

66171

**PROTON RADIATION TOLERANT,
QUAD CHANNEL, HERMETIC 20 PIN LCC,
OPTICALLY COUPLED ISOLATOR**



03/15/2017

Features:

- High Reliability
- Base lead provided for conventional transistor biasing
- Very high gain, high voltage transistor
- Stability over wide temperature range.
- +1kVdc electrical isolation
- Screening available

Applications:

- Eliminate ground loops
- Level shifting
- Line receiver
- Switching power supplies
- Motor control

DESCRIPTION

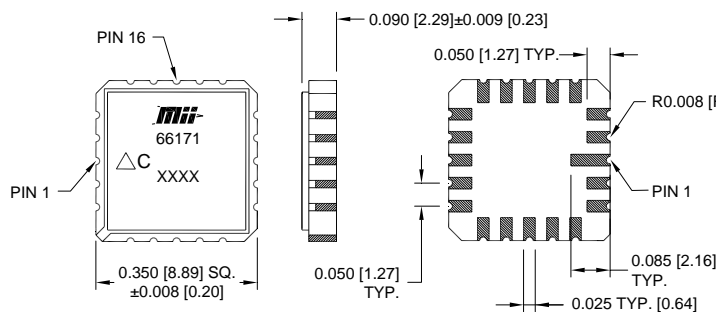
The Mii **66171** is an optically coupled isolator, consisting of four GaAlAs LEDs and four silicon phototransistors mounted and coupled in a miniature surface mount hermetic leadless chip carrier. The 66171 uses an LED proven to be more tolerant to proton radiation. All electrical characteristics of each channel are similar to the JEDEC registered 4N49. Each unit contains four channels. These solid state couplers are ideal for designs where board space, device weight and radiation tolerance are important design considerations.

ABSOLUTE MAXIMUM RATINGS

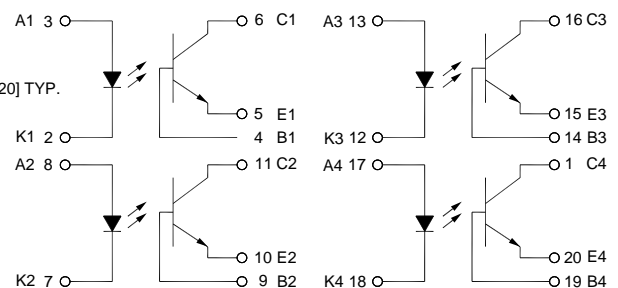
Input-to-output Voltage (see Note 1)	±1 kV
Collector-Base Voltage	45 V
Collector-Emitter Voltage (Value applies to emitter-base open-circuited & the input-diode equal to zero)	40 V
Emitter-Base Voltage	7 V
Input Diode Reverse Voltage	3 V
Input Diode Continuous Forward Current at (or below) 65°C Free-Air Temperature (see note 2)	40 mA
Input Diode Power Dissipation	60 mW
Continuous Collector Current	50 mA
Continuous Transistor Power Dissipation at (or below) 25°C Free-Air Temperature (see Note 3)	300 mW
Storage Temperature.....	-65°C to +125°C
Operating Free-Air Temperature Range	-55°C to +100°C
Lead Solder Temperature (10 seconds)	240°C

Notes:

1. Measured with Inputs shorted together and outputs shorted together.
2. Derate linearly to 100°C free-air temperature at the rate of 0.53 mA/°C above 65°C.
3. Derate linearly to 100°C free-air temperature at the rate of 4 mW/°C.

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.

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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	I_R			100	μA	$V_R = 2\text{ V}$	1
Input Diode Forward Voltage	V_F	1.0 0.8 0.7		2.4 2.0 1.8	V	$I_F = 10\text{ mA}$	1
		-55°C +25°C +100°C					

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

Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	45			V	$I_C = 100\text{ }\mu\text{A}$, $I_B = 0$, $I_F = 0$	1
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C = 1\text{ mA}$, $I_B = 0$, $I_F = 0$	1
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	7			V	$I_C = 0\text{ mA}$, $I_E = 100\text{ }\mu\text{A}$, $I_F = 0$	1

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

On State Collector Current $T_A = +25^\circ\text{C}$	$I_{C(ON)}$	2.0		20	mA	$V_{CE} = 5\text{ V}$, $I_B = 0$, $I_F = 1\text{ mA}$	1
On State Collector Current $T_A = -55^\circ\text{C}$	$I_{C(ON)}$	2.8			mA	$V_{CE} = 5\text{ V}$, $I_B = 0$, $I_F = 2\text{ mA}$	1
On State Collector Current $T_A = +100^\circ\text{C}$	$I_{C(ON)}$	2.0			mA	$V_{CE} = 5\text{ V}$, $I_B = 0$, $I_F = 2\text{ mA}$	1
Off State Collector Current	$I_{C(OFF)}$			100	nA	$V_{CE} = 20\text{ V}$, $I_B = 0$, $I_F = 0\text{ mA}$	1
Off State Collector Current, $T_A = +100^\circ\text{C}$	$I_{C(OFF)}$			100	μA	$V_{CE} = 20\text{ V}$, $I_B = 0$, $I_F = 0\text{ mA}$	1
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.3	V	$I_F = 2\text{ mA}$, $I_C = 2\text{ mA}$, $I_B = 0$	1
Input to Output Resistance	R_{IO}	10^{11}			Ω	$V_{IN-OUT} = 1\text{ kV}$, $t_w = 100\text{ }\mu\text{s}$, duty cycle $\leq 1\%$	2
Input to Output Capacitance	C_{IO}			20	pF	$F = 1\text{ MHz}$, $V_{IN-OUT} = 0$	2
Rise Time (Phototransistor Operation) or Fall Time	t_r or t_f		10	25	μs	$V_{CC} = 10\text{ V}$, $I_F = 5\text{ mA}$, $R_L = 100\text{ }\Omega$, $I_B = 0$	1
Rise Time (Photodiode Operation) or Fall Time	t_r or t_f		0.85	3	μs	$V_{CC} = 10\text{ V}$, $I_F = 5\text{ mA}$, $R_L = 100\text{ }\Omega$, $I_E = 0$	1

NOTES:

- Parameter applies to all four channels.
- These parameters are measured between all phototransistor leads shorted together and with both input diode leads shorted together.

RECOMMENDED OPERATING CONDITIONS:

PARAMETER.	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	I_{FL}	0	100	μA
Input Current, High Level	I_{FH}	1	10	mA
Supply Voltage	V_{CC}	5.0	20	V

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66171-003	Commercial
66171-103	JAN Screened
66171-104	JANTX Screened
66171-105	JANTXV Screened
66171-300	Screened to S Level

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