

**66099-4XX**

**HIGH VOLTAGE  
RADIATION TOLERANT OPTOCOUPLER**

**Mii**

**OPTOELECTRONIC PRODUCTS  
DIVISION**

Rev A 9/25/02

**Features:**

- Designed to meet or exceed MIL-PRF-19500 radiation requirements
- High Current Transfer Ratio - 200% typical
- 1kVdc electrical input to output isolation
- Base lead provided for conventional transistor biasing
- 150 V Breakdown voltage

**Applications:**

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

**DESCRIPTION**

The **66099-4XX** optocoupler consists of a 660 nm GaAlAs LED optically coupled to a high voltage photodiode driving a high voltage transistor mounted in a hermetic TO-5 package. This configuration has proven to be highly tolerant to both proton and total dose radiation.

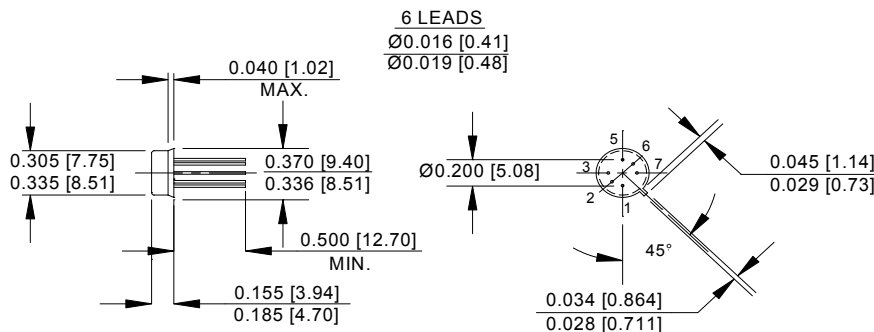
**ABSOLUTE MAXIMUM RATINGS**

Storage Temperature.....	-65°C to +150°C
Operating Free-Air Temperature.....	-55°C to +100°C
Lead Solder Temperature (1/16" (1.6mm) from case for 5 seconds).....	240°C
Input Diode Forward DC Current.....	40mA
Input Power Dissipation (see Note 1).....	80mW
Reverse Input Voltage.....	3V
Collector-Base Voltage.....	150V
Collector-Emitter Voltage.....	150V
Emitter-Base Voltage.....	6V
Continuous Collector Current.....	300mA
Continuous Transistor Power Dissipation (see Note 2).....	300mW

**Notes:**

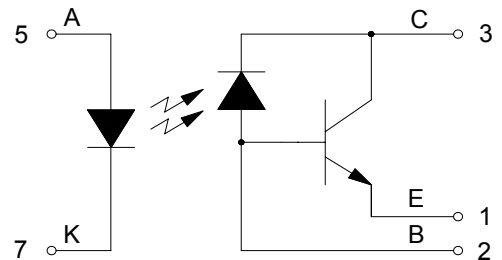
1. Derate linearly 0.80 mW/°C above 25°C.
2. Derate linearly 3.0 mW/°C above 25°C.

**Package Dimensions**



NOTE: ALL LINEAR DIMENSIONS ARE IN INCHES (MILLIMETERS)

**Schematic Diagram**



# 66099-4XX

## HIGH VOLTAGE RADIATION TOLERANT OPTOCOUPLER

Rev A 9/25/02

### 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>	0.8		2	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-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	150			V	I <sub>C</sub> = 100μA, I <sub>B</sub> = 0, I <sub>F</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	150			V	I <sub>C</sub> = 1mA, I <sub>B</sub> = 0, I <sub>F</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	4			V	I <sub>C</sub> = 0mA, I <sub>E</sub> = 100μA, I <sub>F</sub> = 0
Collector-Emitter Cutoff Current	I <sub>CEO</sub>			100	nA	V <sub>CE</sub> = 20V

### COUPLED CHARACTERISTICS

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

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Current Transfer Ratio	CTR	100			%	V <sub>CE</sub> = 1V, I <sub>F</sub> = 10mA
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>			0.3	V	I <sub>F</sub> = 20mA, I <sub>C</sub> = 10mA
Input-Output Isolation Current	I <sub>ISO</sub>			100	nA	V <sub>I-O</sub> = 1000V
Rise Time	t <sub>r</sub>			20	μs	V <sub>CE</sub> = 10V, I <sub>F</sub> = 10mA, R <sub>L</sub> = 100Ω
Fall Time	t <sub>f</sub>			20	μs	V <sub>CE</sub> = 10V, I <sub>F</sub> = 10mA, R <sub>L</sub> = 100Ω

### 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	100	°C

### ORDERING INFORMATION:

PART NUMBER	DESCRIPTION
66099-401	Radiation Tolerant, High Voltage Optocoupler, Commercial
66099-415	Radiation Tolerant, High Voltage Optocoupler, Screened