

66227

**PROTON RADIATION TOLERANT OPTOCOUPLER
(Pin-For- Pin Replacement For 4N49)**



09/11/03

Features:

- Current Transfer Ratio-200% typical
- 1kVdc electrical input to output isolation
- Base lead provided for conventional transistor biasing
- Proton radiation tolerant

Applications:

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

DESCRIPTION

The **66227** Optocoupler consists of an 850nm GaAlAs LED optically coupled to a phototransistor mounted in a hermetic TO-5 package. Test studies have shown this LED to be even more radiation tolerant than the 660nm LED typically used in radiation tolerant applications. Available in commercial or screened levels.

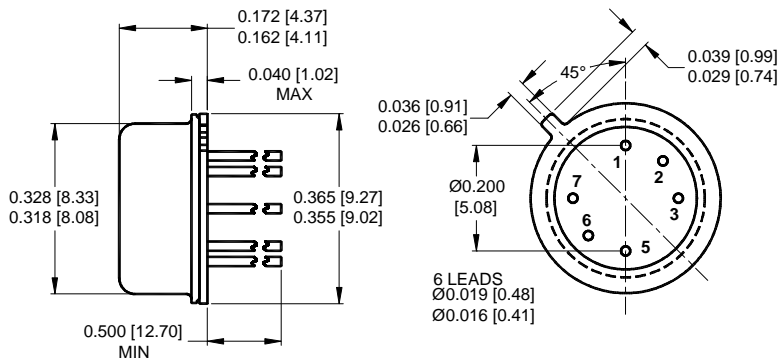
ABSOLUTE MAXIMUM RATINGS

Input Diode Forward DC Current.....	40 mA
Input Power Dissipation (Note 1)	80 mW
Input-Output Isolation Voltage	1000 V
Reverse Input Voltage	3 V
Collector-Base Voltage	40 V
Collector-Emitter Voltage	45 V
Emitter-Base Voltage.....	7 V
Continuous Collector Current	50 mA
Continuous Transistor Power Dissipation (Note 2)	300 mW
Storage Temperature.....	-65°C to +150°C
Operating Free-Air Temperature Range.....	-55°C to +125°C
Lead Solder Temperature (10 seconds, 1/16" from case)	240°C

Notes:

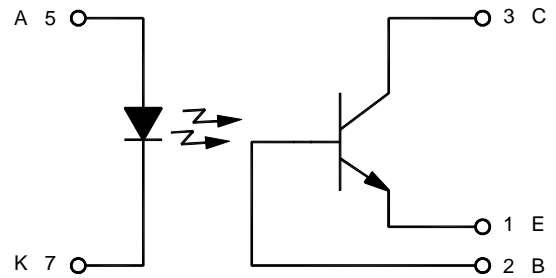
1. Derate linearly 0.8 mW/°C above 25°C.
2. Derate linearly 3.0 mW/°C above 25°C.

Package Dimensions



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

Schematic Diagram



COLLECTOR IS COMMON TO CASE

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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 = 2V	
Input Diode Static Forward Voltage -55°C	V _F	1.0		1.8	V	I _F = 10mA	
Input Diode Static Forward Voltage +25°C	V _F	0.8		1.6	V	I _F = 10mA	
Input Diode Static Forward Voltage +100°C	V _F	0.7		1.4	V	I _F = 10mA	

OUTPUT TRANSISTOR

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Collector-Base Breakdown Voltage	V _{(BR)CBO}	45			V	I _C = 100μA, I _B = 0, I _F = 0	
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40			V	I _C = 1mA, I _B = 0, I _F = 0	
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	7			V	I _C = 0mA, I _E = 100μA, I _F = 0	
Off-State Collector Current +25°C	I _{C(OFF)}			100	nA	V _{CE} = 20V, I _F = 0mA, I _B = 0	
Off-State Collector Current +100°C	I _{C(OFF)}			100	μA	V _{CE} = 20V, I _F = 0mA, I _B = 0	

COUPLED CHARACTERISTICS

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
On State Collector Current	I _{C(ON)}	2.0			mA	V _{CE} = 5.0 V, I _F = 1mA	
On State Collector Current +100°C	I _{C(ON)}	2.0			mA	V _{CE} = 5.0 V, I _F = 2mA	
On State Collector Current -55°C	I _{C(ON)}	2.8			mA	V _{CE} = 5V, I _F = 2 mA	
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			0.3	V	I _F = 2mA, I _C = 2mA, I _B = 0	
Input to Output Internal Resistance	R _{IO}	10 ¹¹			Ω	V _{IN-OUT} = 500V	1
Input to Output Capacitance	C _{IO}		2.5	5	pF	f = 1MHz, V _{IN-OUT} = 1kV	1
Rise Time-Phototransistor Operation	t _r		10	25	μs	V _{CC} = 10V, I _F = 5mA, R _L = 100Ω, I _B = 0	
Fall Time-Phototransistor Operation	t _f		10	25	μs	V _{CC} = 10V, I _F = 5mA, R _L = 100Ω, I _B = 0	
Rise Time-Photodiode Operation	t _r		0.85	3	μs	V _{CC} = 10V, I _F = 5mA, R _L = 100Ω, I _E = 0	
Fall Time-Photodiode Operation	t _f		0.85	3	μs	V _{CC} = 10V, I _F = 5mA, R _L = 100Ω, I _E = 0	

NOTES:

- 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	90	μA
Input Current, High Level	I _{FH}	2	10	MA
Supply Voltage	V _{CE}	5	10	V
Operating Temperature	T _A	-55	100	°C

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66227-001	Commercial
66227-101	Screened