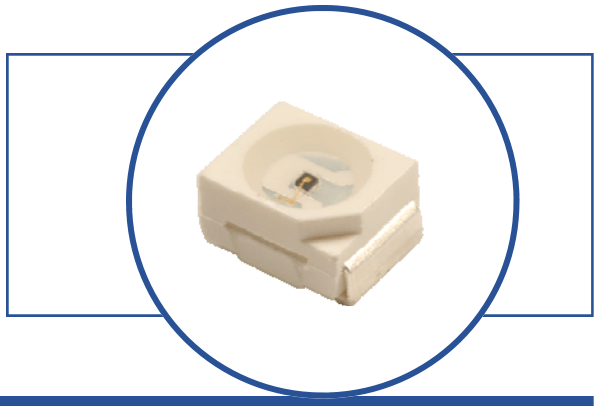
PLCC-2 Pkg Infrared Light Emitting Diode

OP180 & OP280 Series

TT electronics
OPTEK Technology

Features:

- SMD Package
- High power GaAs—OP180, 940 nm typical peak wavelength
- Standard GaAlAs-OP280, 890nm typical peak wavelength
- High power GaAlAs—OP280K and OP280KT, 875 nm typical peakwavelength
- VCSEL GaAlAs-OP280V, 850 nm typical peak wavelength
- Point Source GaAlAs-OP280PS, 850 nm typical peakwavelength
- LCC-2 package style with silicon encapsulation
- Half Power Beam angle from 18° to 100°
- Variety of power ranges
- Suitable for single device or array applications
- Moisture Sensitivity Level: MSL2 or >



Description:

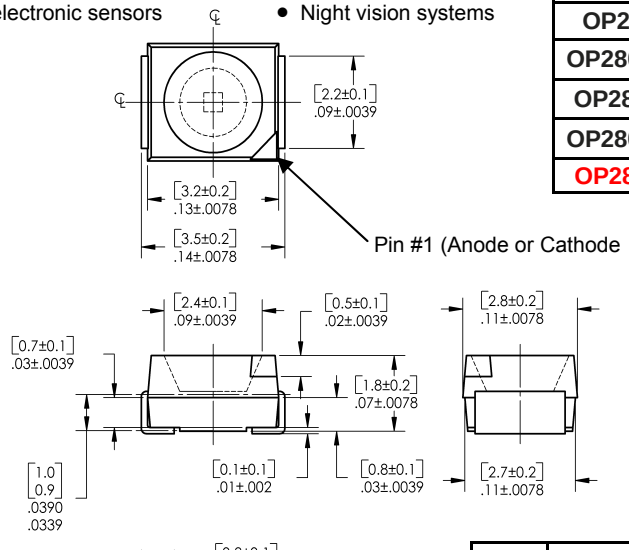
The OP180 is a GaAs and the OP280 series are GaAlAs infrared LED mounted in plastic leadless PLCC-2 SMD package with a flat lens window that allows for wide beam angles. All parts endure the attribute of silicone encapsulation to increase the longevity of the product.
The OP280V is a high performance 850nm vertical cavity surface emitting laser (VCSEL). This device requires substantially lower current to achieve same amount of output power as LEDS. Its high speed, high output makes it versatile with low input current. The OP280PS features a point source irradiance pattern, stable forward voltage over temperature and low rise and fall times, making it ideal for high speed operations. The OP280K and the OP280KT are high performance, high speed, high power IRLEDS. The OP280KT utilizes double hetero junction technology with reverse polarity terminals. The low power consumption PLCC-2 packaging is suitable for single device or array applications.

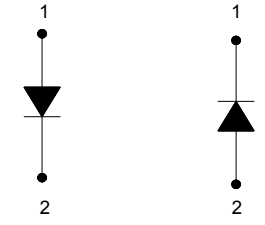
The 180 and 280 Series LEDs are mechanically and spectrally matched to OP580 series phototransistors.
Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

Applications:

- Non-contact position sensing
- Datum detection
- Light curtains
- Photoelectronic sensors
- Machine automation
- Optical encoding
- IR illumination
- Night vision systems

Ordering Information				
Part Number	Apertured Power (mW/cm^2)	I_F (mA)	LED Peak Wavelength	Half Power Angle
OP180	0.50	20	940 nm	100°
OP280	0.50	20	890 nm	100°
OP280KT	0.85	20	850 nm	90°
OP280K	0.85	20	875 nm	90°
OP280PS	0.15	20	850 nm	50°
OP280V	2.50	7	850 nm	18°





Pin #	OP180	OP280	OP280KT	OP280K	OP280PS	OP280V
1	Cathode	Anode	Cathode	Anode	Anode	Cathode
2	Anode	Cathode	Anode	Cathode	Cathode	Anode

DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

RoHS

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

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
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Absolute Maximum Ratings (T_A=25° C unless otherwise noted)

Storage Temperature Range	-40° C to +100° C
Operating Temperature Range—OP180, OP280, OP280K, OP280KT, OP280PS OP280V	-25° C to +85° C 0° C to +70° C
Reverse Voltage OP180, OP280, OP280PS, OP280V OP280K, OP280KT	 5.0 V 4.0 V
Peak Forward Current [1µs pulse width, 300 pps] (Except OP280V)	1.0 A
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° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
$E_{E\ (APT)}$	Radiant Incidence OP180 OP280 OP280K OP280KT OP280PS OP280V	 0.50 0.50 0.65 0.65 0.10 1.50	 - - - - - -	 - - - - - -	mW/cm^2	 I_F = 20 mA(3) I_F = 20 mA(3) I_F = 20 mA(3) I_F = 20 mA(3) I_F = 20 mA(3) I_F = 7 mA(3)
V_F	Forward Voltage OP180 OP280 OP280K OP280KT OP280V OP280PS	 - - - - - -	 1.28 - 1.50 1.55 1.95 1.50	 1.60 1.50 1.80 1.80 2.50 1.80	V	 I_F = 20 mA I_F = 20 mA I_F = 20 mA I_F = 50 mA I_F = 7 mA I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R= 5.0 V
λ_P	Wavelength at Peak Emission OP180 OP280 OP280KT OP280PS, OP280K OPOP280V	 - - - - -	 940 890 850 875 850	 - - - - -	nm	 I_F = 20 mA I_F = 7 mA
θ_{HP}	Emission Angle at Half Power Points OP180, OP280, OP280K, OP280KT OP280PS OP280V	 - - -	 100 90 18	 - - -	 Degree°	 I_F = 20 mA I_F = 20 mA I_F = 7 mA
t_r	Output Rise Time OP180, OP280K, OP280KT, OP280PS OP280 OP280V	 - - -	 25 700 -	 - - 100	 ns ns ps	 $I_{F(PK)}$=50 mA, PW=10 µs, and D.C.=10.0% $I_{F(PK)}$=5 mA, PW=10 µs, and D.C.=10.0% (For OP280V)
t_f	Output Fall Time OP180, OP280K, OP280KT, OP280PS OP280 OP280V	 - - -	 25 700 -	 - - 100	 ns ns ps	

Notes:
1. Solder time less than 5 seconds at temperature extreme.
2. Derate linearly at 2.17 mW/° C above 25° C.
3. $E_{E(APT)}$ 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.

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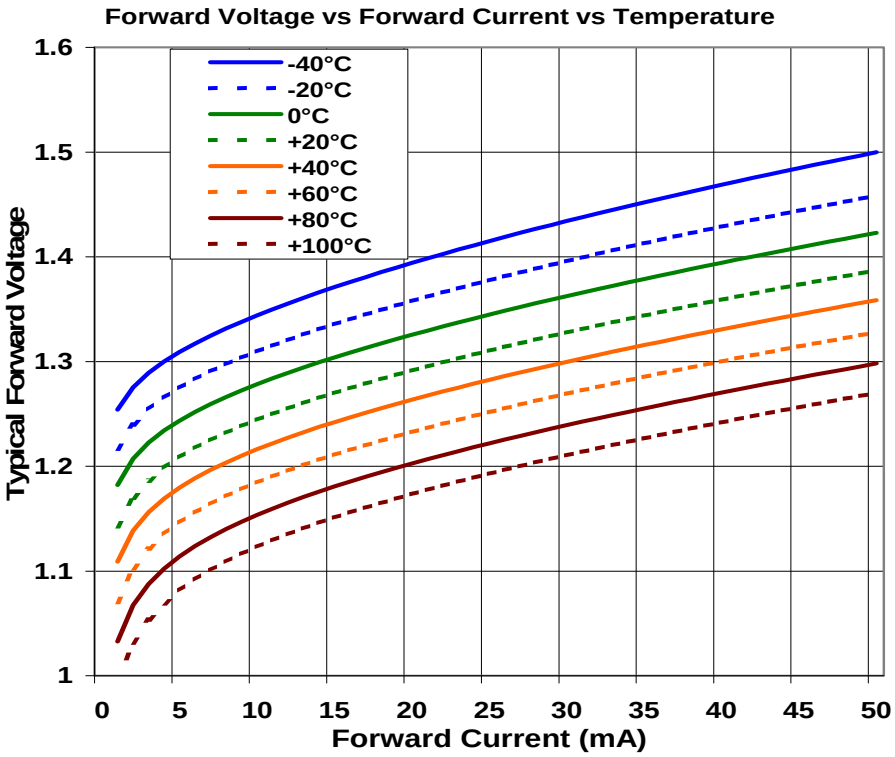
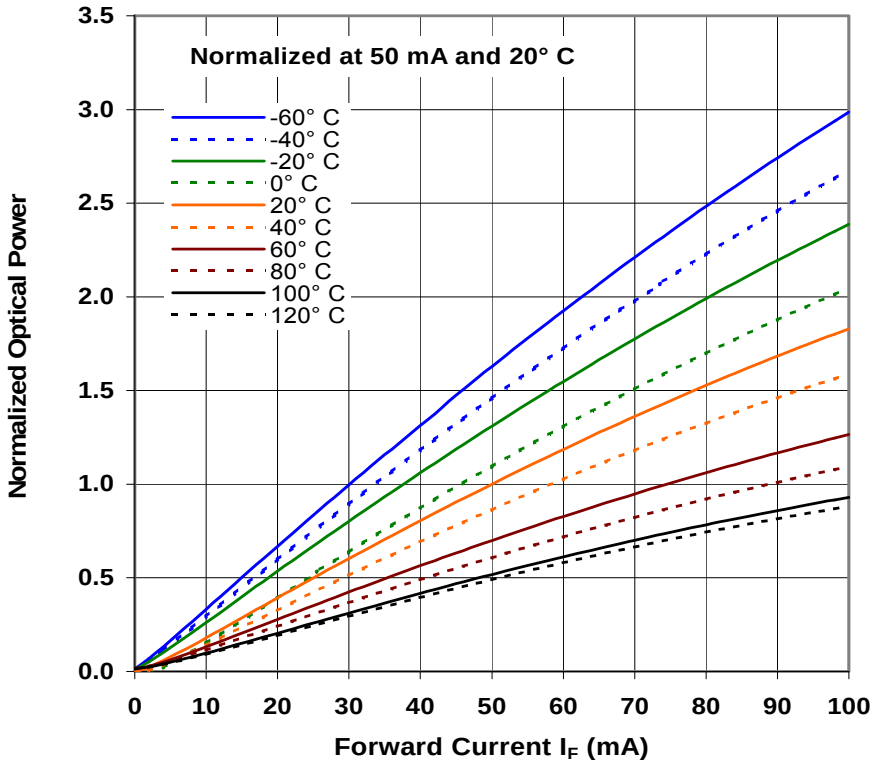
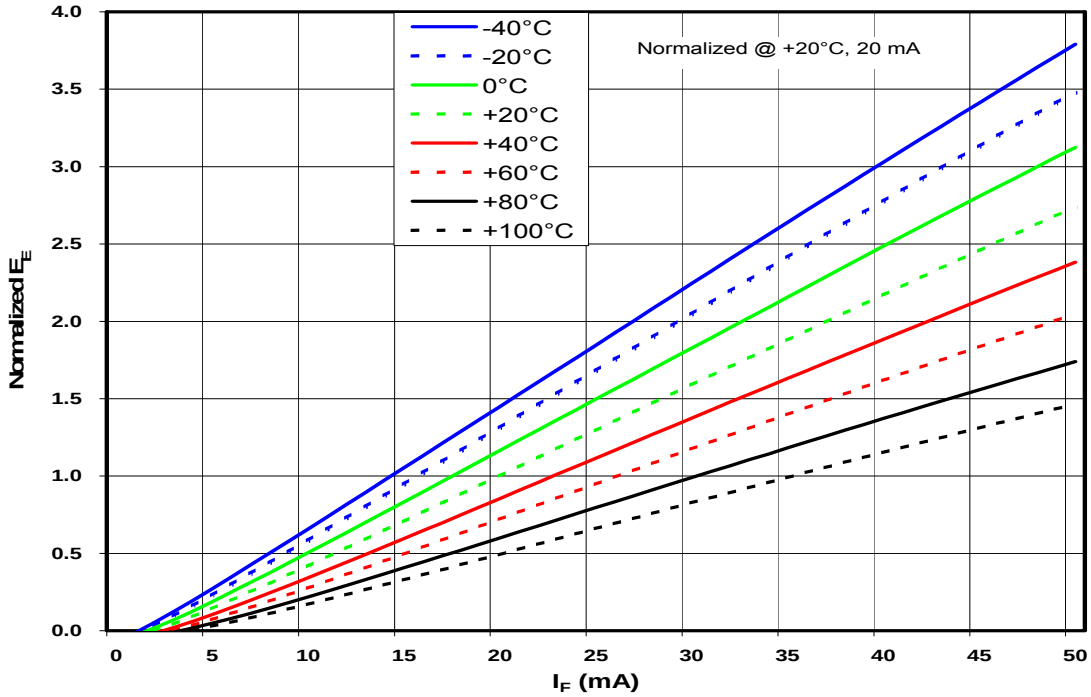
OP280



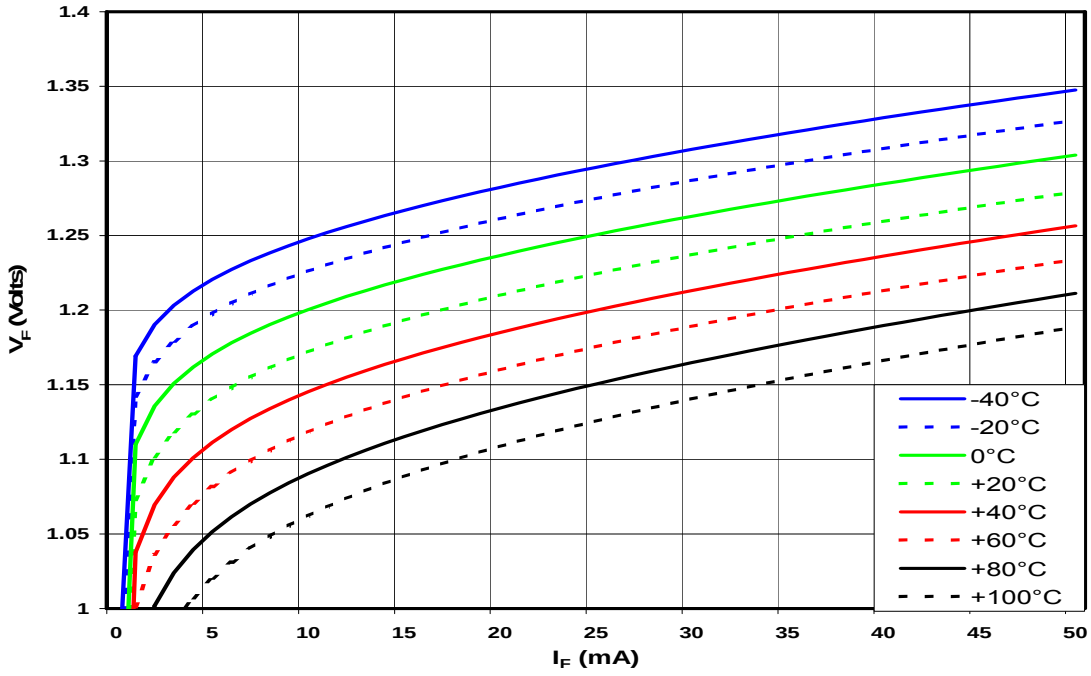


OP180

Optical Power—Ee vs Forward Current—I_F vs Temperature—T_A



Forward Voltage—V_F vs Forward Current—I_F vs Temperature—T_A



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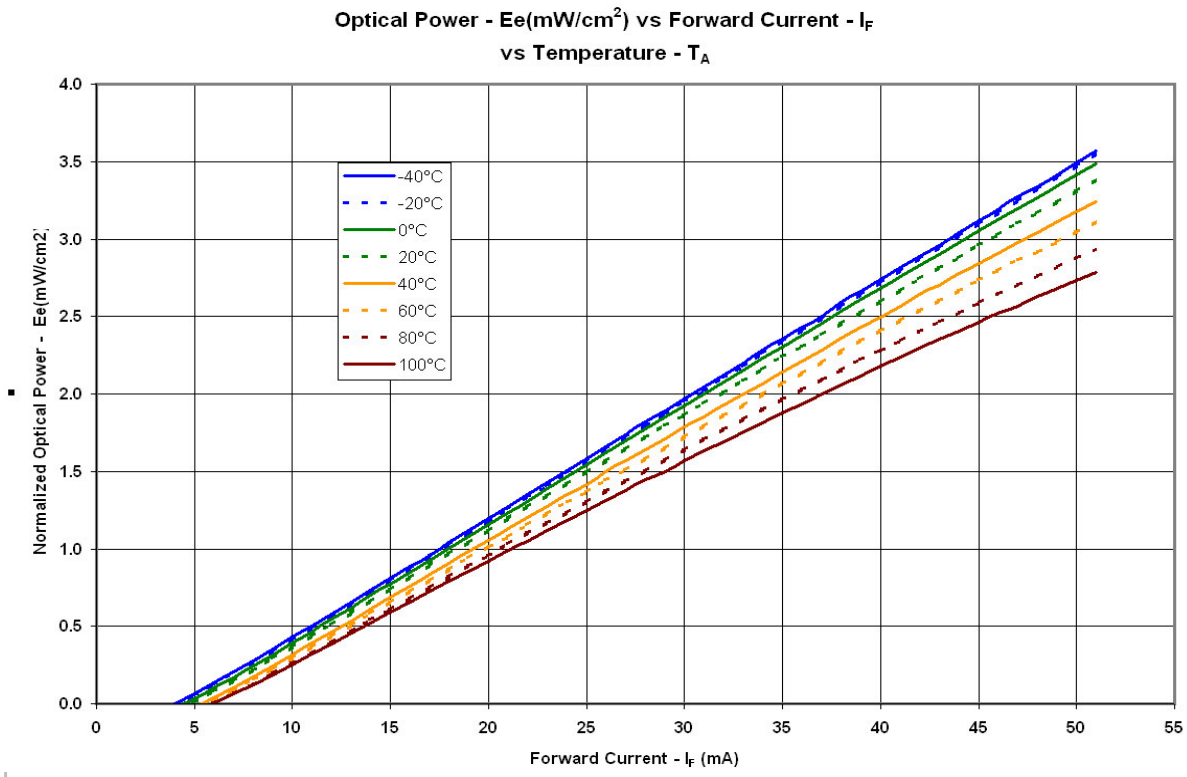
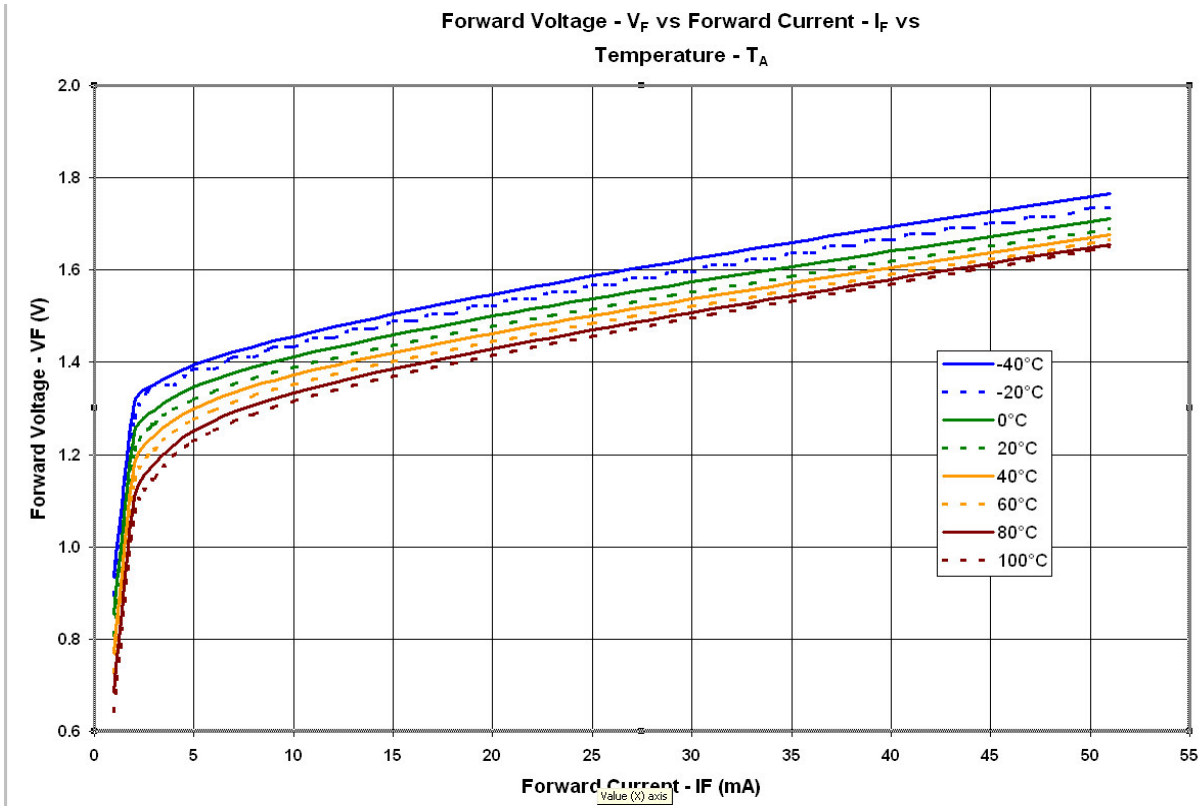
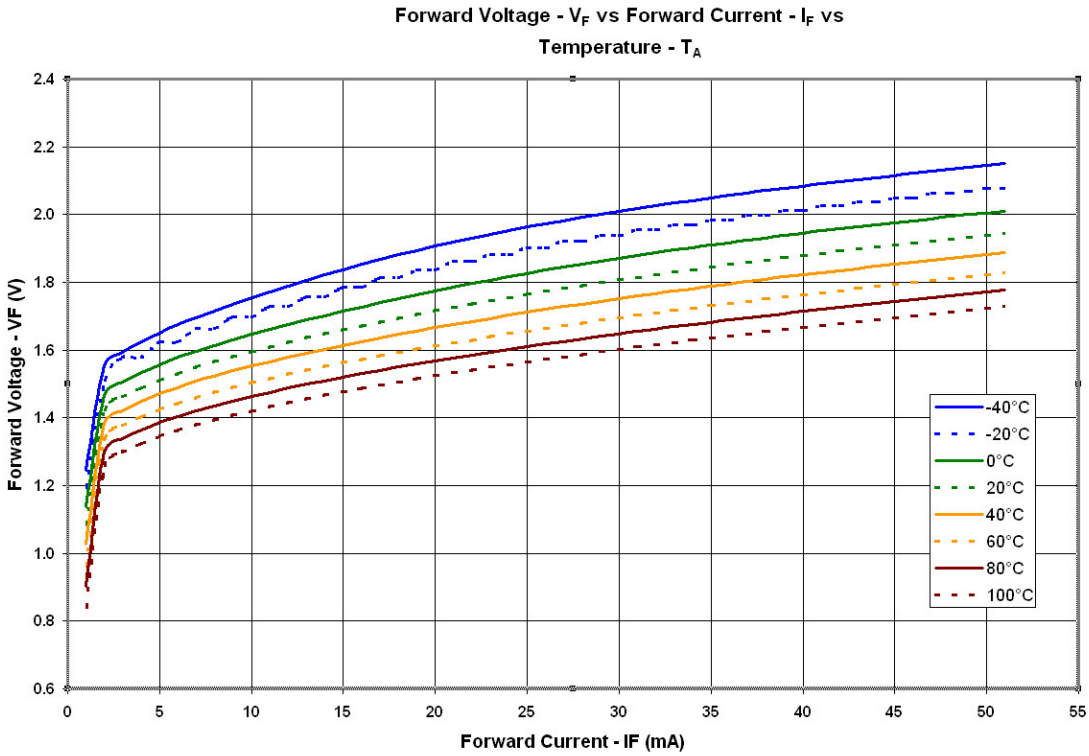
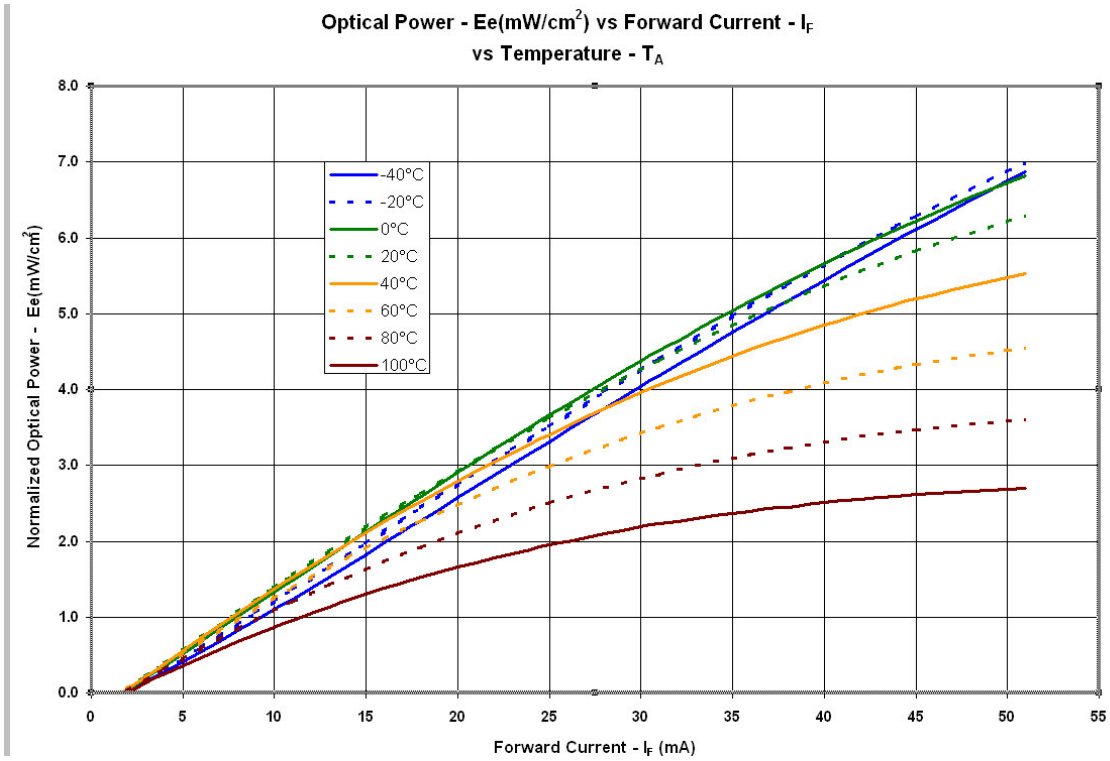
OP280K





OP280KT





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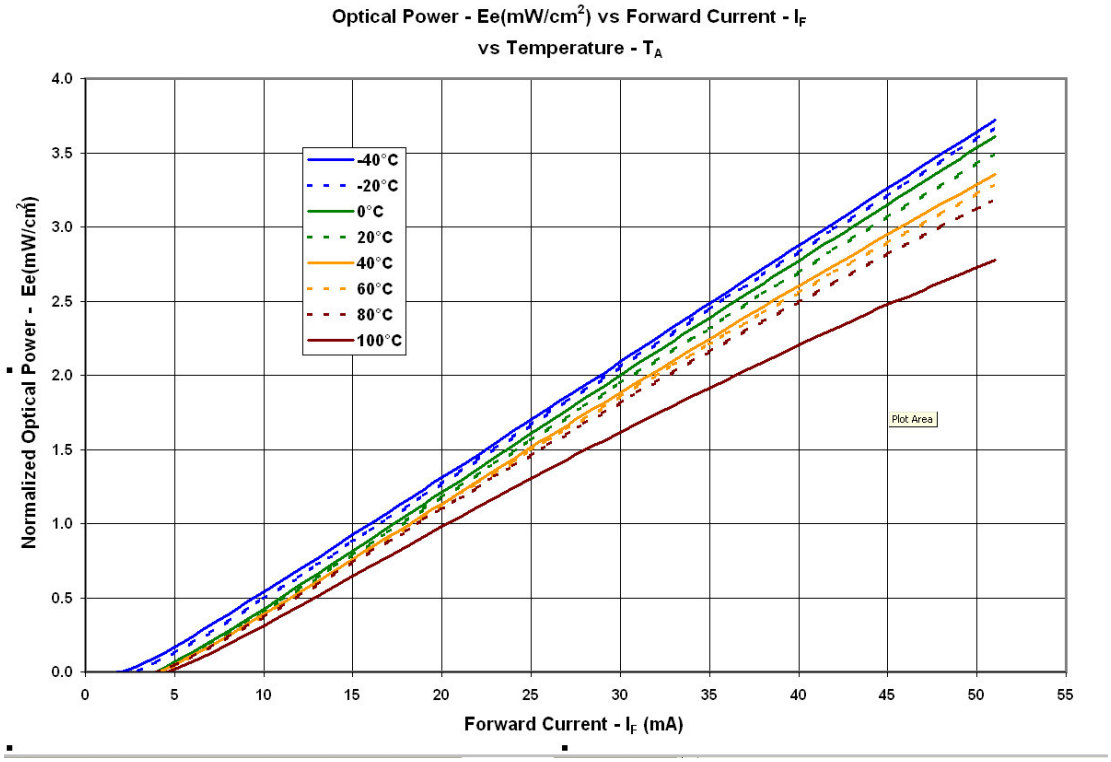
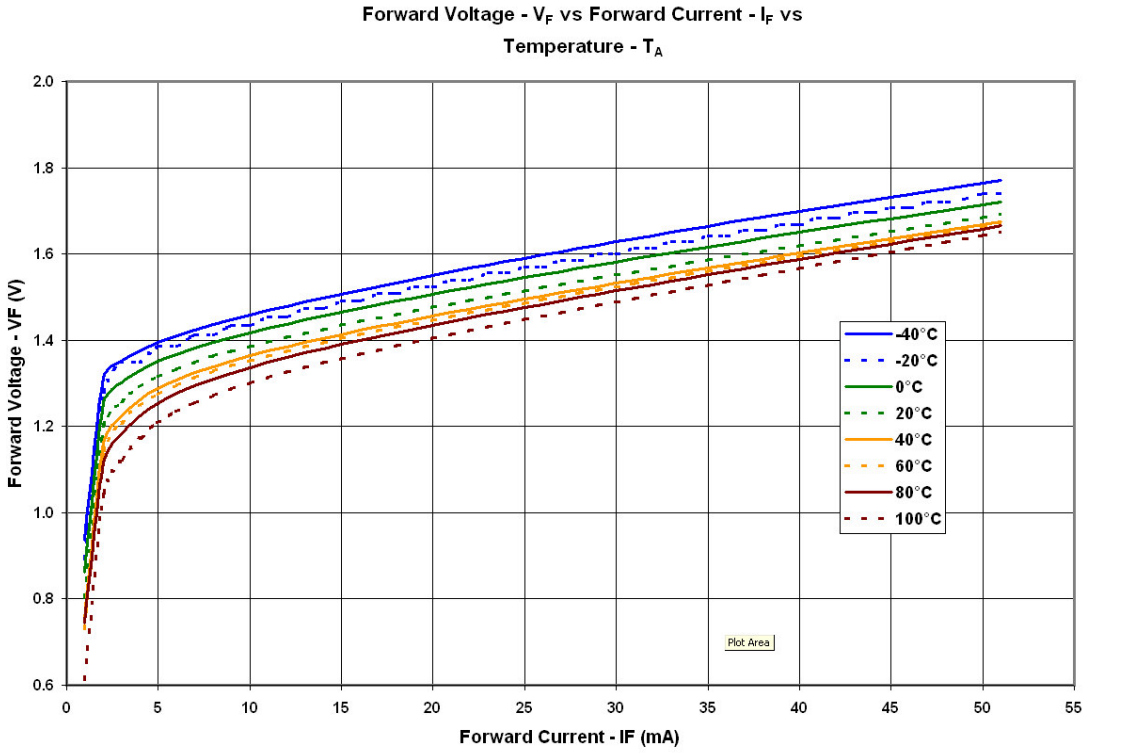
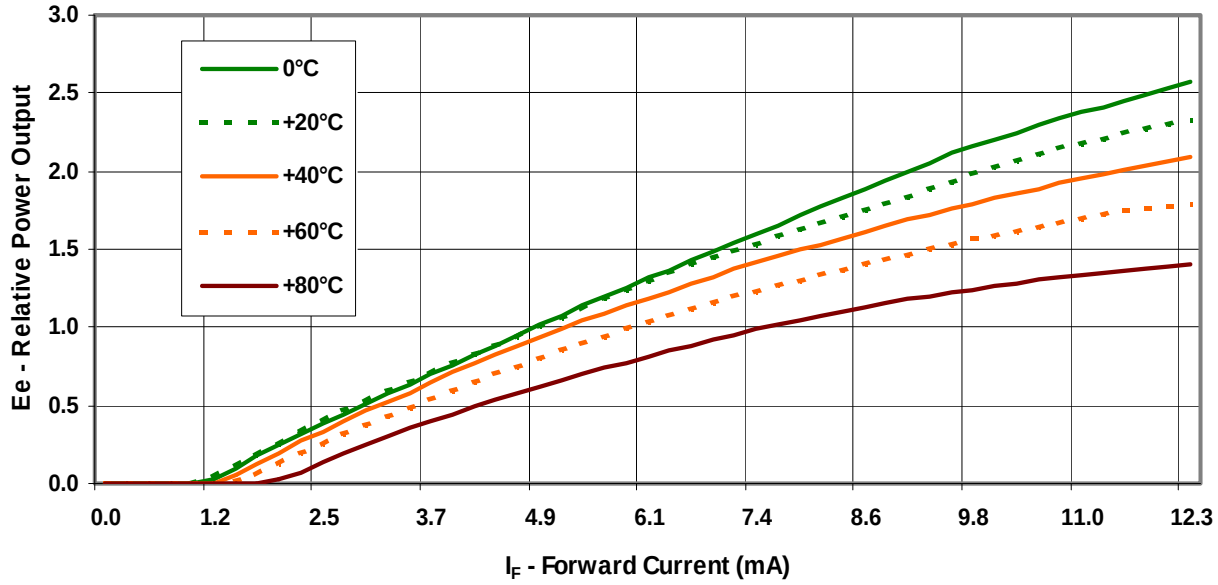
OP280PS



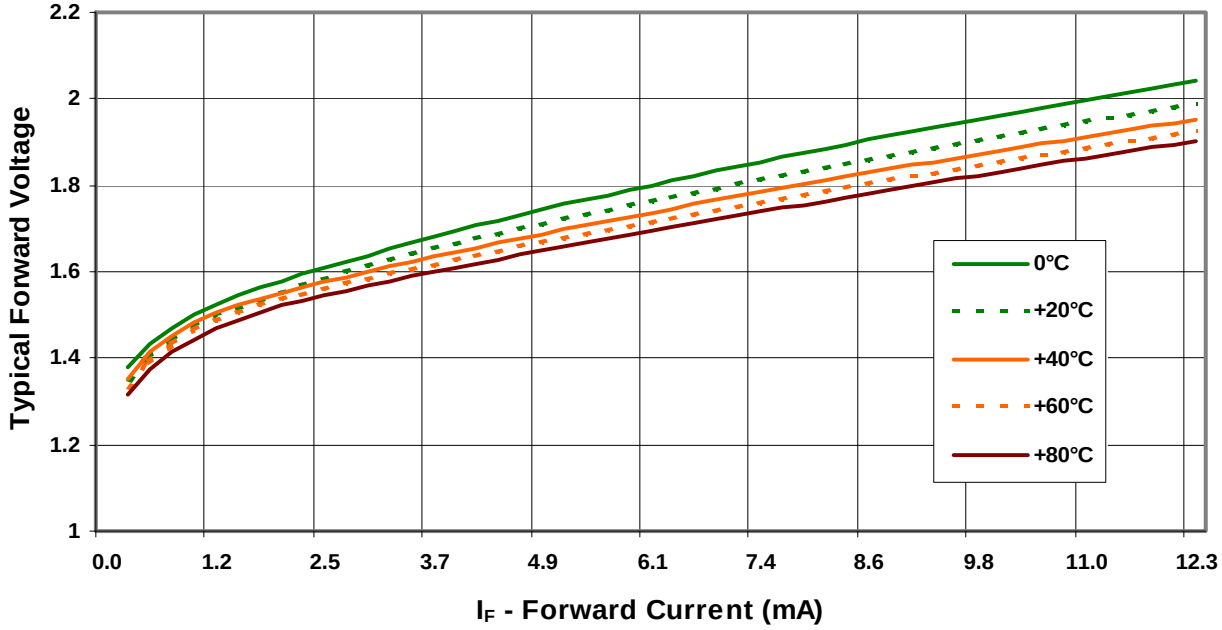


OP280V

Optical Power - Ee(mw/cm^2) vs Forward Current - I_F vs Temperature - T_A



Forward Voltage - V_F vs Forward Current - I_F vs Temperature - T_A



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