

4N47U
4N48U
4N49U

JAN, JANTX, AND JANTXV OPTOCOUPERS



02/12/2020

Features:

- Certified to MIL-PRF-14500/548
- High reliability
- Base lead provided for conventional transistor biasing
- Very high gain, high voltage transistor
- Hermetically sealed for reliability and stability
- Stability over wide temperature range
- High voltage electrical isolation

Applications:

- Line Receivers
- Switchmode Power Supplies
- Signal ground isolation
- Process Control input/output isolation

DESCRIPTION

Very high gain optocoupler utilizing GaAlAs infrared LED optically coupled to an N-P-N silicon phototransistor packaged in a hermetically sealed 6-pin leadless chip carrier. The **4N47U**, **4N48U** and **4N49U** optocouplers can be supplied to customer specifications as well as JAN, JANTX, and JANTXV quality levels.

***ABSOLUTE MAXIMUM RATINGS**

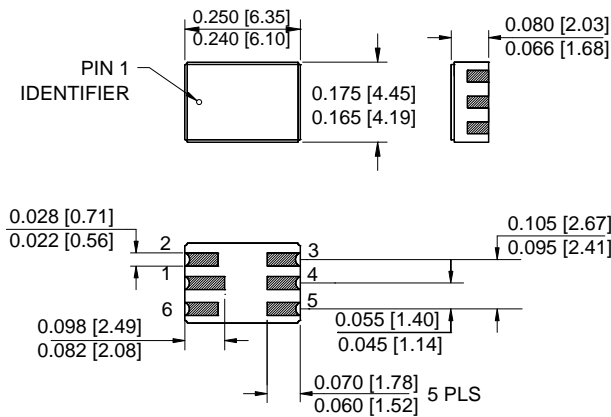
Input to Output Voltage.....	1 kV
Collector-Base Voltage.....	45 V
Collector-Emitter Voltage.....	40 V
Emitter-Base Voltage.....	7 V
Input Diode Reverse Voltage.....	2 V
Input Diode Continuous Forward Current at (or below) 25°C Free-Air Temperature (see note 1).....	40 mA
Continuous Collector Current.....	50 mA
Peak Diode Current (Value Applies for $t_W \leq 1 \mu s$, $PRR < 300pps$).....	1 A
Continuous Transistor Power Dissipation at (or below) 25°C Free-Air Temperature (see Note 2).....	300 mW
Operating Free-Air Temperature Range.....	-55°C to +125°C
Storage Temperature.....	-65°C to +125°C
Lead Temperature (10 seconds maximum).....	240°C

Notes:

1. Derate linearly to 125°C free-air temperature at the rate of 0.67 mA/°C above 65°C.
2. Derate linearly to 125°C free-air temperature at the rate of 3 mW/°C above 25°C.

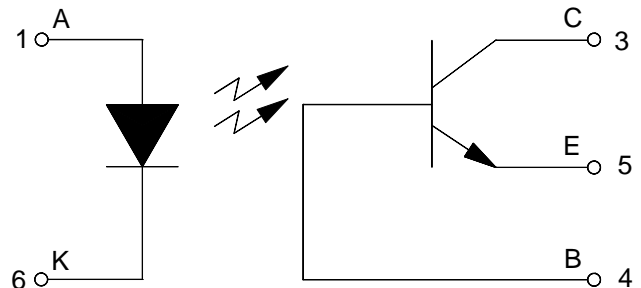
* JEDEC registered data

Package Dimensions



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

Schematic Diagram



4N47U, 4N48U, and 4N49U

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ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$ Unless otherwise specified

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Diode Static Reverse Current	IR			100	μA	$V_R = 2\text{ V}$	
Input Diode Static Forward Voltage	V_F	1.0	1.4	1.7	V	$I_F = 10\text{ mA}$	
		0.8		1.5			
		0.7		1.3			

OUTPUT TRANSISTOR $T_A = 25^\circ\text{C}$ Unless otherwise specified

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	45			V	$I_C = 100\ \mu\text{A}$, $I_E = 0$, $I_F = 0$	
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C = 1\text{ mA}$, $I_B = 0$, $I_F = 0$	
Emitter-Collector Breakdown Voltage	$V_{(BR)EBO}$	7			V	$I_C = 0$, $I_B = 100\ \mu\text{A}$, $I_F = 0$	

COUPLED CHARACTERISTICS $T_A = 25^\circ\text{C}$ Unless otherwise specified

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
On State Collector Current	$I_C(ON)$	0.5		5	mA	$V_{CE} = 5\text{ V}$, $I_B = 0$, $I_F = 1\text{ mA}$	
		1.0		10			
		2.0					
On State Collector Current	$I_C(ON)$	0.7			mA	$V_{CE} = 5\text{ V}$, $I_B = 0$, $I_F = 2\text{ mA}$	
-55°C		1.4					
		2.8					
On State Collector Current	$I_C(ON)$	0.5			mA	$V_{CE} = 5\text{ V}$, $I_B = 0$, $I_F = 2\text{ mA}$	2
+100°C		1.0					
		2.0					
Off State Collector Current	$I_C(OFF)$			100	nA	$V_{CE} = 20\text{ V}$, $I_B = 0$, $I_F = 0\text{ mA}$	
+25°C							
Off State Collector Current	$I_C(OFF)$			100	μA	$V_{CE} = 20\text{ V}$, $I_B = 0$, $I_F = 0\text{ mA}$	
+100°C							
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.3	V	$I_C = 0.5\text{ mA}$, $I_B = 0$, $I_F = 2\text{ mA}$	
				0.3		$I_C = 1\text{ mA}$, $I_B = 0$, $I_F = 2\text{ mA}$	
				0.3		$I_C = 2\text{ mA}$, $I_B = 0$, $I_F = 2\text{ mA}$	
Input to Output Resistance	R_{I-O}	10^{11}				$V_{IN-OUT} = 1\text{ kV}$	1
Input to Output Capacitance	C_{I-O}			5	pF	$f = 1\text{ MHz}$, $V_{IN-OUT} = 0$	1
Rise Time/ Fall Time	t_r / t_f			20	μs	$V_{CC} = 10\text{ V}$, $I_F = 10\text{ mA}$, $R_L = 100\ \Omega$	
Phototransistor Operation				20			
				20			
Rise Time/ Fall Time	t_r / t_f			3	μs	$V_{CC} = 10\text{ V}$, $I_F = 10\text{ mA}$, $R_L = 100\ \Omega$	
Photodiode Operation				3			
				3			

NOTES:

- These parameters are measured between all phototransistor leads shorted together and with both input diode leads shorted together.
- This parameter measured using pulse techniques $t_w = 100\ \mu\text{s}$, duty cycle $\leq 1\%$.

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	IFL	0	100	μA
Input Current, High Level	IFH	2	10	mA
Supply Voltage	VCE	5	10	V

SELECTION GUIDE

JEDEC PART NUMBER	MICROPAC PART NUMBER	PART DESCRIPTION
JAN4N47U	66138-607	JAN Screened
JAN4N48U	66138-608	JAN Screened
JAN4N49U	66138-609	JAN Screened
JANTX4N47U	66138-707	JANTX Screened
JANTX4N48U	66138-708	JANTX Screened
JANTX4N49U	66138-709	JANTX Screened
JANTXV4N47U	66138-807	JANTXV Screened
JANTXV4N48U	66138-808	JANTXV Screened
JANTXV4N49U	66138-809	JANTXV Screened