

**PRELIMINARY**

## SMC1450S

Rev. A1

- Infrared LED
- 1450 nm, 3.0 mW
- Chip: InGaAsP, 300 x 300  $\mu\text{m}$ , 1 pc.
- SMD package, 3.0 x 2.0 x 1.1
- Viewing Angle: 136°



### Description



**SMC1450S** contains one InGaAsP LED chip die mounted on a ceramic SMD package and sealed with silicone or epoxy resin. On forward bias, it emits a radiation power of typical **3.0 mW** at a peak wavelength of **1450 nm**.

### Maximum Ratings ( $T_{\text{CASE}}=25^{\circ}\text{C}$ )

| Parameter                  | Symbol            | Values |       | Unit               |
|----------------------------|-------------------|--------|-------|--------------------|
|                            |                   | Min.   | Max.  |                    |
| Power Dissipation          | $P_D$             |        | 130   | mW                 |
| Forward Current            | $I_F$             |        | 100   | mA                 |
| Pulse Forward Current *1   | $I_{FP}$          |        | 1000  | mA                 |
| Reverse Voltage            | $V_F$             |        | 5     | V                  |
| Thermal Resistance         | $R_{THJA}$        |        | 80    | K/W                |
| Junction Temperature       | $T_J$             |        | 120   | $^{\circ}\text{C}$ |
| Operating Temperature      | $T_{\text{CASE}}$ | - 40   | + 100 | $^{\circ}\text{C}$ |
| Storage Temperature        | $T_{\text{STG}}$  | - 40   | + 100 | $^{\circ}\text{C}$ |
| Lead Solder Temperature *2 | $T_{\text{SLD}}$  |        | + 250 | $^{\circ}\text{C}$ |

\*1 duty=1%, pulse width = 10  $\mu\text{s}$ 

\*2 must be completed within 5 seconds

### Electro-Optical Characteristics ( $T_{\text{CASE}}=25^{\circ}\text{C}$ )

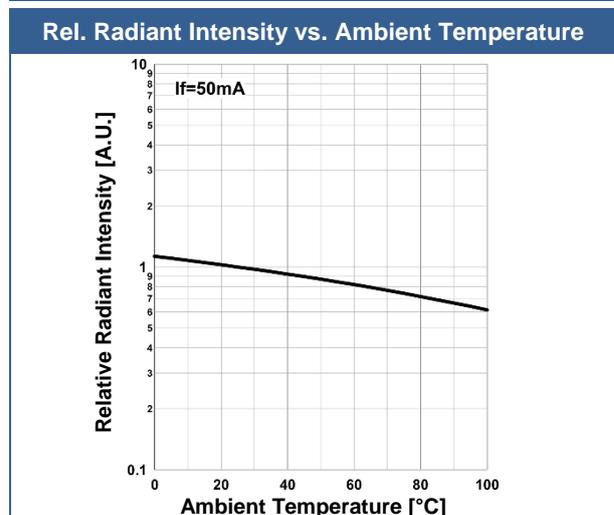
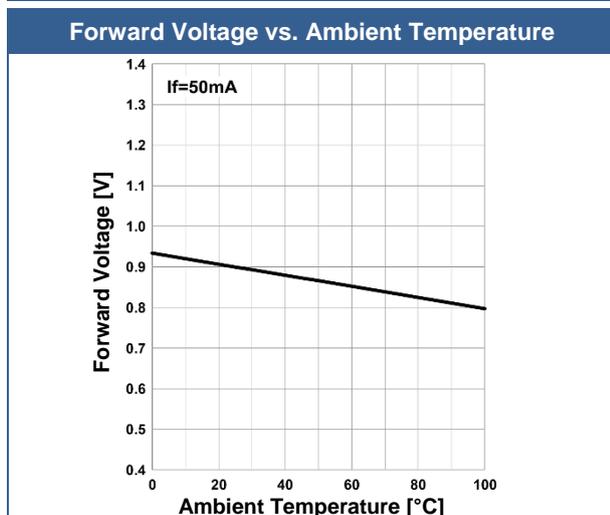
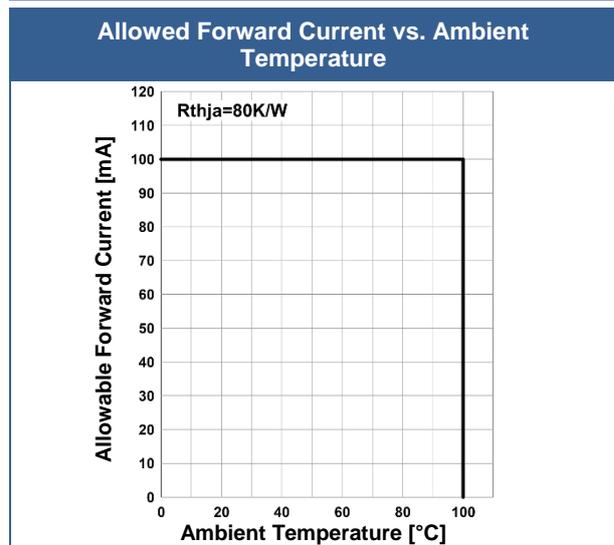
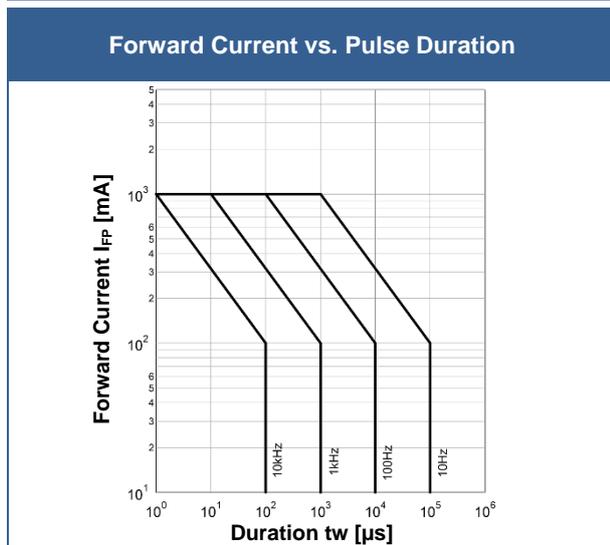
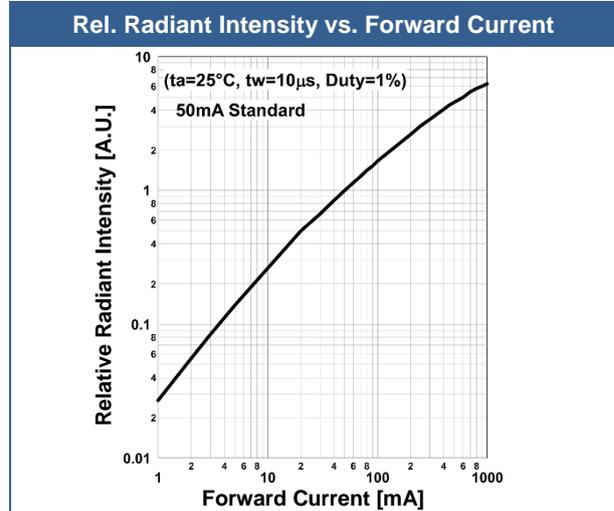
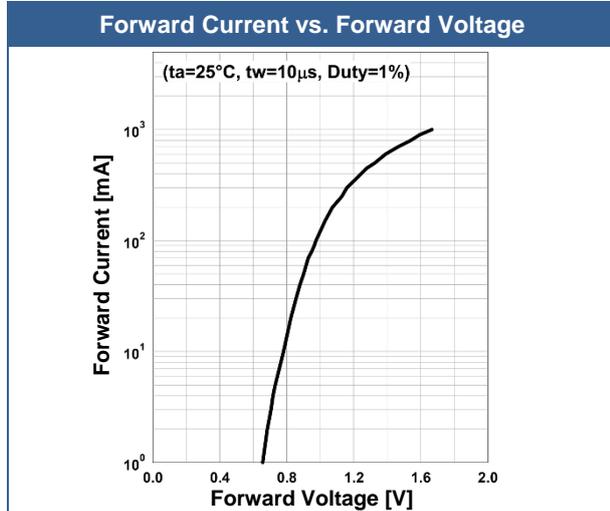
| Parameter            | Symbol          | Conditions         | Values |      |      | Unit          |
|----------------------|-----------------|--------------------|--------|------|------|---------------|
|                      |                 |                    | Min.   | Typ. | Max. |               |
| Peak Wavelength      | $\lambda_P$     | $I_F=50\text{mA}$  | 1400   |      | 1500 | nm            |
| Half Width           | $\Delta\lambda$ | $I_F=50\text{mA}$  |        | 110  |      | nm            |
| Forward Voltage      | $V_F$           | $I_F=50\text{mA}$  |        | 0.9  | 1.3  | V             |
|                      | $V_{FP}$        | $I_{FP}=1\text{A}$ |        | 1.7  |      |               |
| Reverse Current      | $I_R$           | $V_R=5\text{V}$    |        |      | 10   | $\mu\text{A}$ |
| Radiated Power *1    | $P_O$           | $I_F=50\text{mA}$  |        | 3.0  |      | mW            |
|                      |                 | $I_{FP}=1\text{A}$ |        | 18   |      |               |
| Radiant Intensity *2 | $I_E$           | $I_F=50\text{mA}$  |        | 1.0  |      | mW/sr         |
|                      |                 | $I_{FP}=1\text{A}$ |        | 6.2  |      |               |
| Viewing Angle        | $2\theta_{1/2}$ | $I_F=50\text{mA}$  |        | 136  |      | deg.          |
| Rise Time            | $t_R$           | $I_F=50\text{mA}$  |        | 30   |      | ns            |
| Fall Time            | $t_F$           | $I_F=50\text{mA}$  |        | 70   |      | ns            |

\*1 measured by G8370-85

\*2 measured by Ando Optical Multi Meter AQ2140 &amp; AQ2742

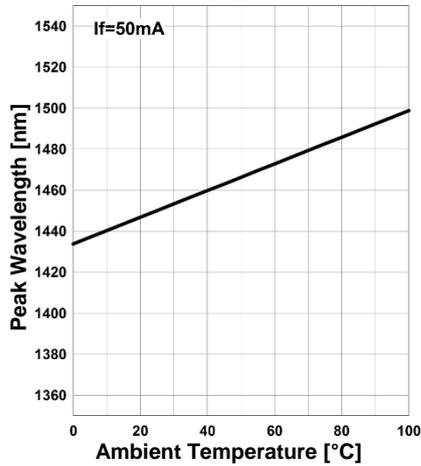


## Typical Performance Curves

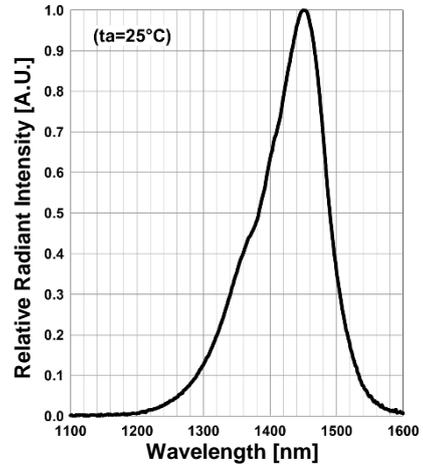




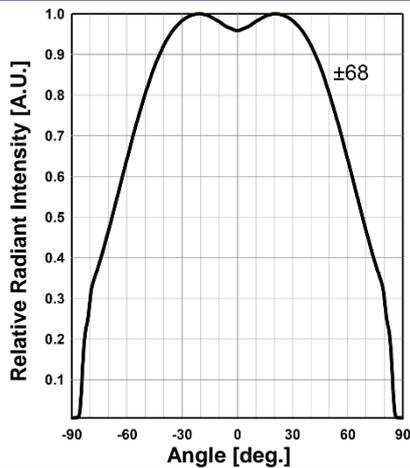
Peak Wavelength vs. Ambient Temperature



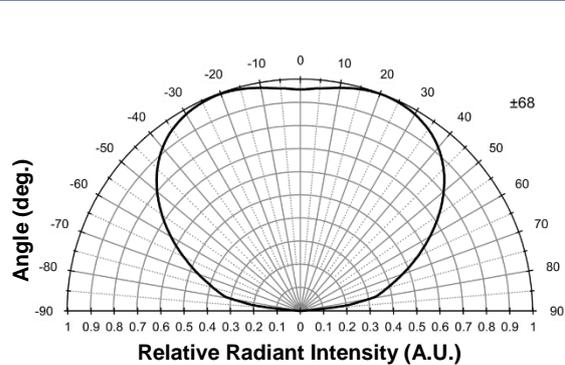
Relative Spectral Emission



Radiation Characteristics



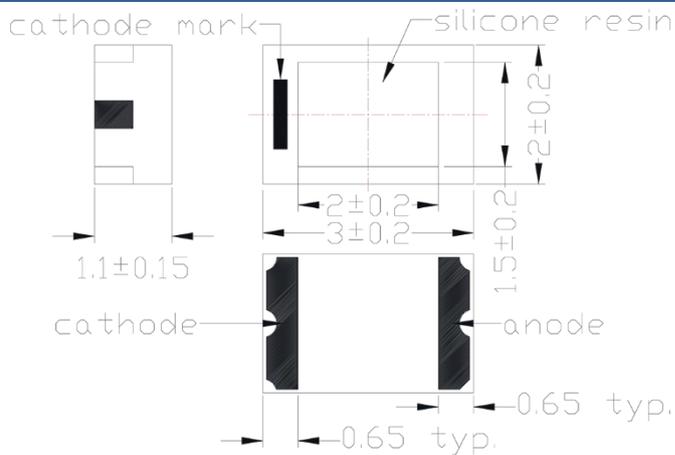
Radiation Characteristics



## Outline Dimensions

SMC1450S

SMD



| Lead | Description |
|------|-------------|
| mark | LED Cathode |

All Dimensions in mm

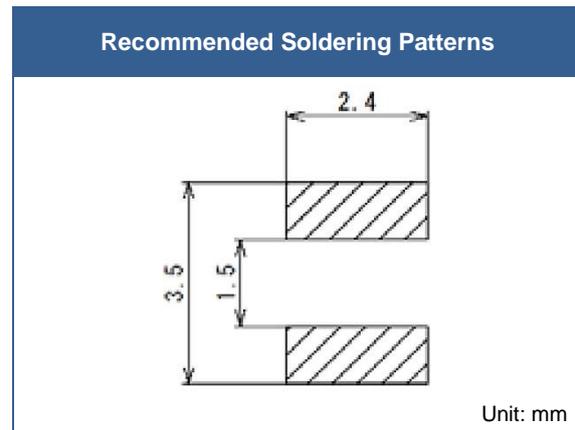
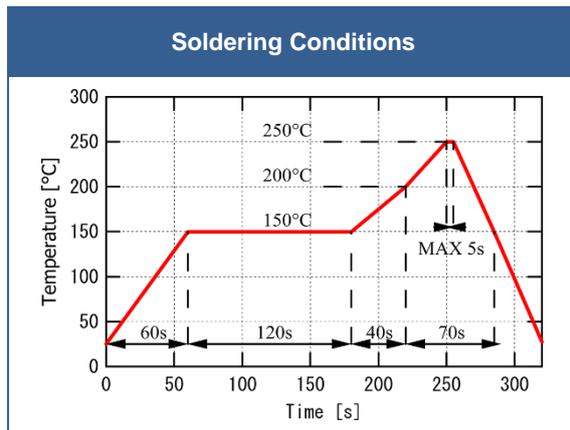


## Precautions

### Soldering:

- Do avoid overheating of the LED
- Do avoid electrostatic discharge (ESD)
- Do avoid mechanical stress, shock, and vibration
- Do only use non-corrosive flux
- Do not apply current to the LED until it has cooled down to room temperature after soldering

### Recommended soldering conditions:



Above table specifies the maximum allowed duration and temperature during soldering. It is strongly advised to perform soldering at the shortest time and lowest temperature possible.

### Cleaning:

**Cleaning with isopropyl alcohol, propanol, or ethyl alcohol is recommended**

DO NOT USE acetone, chloroform, trichloroethylene, or MKS

DO NOT USE ultrasonic cleaners

### Static Electricity:

**LEDs are sensitive to electrostatic discharge (ESD).** Precautions against ESD must be taken when handling or operating these LEDs. Surge voltage or electrostatic discharge can result in complete failure of the device.

### Radiation:

During operation these LEDs do emit light, which could be hazardous to skin and eyes, and may cause cancer. Do avoid exposure to the emitted light. Protective glasses if needed. It is further advised to attach a warning label on products/systems.

### Operation:

**Do only operate LEDs with a current source.**

Running these LEDs from a voltage source will result in complete failure of the device.

Current of a LED is an exponential function of the voltage across it. Usage of current regulated drive circuits is mandatory.



## *Revisions History*

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| Rel. | Rel. Date | Chapter | Modification    | Page |
|------|-----------|---------|-----------------|------|
| A1   | 2020-02   | -       | Initial release | -    |

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The above specifications are for reference purpose only and subjected to change without prior notice