66181 30kV HIGH VOLTAGE ISOLATOR WITH BUFFERED OUTPUT	**Mii** OPTOELECTRONIC PRODUCTS DIVISION

Features:	**Applications:**
• 10 Mhz bandwidth typical • 30kVdc isolation test voltage • TTL compatible input and output • High common mode rejection • Rugged ceramic package	• Military and Space • Voltage Level Shifting • Grid Current Modulator • Switching between power supplies • Medical systems

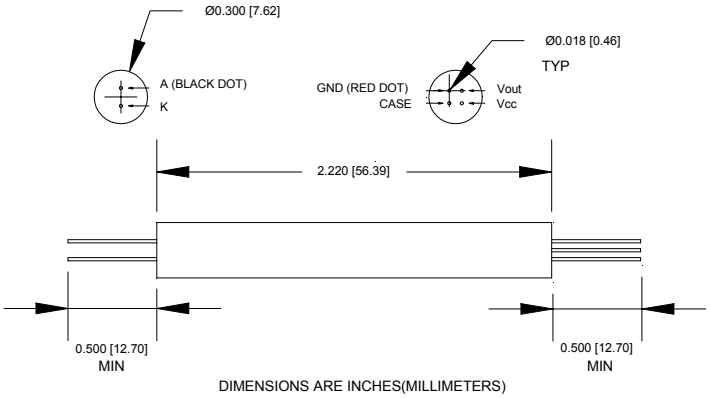
DESCRIPTION

The ***66181*** high voltage isolator consisting of a LED optically coupled to a high speed, high gain inverting detector gate. Output is TTL capable with switching propagation delays of 55ns typical, hermetically sealed in TO-46 packages and mounted in a highly reliability, hermetically sealed ceramic package. Available in commercial (0° to +70°C), extended temperature range (-40° to +85°) and full Military temperature range (-55° to +125°C). ***Contact the factory for special custom or multi-channel requirements!***

ABSOLUTE MAXIMUM RATINGS

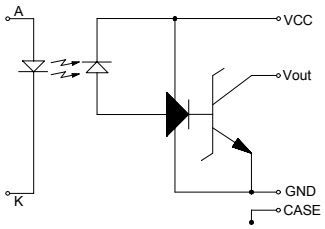
Storage Temperature	-65°C to +150°C
Operating Free-Air Temperature Range	-55°C to +125°C
Lead Solder Temperature	260°C for 10s (1.6mm below seating plane)
Peak Forward Input Current	40mA (1ms duration)
Average Forward Input Current	20mA
Input Power Dissipation	35mW
Reverse Input Voltage	5V
Supply voltage - V_{CC}	7V(1 minute maximum)
Output Current - I_O	25mA
Output Power Dissipation	40mW
Output Voltage - V_O	7V
Total Power Dissipation	350mW

Package Dimensions



DIMENSIONS ARE INCHES(MILLIMETERS)

Schematic Diagram



NOTE:
A.01 TO 0.1 μF BYPASS CAPACITOR MUST BE CONNECTED BETWEEN Vcc AND GROUND.

ENCAPSULATION IN A SUITABLE EPOXY IS REQUIRED TO MEET 30KV ISOLATION VOLTAGE

MICROPAC INDUSTRIES, INC. OPTOELECTRONIC PRODUCTS DIVISION • 725 E. Walnut St., Garland, TX 75040 • (972) 272-3571 • Fax (972) 487-6918
www.micropac.com E-MAIL: optosales@micropac.com

ELECTRICAL CHARACTERISTICS

T_a = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
High Level Output Current	I_{OH}		5	250	µA	V_{CC} = 5.5V, V_O = 5.5V, I_F = 20µA	
Low Level Output Voltage	V_{OL}		0.35	0.6	V	V_{CC} = 5.5V, I_F = 10mA I_{OL} (Sinking) = 10mA	
High Level Supply Current	I_{CCH}		9	20	mA	V_{CC} = 5.5V, I_F = 0	
Low Level Supply Current	I_{CCL}		13	30	mA	V_{CC} = 5.5V, I_F = 20mA	
Input Forward Voltage	V_F		1.5	1.75	V	I_F = 15mA	
Input Reverse Breakdown Voltage	BV_R	5			V	I_R = 10µA	
Input-Output Insulation Leakage Current	$I_{I—O}$			10.0	µA	$V_{I—0}$ = 30kVdc, Relative Humidity = 45% T_a = 25°C, t = 5 sec	
Propagation Delay Time To High Output Level	t_{PLH}		65	150	ns	R_L = 510Ω, C_L = 15Pf. I_f = 13mA	9
Propagation Delay Time To Low Output Level	t_{PHL}		55	150	ns	R_L = 510Ω, C_L = 15Pf I_f = 13mA	9

TYPICAL CHARACTERISTICS

T_A = 25°C, V_{CC} = 5V

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Diode Temperature Coefficient	$\frac{\Delta v_F}{\Delta T_A}$		-1.9		mV/°C	I_F = 20mA	1
Resistance (Input-Output)	R_{I-0}		10^{12}		Ω	$V_{I—O}$ = 500V	3
Input-Input Insulation Leakage Current	I_{I-I}		0.5		nA	Relative Humidity = 45% V_{I-I} = 500V, t = 5s	4
Resistance (Input-Input)	R_{I-I}		10^{12}		Ω	V_{I-I} = 500V	4
Common Mode Transient Immunity at High Output Level	CM_H	1000	10000		V/µs	V_{CM} = 10V (peak), V_O (min) = 2V, R_L = 510Ω, I_F = OmA	7
Common Mode Transient Immunity at Low Output Level	CM_L	1000	10000		V/µs	V_{CM} = 10V (peak), V_O (max) = 0.8V, R_L = 510Ω, I_F = 1OmA	8

NOTES:

1. Each channel
2. Measured between pins 1 through 8 shorted together and pins 9 through 16 shorted together.
3. Measured between pins 9 and 10 or 11 and 12 shorted together, and pins 9 through 16 shorted together.
4. Measured between pins 9 and 10 shorted together, and pins 11 and 12 shorted together.
5. The t_{plh} propagation delay is measured from the 6.5mA point on the trailing edge of the input pulse to the 1.5V point on the trailing edge of the output pulse.
6. The t_{phl} propagation delay is measured from the 6.5mA point on the leading edge of the input pulse to the 1.5V point on the leading edge of the output pulse.
7. CM_h is the max. tolerable common mode transient to assure that the output will remain in a high logic state (i.e. $V_O > 2.0V$).
8. CM_l is the max. tolerable common mode transient to assure that the output will remain in a low logic state (i.e. $V_O < 0.8V$).
9. It is essential that a bypass capacitor (.01 to 0.1µF ceramic) be connected from pin 1 to pin 4.

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level Each Channel	I_{FL}	0	250	µA
Input Current, High Level Each Channel	I_{FH}	12.5	20	Ma
Supply Voltage	V_C	4.5	5.5	V
Fan Out (TTL Load) Each Channel	N		6	
Operating Temperature	T_A	-55	125	°C

SELECTION GUIDE

PART #	PART DESCRIPTION
66181-001	Inverted output, military operating range (-55° to +125°C)
66181-101	Inverted output, full mil-temp (-55° to +125°C) with 100% device screening (on discrete components)
66181-011	Inverted output, commercial version Isolator (0° to 70°C)

MICROPAC INDUSTRIES, INC. OPTOELECTRONIC PRODUCTS DIVISION • 725 E. Walnut St., Garland, TX 75040 • (972) 272-3571 • Fax (972) 487-6918
www.micropac.com E-MAIL: optosales@micropac.com