

# Plastic Infrared Emitting Diode

## OP266AA SERIES



### Features:

- T-1 (3 mm) package style
- Narrow irradiance pattern
- Dome lens
- Higher power output than GaAs at equivalent drive currents
- 850 nm diode

### Description:

Each device in the **OP266AA** series is a high intensity gallium aluminum arsenide infrared emitting diode (GaAlAs) that is molded in an IR transmissive clear or amber-tinted epoxy package with a dome lens. Devices feature a narrow source irradiance pattern and a variety of electrical characteristics. The small T-1 package style makes these devices ideal for space-limited applications.

These devices are mechanically and spectrally matched to other OPTEK products as follows:

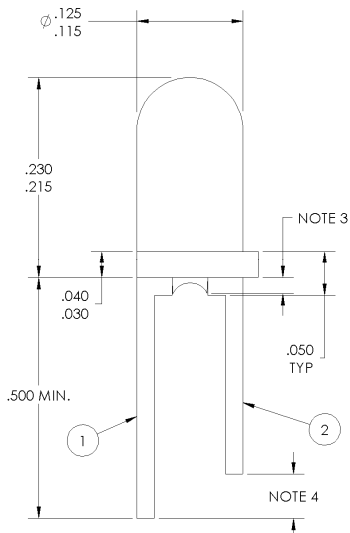
*The OP266AA family conform to the OP506 and OP535 series devices.*

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

### Applications:

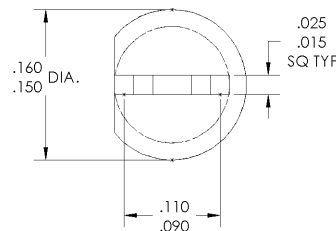
- Space-limited applications
- Applications requiring coupling efficiency
- Battery-operated or voltage-limited

Ordering Information					
Part Number	LED Peak Wavelength	Output Power (mW/cm <sup>2</sup> ) Min / Max	I <sub>F</sub> (mA) Typ / Max	Total Beam Angle	Lead Length
OP266AA	850 nm	5.5 / NA	20 / 50	18°	MIN 0.100"
OP266AB		7.5 / 12.5			
OP266AC		11.5 / 16.5			
OP266AD		15.5 / NA			



### NOTES:

1. Outside discrete shell is polysulfone CLEAR.
2. This LED is built with a GaAlAs chip.
3. Max allowable epoxy miniscus is 0.030".
4. For identification purposes, Cathode lead is .065" ± .035" longer than the anode lead.
5. Dimensions are in inches



Pin #	LED
1	Cathode
2	Anode

### CONTAINS POLYSULFONE

To avoid stress cracking, we suggest using ND Industries' **Vibra-Tite** for thread-locking. **Vibra-Tite** evaporates fast without causing structural failure in OPTEK'S molded plastics.



General Note  
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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1645 Wallace Drive, Carrollton, TX 75006 | Ph: +1 972 323 2200  
www.optekinc.com | www.ttelectronics.com

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## Electrical Specifications

Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)	
Storage and Operating Temperature Range	$-40^\circ\text{C}$ to $+100^\circ\text{C}$
Reverse Voltage	2.0 V
Continuous Forward Current	50 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps)	3.0 A
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron]	$260^\circ\text{C}^{(1)}$
Power Dissipation	$100\text{ mW}^{(2)}$

Notes:

1. RMA flux is recommended. Duration can be extended to 10 second maximum when flow soldering. A maximum of 20 grams force may be applied to the leads when soldering.
2. Derate linearly at  $1.33\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
3.  $E_{E(\text{APT})}$  is a measurement of the average 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.  $E_{E(\text{APT})}$  is not necessarily uniform within the measured area.

Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>						
$E_{E(\text{APT})}$	Apertured Radiant Incidence					$I_F = 20\text{ mA}$ Aperture = $0.081''$ diameter Distance = $0.590''$ from seating surface to aperture surface
	OP266AA	5.50	-	-	mW/cm <sup>2</sup>	
	OP266AB	7.50	-	12.5		
	OP266AC	11.50	-	16.5		
OP266AD	15.50	-	-			
$V_F$	Forward Voltage	-	-	1.80	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	10	-	$\mu\text{A}$	$V_R = 10\text{ V}$
$\lambda_P$	Wavelength at Peak Emission	-	850	-	nm	$I_F = 10\text{ mA}$
$\Delta\lambda_P/\Delta T$	Spectral Shift with Temperature	-	$\pm 0.18$	-	nm/ $^\circ\text{C}$	$I_F = \text{Constant}$
$\theta_{HP}$	Emission Angle at Half Power Points	-	18	-	Degree	$I_F = 20\text{ mA}$
$t_r$	Output Rise Time	-	10	-	ns	$I_{F(\text{PK})} = 100\text{ mA}$ , PW=10 $\mu\text{s}$ , D.C.=10.0%
$t_f$	Output Fall Time	-	10	-	ns	

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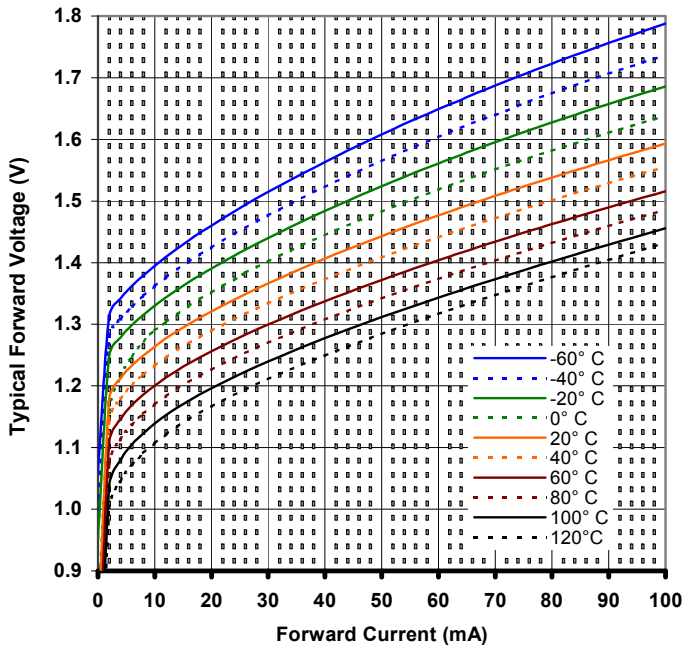
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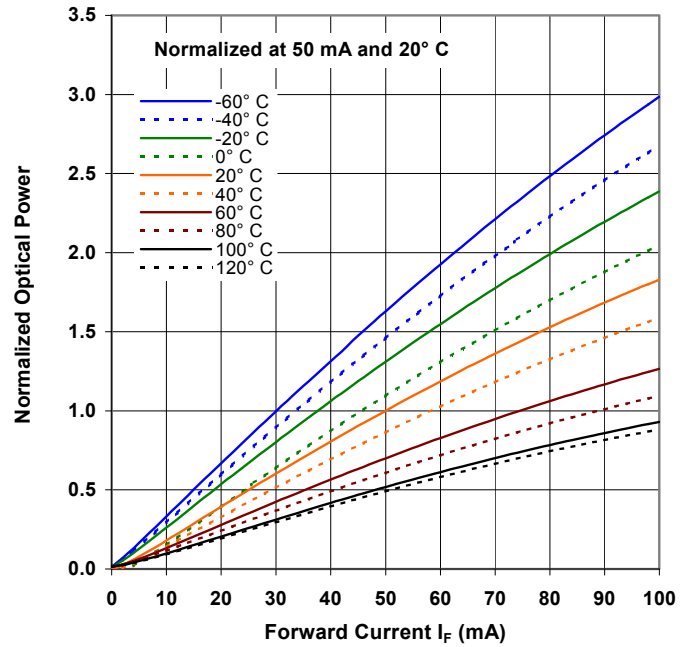
### Performance

OP266AA, AB, AC, AD

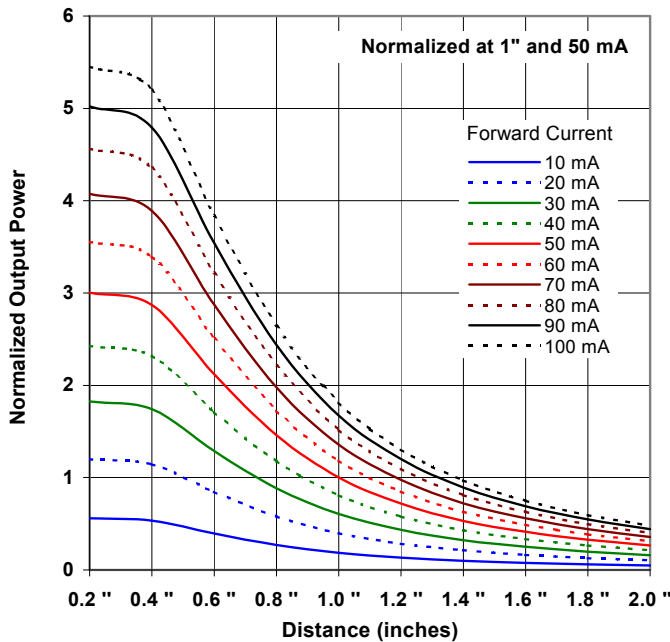
Forward Voltage vs Forward Current vs Temperature



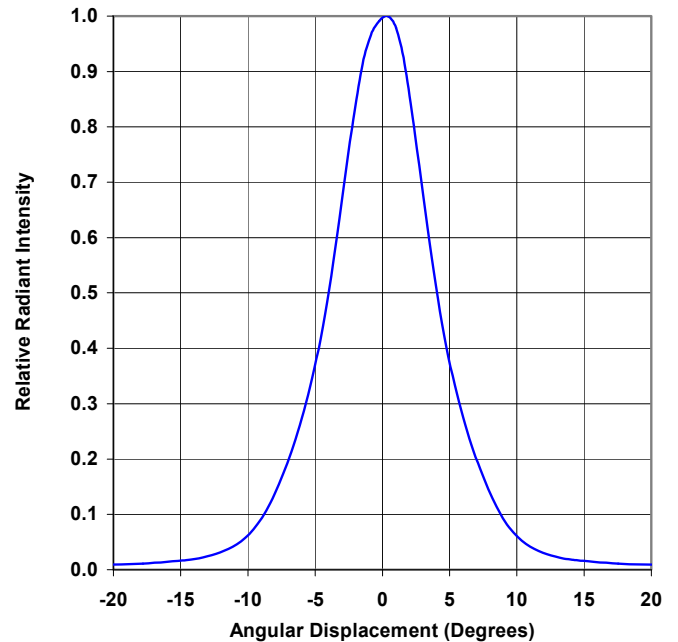
Optical Power vs  $I_F$  vs Temperature



Distance vs Output Power vs Forward Current



Relative Radiant Intensity vs. Angular Displacement



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