

# SMT940-23

High Performance Infrared TOP LED with Lens

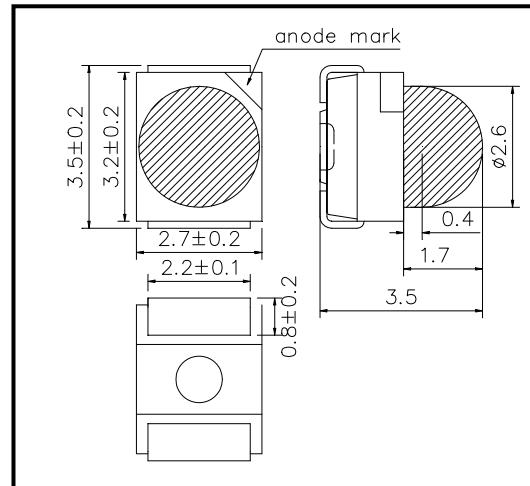
SMT940-23 consists of a AlGaAs LED mounted on the lead frame as TOP LED package with plastic ball lens and is 32mW typical of output power and 30mW/sr of radiant Intensity at  $\pm 15^\circ$  of viewing half angle.

It emits a spectral band of radiation at 940nm.

### ◆ Specifications

1) Product Name	TOP IR LED
2) Type No.	SMT940-23
3) Chip	
(1) Chip Material	GaAs
(2) Chip Dimension	400um*400nm
(3) Peak Wavelength	940nm typ.
4) Package	
(1) Lead Frame Die	Silver Plated
(2) Package Resin	PPA Resin
(3) Lens	Epoxy Resin
(4) Diameter	$\Phi 2.6$ mm

### ◆ Outer dimension (Unit:mm)



### ◆ Absolute Maximum Rating

Item	Symbol	Maximum Rated Value	Unit	Ambient Temperature
Power Dissipation	$P_D$	140	mW	$T_a = 25^\circ\text{C}$
Forward Current	$I_F$	100	mA	$T_a = 25^\circ\text{C}$
Pulse Forward Current	$I_{FP}$	1000	mA	$T_a = 25^\circ\text{C}$
Reverse Voltage	$V_R$	5	V	$T_a = 25^\circ\text{C}$
Junction Temperature	$T_J$	100	$^\circ\text{C}$	
Thermal Resistance	$R_{thjp}$	200	K/W	
Operating Temperature	$T_{OPR}$	-30 ~ +80	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-40 ~ +80	$^\circ\text{C}$	
Soldering Temperature	$T_{SOL}$	250	$^\circ\text{C}$	

‡Pulse Forward Current condition: Duty=1% and Pulse Width=10us.

‡Soldering condition: Soldering condition must be completed within 5 seconds at  $250^\circ\text{C}$

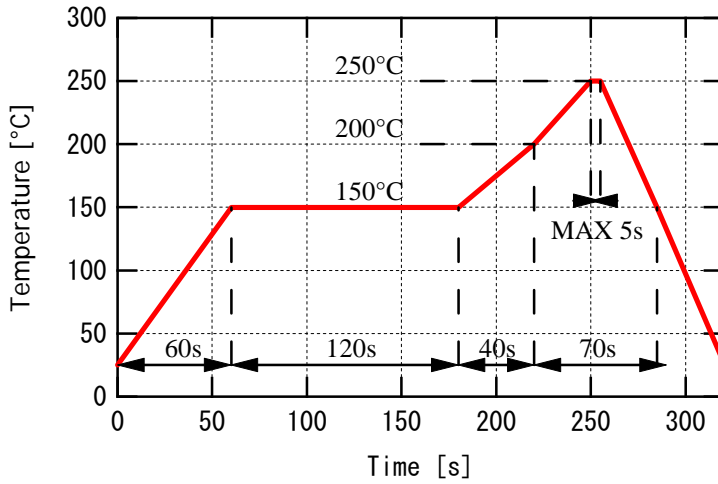
### ◆ Electro-Optical Characteristics [ $T_a = 25^\circ\text{C}$ ]

Item	Symbol	Condition	Minimum	Typical	Maximum	Unit
Forward Voltage	$V_F$	$I_F = 50\text{mA DC}$		1.30	1.45	V
		$I_F = 100\text{mA}, t_p = 20\text{ms}$		1.38	1.6	
Reverse Current	$I_R$	$V_R = 5\text{V}$			10	$\mu\text{A}$
Total Radiated Power	$P_o$	$I_F = 50\text{mA DC}$	8.0	16.0		mW
		$I_F = 100\text{mA}, t_p = 20\text{ms}$		32.0		
Radiant Intensity	$I_E$	$I_F = 50\text{mA DC}$	8	15		mW/sr
		$I_F = 100\text{mA}, t_p = 20\text{ms}$		30		
Peak Wavelength	$\lambda_P$	$I_F = 50\text{mA DC}$	930	940	955	nm
Half Width	$\Delta\lambda$	$I_F = 50\text{mA DC}$		50		nm
Viewing Half Angle	$\theta_{1/2}$	$I_F = 50\text{mA DC}$		$\pm 18$		deg.
Rise Time	$t_r$	$I_F = 50\text{mA DC}$		1000		ns
Fall Time	$t_f$	$I_F = 50\text{mA DC}$		500		ns

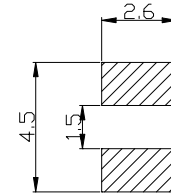
‡Total Radiated Power is measured by Photodyne #500

‡Radiant Intensity is measured by Tektronix J-6512.

◆ SMD Application  
IR-Reflow Soldering Profile for lead free soldering

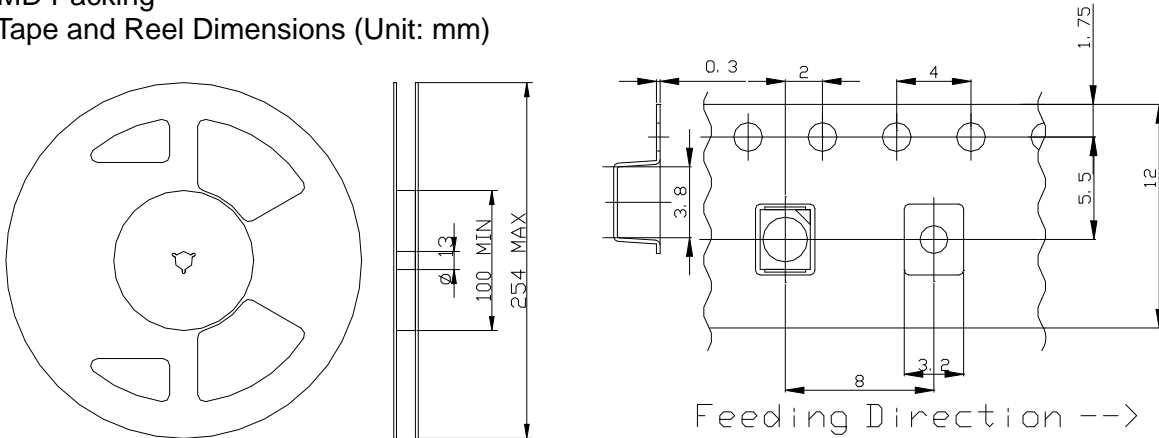


Recommended Land Layout (Unit: mm)



Don't put stress on SMD and a circuit board after soldering.

◆ SMD Packing  
Tape and Reel Dimensions (Unit: mm)



◆ Wrapping

Moisture barrier bag aluminum laminated film with a desiccant to keep out the moisture absorption during the transportation and storage.

## SMD LED STORAGE AND HANDLING PRECAUTIONS

### < Storage Conditions before Opening a Moisture-Barrier Aluminum Bag >

- Before opening a moisture-barrier aluminum bag, please store it at <30°C, <60%RH. Please note that the maximum shelf life is 12 months under these conditions.

### < Storage Conditions after Opening a Moisture-Barrier Aluminum Bag >

- After opening a moisture-barrier aluminum bag, store the aluminum bag and silica gel in a desiccator.
- After opening the bag, please solder the LEDs within 72 hours in a room with 5 - 30°C, <50%RH.
- Please put any unused, remaining LEDs and silica gel back in the same aluminum bag and then vacuum-seal the bag.
- It is recommended to keep the re-sealed bag in a desiccator at <30%RH.

### < Notes about Re-sealing a Moisture-Barrier Aluminum Bag >

- When vacuum-sealing an opened aluminum bag, if you find the moisture-indicator of the silica gel has changed to pink from blue (indicating a relative humidity of 30 % or more), please do not use the unused LEDs, the aluminum bag, or the silica gel.

### < Notes about Opening a Re-sealed Moisture-Barrier Aluminum Bag >

- When opening a vacuumed and re-sealed aluminum bag in order to use the remaining LEDs stored in the bag, if you find that the moisture-indicator of the silica has changed to pink, please do not use the LEDs.

※The 72-hour- long floor life does not include the time while LEDs are stored in the moisture-barrier aluminum bag.  
However, we strongly recommend to solder the LEDs as soon as possible after opening the aluminum bag.