



SMD · CHIP SP0402IR-850-02

Features

- . Peak wavelength $\lambda_p=850\text{nm}$
- . Low forward voltage
- . Pb free
- . The product itself will remain within RoHS compliant version.

Description

SP0402IR-850-02 is an infrared emitting diode in miniature SMD package which is molded in a yellow clear plastic with spherical top view lens.

The device is spectrally matched with silicon photodiode and phototransistor

Applications

- . Infrared applied system
- . PCB mounted infrared sensor
- . Infrared emitting for miniature light barrier
- . Floppy disk drive
- . Optoelectronic switch
- . Smoke detector

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Continuous Forward Current	I _F	25	mA
Peak Forward Current *1	I _{FP}	65	mA
Reverse Voltage	V _R	5	V
Operating Temperature	T _{opr}	-30 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +90	°C
Soldering Temperature *2	T _{sol}	260	°C
Power Dissipation at(or below) 25°C Free Air Temperature	P _d	80	mW

Notes: *1:I_{FP} Conditions--Pulse Width \leq 100 μ s and Duty \leq 10%.

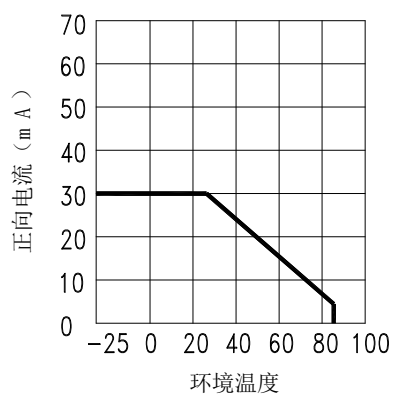
*2:Soldering time \leq 5 seconds.

Electro-Optical Characteristics (Ta=25°C)

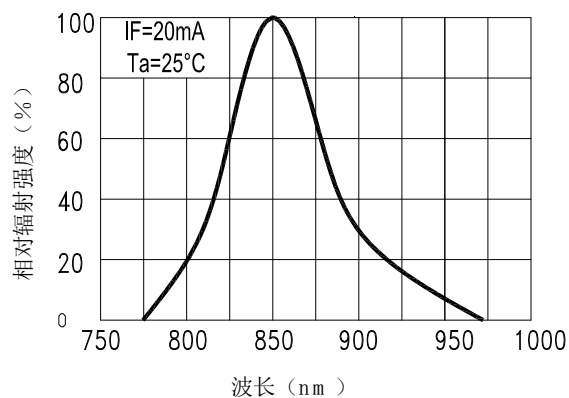
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Radiant Intensity	I _e	1.0	2.0	---	mW /sr	I _F =20mA
Peak Wavelength	λ_p	---	850	---	nm	I _F =20mA
Spectral Bandwidth	$\Delta\lambda$	--	45	--	nm	I _F =20mA
Forward Voltage	V _F	1.0	1.2	1.5	V	I _F =20mA
Reverse Current	I _R	--	--	1	μ A	V _R =5V
View Angle	2 $\theta_{1/2}$	25	30	45	deg	I _F =20mA

Typical Electro-Optical Characteristics Curves

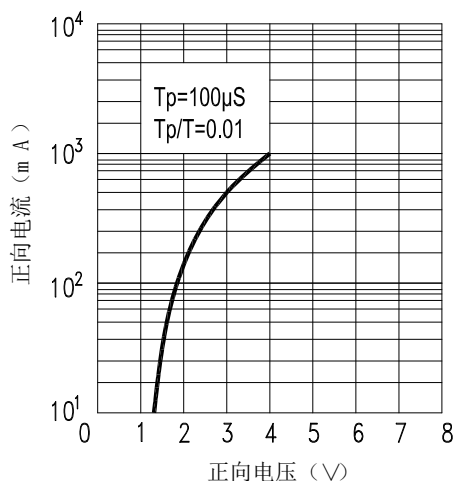
图一：正向电流和环境温度关系曲线



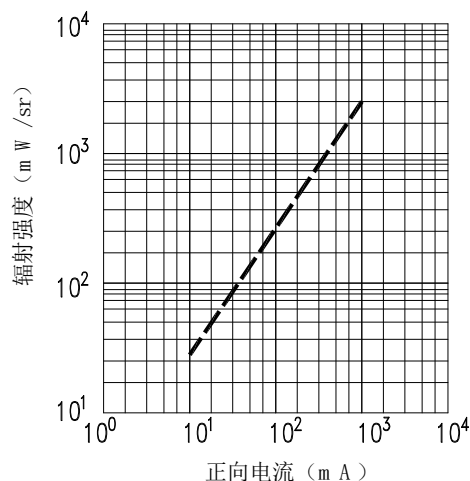
图二：光谱分布曲线



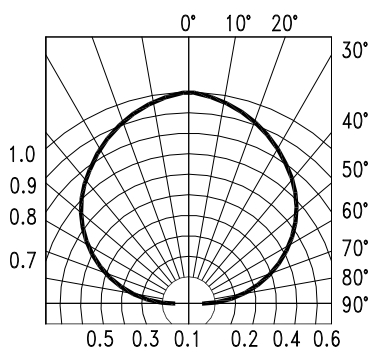
图三：正向电压和正向电流关系曲线



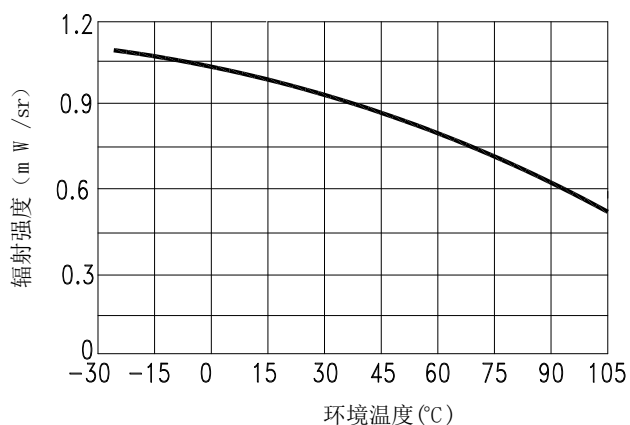
图四：相对强度和正向电流关系曲线



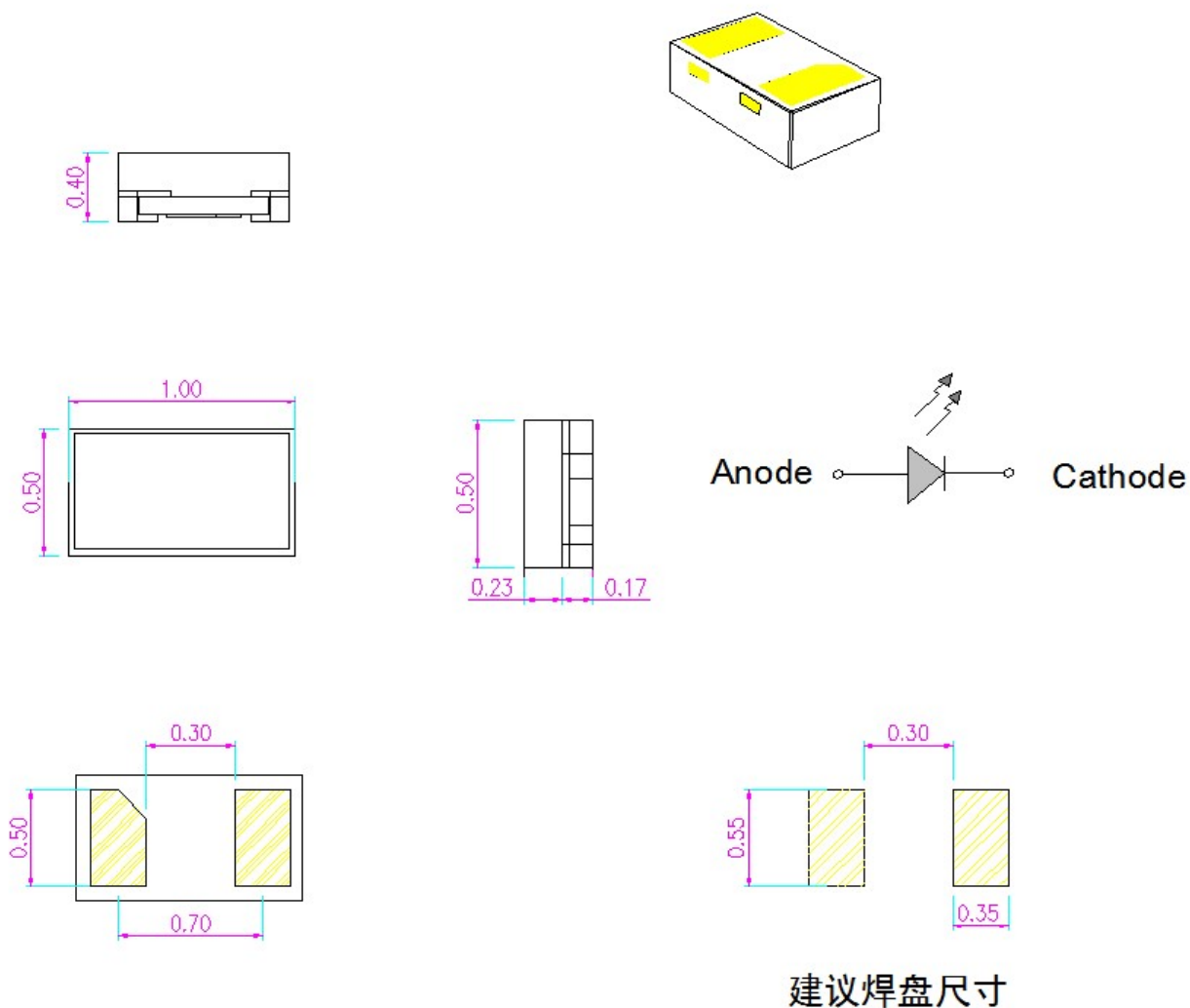
图五：相对辐射强度和空间角关系曲线



图六：相对辐射强度和环境温度关系曲线



Package Dimensions



- Notes: 1. Suggested pad dimension is just for reference only.
Please modify the pad dimension based on individual need.
2. All dimensions are in millimeters
3. Tolerances unless dimensions ± 0.1 mm

Label Form Specification

CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

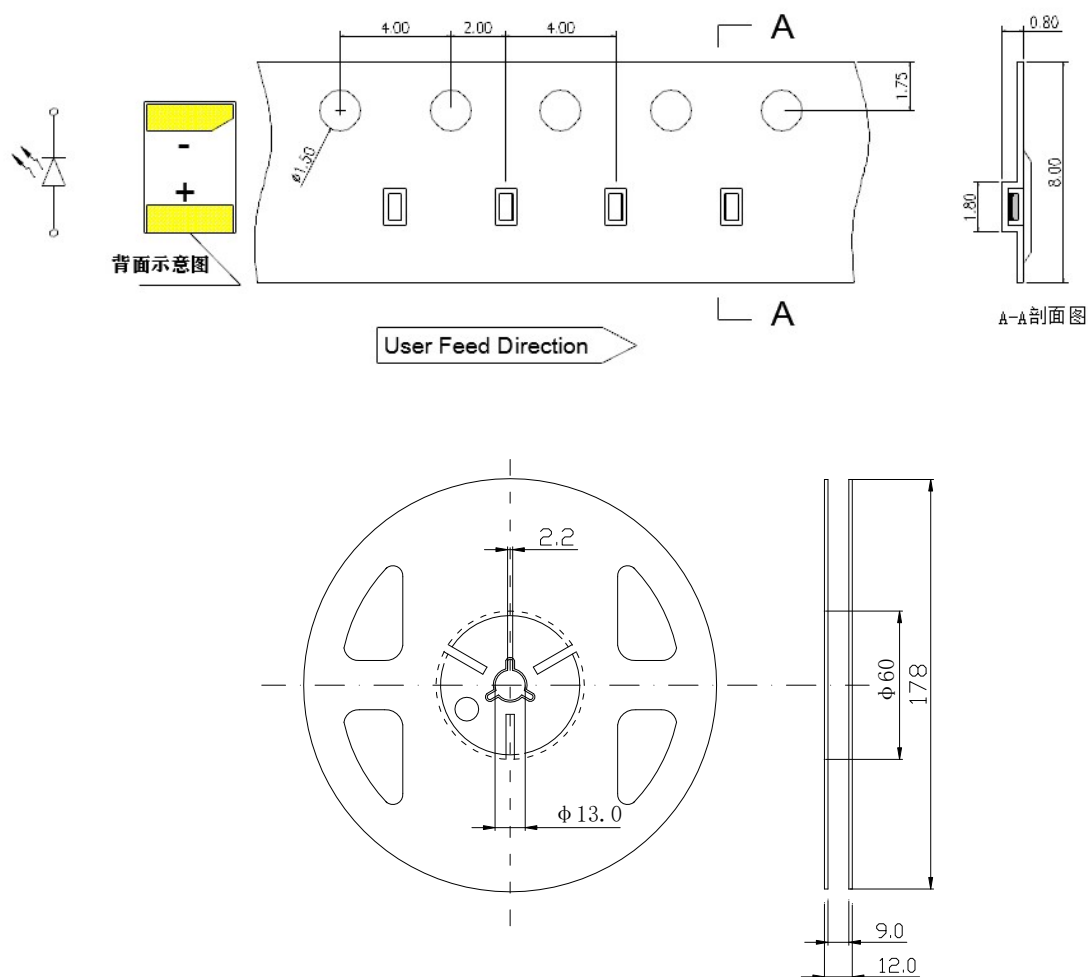
CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

Packing Procedure



Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level: 90%

LTPD: 10%

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 260°C/10sec.	6 Min	22 PCS	0/1
2	Thermal Shock	H : +100°C 5min ∫ 10 sec L : -10°C 5min	300 Cycles	22 PCS	0/1
3	Temperature Cycle	H : +100°C 15min ∫ 5 min L : -40°C 15min	300 Cycles	22 PCS	0/1
4	High Temperature/Humidity Reverse Bias	Ta=85°C,85%RH	1000 Hrs.	22 PCS	0/1
5	Low Temperature Storage	Ta=-40°C	1000 Hrs.	22 PCS	0/1
6	High Temperature Storage	Ta=100°C	1000 Hrs.	22 PCS	0/1
7	DC Operation Life	Ta=25°C IF = 20 mA	1000 Hrs.	22 PCS	0/1

Precautions For Use

1. Over-current-proof

Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 40°C or less and 90%RH or less.

2.3 The LEDs should be used within a year.

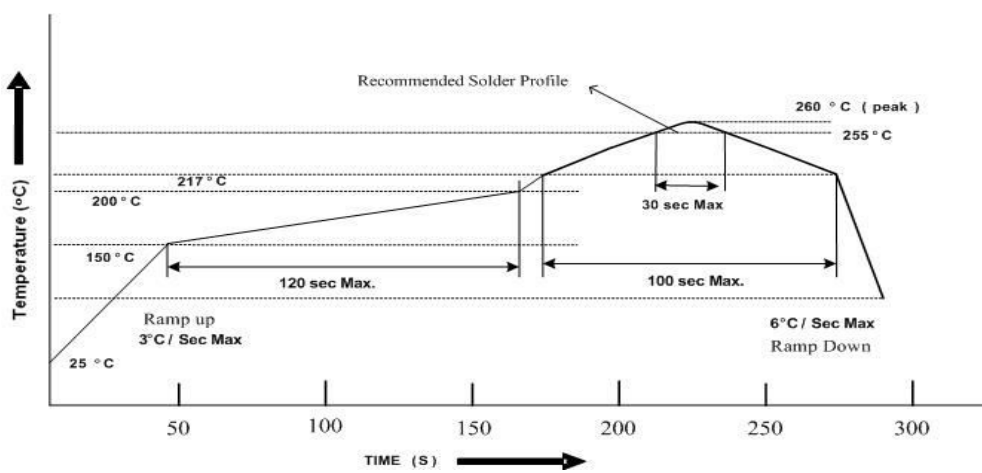
2.4 After opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package

2.6 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following J-STD-33 Standard.

3. Soldering Condition

3.1 Pb-free solder temperature profile



- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.