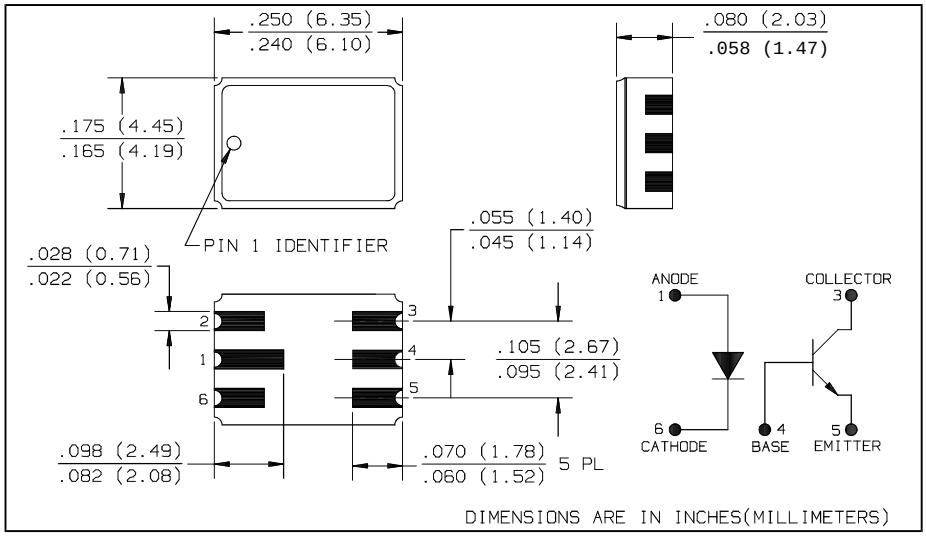
Surface Mount Optically Coupled Isolators
Types JANTX, JANTXV, 4N22AU, 4N23AU, 4N24AU



Features

- JANTX, JANTXV qualified per MIL-PRF-19500/486
- Surface Mountable
- 1 kV Electrical Isolation
- Base contact provided for conventional transistor biasing

Description

The 4N22AU, 4N23AU, and 4N24AU series are DESC qualified, surface mount optically coupled isolators. High reliability processing on the devices is performed in accordance with MIL-PRF-19500/486.

Each device in the series consists of an infrared emitting diode and an NPN silicon phototransistor mounted in a hermetically sealed ceramic surface mount package.

Typical screening and lot acceptance tests are provided on page 13-4. The burn-in condition is V_{CE} = 10 V, I_F = 40 mA, P_D = 275 mW, T_A = 25° C. Refer to MIL-PRF-19500/486 for complete requirements.

When ordering parts without processing, do not use a JAN prefix.

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

Input-to-Output Isolation Voltage	± 1.0 kVDC(1)
Storage and Operating Temperature Range	-65° C to +125° C
Soldering Temperature (vapor phase reflow)	215° C
Soldering Temperature (heated collet for 5 sec)	260° C
Input Diode	
Forward DC Current (65° C or below)	40 mA(2)
Reverse Voltage	2.0 V
Peak Forward Current (1 µs pulse width, 300 pps)	1.00 A
Output Sensor	
Continuous Collector Current	50 mA
Collector-Emitter Voltage	35 V
Collector-Base Voltage	35 V
Emitter-Base Voltage	4.0 V
Power Dissipation	300 mW(3)

Notes:
(1) Measured with input diode leads shorted together and output leads shorted together.
(2) Derate linearly 0.67 mA/° C above 65° C.
(3) Derate linearly 3.0 mW/° C above 25° C.

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

Symbol	Parameter	Type	Min	Typ	Max	Units	Test Conditions
Input Diode							
V_F	Forward Voltage		0.80		1.30	V	I_F = 10.0 mA
			1.00		1.50	V	I_F = 10.0 mA, T_A = -55^o C
			0.70		1.20	V	I_F = 10.0 mA, T_A = 100^o C
I_R	Reverse Current				100	µA	V_R = 2.0 V
Output Phototransistor							
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage		35			V	I_C = 100 µA, I_E = 0, I_F = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage		35			V	I_C = 1.0 mA, I_B = 0, I_F = 0
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage		4.0			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^o C
Coupled							
$I_{C(ON)}$	On-State Collector Current	4N22AU	0.15 2.50 1.00 1.00			mA mA mA mA	V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA, T_A = -55^o C V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA, T_A = 100^o C
		4N23AU	0.20 6.00 2.50 2.50			mA mA mA mA	V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA, T_A = -55^o C V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA, T_A = 100^o C
		4N24AU	0.40 10.00 4.00 4.00			mA mA mA mA	V_{CE} = 5.0 V, I_B = 0, I_F = 2.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA, T_A = -55^o C V_{CE} = 5.0 V, I_B = 0, I_F = 10.0 mA, T_A = 100^o C
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	4N22AU 4N23AU 4N24AU			0.30 0.30 0.30	V	I_C = 2.5 mA, I_B = 0, I_F = 20.0 mA I_C = 5.0 mA, I_B = 0, I_F = 20.0 mA I_C = 10.0 mA, I_B = 0, I_F = 20.0 mA
h_{FE}	DC Current Gain	4N22AU 4N23AU 4N24AU	200 300 400				V_{CE} = 5.0 V, I_C = 10.0 mA, I_F = 0 mA
R_{IO}	Resistance (Input to Output)		10^{11}			Ω	V_{IO} = ± 1000 Vdc(1)
C_{IO}	Capacitance (Input to Output)				5.0	pF	V_{IO} = 0.0 V, f = 1.0 MHz(1)
t_r	Output Rise Time	4N22AU 4N23AU 4N24AU			15.0 15.0 20.0	µs µs µs	V_{CC} = 10.0 V, I_F = 10.0 mA, R_L = 100 Ω
t_f	Output Fall Time	4N22AU 4N23AU 4N24AU			15.0 15.0 20.0	µs µs µs	

HI-REL SURFACE MOUNT