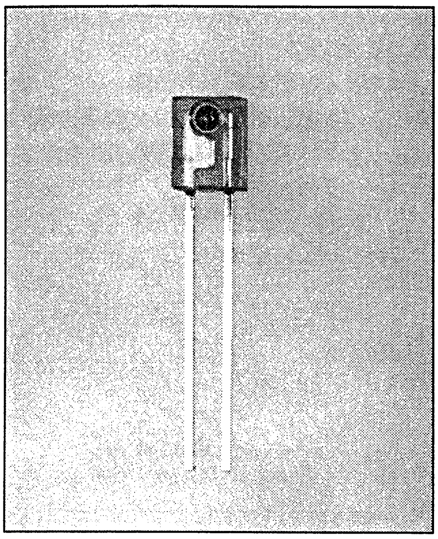
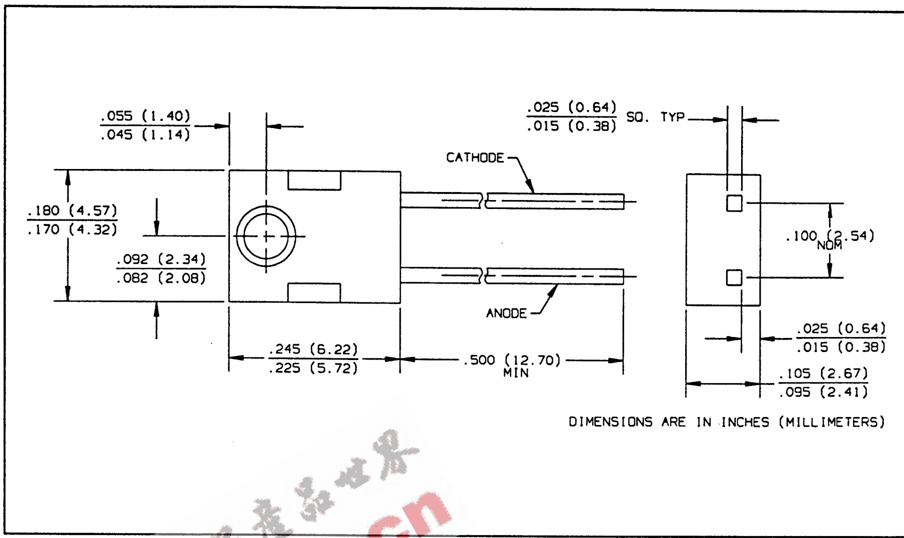
Product Bulletin OP245A
June 1996

OPTEK

GaAlAs Plastic Infrared Emitting Diodes
Types OP245A, OP245B, OP245C, OP245D





Features

- Mechanically and spectrally matched to the OP555 and OP565 series devices
- Wavelength matched to silicon's peak response
- Significantly higher power output than GaAs at equivalent drive currents
- Side-looking package for space limited applications

Description

The OP245 series devices are 890 nm high intensity gallium aluminum arsenide infrared emitting diodes molded in IR transmissive amber tinted epoxy packages. The side-looking packages are for use in PC board mounted slotted switches or as easily mounted interrupt detectors.

Replaces

K6650

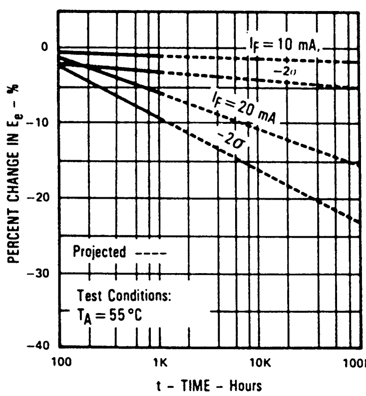
Absolute Maximum Ratings ($T_A = 25^{\circ}$ C unless otherwise noted)

Reverse Voltage . . . . 2.0 V
Continuous Forward Current . . . . 50 mA
Peak Forward Current (1 µs pulse width, 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] . . . . 260° C(1)
Power Dissipation . . . . 100 mW(2)

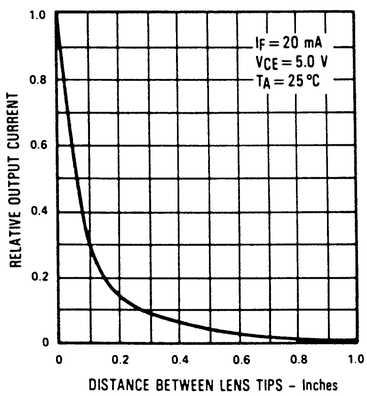
Notes:
(1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. A max. of 20 grams force may be applied to the leads when soldering.
(2) Derate linearly 1.33 mW/° C above 25° C.
(3) $E_{e(APT)}$ is a measurement of the average apertured radiant incidence upon a sensing 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. $E_{e(APT)}$ is not necessarily uniform within the measured area.

Typical Performance Curves

Percent Changes in Radiant Intensity vs Time



Coupling Characteristics of OP245 and OP555



Types OP245A, OP245B, OP245C, OP245D

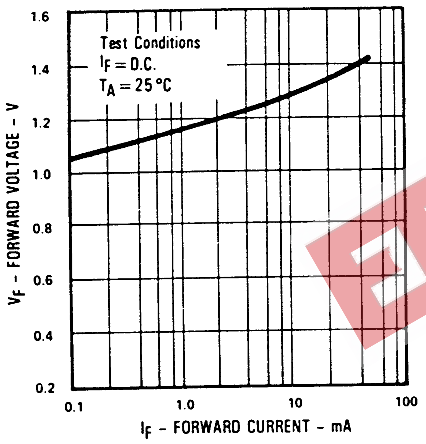
Electrical Characteristics ($T_A = 25^\circ$ C unless otherwise noted)

SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
$E_{e(APT)}$	Apertured Radiant Incidence	OP245D	0.05			mW/cm^2	$I_F = 20$ mA(3)
		OP245C	0.20		0.86	mW/cm^2	$I_F = 20$ mA(3)
		OP245B	0.40		1.20	mW/cm^2	$I_F = 20$ mA(3)
		OP245A	0.60			mW/cm^2	$I_F = 20$ mA(3)
V_F	Forward Voltage				1.80	V	$I_F = 20$ mA
I_R	Reverse Current				100	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			40		Deg.	$I_F = 20$ mA
t_r	Output Rise Time			500		ns	$I_{F(PK)} = 100$ mA,
t_f	Output Fall Time			250		ns	PW = 10 µs, D.C. = 10%

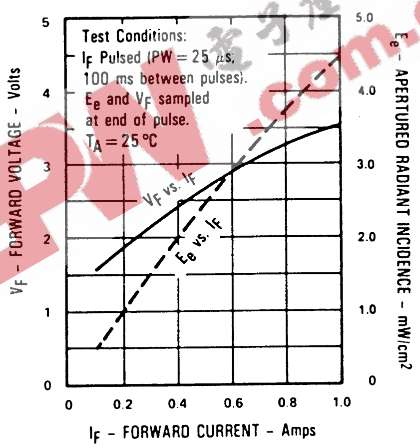
INFRARED EMITTING DIODES

Typical Performance Curves

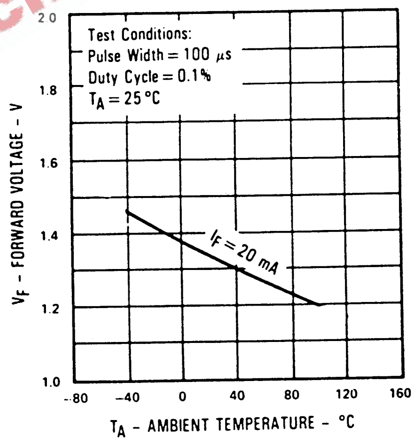
Forward Voltage vs Forward Current



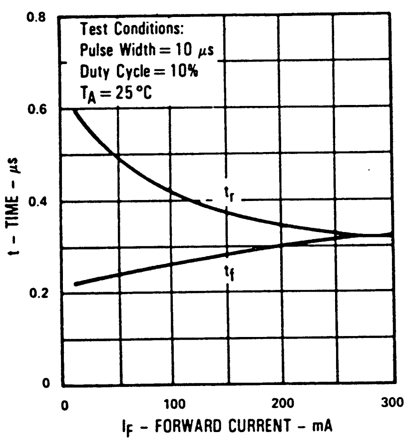
Forward Voltage and Radiant Incidence vs Forward Current



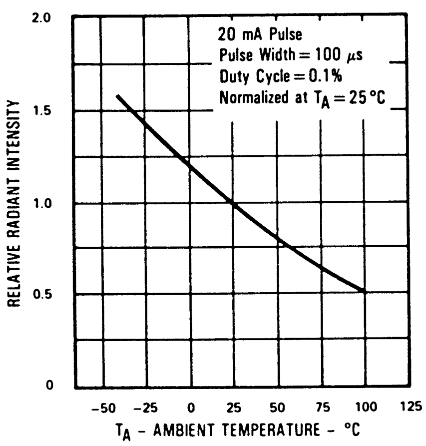
Forward Voltage vs Ambient Temperature



Rise Time and Fall Time vs Forward Current



Relative Radiant Intensity vs Ambient Temperature



Relative Radiant Intensity vs Angular Displacement