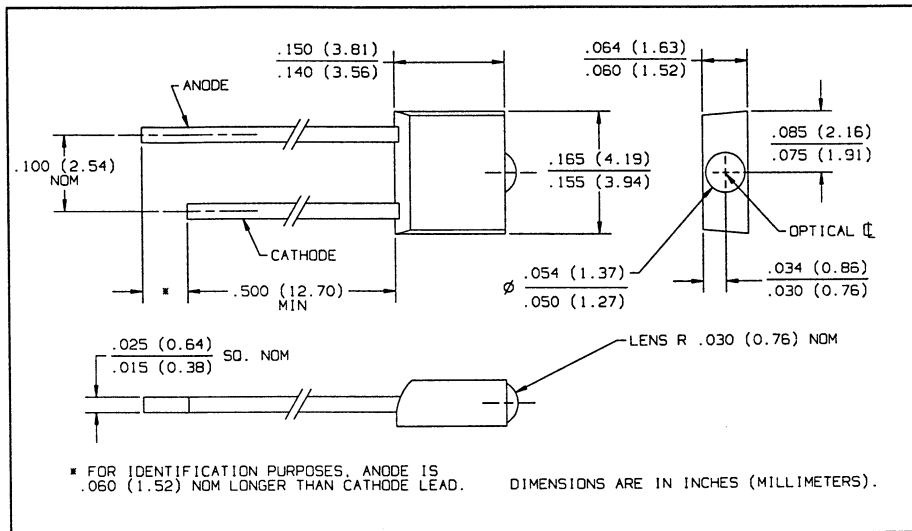
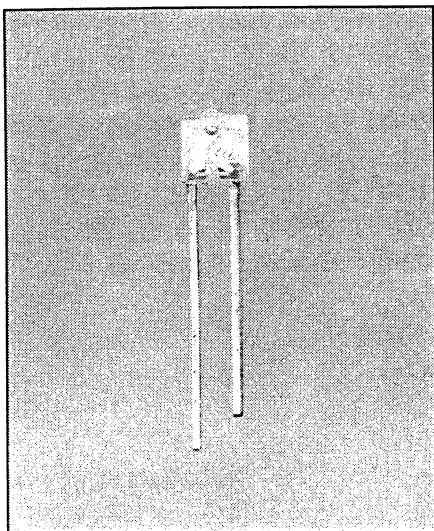


GaAs Plastic Infrared Emitting Diodes Types OP169A, OP169B, OP169C



Features

- Integral lens for narrow beam angle
- Easily stackable on 0.100 inch (2.54 mm) hole centers
- Mechanically and spectrally matched to the OP509 phototransistor series

Description

The OP169 series are gallium arsenide infrared emitting diodes molded in "end looking" miniature clear packages. The molded lens insures improved uniformity of lens magnification from unit to unit. The OP169 series provides a broad range of on-line and radiant intensities and has considerable design flexibility due to its small size. These devices are mechanically and spectrally matched to the OP509 series phototransistors.

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

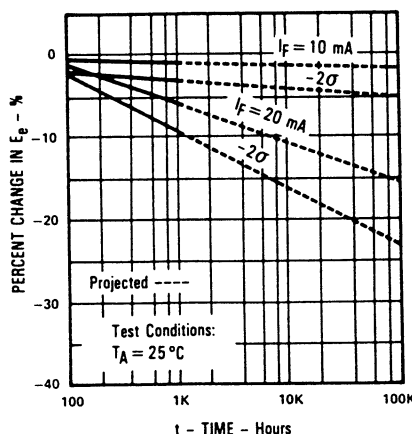
Continuous Forward Current	50 mA
Peak Forward Current (Pulse Width = 1 μsec , 300pps)	3.0 A
Reverse Voltage	2.0 V
Storage and Operating Temperature Range	-40°C to $+100^\circ\text{C}$
Lead Soldering Temperature [1/16 inch (1.6mm) from case for 5 sec. with soldering iron]	$260^\circ\text{C}^{(1)}$
Power Dissipation	100 mW ⁽²⁾

Notes:

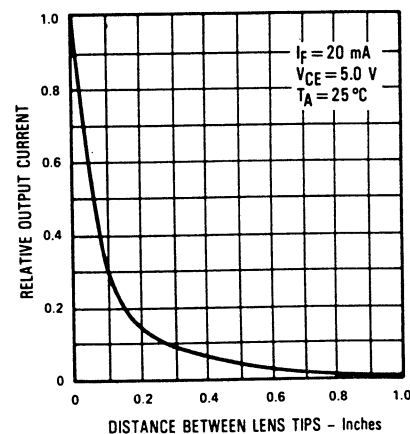
- (1) RMA flux is recommended. Duration can be extended to 10 seconds max. when flow soldering. Maximum 20 grams force may be applied to the leads when soldering.
- (2) Derate linearly 1.33 mW/ $^\circ\text{C}$ above 25°C .
- (3) $E_{e(\text{APT})}$ is a measurement of the average apertured radiant incidence 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. $E_{e(\text{APT})}$ is a measurement of the average radiant intensity within the cone formed by the above conditions. $E_{e(\text{APT})}$ is not necessarily uniform within the measured area.

Typical Performance Curves

Percent Changes in Radiant Intensity vs Time



Coupling Characteristics of OP169 and OP509



Types OP169A, OP169B, OP169C

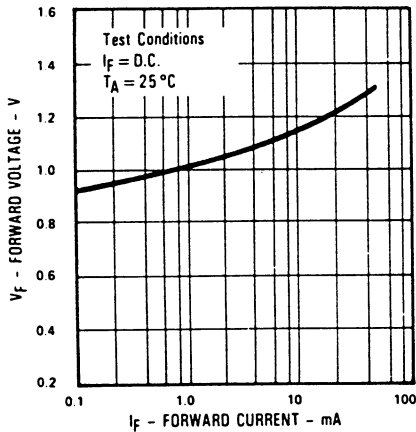
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$E_e(\text{APT})$	Apertured Radiant Incidence	OP169C 0.027 OP169B 0.108 OP169A 0.180		0.220	mW/cm^2	$I_F = 20\text{ mA}^{(3)}$
V_F	Forward Voltage			1.60	V	$I_F = 20\text{ mA}$
I_R	Reverse Current			100	μA	$V_R = 2.0\text{ V}$
λ_p	Wavelength at Peak Emission		935		nm	$I_F = 20\text{ mA}$
B	Bandwidth Between Half Power Points		50		nm	$I_F = 10\text{ mA}$
$\Delta\lambda_p/\Delta T$	Spectral Shift with Temperature		+0.30		$\text{nm}/^\circ\text{C}$	$I_F = \text{Constant}$
θ_{HP}	Emission Angle at Half Power Points		46		Deg.	$I_F = 20\text{ mA}$
t_r	Output Rise Time		1000		ns	$I_{F(\text{PK})} = 100\text{ mA}$, PW = $10\ \mu\text{s}$, D.C. = 10.0%
t_f	Output Fall Time		500		ns	

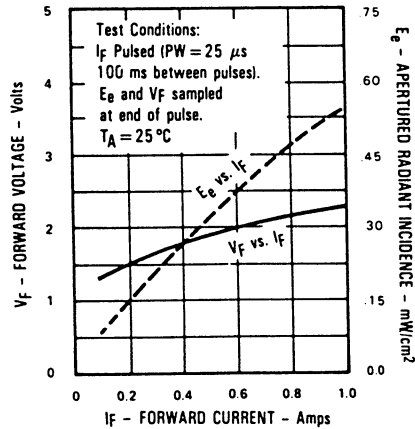
INFRARED
EMITTING
DIODES

Typical Performance Curves

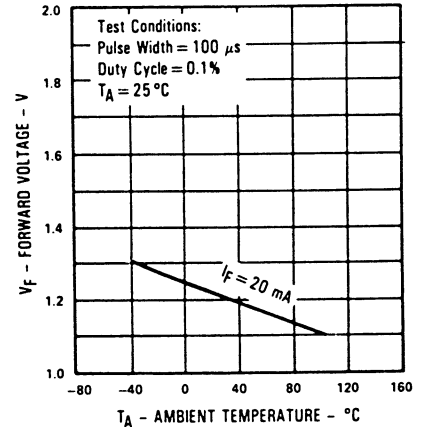
Forward Voltage vs Forward Current



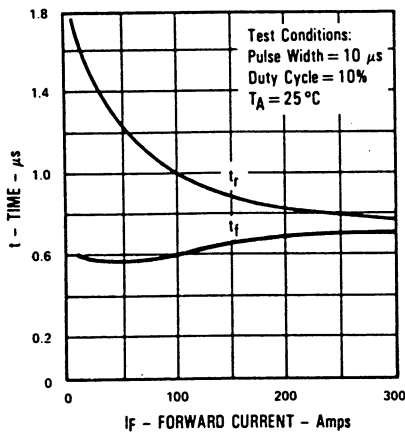
Forward Voltage and Radiant Incidence vs Forward Current



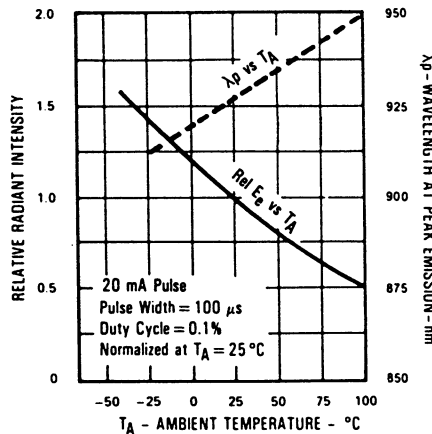
Forward Voltage vs Ambient Temperature



Rise Time and Fall Time vs Forward Current



Relative Radiant Intensity and Wavelength at Peak Emission vs Ambient Temperature



Relative Radiant Intensity vs Angular Displacement

