BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

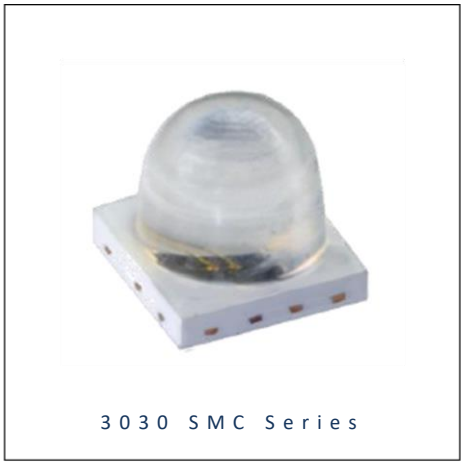
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- ▶ SMC High Power
- ▶ 3030 SMC 3.0t Series
- ▶ Infrared (IR) 850nm

Release Date: 06 April 2018 Version: A1.1

N0F25S45



3030 SMC Series

3030 SMC Series

RoHS Compliant

FEATURES:

- **Package:** TOP View SMC Package with Silicon Lens
- **Forward Current:** 250mA
- **Forward Voltage (typ.):** 1.6V
- **Luminous Flux (typ.):** 175mW@250mA
- **Colour:** Infrared
- **Wavelength:** 850nm
- **Viewing angle:** 30°
- **Materials:**
  - Die: AlGaInP
  - Resin: Silicon (Water Clear)
  - L/T Finish: Ag plated
- **Operating Temperature:** -40~+80°C
- **Storage Temperature:** -40~+100°C
- **Grouping parameters:**
  - Forward Voltage
  - Radiant Power
  - Peak Wavelength
- **Soldering methods:** IR Reflow
- **Preconditioning:** MSL2 according to J-STD020
- **Packing:** 12mm tape with 500pcs Min./reel, ø180mm (7'')

APPLICATIONS:

- Security Camera
- Data Communication
- Surveillance
- Facial Recognition

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	320	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Junction Temperature	T_j	125	°C
Electrostatic Discharge (HBM: MIL-STD-883 C2)	ESD	2000	V
Thermal Resistance Junction to Solder Point	R_{th}	14	°C/W
Operating Temperature	T_{OPR}	-40~+80	°C
Storage Temperature	T_{STG}	-40~+100	°C
Soldering Temperature	T_{SOL}	260	°C

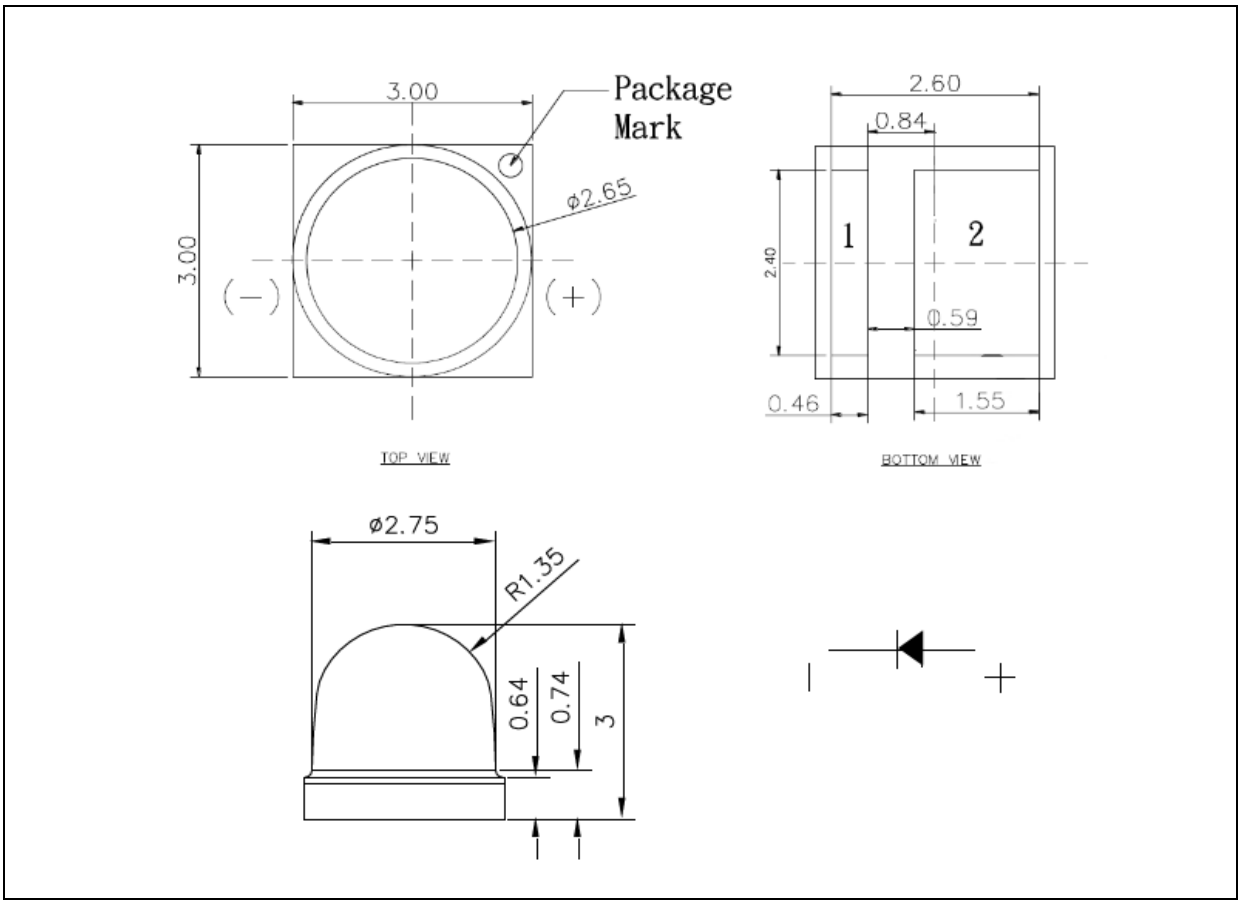
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.4	---	2.0	V	I_F=250mA
Radiant Power	P_O	125	---	225	mW	I_F=250mA
Dominant Wavelength	λ_D	840	---	870	nm	I_F=250mA
Viewing Angle	$2\theta_{1/2}$	---	30	---	deg	I_F=250mA

1. Radiant Power (P_O) ±7%, Forward Voltage (V_F) ±0.1V, Viewing angle($2\theta_{1/2}$) ±10°

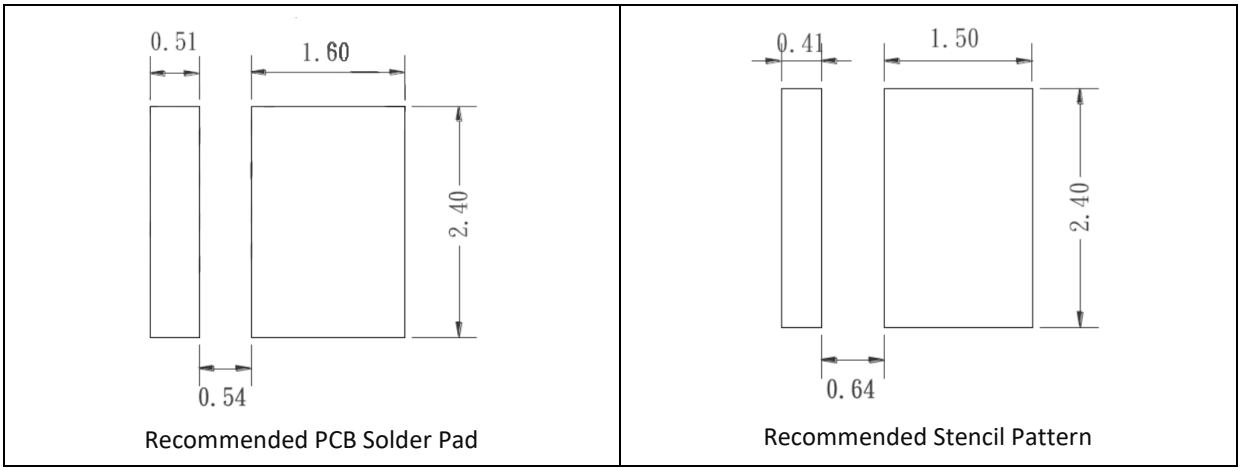
OUTLINE DIMENSION:

Package Dimension:



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

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance ±0.12mm with angle tolerance ±0.5°.

BINNING GROUPS:

Forward Voltage Classifications (I_F = 250mA):

Code	Min.	Max.	Unit
V1416	1.4	1.6	V
V1618	1.6	1.8	
V1820	1.8	2.0	

Radiant Power Classifications (I_F = 250mA):

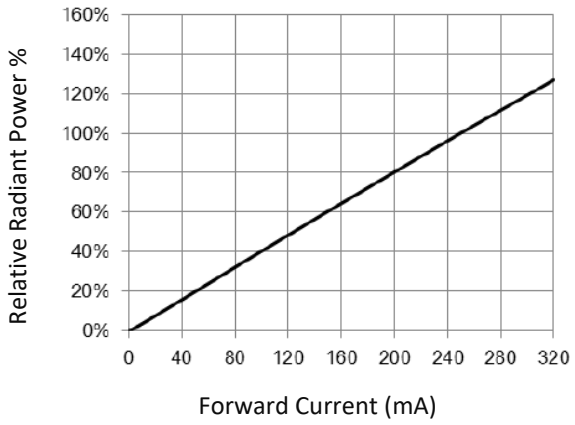
Code	Min.	Max.	Unit
P12	125	150	mW
P13	150	175	
P14	175	200	
P21	200	225	

Peak Wavelength Classifications (I_F = 250mA):

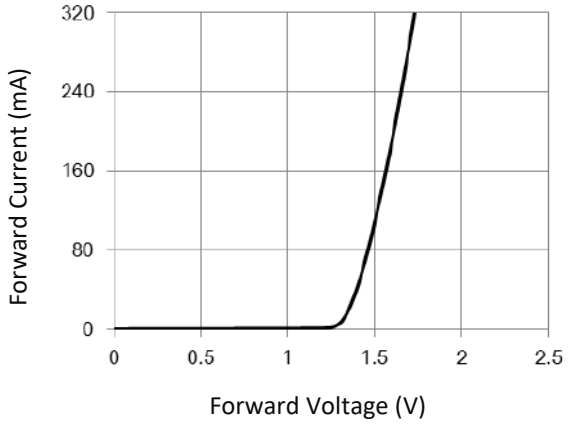
Code	Min.	Max.	Unit
P850	840	870	nm

ELECTRO-OPTICAL CHARACTERISTICS:

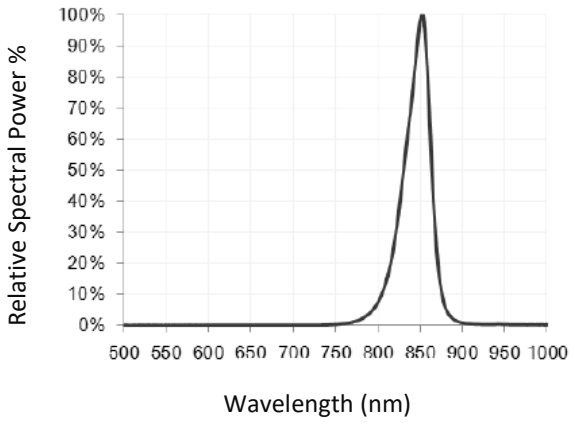
Relative Radiant Power v.s. Forward Current



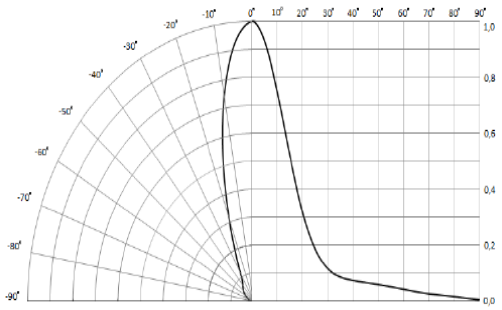
Forward Current v.s. Forward Voltage



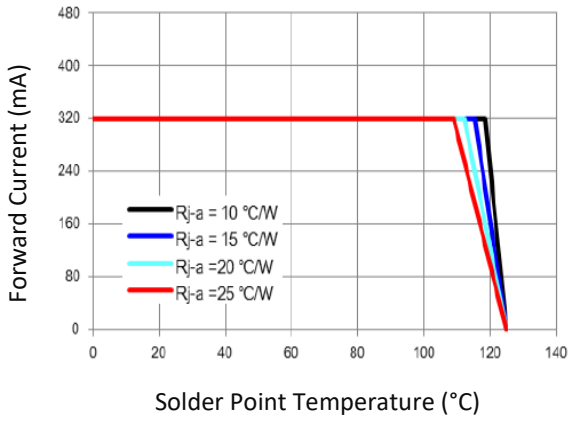
Relative Spectral Power v.s. Wavelength

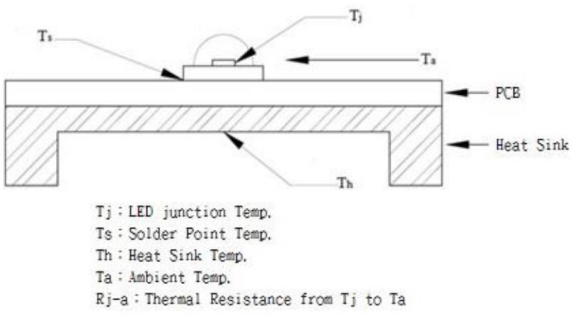


Directive Radiation



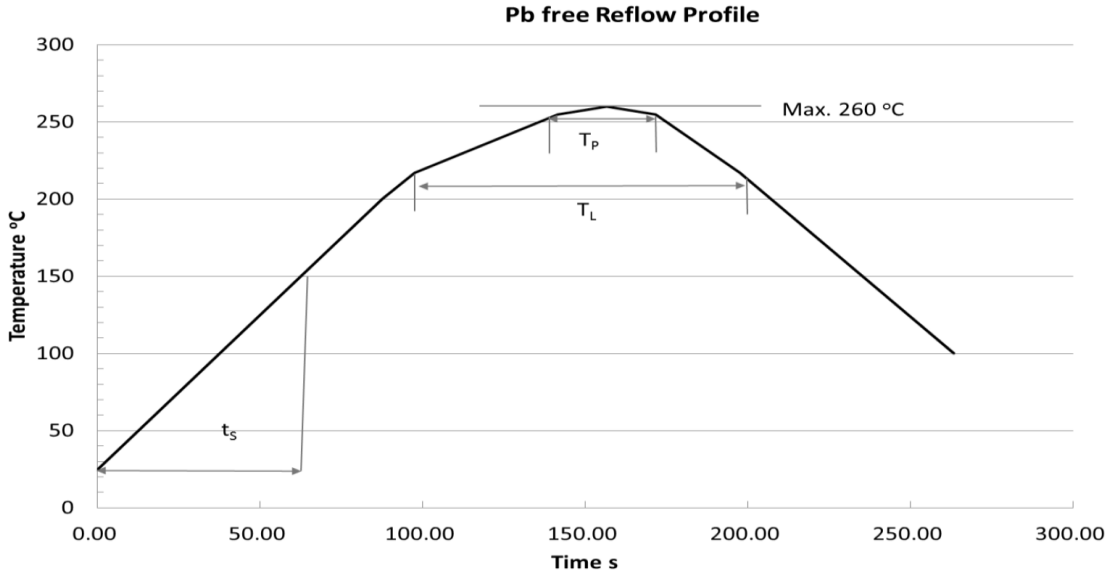
Forward Current Derating Curve





RECOMMENDED SOLDERING PROFILE:

IR Reflow Lead-free Solder:



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up Rate to Preheat (25°C to 150°C)			2	3	K/s
Time t_S (T_{Smin} to T_{smax})	t_S	60	100	120	s
Ramp-up Rate to Peak (T_{Smax} to T_P)			2	3	K/s
Liquidus Temperature	T_L		217		°C
Time above Liquidus temperature	t_L		80	100	s
Peak Temperature	T_P		245	260	°C
Time within 5 °C of the specified peaktemperature T_P - 5 K	t_P	10	20	30	s
Ramp-down Rate (T_P to 100 °C)			3	4	K/s
Time 25 °C to T_P				480	s

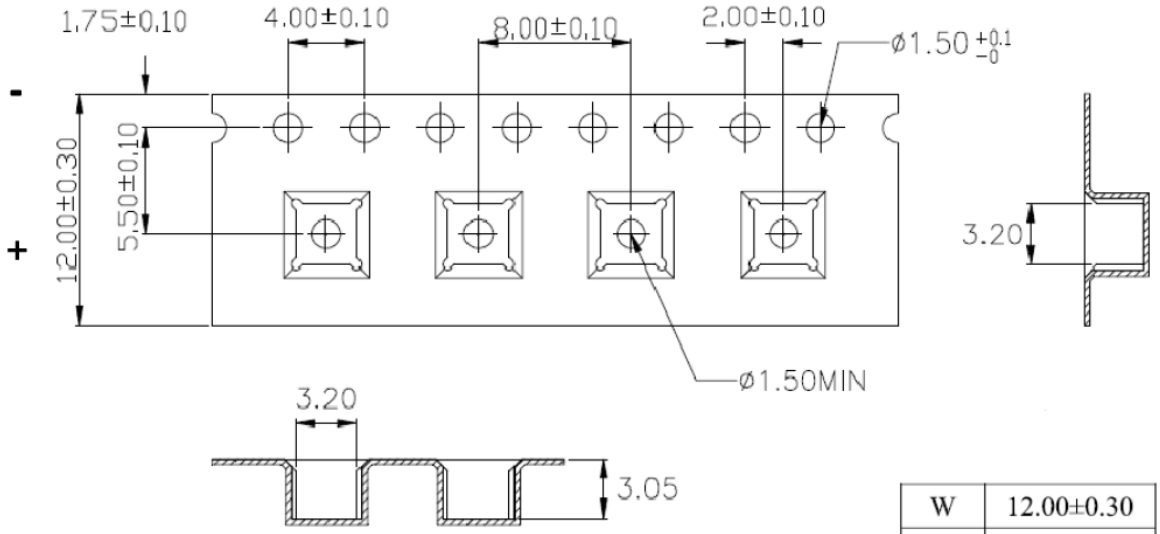
Note:

1. Maximum reflow soldering: 3 times.
2. The recommended soldering temperature is 245°C. Maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

PACKING SPECIFICATION:

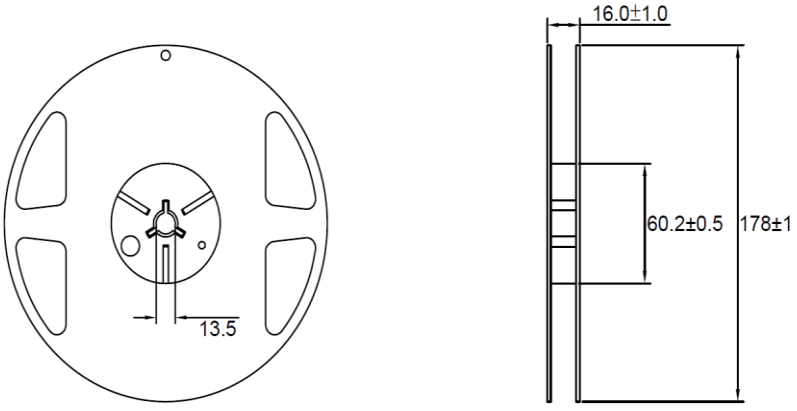
Reel Dimension:

500pcs Min./reel (Maximum 650pcs)



W	12.00±0.30
A0	3.20±0.10
B0	3.20±0.10
K0	3.05±0.10

1. 10 sprocket hole pitch cumulative tolerance ±0.20.
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-D requirements.
5. Thickness : 0.30±0.05mm.



PRECAUTIONS OF USE:

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 descanting agent and apply baking at 60°C±5°C for 15hrs before use.

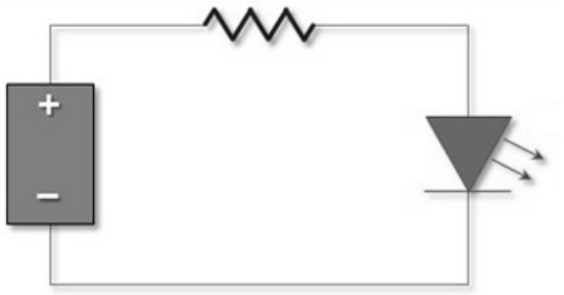
Baking:

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 followings:

- 60±3°C x 24hrs and <5%RH, taped / reel 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-electrosatic glove is recommended when handing 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.

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	26/05/2016	Datasheet set-up.
A1.1	06/04/2018	Revise lead frame solder pad design.