

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


03/17/2020

Features:

- High Reliability
- Base lead provided for conventional transistor biasing, or Photodiode operation. The base lead can also be used in a circuit to reduce timing delay.
- Rugged package
- Stability over wide temperature
- 1000V electrical isolation

Applications:

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

DESCRIPTION

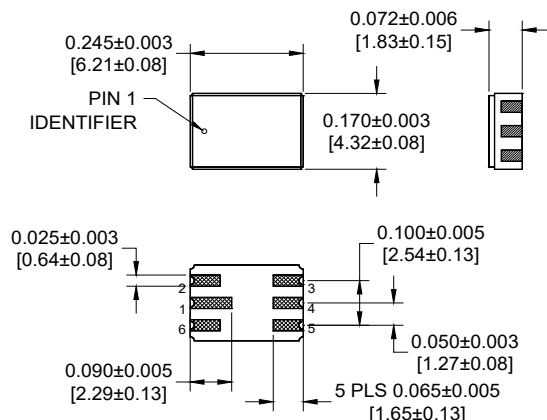
The **66224** is a single channel device electrically similar to the 4N49. This product has been designed to be more tolerant to radiation. The 66224 optocoupler is packaged in a hermetically sealed 6 pin leadless chip carrier (LCC). This device available as commercial, or built to MIL-PRF-19500 / 548 and screened to JAN, JANTX, JANTXV, or JANS levels. The devices can also be screened to customer requirements.

ABSOLUTE MAXIMUM RATINGS

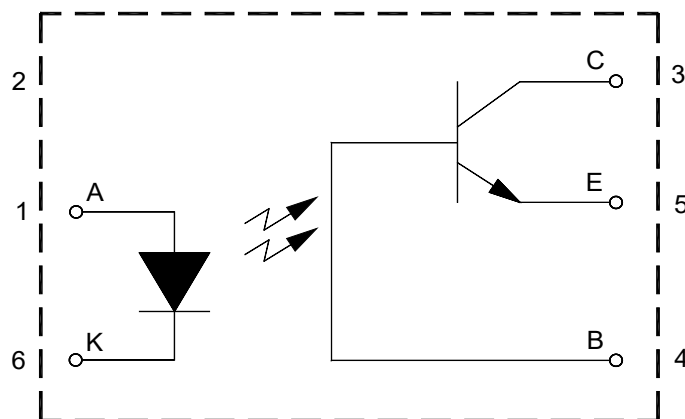
Input to Output Voltage.....	1 kV
Input Power Dissipation (Note 1).....	80 mW
Emitter-Collector Voltage.....	7 V
Collector-Emitter Voltage (Value applies to emitter-base open-circuited & the input-diode equal to zero)	60 V
Collector-Base Voltage	45 V
Reverse Input Voltage	7 V
Input Diode Continuous Forward Current	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	-55°C to +150°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 0.48 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

03/17/2020

ELECTRICAL CHARACTERISTICST_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 TRANSISTORT_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 +100°C	I _{CEO} I _{CEO}			100 100	nA μA	V _{CE} = 20 V, I _F = 0 mA, I _B = 0 V _{CE} = 20 V, I _F = 0 mA, I _B = 0	
Current Gain	h _{FE}	100					

COUPLED CHARACTERISTICST_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)}	2.0			mA	V _{CE} = 5 V, I _F = 2 mA, I _B = 0	2
On State Collector Current -55°C	I _{C(ON)}	2.8			mA	V _{CE} = 5 V, I _F = 2 mA	2
Current Transfer Ratio	CTR	2.0					
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	Commercial with Group A
66224-103	Screened to JANTX level
66224-105	Screened to JANTXV level

66224-300	Screened to Space level
66224-309	Screened to JANS
