

**66296**

**PROTON RADIATION TOLERANT  
QUAD CHANNEL, 20 PIN LCC,  
TRANSISTOR OUTPUT OPTOCOUPLER**



02/08/2013

**Features:**

- 850 nm Proton Radiation Tolerant LEDs
- High Reliability
- Base lead provided for conventional transistor biasing
- +1 kVdc electrical isolation
- Screening available

**Applications:**

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

**DESCRIPTION**

The Mii **66296** is a quad optocoupler, consisting of four 850 nm GaAlAs LEDs that have proven to be highly tolerant to proton radiation and four silicon phototransistors mounted and coupled in a miniature surface mount hermetic leadless chip carrier. Each unit contains four channels. These solid state couplers are ideal for designs where board space and device weight are important design considerations.

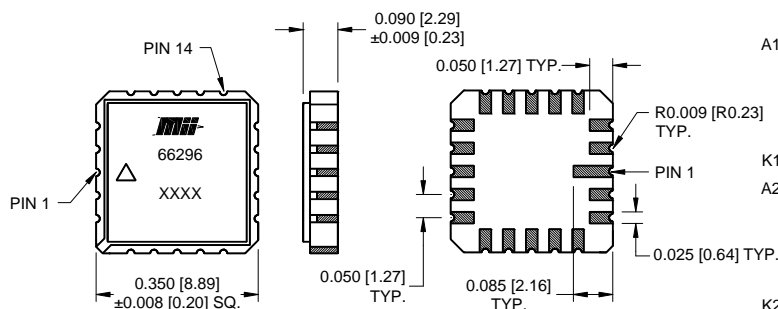
**ABSOLUTE MAXIMUM RATINGS**

Input-to-output Voltage (Note 1) .....	+1 kV
Collector-Base Voltage .....	45 V
Collector-Emitter Voltage .....	40 V
Emitter-Base Voltage .....	7 V
Input Diode Reverse Voltage .....	3 V
Input Diode Continuous Forward Current .....	50 mA
Input Diode Power Dissipation (Note 2) .....	80 mW
Continuous Collector Current .....	50 mA
Continuous Transistor Power Dissipation (Note 3) .....	300 mW
Storage Temperature.....	-65°C to +150°C
Operating Free-Air Temperature Range .....	-55°C to +125°C
Lead Solder Temperature (10 seconds max.) .....	240°C

**Notes:**

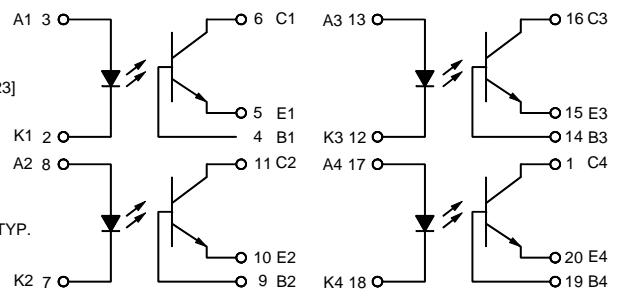
1. Measured with Inputs shorted together and outputs shorted together.
2. Derate linearly at the rate of 0.67 mW/°C above 65°C case.
3. Derate linearly at the rate of 2.3 mW/°C above 65°C case.

**Package Dimensions**



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

**Schematic Diagram**



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**ELECTRICAL CHARACTERISTICS**T<sub>A</sub> = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Diode Static Reverse Current	I <sub>R</sub>			8	μA	V <sub>R</sub> = 6 V	2
Input Diode Forward Voltage	V <sub>F</sub>	0.8		1.8	V	I <sub>F</sub> = 10 mA	2
		0.8		1.6			
		0.8		1.4			

**OUTPUT TRANSISTOR**T<sub>A</sub> = 25°C unless otherwise specified.

Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	45			V	I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0, I <sub>F</sub> = 0	2
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	40			V	I <sub>C</sub> = 1 mA, I <sub>B</sub> = 0, I <sub>F</sub> = 0	2
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	7			V	I <sub>C</sub> = 0 mA, I <sub>E</sub> = 100 μA, I <sub>F</sub> = 0	2

**COUPLED CHARACTERISTICS**T<sub>A</sub> = 25°C unless otherwise specified.

On State Collector Current T <sub>a</sub> = +25°C	I <sub>C(ON)</sub>	2.0			mA	V <sub>CE</sub> = 5 V, I <sub>B</sub> = 0, I <sub>F</sub> = 1 mA	2
On State Collector Current T <sub>a</sub> = -55°C	I <sub>C(ON)</sub>	2.0			mA	V <sub>CE</sub> = 5 V, I <sub>B</sub> = 0, I <sub>F</sub> = 2 mA	2
On State Collector Current T <sub>a</sub> = +100°C	I <sub>C(ON)</sub>	2.0			mA	V <sub>CE</sub> = 5 V, I <sub>B</sub> = 0, I <sub>F</sub> = 2 mA	2
Off State Collector Current	I <sub>C(OFF)</sub>			100	nA	V <sub>CE</sub> = 20 V, I <sub>B</sub> = 0, I <sub>F</sub> = 0 mA	2
Off State Collector Current, T <sub>a</sub> = +100°C	I <sub>C(OFF)</sub>			100	μA	V <sub>CE</sub> = 20 V, I <sub>B</sub> = 0, I <sub>F</sub> = 0 mA	2
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>			0.3	V	I <sub>F</sub> = 2 mA, I <sub>C</sub> = 2 mA, I <sub>B</sub> = 0	2
Input to Output Current	I <sub>IO</sub>			1.0	μA	V <sub>IN-OUT</sub> = 1 kV	1
Input to Output Capacitance	C <sub>IO</sub>			5	pF	F = 1 MHz, V <sub>IN-OUT</sub> = 0	1
Rise Time or Fall Time	t <sub>r</sub> or t <sub>f</sub>		10	20	μs	V <sub>CC</sub> = 10 V, I <sub>F</sub> = 5 mA, R <sub>L</sub> = 100Ω	2

**NOTES:**

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

**SELECTION GUIDE**

PART NUMBER	PART DESCRIPTION
66296-001	Commercial
66296-101	Commercial with Group A
66296-103	Screened to TX Level
66296-105	Screened to TXV Level
66296-301	Screened to Space Level