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) 810nm

Release Date: 23 July 2021 Version: A1.1

N0F59S60

3030 SMC Series

3030 SMC Series

RoHS Compliant

FEATURES:

- **Package:** TOP View SMC Package with Silicon Lens
- **Forward Current:** 500mA
- **Forward Voltage (typ.):** 3.2V
- **Luminous Flux (typ.):** 650mW@500mA
- **Colour:** Infrared
- **Wavelength:** 810nm
- **Viewing angle:** 30°
- **Materials:**
  - Resin: Silicon (Water Clear)
  - L/T Finish: Ag plated
- **Operating Temperature:** -40~+85°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 max.650pcs Min./reel, ø180mm (7'')

APPLICATIONS:

- Medical
- Cosmetics

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	700	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}	12	°C/W
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C
Soldering Temperature	T_{SOL}	260	°C

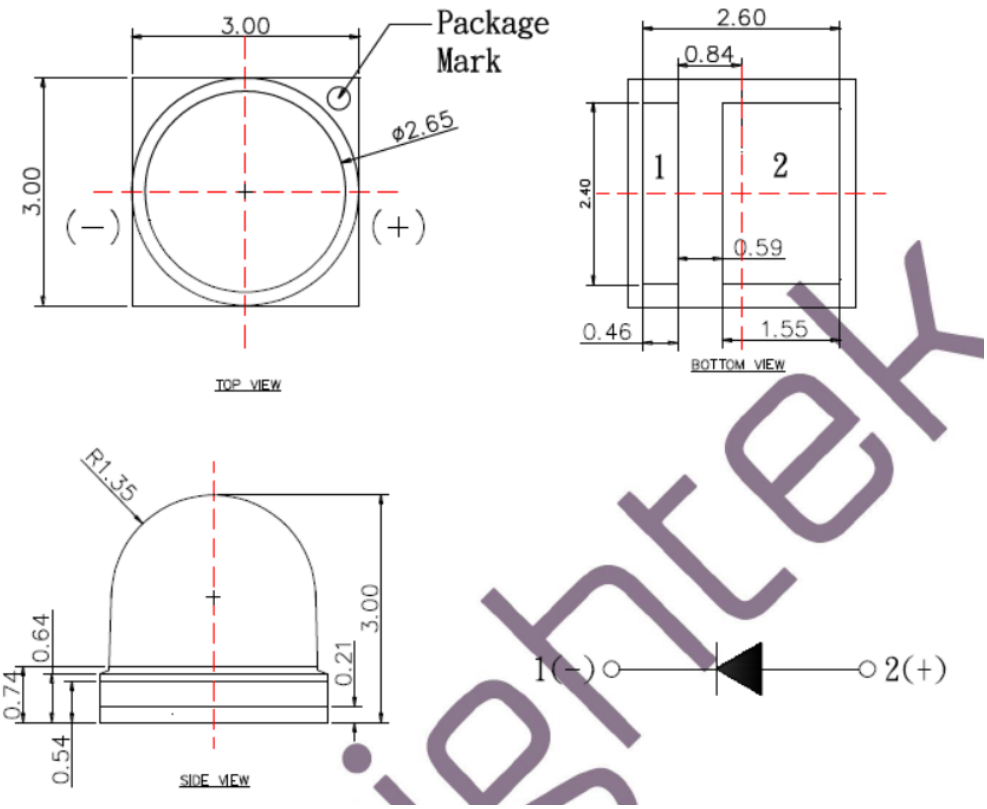
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	---	3.6	V	I_F=500mA
Radiant Power	P_O	500	---	800	mW	I_F=500mA
Peak Wavelength	λp	795	---	825	nm	I_F=500mA
Viewing Angle	$2\theta_{1/2}$	---	30	---	deg	I_F=500mA

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

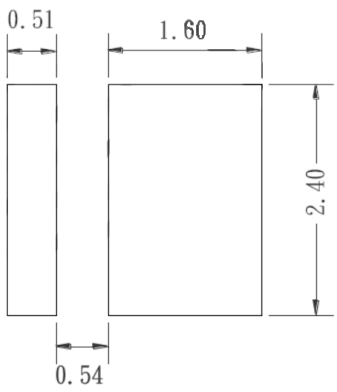
OUTLINE DIMENSION:

Package Dimension:

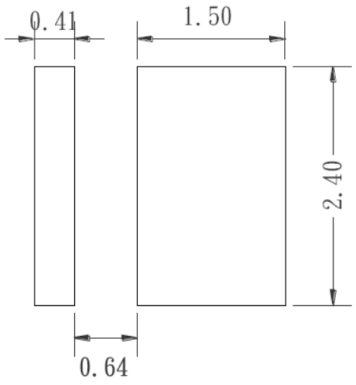


1. All dimensions are in millimetre (mm).
2. Tolerance ±0.13mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad



Recommended Stencil Pattern

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

BINNING GROUPS:

Forward Voltage Classifications (I_F = 500mA):

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	

Radiant Power Classifications (I_F = 500mA):

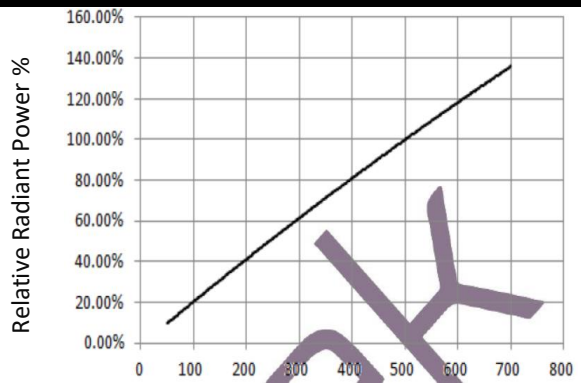
Code	Min.	Max.	Unit
PA4	500	550	mW
PA5	550	600	
PA6	600	700	
PA7	700	800	

Peak Wavelength Classifications (I_F = 500mA):

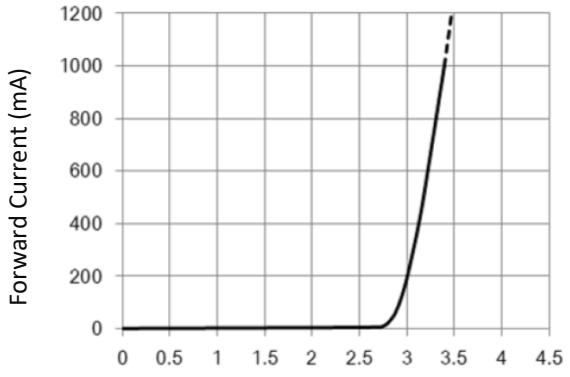
Code	Min.	Max.	Unit
I810	795	825	nm

ELECTRO-OPTICAL CHARACTERISTICS:

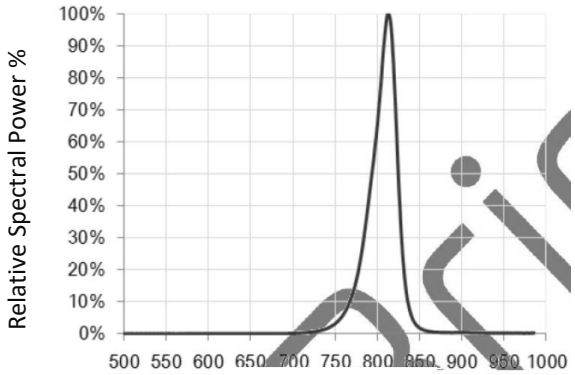
Relative Radiant Power v.s. Forward Current



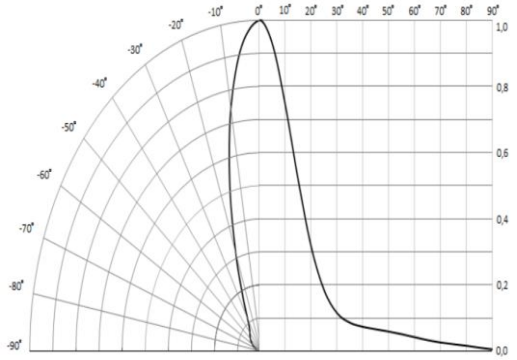
Forward Current v.s. Forward Voltage



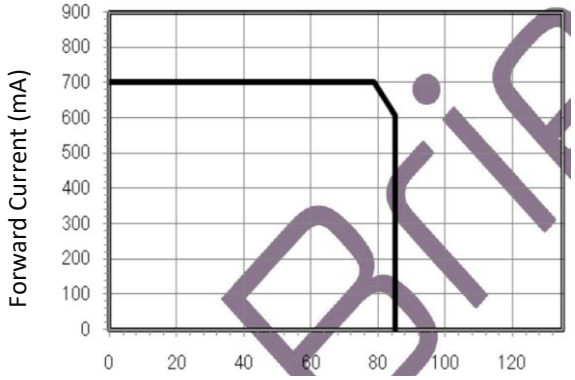
Relative Spectral Power v.s. Wavelength

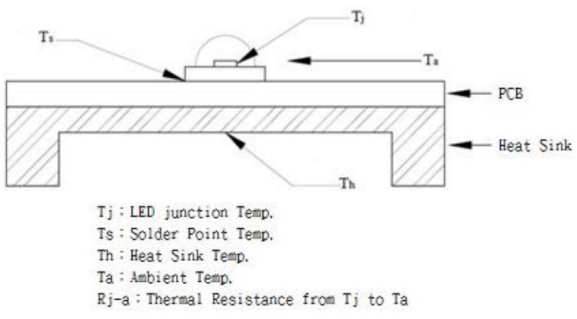


Directive Radiation



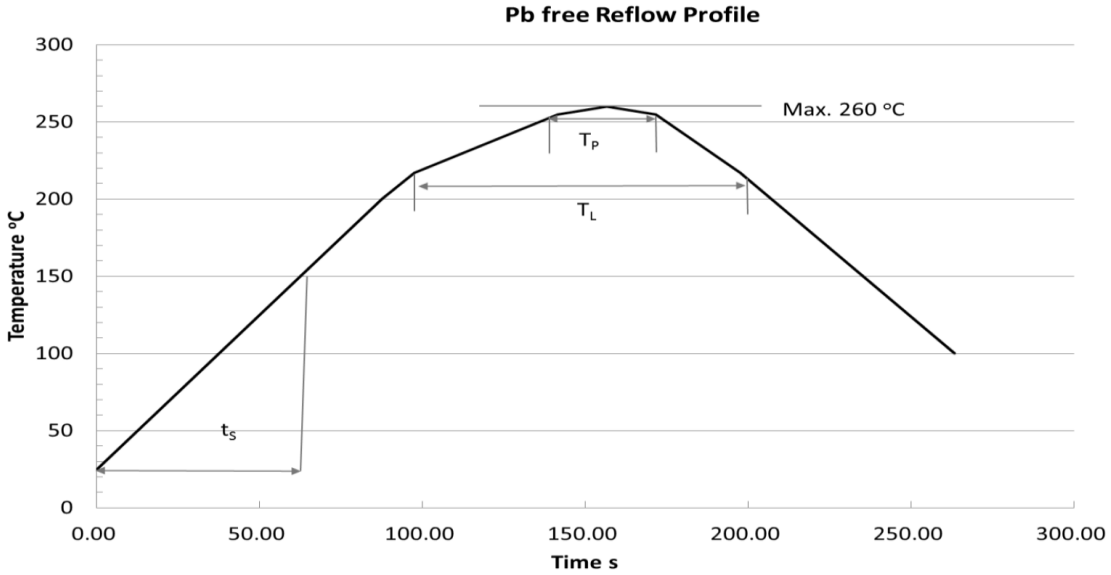
Forward Current Derating Curve





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

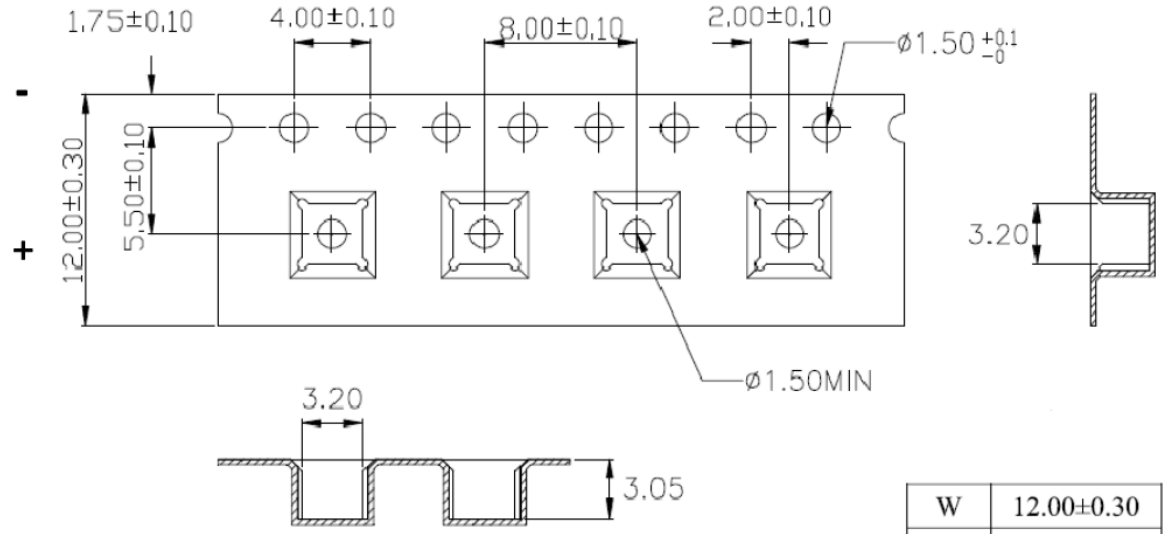
Note:

1. Maximum reflow soldering: 2 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:

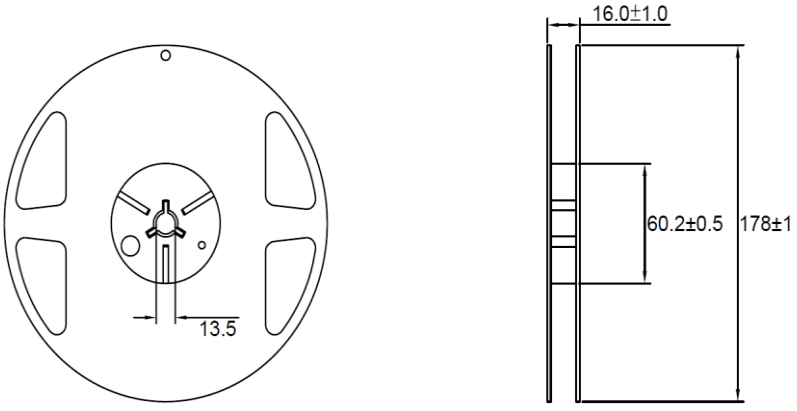
Reel Dimension:

Max.650pcs/reel



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 months 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 <10% R.H. and apply baking before use.

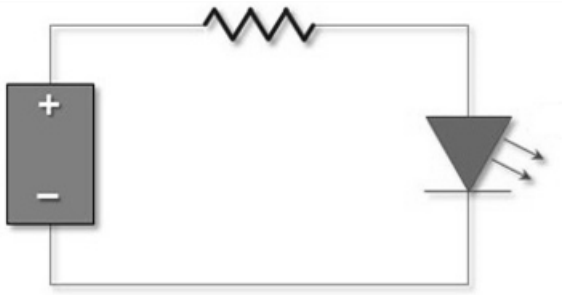
Baking:

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	16/06/2021	Datasheet set-up.
A1.1	23/07/2021	New datasheet format.