

66224**PROTON RADIATION TOLERANT OPTOCOUPLER
(Single Channel, Electrically Similar to 4N49)**

09/29/2010

Features:

- High Reliability
- Base lead provided for conventional transistor biasing
- Rugged package
- Stability over wide temperature
- +1000V electrical isolation

Applications:

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

DESCRIPTION

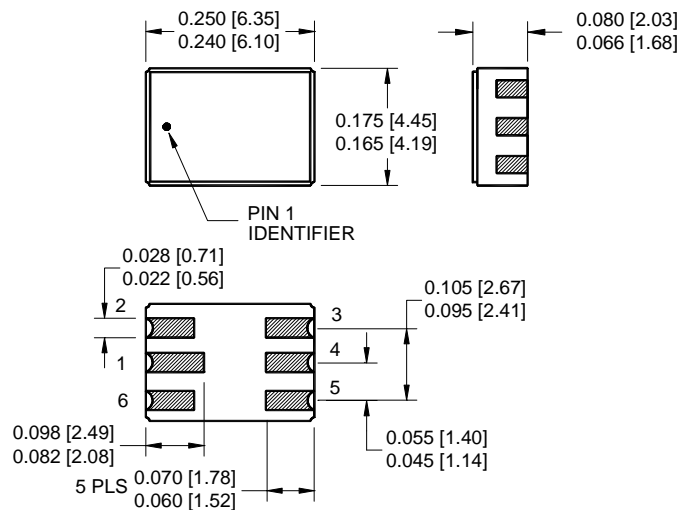
The **66224** is a single channel device electrically similar to the 4N49. This product has been designed to be more tolerant to proton radiation. The 66224 optocoupler is packaged in a hermetically sealed 6 pin leadless chip carrier (LCC). This device available as commercial or screened to JAN, JANTX, JANTXV, or JANS levels. The devices can also be screened to customer requirements.

ABSOLUTE MAXIMUM RATINGS

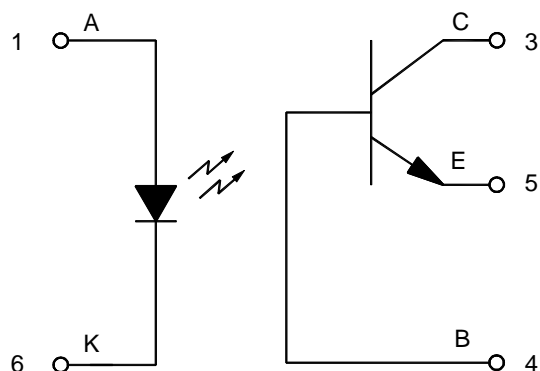
Input to Output Voltage.....	1 kV
Emitter-Collector Voltage.....	7 V
Collector-Emitter Voltage (Value applies to emitter-base open-circuited & the input-diode equal to zero).....	60 V
Collector-Base Voltage.....	45 V
Reverse Input Voltage.....	7 V
Input Diode Continuous Forward Current (Note 1).....	50 mA
Peak Forward Input Current (Value applies for $t_w \leq 1\mu s$, PRR < 300 pps).....	1 A
Continuous Collector Current.....	50 mA
Continuous Transistor Power Dissipation (Note 2).....	300 mW
Storage Temperature.....	-65°C to +125°C
Operating Free-Air Temperature Range.....	-55°C to +125°C
Lead Solder Temperature (10 seconds max.).....	240°C

Notes:

1. Derate linearly to 125°C free-air temperature at the rate of 0.67 mW/°C above 25°C.
2. Derate linearly to 125°C free-air temperature at the rate of 2.3 mW/°C above 25°C.

Package Dimensions

ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

Schematic Diagram

66224

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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			8	μA	V _R = 6 V	
Input Diode Static Forward Voltage -55°C	V _F			1.8	V	I _F = 10 mA	
Input Diode Static Forward Voltage +25°C	V _F			1.6	V	I _F = 10 mA	
Input Diode Static Forward Voltage +100°C	V _F			1.4	V	I _F = 10 mA	

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 = 100 μA, I _B = 0, I _F = 0	
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40			V	I _C = 1 mA, I _B = 0, I _F = 0	
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5			V	I _C = 0 mA, I _E = 100 μA, I _F = 0	
Off-State Collector Current	I _{CEO}			100	nA	V _{CE} = 20 V, I _F = 0 mA, I _B = 0	
+100°C	I _{CEO}			100	μA	V _{CE} = 20 V, I _F = 0 mA, 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 V, I _F = 1 mA, I _B = 0	2
On State Collector Current +100°C	I _{C(ON)}	0.5			mA	V _{CE} = 0.4 V, I _F = 2 mA, I _B = 0	2
On State Collector Current -55°C	I _{C(ON)}	0.7			mA	V _{CE} = 5 V, I _F = 2 mA	2
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			0.3	V	I _F = 2 mA, I _C = 2 mA, I _B = 0	
Input to Output Internal Resistance	R _{IO}	10 ¹¹			Ω	V _{I-O} = 1000 V	1
Input to Output Capacitance	C _{IO}		2.5	5	pF	f = 1 MHz, V _{I-O} = 0 V	1
Rise Time- Phototransistor Operation	t _r		10	25	μs	V _{CC} = 10 V, I _F = 5 mA, R _L = 100 Ω, I _B = 0	
Fall Time-Phototransistor Operation	t _f		10	25	μs	V _{CC} = 10 V, I _F = 5 mA, R _L = 100 Ω, I _B = 0	
Rise Time-Photodiode Operation	t _r		0.85	3	μs	V _{CC} = 10 V, I _F = 5 mA, R _L = 100 Ω, I _E = 0	
Fall Time-Photodiode Operation	t _f		0.85	3	μs	V _{CC} = 10 V, I _F = 5 mA, R _L = 100 Ω, I _E = 0	

NOTES:

- These parameters are measured between all phototransistor leads shorted together and with both input diode leads shorted together.
- This parameter must be measured using pulse techniques (t_W = 100μs duty cycle ≤ 1%).

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	30	V
Operating Temperature	T _A	-55	125	°C

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66224-001	Commercial
66224-101	Screened to JAN level
66224-103	Screened to JANTX level
66224-105	Screened to JANTXV level
66224-300	Screened to JANS level