

**4N47BU**  
**4N48BU**  
**4N49BU**

JAN, JANTX, AND JANTXV OPTOCOUPLEDERS



02/12/2020

**Features:**

- Certified to MIL-PRF-19500/548
- High reliability
- Base lead provided for conventional transistor biasing
- High blocking 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 **4N47BU**, **4N48BU** and **4N49BU** optocouplers can be supplied to customer specifications as well as JAN, JANTX, and JANTXV quality levels.

**\*ABSOLUTE MAXIMUM RATINGS**

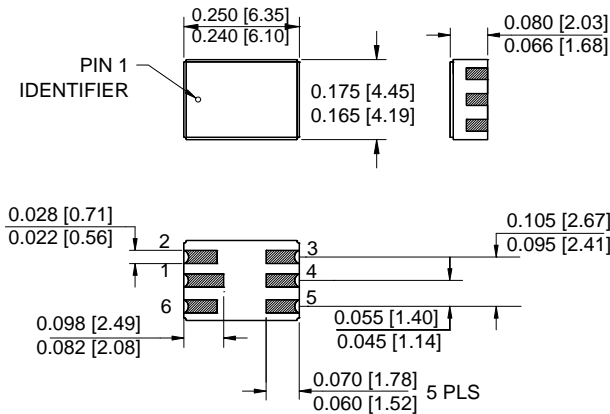
Input to Output Voltage.....	1 kV
Collector-Base Voltage.....	60 V
Collector-Emitter Voltage.....	60 V
Emitter-Base Voltage.....	7 V
Input Diode Reverse Voltage.....	2 V
Input Diode Continuous Forward Current at (or below) 25°C Free-Air Temperature (see note 1).....	40 mA
Continuous Collector Current.....	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.

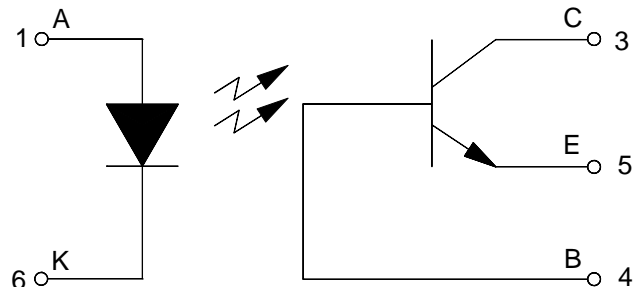
\* JEDEC registered data

**Package Dimensions**



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

**Schematic Diagram**



Micropac Industries cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement. Micropac reserves the right to make changes at any time in order to improve design and to supply the best product possible.

**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	$I_R$			100	$\mu\text{A}$	$V_R = 2\text{ V}$	
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	$V_{(BR)CBO}$	60			V	$I_C = 100\ \mu\text{A}$ , $I_E = 0$ , $I_F = 0$	
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	60			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	$I_{C(ON)}$	0.5			mA	$V_{CE} = 5\text{ V}$ , $I_B = 0$ , $I_F = 2\text{ mA}$	
-55°C		1.0					
		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	$\mu\text{A}$	$V_{CE} = 20\text{ V}$ , $I_B = 0$ , $I_F = 0\text{ mA}$	
+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	$\mu\text{s}$	$V_{CC} = 10\text{ V}$ , $I_F = 10\text{ mA}$ , $R_L = 100\ \Omega$	
Phototransistor Operation				20			
				20			
Rise Time/ Fall Time	$t_r / t_f$			3	$\mu\text{s}$	$V_{CC} = 10\text{ V}$ , $I_F = 10\text{ mA}$ , $R_L = 100\ \Omega$	
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	$\mu\text{A}$
Input Current, High Level	IFH	2	10	mA
Supply Voltage	VCE	5	10	V

**SELECTION GUIDE**

JEDEC PART NUMBER	MICROPAC PART NUMBER	PART DESCRIPTION
JAN4N47BU	66138-617	JAN Screened
JAN4N48BU	66138-618	JAN Screened
JAN4N49BU	66138-619	JAN Screened
JANTX4N47BU	66138-717	JANTX Screened
JANTX4N48BU	66138-718	JANTX Screened
JANTX4N49BU	66138-719	JANTX Screened
JANTXV4N47BU	66138-817	JANTXV Screened
JANTXV4N48BU	66138-818	JANTXV Screened
JANTXV4N49BU	66138-819	JANTXV Screened

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