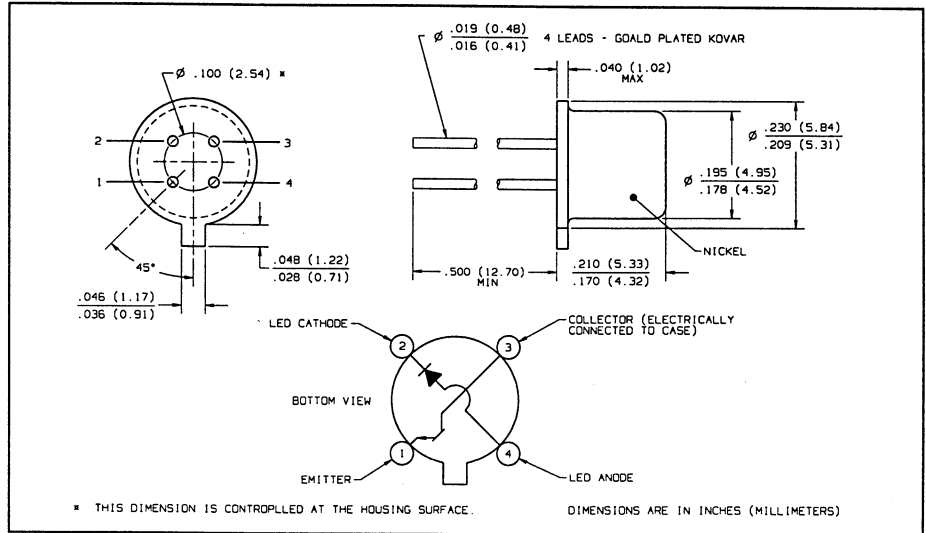
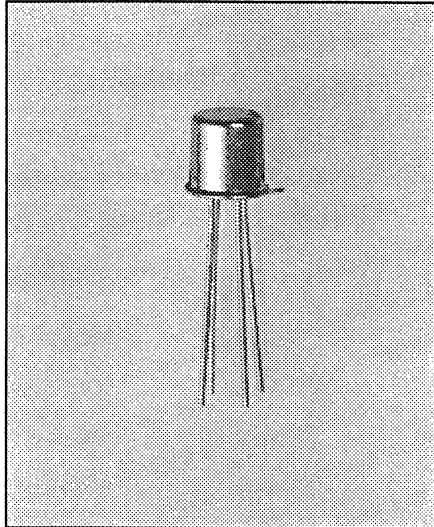


# High Reliability Optically Coupled Isolators

## Types 3N261, 3N262, 3N263 3N261TX, 3N262TX, 3N263TX



### Features

- TX versions processed to Optek's military screening program patterned after MIL-PRF-19500
- TO-72 hermetically sealed package
- 1 kVDC electrical isolation
- High current transfer ratio at low diode current drive

### Description

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

This series is identical to the JEDEC registered optically coupled isolators. Typical screening and lot acceptance tests are provided on page 13-4.

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

Input-to-Output Isolation Voltage	$\pm 1.00$ kVDC <sup>(1)</sup>
Storage Temperature Range	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Operating Temperature Range	$-55^\circ\text{C}$ to $+125^\circ\text{C}$
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]	$240^\circ\text{C}$ <sup>(2)</sup>

### Input Diode

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

### Output Phototransistor

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

### 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  $0.60\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (4) Derate linearly  $2.0\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (5) The input waveform is supplied by a generator with the following characteristics:  
 $Z_{OUT} = 50\ \Omega$ ,  $t_r \leq 15\text{ ns}$ , duty cycle  $\cong 1\%$ , pulse width  $\cong 100\text{ ms}$ .

# Types 3N261, 3N262, 3N263 3N261TX, 3N262TX, 3N263TX

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

Symbol	Parameter	3N261TX			3N262TX			3N263TX			Units	Test Conditions
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
<b>Input Diode</b>												
V <sub>F</sub>	Forward Voltage	0.80		1.50	0.80		1.50	0.80		1.50	V	I <sub>F</sub> = 10.0 mA
		1.00		1.70	1.00		1.70	1.00		1.70	V	I <sub>F</sub> = 10.0 mA, T <sub>A</sub> = -55° C
		0.70		1.30	0.70		1.30	0.70		1.30	V	I <sub>F</sub> = 10.0 mA, T <sub>A</sub> = 100° C
I <sub>R</sub>	Reverse Current			100			100			100	μA	V <sub>R</sub> = 2.0 V
<b>Output Phototransistor</b>												
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage	40			40			40			V	I <sub>C</sub> = 1.00 mA
V <sub>(BR)ECO</sub>	Emitter-Collector Breakdown Voltage	7.0			7.0			7.0			V	I <sub>E</sub> = 100 μA
I <sub>CEO</sub>	Collector Dark Current			100 100			100 100			100 100	nA μA	V <sub>CE</sub> = 10.0 V V <sub>CE</sub> = 10.0 V, T <sub>A</sub> = 100° C
<b>Coupled</b>												
I <sub>C(on)</sub>	On-State Collector Current	0.50			1.00			2.00		10.0	mA	I <sub>F</sub> = 1.0 mA, V <sub>CE</sub> = 5.0 V
		0.70			1.40			2.80			mA	I <sub>F</sub> = 2.0 mA, V <sub>CE</sub> = 5.0 V, T <sub>A</sub> = -55° C
		0.50			1.00			2.00			mA	I <sub>F</sub> = 2.0 mA, V <sub>CE</sub> = 5.0 V, T <sub>A</sub> = 100° C
V <sub>CE(SAT)</sub>	Collector-Emitter Saturation Voltage			0.30							V	I <sub>F</sub> = 2.0 mA, I <sub>C</sub> = 0.50 mA
							0.30				V	I <sub>F</sub> = 2.0 mA, I <sub>C</sub> = 1.0 mA
									0.30			V
I <sub>IO</sub>	Leakage Input-to-Output			10			10			10	nA	V <sub>IO</sub> = ± 1.00 kVDC <sup>(1)</sup>
C <sub>IO</sub>	Capacitance Input-to-Output			5.0			5.0			5.0	pF	V <sub>IO</sub> = 0 V, f = 1.00 MHz <sup>(1)</sup>
t <sub>r</sub>	Output Rise Time			20.0			20.0			25.0	μs	V <sub>CC</sub> = 10.0 V, I <sub>F</sub> = 5.0 mA, <sup>(5)</sup> R <sub>L</sub> = 100 Ω
t <sub>f</sub>	Output Fall Time			20.0			20.0			25.0	μs	

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