

66189

PROTON RADIATION TOLERANT OPTOCOUPLER



09/22/03

Features:

- High Reliability
- Base lead eliminated for improved noise immunity
- Proton & Total Dose Tolerant
- Stability over wide temperature
- +500V electrical isolation

Applications:

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

DESCRIPTION

The **66189** contains a proton tolerant 660nm LED optically coupled to a silicon photodiode detector circuit. The optocoupler is mounted in a hermetic TO-72 package. The internal base connection has been eliminated for improved noise immunity.

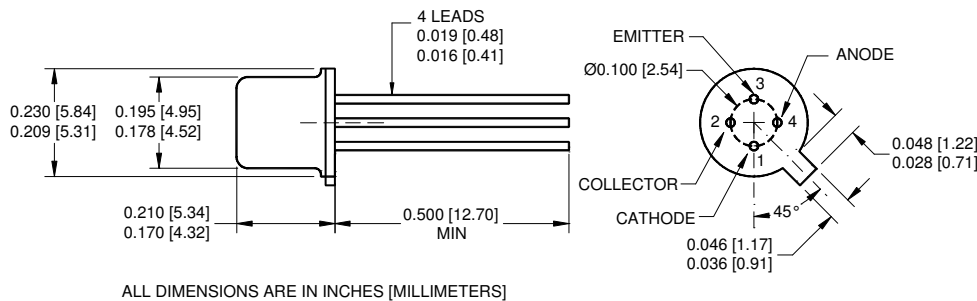
ABSOLUTE MAXIMUM RATINGS

Emitter-Collector Voltage	5V
Collector-Emitter Voltage	40V
Reverse Input Voltage	7V
Input Diode Continuous Forward Current (Note 1)	50mA
Peak Forward Input Current (Value applies for $t_w \leq 1\mu s$, PRR < 300 pps)	1A
Continuous Collector Current	50mA
Continuous Transistor Power Dissipation (Note 2)	230mW
Input to Output Isolation Voltage	500V
Storage Temperature	-55°C to +150°C
Operating Free-Air Temperature Range	-55°C to +100°C
Lead Solder Temperature (10 seconds, 1/16" from case)	260°C

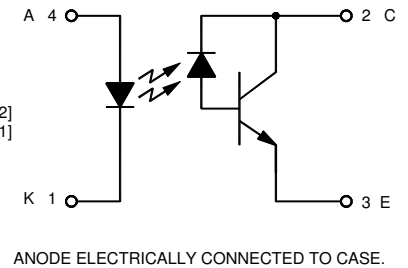
Notes:

1. Derate linearly to 100°C free-air temperature at the rate of 0.67 mA/°C above 25°C.
2. Derate linearly to 100°C free-air temperature at the rate of 3.0 mW/°C above 25°C.

Package Dimensions



Schematic Diagram



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ELECTRICAL CHARACTERISTICS

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode Static Reverse Current	I _R			1	μA	V _R = 3V
Input Diode Static Forward Voltage	V _F			2.0	V	I _F = 10mA
Input Diode Static Forward Voltage	V _F			2.2	V	I _F = 20mA
Reverse Breakdown Voltage	B _{VR}	7			V	I _R = 100μA
Input Diode Capacitance	C _{IN}		25		pF	V = 0V, f = 1MHz

OUTPUT TRANSISTOR

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40			V	I _C = 1mA, I _B = 0, I _F = 0
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5			V	I _C = 0mA, I _E = 10μA, I _F = 0
Collector-Emitter Dark Current	I _{CEO}			50	nA	V _{CE} = 40V, I _F = 0mA
	I _{CEO}			10	nA	V _{CE} = 5V, I _F = 0mA

COUPLED CHARACTERISTICS

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
On State Collector Current	I _{C(ON)}	4			mA	V _{CE} = 5V, I _F = 10mA
On State Collector Current	I _{C(ON)}	3			mA	V _{CE} = 0.4V, I _F = 10mA
On State Collector Current	I _{C(ON)}	2			mA	V _{CE} = 5V, I _F = 10mA -55°C +100°C
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			0.4	V	I _F = 50mA, I _C = 10mA
Isolation Resistance	R _{ISO}	10 ⁹			Ω	V _{IN-OUT} = 500V
Input to Output Capacitance	C _{IO}			2.5	pF	f = 1MHz
Delay Time	t _d			4	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω
Storage Time	t _s			0.5	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω
Rise Time	t _r			5	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω
Fall Time	t _f			7	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	I _{FL}	0	1	μA
Input Current, High Level	I _{FH}	2	20	mA
Supply Voltage	V _{CE}	5	35	V
Operating Temperature	T _A	-55	100	°C

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66189-001	Commercial
66189-101	Screened to JAN level
66189-103	Screened to JANTX level
66189-105	Screened to JANTXV level