

66323 7.5 kV HIGH VOLTAGE, 6N140 TYPE HIGH SPEED ISOLATOR



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Features:

- High Current Transfer Ratio 1000% typical
- 7.5 kVdc Isolation
- Low input current requirement of 0.5 mA
- Integral Detector Die Faraday Shield for improved Common Mode Rejection

Applications:

- High Voltage Isolation
- Voltage Level Shifting
- Isolated Receiver Input
- Switching power supplies
- Medical systems

DESCRIPTION

The **66323** high voltage isolator consists of an 850 nm LED optically coupled to a high gain inverting photon detector. The isolator provides high CTR and low leakage currents over the specified temperature range of -40°C to +100°C. The isolator is built with hermetic components internally optically coupled and encased in a high temperature outer PPS plastic housing.

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ 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
Temperature (10 second, 1.6 mm from case) (Note 1)	260°C

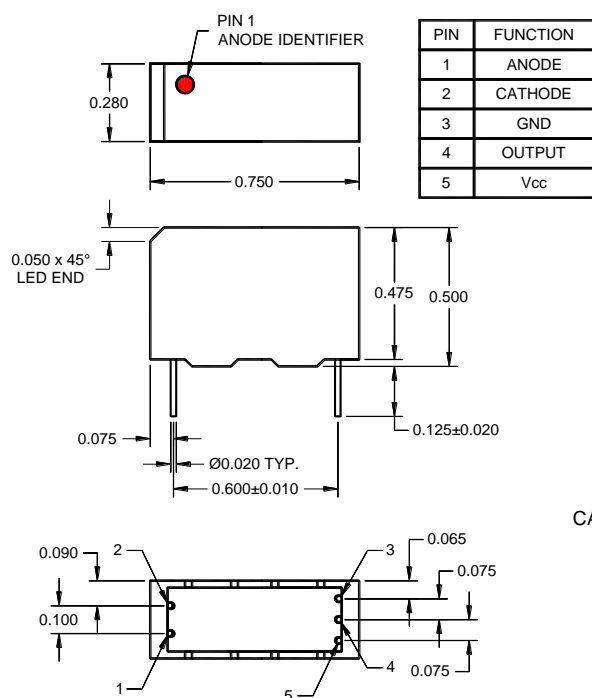
LED:

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

Output IC:

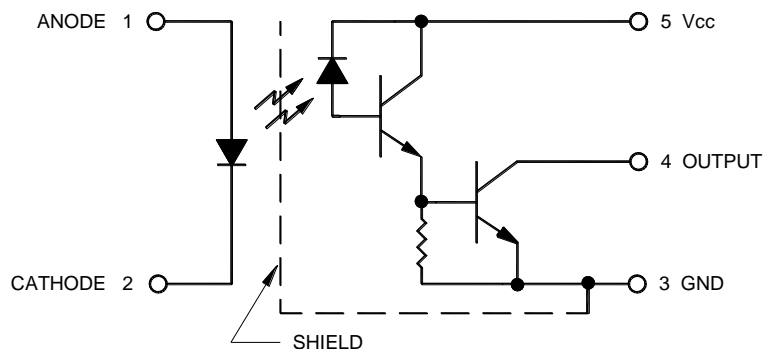
Supply Voltage - V_{CC}	-0.5V to 7.0 V (1 minute maximum)
Output Current - I_O	25 mA
Output Power Dissipation	40 mW
Output Voltage - V_O	18 V

Package Dimensions



ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

Schematic Diagram



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ELECTRICAL CHARACTERISTICS ($T_A = -40^{\circ}\text{C}$ to $+100^{\circ}\text{C}$ 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 mA	
Reverse Current	I _R			100	μA	V _R = 3.0 V	
Output IC							
Current Transfer Ratio	CTR	300	1000		%	I _F = 0.5 mA , V _O = 0.4 V, V _{CC} = 4.5 V	3
		300	750			I _F = 1.6mA , V _O = 0.4 V, V _{CC} = 4.5 V	
		200	400			I _F = 5.0 mA , V _O = 0.4 V, V _{CC} = 4.5 V	
Low Level Output Voltage	V _{OL}		0.1	0.4	V	I _F = 0.5 mA , I _{OL} = 1.5 mA, V _{CC} = 4.5 V	
			0.2	0.4		I _F = 5.0 mA , I _{OL} = 10 mA, V _{CC} = 4.5 V	
Logic High Output Current	I _{OH}		0.005	250	μA	I _F = 2 μA, V _O = V _{CC} = 18 V	
High Level Supply Current	I _{CCH}		0.010	40	μA	I _F = 0 mA, V _{CC} = 18 V	
Low Level Supply Current	I _{CCL}		2	4	mA	I _F = 1.6 mA, V _{CC} = 18 V	
Input – Output Isolation Voltage	V _{I-O}	7500			V	I _{I-O} = 25 μA	2
Propagation Delay Time To High Output Level	t _{PLH}			60	μs	I _F = 0.5 mA , V _{CC} = 5.0 V, R _L = 4.7 kΩ	
				30		I _F = 5.0 mA , V _{CC} = 5.0 V, R _L = 680 Ω	
Propagation Delay Time To Low Output Level	t _{PHL}			100	μs	I _F = 0.5 mA , V _{CC} = 5.0V, R _L = 4.7 kΩ	
				10		I _F = 5.0 mA , V _{CC} = 5.0 V, R _L = 680 Ω	
Typical Characteristics (V _{CC} = 5V, T _A = 25°C)							
Input Capacitance	C _{IN}		60		pF	V _F = 0, f = 1 MHz	
Coupling Capacitance (Input – Output)	C _{I—O}		1.5		pF	V _F = 0, f = 1 MHz	2
Common Mode Transient Immunity At High Output Level	CM _H	500	1000		V/μs	V _{CM} = 50 Vp-p, V _{CC} = 5.0 V R _L = 1.5 kΩ, I _F = 0	4, 6
Common Mode Transient Immunity At Low Output Level	CM _L	500	1000		V/μs	V _{CM} = 50 Vp-p, V _{CC} = 5.0 V R _L = 1.5 kΩ, I _F = 1.6 mA	5, 6

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 (V_{CC} , GND and Output) shorted together.
- 3) CURRENT TRANSFER RATIO is defined as the ratio of output collector current, I_O , to the forward LED input current, I_F , times 100%.
- 4) CM_H is the maximum tolerable common mode transient to assure the output will remain in a HIGH logic state (ie. $V_O > 2.0 \text{ V}$).
- 5) CM_L is the maximum tolerable common mode transient to assure the output will remain in a LOW logic state (ie. $V_O < 0.8 \text{ V}$).
- 6) In applications where dv/dt may exceed 50,000 V/ μs (such as static discharge) a series resistor, R_{CC} , should be include to protect the detector IC from destructively high surge currents. The recommended value is $R_{CC} = 1 \text{ V}/(0.6 * I_F) \text{ mA}$.

SELECTION GUIDE

PART #	PART DESCRIPTION
66323-001	Commercial
66323-101	Screened