

66311 7.5 kV HIGH VOLTAGE, RADIATION TOLERANT ISOLATOR



06/24/2015 Rev. A

Features:

- Designed to exceed MIL-PRF-19500 radiation requirements
- 7.5 kVdc Isolation
- Current Transfer Ratio 150% typical
- Base lead provided for conventional transistor biasing

Applications:

- High Voltage Isolation
- Voltage Level Shifting
- Grid Current Modulator
- Switching power supplies
- Medical systems

DESCRIPTION

The **66311** high voltage isolator consisting of an 850 nm LED optically coupled to a radiation tolerant phototransistor. This configuration has proven to be highly tolerant to both proton and total dose radiation. The isolator is built with hermetic components internally optically coupled and encased in a high temperature outer PPS plastic housing.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Isolation Voltage (Input to Output) (Note 2).....	7.5 kVdc
Operating Free-Air Temperature Range	-40°C to +100°C
Storage Temperature.....	-40°C to +100°C
Lead Solder Temperature (10 second, 1.6 mm from case) (Note 1).....	260°C

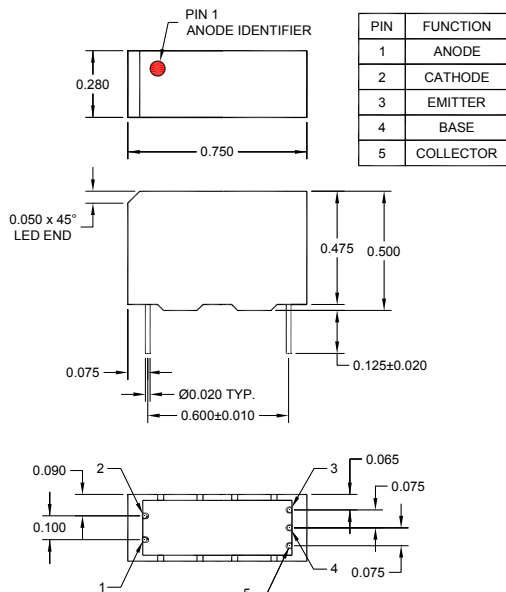
LED:

Peak Forward Input Current (2μs duration).....	300 mA
Average Forward Input Current	50 mA
Reverse Input Voltage	3.0 V
Input Power Dissipation	100 mW

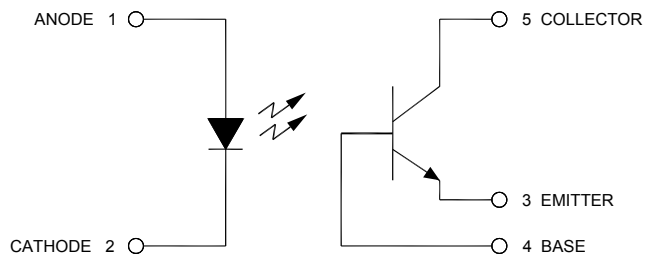
Output Transistor:

Collector-Base Voltage	40 V
Collector-Emitter Voltage	40 V
Emitter-Base Voltage	4 V
Continuous Collector Current	50 mA
Continuous Transistor Power Dissipation	300 mW

Package Dimensions



Schematic Diagram



ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input LED							
Input Forward Voltage	V_F		1.3	1.8	V	$I_F = 20\text{ mA}$	
Reverse Current	I_R			100	μA	$V_R = 3.0\text{ V}$	
Output Transistor							
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	$I_C = 0, I_E = 100\ \mu\text{A}, I_F = 0$	
Collector-Emitter Cutoff Current	I_{CEO}			100	nA	$V_{CC} = 20\text{ V}, I_F = 0$	
Coupled Characteristics							
Current Transfer Ratio	CTR	50			%	$V_{CE} = 1\text{ V}, I_F = 10\text{ mA}$	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.5	V	$I_F = 10\text{ mA}, I_C = 5\text{ mA}$	
Input – Output Isolation Voltage	V_{I-O}	7500			V	$I_{I-O} = 25\ \mu\text{A}$	2
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	$V_{CC} = 10\text{ V}, I_F = 10\text{ mA}, R_L = 100\ \Omega$	

NOTES:

- 1) The duration can be extended to 10 seconds maximum when flow soldering. Otherwise 5 seconds with soldering iron.
- 2) Device considered a two terminal device with all Input pins (Anode and Cathode) shorted together and all Output pins (Collector, Emitter and Base) shorted together.

SELECTION GUIDE

PART #	PART DESCRIPTION
66311-001	Commercial
66311-101	Screened

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