

H11L1, H11L2, H11L3, H11L4



**ISOCOM**  
COMPONENTS

**MICROPROCESSOR COMPATIBLE  
SCHMITT TRIGGER OPTICALLY  
COUPLED ISOLATOR**



**DESCRIPTION**

The H11L1, 2, 3, 4 series are optically coupled isolators consisting of a Gallium Arsenide infrared emitting diode and a Microprocessor Compatible Schmitt trigger output mounted in a standard 6 pin dual in line package.

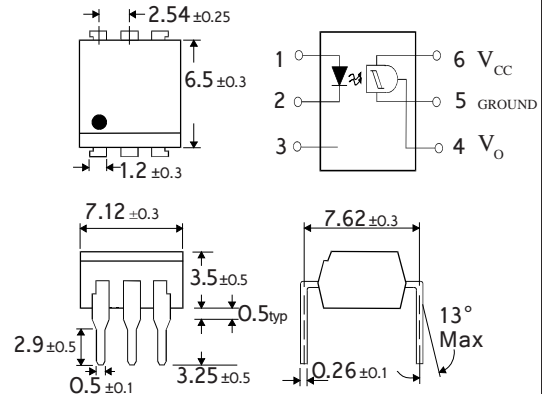
**FEATURES**

- Options :-  
10mm lead spread - add G after part no.  
Surface mount - add SM after part no.  
Tape&reel - add SMT&R after part no.
- High data rate, 1MHz typical (NRZ)
- Microprocessor compatible drive
- Logic compatible output sinks 16 milliamperes at 0.4 volts maximum
- High Isolation Voltage ( $5kV_{RMS}, 7kV_{PK}$ )
- High common mode rejection ratio
- Fast switching :  $t_{rise}, t_{fall} = 100nS$  typical
- Wide supply voltage capability, compatible with all popular logic systems
- Guaranteed On / Off threshold hysteresis

**APPLICATIONS**

- Logic to logic isolator
- Line receiver-eliminates noise and transient problems
- Programmable current level sensor
- AC to TTL conversion - square wave shaping
- Digital programming of power supplies
- Interfaces computers with peripherals

**Dimensions in mm**



**ABSOLUTE MAXIMUM RATINGS  
(25°C unless otherwise specified)**

Storage Temperature \_\_\_\_\_  $-40^\circ C$  to  $+125^\circ C$   
Operating Temperature \_\_\_\_\_  $-25^\circ C$  to  $+85^\circ C$   
Lead Soldering Temperature  
(1/16 inch (1.6mm) from case for 10 secs)  $260^\circ C$

**INPUT DIODE**

Forward Current,  $I_F$  \_\_\_\_\_ 50mA  
Peak forward current  
(Pulse width  $\leq 100\mu S$ , Duty ratio=0.001) — 1A  
Reverse Voltage,  $V_R$  \_\_\_\_\_ 6V  
Power Dissipation  
(derate linearly  $1.41mW / ^\circ C$  above  $25^\circ C$ ) — 70mW

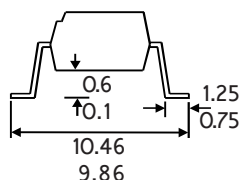
**OUTPUT DETECTOR**

Output Voltage,  $V_{CC}$  \_\_\_\_\_ 16V  
Supply Voltage,  $V_{OH}$  \_\_\_\_\_ 16V  
Output current,  $I_{OL}$  \_\_\_\_\_ 50mA  
Power Dissipation  
(derate linearly  $2mW / ^\circ C$  above  $25^\circ C$ ) — 150mW

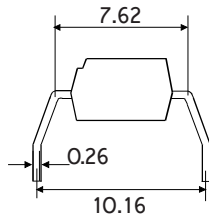
**POWER DISSIPATION**

Total Power Dissipation  
(derate linearly  $2.94mW / ^\circ C$  above  $25^\circ C$ ) — 170mW

**OPTION SM  
SURFACE MOUNT**



**OPTION G**



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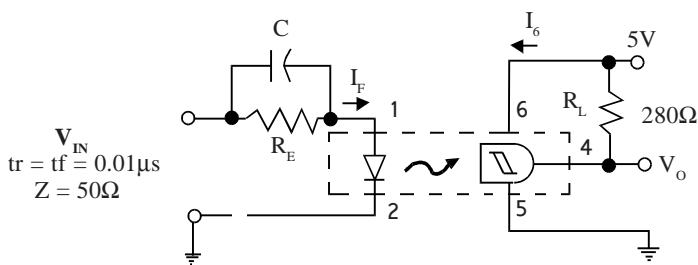
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )	0.75			V	$I_F = 0.3\text{mA}$ $I_F = 10\text{mA}$ $V_R = 3\text{V}$ $V = 0, f = 1\text{MHz}$
	Forward Voltage ( $V_F$ )				1.5 V	
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	
	Capacitance ( $C_j$ )			100	pF	
Output	Operating Voltage Range ( $V_{CC}$ )	3		15	V	$I_F = 0\text{mA}, V_{CC} = 5\text{V}$ $I_F = 0\text{mA}, V_{CC} = V_o = 15\text{V}$
	Supply Current $I_6$ (off)		1.6	5	mA	
	Output Current High ( $I_{OH}$ )			100	$\mu\text{A}$	
Coupled	Supply Current $I_6$ (on)		1.6	5	mA	$I_F = 10\text{mA}, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$
	Output Voltage, Low ( $V_{OL}$ )			0.4	V	
	Turn-on Threshold Current $I_F$ (on)					
	H11L1			1.6	mA	$R_L = 270\Omega, V_{CC} = 5\text{V}$
	H11L2			10	mA	$R_L = 270\Omega, V_{CC} = 5\text{V}$
	H11L3			5	mA	$R_L = 270\Omega, V_{CC} = 5\text{V}$
	H11L4			2	mA	$R_L = 270\Omega, V_{CC} = 5\text{V}$
	Turn-off Threshold Current $I_F$ (off)	0.3			mA	$R_L = 270\Omega, V_{CC} = 5\text{V}$
	Hysteresis Ratio $I_F$ (off) / $I_F$ (on)	0.5	0.9			$R_L = 270\Omega, V_{CC} = 5\text{V}$
	Input to Output Isolation Voltage $V_{ISO}$	5000			$V_{RMS}$	See note 1
		7000			$V_{PK}$	See note 1
	High to Low Propagation time	$t_{PHL}$	1	3	$\mu\text{s}$	$R_E = 280\Omega$
	Fall Time	$t_f$	0.05	0.5	$\mu\text{s}$	$V_{CC} = 5\text{V}$
Low to High Propagation time	$t_{PLH}$	2	6	$\mu\text{s}$	$I_F = 4\text{mA}$	
Rise Time	$t_r$	0.1	0.5	$\mu\text{s}$		

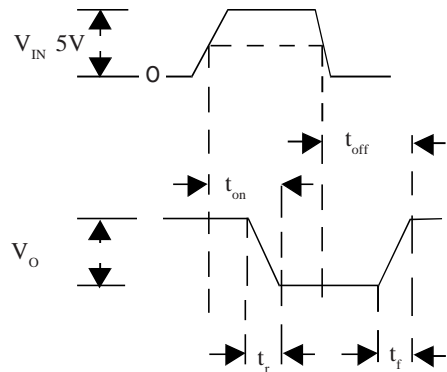
Note 1 Measured with input leads shorted together and output leads shorted together for 1 minute

Note 2 Special Selections are available on request. Please consult the factory.

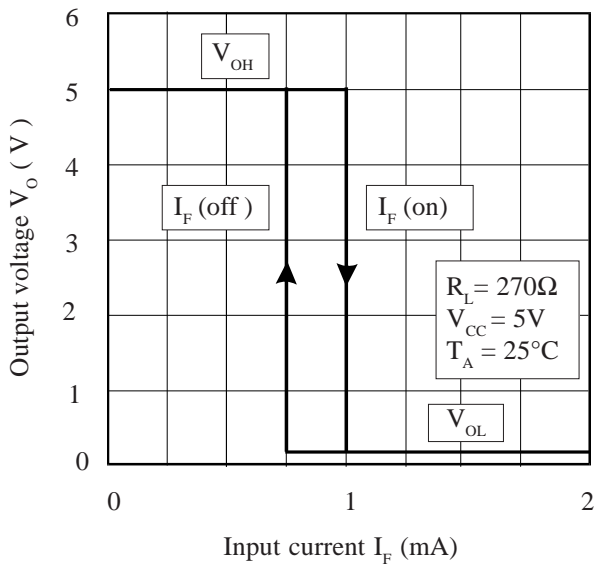
**SWITCHING CHARACTERISTICS**



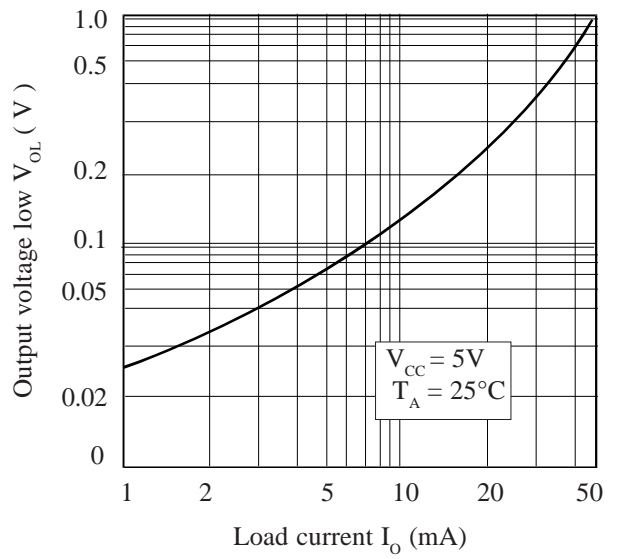
**SWITCHING TEST CIRCUIT**



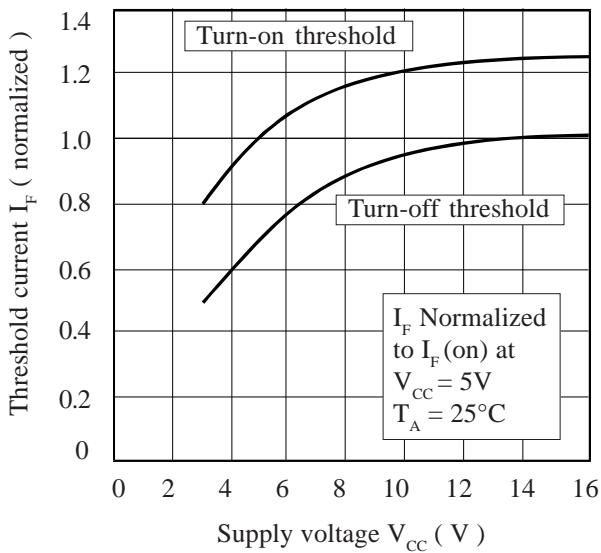
**Transfer Characteristics**



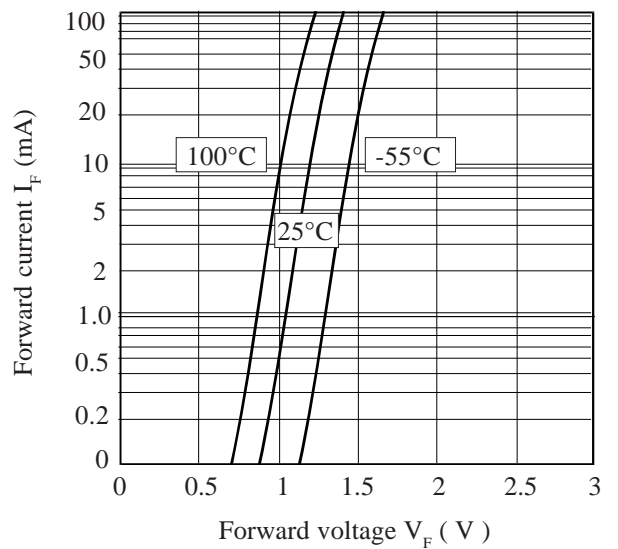
**On Voltage vs. Load Current**



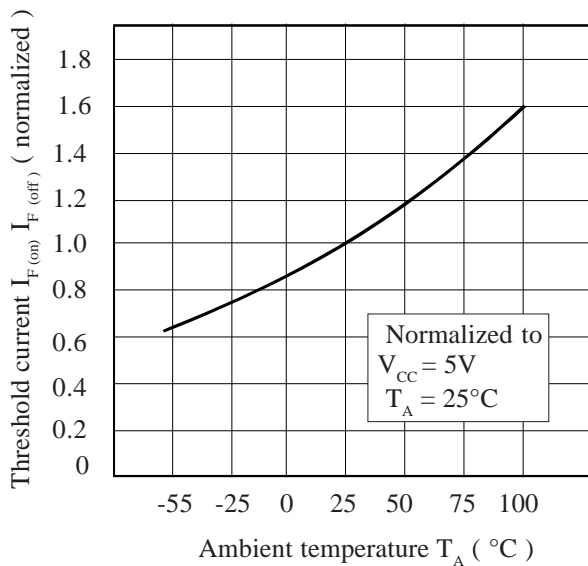
**Threshold Current vs. Supply Voltage**



**Forward Voltage vs. Forward Current**



**Threshold Current vs. Ambient Temperature**



**Supply Current vs. Supply Voltage**

