

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.

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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
- V_{cc} 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 $^\circ\text{C}$
Storage Temperature	-55 to 150 °C
Lead Soldering Temperature (10s)	260°C

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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	μΑ
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 $T_A = 25^{\circ}C$)

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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.



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Fig 2 Transfer Characteristics



Fig 4 Normalized Turn-On Current vs Ambient temperature



Fig 6 Supply Current vs Supply Voltage





Switching Time Test Circuit and Waveform



ORDER INFORMATION

	H11L1 (UL Approval)						
After PN	PN	Description	Packing quantity				
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.	А	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



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- When requiring a device for any "specific" application, please contact our sales for advice.
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- Do not immerse device body in solder paste.

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