

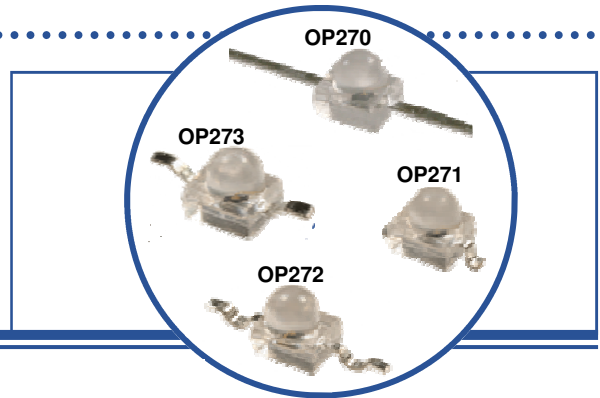
Infrared Light Emitting Diode

OP270 Series



Features:

- High power GaAIAs
- 1.9 mm water clear plastic SMD package
- 890 nm wavelength
- Narrow beam angle
- Choice of four lead configurations



Description:

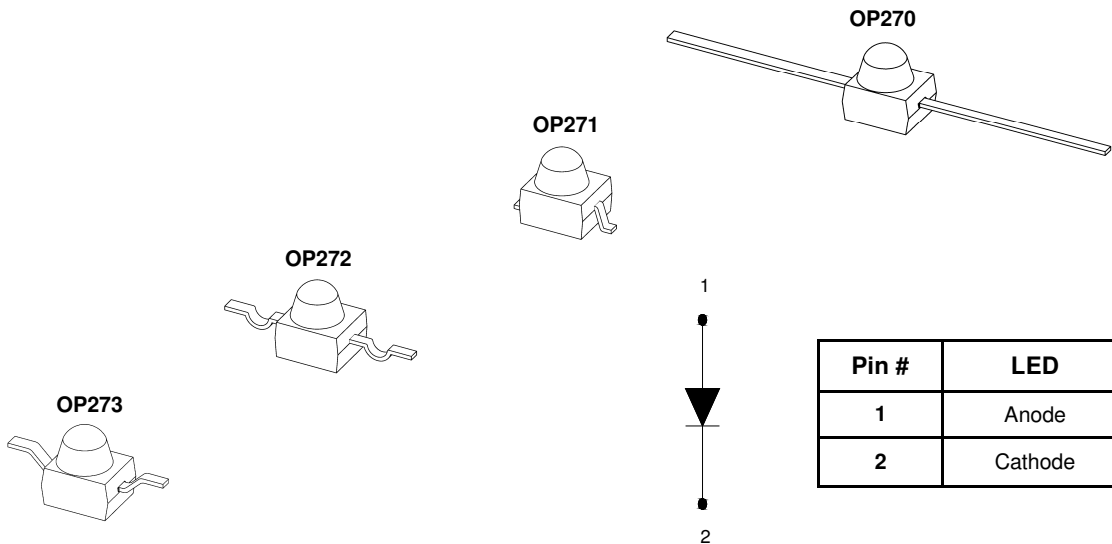
Each device in this series is a GaAIAs infrared LED mounted in a clear plastic SMD package. Each device has an integral molded lens that enables a narrow beam angle and provides an even emission pattern. This series offers four lead configurations, which are compatible with most automated mounting equipment. *OP270 Series LEDs are mechanically and spectrally matched to OP570 series phototransistors.*

Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

Applications:

- Non-contact position sensing
- Datum detection
- Machine automation
- Optical encoding
- IrDA
- Reflective and transmissive sensing

Ordering Information			
Part Number	LED Peak Wavelength	Total Beam Angle	Lead Configuration
OP270	890 nm	25°	Axial
OP271			Gull Wing
OP272			Yoke
OP273			Rev. Gull

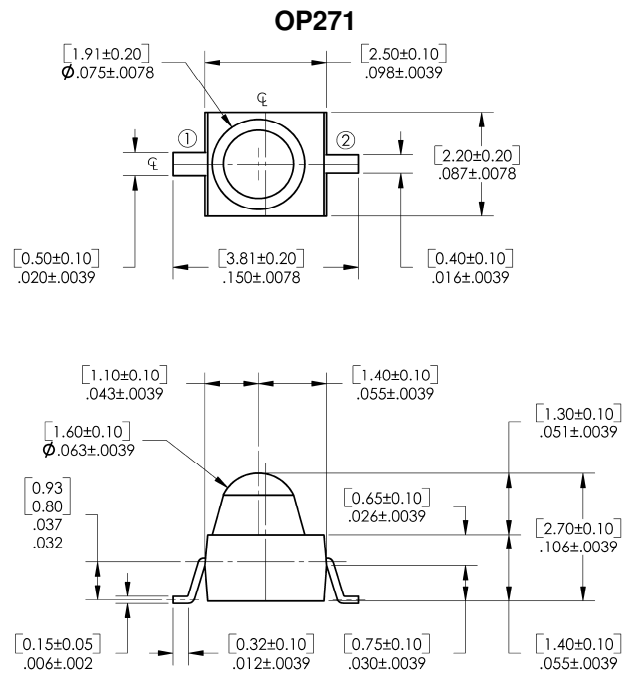
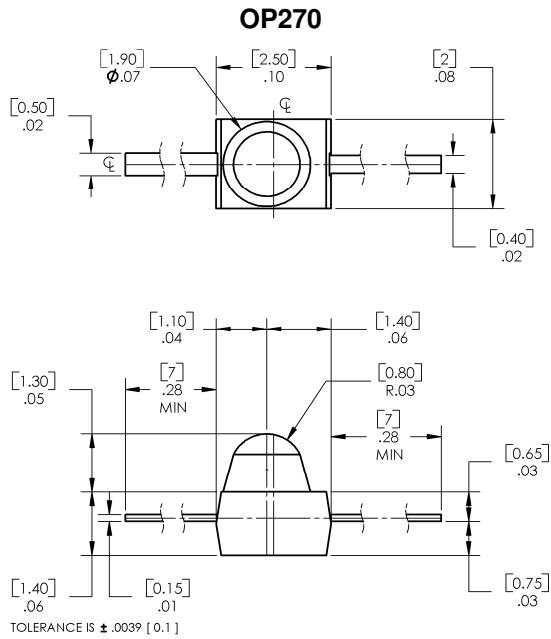


RoHS

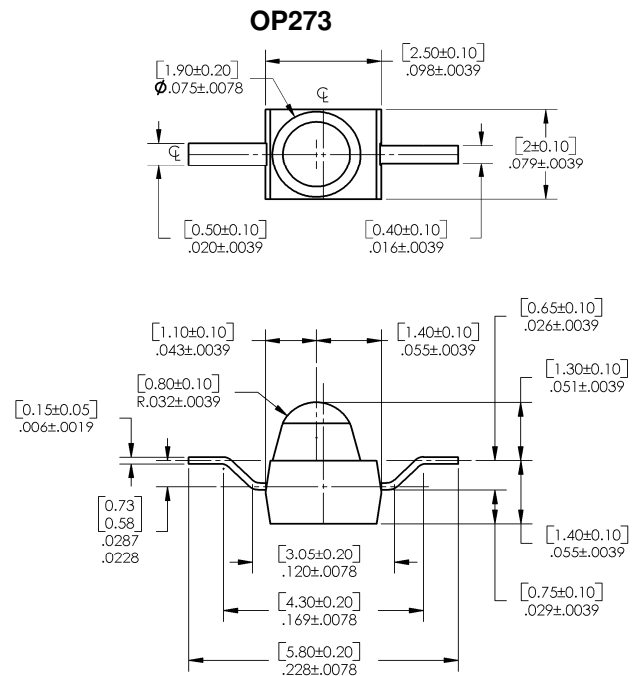
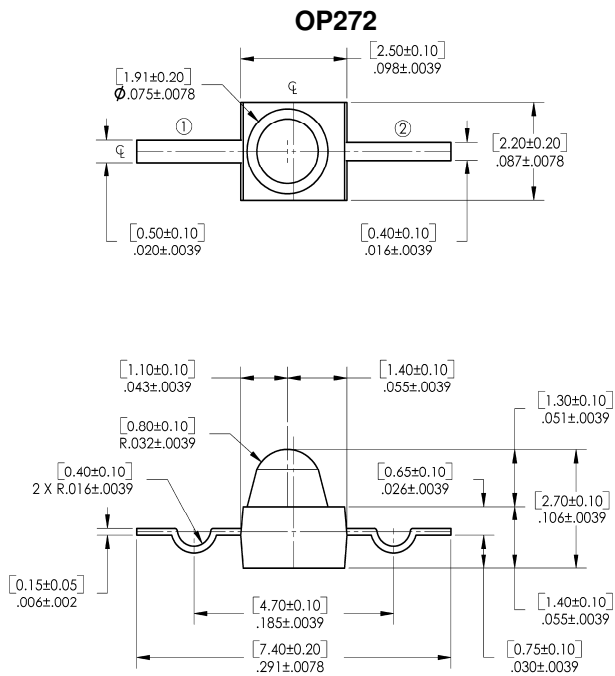
OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Infrared Light Emitting Diode

OP270 Series



DIMENSIONS ARE IN: [MILLIMETERS] [INCHES]



Pin #	LED
1	Anode
2	Cathode

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Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range	-40° C to +85° C
Operating Temperature Range	-25° C to +85° C
Reverse Voltage	30 V
Continuous Forward Current	50 mA
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron]	260° C ⁽¹⁾
Power Dissipation	130 mW ⁽²⁾

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
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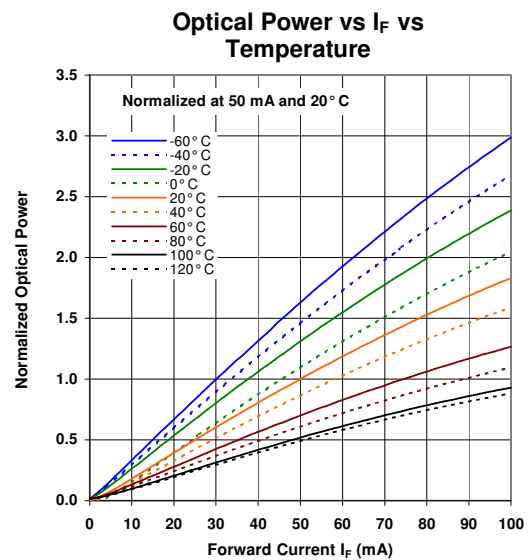
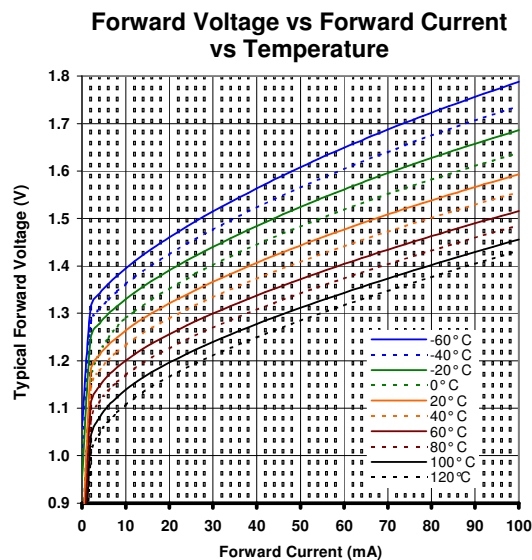
Input Diode

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$E_{E(APT)}$	Apertured Radiant Incidence	1.5	-	-	mW/cm ²	$I_F = 20\text{ mA}^{(3)}$
V_F	Forward Voltage	-	-	1.50	V	$I_F = 20\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2.0\text{ V}$
λ_P	Wavelength at Peak Emission	-	890	-	nm	$I_F = 10\text{ mA}$
θ_{HP}	Emission Angle at Half Power Points	-	25	-	Degree	$I_F = 20\text{ mA}$
t_r	Output Rise Time	-	-	500	ns	$I_{F(PK)}=100\text{ mA}$, $PW=10\text{ }\mu\text{s}$, and $D.C.=10\%$
t_f	Output Fall Time	-	-	500	ns	

Notes:

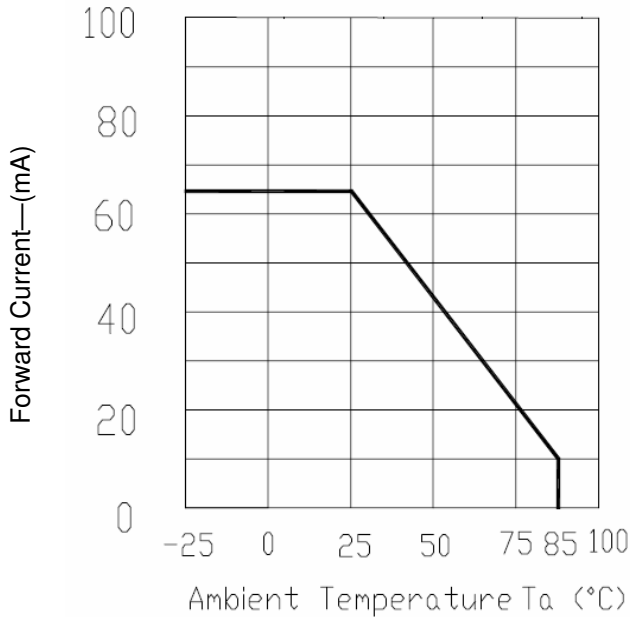
- Solder time less than 5 seconds at temperature extreme.
- Derate linearly at 2.17 mW/°C above 25°C.
- $E_{E(APT)}$ is a measurement of the apertured radiant incidence upon a sensing area 0.081" (2.06 mm) in diameter, perpendicular to and centered on the mechanical axis of the lens and 0.590" (14.99 mm) from the measurement surface. $E_{E(APT)}$ is not necessarily uniform within the measured area.

OP270 Series

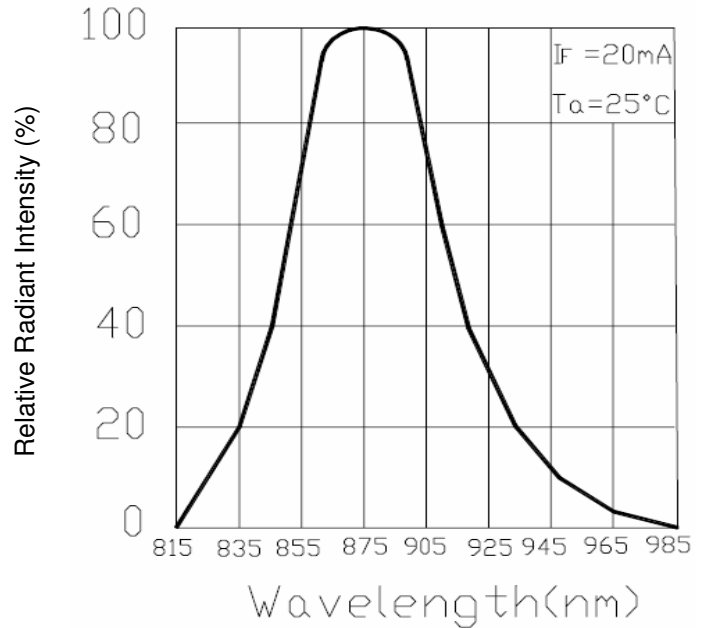


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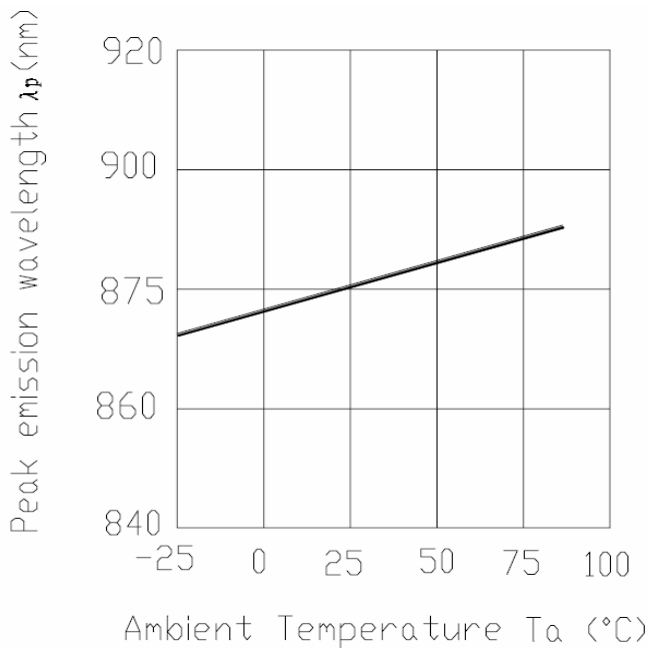
Forward Current vs. Ambient Temperature



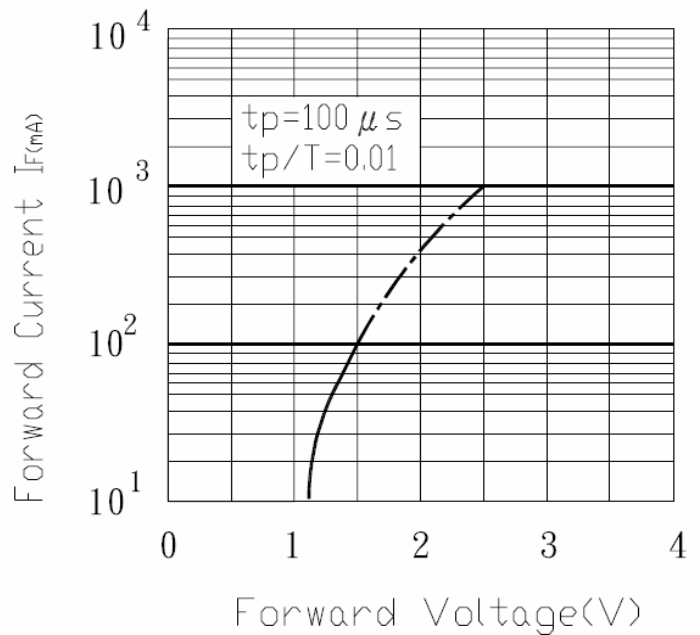
Spectral Distribution



Peak Emission Wavelength vs. Ambient Temperature

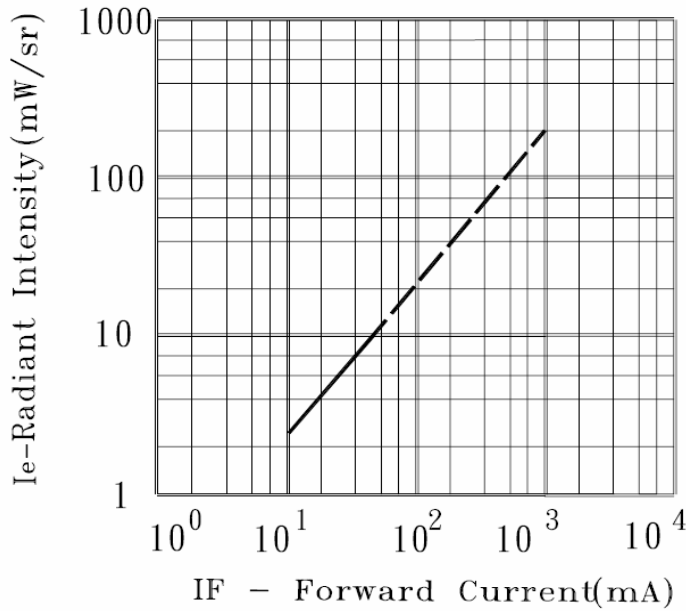


Forward Current vs. Forward Voltage

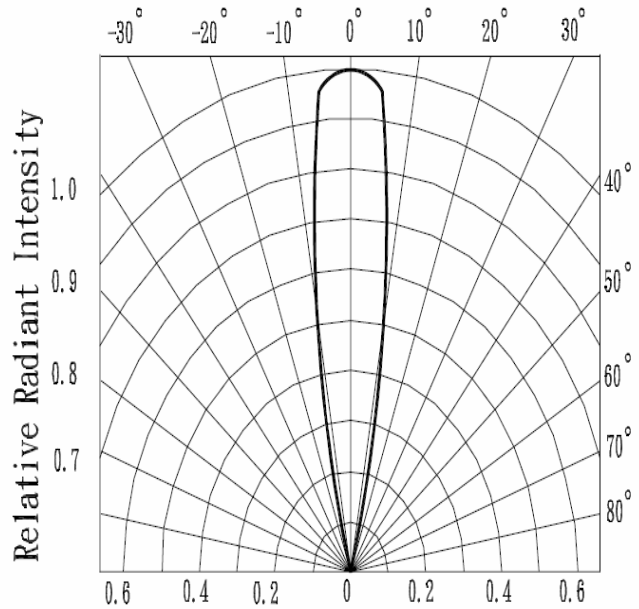


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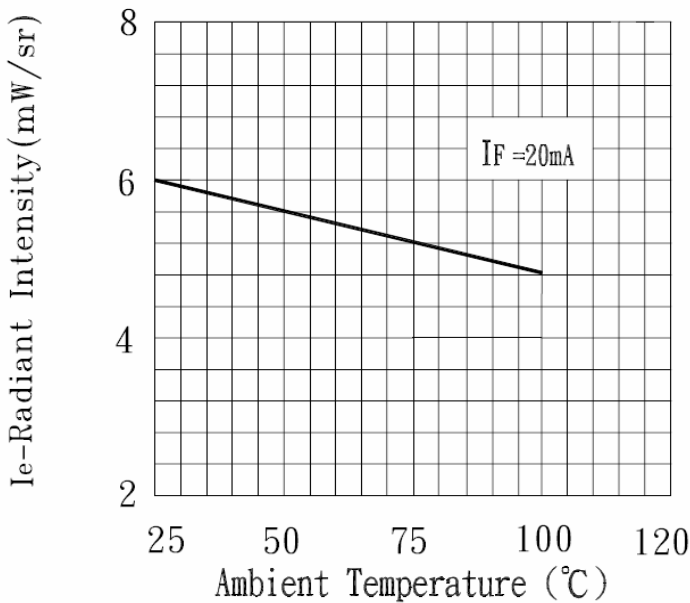
**Relative Radiant intensity
Vs. Angular Displacement**



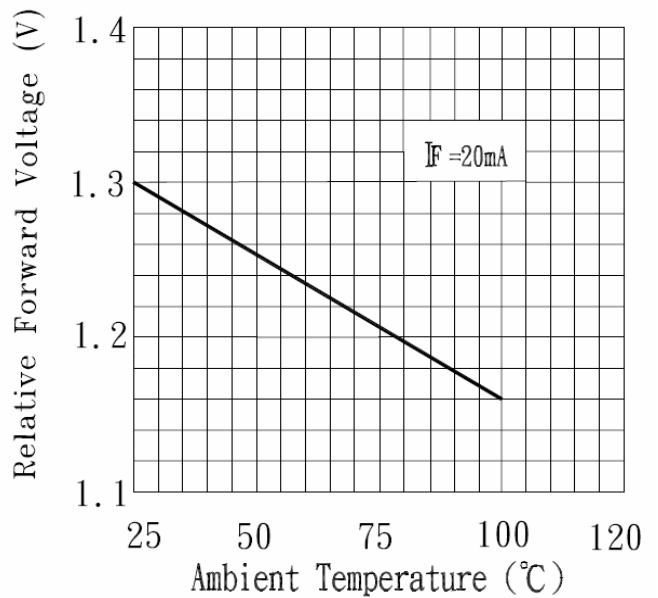
**Relative Radiant intensity
Vs. Angular Displacement**



**Relative Intensity vs.
Ambient Temperature**



**Relative Intensity vs.
Ambient Temperature**



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