66227 **PROTON RADIATION TOLERANT OPTOCOUPLER (Pin-For- Pin Replacement For 4N49)**	MICROPAC

09/11/03

Features:	**Applications:**
• Current Transfer Ratio-200% typical • 1kVdc electrical input to output isolation • Base lead provided for conventional transistor biasing • Proton radiation tolerant	• Eliminate ground loops • Level shifting • Line receiver • Switching power supplies • Motor control

DESCRIPTION

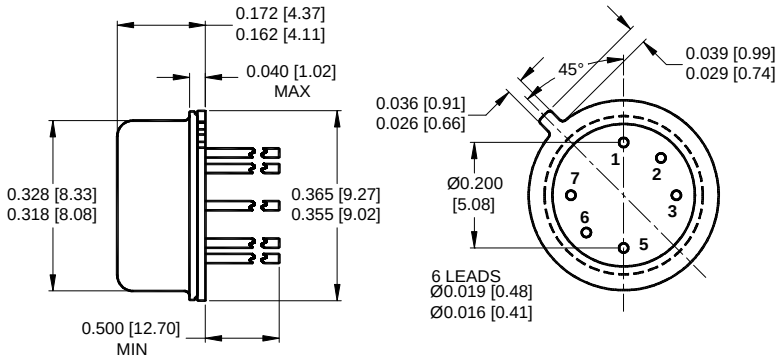
The ***66227*** Optocoupler consists of an 850nm GaAlAs LED optically coupled to a phototransistor mounted in a hermetic TO-5 package. Test studies have shown this LED to be even more radiation tolerant than the 660nm LED typically used in radiation tolerant applications. Available in commercial or screened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

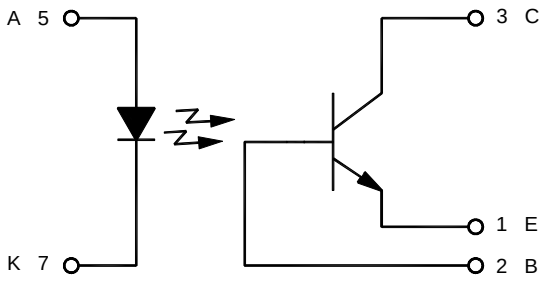
Notes:
1. Derate linearly 0.8 mW/°C above 25°C.
2. Derate linearly 3.0 mW/°C above 25°C.

Package Dimensions



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

Schematic Diagram



COLLECTOR IS COMMON TO CASE

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 = O	
+100°C	$I_{C(OFF)}$			100	µA	V_{CE} = 20V, I_F = 0mA, I_B = O	

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:

1. 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