

66280

Radiation Tolerant Bulkhead Optocoupler



07/11/07

PRELIMINARY

Features:

- High reliability
- Base lead provided for conventional transistor biasing
- 850 nm LED, silicon photodiode & 2N2222 amplifier
- Hermetically sealed for reliability and stability
- Stability over wide temperature range
- 500 Volt electrical isolation

Applications:

- Line Receivers
- Switchmode Power Supplies
- Signal ground isolation
- Process Control input/output isolation

DESCRIPTION

The 66280 Optocoupler consists of an 850nm GaAlAs LED optically coupled to a photodiode detector driving a radiation tolerant transistor. This configuration has proven to be highly tolerant to both proton and total dose radiation. Available as commercial or screened.

\*ABSOLUTE MAXIMUM RATINGS

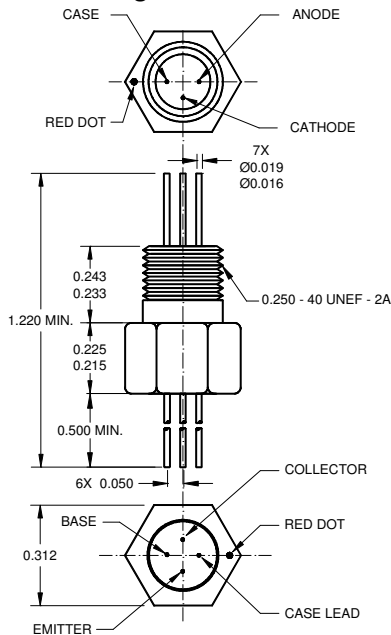
Input to Output Voltage .....	500V
Collector-Base Voltage .....	40V
Collector-Emitter Voltage (See Note 1) .....	40V
Emitter-Base Voltage .....	7V
Input Diode Reverse Voltage.....	2V
Input Diode Continuous Forward Current at (or below) 65°C Free-Air Temperature (see note 2) .....	40mA
Continuous Collector Current .....	50mA
Peak Diode Current (See Note 3).....	1A
Continuous Transistor Power Dissipation at (or below) 25°C Free-Air Temperature (see Note 4).....	300mW
Operating Free-Air Temperature Range.....	-55°C to +125°C
Storage Temperature .....	-65°C to +150°C
Lead Temperature (1/16" (1.6mm) from case for 10 seconds).....	240°C

\* JEDEC registered data

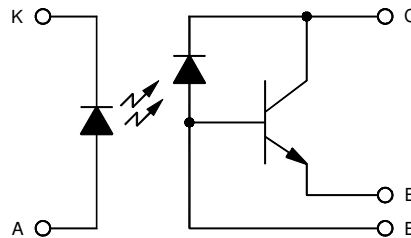
Notes:

1. This value applies with the emitter-base diode open-circuited and the input-diode current equal to zero.
2. Derate linearly to 125°C free-air temperature at the rate of 0.67 mW/°C.
3. This value applies for  $t_w \leq 1 \mu s$ . PRR < 300 pps.
4. Derate linearly to 125°C free-air temperature at the rate of 3 mW/°C.

Package Dimensions



Schematic Diagram



**INPUT DIODE CHARACTERISTICS**  $T_A = 25^\circ\text{C}$  unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode Static Reverse Current	$I_R$			100	$\mu\text{A}$	$V_R = 2\text{V}$
Input Diode Static Forward Voltage	$V_F$	0.8		1.8	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-Base Breakdown Voltage	$V_{(BR)CBO}$	40			V	$I_C = 100\mu\text{A}, I_E = 0, I_F = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C = 1\text{mA}, I_B = 0, I_F = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	4			V	$I_C = 0\text{mA}, I_E = 100\mu\text{A}, I_F = 0$
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 Voltage	$V_{I-O}$	500			V	$I_{I-O} = 100\text{nA}$
Rise Time	$t_r$			20	$\mu\text{s}$	$V_{CC} = 10\text{V}, I_F = 10\text{mA}, R_L = 100\Omega$
Fall Time	$t_f$			20	$\mu\text{s}$	$V_{CC} = 10\text{V}, I_F = 10\text{mA}, R_L = 100\Omega$

**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	100	$^\circ\text{C}$

**SELECTION GUIDE**

PART NUMBER	PART DESCRIPTION
66280-001	Commercial
66280-101	Screened