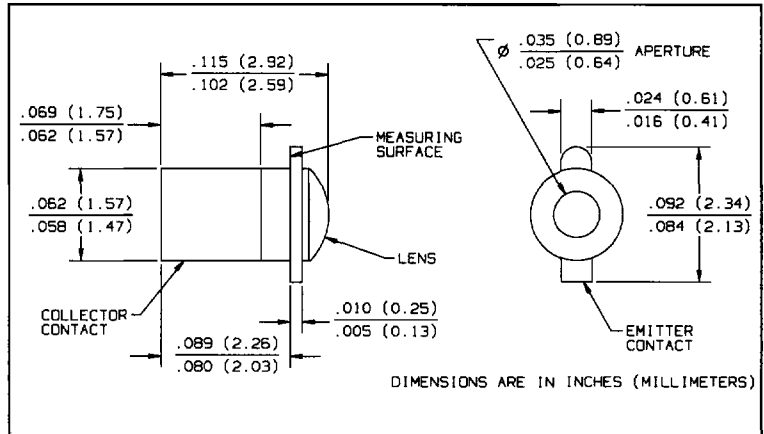
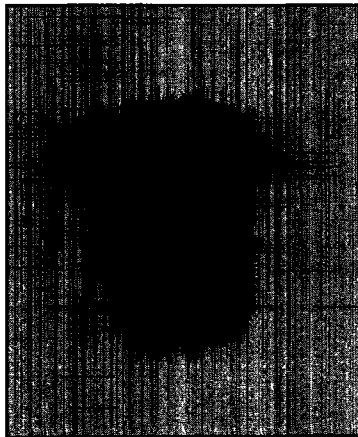


High Reliability NPN Silicon Phototransistor

Type OP604ESA-XN⁽³⁾



Features

- Processed to Optek's Space level screening program patterned after FSA/SCC Generic Specification 5000
- Miniature hermetically sealed package
- Ideal for direct mounting in PC boards
- Mechanically and spectrally matched to the OP224 Series LED

Description

The OP604ESA consists of a high reliability NPN silicon phototransistor mounted in a miniature glass lensed, hermetically sealed, "pill" package. All devices are processed to Optek's program patterned after ESA/SCC Generic Specification No. 5000. See page 13-4 for details. This device type is lensed and has an acceptance half angle of 18° measured from the optical axis to the half power point. The series is also mechanically and spectrally matched to Optek's OP224 series high reliability infrared emitting diode.

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

Storage Temperature Range	.....	-65°C to $+150^\circ\text{C}$
Operating Temperature Range	.....	-55°C to $+125^\circ\text{C}$
Collector-Emitter Voltage	.....	50 V
Emitter-Collector Voltage	.....	7.0 V
Soldering Temperature (for 5 seconds with soldering iron)	.....	240°C ⁽¹⁾
Power Dissipation	.....	50 mW ⁽²⁾

Notes:

- (1) No-clean or low solids RMA flux is recommended. Duration can be extended to 10 seconds maximum when wave soldering.
- (2) Derate linearly 0.5 mW/ $^\circ\text{C}$ above 25°C .
- (3) "X" defines the testing level per ESA/SCC Generic Specification 5000, Chart III. "X" will be either "B" (full processing) or "C" (reduced processing). "N" defines lot acceptance testing. "N" will be either 1, 2, or 3. Level 3 is the lowest defined level with emphasis on electrical tests, solderability, and visual inspection. Level 2 requires all tests of Level 3 and adds endurance testing (burn-in) with drift limits on key parameters. Level 1 is the most stringent LAT level and includes all requirements of Levels 2 and 3 plus additional testing for tolerance of thermal, mechanical, and environmental exposure.

Part Number Guide

OP604ESA-XN

Optek
High Reliability

ESA/SCC Specification
No. 5000

"B" - Full Processing
"C" - Reduced Processing

Level "1"
Environmental/Mechanical
plus 2 & 3
Level "2" Life Testing
plus Level 3
Level "3" Electrical
Inspection

Type OP604ESA-XN

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

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
$I_{C(ON)}$	On-State Collector Current	7.0			mA	$V_{CE} = 5.0\text{ V}$, $E_e = 20\text{ mW/cm}^2(3)(4)$
I_{CEO}	Collector Dark Current			25 100	nA μA	$V_{CE} = 10.0\text{ V}$, $E_e = 0$ $V_{CE} = 30.0\text{ V}$, $E_e = 0$, $T_A = 100^\circ\text{C}$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50			V	$I_C = 100\text{ }\mu\text{A}$, $E_e = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	7.0			V	$I_E = 100\text{ }\mu\text{A}$, $E_e = 0$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			0.40	V	$I_C = 0.4\text{ mA}$, $E_e = 20\text{ mW/cm}^2(3)(4)$
t_r	Rise Time			20.0	μs	$V_{CC} = 30\text{ V}$, $I_C = 1.00\text{ mA}$, $R_L = 100\text{ }\Omega$
t_f	Fall Time			20.0	μs	

Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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