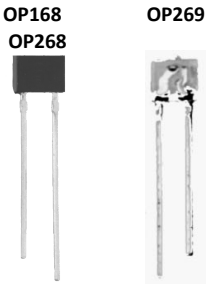
Plastic Infrared Emitting Diode

OP168F, OP268F, OP269 Series

Features:

- "End-looking" LED plastic package
- Flat lens for wide radiation angle (OP168, OP268)
- Integral lens for narrow beam angle (OP269)
- Easily stackable on 0.100" (2.54 mm) hole centers
- Mechanically and spectrally matched to other OPTEK devices



Description:

Each diode in this series is molded into an end-looking plastic package. The package for all **OP168F** and **OP268F** devices is black, whereas the package for all **OP269** packages is clear. **OP168F** devices are GaAs (935 nm). **OP268F** and **OP269** devices are GaAlAs (890 nm).

Due to their small size, all diodes in this series offer considerable design flexibility.

The OP168F and OP268F series are mechanically and spectrally matched to the OP508F series phototransistor and the OP538F series photodarlingtons. The OP269 series are mechanically and spectrally matched to the OP509 series phototransistors.

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

For custom screening contact your OPTEK representative.

Applications:

- Space-limited applications
- Excellent design flexibility
- PC Board mounted slotted switch
- PC Board interrupter

Ordering Information			
Part Number	**LED Peak Wavelength**	**Total Beam Angle**	**Lead Length**
OP168FA	935 nm	104°	0.50" (min)
OP168FB			
OP268FA	890 nm	104°	
OP268FB			
OP269A	890 nm	18°	

RoHS

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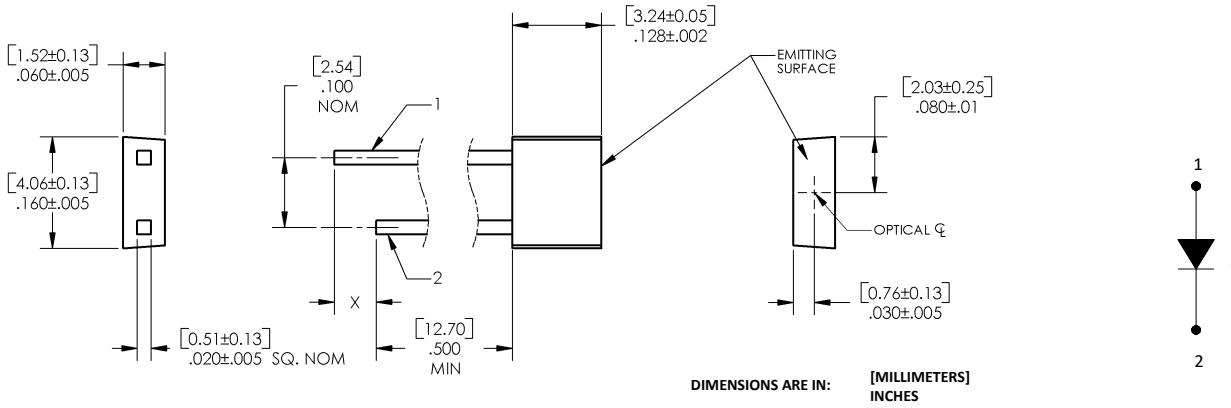
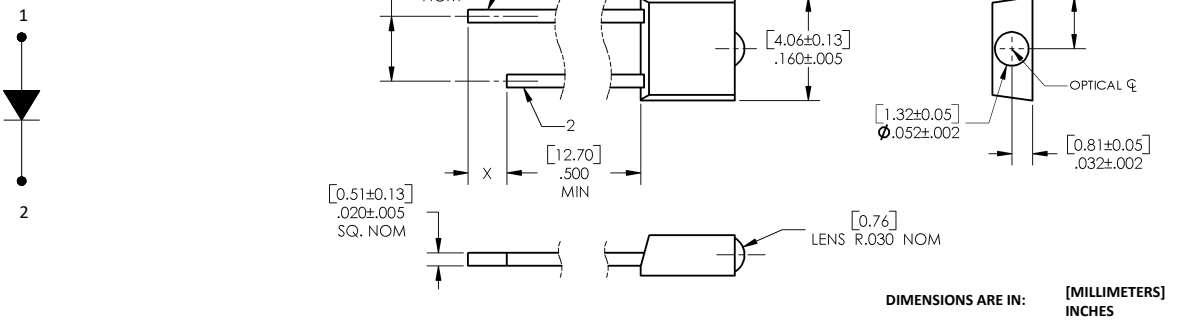
OP168F (A, B), OP268F (A, B)



Pin #	LED X = 0.060” (1.5 mm)
1	Anode
2	Cathode

OP269 (A)



Pin #	LED X = 0.060” (1.5 mm)
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Electrical Specifications

Absolute Maximum Ratings (T_A = 25 °C unless otherwise noted)

Storage and Operating Temperature Range	-40 °C to +100 °C
Reverse Voltage	2.0 V
Continuous Forward Current	50 mA
Peak Forward Current (1 µs pulse width, 300 pps) OP168, OP268, OP269 (A)	3.0 A
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron](1)	260 °C
Power Dissipation(2)	100 mW

Electrical Characteristics (T_A = 25 °C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
$E_{E\ (APT)}$(3)	Apertured Radiant Incidence OP168FA OP168FB OP268FA OP268FB OP269A	 0.48 0.43 0.64 0.45 0.58	 - - - - -	 - 0.73 - 0.99 -	mW/cm^2	I_F = 20 mA Aperture = .081” dia. Distance = .400” from tip of lens to aperture surface
V_F	Forward Voltage OP168F OP268F, OP269	 1.00 1.00	 - -	 1.40 1.50	V	I_F = 20 mA
I_R	Reverse Current OP168F, OP268F, OP269	 -	 -	 100	µA	V_R = 2.0 V
λ_P	Wavelength at Peak Emission OP168F OP268F, OP269	 - -	 935 890	 - -	nm	I_F = 20 mA

Notes:

1. RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. A maximum of 20 grams force may be applied to the leads when soldering.
2. Derate linearly 1.07 mW/ °C above 25 °C.
3. For OP168 (FA, FB) and OP268 (FA, FB), $E_{E(APT)}$ is a measurement of the average apertured radiant energy incident upon a sensing area 0.081” (2.06 mm) in diameter perpendicular to and centered on the mechanical axis of the lens and 0.400” (10.16 mm) from the measurement surface. For OP269 (A), $E_{E(APT)}$ is a measurement of the average apertured radiant energy incident upon a sensing area 0.180” (4.57 mm) in diameter perpendicular to and centered on the mechanical axis of the lens and 0.653” (16.6 mm) from the lens tip. NOTE: $E_{E(APT)}$ is a measurement of the *average* radiant intensity within the cone formed by the above conditions. $E_{E(APT)}$ is not necessarily uniform within the measured area.

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Electrical Specifications

Electrical Characteristics (T_A = 25 °C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
B	Spectral Bandwidth between Half Power Points OP168F OP268F, OP269	 - -	 50 80	 - -	nm	I_F = 10 mA
$\Delta\lambda_P/\Delta T$	Spectral Shift with Temperature OP168F OP268F, OP269	 - -	 ±0.30 ±0.18	 - -	nm/°C	I_F = Constant
θ_{HP}	Emission Angle at Half Power Points OP168F OP268F, OP269	 - - -	 104° 104° 46°	 - - -	Degree	I_F = 20 mA
t_r	Rise Time OP168F OP268F, OP269	 - -	 1000 500	 - -	ns	$I_{F(PK)}$ = 100 mA, PW = 10 µs, D.C. = 10 %
t_f	Fall Time OP168F OP268F, OP269	 - -	 500 250	 - -	ns	$I_{F(PK)}$ = 100 mA, PW = 10 µs, D.C. = 10 %

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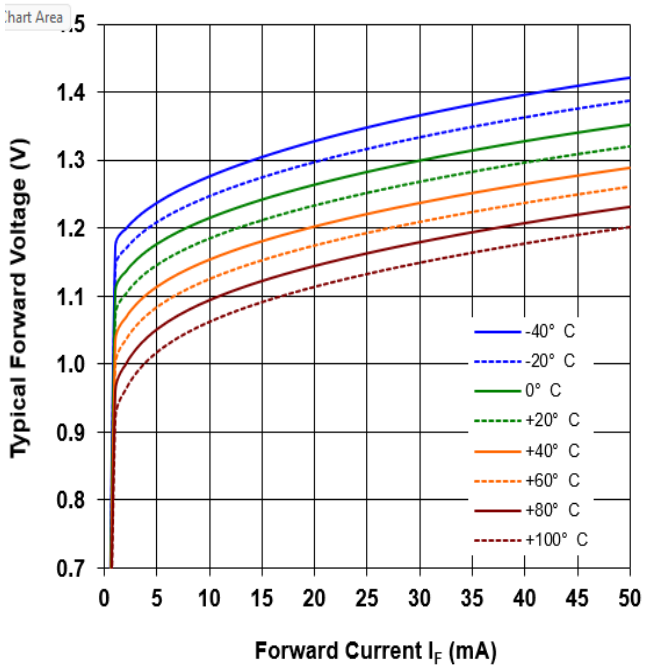
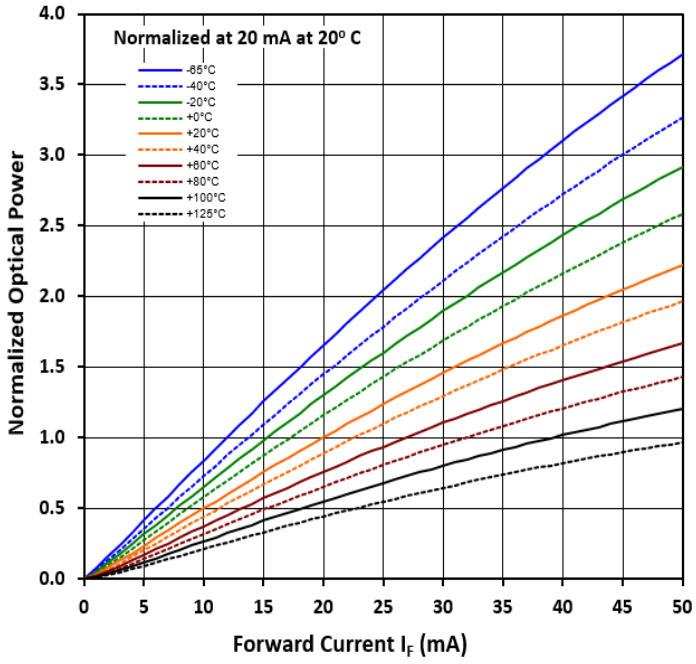
Typical Performance

OP168F (A, B)

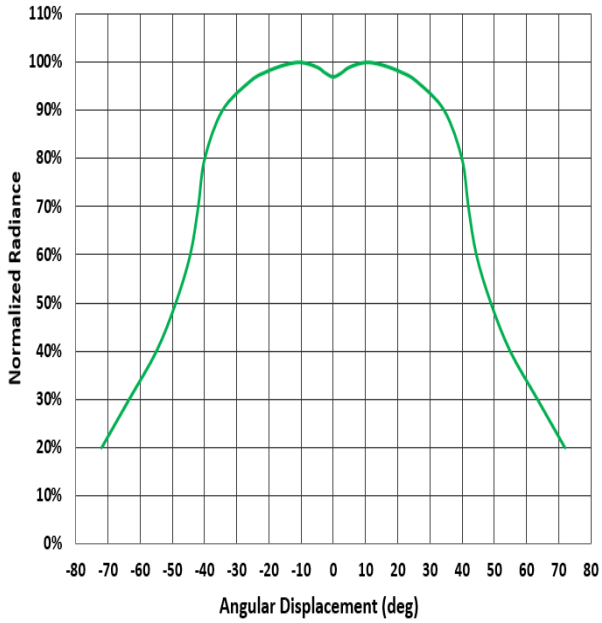
LED Forward Current vs Forward Voltage vs Temp



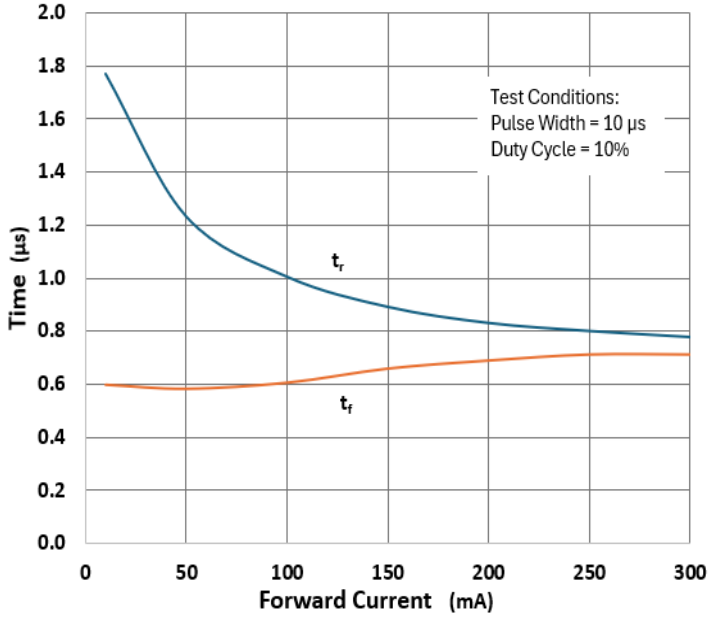
Optical Power vs I_F vs Temperature



Normalized Angular Radiant Intensity vs Angular Displacement



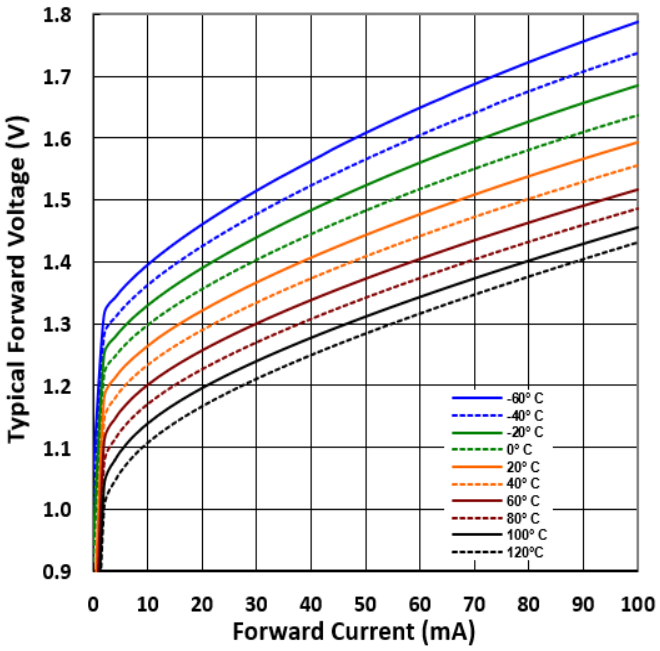
Rise and Fall Time vs Forward Current



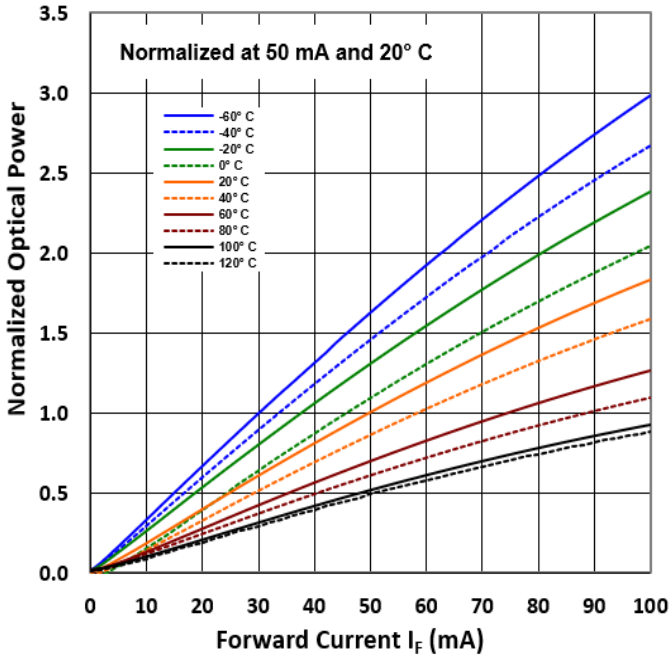
Typical Performance

OP268F (A, B)

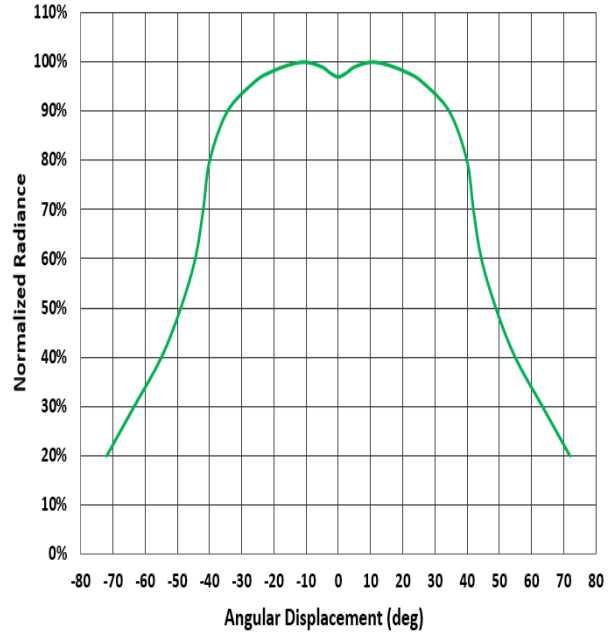
LED Forward Voltage vs I_F vs Temp



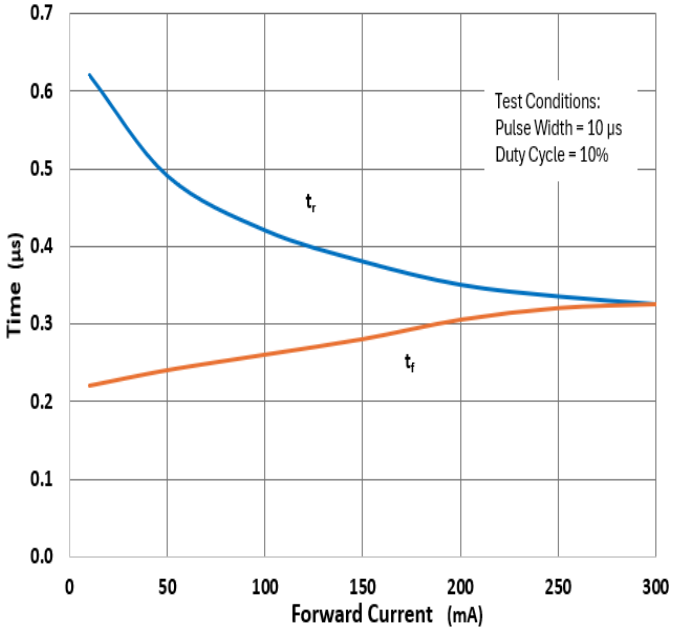
Optical Power vs I_F vs Temperature



Normalized Angular Radiant Intensity vs Angular Displacement



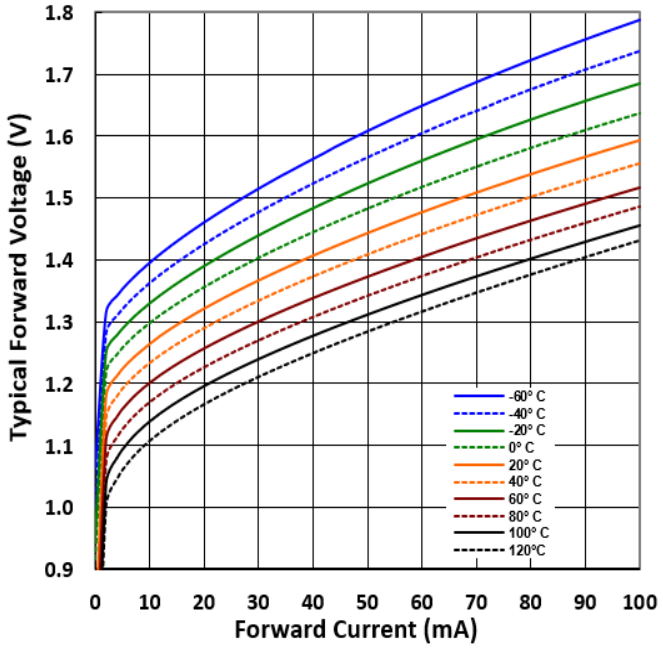
Rise and Fall Time vs Forward Current



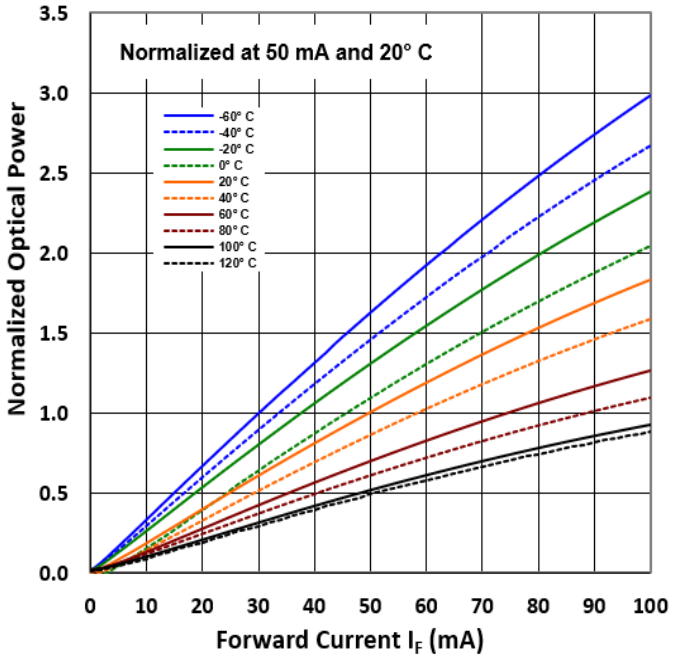
Typical Performance

OP269 (A)

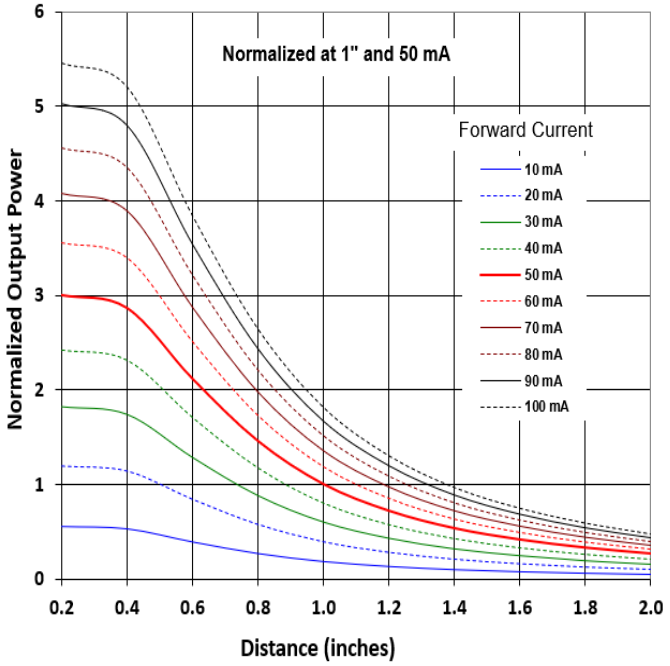
LED Forward Voltage vs I_F vs Temp



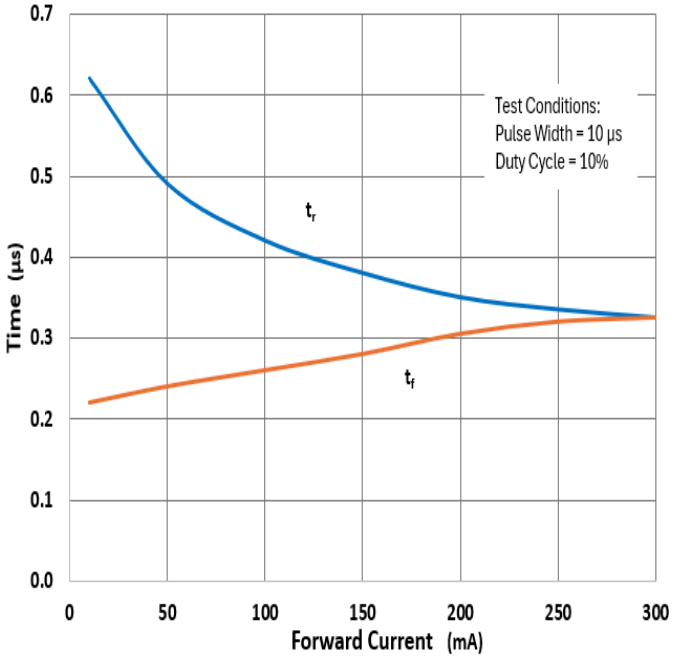
Optical Power vs I_F vs Temperature



Distance vs Output Power vs Forward Current



Rise and Fall Time vs Forward Current



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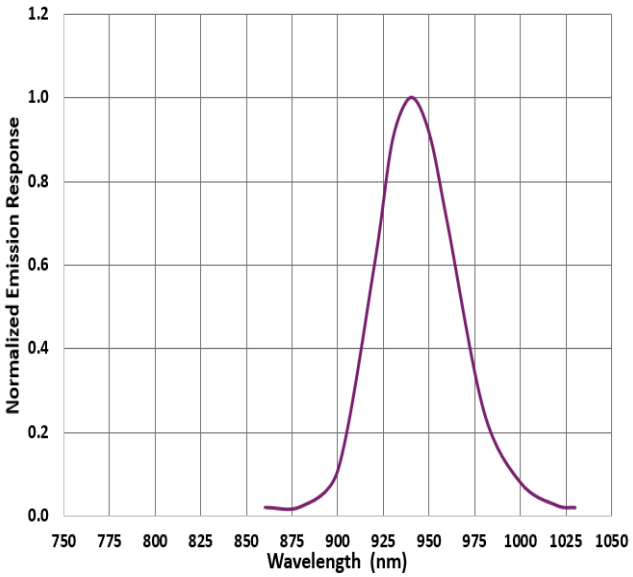
Typical Performance

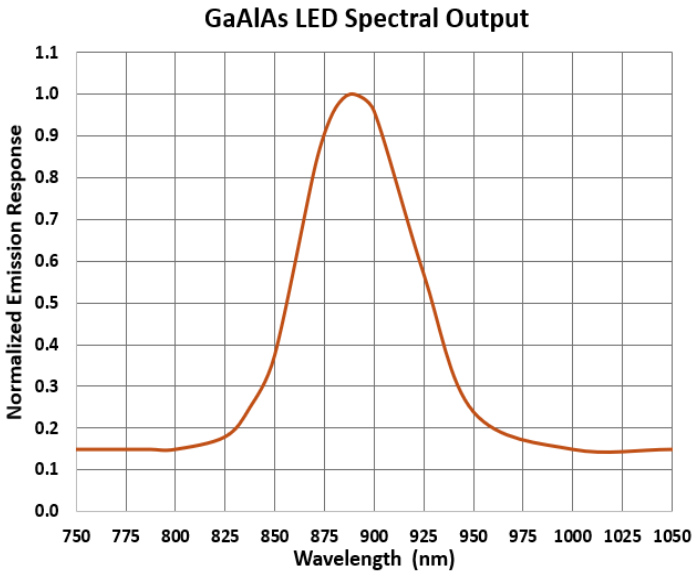
OP168F

GaAs LED Spectral Output



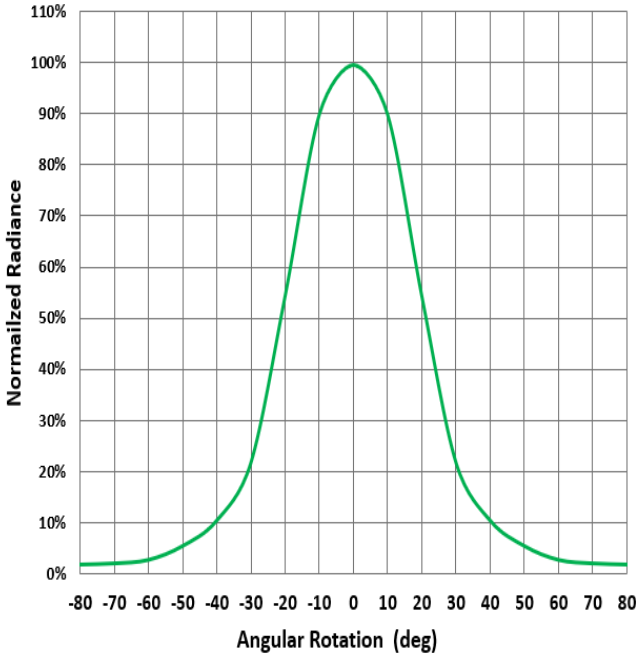
OP268F OP269

GaAlAs LED Spectral Output



OP269

Normalized Radiant Intensity vs Angular Displacement



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