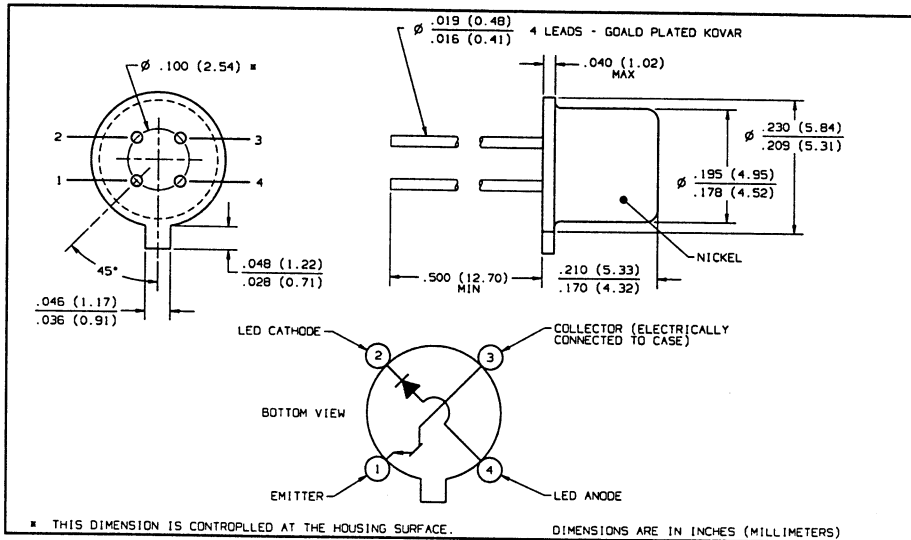
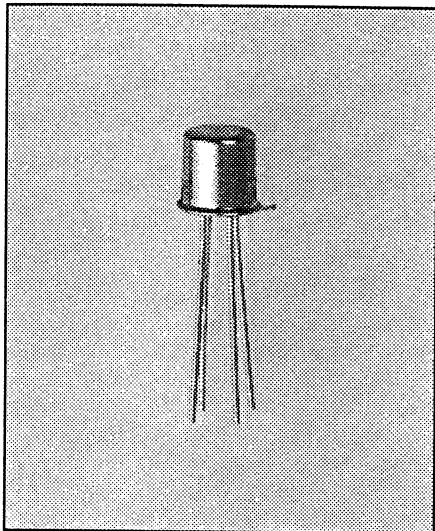


High Reliability Optically Coupled Isolators

Types 3N243, 3N244, 3N245, 3N243TX, 3N244TX, 3N245TX



Features

- TX versions processed to Optek's military screening program patterned after MIL-PRF-19500
- TO-72 hermetically sealed package
- 1 kVDC electrical isolation

Description

Each device in the series is a high reliability design optically coupled isolator consisting of an infrared emitting diode and an NPN silicon phototransistor mounted in a hermetically sealed TO-72 package.

Typical screening and lot acceptance tests are provided on page 13-4.

Replaces

3N243R, 3N244R, 3N245R

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

Input-to-Output Isolation Voltage	± 1.00 kVDC ⁽¹⁾
Storage Temperature Range	-65° C to +150° C
Operating Temperature Range	-55° C to +125° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]	240° C ⁽²⁾

Input Diode

Forward DC Current	40 mA
Reverse Voltage	2.0 V
Power Dissipation	60 mW ⁽³⁾

Output Phototransistor

Continuous Collector Current	30 mA
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5.0 V
Power Dissipation	200 mW ⁽⁴⁾

Notes:

- (1) Measured with input leads shorted together and output leads shorted together.
- (2) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (3) Derate linearly 0.60 mW/° C above 65° C.
- (4) Derate linearly 2.0 mW/° C above 25° C.
- (5) The input waveform is supplied by a generator with the following characteristics:
Z_{OUT} = 50 Ω, t_r ≤ 15 ns, duty cycle ≅ 1%, pulse width ≅ 100 ms.

Types 3N243, 3N244, 3N245 3N243TX, 3N244TX, 3N245TX

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

Symbol	Parameter	3N243TX			3N244TX			3N245TX			Units	Test Conditions
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
Input Diode												
V_F	Forward Voltage	0.80		1.30	0.80		1.30	0.80		1.30	V	$I_F = 10.0\text{ mA}$
		1.00		1.50	1.00		1.50	1.00		1.50	V	$I_F = 10.0\text{ mA}, T_A = -55^\circ\text{C}$
		0.70		1.20	0.70		1.20	0.70		1.20	V	$I_F = 10.0\text{ mA}, T_A = 100^\circ\text{C}$
I_R	Reverse Current			100			100			100	μA	$V_R = 2.0\text{ V}$
Output Phototransistor												
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30			30			30			V	$I_C = 1.00\text{ mA}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0			5.0			5.0			V	$I_E = 100\text{ }\mu\text{A}$
I_{CEO}	Collector Dark Current			100			100			100	nA μA	$V_{CE} = 10.0\text{ V}$ $V_{CE} = 10.0\text{ V}, T_A = 100^\circ\text{C}$
Coupled												
$I_{C(on)}$	On-State Collector Current	1.50			3.00			6.00			mA	$I_F = 10.0\text{ mA}, V_{CE} = 10.0\text{ V}$
		0.30			0.80			1.50			mA	$I_F = 3.0\text{ mA}, V_{CE} = 10.0\text{ V}$
		0.50			1.00			1.50			mA	$I_F = 10.0\text{ mA}, V_{CE} = 10.0\text{ V}, T_A = -55^\circ\text{C}$
		0.50			1.00			1.50			mA	$I_F = 10.0\text{ mA}, V_{CE} = 10.0\text{ V}, T_A = 100^\circ\text{C}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			0.30							V	$I_F = 20\text{ mA}, I_C = 1.50\text{ mA}$
							0.30				V	$I_F = 20\text{ mA}, I_C = 3.0\text{ mA}$
									0.30		V	$I_F = 20\text{ mA}, I_C = 6.0\text{ mA}$
I_{IO}	Leakage Input-to-Output			100			100			100	nA	$V_{IO} = \pm 1.00\text{ kVDC}^{(1)}$
C_{IO}	Capacitance Input-to-Output			5.0			5.0			5.0	pF	$V_{IO} = 0\text{ V}, f = 1.00\text{ MHz}^{(1)}$
t_r	Output Rise Time			10.0			10.0			10.0	μs	$V_{CC} = 10.0\text{ V}, I_F = 10.0\text{ mA},^{(5)}$ $R_L = 100\text{ }\Omega$
t_f	Output Fall Time			10.0			10.0			10.0	μs	

HI-REL OPTO COMPONENTS

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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