

DESCRIPTION

The H11L1 (UL Approval) and H11L1V (UL and VDE Approvals) devices each consist of a GaAs infrared emitting diode optically coupled to a high speed output integrated Microprocessor Compatible Schmitt trigger detector, which provides hysteresis for noise immunity and pulse shaping.

ISOCOM

COMPONENTS

FEATURES

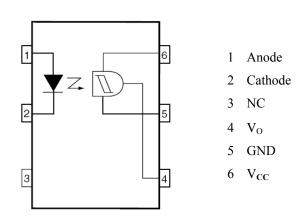
- High Data Rate, 1MHz typical (NRZ)
- Free from Latch Up and Oscillation
- Microprocessor Compatible Drive
- Logical Compatible Output sinks 16mA at 0.4V maximum
- Guaranteed On/Off Threshold Hysteresis
- Wide Supply Voltage Capability, compatible with all popular Logic Systems
- Operating Voltage Range Vcc 3V to 16V
- Operating Temperature Range - 55°C to +100°C
- High AC Isolation voltage 5000V_{RMS}
- Lead Free and RoHS Compliant
- UL Approval Certificate E91231
- VDE Approval Certificate 40044376

APPLICATIONS

- Logic to Logic isolator
- Line Receiver eliminate noise and transient problems
- Programmable Current Level Sensor
- AC to TTL Conversion Square Wave Shaping
- Power Supply Digital Programming
- Computer Peripherals Interface

ORDER INFORMATION

- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount
- Add SMT&R after PN for Surface Mount Tape & Reel



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device. Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

Input

Forward Current	60mA
Reverse Voltage	6V
Power Dissipation	120mW

Output

Output Current	50mA
Output Voltage	16V
Supply Voltage	16V
Power Dissipation	150mW

Total Package

Isolation Voltage	$5000V_{\text{RMS}}$
Total Power Dissipation	250mW
Operating Temperature	-55 to 100 °C
Storage Temperature	-55 to 150 °C
Lead Soldering Temperature (10s)	260°C

ISOCOM COMPONENTS 2004 LTD Park View Road West Park View Industrial

Unit 25B, Park View Road West, Park View Industrial Estate Hartlepool, Cleveland, TS25 1PE, United Kingdom Tel : +44 (0)1429 863 609 Fax : +44 (0)1429 863 581 e-mail : sales@isocom.co.uk http://www.isocom.com

ISOCOM COMPONENTS ASIA LTD

Hong Kong Office, Block A, 8/F, Wah Hing Industrial mansion, 36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong. Tel : +852 2995 9217 Fax : +852 8161 6292 e-mail : sales@isocom.com.hk



Truth Table

LED	Vo
ON	LOW
OFF	HIGH

ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}C$, unless otherwise specified. Typical Values at $T_A = 25^{\circ}C$)

INPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Forward Voltage	\mathbf{V}_{F}	$I_F = 10 mA$		1.15	1.5	V
Reverse Current	I _R	$V_R = 5V$			10	μA
Terminal Capacitance	C _{IN}	V = 0V, f = 1MHz		33		pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Operating Voltage	V _{CC}		3		15	V
Supply Current	I _{CC(off)}	$V_{CC} = 5V, I_F = 0mA$		1.6	5	mA
High Level Output Current	I _{OH}	$I_F = 0mA$, $V_{CC} = V_0 = 15V$			100	μΑ

ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}C$, unless otherwise specified, Typical Values at $T_A = 25^{\circ}C$)

COUPLED

ISOCOM

COMPONENTS

–I⊢–

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Supply Current	I _{CC(on)}	$V_{CC} = 5V, I_F = 10mA$		1.6	5	mA
Low Level Output Voltage	V _{OL}	$V_{CC} = 5V, I_F = I_{F(on)} \text{ (max)}, \\ R_L = 270\Omega$			0.4	V
Turn-On Threshold Current	I _{F(on)}	$V_{CC} = 5V, R_L = 270\Omega$			1.6	mA
Turn-Off Threshold Current	$I_{F(off)}$	$V_{CC} = 5V, R_L = 270\Omega$		1		mA
Hysteresis Rtio	$I_{F(off)}/I_{F(on)}$	$V_{CC} = 5V, R_L = 270\Omega$	0.5		0.9	
Turn-On Time	t _(on)	$V_{CC} = 5V,$ $I_F = I_{F(on)}$ (max),			4	μs
Fall Time	t _f	$R_L = 270\Omega$		0.1		
Turn-Off Time	t _(off)				4	
Rise Time	t _r			0.1		

ISOLATION

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Isolation Voltage	V _{ISO}	R.H. = 40% to 60%, t = 1 min, Note 1	5000			V _{RMS}
Input - Output Resistance	R _{I-O}	$V_{I-O} = 500 VDC$ R.H. = 40% to 60%	10 ¹¹			Ω

Note 1 : Measured with input leads shorted together and output leads shorted together.



6

5

4

З

2

1

0

ò

Output Voltage, V₀ (V)

V_{OH}

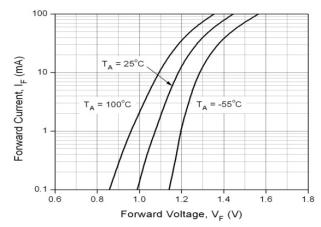
IF(OFF)

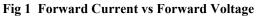
IF(ON)

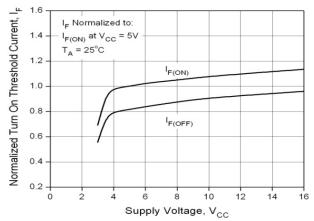
1

V_{OL}

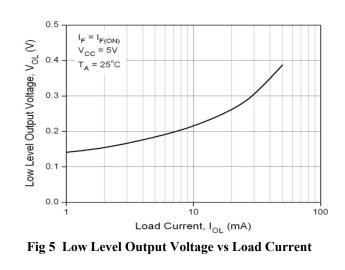
2











Input Current, I_F (mA) Fig 2 Transfer Characteristics

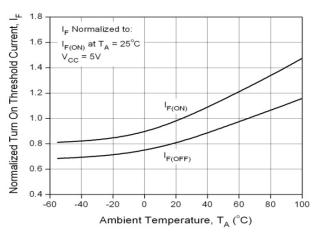


Fig 4 Normalized Turn-On Current vs Ambient temperature

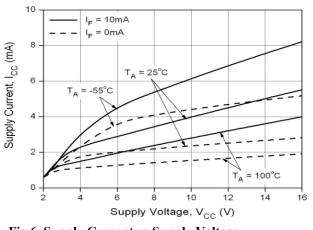
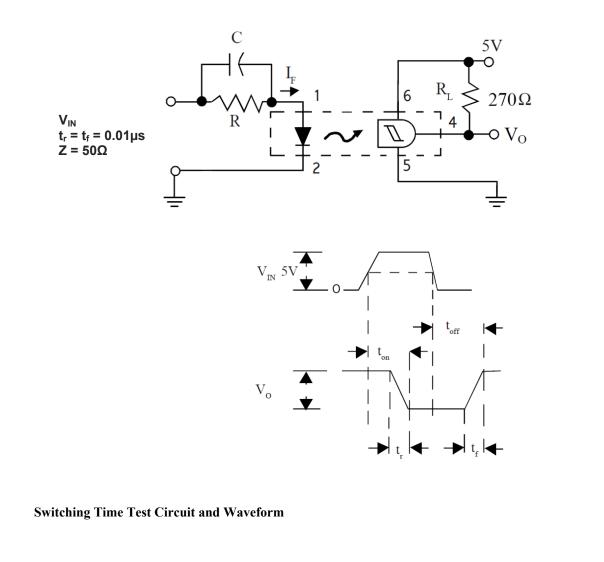


Fig 6 Supply Current vs Supply Voltage







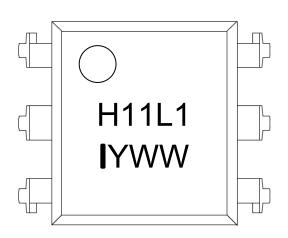
ORDER INFORMATION

H11L1 (UL Approval)						
After PN	PN	PN Description				
None	H11L1	Standard DIP6	65 pcs per tube			
G	H11L1G	10mm Lead Spacing	65 pcs per tube			
SM	H11L1SM	Surface Mount	65 pcs per tube			
SMT&R	H11L1SMT&R	Surface Mount Tape & Reel	1000 pcs per reel			

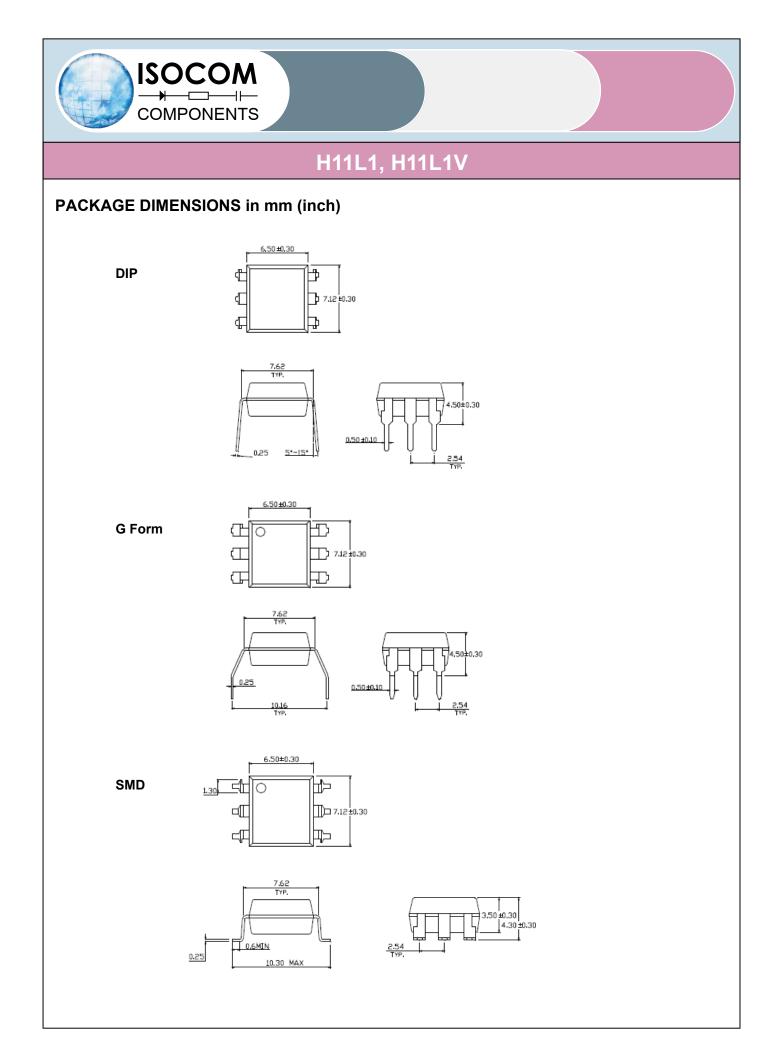
	H11L1V (UL Approval and VDE Approvals)						
After PN	PN	Description	Packing quantity				
None	H11L1V	Standard DIP6	65 pcs per tube				
G	H11L1VG	10mm Lead Spacing	65 pcs per tube				
SM	H11L1VSM	Surface Mount	65 pcs per tube				
SMT&R	H11L1VSMT&R	Surface Mount Tape & Reel	1000 pcs per reel				



DEVICE MARKING

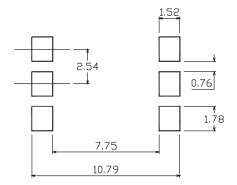


- H11L1 denotes Device Part Number (H11L1 as example)
- I denotes Isocom
- Y denotes 1 digit Year code
- WW denotes 2 digit Week code

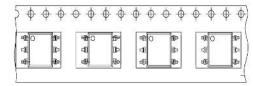




RECOMMENDED PAD LAYPUT FOR SMD (mm)

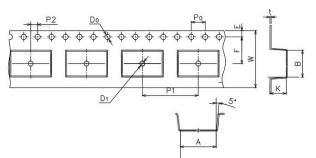


TAPE AND REEL PACKAGING

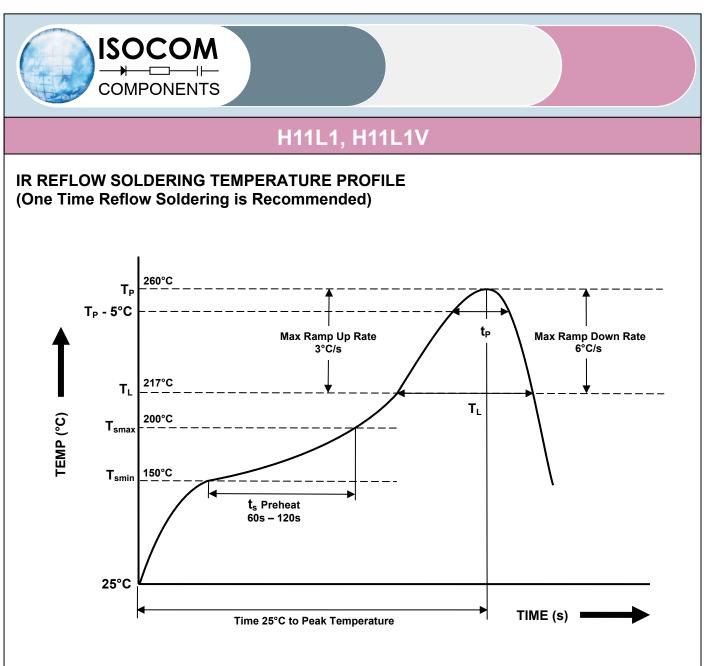


Direction of feed from reel





Dimension No.	Α	В	Do	D1	E	F
Dimension(mm)	10.4±0.1	7.5±0.1	1.5±0.1	1.5+0.1/-0	1.75±0.1	7.5±0.1
Dimension No.	Ро	P1	P2	t	w	к
Dimension (mm)	4.0±0.15	12.0±0.1	2.0±0.1	0.35±0.03	16.0±0.2	4.5±0.1



Profile Details	Conditions
Preheat - Min Temperature (T _{SMIN}) - Max Temperature (T _{SMAX}) - Time T _{SMIN} to T _{SMAX} (t _s)	150°C 200°C 60s - 120s
$\label{eq:solution} \begin{array}{l} \textbf{Soldering Zone} \\ & - \text{Peak Temperature } (T_{\text{P}}) \\ & - \text{Time at Peak Temperature} \\ & - \text{Liquidous Temperature } (T_{\text{L}}) \\ & - \text{Time within 5°C of Actual Peak Temperature } (T_{\text{P}} - 5^{\circ}\text{C}) \\ & - \text{Time maintained above } T_{\text{L}} (t_{\text{L}}) \\ & - \text{Ramp Up Rate } (T_{\text{L}} \text{ to } T_{\text{P}}) \\ & - \text{Ramp Down Rate } (T_{\text{P}} \text{ to } T_{\text{L}}) \end{array}$	260°C 10s max 217°C 30s max 60s - 100s 3°C/s max 6°C/s max
Average Ramp Up Rate $(T_{smax}$ to $T_P)$	3°C/s max
Time 25°C to Peak Temperature	8 minutes max



NOTES :

- Isocom is continually improving the quality, reliability, function or design and Isocom reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.

- When requiring a device for any "specific" application, please contact our sales for advice.

- The contents described herein are subject to change without prior notice.
- Do not immerse device body in solder paste.

ISOCOM

COMPONENTS



ISOCOM

COMPONENTS

ISOCOM is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing ISOCOM products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such ISOCOM products could cause loss of human life, bodily injury or damage to property.

In developing your designs, please ensure that ISOCOM products are used within specified operating ranges as set forth in the most recent ISOCOM products specifications.

____ The ISOCOM products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These ISOCOM products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation Instruments, traffic signal instruments, combustion control instruments, medical Instruments, all types of safety devices, etc... Unintended Usage of ISOCOM products listed in this document shall be made at the customer's own risk.

____ Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

____ The products described in this document are subject to the foreign exchange and foreign trade laws.

_____ The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by ISOCOM Components for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of ISOCOM Components or others.

_ The information contained herein is subject to change without notice.