



**H11L1**

ISOCOM COMPONENTS

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## Company Address

Arrow Electronics, Inc  
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### 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.

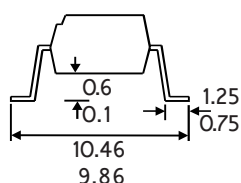
#### FEATURES

- 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

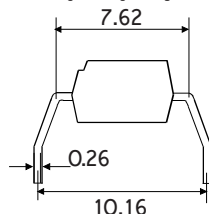
#### APPLICATIONS

- 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

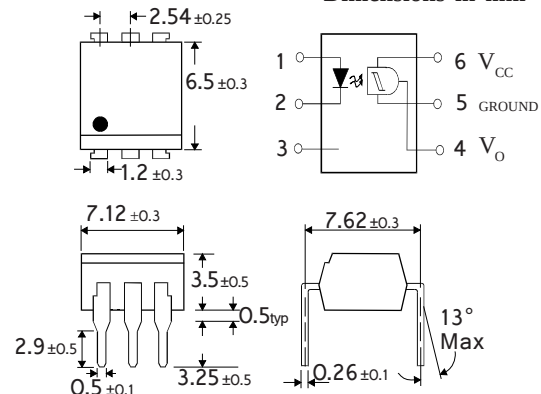
**OPTION SM**  
SURFACE MOUNT



**OPTION G**



**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

#### ISOCOM COMPONENTS 2004 LTD

Unit 25B, Park View Road West,  
Park View Industrial Estate, Brenda Road  
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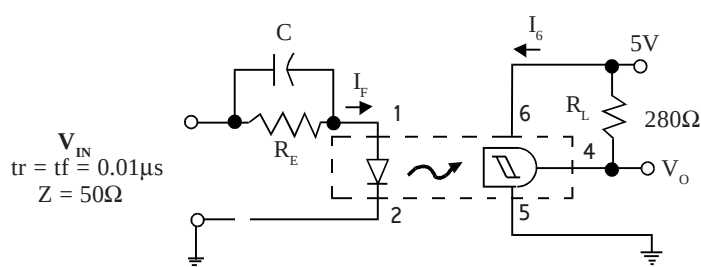
### ELECTRICAL CHARACTERISTICS ( $T_A = 25^{\circ}\text{C}$ Unless otherwise noted )

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

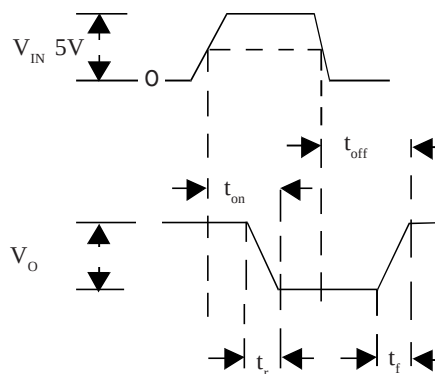
Note 1 Measured with input leads shorted together and output leads shorted together for 1 minute

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

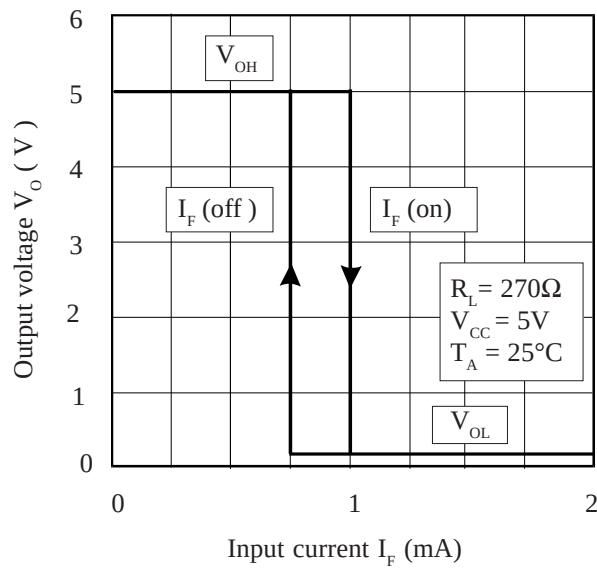
## SWITCHING CHARACTERISTICS



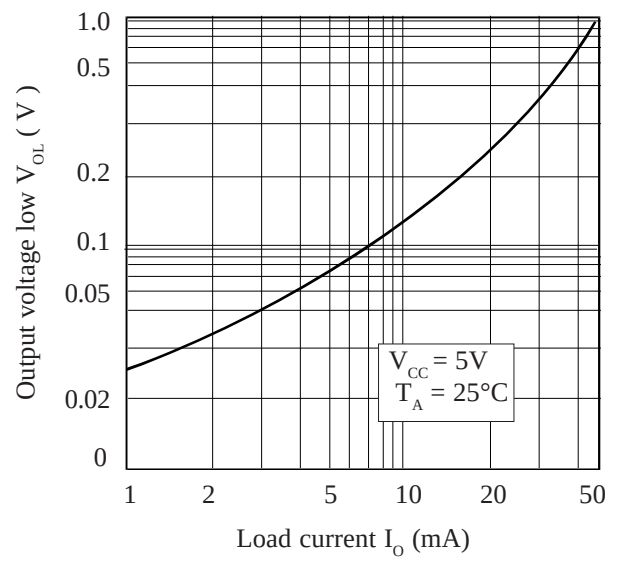
## SWITCHING TEST CIRCUIT



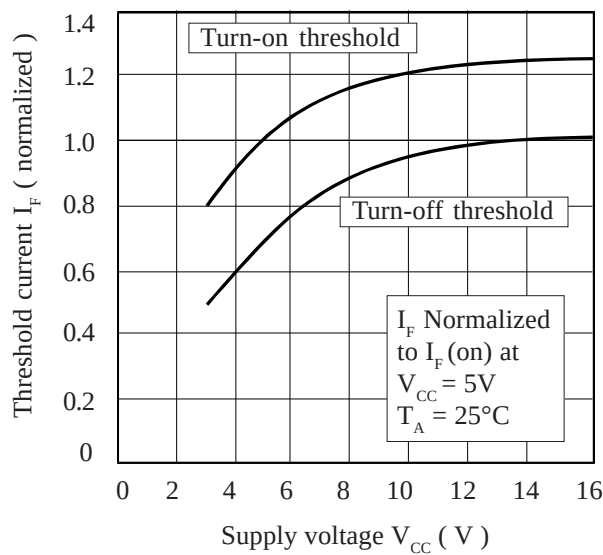
Transfer Characteristics



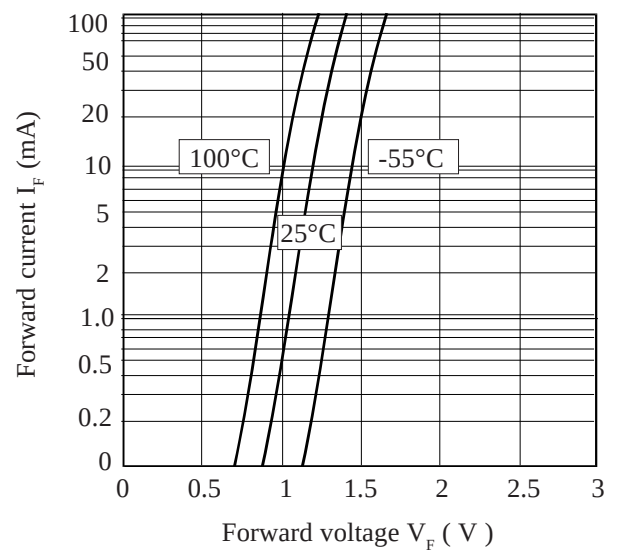
On Voltage vs. Load Current



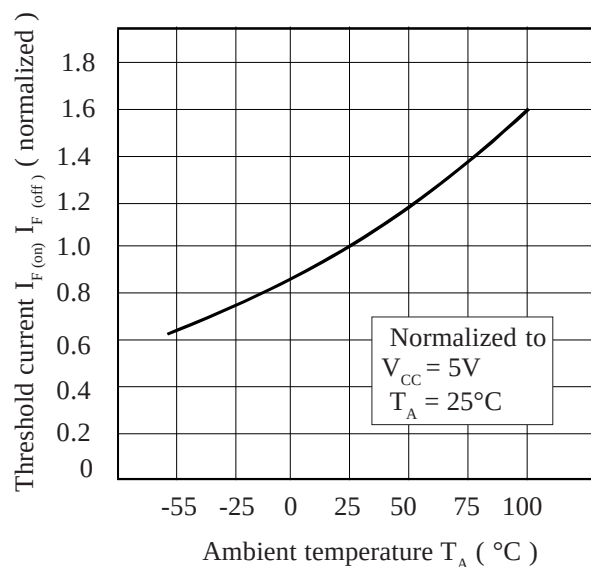
Threshold Current vs. Supply Voltage



Forward Voltage vs. Forward Current



Threshold Current vs. Ambient Temperature



Supply Current vs. Supply Voltage

