



**BRIGHTTEK**  
**BRIGHTTEK (EUROPE) LIMITED**

*Brighten up The World With LED!*



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

## PRODUCT DATASHEET



- ▶ Ceramic High Power
- ▶ 3535 Series
- ▶ Ultraviolet (380-390nm)

**NOQ10S96Z** (Old P/N: NOQ10S96)

**NOQ10S96ZSTAR**



Release Date: 20 May 2015 Version: A1.9



### 3535 2.9t Series

**RoHS Compliant**



#### FEATURES:

- **Package:** Ceramic SMT Package with Silicon Lens
- **Forward Current:** 500-700mA
- **Forward Voltage (typ.):** 3.7V
- **Radiant Power (typ.):** 780mW@500mA; 1037mW@700mA
- **Colour:** Ultraviolet (UV)
- **Peak Wavelength:** 380-390nm
- **Viewing angle:** 60°
- **Materials:**
  - Die: InGaN
  - Resin: Silicon (Water Clear)
  - L/T Finish: Gold Plated (Au)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **Grouping parameters:**
  - Forward Voltage
  - Radiant Power
  - Peak Wavelength
- **Soldering methods:** Reflow
- **Moisture sensitive Level:** MSL2 according to J-STD020
- **Packing:** 12mm tape with 100pcs Min./reel, ø180mm (7'')  
35pcs/tray; 210pcs/carton (with Starboard)

#### APPLICATIONS:

- Industrial Curing
- Air Purifier
- Poster Printing Curing
- Counterfeit Money Detector
- Blood Detector
- Nail Curing
- Teeth Curing

## CHARACTERISTICS:

### Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	$I_F$	700	mA
Reverse Current @5V	$I_R$	10	$\mu$ A
Junction Temperature	$T_j$	125	°C
Electrostatic Discharge (HBM: MIL-STD-883 C 3B)	ESD	8000	V
Operating Temperature	$T_{OPR}$	-40~+85	°C
Storage Temperature	$T_{STG}$	-40~+100	°C
Soldering Temperature	$T_{SOL}$	260	°C
Thermal Resistance - Junction to Solder Point	$R_{th}$	12	°C/W

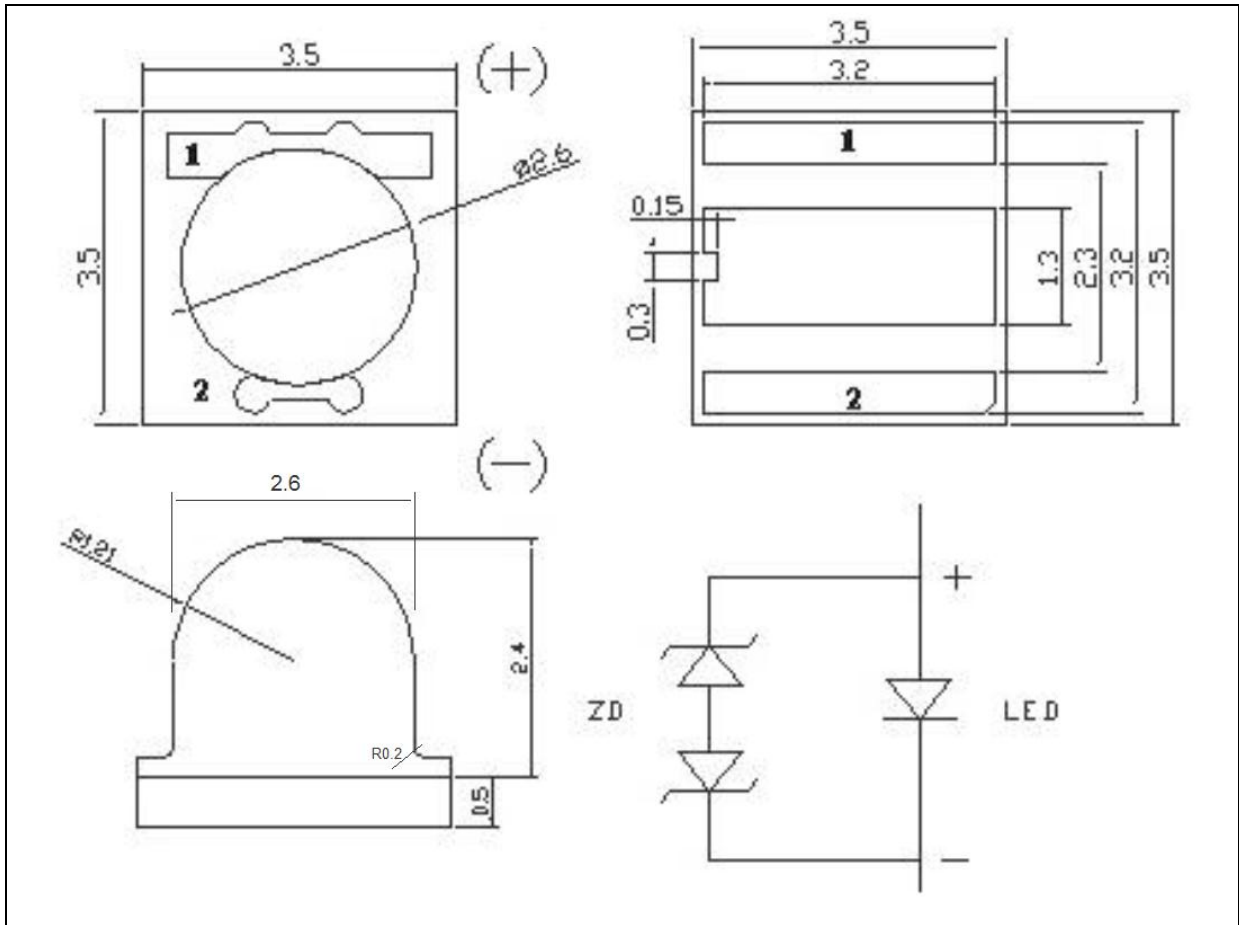
### Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	$V_F$	2.8	3.4	4.0	V	$I_F=500$ mA
Radiant Power	$P_O$	445	560	675	mW	$I_F=350$ mA
		620	780	940		$I_F=500$ mA
		824	1037	1250		$I_F=700$ mA
		---	395	---		$I_F=350$ mA
Radiant Intensity	$I_e$	---	550	---	mW/sr	$I_F=500$ mA
		---	730	---		$I_F=700$ mA
		---	---	---		$I_F=500$ mA
Peak Wavelength	$\lambda_D$	380	385	390	nm	$I_F=500$ mA
Viewing Angle	$2\theta_{1/2}$	---	60	---	deg	$I_F=500$ mA

1. Luminous flux ( $\Phi_v$ )  $\pm 5\%$ , Forward Voltage ( $V_F$ )  $\pm 0.05$ V, Viewing angle( $2\theta_{1/2}$ )  $\pm 10^\circ$
2. IS standard testing

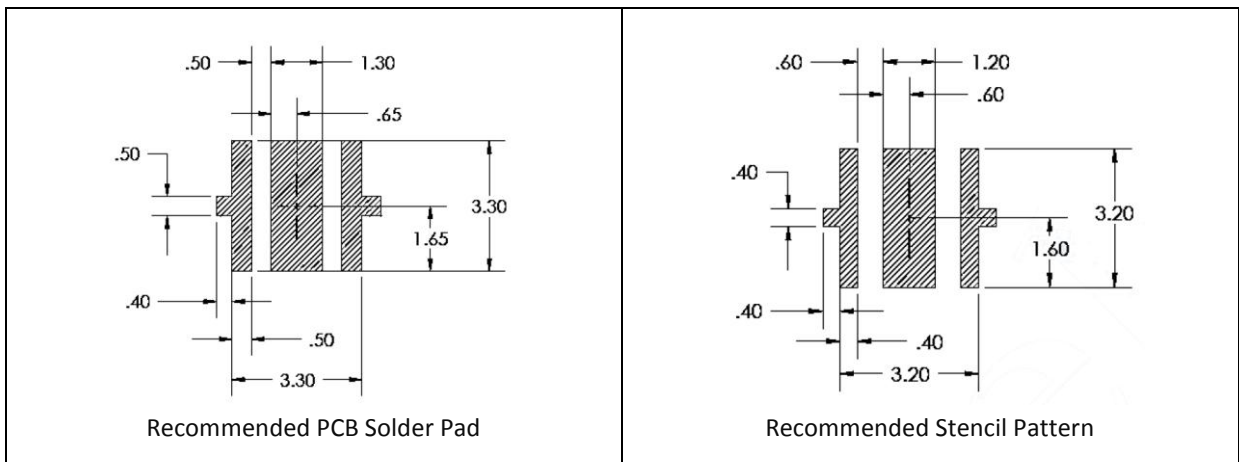
**OUTLINE DIMENSION:**

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.13$ mm, unless otherwise noted.

Recommended Soldering Pad Dimension:

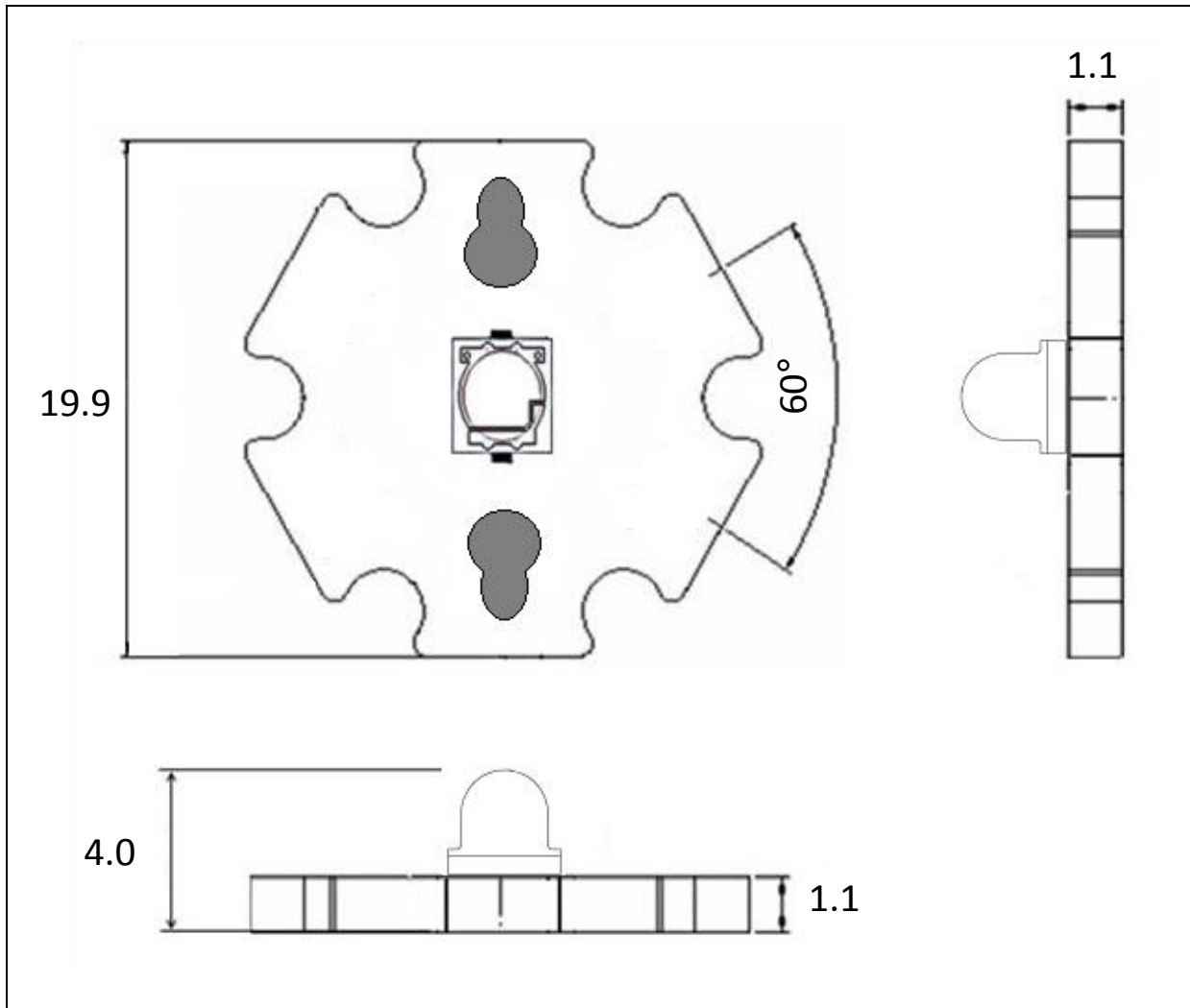


1. Dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.12$ mm with angle tolerance  $\pm 0.5^\circ$ .

**MCPCB:**

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Starboard Dimensions:



1. Dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.25\text{mm}$  with angle tolerance  $\pm 0.5^\circ$ .

**BINNING GROUPS:**


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 Forward Voltage Classifications ( $I_F = 500\text{mA}$ ):

Code	Min.	Max.	Unit
V2830	2.8	3.0	V
V3032	3.0	3.2	
V3234	3.2	3.4	
V3436	3.4	3.6	
V3638	3.6	3.8	
V3840	3.8	4.0	

 Radiant Power Classifications ( $I_F = 500\text{mA}$ ):

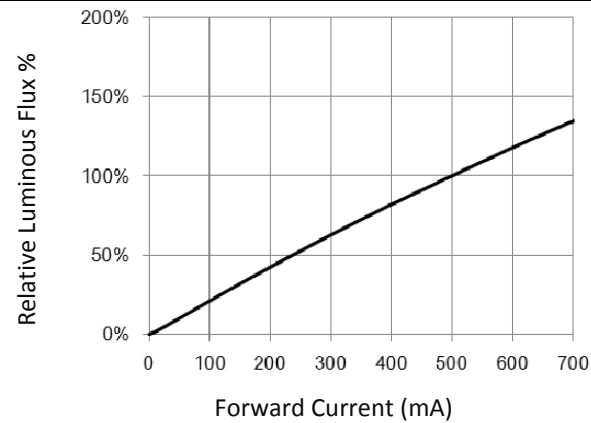
Code	Min.	Max.	Unit
U062	620	660	mW
U066	660	700	
U070	700	740	
U074	740	780	
U078	780	820	
U082	820	860	
U086	860	900	
U090	900	940	

 Peak Wavelength Classifications ( $I_F = 500\text{mA}$ ):

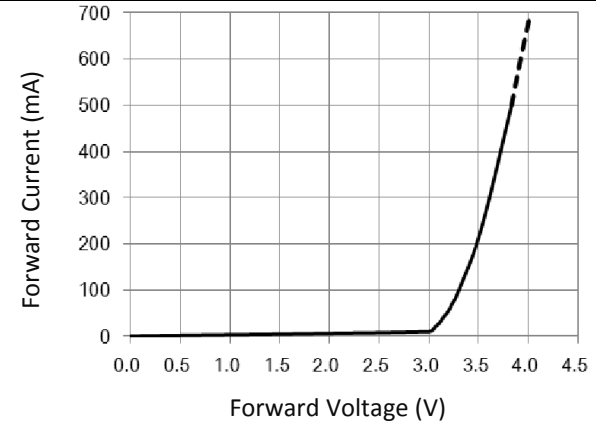
Code	Min.	Max.	Unit
Q380	380	385	nm
Q385	385	390	

## ELECTRO-OPTICAL CHARACTERISTICS:

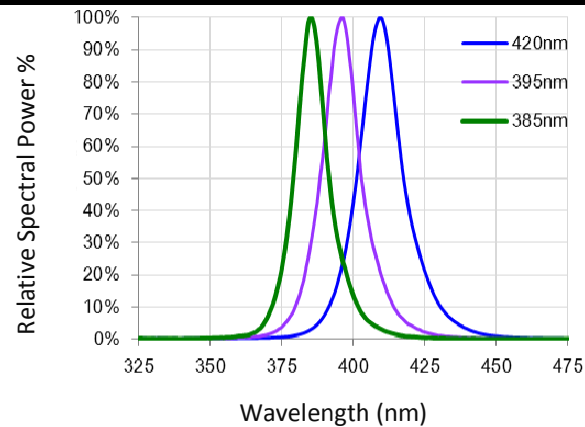
Relative Luminous Flux v.s. Forward Current



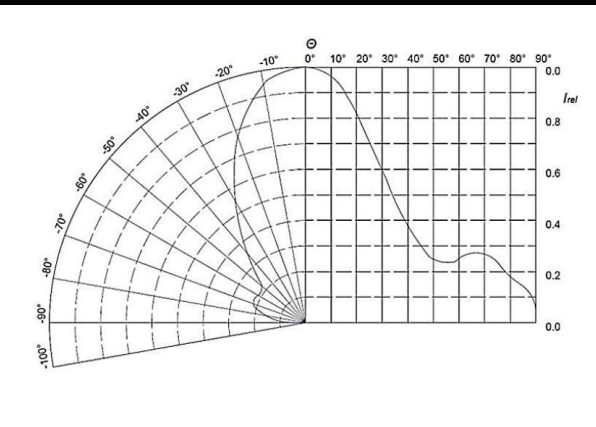
Forward Current v.s. Forward Voltage



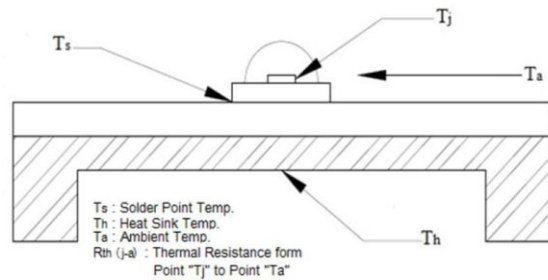
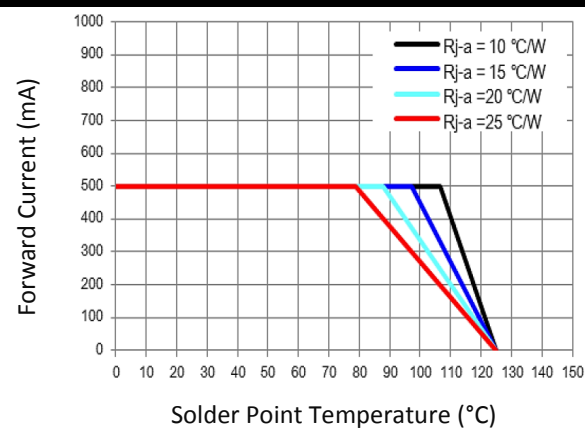
Relative Spectral Power v.s. Wavelength



Directive Radiation

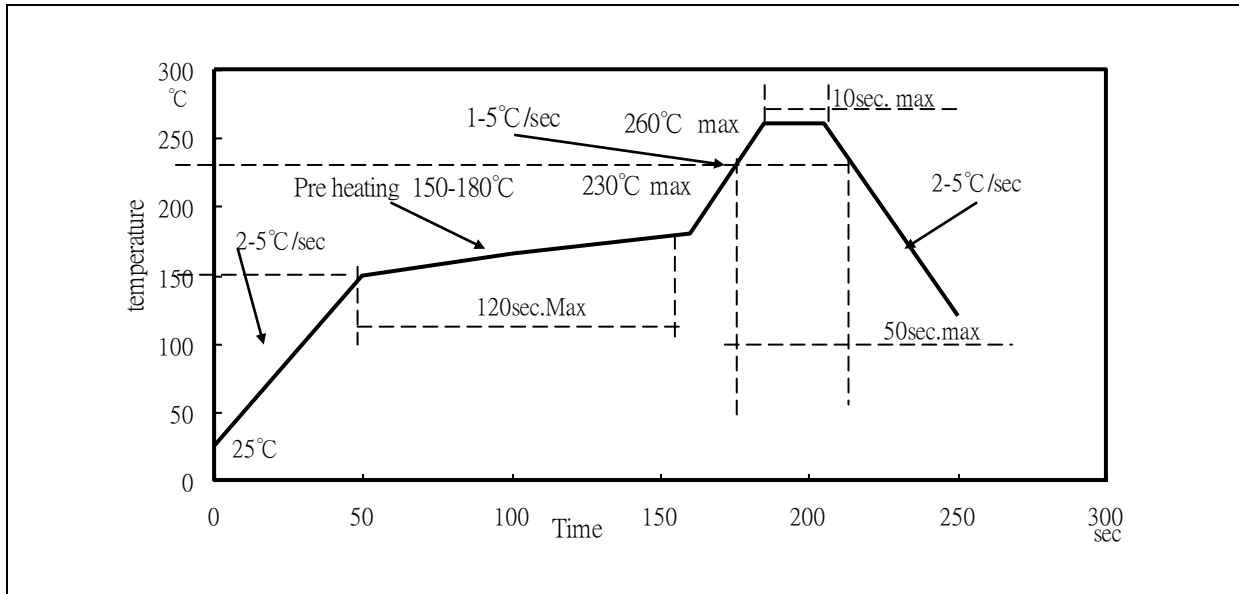


Forward Current Derating Curve



## RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:



Note:

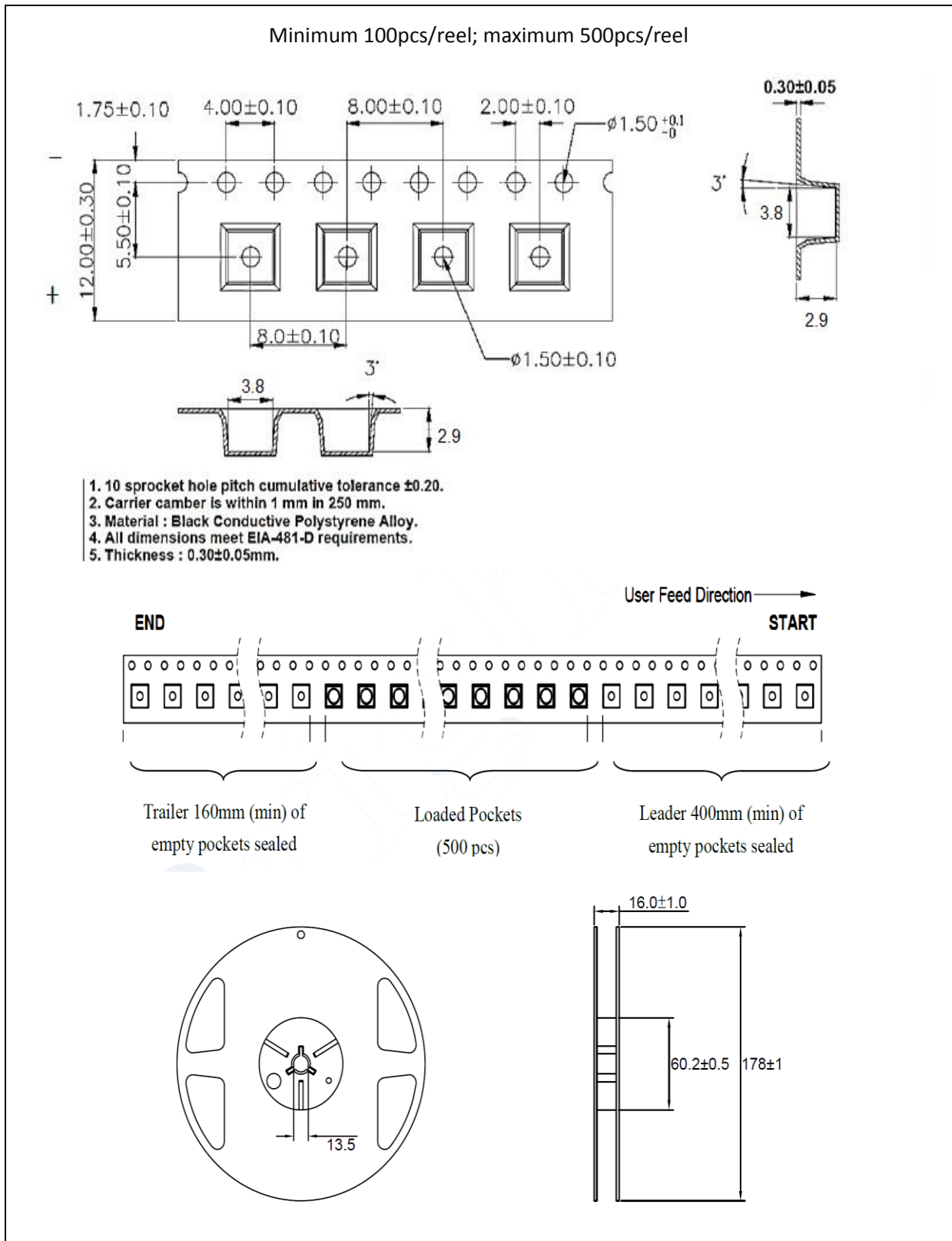
1. Recommend reflow temperature 240°C. The maximum soldering temperature should be limited to 260°C.
2. Maximum reflow soldering: 3 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.



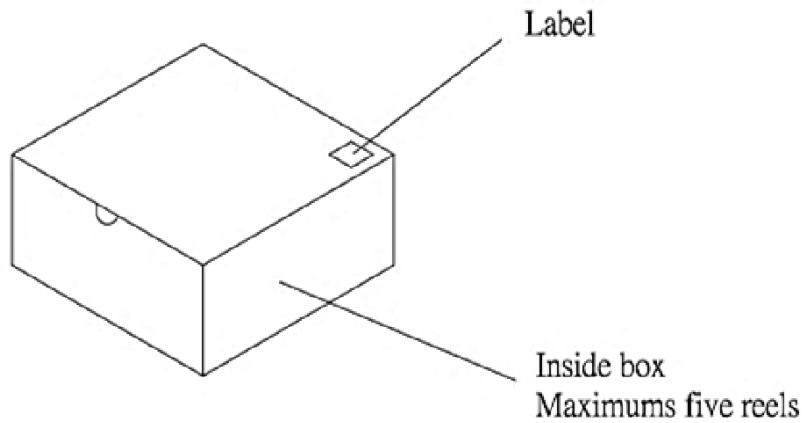


## PACKING SPECIFICATION:

Reel Dimension:



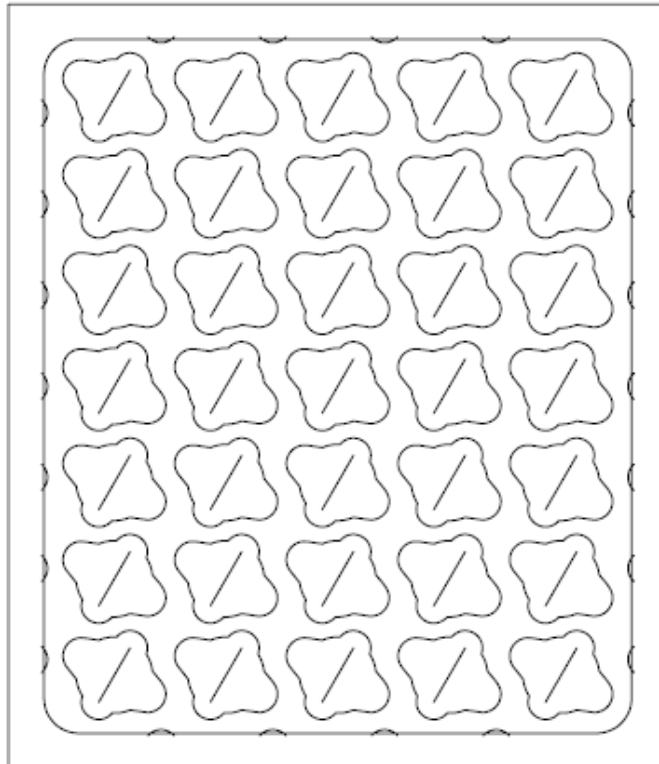
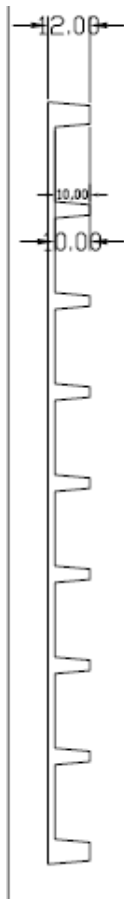
Carton Dimension:



1. Each reel is packed in packed in a moisture-proof bag along with 2 packs od desiccant and a humidity card;
2. A maximum of 5 moisture-proof bags are packed in an inner box (size: 240x200x105mm);
3. A maximum of 4 inner boxes are put in an outer box (size: 410x255x230mm);
4. Part number, lot number and quantity will be indicated on the label of the moisture-proof bag and on the cardboard box.

Tray Dimension for Starboard:

35pcs/tray; 210pcs/carton



## PRECAUTIONS OF USE:

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### Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 month at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp-proof box with desiccating agent and apply baking at 60°C±5°C for 15hrs before use.

### Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs.

The suggested baking conditions are as follows:

- 70±3°C x 24hrs and <5%RH, taped / reel package.
- 100±3°C x 2hrs, bulk (loose) package.
- 130±3°C x 30min, bulk (loose) package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

### Testing Circuit:



Must apply resistor(s) for protection (over current proof).

### Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

### ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

## Test Items and Reliability:

Test Item	Test Condition	Duration / Cycle	Failure Rate	Reference
Thermal Shock	-40°C 30mins ↓↑ 5mins 125°C 30mins	100 cycles	0/22	AEC-Q101
High Temperature Storage	Ta=100°C	1000hrs	0/22	EIAJ ED-4701 200 201
Humidity Heat Storage	Ta=85°C RH=85%	1000hrs	0/22	EIAJ ED-4701 100 103
Low Temperature Storage	Ta=-40°C	1000hrs	0/22	EIAJ ED-4701 200 202
Life Test	Ta=25°C I <sub>F</sub> =500mA	1000hrs	0/22	
High Humidity Heat Operation	85°C RH=85% I <sub>F</sub> =500mA	1000hrs	0/22	
High Temperature Operation	Ta=85°C I <sub>F</sub> =500mA	1000hrs	0/22	
ESD (HBM)	8KV at 1.5kΩ 100pf	3 times	0/22	MIL-STD-883

Failure Criteria				
Item	Symbol	Condition	Criteria for Judgment	
			Min	Max
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =500mA	-	USL <sup>1</sup> x 1.1
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	100μA
Luminous Intensity	I <sub>V</sub>	I <sub>F</sub> =500mA	LSL <sup>2</sup> x 0.7	-

1. USL: Upper Specification Level.
2. LSL: Lower Specification Level.

**REVISION RECORD:**

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Version	Date	Summary of Revision
A1.0	28/07/2014	Datasheet set-up.
A1.1	29/08/2014	Add picture and starboard information.
A1.2	17/09/2014	Add radiant intensity.
A1.3	04/03/2015	Revised reel quantity.
A1.4	12/03/2015	Update photo and drawing.
A1.5	13/03/2015	Add radiant power and intensity information.
A1.6	16/03/2015	P/N adds suffix Z indicating with Zeners.
A1.7	26/03/2015	Mark with old P/N.
A1.8	19/05/2015	Dimension and characteristics update.
A1.9	20/05/2015	Add carton packing dimension.