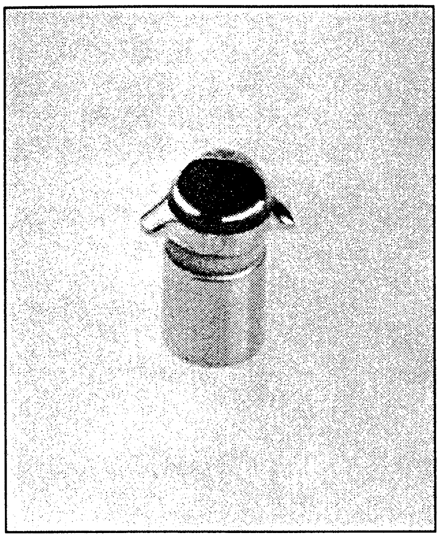
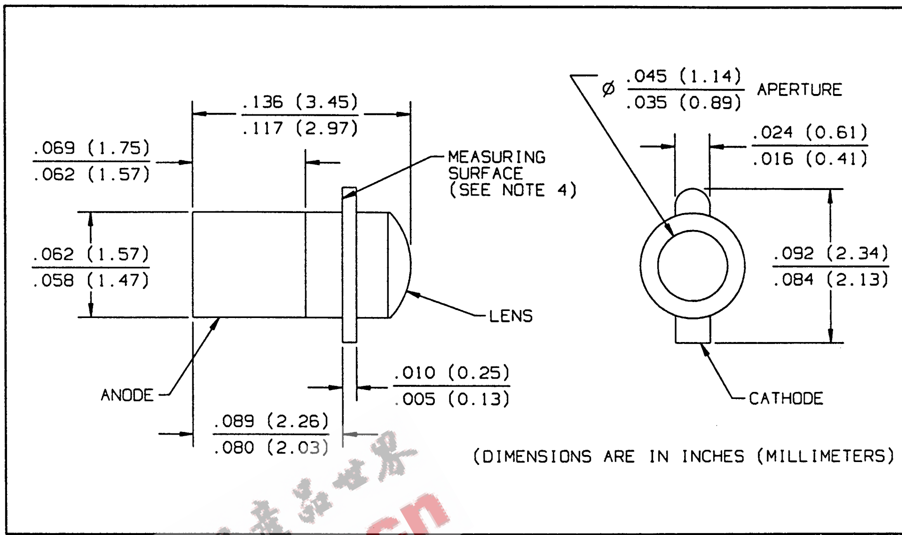
OPTEK

Product Bulletin OP223
June 1996

GaAlAs Hermetic Infrared Emitting Diodes
Types OP223, OP224





Features

- Narrow irradiance pattern
- Enhanced temperature range
- Small package size permits high device density mounting
- Mechanically and spectrally matched to the OP640SL and OP300SL series devices
- Significantly higher power output than GaAs at equivalent drive currents
- Wavelength matched to silicon's peak response

Description

The OP223 and OP224 devices are 890nm gallium aluminum arsenide infrared emitting diodes mounted in hermetically sealed "Pill" type packages. The narrow irradiance pattern provides high on-axis intensity for excellent coupling efficiency.

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

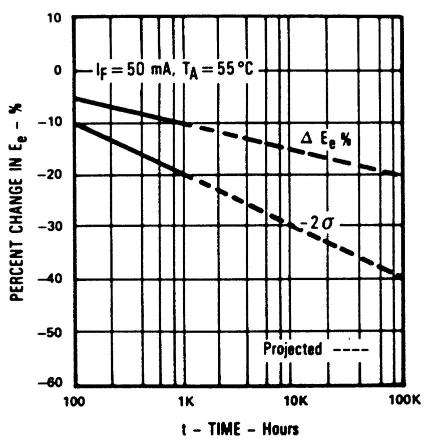
Reverse Voltage	2.0 V
Continuous Forward Current	100 m
Peak Forward Current (2 µs pulse width, 0.1% duty cycle)	1.0
Storage Temperature Range	-65° C to +150°
Operating Temperature Range	-65° C to +125°
Soldering Temperature (5 sec. with soldering iron)	260° C(1)(2
Power Dissipation	150 mW(3

Notes:

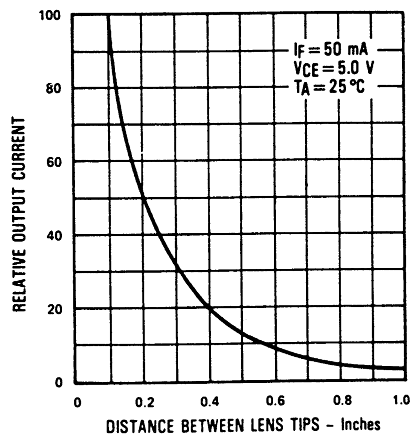
(1) Refer to Application Bulletin 202 which discusses proper techniques for soldering Pill type devices into PC boards.
(2) No clean or low solids, RMA flux is recommended. Duration can be extended to 10 sec. max when flow soldering.
(3) Derate linearly 1.50 mW/° C above 25° C.
(4) $E_{e(APT)}$ is measured using a 0.031" (0.787 mm) diameter apertured sensor placed 0.50" (12. mm) from the mounting plane. $E_{e(APT)}$ is not necessarily uniform within the measured area.

Typical Performance Curves

Percent Changes in Radiant Intensity vs Time



Coupling Characteristics of OP223 and OP600



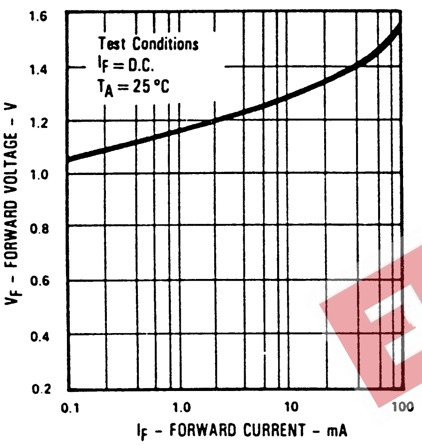
Types OP223, OP224

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

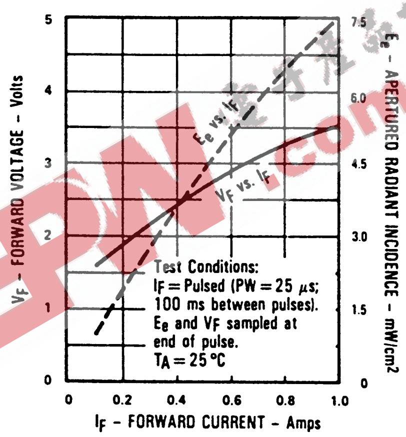
SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
$E_{e(APT)}$	Apertured Radiant Incidence	OP223 OP224	1.00 3.50			mW/cm^2 mW/cm^2	I_F = 50 mA(4) I_F = 50 mA(4)
V_F	Forward Voltage				1.80	V	I_F = 50 mA
I_R	Reverse Current				100	µA	V_R = 2.0 V
λp	Wavelength at Peak Eission			890		nm	I_F = 10 mA
B	Spectral Bandwidth Between Half Power Points			80		nm	I_F = 10 mA
$\Delta\lambda p/\Delta T$	Spectral Shift with Temperature			+0.18		nm/° C	I_F = Constant
θ_{HP}	Emission Angle at Half Power Points			24		Deg.	I_F = 50 mA
t_r	Output Rise Time			500		ns	$I_{F(PK)}$ = 100 mA, PW = 10 µs, D.C. = 10.0%
t_f	Output Fall Time			250		ns	

Typical Performance Curves

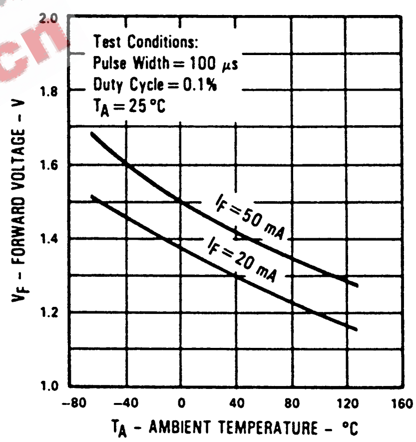
Forward Voltage vs Forward Current



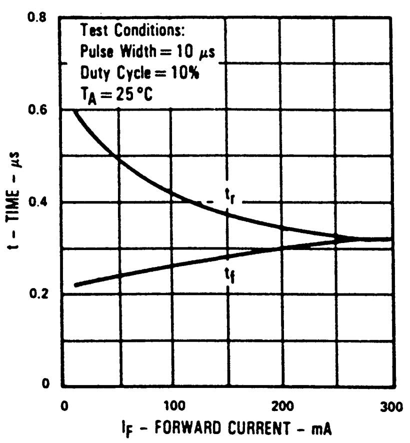
Forward Voltage and Radiant Incidence vs Forward Current



Forward Voltage vs Ambient Temperature



Rise Time and Fall Time vs Forward Current



Normalized Power Output vs Ambient Temperature