

L940 V Series

Infrared LED Lamp

This series of L940-__V is a GaAs LED mounted on a lead frame and encapsulated in various types of epoxy lens which offer different design settings.

On forward bias, it emits a high power radiation of typical 18mW with a peak wavelength at 940nm.

Specifications

| | |
|--------------------|-------------|
| 1. Chip material | GaAs |
| 2. Peak wavelength | 940nm |
| 3. Resin Material | Epoxy resin |
| 4. Solder | Lead free |



Absolute Maximum Ratings

| Item | Symbol | Maximum Rated Value | Unit | Ambient Temperature |
|-----------------------|-----------|---------------------|--------------------|--------------------------|
| Power Dissipation | P_D | 160 | 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 | $T_a=25^{\circ}\text{C}$ |
| Operating Temperature | T_{OPR} | -30 ~ +85 | $^{\circ}\text{C}$ | $T_a=25^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -40 ~ +100 | $^{\circ}\text{C}$ | |
| Soldering Temperature | T_{SOL} | 265 | $^{\circ}\text{C}$ | |

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

| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit |
|----------------------|-----------------|-------------------|---------|---------|---------|---------------|
| Forward Voltage | V_F | $I_F=50\text{mA}$ | | 1.3 | 1.5 | V |
| Reverse Current | I_R | $V_R=5\text{V}$ | | | 10 | μA |
| Total Radiated Power | P_O | $I_F=50\text{mA}$ | 13 | 18 | | mW |
| Peak Wavelength | λ_P | $I_F=50\text{mA}$ | | 940 | | nm |
| Half Width | $\Delta\lambda$ | $I_F=50\text{mA}$ | | 50 | | nm |
| Rise Time | t_r | $I_F=50\text{mA}$ | | 2500 | | ns |
| Fall Time | t_f | $I_F=50\text{mA}$ | | 1000 | | ns |

Characteristics of Radiant Intensity (Ta=25°C)

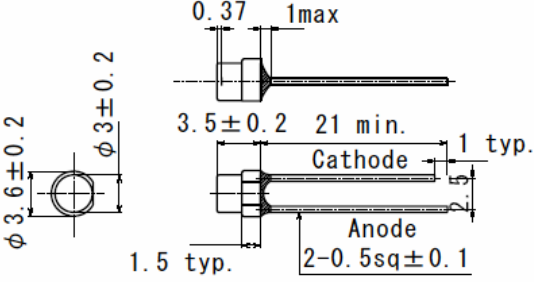
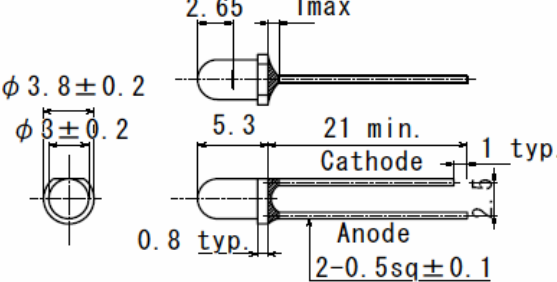
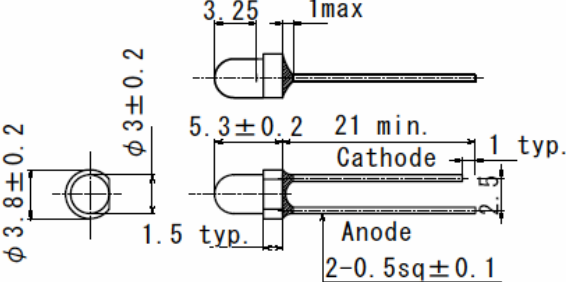
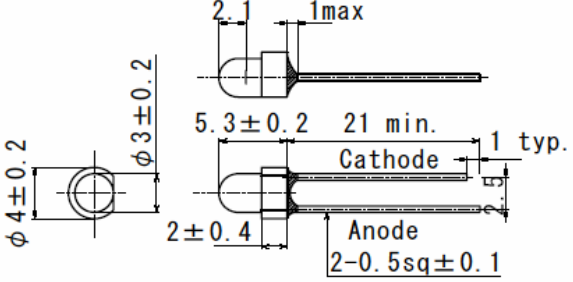
| Type | Viewing Half Angle | Radiant Intensity I _F =50mA Unit : mW/sr | | | Outer Dimension | Dimension Figure |
|----------|---------------------------|--|---------|---------|-----------------|------------------|
| | | Minimum | Typical | Maximum | | |
| L940-01V | ±10° | | 55 | | Φ 5 | 1 |
| L940-02V | ±7° | | 85 | | Φ 5 | 2 |
| L940-03V | ±10° | | 55 | | Φ 5 | 3 |
| L940-04V | ±20° | | 25 | | Φ 5 | 4 |
| L940-05V | ±40° | | 7 | | Φ 5 | 5 |
| L940-06V | ±7° | | 90 | | Φ 5 | 6 |
| L940-09V | ±25°(Long) ±15°(Short) | | 30 | | Φ 5 Oval | 7 |
| L940-46V | | | | | Φ 5 | 8 |
| L940-41V | ±16° | | 30 | | Φ 4 | 9 |
| L940-42V | ±23° | | 25 | | Φ 4 | 10 |
| L940-31V | | | | | Φ 3 | 11 |
| L940-33V | ±18° | | 20 | | Φ 3 | 12 |
| L940-34V | | | | | Φ 3 | 13 |
| L940-36V | ±33° | | 10 | | Φ 3 | 14 |

Brightness is measured by Tektronix J-16
 Total Radiant Power is measured by Photodyne #500

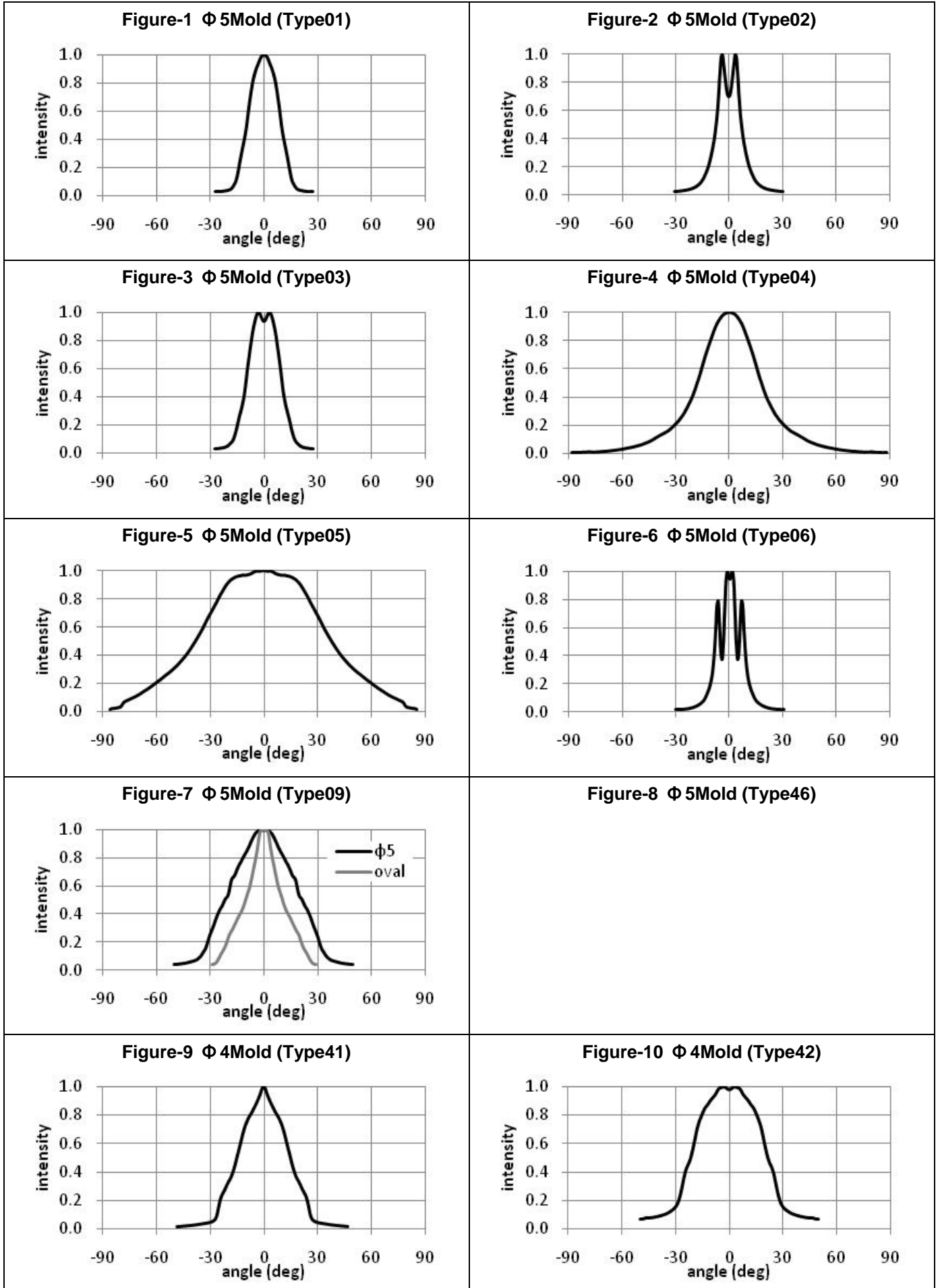
Outer Dimension of LED Lamp (1/2)

| | |
|--|--|
| <p>Figure-1 Φ 5Mold (Type01)</p> <p>cup position 4.7 1.5max</p> <p>ϕ 5.8\pm0.2 ϕ 5\pm0.2</p> <p>9\pm0.2 21 min. 1 typ. Cathode</p> <p>1.0\pm0.2 Anode 2-0.5sq\pm0.1</p> | <p>Figure-2 Φ 5Mold (Type02)</p> <p>cup position 5.32 1.5max</p> <p>ϕ 5.8\pm0.2 ϕ 5.2\pm0.2</p> <p>8.5\pm0.2 21 min. 1 typ. Cathode</p> <p>1.0\pm0.2 Anode 2-0.5sq\pm0.1</p> |
| <p>Figure-3 Φ 5Mold (Type03)</p> <p>cup position 4.55 1.5max</p> <p>ϕ 5.8\pm0.2 ϕ 5\pm0.2</p> <p>8.25\pm0.2 21 min. 1 typ. Cathode</p> <p>1.0\pm0.2 Anode 2-0.5sq\pm0.1</p> | <p>Figure-4 Φ 5Mold (Type04)</p> <p>cup position 3.55 1.5max</p> <p>ϕ 5.8\pm0.2 ϕ 5\pm0.2</p> <p>7.7\pm0.2 21 min. 1 typ. Cathode</p> <p>1.0\pm0.2 Anode 2-0.5sq\pm0.1</p> |
| <p>Figure-5 Φ 5Mold (Type05)</p> <p>cup position 0.55 1.5max</p> <p>ϕ 5.4\pm0.2 ϕ 4.8\pm0.2</p> <p>3.35 21 min. 1 typ. Cathode</p> <p>ϕ 4.45\pm0.2 Anode 1.0\pm0.2 2-0.5sq\pm0.1</p> | <p>Figure-6 Φ 5Mold (Type06)</p> <p>cup position 5.6 1.5max</p> <p>ϕ 5.5\pm0.2 ϕ 5\pm0.2</p> <p>8.7\pm0.2 21 min. 1 typ. Cathode</p> <p>Anode 2-0.5sq\pm0.1</p> |
| <p>Figure-7 Φ 5Mold (Type09)</p> <p>cup position 4.1 1.5max</p> <p>4.7\pm0.2 5.5\pm0.2</p> <p>7.7\pm0.2 21 min. 1 typ. Cathode</p> <p>Anode 2-0.5sq\pm0.1</p> | <p>Figure-8 Φ 5Mold (Type46)</p> <p>1.5max</p> <p>5.8\pm0.2 4.8\pm0.2</p> <p>4.4\pm0.2 21 min. 1 typ. Cathode</p> <p>0.6 Anode 2-0.5sq\pm0.1</p> |
| <p>Figure-9 Φ 4Mold (Type41)</p> <p>cup position 3.05 1max</p> <p>4.7\pm0.2 ϕ 3.9\pm0.2</p> <p>6.45\pm0.2 21 min. 1 typ. Cathode</p> <p>1.5\pm0.2 Anode 2-0.5sq\pm0.1</p> | <p>Figure-10 Φ 4Mold (Type42)</p> <p>cup position 3.05 1max</p> <p>4.7\pm0.2 ϕ 3.9\pm0.2</p> <p>6.45\pm0.2 21 min. 1 typ. Cathode</p> <p>1.5\pm0.2 Anode 2-0.5sq\pm0.1</p> |

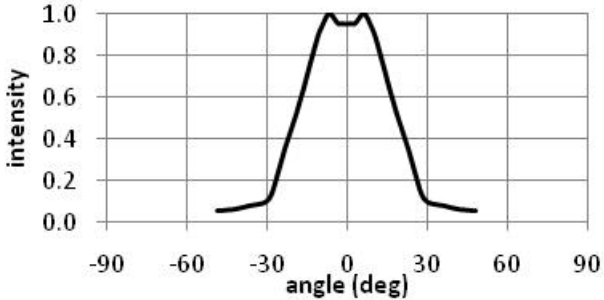
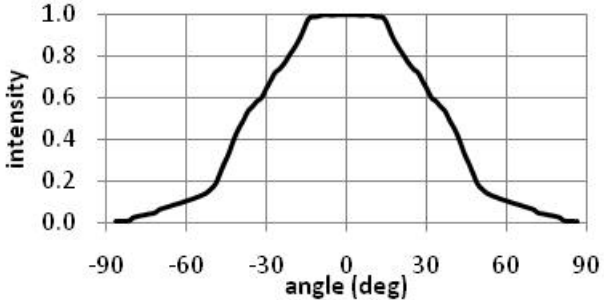
Outer Dimension of LED Lamp (2/2)

| | |
|--|--|
| <p>Figure-11 Φ 3Mold (Type31) cup position</p>  <p>0.37 1max ϕ 3.6\pm0.2 ϕ 3\pm0.2 3.5\pm0.2 21 min. Cathode 1 typ. 1.5 typ. Anode 2-0.5sq\pm0.1</p> | <p>Figure-12 Φ 3Mold (Type33) cup position</p>  <p>2.65 1max ϕ 3.8\pm0.2 ϕ 3\pm0.2 5.3 21 min. Cathode 1 typ. 0.8 typ. Anode 2-0.5sq\pm0.1</p> |
| <p>Figure-13 Φ 3Mold (Type34) cup position</p>  <p>3.25 1max ϕ 3.8\pm0.2 ϕ 3\pm0.2 5.3\pm0.2 21 min. Cathode 1 typ. 1.5 typ. Anode 2-0.5sq\pm0.1</p> | <p>Figure-14 Φ 3Mold (Type36) cup position</p>  <p>2.1 1max ϕ 4\pm0.2 ϕ 3\pm0.2 5.3\pm0.2 21 min. Cathode 1 typ. 2\pm0.4 Anode 2-0.5sq\pm0.1</p> |
| <p>Figure-15</p> | <p>Figure-16</p> |
| <p>Figure-17</p> | <p>Figure-18</p> |
| <p>Figure-19</p> | <p>Figure-20</p> |

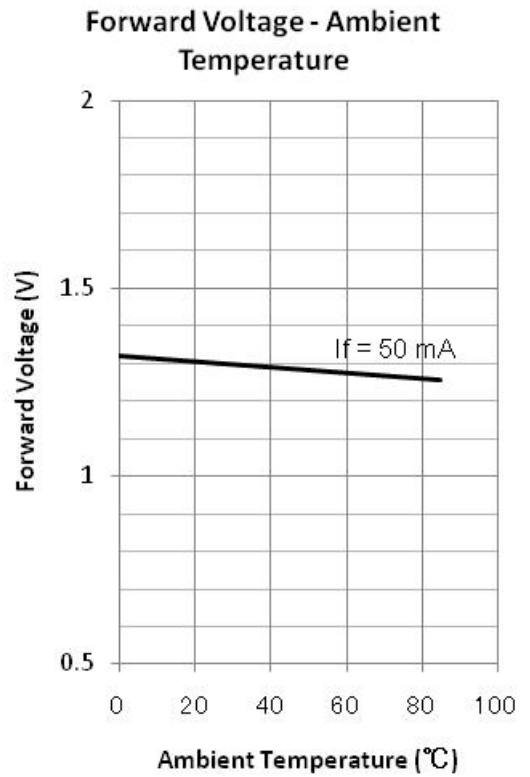
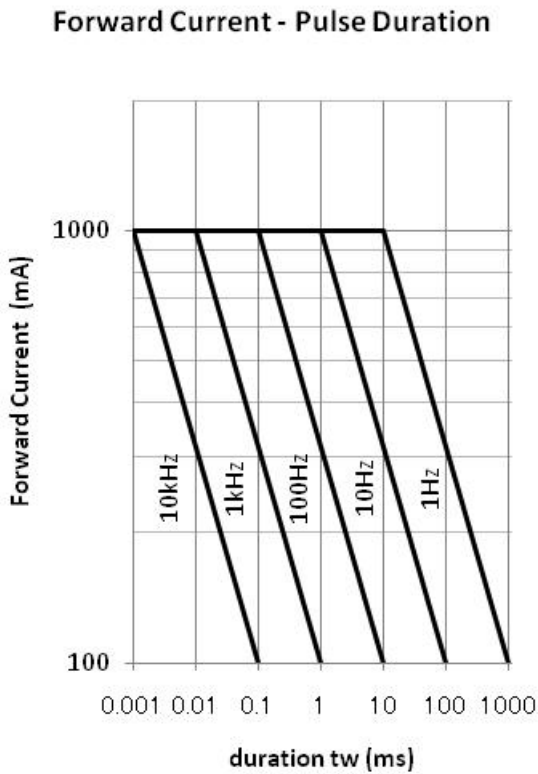
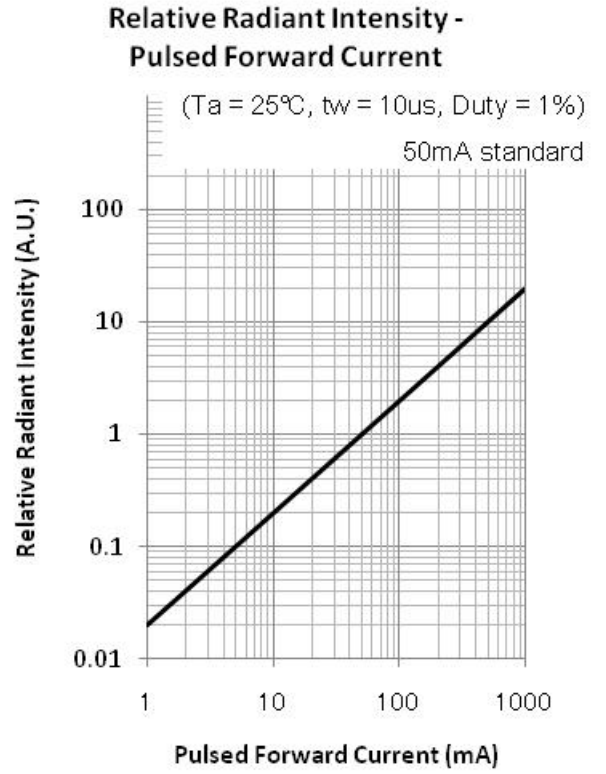
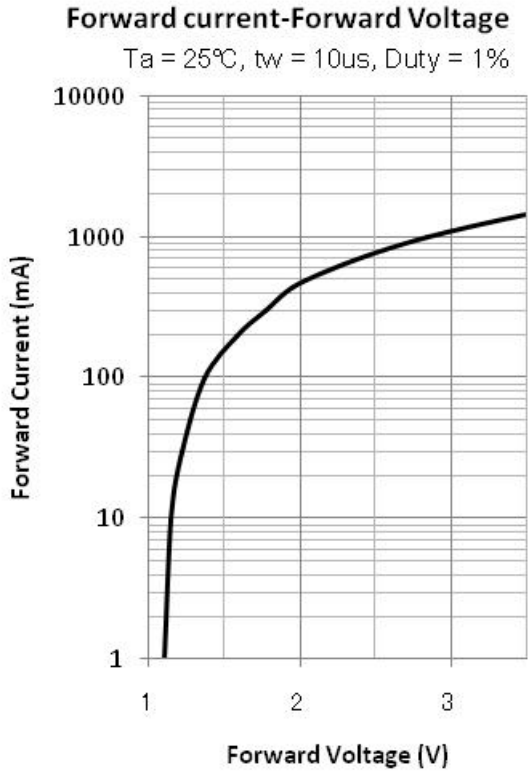
The Viewing half angle (1/2)



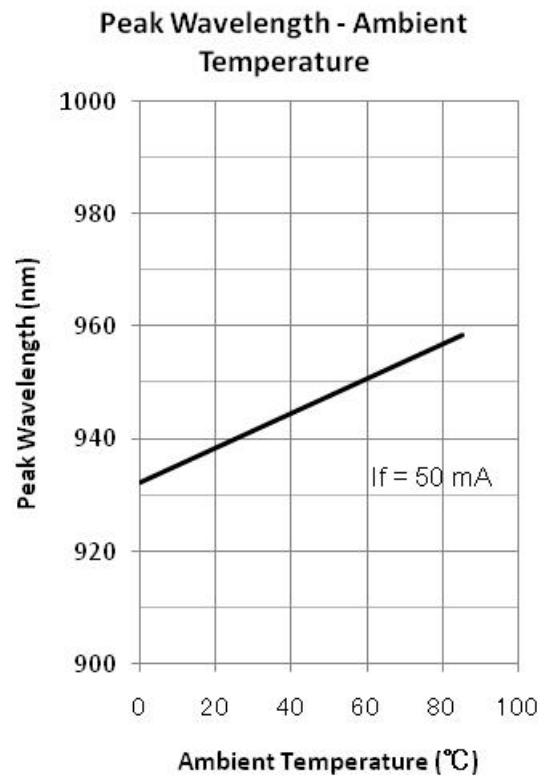
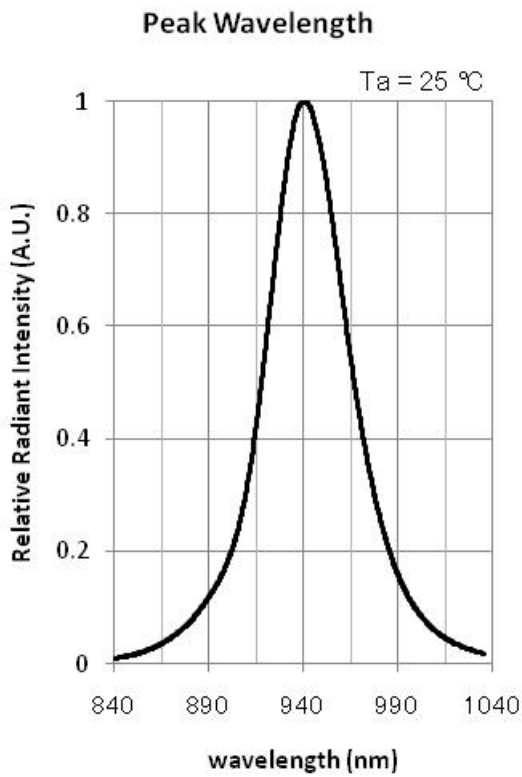
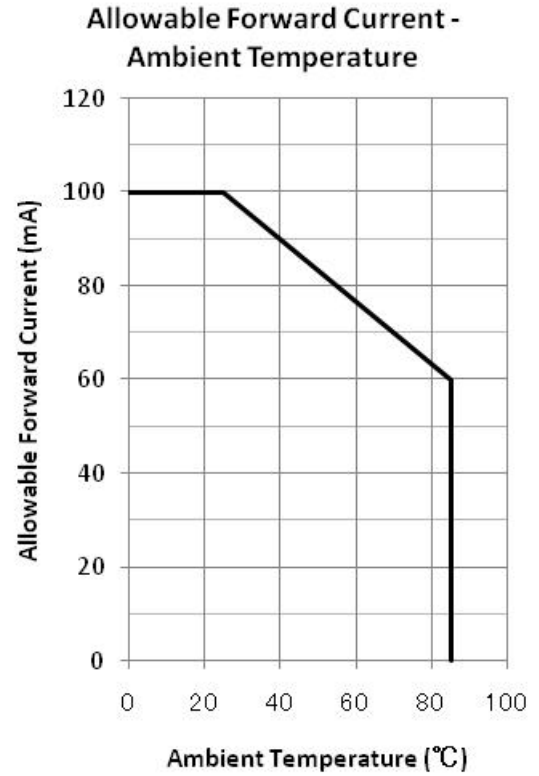
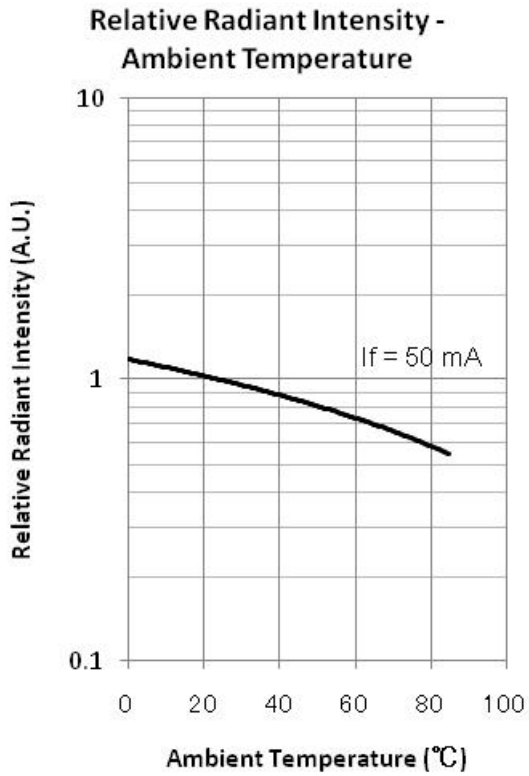
The Viewing half angle (2/2)

| | |
|---|--|
| <p>Figure-11 Φ 3Mold (Type31)</p> | <p>Figure-12 Φ 3Mold (Type33)</p>  |
| <p>Figure-13 Φ 3Mold (Type34)</p> | <p>Figure-14 Φ 3Mold (Type36)</p>  |
| <p>Figure-15</p> | <p>Figure-16</p> |
| <p>Figure-17</p> | <p>Figure-18</p> |
| <p>Figure-19</p> | <p>Figure-20</p> |

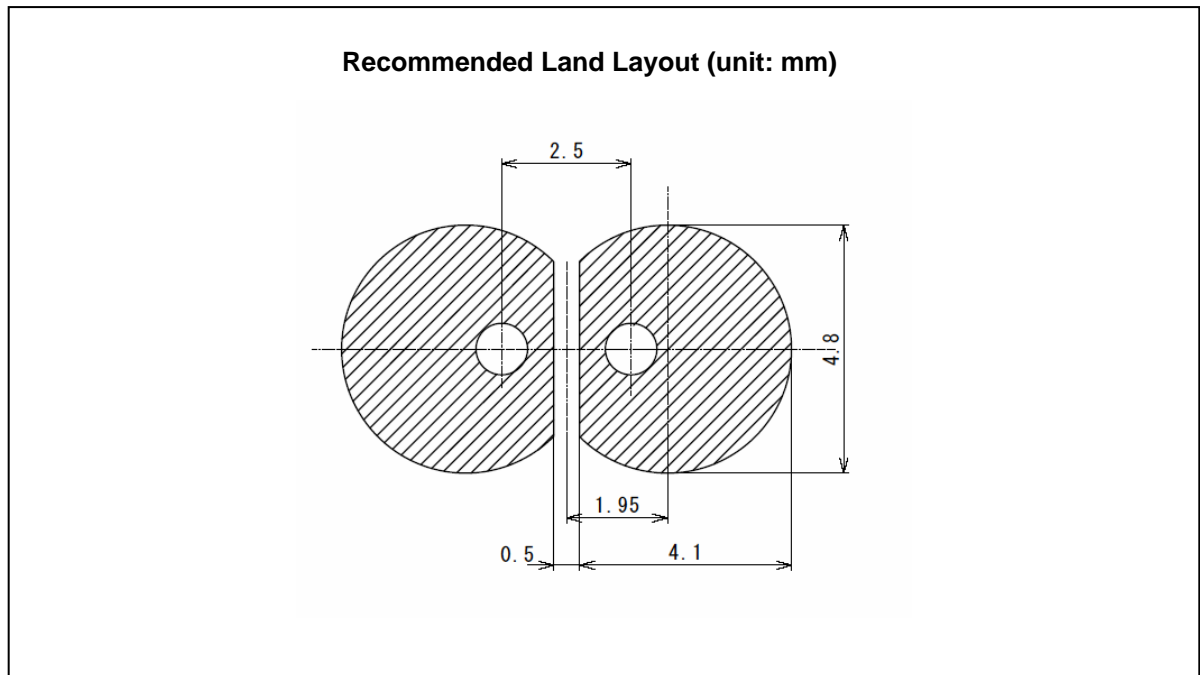
L940 V Series Operating Conditions (1/2)



L940 V Series Operating Conditions (2/2)



Recommended Land Layout



Soldering Conditions

