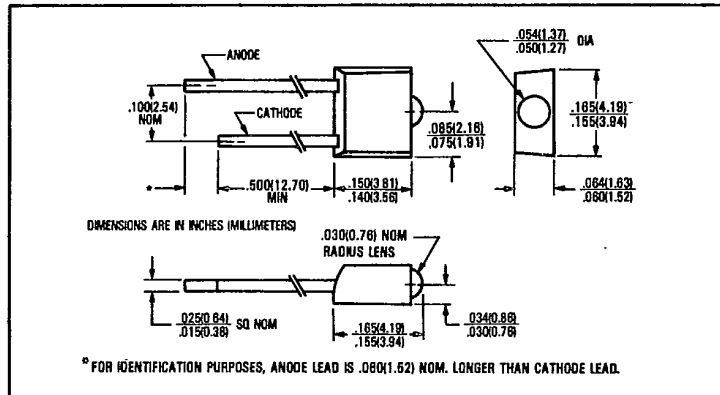
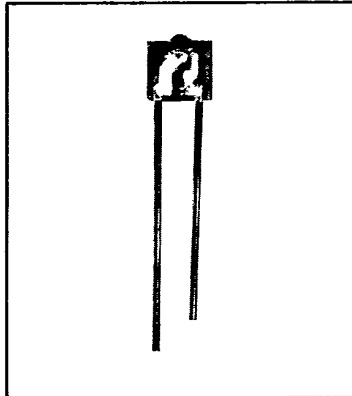


GaAs Plastic Infrared Emitting Diodes

Types OP169SL, OP169SLD, OP169SLC



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 OP169SL series are gallium arsenide infrared emitting diodes molded in "end-emitting" miniature clear packages. The molded lens insures improved uniformity of lens magnification from unit to unit. The OP169SL 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 of phototransistors. For additional information on spectral emission characteristics, please refer to the OP509 data sheet.

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

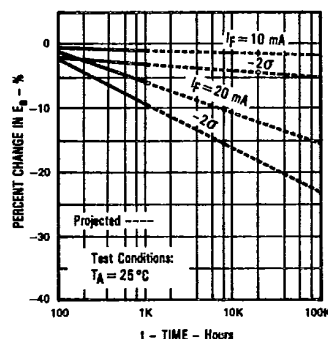
Continuous Forward Current	60 mA
Peak Forward Current (Pulse Width = 1 μsec , 300 pps)	3.0 A
Reverse Voltage	2.0 V
Storage and Operating Temperature Range	-40°C to $+100^\circ\text{C}$
Lead Soldering Temperature [1/16 inch (1.6 mm) from Case for 5 sec. with soldering iron] ⁽¹⁾	240 $^\circ\text{C}$
Power Dissipation	100 mW ⁽²⁾

Notes:

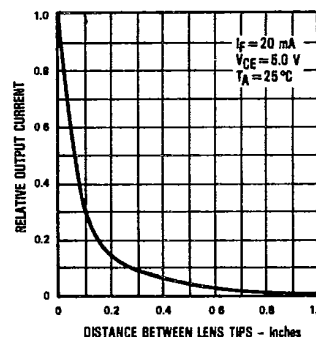
- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (2) Derate linearly 1.33 mW/ $^\circ\text{C}$ above 25°C .
- (3) $E_{\theta}(\text{APT})$ is a measurement of the average apertured radiant incidence upon a sensing area 0.180" (4.67 mm) in diameter perpendicular to and centered on the mechanical axis of the lens, and 0.653" (16.6 mm) from the lens tip. $E_{\theta}(\text{APT})$ is a measurement of the average radiant intensity within the cone formed by the above conditions. $E_{\theta}(\text{APT})$ is not necessarily uniform within the measured area.

Typical Performance Curves

Percent Changes in Radiant Intensity vs Time



Coupling Characteristics of OP169SL and OP509



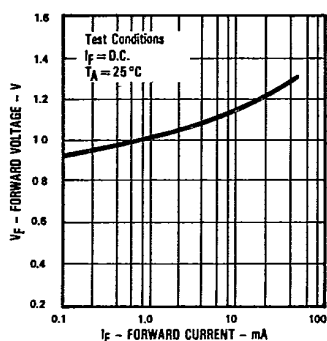
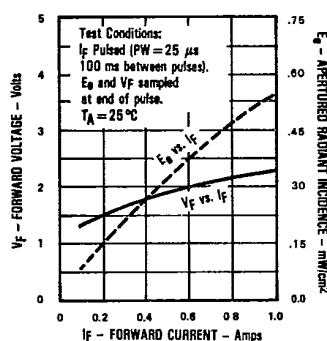
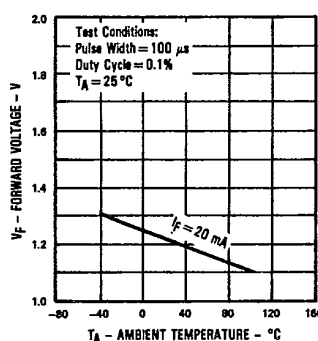
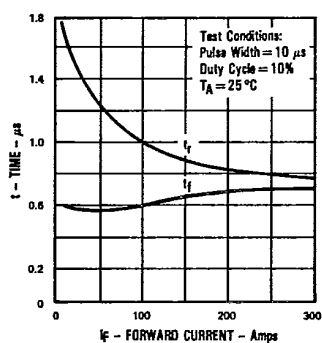
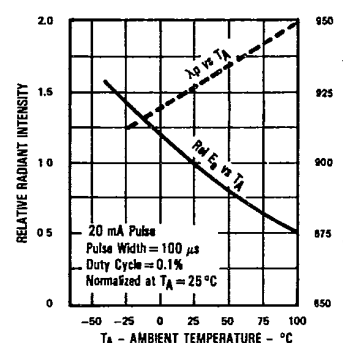
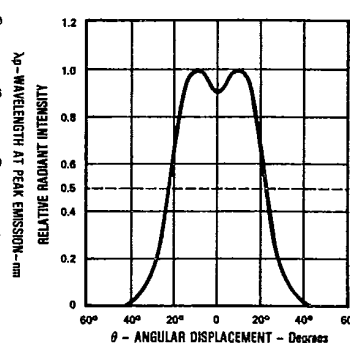
Types OP169SL, OP169SLD, OP169SLC

T-41-11

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

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
P_O	Radiant Power Output		0.20		mW	$I_F = 20\text{ mA}$
$E_e(\text{APT})^{(3)}$	Apertured Radiant Incidence				mW/cm^2	$I_F = 20\text{ mA}$
		0.020		0.24	mW/cm^2	$I_F = 20\text{ mA}$
		0.116			mW/cm^2	$I_F = 20\text{ mA}$
		0.195			mW/cm^2	$I_F = 20\text{ mA}$
V_F	Forward Voltage			1.80	V	$I_F = 20\text{ mA}$
I_R	Reverse Current			100	μA	$V_R = 2.0\text{ V}$
λ_p	Wavelength at Peak Emission		930		nm	$I_F = 20\text{ mA}$
$\Delta\lambda_p$	Spectral Bandwidth Between Half Power Points		50		nm	$I_F = 20\text{ mA}$
$\Delta\lambda_p/\Delta T$	Spectral Shift with Temperature		+0.30		nm/ $^\circ\text{C}$	$I_F = \text{Constant}$
θ_{HP}	Emission Angle at Half Power Points		48		Deg.	$I_F = 20\text{ mA}$
t_r	Output Rise Time		1550		ns	$I_F(\text{PK}) = 20\text{ mA}$, $PW = 10.0\text{ }\mu\text{s}$, D.C. = 10.0%
t_f	Output Fall Time		580		ns	

Typical Performance Curves

Forward Voltage vs
Forward CurrentForward Voltage and Radiant Incidence
vs Forward CurrentForward Voltage vs
Ambient TemperatureRise Time and Fall Time vs
Forward CurrentRelative Radiant Intensity and Wavelength
at Peak Emission vs Ambient TemperatureRelative Radiant Intensity vs
Angular Displacement

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

Optoelectronics Division, TRW Electronic Components Group, 1215 W. Crosby Rd., Carrollton, TX 75006 (214) 323-2200, TLX 6716032 or 215849
© TRW Inc. 1985, 1984. TRW is the name and mark of TRW Inc. Printed in U.S.A.