66325 25 kV HIGH VOLTAGE, 6N140 TYPE HIGH SPEED ISOLATOR

OPTOELECTRONIC PRODUCTS DIVISION

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Features:

- High Current Transfer Ratio 1000% typical
- 25 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 ***66325*** 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 -40ºC to +100ºC.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) ..... 25 kVdc
Operating Free-Air Temperature Range ..... -40°C to +100°C
Storage Temperature ..... -40°C to +100°C
Lead Solder Temperature (10 second, 1.6mm from case) (Note 1) ..... 260°C

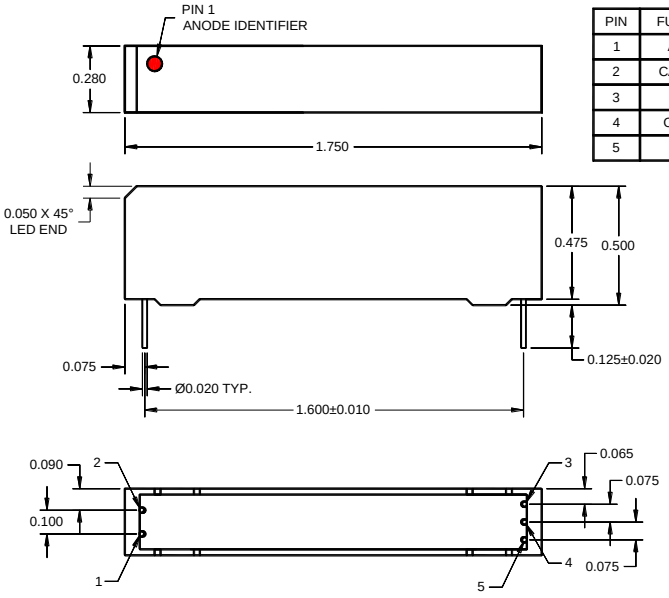
LED:

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

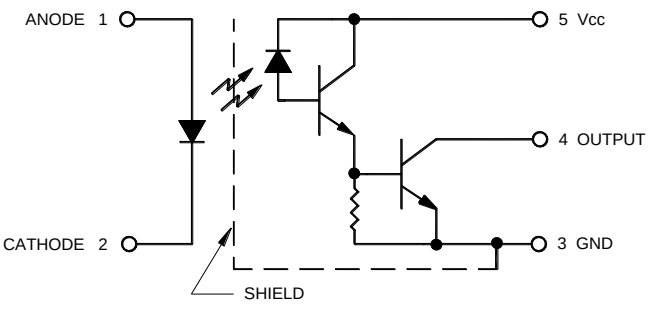
Package Dimensions



PIN	FUNCTION
1	ANODE
2	CATHODE
3	GND
4	OUTPUT
5	Vcc

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

Schematic Diagram



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ELECTRICAL CHARACTERISTICS (T_A = -40°C to +100°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 = 1.6 mA ,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}	25,000			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} = 5.0 V, R_L = 4.7 kΩ	
				10		I_F = 5.0 mA , V_{CC} = 5.0 V, R_L = 680 Ω	
Typical Characteristics (V_{CC} = 5 V, 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 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 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} = 1V/(0.6 * I_F) mA.

SELECTION GUIDE

PART #	PART DESCRIPTION
66325-001	Commercial
66325-101	Screened