

**66212**

**PROTON RADIATION TOLERANT 4 PIN LCC  
OPTOCOUPLER WITH 850 nm LED**



03/21/06

**Features:**

- Hermetically Sealed
- Designed to be proton radiation tolerant
- High Current Transfer Ratio - 200% minimum
- 1000Vdc electrical input to output isolation

**Applications:**

- Ground loop isolation
- Level shifting
- Line receiver
- Switching power supplies
- Motor control

**DESCRIPTION**

The **66212** optocoupler consists of an 850 nm GaAlAs LED optically coupled to a phototransistor detector all mounted in a hermetic 4 pin LCC package. This configuration has proven to be highly tolerant to proton radiation. The 850 nm LED has proven to be more tolerant of operating temperatures over 100°C than the more commonly used 660nm LED.

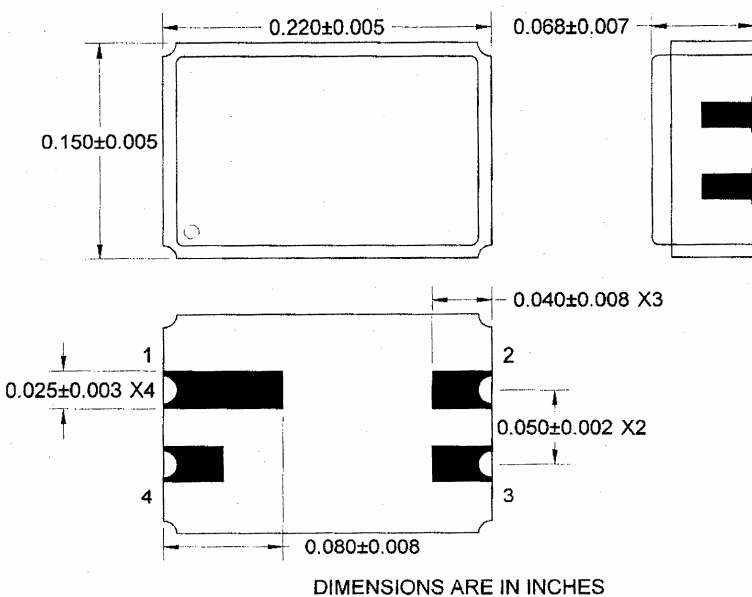
**ABSOLUTE MAXIMUM RATINGS**

Input Diode Forward DC Current.....	50mA
Input Power Dissipation (see Note 1).....	360mW
Reverse Input Voltage .....	.2V
Collector-Emitter Voltage .....	50V
Continuous Collector Current .....	50mA
Continuous Transistor Power Dissipation (see Note 2).....	300mW
Storage Temperature.....	-65°C to +150°C
Operating Free-Air Temperature Range.....	-55°C to +125°C
Lead Solder Temperature (1/16" (1.6mm) from case for 5 seconds) .....	260°C

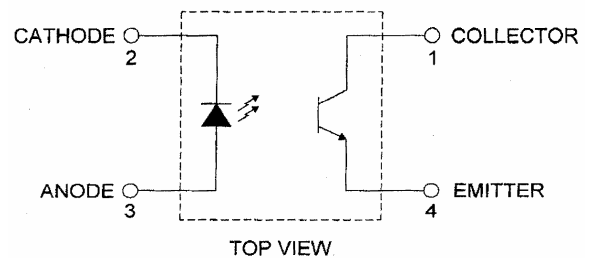
**Notes:**

1. Derate linearly from 25°C to 125°C @ 3.6 mW/°C
2. Derate linearly from 25°C to 125°C @ 3.0 mW/°C

**Package Dimensions**



**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
Input Diode Static Reverse Current	I <sub>R</sub>			100	μA	V <sub>R</sub> = 2V
Input Diode Static Forward Voltage	V <sub>F</sub>	0.80		1.5	V	I <sub>F</sub> = 10mA

**OUTPUT TRANSISTOR CHARACTERISTICS**

T<sub>A</sub> = 25°C unless otherwise noted

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	40			V	I <sub>C</sub> = 1mA, I <sub>F</sub> = 0
Collector-Emitter Dark Current	I <sub>CEO</sub>			100	nA	V <sub>CE</sub> = 20V, I <sub>F</sub> = 0

**COUPLED CHARACTERISTICS**

T<sub>A</sub> = 25°C unless otherwise noted

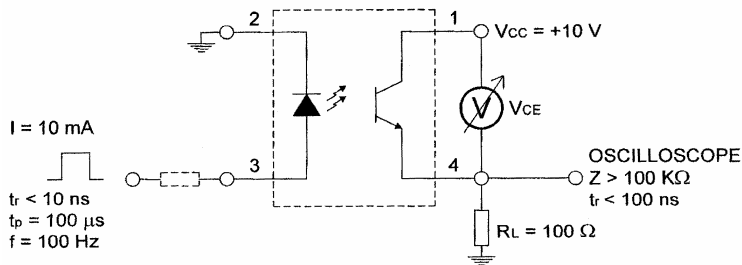
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
On State Collector Current	I <sub>C(ON1)</sub>	2.0			mA	V <sub>CE</sub> = 1V, I <sub>F</sub> = 1.0 mA
On State Collector Current	I <sub>C(ON2)</sub>	40			mA	V <sub>CE</sub> = 5V, I <sub>F</sub> = 10.0 mA
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>			0.22	V	I <sub>C</sub> = 10.0 mA, I <sub>F</sub> = 20.0 mA
Emitter Collector Breakdown Voltage	V <sub>BR ECO</sub>	5			V	I <sub>E</sub> = 100 μA, I <sub>F</sub> = 0 mA
Input-Output Isolation Voltage DC (Note 3)	V <sub>IN-OUT</sub>	1000			V	T=5 sec
Rise Time (see Switching Time Test Circuit)	t <sub>r</sub>			20	μs	V <sub>CC</sub> = 10V, I <sub>F</sub> = 10mA, R <sub>L</sub> = 100Ω
Fall Time	t <sub>f</sub>			20	μs	V <sub>CC</sub> = 10V, I <sub>F</sub> = 10mA, R <sub>L</sub> = 100Ω

Note 3: Measurement with inputs shorted together and outputs shorted together

**RECOMMENDED OPERATING CONDITIONS:**

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	I <sub>FL</sub>	0	10	μA
Input Current, High Level	I <sub>FH</sub>	1	20	mA
Operating Temperature	T <sub>A</sub>	-55	125	°C

Switching Time Circuit



**ORDERING INFORMATION:**

PART NUMBER	DESCRIPTION
66212-001	Commercial
66212-101	Screened