

66171**PROTON RADIATION TOLERANT,
QUAD CHANNEL, HERMETIC 20 PIN LCC,
OPTICALLY COUPLED ISOLATOR**

08/10/2012

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

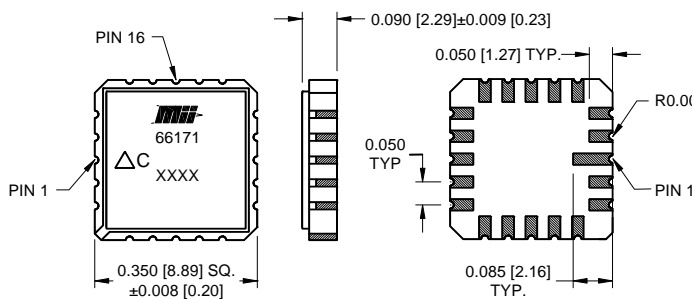
The Mii **66171** is an optically coupled isolator, consisting of four GaAlAs LEDs and four silicon phototransistors mounted and coupled in a miniature surface mount hermetic leadless chip carrier. The 66171 uses an LED proven to be more tolerant to proton radiation. All electrical characteristics of 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

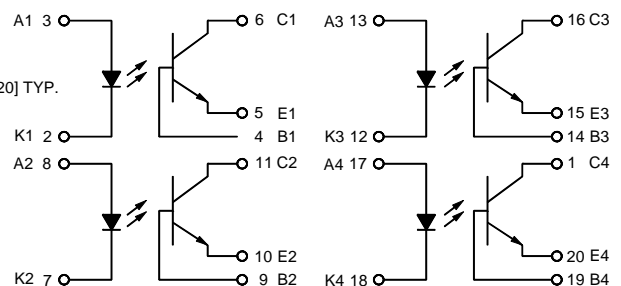
Input-to-output Voltage (see Note 1)	± 1 kV
Collector-Base Voltage	45 V
Collector-Emitter Voltage (Value applies to emitter-base open-circuited & the input-diode equal to zero)	40 V
Emitter-Base Voltage	7 V
Input Diode Reverse Voltage	3 V
Input Diode Continuous Forward Current at (or below) 65°C Free-Air 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

66171

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ELECTRICAL CHARACTERISTICS

T_A = 25°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 V	1
Input Diode Forward Voltage	V _F	1.0		2.4	V	I _F = 10 mA	1
		0.8		2.0			
		0.7		1.8			

OUTPUT TRANSISTOR

T_A = 25°C unless otherwise specified.

Collector-Base Breakdown Voltage	V _{(BR)CBO}	45			V	I _C = 100 μA, I _B = 0, I _F = 0	1
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40			V	I _C = 1 mA, I _B = 0, I _F = 0	1
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	7			V	I _C = 0 mA, I _E = 100 μA, I _F = 0	1

COUPLED CHARACTERISTICS

T_A = 25°C unless otherwise specified.

On State Collector Current T _a = +25°C	I _{C(ON)}	2.0		20	mA	V _{CE} = 5 V, I _B = 0, I _F = 1 mA	1
On State Collector Current T _a = -55°C	I _{C(ON)}	2.8			mA	V _{CE} = 5 V, I _B = 0, I _F = 2 mA	1
On State Collector Current = +100°C	I _{C(ON)}	2.0			mA	V _{CE} = 5 V, I _B = 0, I _F = 2 mA	1
Off State Collector Current	I _{C(OFF)}			100	nA	V _{CE} = 20 V, I _B = 0, I _F = 0 mA	1
Off State Collector Current, T _a = +100°C	I _{C(OFF)}			100	μA	V _{CE} = 20 V, I _B = 0, I _F = 0 mA	1
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			0.3	V	I _F = 2 mA, I _C = 2 mA, I _B = 0	1
Input to Output Resistance	R _{IO}	10 ¹¹			Ω	V _{IN-OUT} = 1 kV, t _w = 100 μs, duty cycle ≤ 1%	2
Input to Output Capacitance	C _{IO}			20	pF	F = 1 MHz, V _{IN-OUT} = 0	2
Rise Time (Phototransistor Operation) or Fall Time	t _r or t _f		10	25	μs	V _{CC} = 10 V, I _F = 5 mA, R _L = 100 Ω, I _B = 0	1
Rise Time (Photodiode Operation) or Fall Time	t _r or t _f		0.85	3	μs	V _{CC} = 10V, I _F = 5mA, R _L = 100Ω, 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