

66099

RADIATION TOLERANT TO-5 OPTOCOUPLER



09/09/03

Features:

- Meets or exceeds MIL-PRF-19500 radiation requirements
- Current Transfer Ratio-150% typical
- 1kVdc 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 **66099** Optocoupler consists of a 660 nm 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 standard and high voltage and commercial or screened levels.

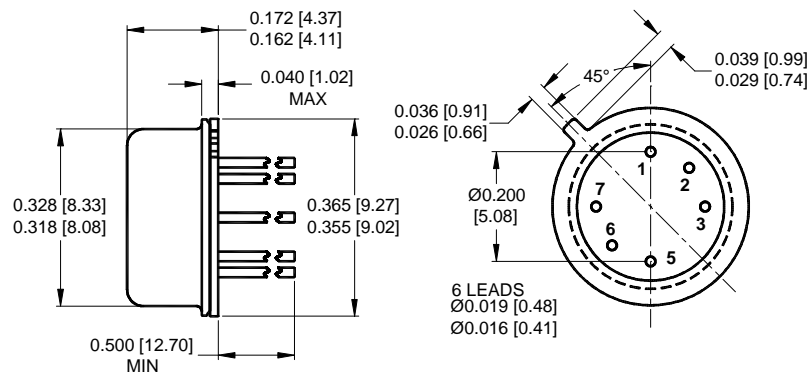
ABSOLUTE MAXIMUM RATINGS

Input Diode Forward DC Current.....	40 mA
Input Power Dissipation (Note 1)80 mW
Input-Output Isolation Voltage	1000 V
Reverse Input Voltage	3 V
Collector-Base Voltage -00X, -10X.....	40 V
Collector-Base Voltage -40X	150 V
Collector-Emitter Voltage -00X, -10X	40 V
Collector-Emitter Voltage -40X	150 V
Emitter-Base Voltage -00X, -10X.....	4 V
Emitter-Base Voltage -40X	6 V
Continuous Collector Current	50 mA
Continuous Transistor Power Dissipation (Note 2)300 mW
Storage Temperature	-65°C to +150°C
Operating Free-Air Temperature Range.....	-55°C to +100°C
Lead Solder Temperature (10 seconds, 1/16" from case)	240°C

Notes:

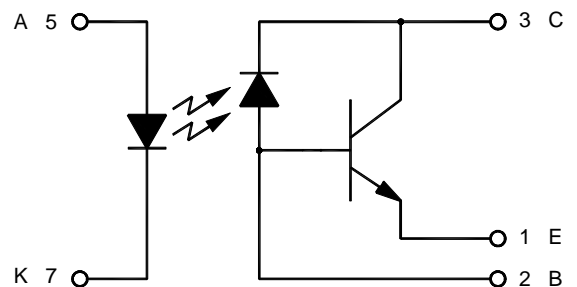
1. Derate linearly 1.0 mW/°C above 25°C.
2. Derate linearly 4.0 mW/°C above 25°C.

Package Dimensions



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

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	μA	$V_R = 2\text{V}$
Input Diode Static Forward Voltage	V_F	0.8		2	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-Base Breakdown Voltage		40				
Collector-Base Breakdown Voltage		150				
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C = 1\text{mA}, I_B = 0, I_F = 0$
Collector-Emitter Breakdown Voltage		40				
Collector-Emitter Breakdown Voltage		150				
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	4			V	$I_C = 0\text{mA}, I_E = 100\mu\text{A}, I_F = 0$
Emitter-Base Breakdown Voltage		4				
Emitter-Base Breakdown Voltage		6				
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}	1000			V	$I_{I-O} = 100\text{nA}$
Rise Time	t_r			20	μs	$V_{CC} = 10\text{V}, I_F = 10\text{mA}, R_L = 100\Omega$
Fall Time	t_f			20	μs	$V_{CC} = 10\text{V}, I_F = 10\text{mA}, R_L = 100\Omega$

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	I_{FL}	0	10	μA
Input Current, High Level	I_{FH}	1	20	mA
Operating Temperature	T_A	-55	100	$^\circ\text{C}$

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66099-003	Commercial
66099-101	Screened
66099-103	TX screening plus Group A
66099-105	TXV screening plus Group A
66099-401	High Voltage, Commercial
66099-415	High voltage, Screened