

## Features

- Low Profile, Stable Color
- 4 Leads With 3mm Dome
- Water Clear Lens
- InGaN/ AlInGaP Technology
- Solid State Reliability
- Special Packaging Available Upon Request

## Description

The INP-3A4X40.X series is a high brightness Piranha LED. It is 4 leads with 3mm dome through-hole type LED which can be used in various applications.

## Applications

- Consumer Electronics
- Variable Message Signs (VMS)
- Automobile After Market
- Industrial Equipment
- Advertising Signs

### Package Dimensions in mm

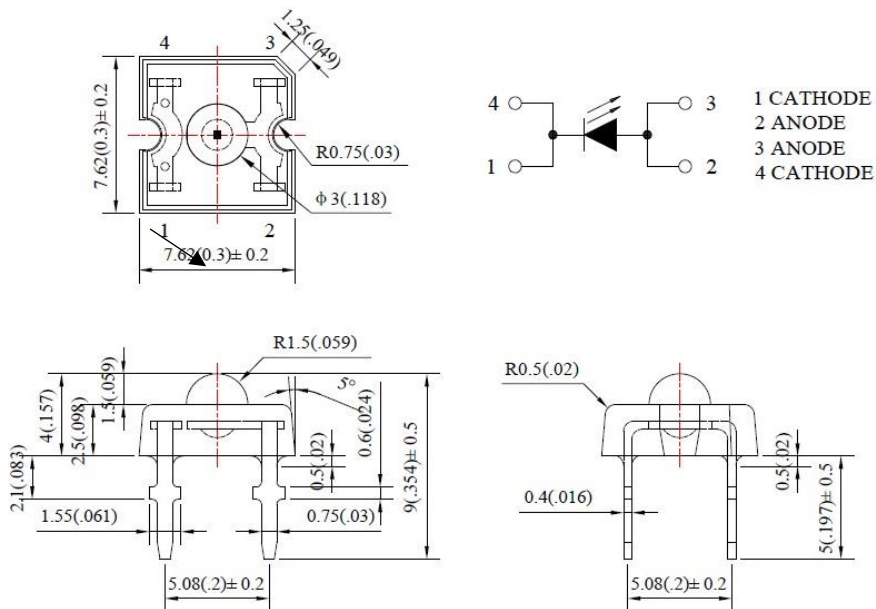


Figure 1. INP-3A4X40.X series Package Dimensions

## Notes

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25$  mm ( $.010''$ ) unless otherwise noted.
3. Protruded resin under flange is 1.00 mm ( $.039''$ ) max.
4. Specifications are subject to change without notice.

**Absolute Maximum Rating at 25°C** (Note)

Product	Emission Color	P <sub>d</sub> (mW)	I <sub>F</sub> (mA)	I <sub>FP</sub> * (mA)	V <sub>R</sub> (V)	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
INP-3A4Y40	Yellow	120	50	100	5	-40°C~+80°C	-40°C~+85°C
INP-3A4A40	Amber						
INP-3A4R40	Red						
INP-3A4C40	Cyan	180	50	100			
INP-3A4G40	Green						
INP-3A4B40	Blue						
INP-3A4W40.65	Cool White						

**Notes**

1. Derate linearly as shown in derating curve.
2. Duty Factor = 10%, Frequency = 1 kHz.

**Electrical Characteristics**  $T_A = 25^\circ\text{C}$  (Note)

Product	Emission Color	$I_F(\text{mA})$	$V_F(\text{V})$		$\lambda(\text{nm})$			Viewing Angle	$I_V(\text{mcd})$	
			min	max	$\lambda_D$	$\lambda_P$	$\Delta\lambda$		$2\theta_{1/2}$	min
INP-3A4Y40	Yellow	20	1.6	2.4	590	592	15	40	1000	2500
INP-3A4A40	Amber	20	1.6	2.4	605	610	20	40	1000	2500
INP-3A4R40	Red	20	1.6	2.4	624	632	20	40	1000	2500
INP-3A4C40	Cyan	20	2.6	3.6	505	495	35	40	5000	8000
INP-3A4G40	Green	20	2.6	3.6	525	520	35	40	6000	8000
INP-3A4B40	Blue	20	2.6	3.6	470	468	25	40	1500	3000
INP-3A4W40.65	Cool White	20	2.8	3.6	6500K ( $X = 0.31, Y = 0.32$ )			40	2000	4000

**Notes**

1. Performance guaranteed only under conditions listed in above tables.
2. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
3.  $2\theta_{1/2}$  is the o-axis angle where the luminous intensity is 1/2 the peak intensity.
4. The dominant wavelength ( $\lambda_D$ ) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

**ESD Precaution**

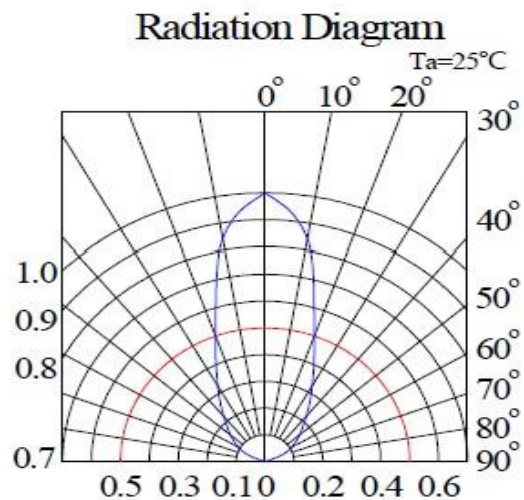
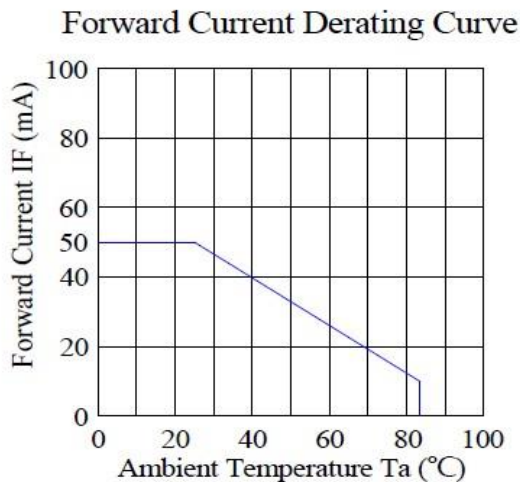
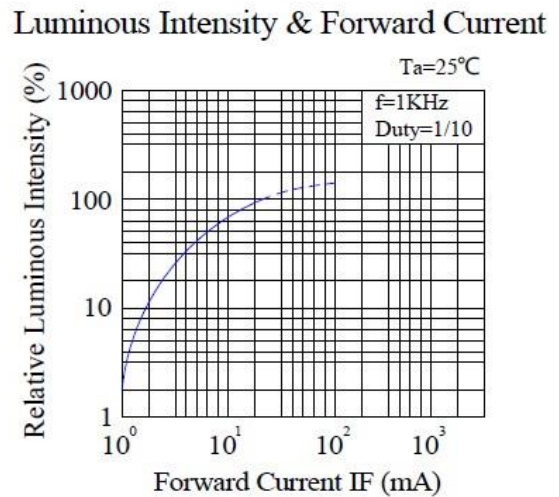
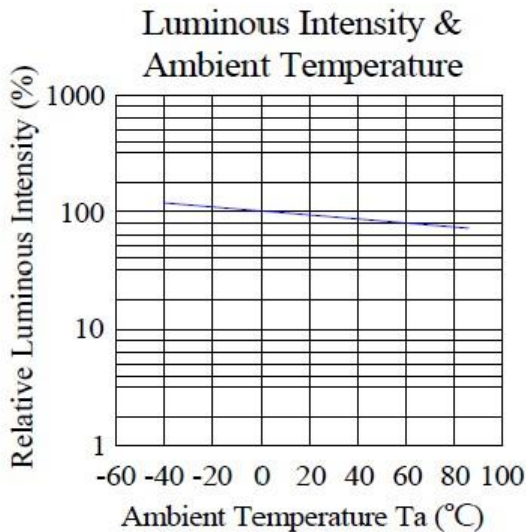
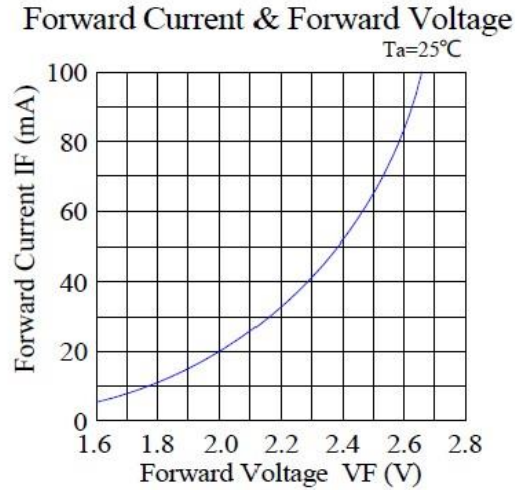
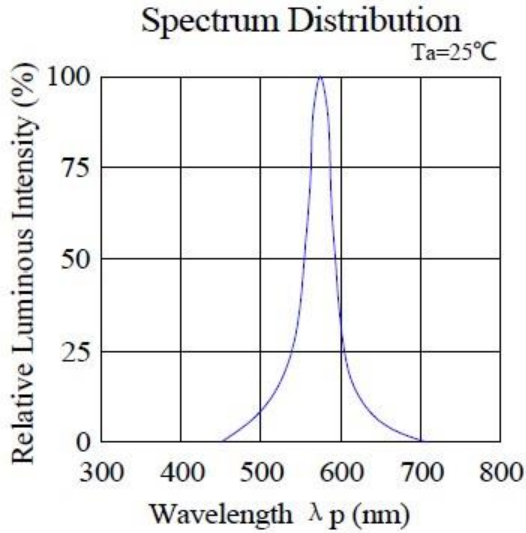
ATTENTION: Electrostatic Discharge (ESD) protection

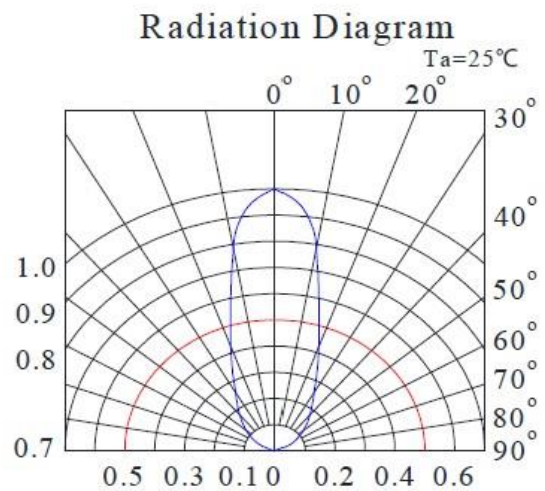
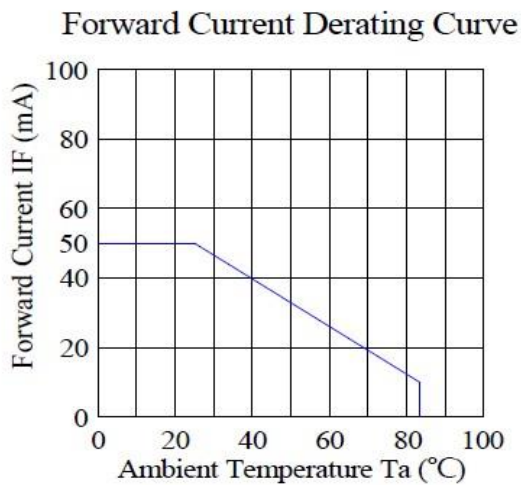
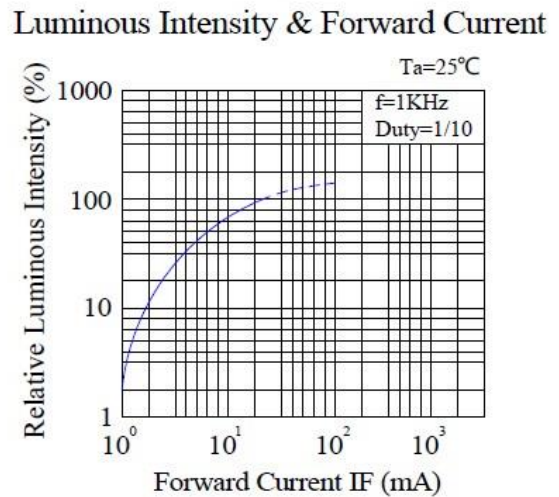
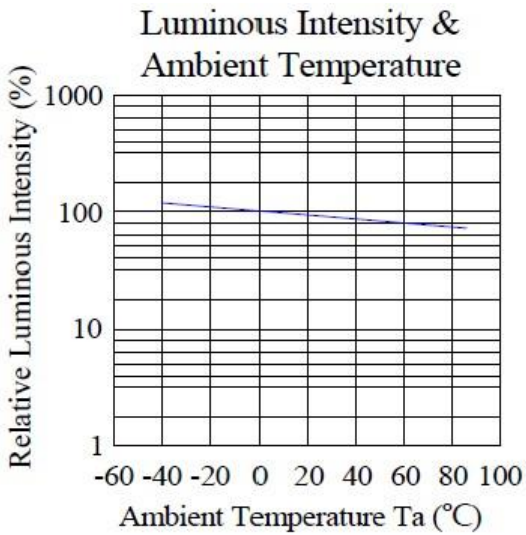
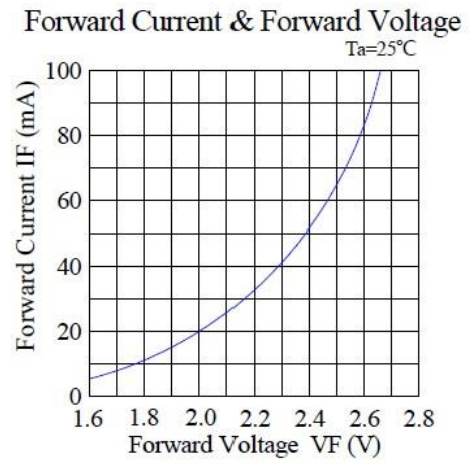
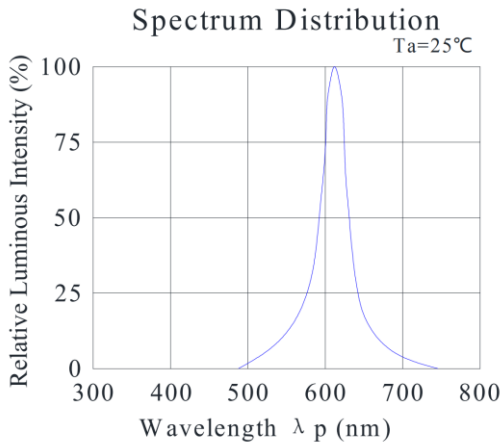


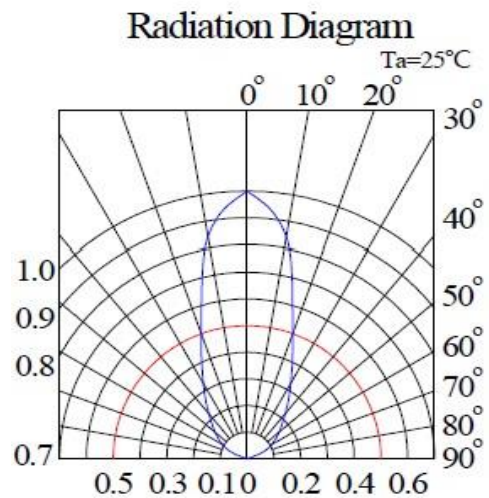
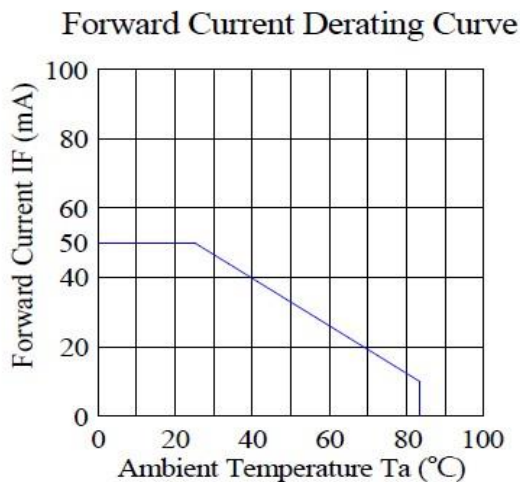
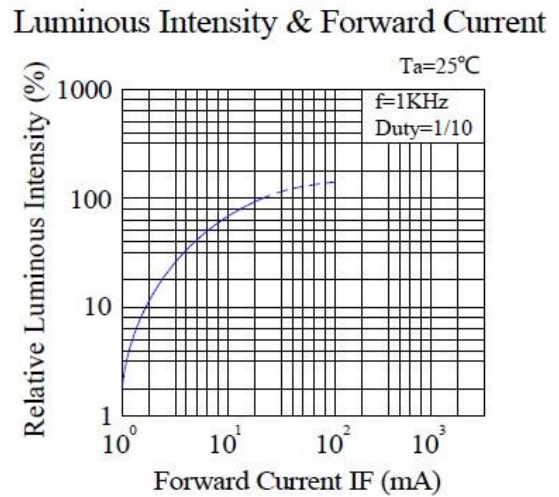
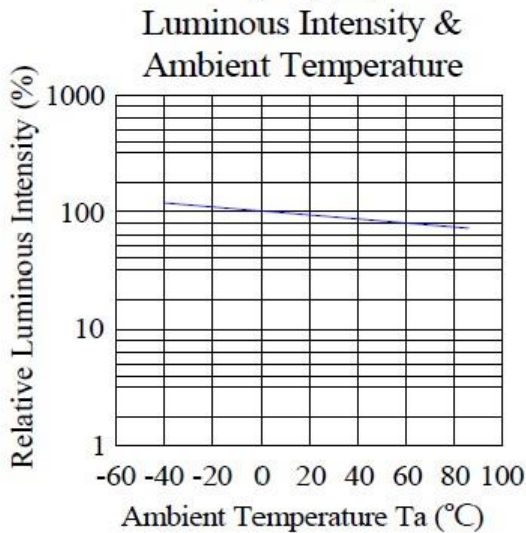
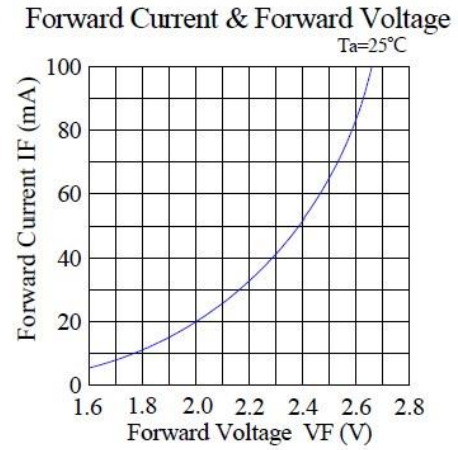
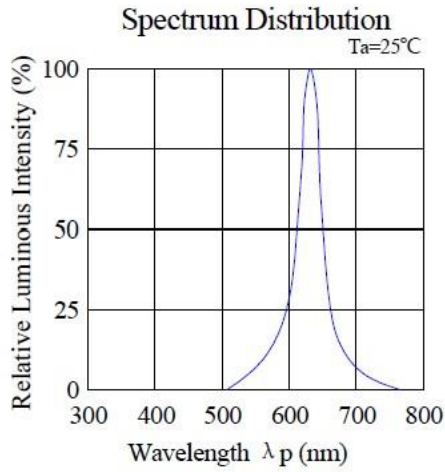
The symbol above denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are STATIC SENSITIVE devices. ESD precaution must be taken during design and assembly. If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

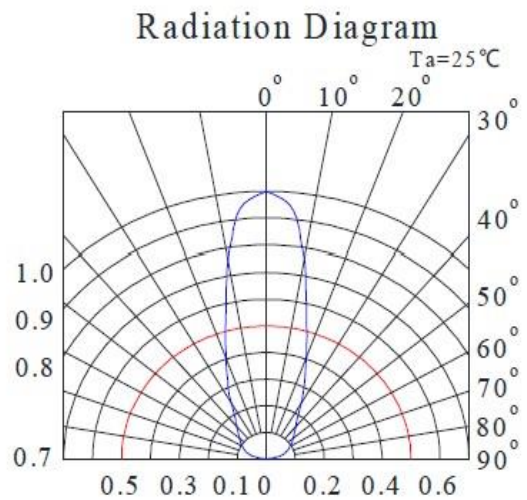
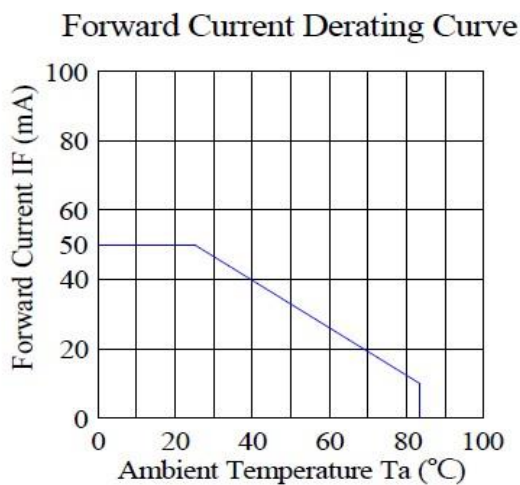
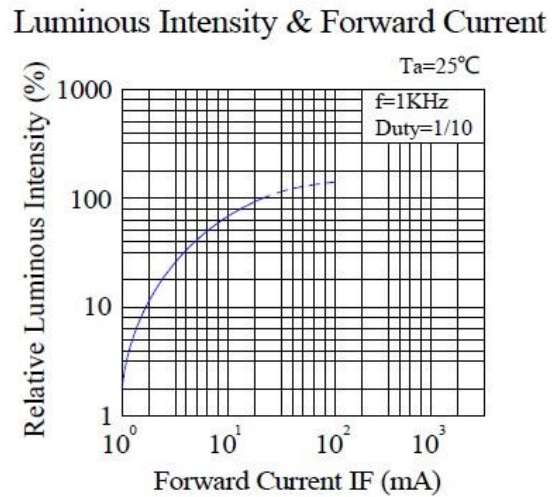
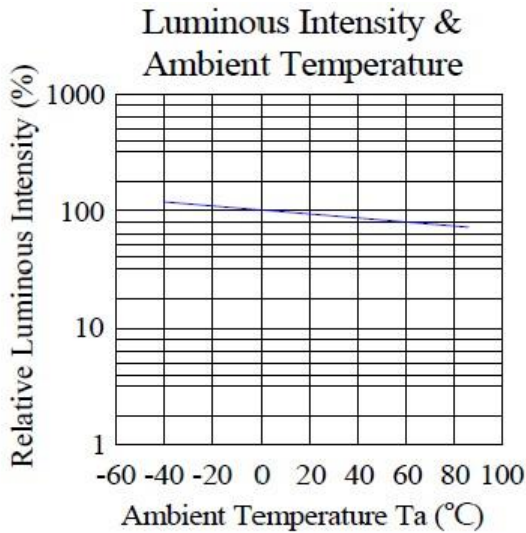
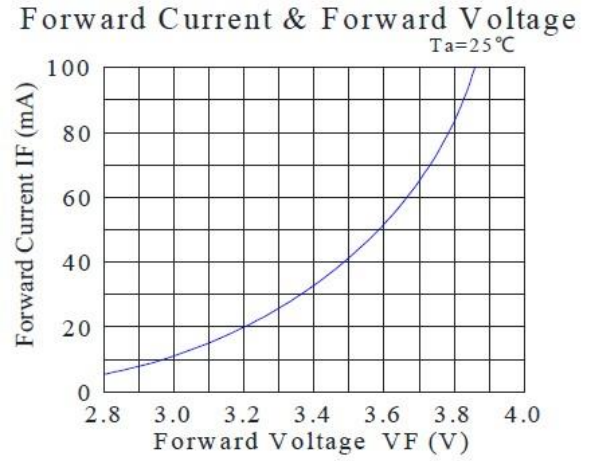
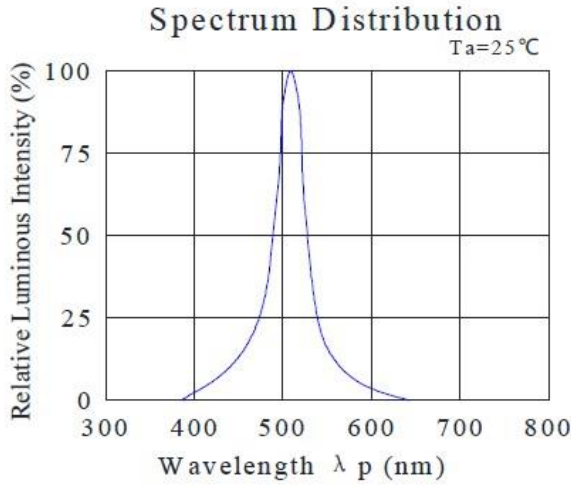
Please be advised that normal static precautions should be taken in the handling and assembly of this device to prevent damage or degradation which may be induced by electrostatic discharge (ESD).

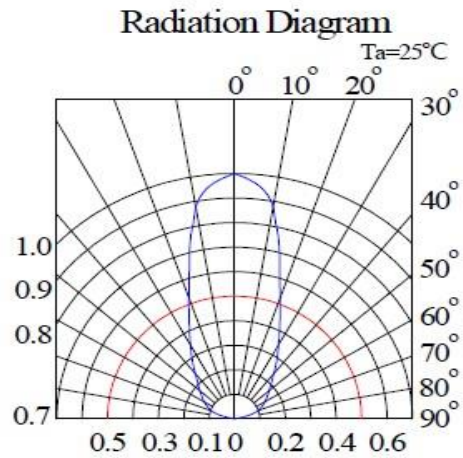
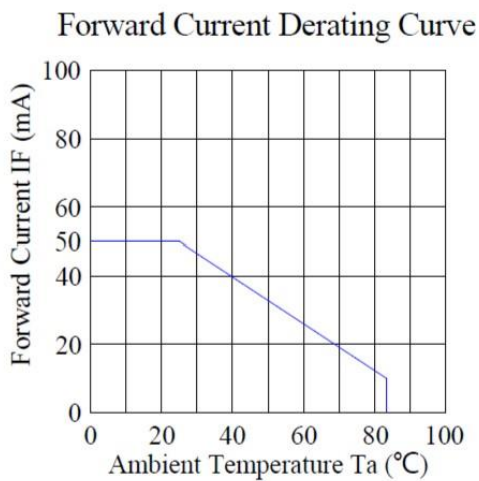
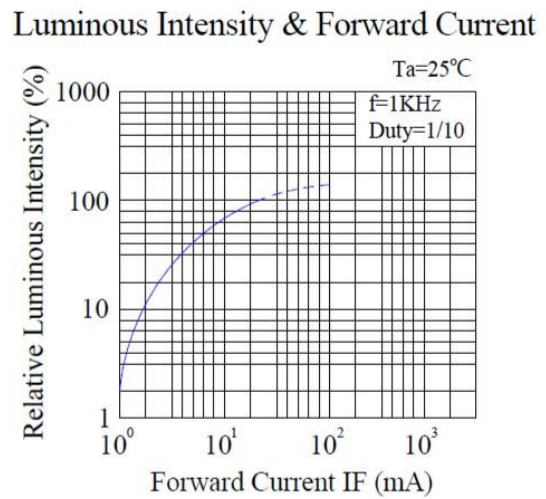
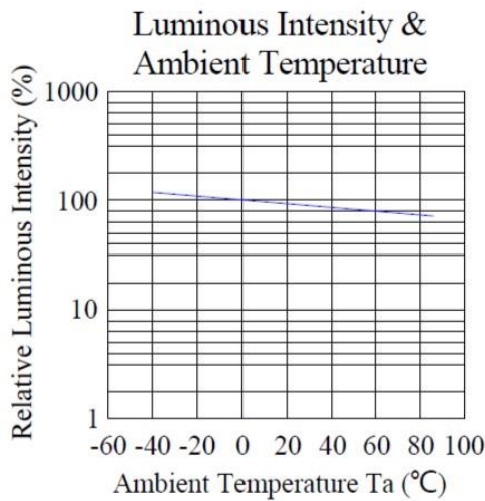
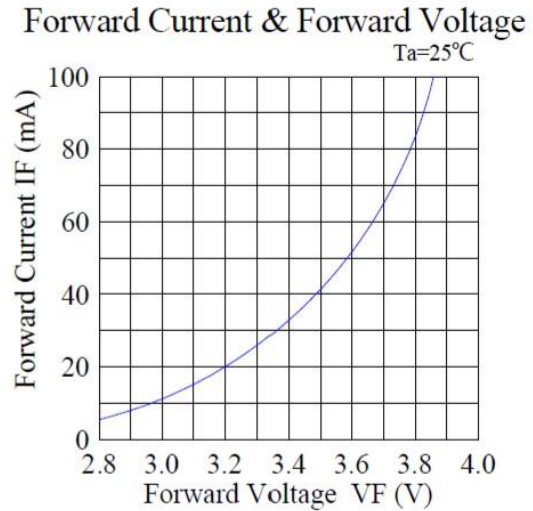
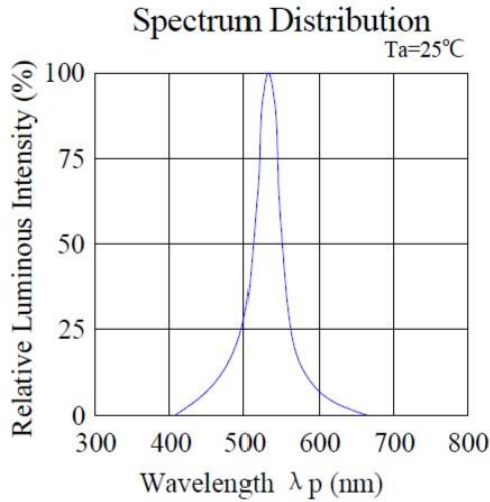
### Typical Characteristic Curves – Yellow



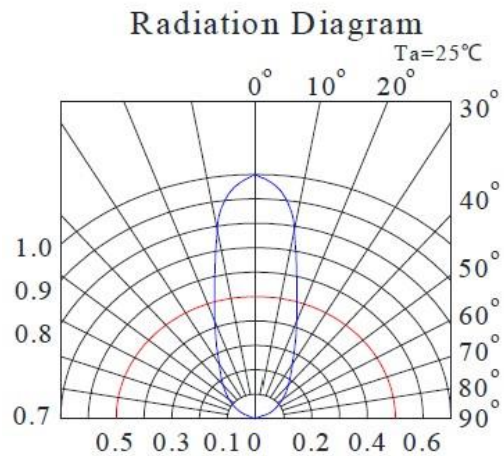
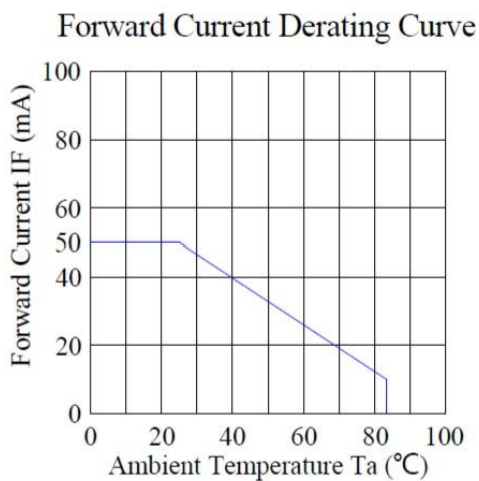
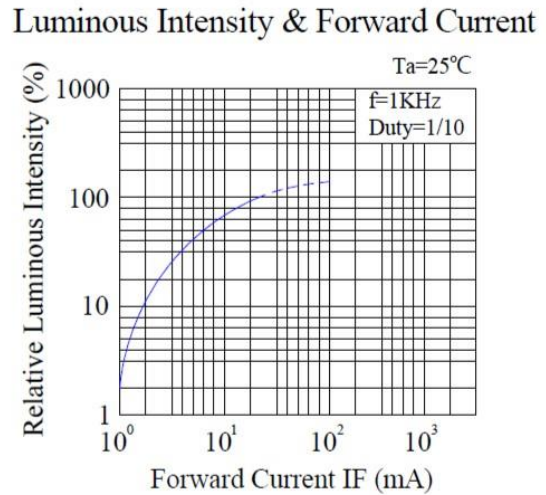
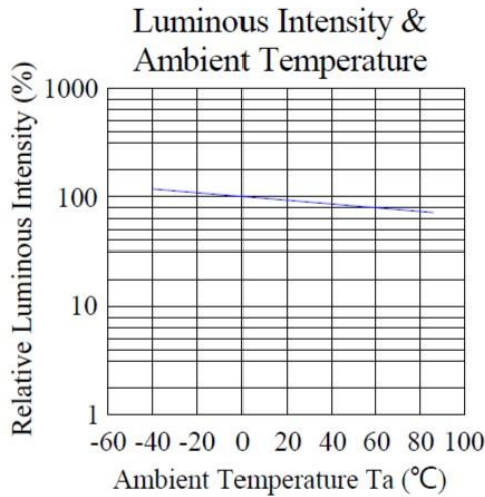
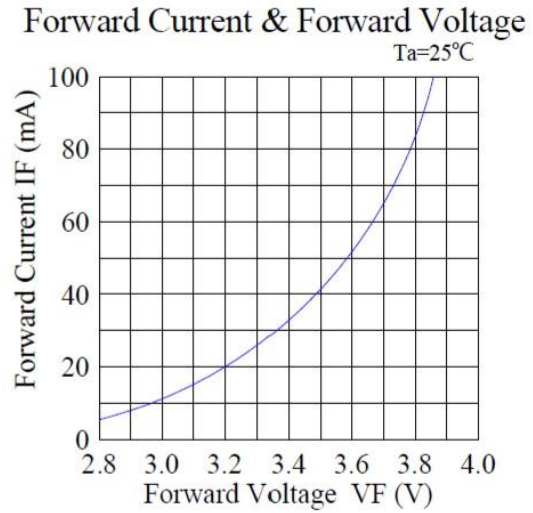
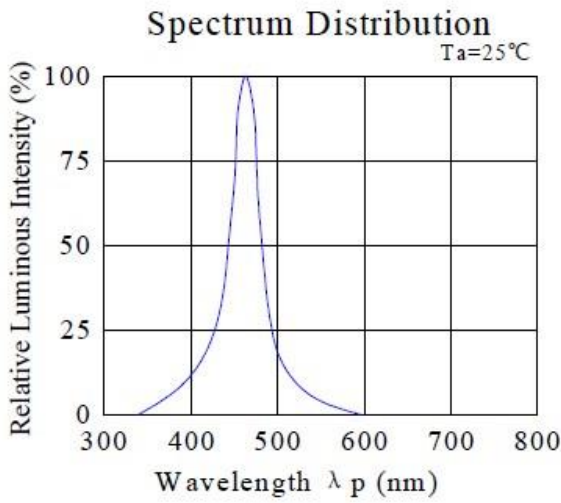
**Typical Characteristic Curves – Amber**


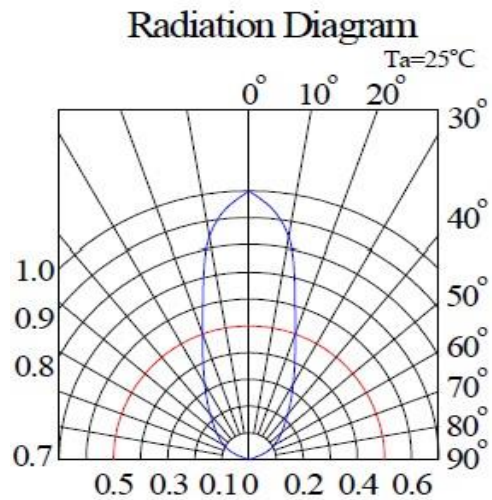
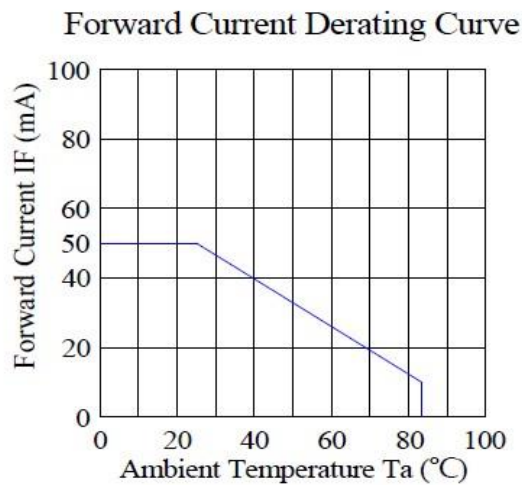
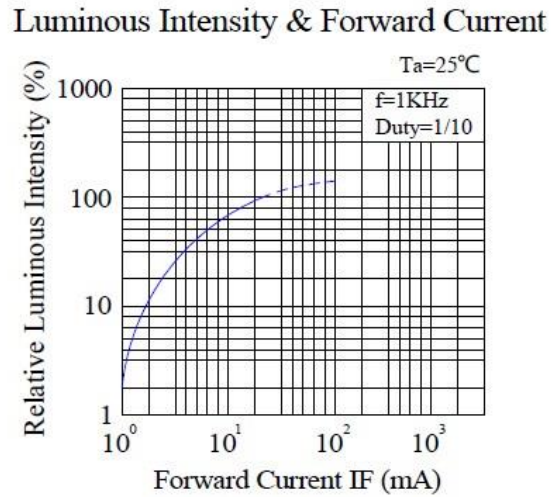
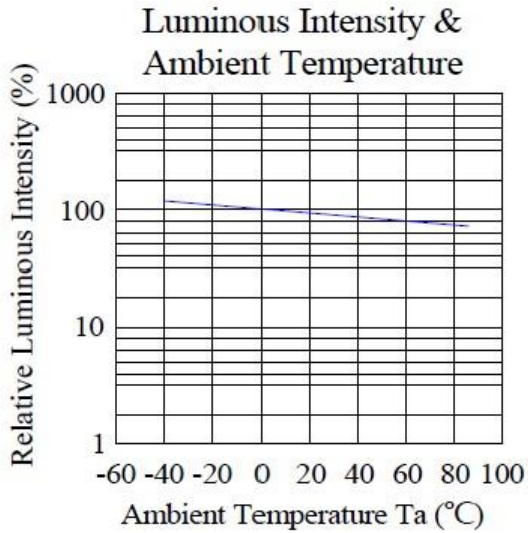
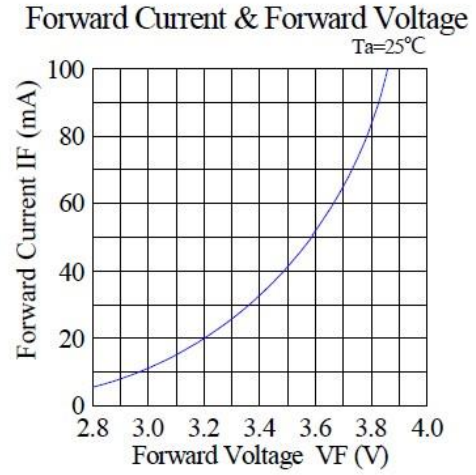
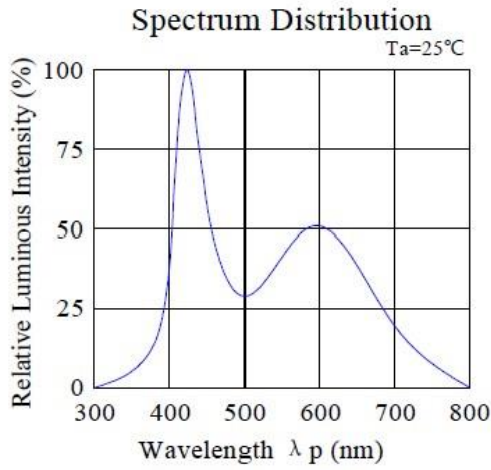
**Typical Characteristic Curves – Red**


**Typical Characteristic Curves – Cyan**


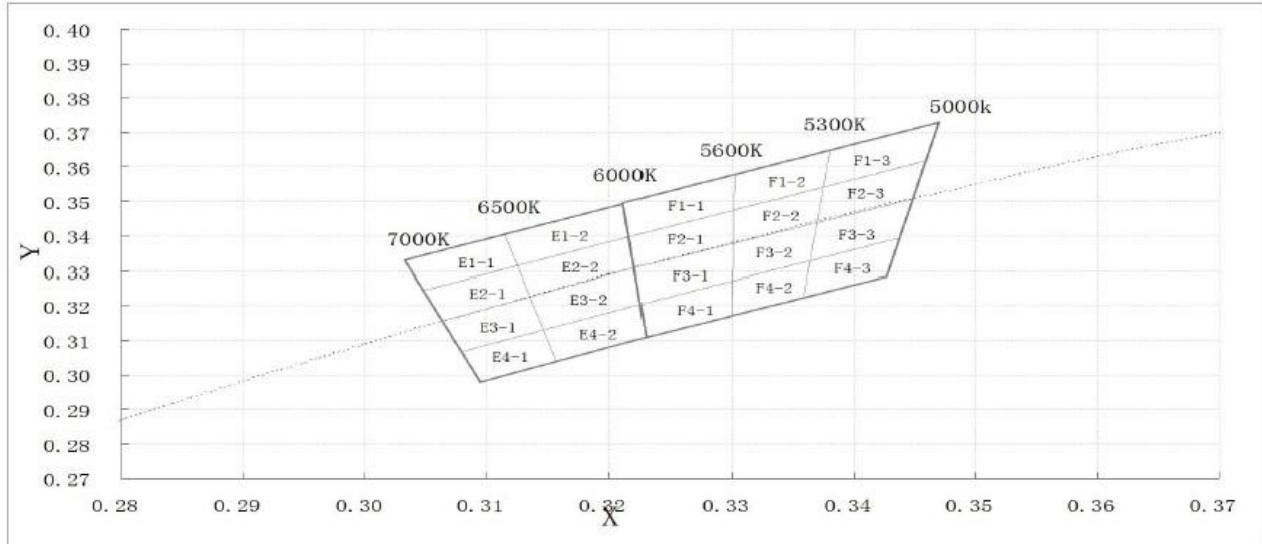
**Typical Characteristic Curves – Green**




**Typical Characteristic Curves – Blue**


**Typical Characteristic Curves – Cool White**


**Chromaticity Bin (For Cool White Only)**



Bin Code	Left x	Left y	Top x	Top y	Right x	Right y	Bottom x	Bottom y
E1-1	0.305	0.324	0.313	0.331	0.312	0.341	0.303	0.333
E2-1	0.306	0.316	0.314	0.323	0.313	0.331	0.305	0.324
E3-1	0.308	0.307	0.315	0.313	0.314	0.323	0.306	0.316
E4-1	0.310	0.298	0.316	0.304	0.315	0.313	0.308	0.307
E1-2	0.313	0.331	0.323	0.340	0.323	0.349	0.312	0.341
E2-2	0.314	0.323	0.323	0.330	0.323	0.340	0.313	0.331
E3-2	0.315	0.313	0.323	0.321	0.323	0.330	0.314	0.323
E4-2	0.316	0.304	0.323	0.311	0.323	0.321	0.315	0.313
F1-1	0.323	0.340	0.330	0.347	0.330	0.357	0.323	0.349
F2-1	0.323	0.330	0.330	0.337	0.330	0.347	0.323	0.340
F3-1	0.323	0.321	0.330	0.327	0.330	0.337	0.323	0.330
F4-1	0.323	0.311	0.330	0.317	0.330	0.327	0.323	0.321
F1-2	0.330	0.347	0.337	0.354	0.338	0.365	0.330	0.357
F2-2	0.330	0.337	0.337	0.343	0.337	0.354	0.330	0.347
F3-2	0.330	0.327	0.337	0.333	0.337	0.343	0.330	0.337
F4-2	0.330	0.317	0.337	0.322	0.337	0.333	0.330	0.327
F1-3	0.337	0.354	0.346	0.362	0.347	0.373	0.338	0.365
F2-3	0.337	0.343	0.345	0.351	0.346	0.362	0.337	0.354
F3-3	0.337	0.333	0.344	0.340	0.345	0.351	0.337	0.343
F4-3	0.337	0.322	0.343	0.328	0.344	0.340	0.337	0.333

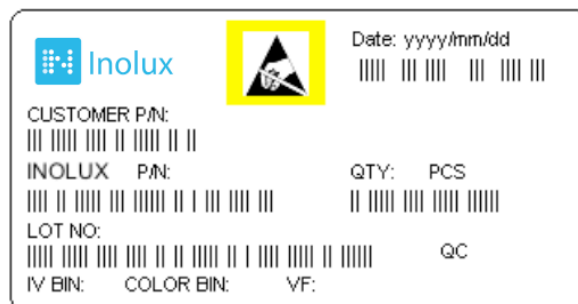
**Notes**

1. Color Coordinates Measurement allowance is  $\pm 0.01$ .

## Ordering Information

Product	Emission Color	Technology	Test Current I <sub>F</sub> (mA)	Luminous Intensity I <sub>v</sub> (mcd) (Typ.)	Forward Voltage V <sub>F</sub> (V) (Typ.)	Orderable Part Number
INP-3A4Y40	Yellow	AllInGaP	20	2500	2.0	INP-3A4Y40
INP-3A4A40	Amber	AllInGaP	20	2500	2.0	INP-3A4A40
INP-3A4R40	Red	AllInGaP	20	2500	2.0	INP-3A4R40
INP-3A4C40	Cyan	InGaN	20	8000	3.2	INP-3A4C40
INP-3A4G40	Green	InGaN	20	8000	3.2	INP-3A4G40
INP-3A4B40	Blue	InGaN	20	3000	3.2	INP-3A4B40
INP-3A4W40.65	Cool White	InGaN	20	4000	3.2	INP-3A4W40.65

## Label Specifications



**Inolux P/N:**

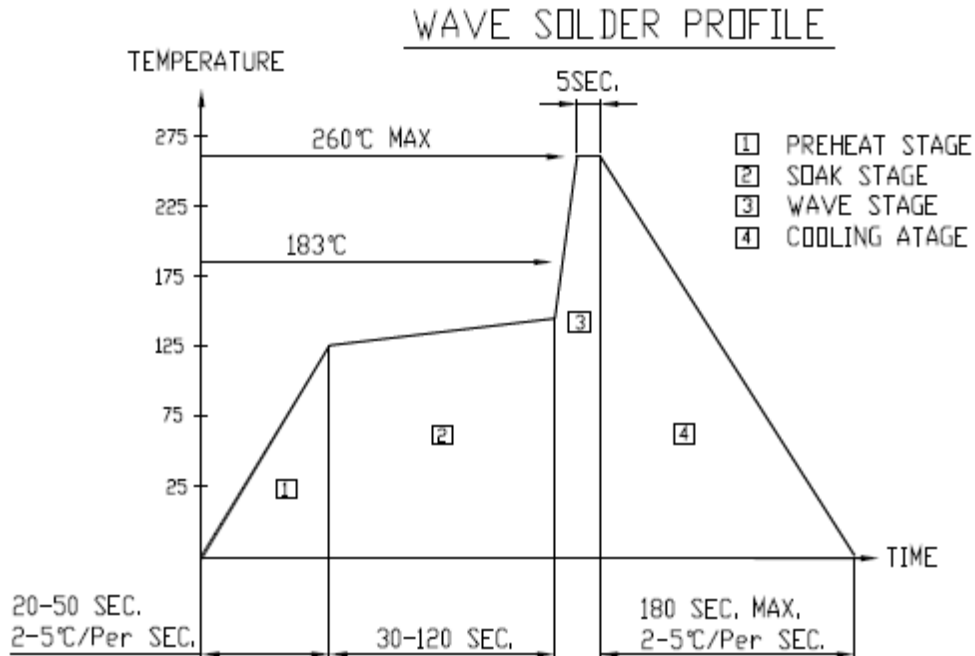
I	N	P	-	3	A	4	X	X	X	.X	-	X	X	X	X
				Package	Lead Number	Color	View Angle		CCT		Customized Stamp-off				
Inolux Through Hole Piranha				3 = 3mm dome 3A = Standard Variation	4 = 4 leads	Y: 590 nm A: 605 nm R: 624 nm C: 505 nm G: 525 nm B: 470 nm CW: X: 0.31 Y: 0.32	40 = 40 deg.		65 = 6500k						

**Lot No.:**

Z	2	0	1	7	01	24	001
Internal Tracker	Year (2017, 2018, .....)				Month	Date	Serial

## Soldering

Recommended soldering conditions:



## Soldering Iron

Basic Spec is Max 3 sec. @ 300°C. Lamps without stopper must leave a min. of 3mm clearance from base of the lens to the soldering point.

## Rework

Caution is advised when rework is performed. Rework should be completed within 4 second under 245°C using a double-headed soldering iron.

**Reliability**

Item	Frequency/ lots/ samples/ failures	Standards Reference	Conditions
Precondition	For all reliability monitoring tests according to JEDEC Level 2	J-STD-020	1.) Baking at 85°C for 24hrs 2.) Moisture storage at 85°C/ 60% R.H. for 168hrs
Solderability	1Q/ 1/ 22/ 0	JESD22-B102-B And CNS-5068	Accelerated aging 155°C/ 24hrs Tinning speed: 2.5+0.5cm/s Tinning: A: 215°C/ 3+1s or B: 260°C/ 10+1s
Resistance to soldering heat		CNS-5067	Dipping soldering terminal only Soldering bath temperature A: 260+/-5°C; 10+/-1s B: 350+/-10°C; 3+/-0.5s
Operating life test	1Q/ 1/ 40/ 0	CNS-11829	1.) Precondition: 85°C baking for 24hrs 85°C/ 60%R.H. for 168hrs 2.) Tamb25°C; IF=20mA; duration 1000hrs
High humidity, high temperature bias	1Q/ 1/ 45/ 0	JESD-A101-B	Tamb: 85°C Humidity: 85% R.H., IF=5mA Duration: 1000hrs
High temperature bias	1Q/ 1/ 20	IN specs.	Tamb: 55°C IF=20mA Duration: 1000hrs
Pulse life test	1Q/ 1/ 40/ 0		Tamb25°C, If=20mA,, Ip=100mA, Duty cycle=0.125 (tp=125 μs, T=1sec) Duration 500hrs)
Temperature cycle	1Q/ 1/ 76/ 0	JESD-A104-A IEC 68-2-14, Nb	A cycle: -40 degree C 15min; +85 degree C 15min Thermal steady within 5 min.. 300 cycles 2 chamber/ Air-to-air type
High humidity storage test	1Q/ 1/ 40/ 0	CNS-6117	60+3°C 90+5/-10% R.H. for 500hrs
High temperature storage test	1Q/ 1/ 40/ 0	CNS-554	100+10°C for 500hrs
Low temperature storage test	1Q/ 1/ 40/ 0	CNS-6118	-40+5°C for 500hrs

## Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release		1.0	05-18-2020

## DISCLAIMER

INOLUX reserves the right to make changes without further notice to any products herein to improve reliability, function or design. INOLUX does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

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INOLUX's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of INOLUX or INOLUX CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.