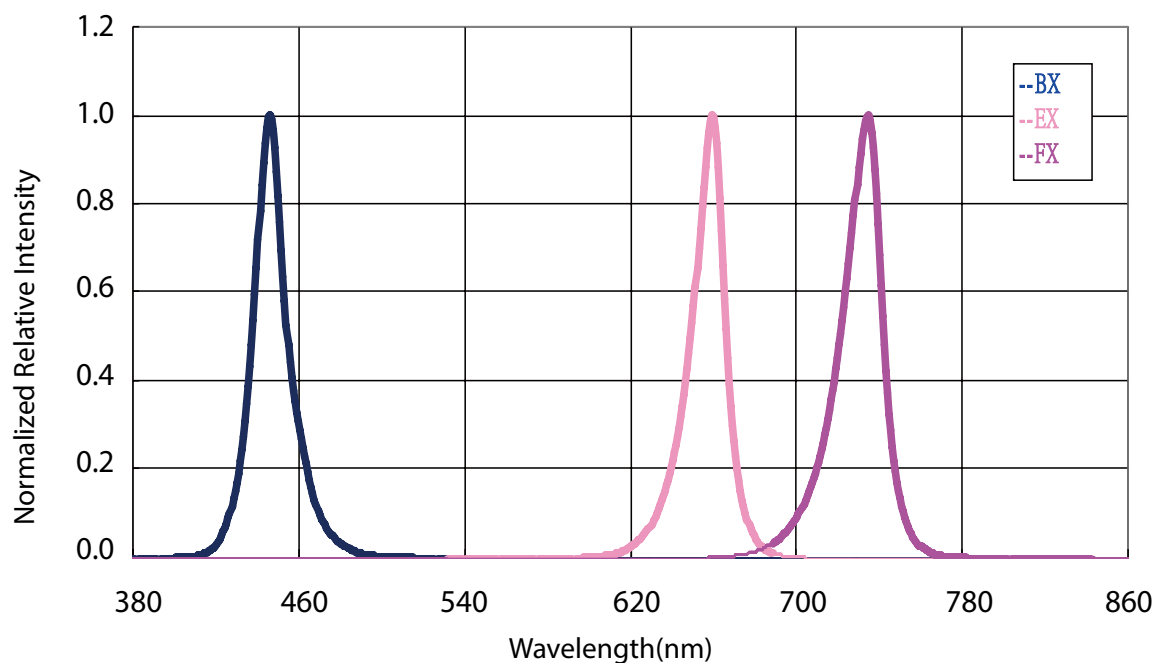
A2		A3		A4	
X	Y	X	Y	X	Y
0.3905	0.1790	0.3905	0.1790	0.3495	0.1570
0.4315	0.2010	0.3915	0.1390	0.3505	0.1170
0.4325	0.1610	0.3505	0.1170	0.3095	0.0950
0.3915	0.1390	0.3495	0.1570	0.3085	0.1350



LX	
X	Y
0.4191	0.579
0.4327	0.5655
0.3972	0.4986
0.3819	0.5055

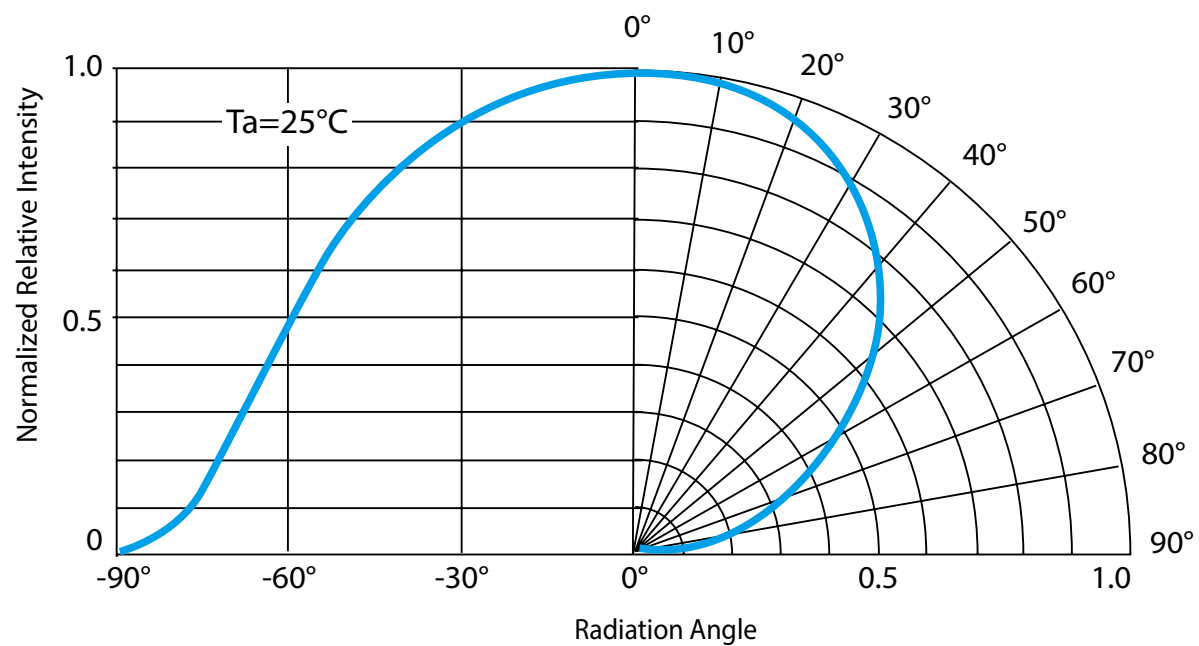
Characteristic curve

Color Spectrum

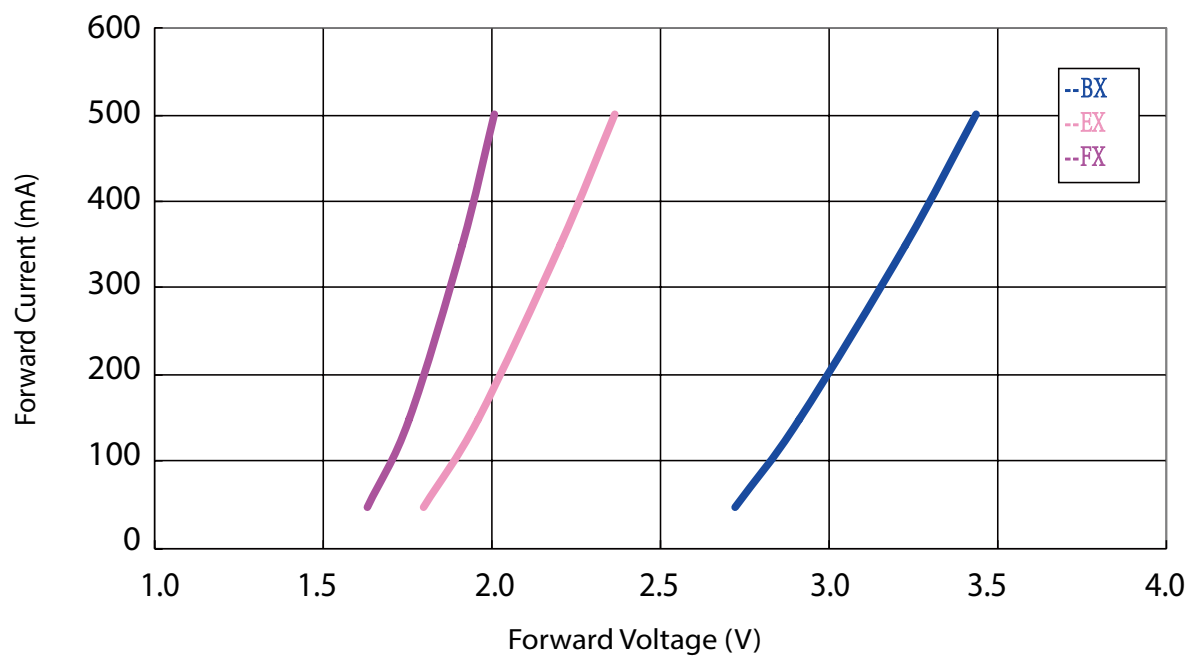
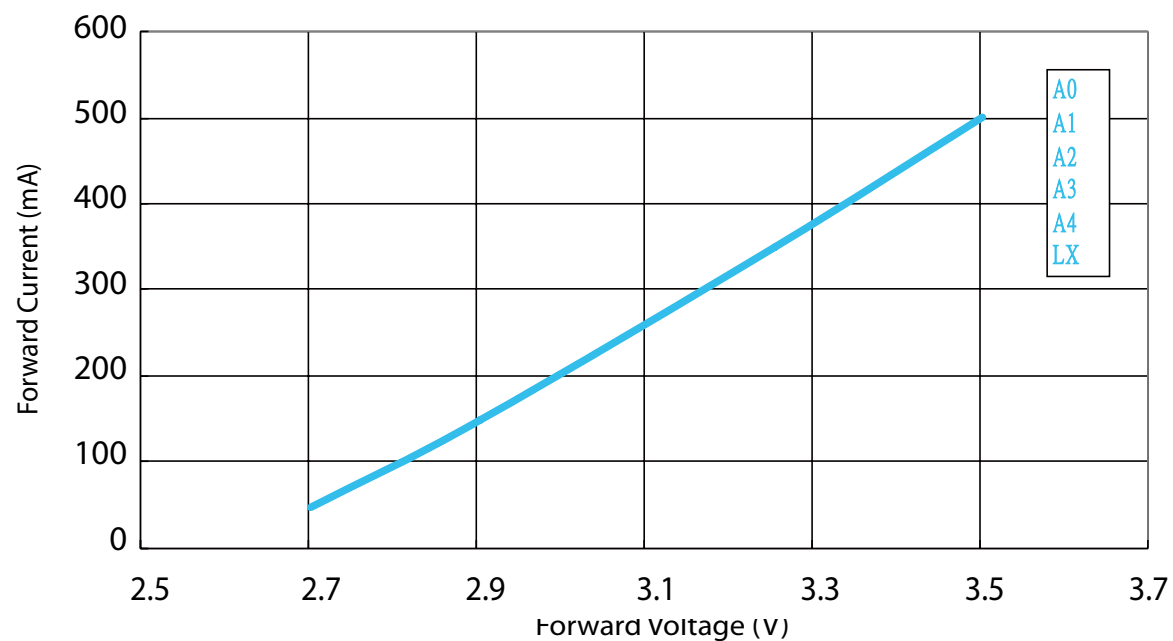


Notes:
Normalized Relative Intensity: ± 0.15

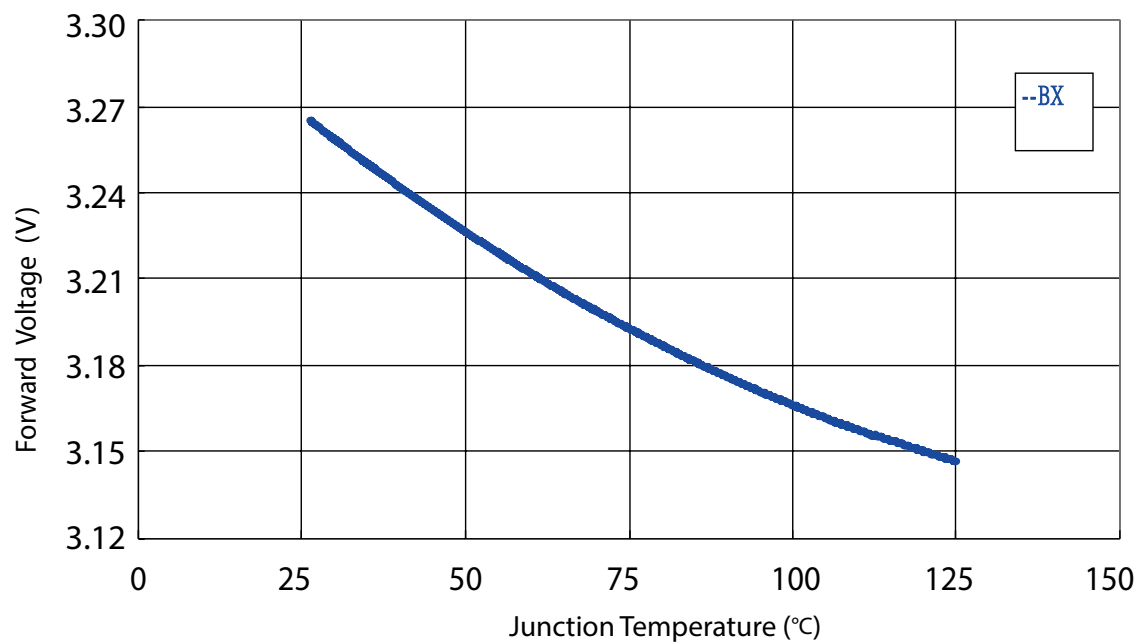
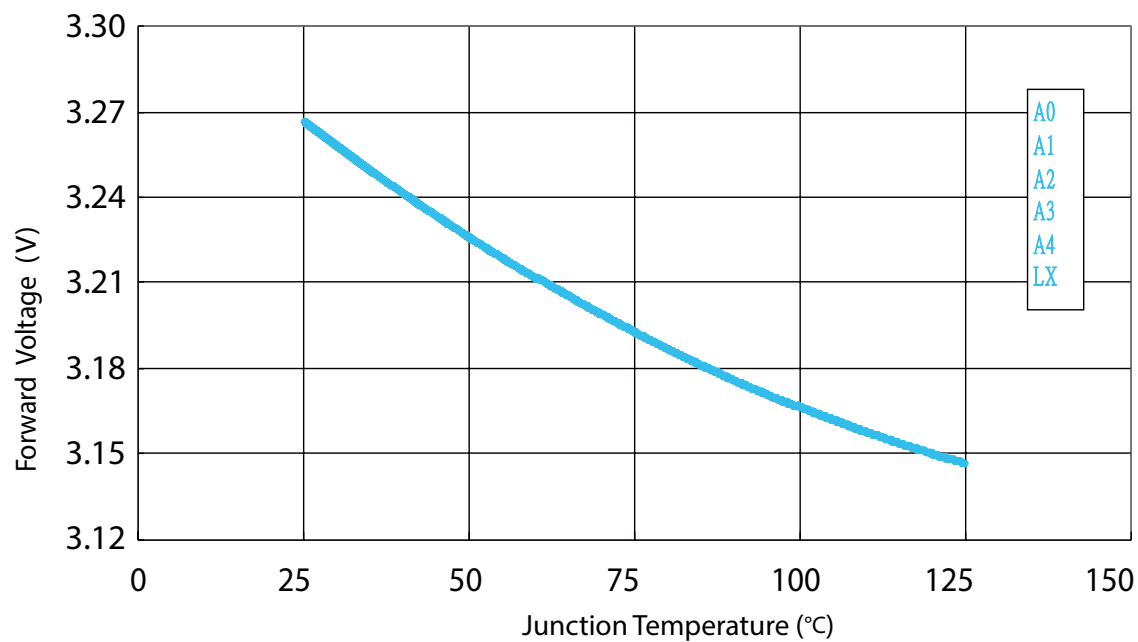
Beam Pattern

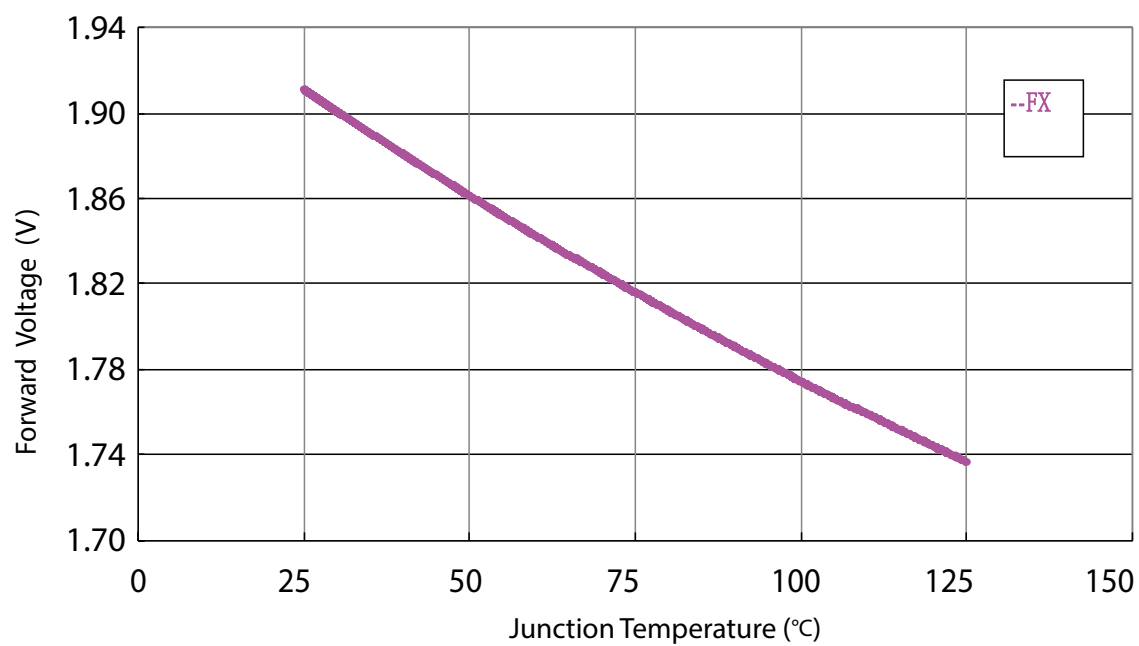
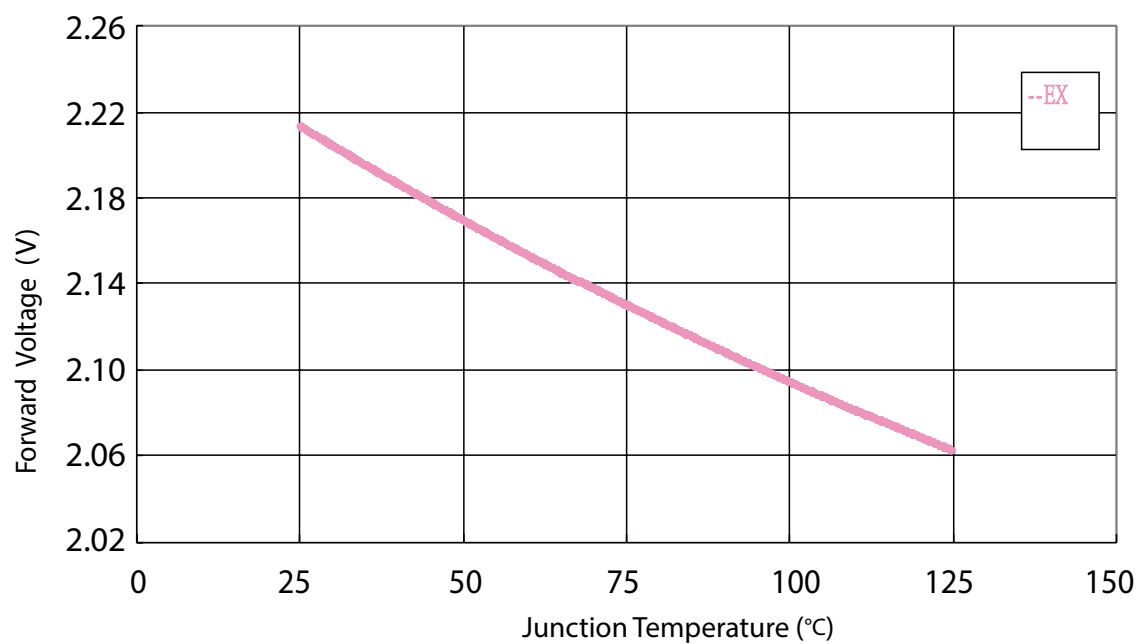


Forward Current vs. Forward Voltage

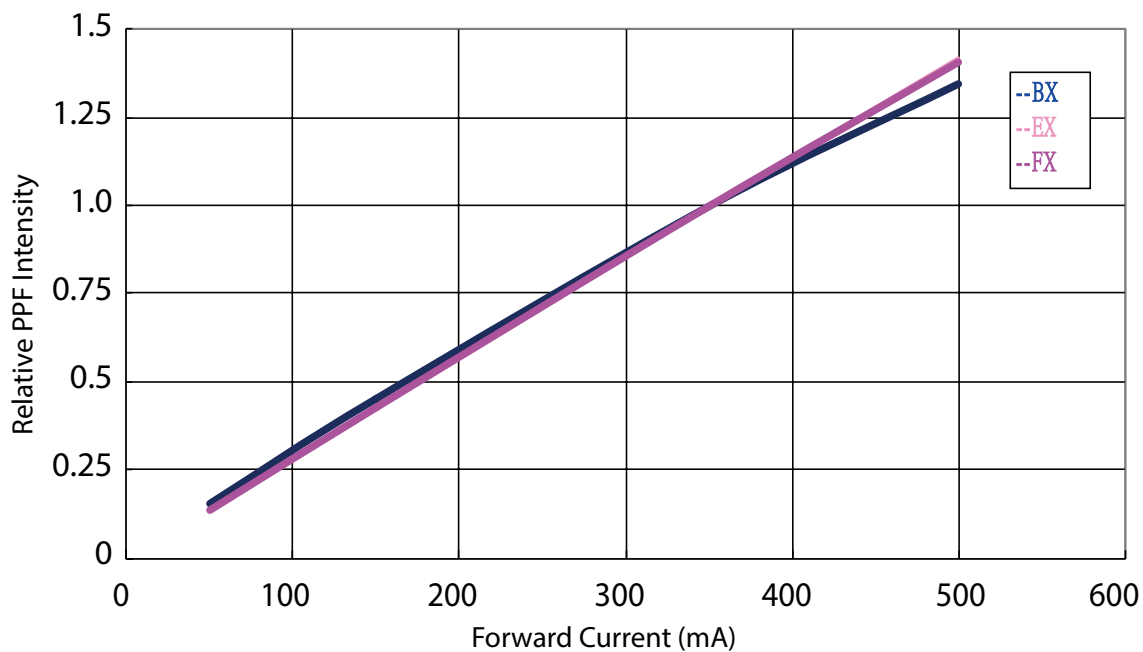
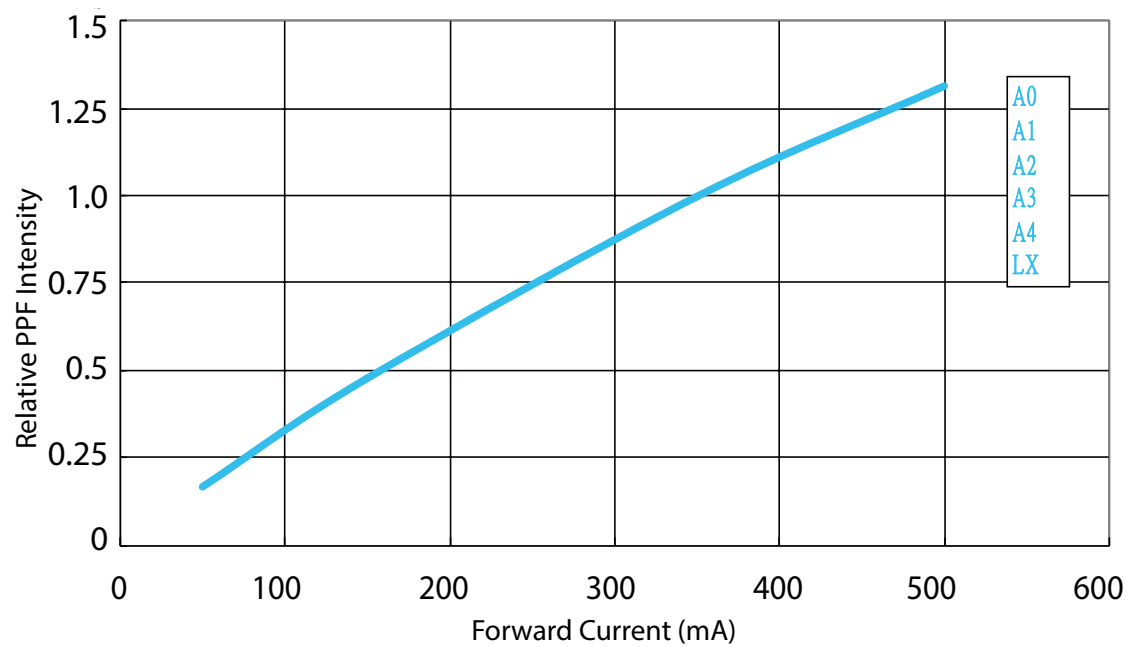


Forward Voltage vs.Junction Temperature

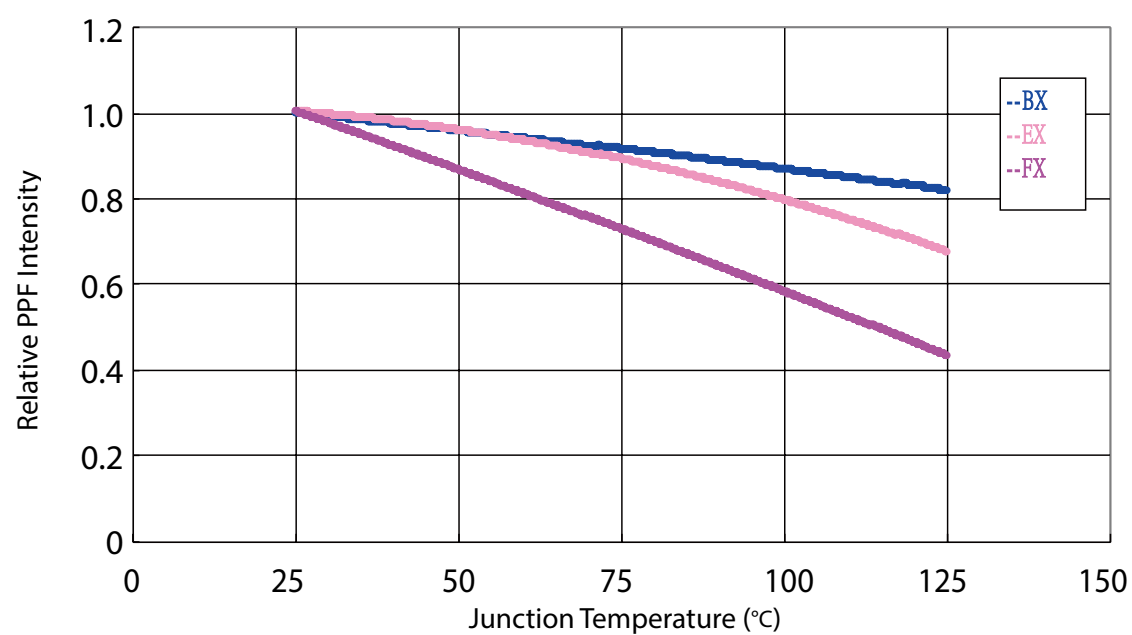
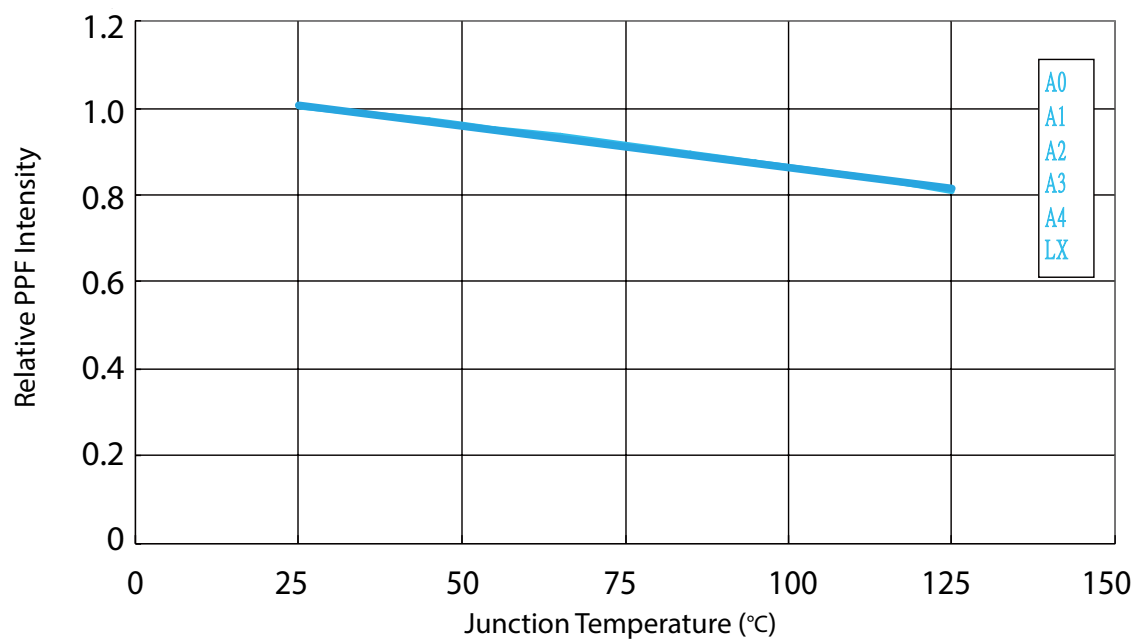




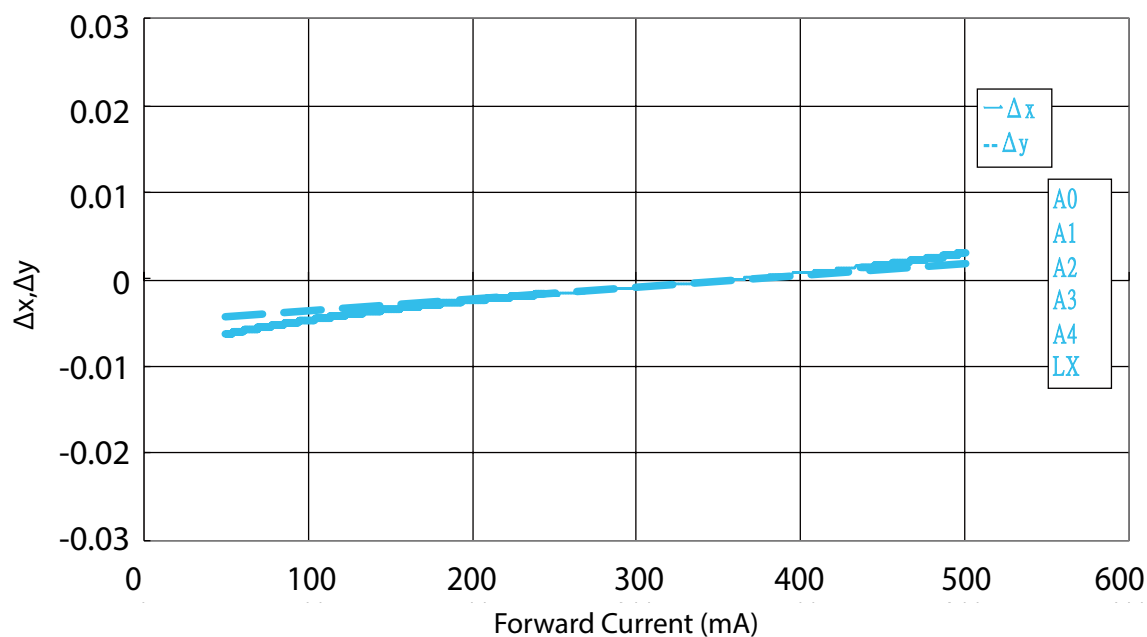
Relative PPF Intensity vs. Forward Current



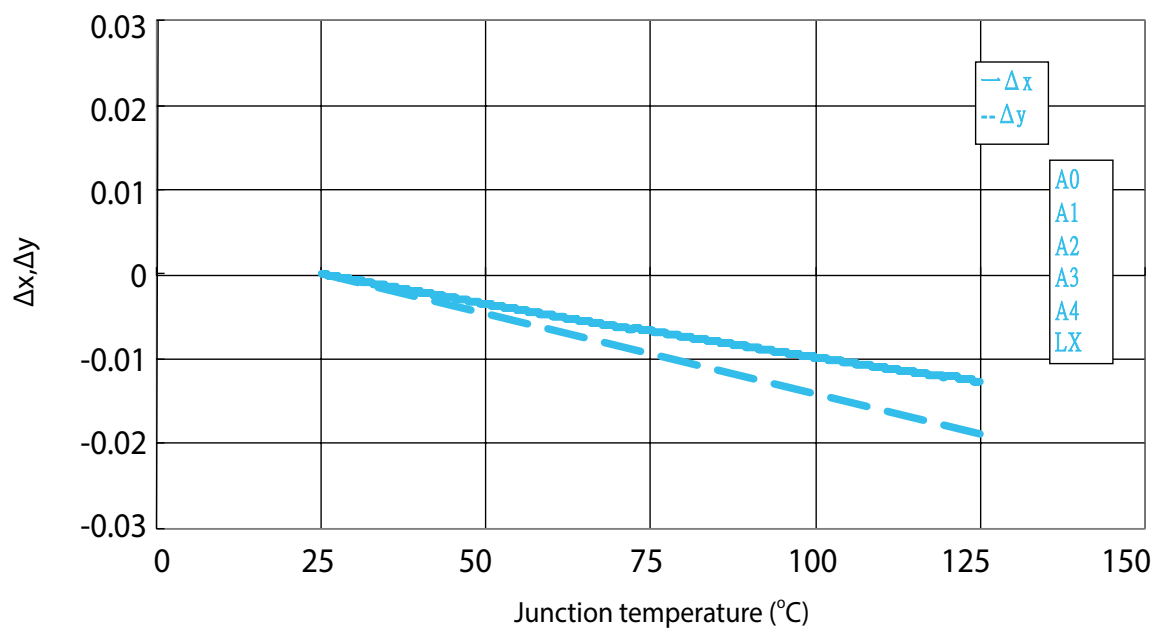
Relative PPF Intensity vs. Junction Temperature



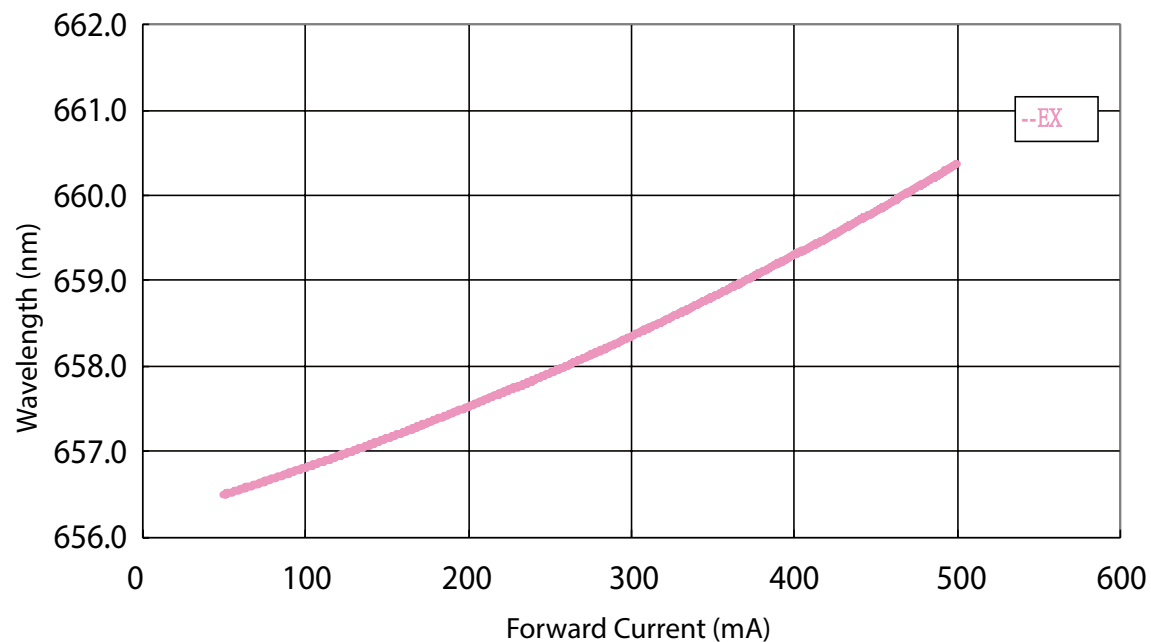
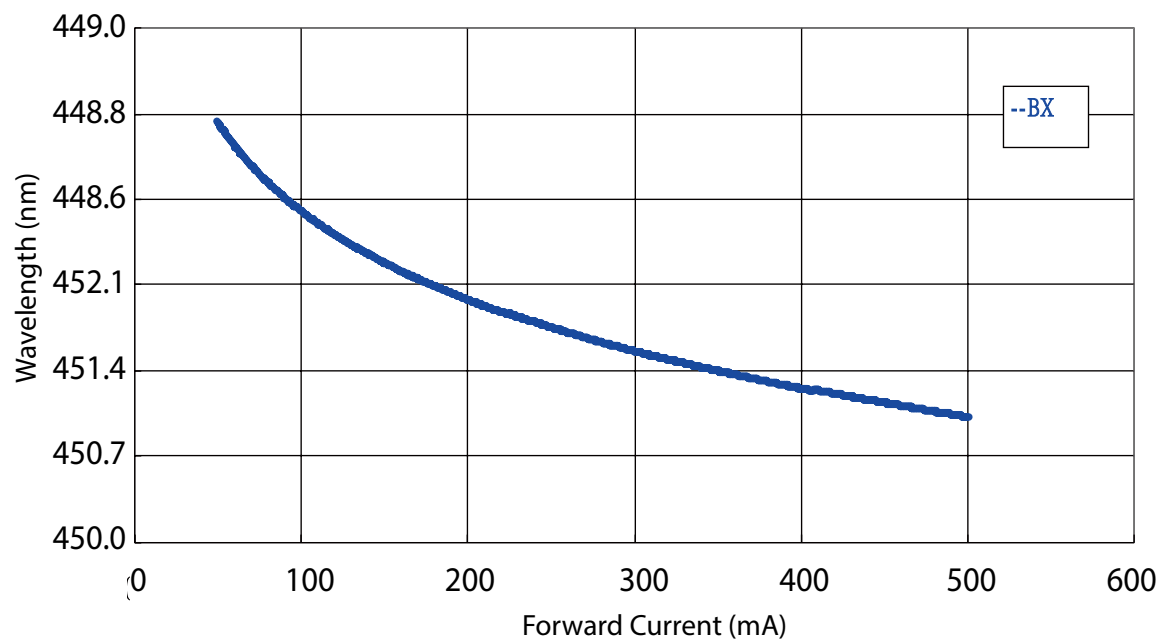
$\Delta x, \Delta y$ vs. Forward Current

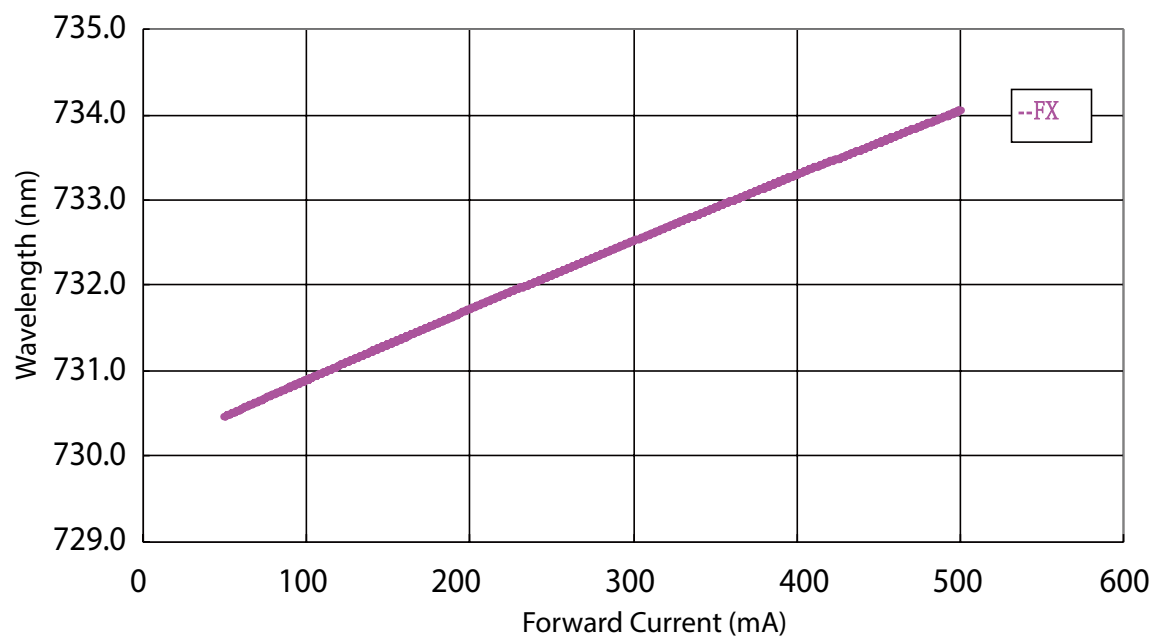


$\Delta x, \Delta y$ vs. Junction Temperature

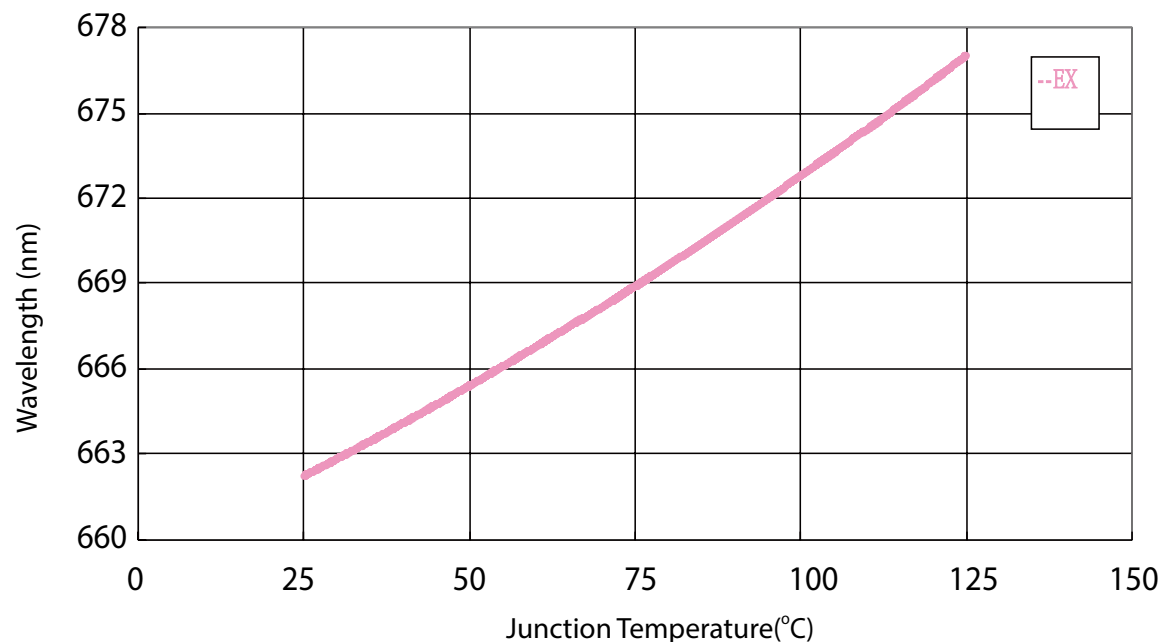
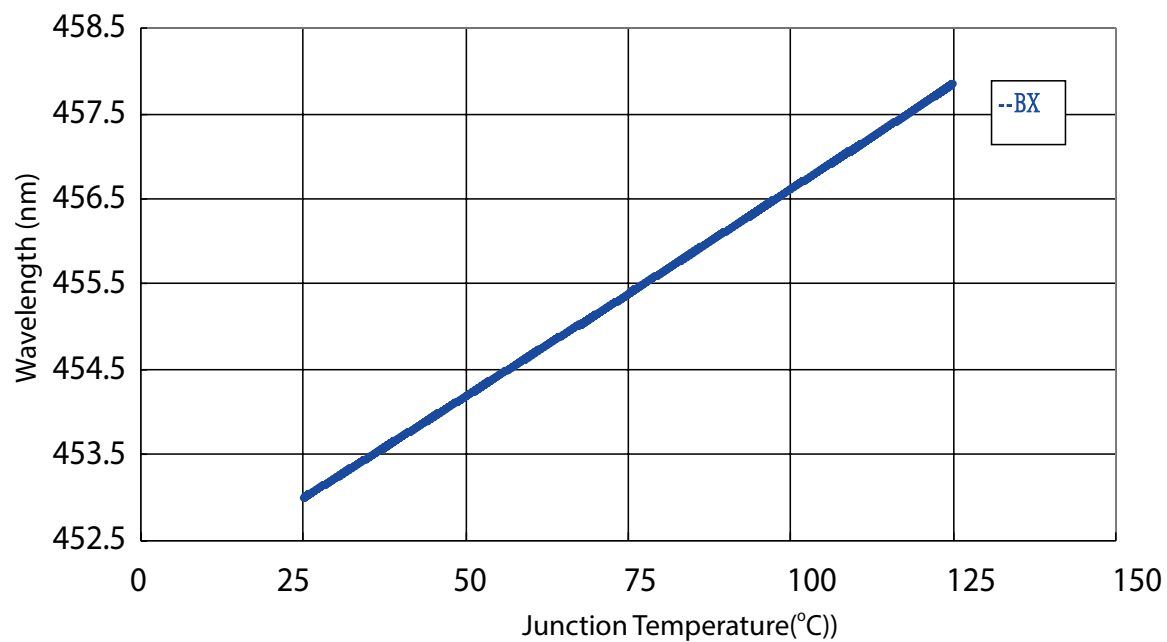


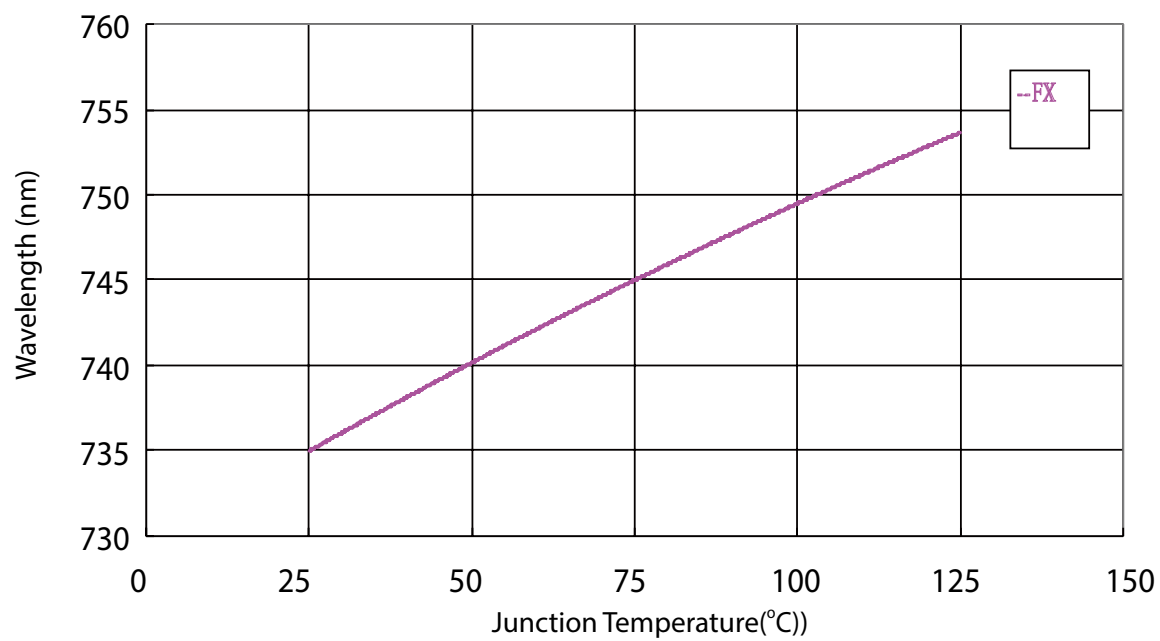
Wavelength(Wp) vs. Forward Current



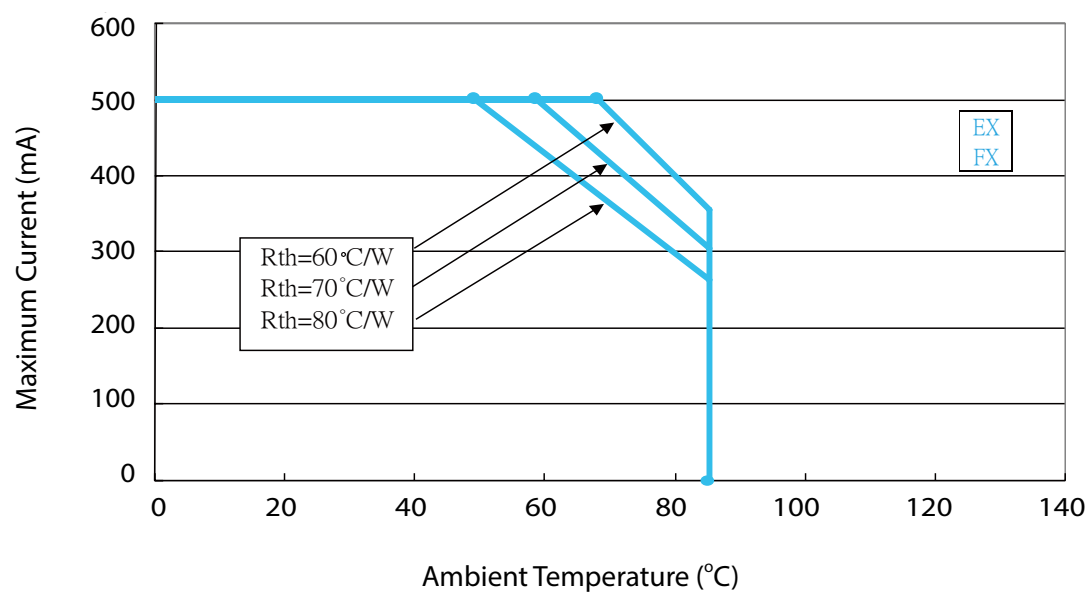
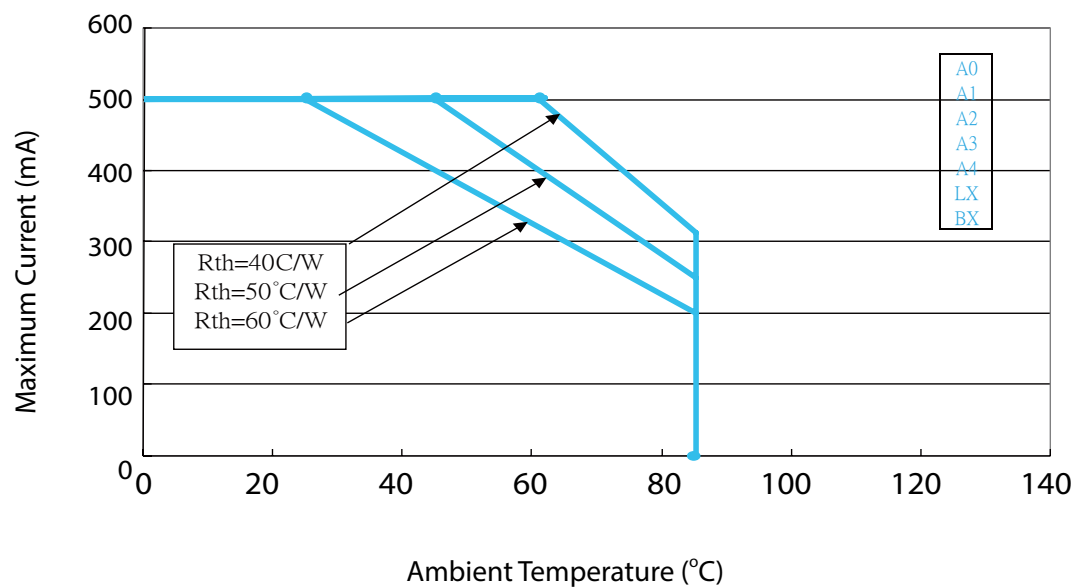


Wavelength(Wp) vs. Junction Temperature



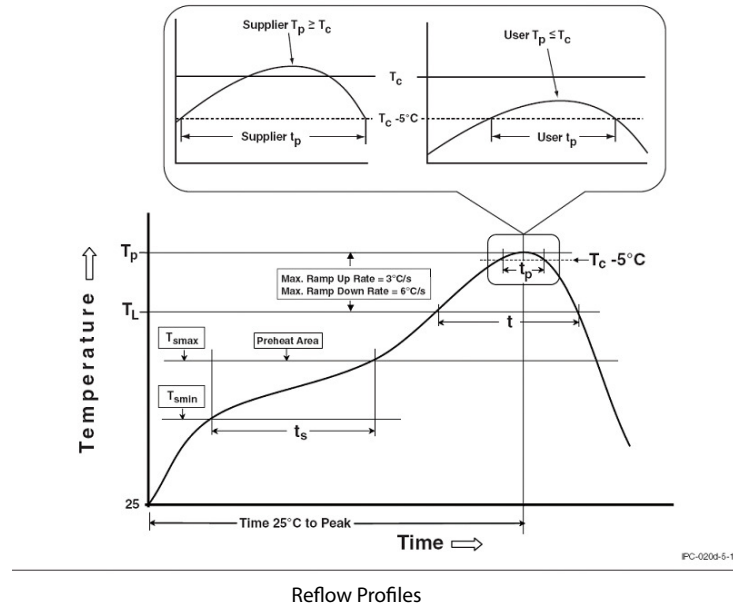


Maximum Current vs. Ambient Temperature



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_{smin})	150 °C
Temperature max (T_{smax})	200 °C
Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds
Average ramp-up rate (T_{smax} 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_{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.

Reliability

NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C 30, 30, mins	100 Cycle
2	Thermal Shock	-40°C~100°C 15, 15 mins ≤ 10 sec	100 Cycle
3	Resistance to Soldering Heat	T _{SOL} =260°C, 30 sec	3 times
4	Moisture Resistance	25°C~65°C 90% RH 24 hrs / 1 cycle	10 Cycle
5	High-Temperature Storage	T _A =100°C	1,000 hrs
6	Low-Temperature Storage	T _A =-40°C	1,000 hrs
7	Operation Life test	25°C	1,000 hrs
8	High Temperature Operation Life test	85°C	1,000 hrs
9	High Humidity Heat Life Test	85°C, 85%RH	1,000 hrs
10	ON/OFF Test	30 sec ON, 30 sec OFF	1.5W times

Failure Criteria

Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u/v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μ A
Resistance to Soldering Heat	No dead lamps or visual damage	

Cautions

LEDs should be stored or lighted in the environment of no sulfur.

Some materials, such as plastic seals, printing ink, enclosures and adhesives, may contain sulfur.

LEDs also should not be exposed in the acid or halogen environment.

Revision History

Versions	Description	Release Date
1	Establish a datasheet	2018/01/17
2	Revise the Normalized Relative Intensity	2018/4/24
3	Add Wavelength Bin Structure of Group CWO and FXO	2018/8/14

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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www.edison-opto.com

For general assistance please contact:
service@edison-opto.com.tw

For technical assistance please contact:
LED.Detective@edison-opto.com.tw