

66228**PROTON TOLERANT OPTOCOUPLER**

09/22/03

Features:

- High Reliability
- Base lead eliminated for improved noise immunity
- Rugged package
- Stability over wide temperature
- +500V electrical isolation

Applications:

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

DESCRIPTION

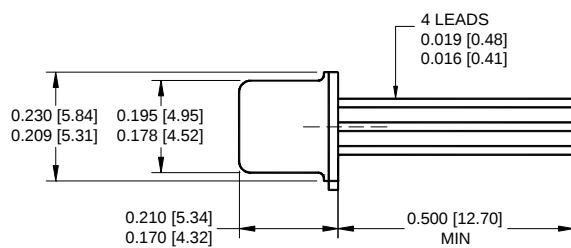
The **66228** contains a gallium arsenide infrared LED optically coupled to a silicon planar phototransistor. The optocoupler is built on a TO-46 header. The anode of the LED is electrically connected to the case. The internal base connection has been eliminated for improved noise immunity.

ABSOLUTE MAXIMUM RATINGS

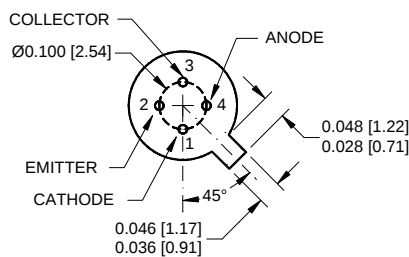
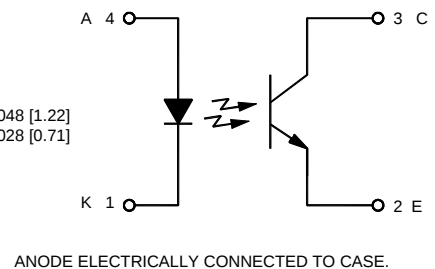
Emitter-Collector Voltage	7V
Collector-Emitter Voltage	60V
Reverse Input Voltage	7V
Input Diode Continuous Forward Current (Note 1)	50mA
Peak Forward Input Current (value applies for $t_w \leq 1\mu s$, PRR < 300 pps)	500mA
Continuous Collector Current	50mA
Continuous Transistor Power Dissipation (Note 2)	230mW
Input to Output Isolation Voltage	1000V
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)	260°C

Notes:

1. Derate linearly to 125°C free-air temperature at the rate of 0.5 mA/°C.
2. Derate linearly to 125°C free-air temperature at the rate of 2.3 mW/°C.

Package Dimensions

ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

**Schematic Diagram**

66228

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ELECTRICAL CHARACTERISTICS

 $T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode Static Reverse Current	I_R			1	μA	$V_R = 3\text{V}$
Input Diode Static Forward Voltage	V_F		1.15	1.2	V	$I_F = 2\text{mA}$
Input Diode Static Forward Voltage	V_F		1.5	1.8	V	$I_F = 50\text{mA}$
Reverse Breakdown Voltage	B_{VR}	6	12		V	$I_R = 8\mu\text{A}$
Input Diode Capacitance	C_{IN}		25		pF	$V = 0\text{V}$, $f = 1\text{MHz}$

OUTPUT TRANSISTOR

 $T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	50			V	$I_C = 1\text{mA}$, $I_B = 0$, $I_F = 0$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	7			V	$I_C = 10\mu\text{A}$, $I_E = 10\mu\text{A}$, $I_F = 0$
Collector-Emitter Dark Current	I_{CEO1}			50	nA	$V_{CE} = 50\text{V}$, $I_F = 0\text{mA}$
	I_{CEO2}			10	nA	$V_{CE} = 5\text{V}$, $I_F = 0\text{mA}$

COUPLED CHARACTERISTICS

 $T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
On State Collector Current	$I_{C(ON)}$	4			mA	$V_{CE} = 5\text{V}$, $I_F = 10\text{mA}$
On State Collector Current	$I_{C(ON)}$	3		20	mA	$V_{CE} = 0.4\text{V}$, $I_F = 10\text{mA}$
On State Collector Current -55°C	$I_{C(ON)}$	2			mA	$V_{CE} = 5\text{V}$, $I_F = 10\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$I_F = 50\text{mA}$, $I_C = 10\text{mA}$
Isolation Resistance	R_{ISO}	10^9			Ω	$V_{IN-OUT} = 1000\text{V}$
Input to Output Capacitance	C_{IO}		2	2.5	pF	$f = 1\text{MHz}$
Delay Time	t_d		2	4	μs	$V_{CE} = 5\text{V}$, $I_F = 2\text{mA}$, $R_L = 100\Omega$
Storage Time	t_s		0.2	0.5	μs	$V_{CE} = 5\text{V}$, $I_F = 2\text{mA}$, $R_L = 100\Omega$
Rise Time	t_r		3	5	μs	$V_{CE} = 5\text{V}$, $I_F = 2\text{mA}$, $R_L = 100\Omega$
Fall Time	t_f		4	5	μs	$V_{CE} = 5\text{V}$, $I_F = 2\text{mA}$, $R_L = 100\Omega$

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	I_{FL}	0	1	μA
Input Current, High Level	I_{FH}	2	10	mA
Supply Voltage	V_{CE}	5	50	V
Operating Temperature	T_A	-55	125	$^\circ\text{C}$

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66228-001	Commercial
66228-101	Screened