66169	**GULL WING HERMETICALLY SEALED, DUAL CHANNEL OPTOCOUPLER (Electrically Similar To 6N134)**	**OPTOELECTRONIC PRODUCTS DIVISION**

Features:	**Applications:**
• High Speed • 1500 Vdc isolation test voltage • 5 MHz bandwidth • High radiation immunity • Faraday shield to provide high common mode rejection	• Military and Space • High reliability systems • Voltage Level Shifting • Isolated Receiver Input • Communication systems • Medical systems

DESCRIPTION

The ***66169*** dual channel optocoupler consists of an LED optically coupled to a high speed, high gain inverting detector gate. Maximum isolation can be achieved while providing TTL output capable of switching with a propagation delay of 55ns typical. The 66169 is a 10 pin gull wing hermetically sealed package and is available in standard and screened versions or tested to customer specifications.

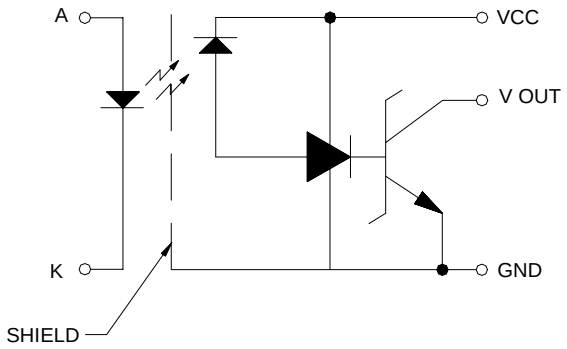
ABSOLUTE MAXIMUM RATINGS

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

CONTACT FACTORY
FOR PACKAGE
AND PIN OUT
INFORMATION

Schematic Diagram



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ELECTRICAL CHARACTERISTICS T_A = -55°C to 125°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 = 250µA	
Low Level Output Voltage	V_{OL}		0.35	0.6	V	V_{CC} = 5.5V, I_F = 10mA I_{OL} (Sinking) = 10mA	8
High Level Supply Current	I_{CCH}		9	14	mA	V_{CC} = 5.5V, I_F = 0	
Low Level Supply Current	I_{CCL}		13	18	mA	V_{CC} = 5.5V, I_F = 20mA	
Input Forward Voltage	V_F		1.5	1.75	v	I_F = 20mA	
Input Reverse Breakdown Voltage	BV_R	5			v	I_R = 10µA	
Input-Output Insulation Leakage Current	$I_{I—O}$			1.0	µA	$V_{I—0}$ = 1500Vdc, Relative Humidity = 45% T_A = 25°C, t = 5s	3
Propagation Delay Time To High Output Level	t_{PLH}		65	100	ns	V_{CC} = 5.5V R_L = 510Ω, C_L = 15Pf, I_f = 13mA, T_A = 25°C	4
Propagation Delay Time To Low Output Level	t_{PHL}		55	100	ns	V_{CC} = 5.5V, R_L = 510Ω, C = 15p, I_f = 13mA, T_A = 25°C	5

TYPICAL CHARACTERISTICS AT T_A = 25°C, V_{CC} = 5V Each Channel

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Capacitance	C_{IN}		60		pF	V_F = 0, f = MHz	
Input Diode Temperature Coefficient	$\frac{\Delta V_F}{\Delta T_A}$		-1.9		mV/°C	I_F = 20mA	
Resistance (Input-Output)	R_{I-0}		10^{12}		Ω	$V_{I—O}$ = 500V	2
Capacitance (Input-Output)	C_{I-0}		1.7		pF	f = 1MHz	2
Input-Input Insulation Leakage Current	I_{I-I}		0.5		nA	Relative Humidity = 45% V_{I-I} = 500V, t = 5s	3
Output Rise-Fall Time (10-90%)	t_r, t_f		35		ns	R_L = 510Ω, C_L = 15pF I_F = 13mA	
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 = 0mA	6
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 = 10mA	7

NOTES:

1. Measured between pins 1 through 8 shorted together and pins 9 through 16 shorted together.
2. Measured between pins 9 and 10 or 11 and 12 shorted together, and pins 9 through 16 shorted together.
3. Measured between pins 9 and 10 shorted together, and pins 11 and 12 shorted together.
4. 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.
5. 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.
6. 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).
7. 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).
8. 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	I_{FL}	0	250	µA
Input Current, High Level	I_{FH}	12.5	20	mA
Supply Voltage	V_C	4.5	5.5	V
Fan Out (TTL Load)	N		6	
Operating Temperature	T_A	-55	125	°C

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66169-000	Single Channel optocoupler, full mil-temp (-55° to +125°C) with 100% device screening
66169-002	Single Channel optocoupler, military operating range (-55° to +125°C)
66169-003	Single Channel optocoupler, commercial (0° to 70°C)
66169-004	Single Channel optocoupler, extended temperature range (-40° to +85°C)