



AM4457F3C

1.5 mm Side Look Infrared Emitting Diode

DESCRIPTION

- F3 Made with Gallium Arsenide Infrared Emitting diodes

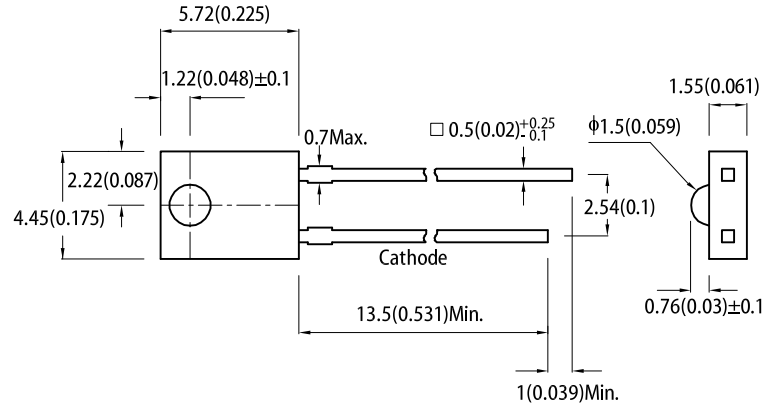
FEATURES

- Side looking package
- Mechanically and spectrally matched to the Phototransistor
- Package matches with photodetector AM4457P3C-F-R
- Halogen-free
- RoHS compliant

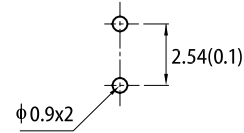
APPLICATIONS

- Infrared Illumination for cameras
- Machine vision systems
- Surveillance systems
- Industrial electronics
- IR data transmission
- Remote control

PACKAGE DIMENSIONS



Recommended PCB Layout



Notes:

- All dimensions are in millimeters (inches).
- Tolerance is $\pm 0.25(0.01)$ unless otherwise noted.
- Lead spacing is measured where the leads emerge from the package.
- The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

SELECTION GUIDE

| Part Number | Emitting Color (Material) | Lens Type | Po (mW/sr) @ 20mA ^[2] | | Viewing Angle ^[1] |
|-------------|---------------------------|-------------|----------------------------------|------|------------------------------|
| | | | Min. | Typ. | 2θ1/2 |
| AM4457F3C | Infrared (GaAs) | Water Clear | 3 | 7 | 70° |
| | | | *2 | *5 | |

Notes:
 1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
 2. Radiant Intensity / luminous flux: +/-15%.
 * Radiant intensity value is traceable to CIE127-2007 standards.

ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^\circ\text{C}$

| Parameter | Symbol | Emitting Color | Value | | Unit |
|---|-------------------------|----------------|-------|------|----------------------------|
| | | | Typ. | Max. | |
| Wavelength at Peak Emission $I_F = 20\text{mA}$ | λ_{peak} | Infrared | 940 | - | nm |
| Spectral Bandwidth at 50% Φ REL MAX $I_F = 20\text{mA}$ | $\Delta\lambda$ | Infrared | 50 | - | nm |
| Forward Voltage $I_F = 20\text{mA}$ | $V_F^{[1]}$ | Infrared | 1.2 | 1.6 | V |
| Reverse Current ($V_R = 5\text{V}$) | I_R | Infrared | - | 10 | μA |
| Temperature Coefficient of Wavelength $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$ | TC_λ | Infrared | 0.3 | - | $\text{nm}/^\circ\text{C}$ |
| Temperature Coefficient of V_F $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$ | TC_V | Infrared | -1.2 | - | $\text{mV}/^\circ\text{C}$ |

Notes:

1. Forward voltage: $\pm 0.1\text{V}$.
2. Wavelength value is traceable to CIE127-2007 standards.
3. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

ABSOLUTE MAXIMUM RATINGS at $T_A=25^\circ\text{C}$

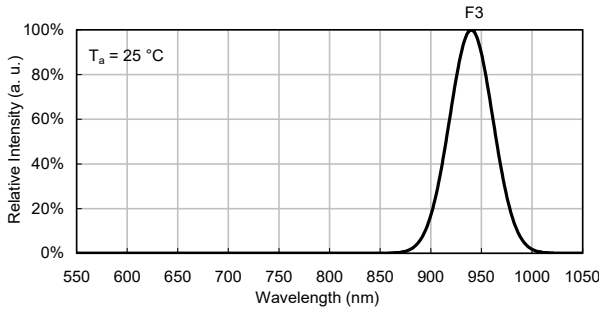
| Parameter | Symbol | Value | Unit |
|--|--------------------------|------------------------------------|---------------------------|
| Power Dissipation | P_D | 90 | mW |
| Reverse Voltage | V_R | 5 | V |
| Junction Temperature | T_j | 115 | $^\circ\text{C}$ |
| Operating Temperature | T_{op} | -40 to +85 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 to +85 | $^\circ\text{C}$ |
| DC Forward Current | I_F | 50 | mA |
| Peak Forward Current | $I_{\text{FP}}^{[1]}$ | 1.2 | A |
| Electrostatic Discharge Threshold (HBM) | - | 8000 | V |
| Thermal Resistance (Junction / Ambient) | $R_{\text{th JA}}^{[2]}$ | 460 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance (Junction / Solder point) | $R_{\text{th JS}}^{[2]}$ | 220 | $^\circ\text{C}/\text{W}$ |
| Lead Solder Temperature ^[3] | | 260 $^\circ\text{C}$ For 3 Seconds | |
| Lead Solder Temperature ^[4] | | 260 $^\circ\text{C}$ For 5 Seconds | |

Notes:

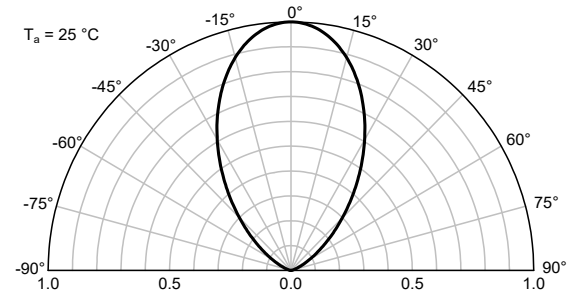
1. 1/100 Duty Cycle, 10 μs Pulse Width.
2. $R_{\text{th JA}}$, $R_{\text{th JS}}$ Results from mounting on PC board FR4 (pad size $\geq 16\text{ mm}^2$ per pad).
3. 2mm below package base.
4. 5mm below package base.
5. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

TECHNICAL DATA

RELATIVE INTENSITY vs. WAVELENGTH

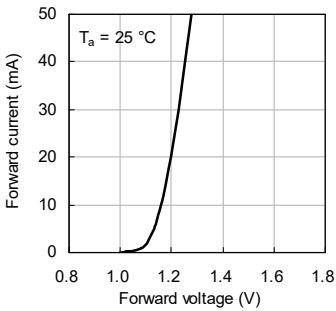


SPATIAL DISTRIBUTION

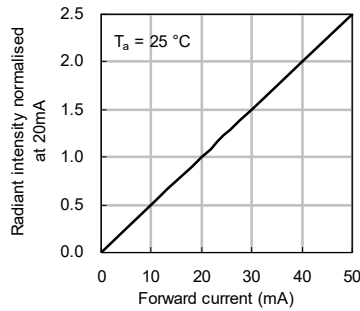


INFRARED

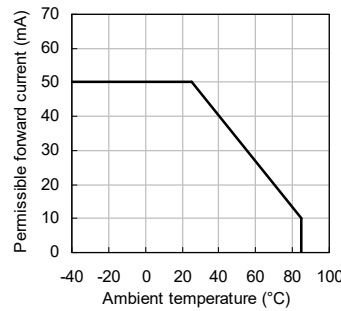
Forward Current vs. Forward Voltage



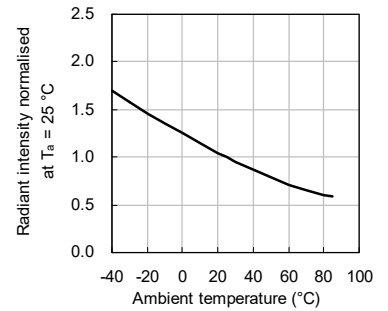
Radiant Intensity vs. Forward Current



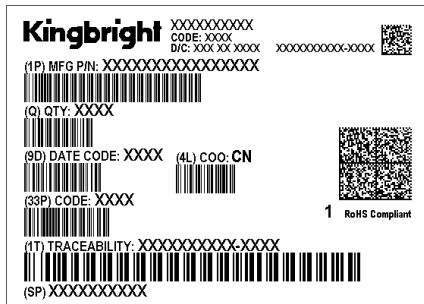
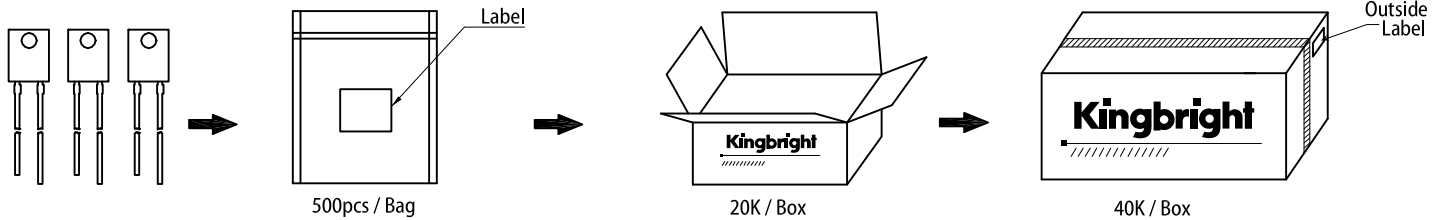
Forward Current Derating Curve



Radiant Intensity vs. Ambient Temperature



PACKING & LABEL SPECIFICATIONS



PRECAUTIONARY NOTES

- The information included in this document reflects representative usage scenarios and is intended for technical reference only.
- The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
- When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
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