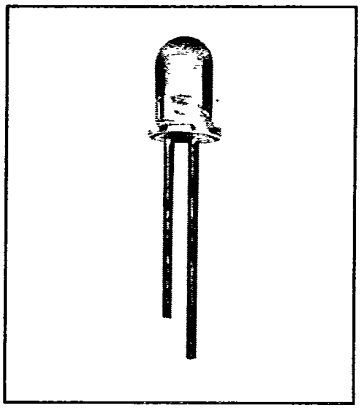
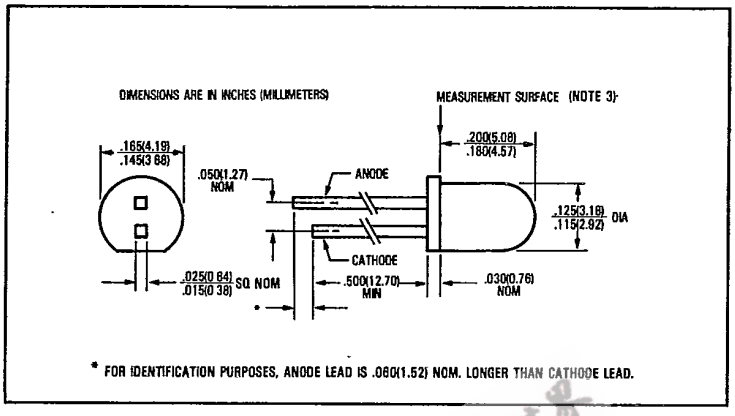
Optoelectronics Division
TRW Electronic Components Group

Product Bulletin 5042
January 1985

GaAs Plastic Infrared Emitting Diodes

Types OP160SL, OP160SLD, OP160SLC, OP160SLB, OP160SLA





Features

- Selected to specific on-line intensity ranges
- Low cost, miniature, plastic end-looking T-1 package
- Mechanically and spectrally matched to the OP500–OP500SL series phototransistors and the OP530 photodarlington

Description

The OP160SL series devices are gallium arsenide infrared emitting diodes mounted in clear plastic end-looking packages. The OP160SL series allows a broad range of intensity selection. The narrow radiation pattern provides high on-axis intensity for excellent coupling efficiency with an OP500 or OP500SL series T-1 phototransistor. For additional information on spectral emission characteristics, please refer to the OP500 data sheet.

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Reverse Voltage	2.0 V
Continuous Forward Current	50 mA
Peak Forward Current (Pulse Width = 1 μsec., 300 pps)	3.0 A
Storage and Operating Temperature Range	−40°C to +100°C
Lead Soldering Temperature (1/16 inch (1.6 mm) from case for 5 sec. with soldering iron)[1]	240°C
Power Dissipation	100 mW[2]

Notes:

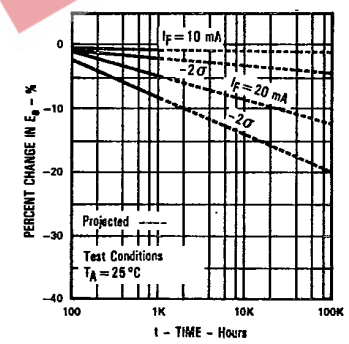
(1) RMA flux is recommended. Duration can be extended to 10 seconds max. when flow soldering.

(2) Derate linearly 1.33 mW/°C above 25°C.

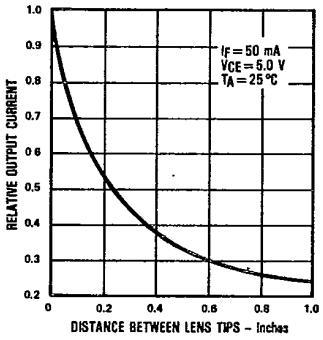
(3) $E_{e(APT)}$ is a measurement of the average apertured radiant incidence upon a sensing area 0.081" (2.06 mm) in diameter perpendicular to and centered on the mechanical axis of the lens, and 0.590" (14.99 mm) from the measurement surface. $E_{e(APT)}$ is not necessarily uniform within the measured area.

Typical Performance Curves

Percent Changes in Radiant Intensity vs Time



Coupling Characteristics of OP160SL and OP500



Types OP160SL, OP160SLD, OP160SLC, OP160SLB, OP160SLA

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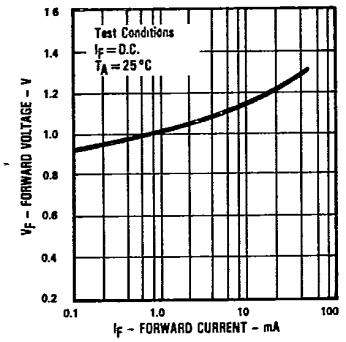
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter		Min.	Typ.	Max.	Units	Test Conditions
PO	Radiant Power Output	OP160	0.50			mW	I_F = 20 mA
E_e[APT][3]	Apertured Radiant Incidence	OP160SL	0.05			mW/cm²	I_F = 20 mA
		OP160SLD	0.28		0.95	mW/cm²	I_F = 20 mA
		OP160SLC	0.85		1.60	mW/cm²	I_F = 20 mA
		OP160SLB	1.40		2.2	mW/cm²	I_F = 20 mA
		OP160SLA	1.95			mW/cm²	I_F = 20 mA
VF	Forward Voltage				1.60	V	I_F = 20 mA
IR	Reverse Current				100	μA	V_R = 2.0 V

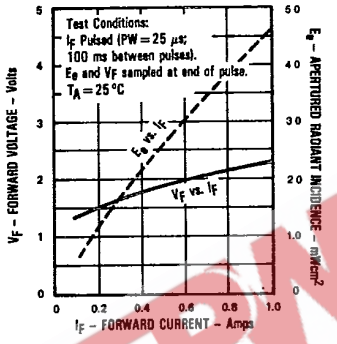
C

Typical Performance Curves

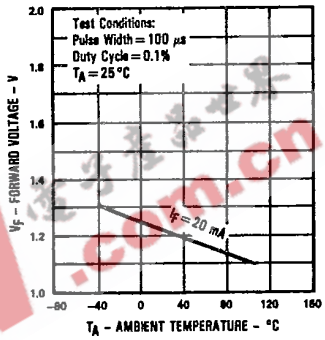
Forward Voltage vs Forward Current



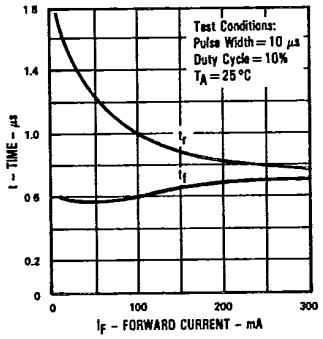
Forward Voltage and Radiant Incidence vs Forward Current



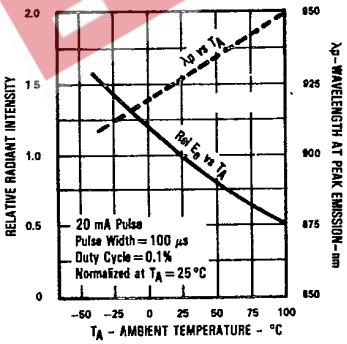
Forward Voltage vs Ambient Temperature



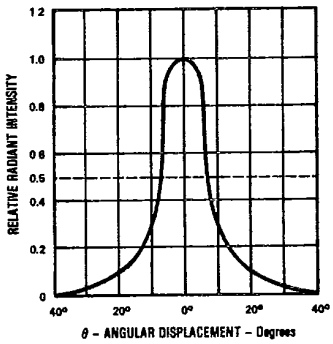
Rise Time and Fall Time vs Forward Current



Relative Radiant Intensity and Wavelength at Peak Emission vs Ambient Temperature



Relative Radiant Intensity vs Angular Displacement



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