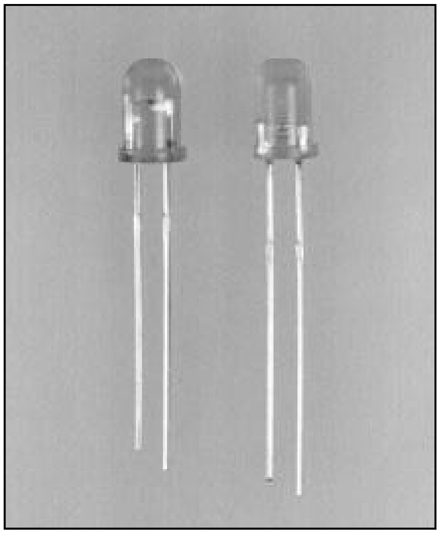
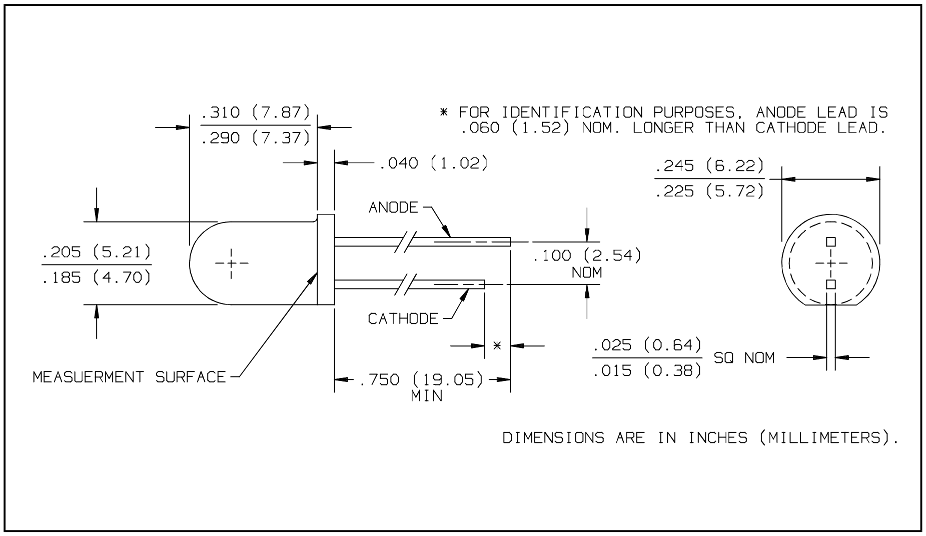
Product Bulletin OP294
June 1996

GaAlAs Plastic Infrared Emitting Diode
Types OP294, OP299





Features

- Characterized at 5mA for battery operated systems or other low drive current systems
- Wide irradiance pattern (OP294) or narrow irradiance pattern (OP299)
- Significantly higher power output than GaAs at equivalent drive currents
- Wavelength matched to silicon's peak response
- T-1 3/4 package

Description

The OP294 and OP299 are gallium arsenide infrared emitting diodes designed for low current or power limited applications (such as battery supplies). These LEDs are similar in design to the OP290 and OP295 but use a smaller chip which increases output efficiency at low current levels by increasing current density. Light output can be maximized with continuous (d.c.) forward current up to 100mA or with pulsed forward current operation up to 750 mA. The chip is mounted in an IR transmissive plastic package and has been designed and tested for use with OP593/598 phototransistors or similar photodetector.

Absolute Maximum Ratings ($T_A = 25^o$ C unless otherwise noted)

Reverse Voltage . . . . 5.0 V
Continuous Forward Current . . . . 100 mA
Peak Forward Current . . . . 750 mA
Storage and Operating Temperature Range . . . . -40^o C to +100^o C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] . . . . 260^o C(1)
Power Dissipation . . . . 180 mW(2)

Notes:

(1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. A max. of 20 grams force may be applied to the leads when soldering.
(2) Derate linearly 1.80 mW/^{o} C above 25^o C.
(3) $E_{e(APT)}$ is a measurement of the average apertured radiant energy incident upon a sensing area 0.250" (6.35 mm) in diameter, perpendicular to and centered on the mechanical axis of the lens, and 1.429" (36.3 mm) from the measurement surface. $E_{e(APT)}$ is not necessarily uniform within the measured area.
(4) $E_{e(APT)}$ is a measurement of the average apertured radiant energy incident upon a sensing area 0.250" (6.35 mm) in diameter, perpendicular to and centered on the mechanical axis of the lens, and .500" (12.7 mm) from the measurement surface. $E_{e(APT)}$ is not necessarily uniform within the measured area.
(5) Cathode lead is 0.070" nominal shorter than anode lead.

Types OP294, OP299

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

SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
$E_{e(APT)}$	Apertured Radiant Incidence	OP294 OP299	0.50 0.15		1.50 0.45	mW/cm^2 mW/cm^2	I_F = 5 mA[4] I_F = 5 mA[3]
V_F	Forward Voltage				1.50	V	I_F = 5 mA
I_R	Reverse Current				10	µA	V_R = 2 V
λp	Wavelength at Peak Emission			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	OP294 OP299		50 20		Deg. Deg.	I_F = 10 mA I_F = 10 mA
t_r	Output Rise Time			500		ns	$I_{F(PK)}$ = 100 mA, PW = 10 µs, D.C. = 10%
t_f	Output Fall Time			250		ns	