

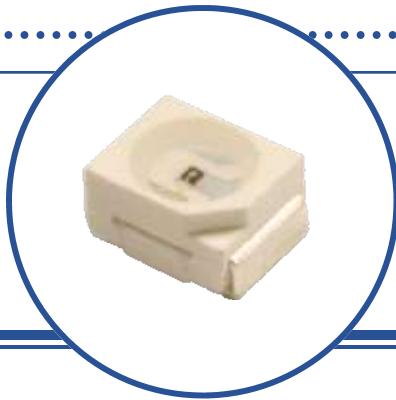
Infrared Light Emitting Diode

OP180 & OP280 Series



Features:

- High power GaAs—OP180, 940 nm center wavelength
- High power GaAlAs—OP280K and OP280KT, 875 nm center wavelength
- VCSEL GaAlAs—OP280V, 850 nm center wavelength
- Point Source GaAlAs—OP280PS, 850 nm center wavelength
- PLCC-2 package style with silicon encapsulation
- Half Power Beam angle from 18° to 100°
- Suitable for single device or array applications



Description:

The **OP180** is a GaAs and the **OP280K**, **OP280KT** is a GaAlAs infrared LED mounted in plastic leadless PLCC-2 SMD package with a flat lens window that allows a wide beam angle. The major differentiator from the two High power GaAlAs LEDs is that **OP280KT** has reversed polarity terminals. The **OP280V** is incorporated into the group with a high performance 850nm invisible VCSEL (Class 1M) with silicon encapsulant. Its high speed, high output and narrow beam pattern (18°) makes it very suitable for high-speed data equipment applications. The **OP280PS** has a GaAlAs diode in a PLCC-2 package that features a narrow irradiance pattern. The PLCC-2 packaging is suitable for single device or array applications.

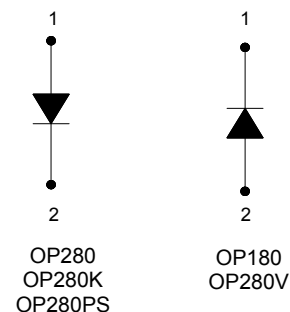
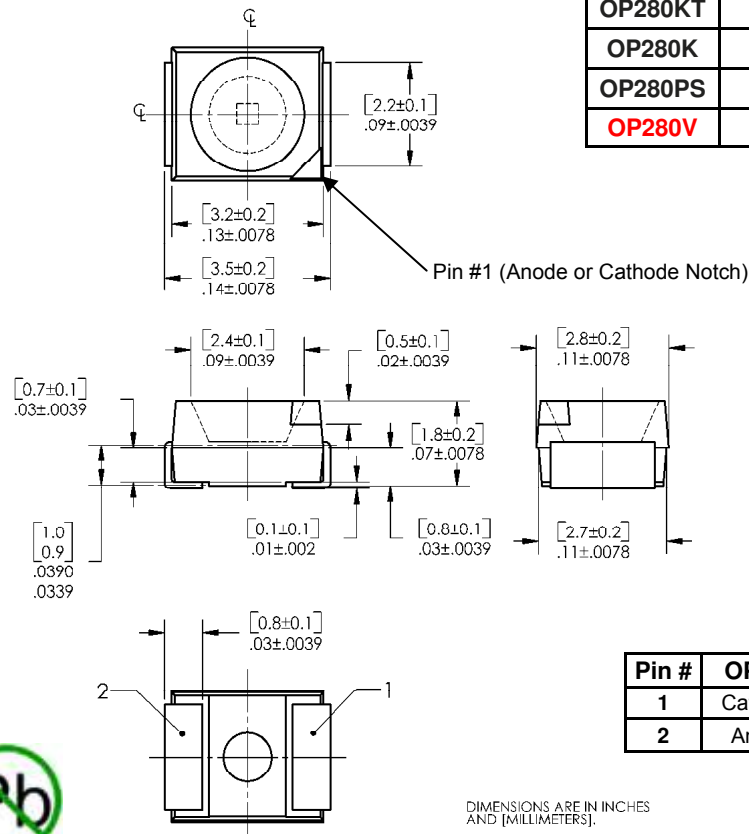
The 180 and 280 Series LEDs are mechanically and spectrally matched to OP580 series phototransistors.

Applications:

- Non-contact position sensing
- Machine automation
- Datum detection
- Optical encoding

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°
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	OP280KT	OP280K	OP280PS	OP280V
1	Cathode	Cathode	Anode	Anode	Cathode
2	Anode	Anode	Cathode	Cathode	Anode



RoHS

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

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

Storage Temperature Range	-40° C to +100° C
Operating Temperature Range—OP180, OP280K, OP280KT, OP280PS OP280V	-25° C to +85° C 0° C to +70° C
Reverse Voltage OP180, OP280PS, OP280V OP280K, OP280KT	5.0 V 4.0 V
Peak Forward Current [1 μ s pulse width, 300 pps]	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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
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Input Diode

E_E (APT)	Radiant Incidence OP180 OP280 OP280K OP280PS OP280V	1.5 0.5 20.0 2.8 1.05	- - 24.0 3.5 -	- - - - -	mW/cm ²	$I_F = 20\text{ mA}$ $I_F = 20\text{ mA}^{(3)}$ $I_F = 20\text{ mA}$ $I_F = 20\text{ mA}$ $I_F = 7\text{ mA}$
V_F	Forward Voltage OP180 OP280K OP280KT OP280V OP280PS	- - - - -	1.28 1.50 1.55 1.95 1.50	1.60 1.80 1.80 2.50 1.80	V	$I_F = 20\text{ mA}$ $I_F = 20\text{ mA}$ $I_F = 50\text{ mA}$ $I_F = 7\text{ mA}$ $I_F = 20\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 5.0\text{ V}$
λ_P	Wavelength at Peak Emission OP180 OP280KT OP280PS, OP280K OP280V	- - - -	940 875 850	- - -	nm	$I_F = 20\text{ mA}$ $I_F = 7\text{ mA}$
θ_{HP}	Emission Angle at Half Power Points OP180, OP280K, OP280KT OP280PS OP280V	- - -	100 90 18	- - -	Degree	$I_F = 20\text{ mA}$ $I_F = 20\text{ mA}$ $I_F = 7\text{ mA}$
t_r	Output Rise Time OP180, OP280K, OP280KT, OP280PS	-	25	-	ns	$I_{F(PK)}=50\text{ mA}$, $PW=10\text{ }\mu\text{s}$, and D.C.=10.0%
t_f	Output Fall Time OP180, OP280K, OP280KT, OP280PS	-	25	-	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.

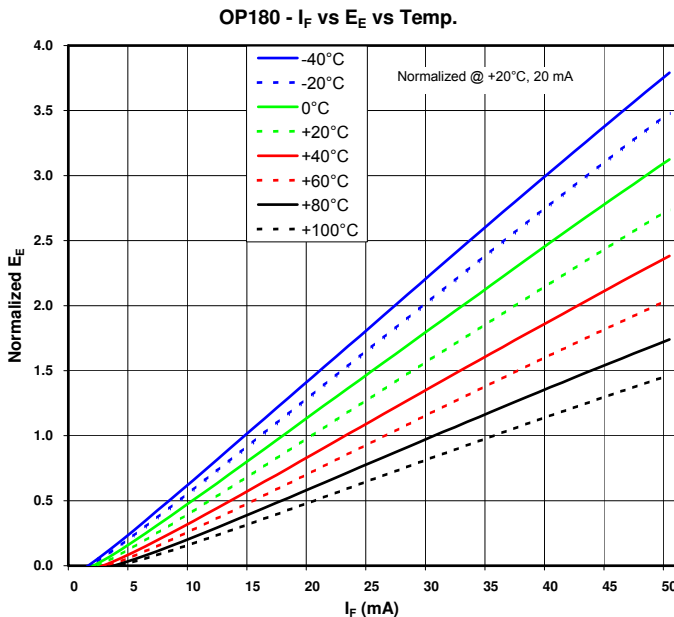
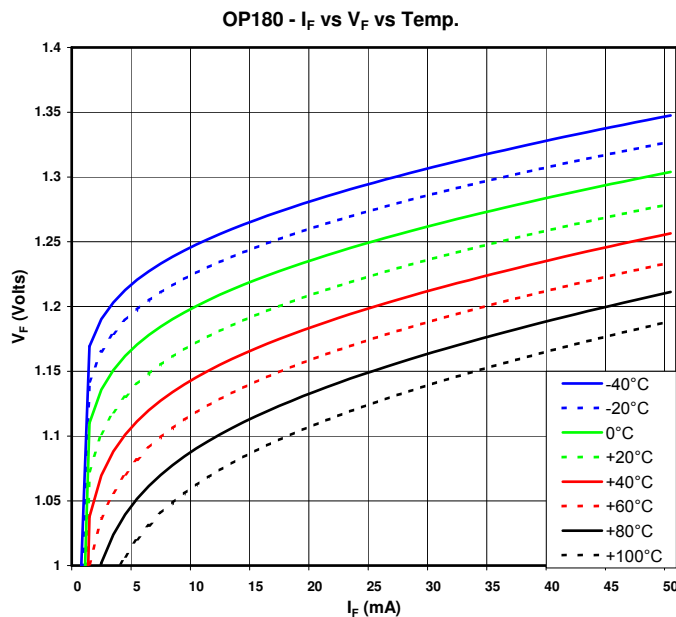
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Infrared Light Emitting Diode

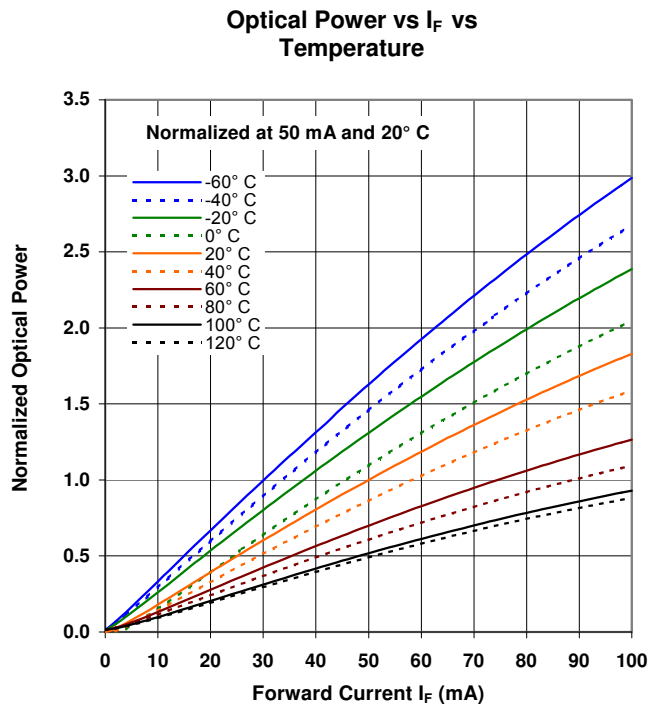
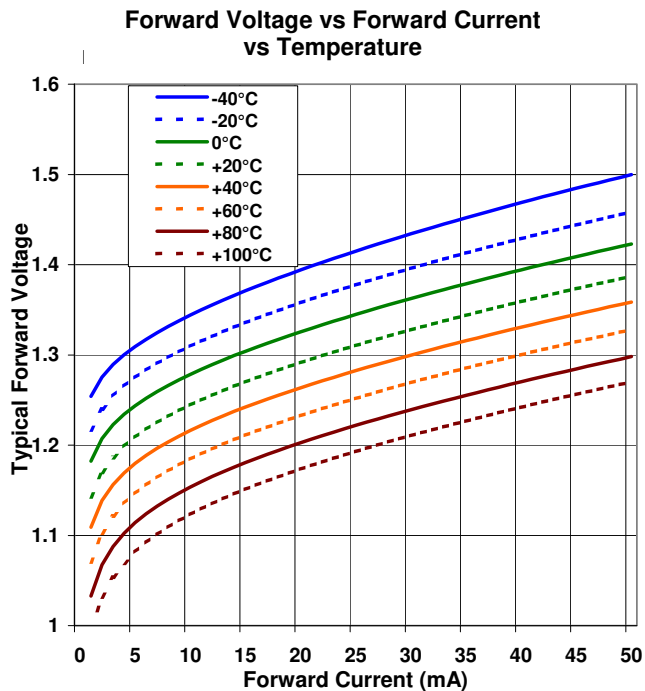
OP180 & OP280 Series



OP180



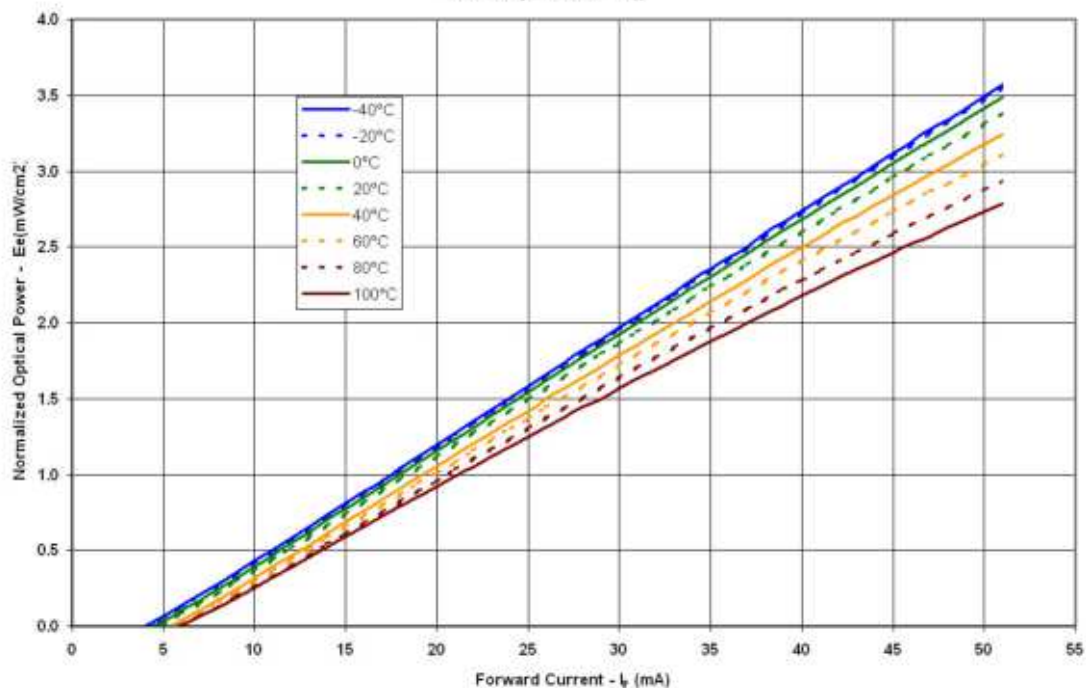
OP280



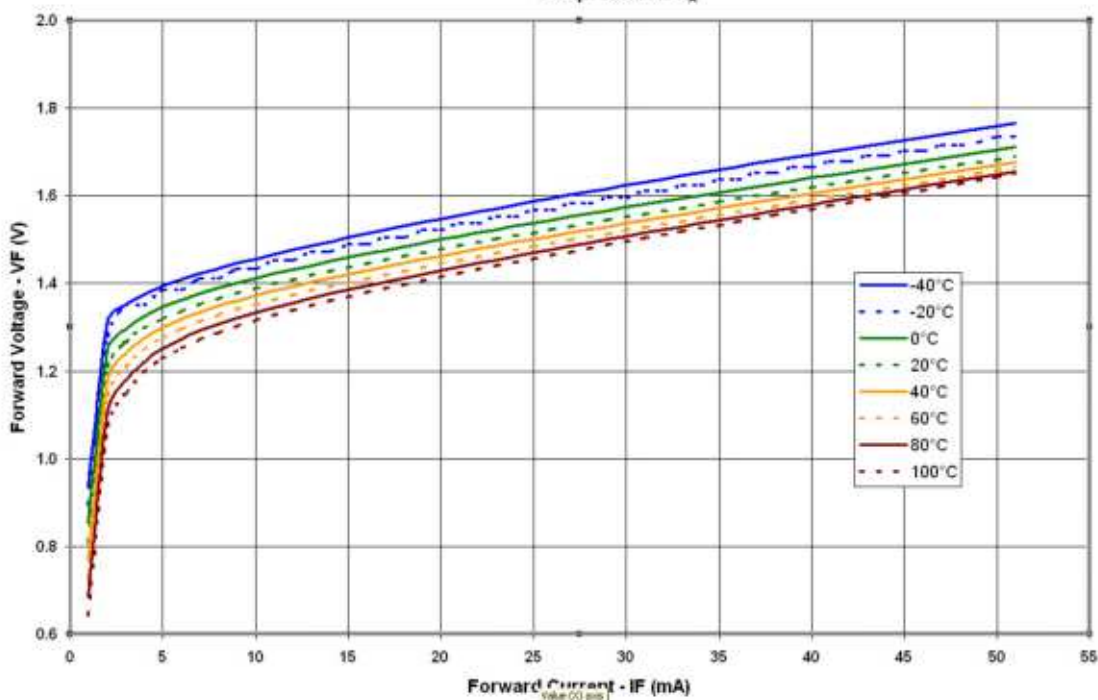
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OP280K

Optical Power - $E_e(\text{mW}/\text{cm}^2)$ vs Forward Current - I_F
vs Temperature - T_A

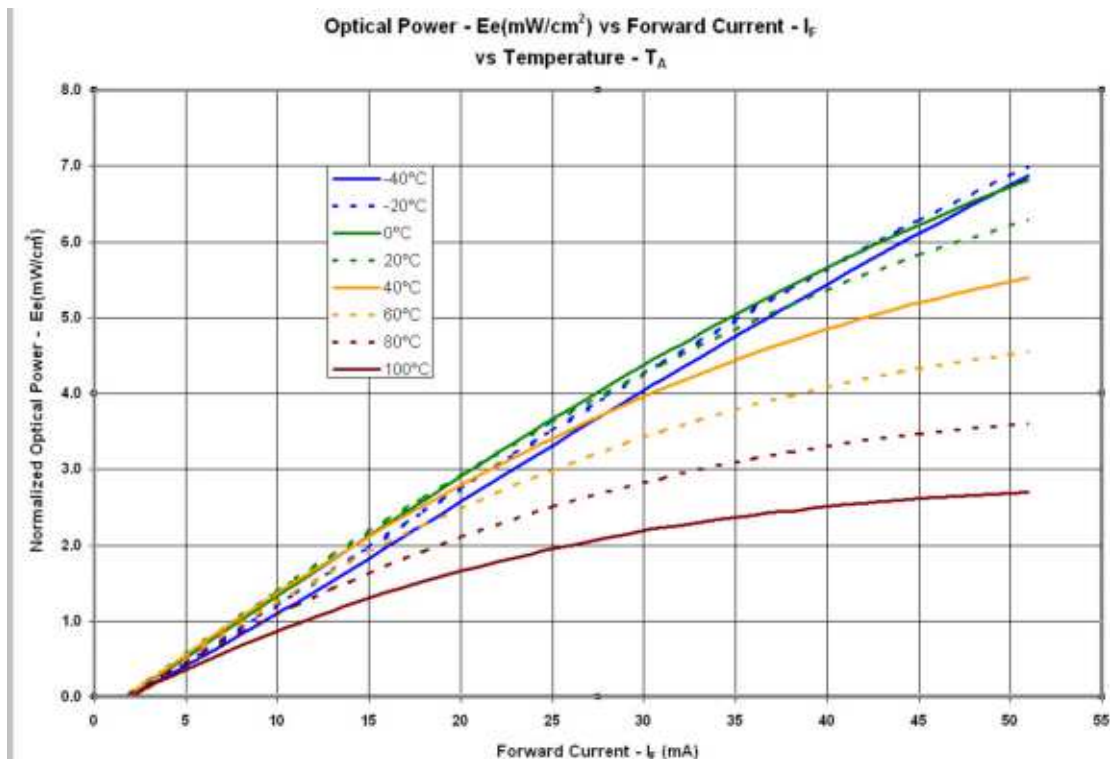
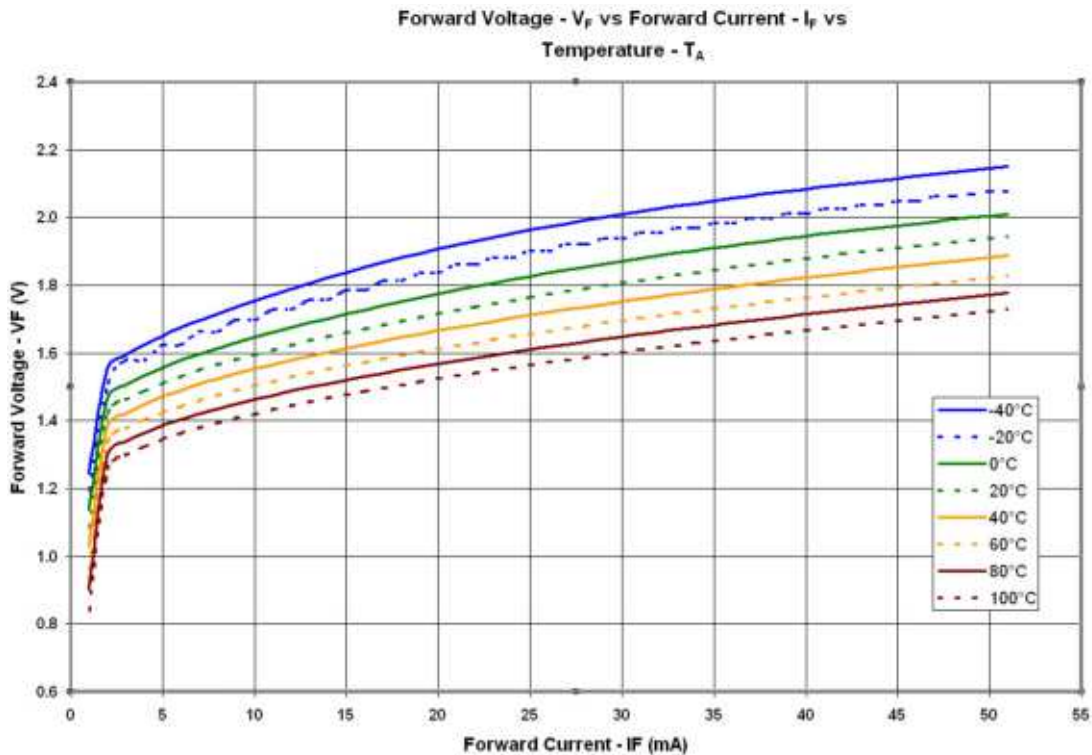


Forward Voltage - V_F vs Forward Current - I_F vs
Temperature - T_A



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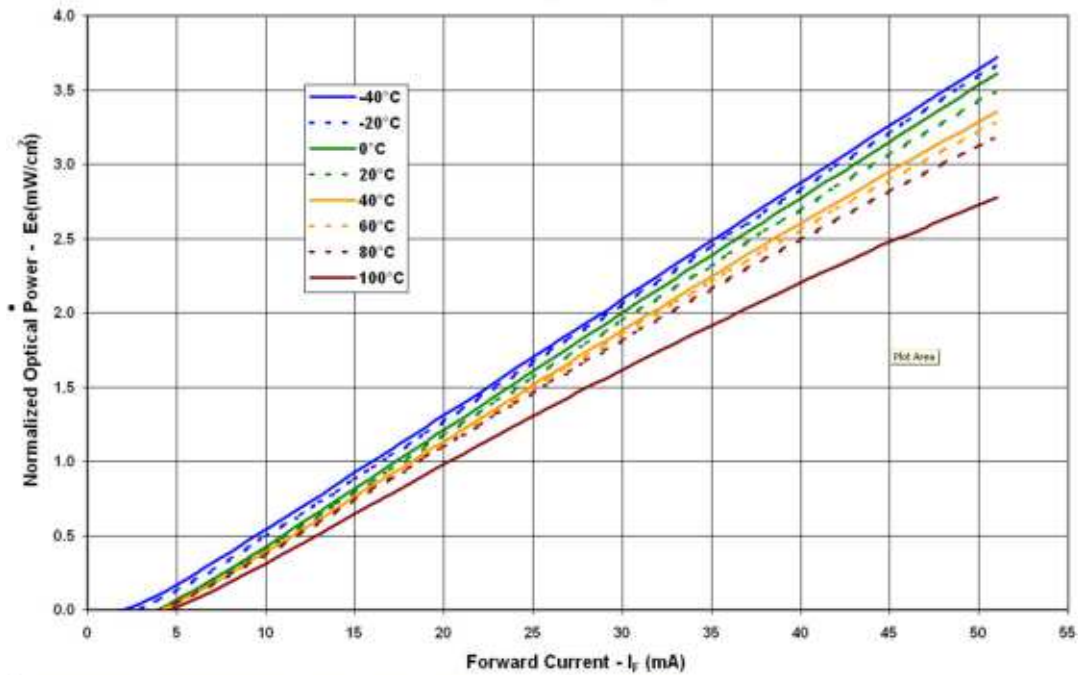
OP280KT



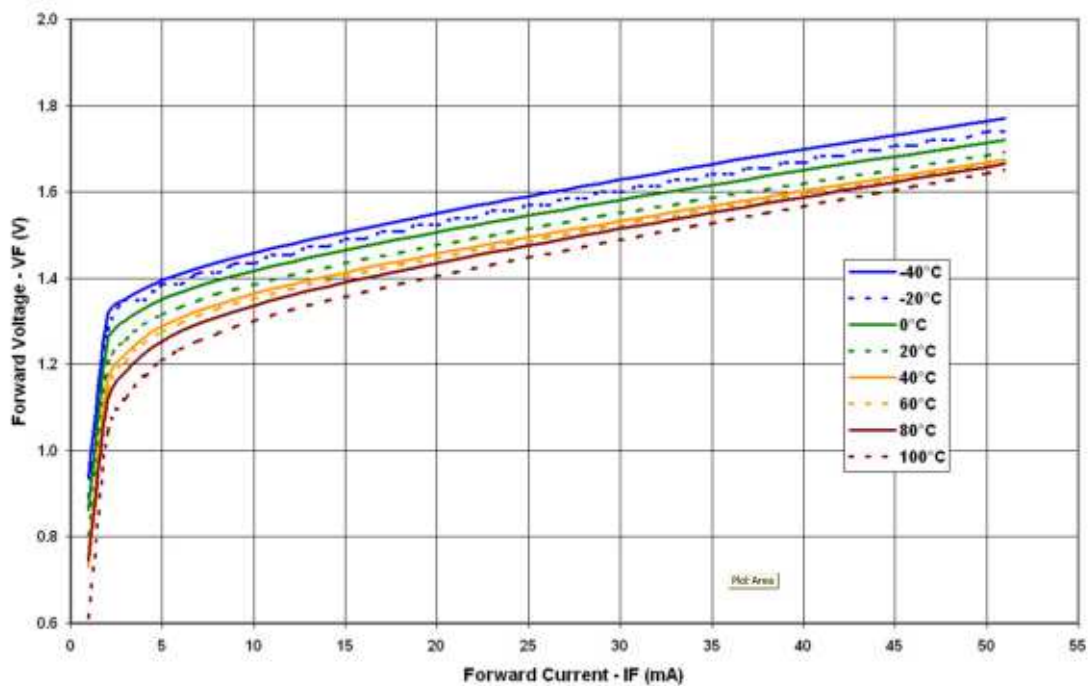
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OP280PS

Optical Power - $E_e(\text{mW}/\text{cm}^2)$ vs Forward Current - I_F
vs Temperature - T_A

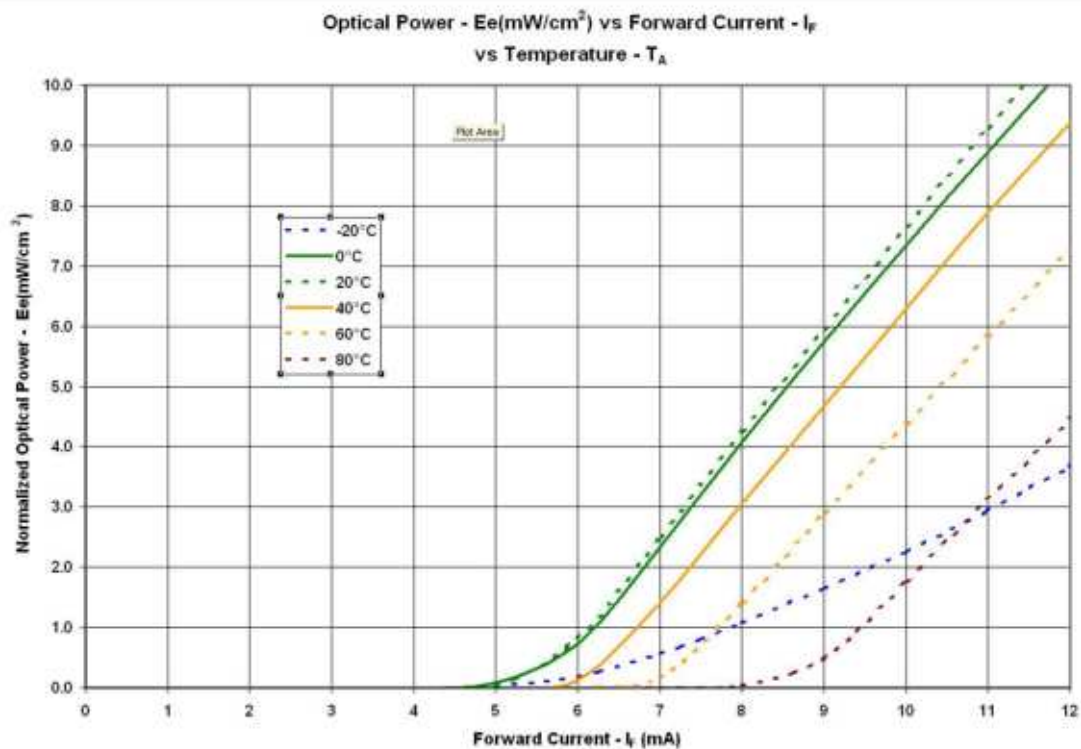
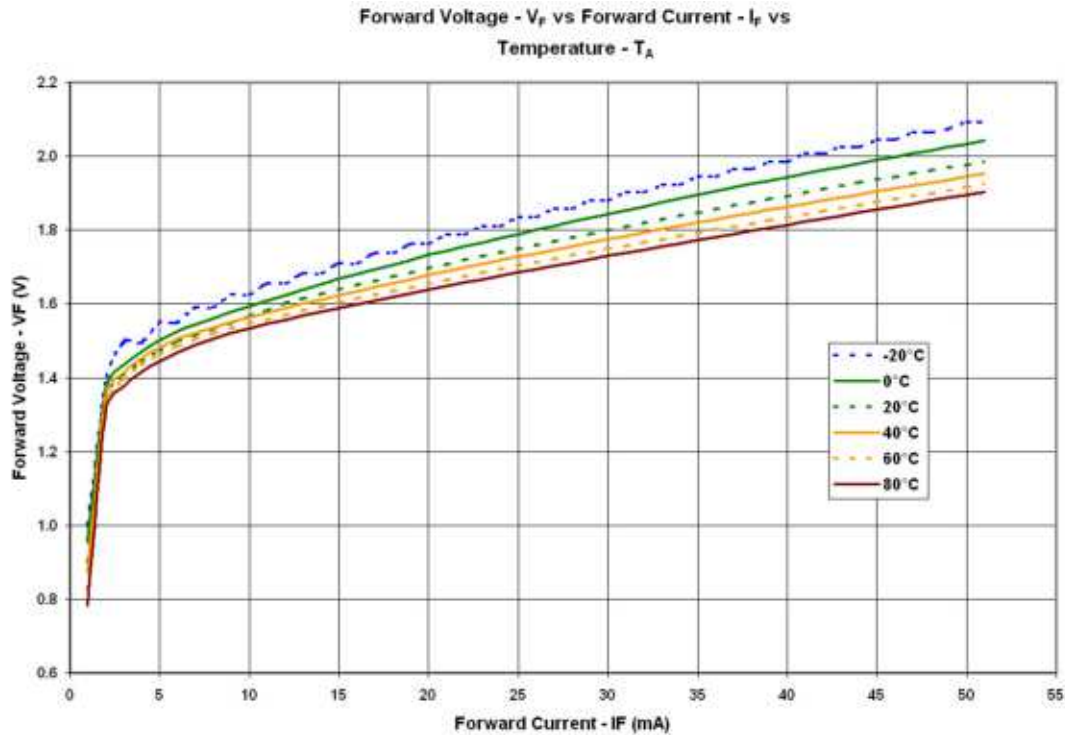


Forward Voltage - V_F vs Forward Current - I_F vs
Temperature - T_A



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OP280V



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Infrared Light Emitting Diode OP180 & OP280 Series

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