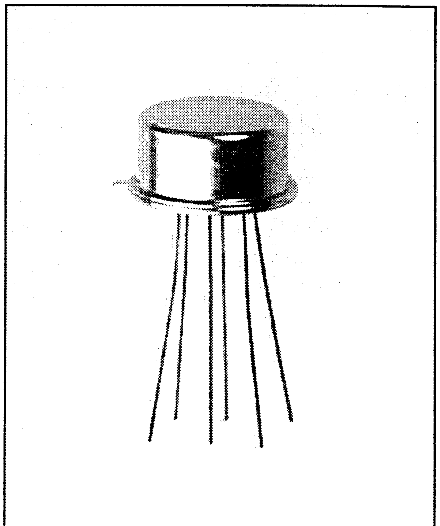
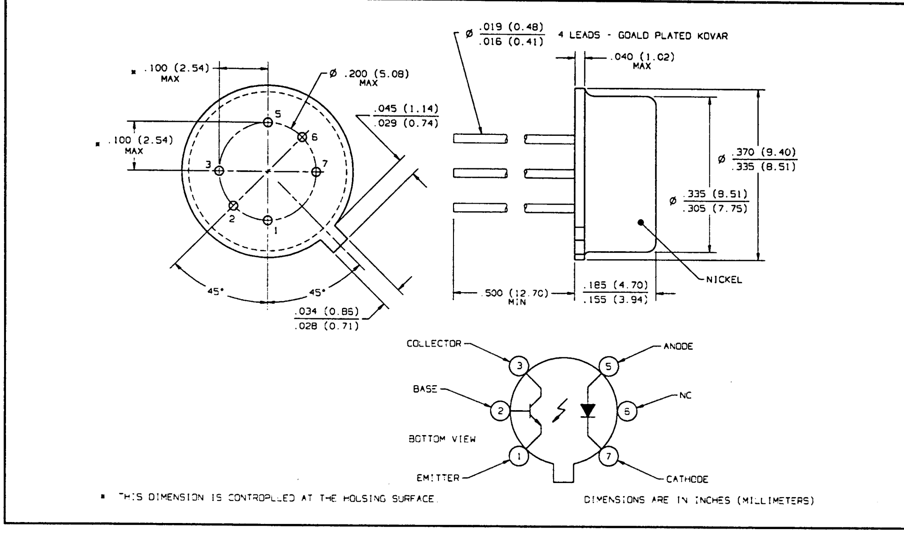
Optically Coupled Isolators
Types 4N47, 4N48, 4N49
JANTX, JANTXV-4N47, 4N48, 4N49





Features

- High current transfer ratio
- TO-78 hermetic package
- 1.0 kV electrical isolation
- Base lead provided for conventional transistor biasing
- TX and TXV versions qualified per MIL-PRF-19500/548
- Patent number 4124860
- Available with or without TX or TXV processing

Description

The JANTX and JANTXV series of the 4N47, 4N48, and 4N49 are JEDEC registered, DESC qualified, optically coupled isolators. High reliability processing on devices is performed in accordance with MIL-PRF-19500/548. Typical screening and lot acceptance tests are provided on page 13-4.

The non JAN versions are built on the same manufacturing line as the JAN components.

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

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

Input Diode
Forward DC Current (65° C or below) . . . . 40 mA
Reverse Voltage . . . . 2.0 V
Power Dissipation . . . . 60 mW(2)

Output Phototransistor
Continuous Collector Current . . . . 50 mA
Collector-Base Voltage . . . . 45 V
Collector-Emitter Voltage . . . . 40 V
Emitter-Base Voltage . . . . 7.0 V
Power Dissipation . . . . 300 mW(3)

Notes:
(1) Measured with input leads shorted together and output leads shorted together.
(2) Derate linearly 1.0 mW/° C above 65° C.
(3) Derate linearly 3.0 mW/° C above 25° C.

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

Symbol	Parameter	Type	Min	Typ	Max	Units	Test Conditions
Input Diode							
V_F	Forward Voltage		0.80 1.00 0.70		1.50 1.70 1.30	V V V	I_F = 10.0 mA I_F = 10.0 mA, TA = -55° C I_F = 10.0 mA, T_A = 100° C
I_R	Reverse Current				100	µA	V_R = 2.0 V
Output Phototransistor							
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage		45			V	I_C = 100 µA, I_E = 0, I_F = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage		40			V	IC = 1.0 mA, I_B = 0, I_F = 0
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage		7.0			V	I_E = 100 µA, I_C = 0, I_F = 0
$I_{C(OFF)}$	Collector-Emitter Dark Current				100 100	nA µA	V_{CE} = 20 V, I_B = 0, I_F = 0 V_{CE} = 20 V, I_B = 0, I_F = 0, T_A = 100° C
$I_{CB(OFF)}$	Collector-Base Dark Current				10.0	nA	V_{CB} = 20 V, I_E = 0, I_F = 0
Coupled							
$I_{C(ON)}$	On-State Collector Current	4N47	0.5 0.7 0.5			mA mA mA	V_{CE} = 5.0 V, I_B = 0, I_F = 1.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA, T_A = -55° C V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA, T_A = 100° C
		4N48	1.0 1.4 1.0		5.0	mA mA mA	V_{CE} = 5.0 V, I_B = 0, I_F = 1.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA, T_A = -55° C V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA, T_A = 100° C
		4N49	2.0 2.8 2.0		10.0	mA mA mA	V_{CE} = 5.0 V, I_B = 0, I_F = 1.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA, T_A = -55° C V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA, T_A = 100° C
$I_{CB(ON)}$	On-State Collector Base		30			µA	VCB = 5.0 V, I_E = 0, I_F = 10 mA
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	4N47 4N48 4N49			0.30 0.30 0.30	V V V	I_C = 0.5 mA, I_B = 0, I_F = 2.0 mA I_C = 1.0 mA, I_B = 0, I_F = 2.0 mA I_C = 2.0 mA, I_B = 0, I_F = 2.0 mA
h_{FE}	DC Current Gain	4N47 4N48 4N49	100 100 100				V_{CE} = 5.0 V, I_C = 10.0 mA, I_F = 0 mA
R_{IO}	Resistance (Input-to-Output)		10^{11}			Ω	V_{I-O} = ± 1000 Vdc[1]
C_{IO}	Capacitance (Input to Output)				5.0	pF	V_{I-O} = 0 V, f = 1.0 MHz[1]
t_r	Output Rise Time	4N47 4N48 4N49			20.0 20.0 25.0	µs µs µs	V_{CC} = 10.0 V, I_F = 5.0 mA, R_L = 100 Ω
t_f	Output Fall Time	4N47 4N48 4N49			20.0 20.0 25.0	µs µs µs	