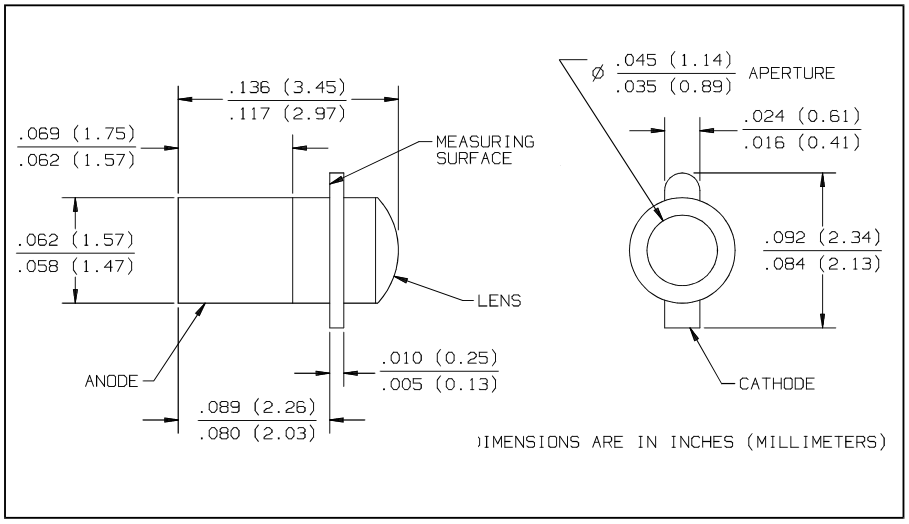
High Reliability GaAlAs Infrared Emitting Diode
Type OP224ESA-XN(3)



Features

- Processed to Optek's Military screening program patterned after ESA/SCC Generic Specification No. 5000
- Miniature hermetically sealed "pill" package
- Twice the power output of GaAs at the same drive current
- Mechanically and spectrally matched to the OP600 series phototransistor

Description

The OP224ESA is a high reliability gallium aluminum arsenide infrared emitting diode mounted in miniature "pill" type hermetically sealed package. This package style is intended for direct mounting into PC boards.

All devices are processed to Optek's 100 percent screening program patterned after ESA/SCC Generic Specification No. 5000. See page 13-4 for details.

Gallium aluminum arsenide features twice the radiated output of gallium arsenide at the same forward current. With a wavelength centered at 890 nanometers, it closely matches the spectral response of silicon phototransistors, such as Optek's OP600 high reliability series.

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

Storage Temperature Range	-65° C to +150° C
Operating Temperature Range	-55° C to +125° C
Soldering Temperature (for 5 sec. with soldering iron)	240° C(1)
Reverse Voltage	2.0 V
Continuous Foward Current	100 mA
Power Dissipation	100 mW(2)

Notes:
(1) No-clean or low solids, RMA flux is recommended. Duration can be extended to 10 seconds max. when flow soldering.
(2) Derate linearly 1.00 mW/° C above 25° C.
(3) X defines the Testing Level per ESA/SCC 5000 Generic Specification Chart III. X will be either "B" (full processing) or "C" (reduced processing).
N defines Lot Acceptance Tests per ESA/SCC Generic Specification 5000 Chart V. N will be either 1, 2, or 3. See Generic Processing Table for details.

Part Number Guide
OP224ESA-XN

- Optek High Reliability Part Number
- ESA/SCC Specification No. 5000
- "B" - Full Processing
  "C" - Reduced Processing
- Level "1" Environmental/Mechanical plus Level 2 & 3
  Level "2" Life Testing plus Level 3
  Level "3" Electrical Inspection

Type OP224ESA-XN

Electrical Characteristics (T_A = 25^o C unless otherwise noted)

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
I_R	Reverse Current (High Temperature)			100	μA	V_R = 2 V, T_A = 125^o C
I_R	Reverse Current (Low Temperature)			10	μA	V_R = 2 V, T_A = -55^o C
P_O	Radiant Power Output	1.50			mW	I_F = 50 mA
V_F	Forward Voltage	0.80		1.80	V	I_F = 50 mA
I_R	Reverse Current			100	μA	V_R = 2.0 V
λp	Wavelength at Peak Emission	850		910	nm	I_F = 50 mA
B	Spectral Bandwidth Between Half Power Points		80		nm	I_F = 50 mA
Δλp/ΔT	Spectral Shift with Temperature		0.18		nm/^{o}C	I_F = Constant
θ_{HP}	Emission Angle at Half Power Points		18		Deg.	I_F = 50 mA
V_F	Forward Voltage (High Temperature)	0.70		1.70	V	I_F = 50 mA, T_A = 100^o C
V_F	Forward Voltage (Low Temperature)	1.20		2.00	V	I_F = 50 mA, T_A = -55^o C
$E_{e(APT)}$	Apertured Radiant Incidence	3.50			mW/cm^2	I_F = 50 mA[6]
I_e	Radiant Intensity	5.64			mw/Sr	I_F = 50 mA[6][7]
t_r, t_f	Rise and Fall Time			800	ns	I_F = 50 mA, PW = 10 μS, dc = 10%

(4) Visual inspection based upon Optek's interpretation of pre-cap inspection as specified in MIL-S-19500/548 as applicable for LED's.
(5) $E_{e(APT)}$ is measured using a 0.031 inches (0.78 mm) diameter apertured sensor placed 0.50 inches (12.7 mm) from the mounting plane.
(6) I_e is calculated from the measured value of $E_{e(APT)}$ assuming the source to be located at the mounting plane. The conversion for this aperture and distance is I_e(mW/Sr) = $E_{e(APT)}$(mW/cm^2) x 1.61.

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