

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.

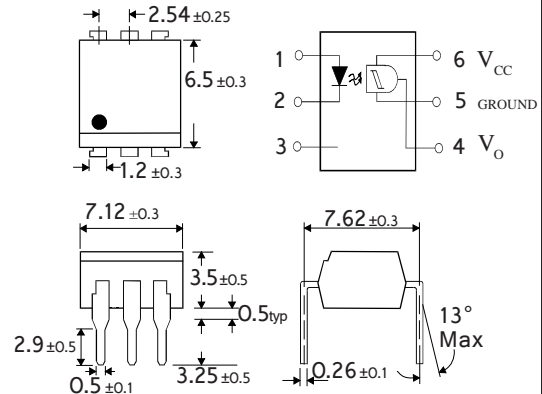
FEATURES

- 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°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 $\leq 100\mu S$, Duty ratio=0.001) — 1A
Reverse Voltage, V_R _____ 6V
Power Dissipation
(derate linearly 1.41mW / °C above 25°C) — 70mW

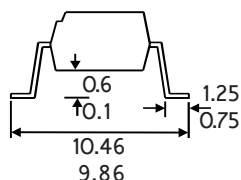
OUTPUT DETECTOR

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

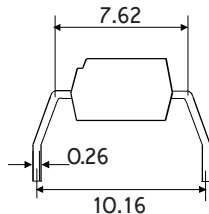
POWER DISSIPATION

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

**OPTION SM
SURFACE MOUNT**



**OPTION G
10MM LEAD SPREAD**



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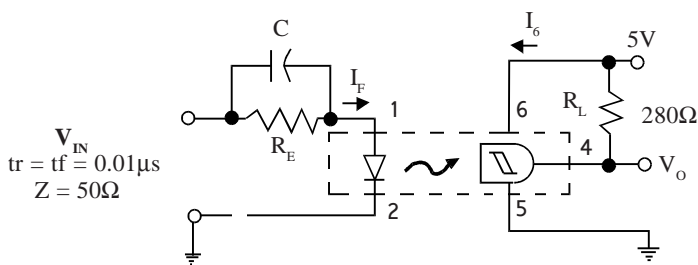
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

| 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 | | |
| | Reverse Current (I_R) | | | | 10 | | μA |
| | 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 | μA | | |
| Coupled | Supply Current I_6 (on) | | 1.6 | 5 | mA | $I_F = 10\text{mA}, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ $R_L = 270\Omega, V_{CC} = 5\text{V}$ See note 1 See note 1 $R_E = 280\Omega$ $V_{CC} = 5\text{V}$ $I_F = 4\text{mA}$ | |
| | 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) | 0.3 | | | mA | | |
| | Hysteresis Ratio I_F (off) / I_F (on) | 0.5 | 0.9 | | | | |
| | Input to Output Isolation Voltage V_{ISO} | 5000 | | | V_{RMS} | | |
| | | 7000 | | | V_{PK} | | |
| | High to Low Propagation time | t_{PHL} | 1 | 3 | μs | | |
| | Fall Time | t_f | 0.05 | 0.5 | μs | | |
| Low to High Propagation time | t_{PLH} | 2 | 6 | μs | | | |
| Rise Time | t_r | 0.1 | 0.5 | μs | | | |

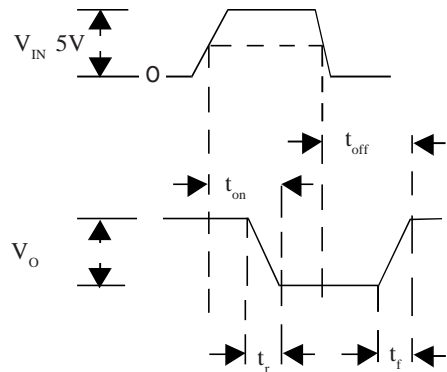
Note 1 Measured with input leads shorted together and output leads shorted together for 1 minute

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

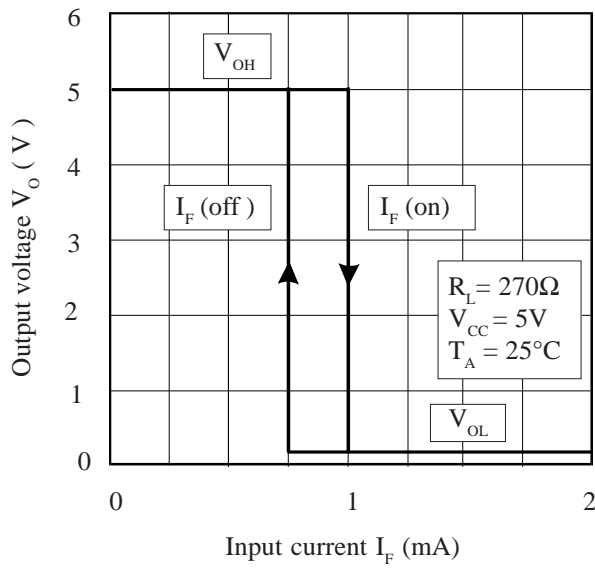
SWITCHING CHARACTERISTICS



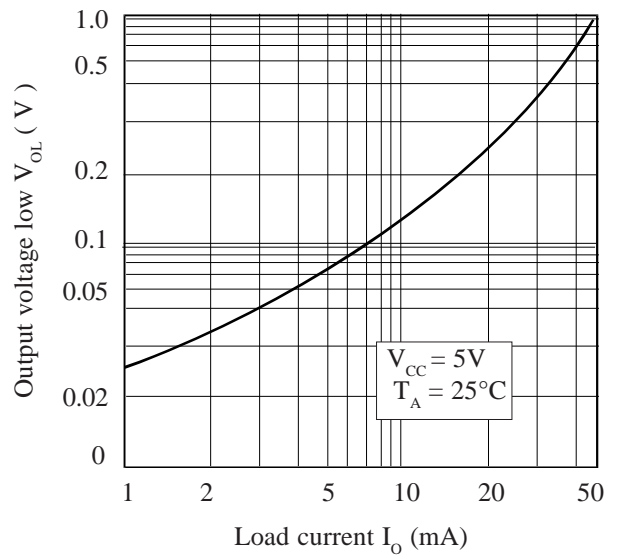
SWITCHING TEST CIRCUIT



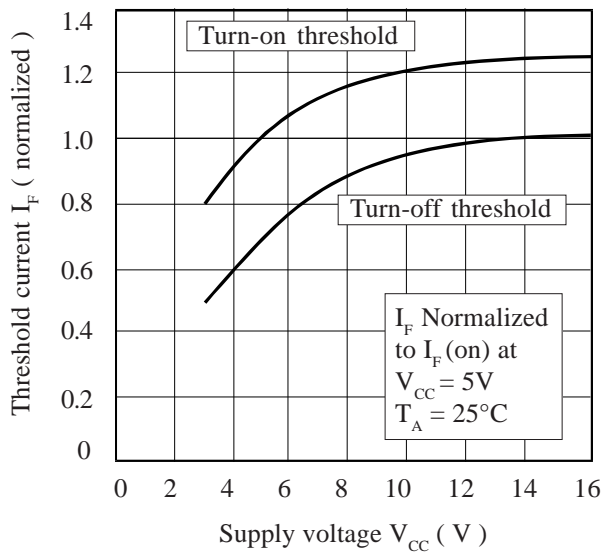
Transfer Characteristics



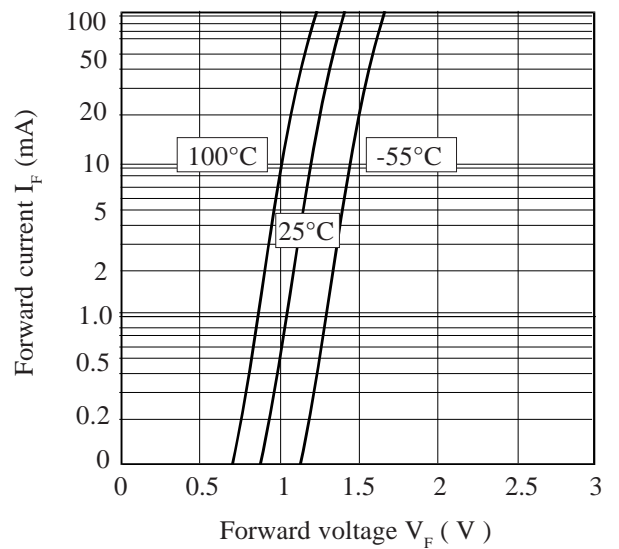
On Voltage vs. Load Current



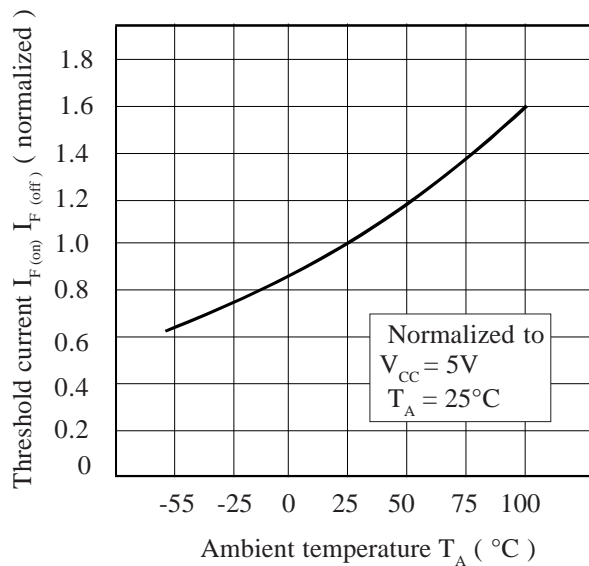
Threshold Current vs. Supply Voltage



Forward Voltage vs. Forward Current



Threshold Current vs. Ambient Temperature



Supply Current vs. Supply Voltage

