

H11L1, H11L2, H11L3, H11L4



**ISOCOM**  
COMPONENTS

**MICROPROCESSOR COMPATIBLE  
SCHMITT TRIGGER OPTICALLY  
COUPLED ISOLATOR**



**DESCRIPTION**

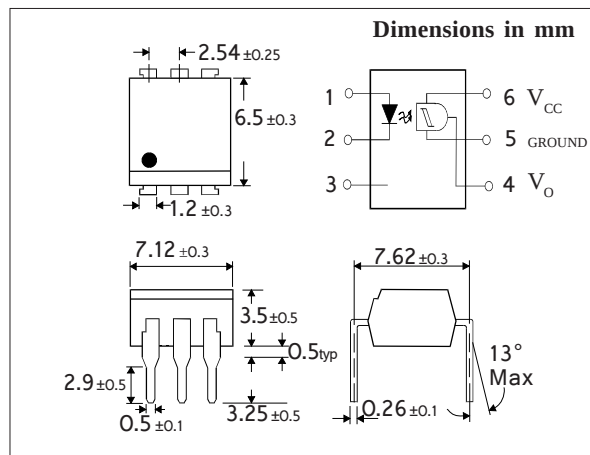
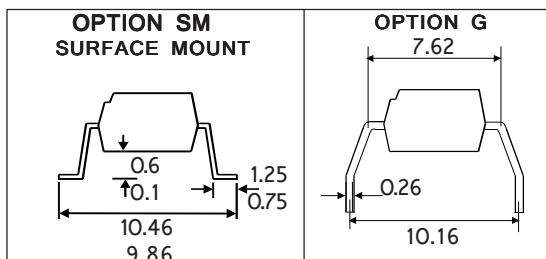
The H11L1, 2, 3, 4 series are optically coupled isolators consisting of a Gallium Arsenide infrared emitting diode and a Microprocessor Compatible Schmitt trigger output mounted in a standard 6 pin dual in line package.

**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



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

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

**INPUT DIODE**

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

**OUTPUT DETECTOR**

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

**POWER DISSIPATION**

Total Power Dissipation  
(derate linearly 2.94mW / °C above 25°C) — 170mW

**ISOCOM COMPONENTS 2004 LTD**

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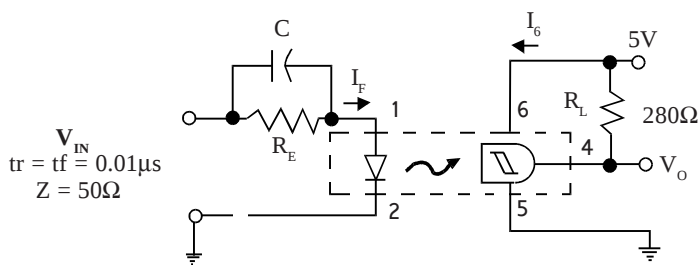
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

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

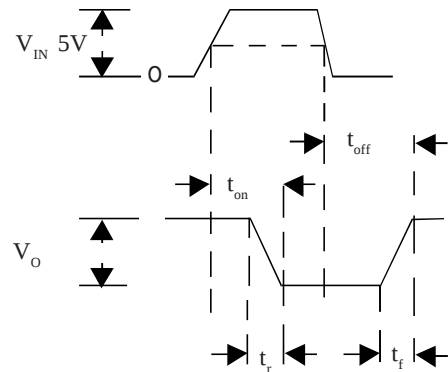
Note 1 Measured with input leads shorted together and output leads shorted together for 1 minute

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

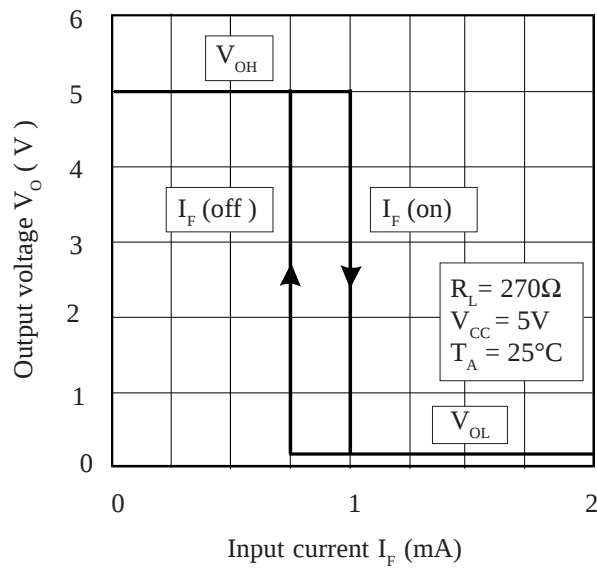
**SWITCHING CHARACTERISTICS**



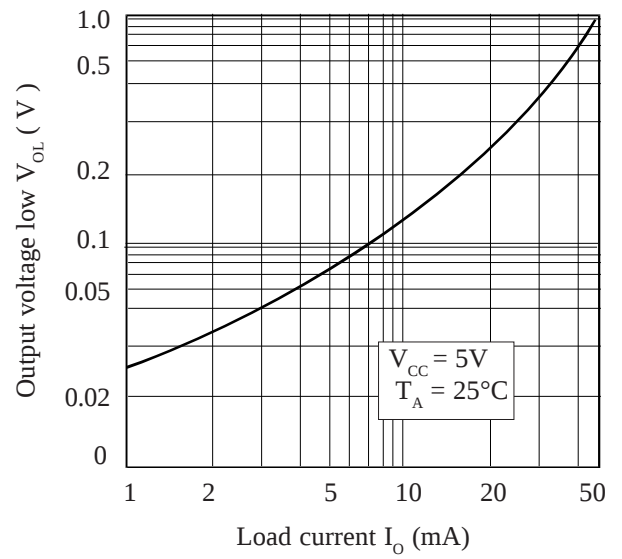
**SWITCHING TEST CIRCUIT**



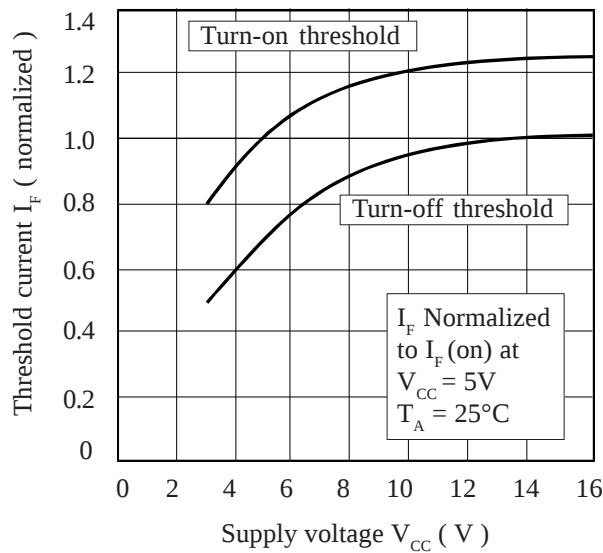
Transfer Characteristics



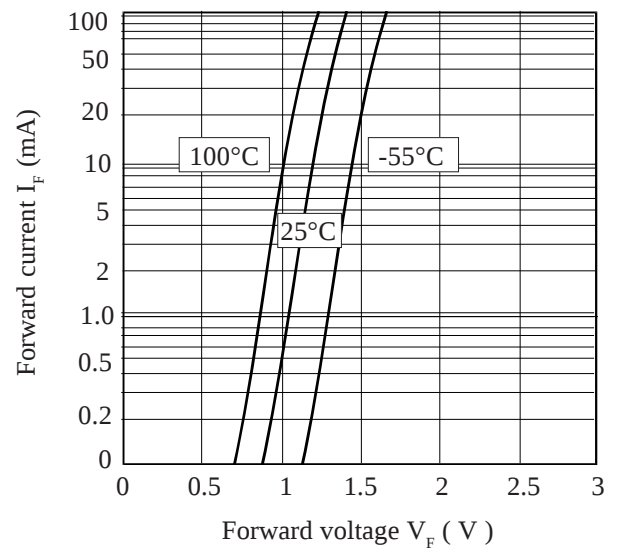
On Voltage vs. Load Current



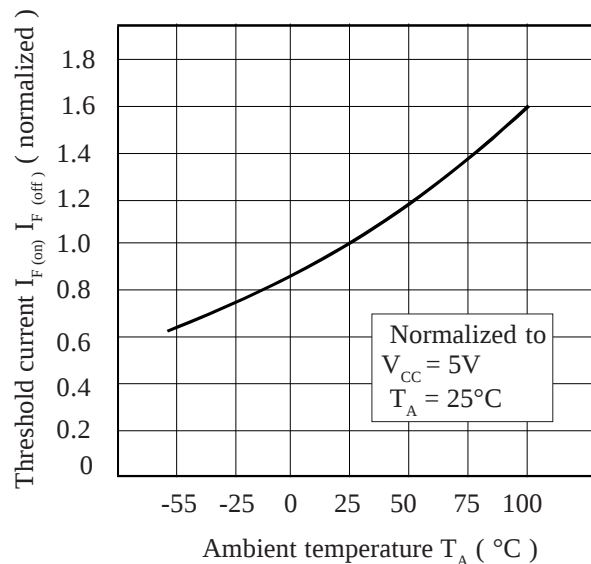
Threshold Current vs. Supply Voltage



Forward Voltage vs. Forward Current



Threshold Current vs. Ambient Temperature



Supply Current vs. Supply Voltage

