

**66225**

**TO-72 RADIATION TOLERANT OPTOCOUPLER  
WITH 850 nm LED**



05/21/03

**Features:**

- Designed to meet or exceed MIL-PRF-19500 radiation requirements
- High Current Transfer Ratio - 200% typical
- 500Vdc electrical input to output isolation
- Base lead provided for conventional transistor biasing

**Applications:**

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

**DESCRIPTION**

The **66225** optocoupler consists of an 850 nm GaAlAs LED optically coupled to a photodiode detector and a 2N2222 transistor all mounted in a hermetic TO72 package. This configuration has proven to be highly tolerant to both proton and total dose radiation. The 850 nm LED has proven to be more tolerant of operating temperatures over 100°C than the more commonly used 660nm LED.

**ABSOLUTE MAXIMUM RATINGS**

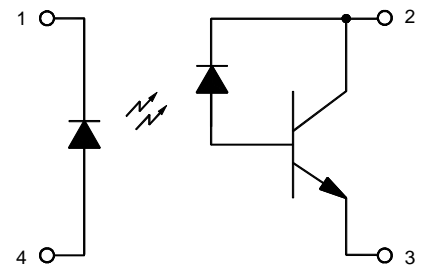
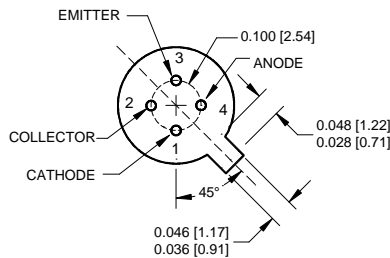
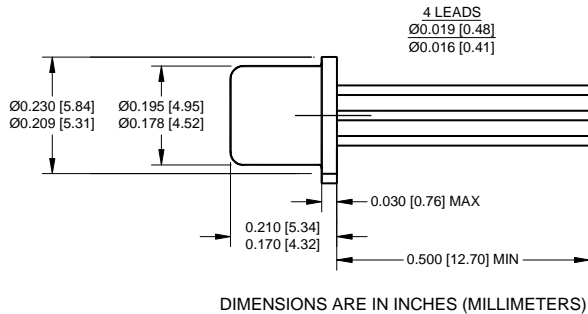
Input Diode Forward DC Current.....	50mA
Input Power Dissipation (see Note 1).....	80mW
Reverse Input Voltage .....	7V
Collector-Emitter Voltage .....	40V
Continuous Collector Current .....	50mA
Continuous Transistor Power Dissipation (see Note 2).....	230mW
Storage Temperature.....	-65°C to +150°C
Operating Free-Air Temperature Range.....	-55°C to +125°C
Lead Solder Temperature (1/16" (1.6mm) from case for 5 seconds) .....	240°C

**Notes:**

1. Derate linearly @ 0.80 mW/°C above 25°C.
2. Derate linearly @ 2.3 mW/°C above 25°C.

**Package Dimensions**

**Schematic Diagram**



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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	$\mu\text{A}$	$V_R = 3\text{V}$
Input Diode Static Forward Voltage	$V_F$			1.5	V	$I_F = 10\text{mA}$

**OUTPUT TRANSISTOR CHARACTERISTICS** $T_A = 25^\circ\text{C}$  unless otherwise noted

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C = 1\text{mA}, I_B = 0, I_F = 0$
Collector-Emitter Cutoff Current	$I_{CEO}$			100	nA	$V_{CE} = 20\text{V}$

**COUPLED CHARACTERISTICS** $T_A = 25^\circ\text{C}$  unless otherwise noted

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Current Transfer Ratio	CTR	100			%	$V_{CE} = 1\text{V}, I_F = 10\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.3	V	$I_F = 20\text{mA}, I_C = 10\text{mA}$
Input-Output Isolation Current	$I_{ISO}$			100	nA	$V_{I-O} = 500\text{V}$
Rise Time	$t_r$			10	$\mu\text{s}$	$V_{CE} = 10\text{V}, I_F = 10\text{mA}, R_L = 100\Omega$
Fall Time	$t_f$			10	$\mu\text{s}$	$V_{CE} = 10\text{V}, I_F = 10\text{mA}, R_L = 100\Omega$

**RECOMMENDED OPERATING CONDITIONS:**

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	$I_{FL}$	0	10	$\mu\text{A}$
Input Current, High Level	$I_{FH}$	1	20	mA
Operating Temperature	$T_A$	-55	125	$^\circ\text{C}$

**ORDERING INFORMATION:**

PART NUMBER	DESCRIPTION
66225-001	Commercial
66225-101	Screened