

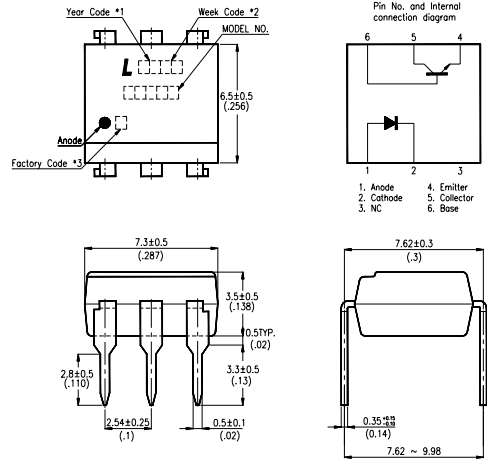
Features

- High input-output isolation voltage
($V_{ISO} = 5,000V_{rms}$)
- Current transfer ratio
(CTR : MIN. 10% at $I_F = 10mA$, $V_{CE} = 10V$)
- UL approved (No. E113898)
- VDE approved (No. 094722)
- FIMKO approved (No.209049)
- SEMKO approved (No. 9943380/01-20)
- NEMKO approved (No. P99102464)
- DEMKO approved (No. 99-04182)
- CSA approve in progress
- Options Available :
 - Leads with 0.4" (10.16mm) Spacing (M Type)
 - Lead Bends for Surface Mounting (S Type)
 - Tape and Reel of Type I for SMD (Add "-TA" Suffix)
 - Tape and Reel of Type II for SMD (Add "-TA1" Suffix)
 - VDE 0884 Approvals (Add "-V" Suffix)

Applications

1. General Purpose Switching Circuits
2. Interfacing and coupling systems of different potentials and impedances
3. Monitor and detection circuits

Package Dimensions



NOTES :

1. Year date code.
2. 2-digit work week.
3. Factory code shall be marked (Z : Taiwan, Y : Thailand).
4. Model No.: H11A1 ; H11A2 ; H11A3 ; H11A4 ; H11A5
5. All dimensions are in millimeters (inches).
6. Tolerance is $\pm 0.25mm$ (.010") unless otherwise noted.
7. Specifications are subject to change without notice.

Ordering Information

Part Number	Package	Safety Standard Approval	Application part number
H11A1 H11A1M H11A1S H11A1S-TA H11A1S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)	<ul style="list-style-type: none"> • UL approved • FIMKO approved • SEMKO approved • DEMKO approved • NEMKO approved • CSA approve in progress 	H11A1
H11A2 H11A2M H11A2S H11A2S-TA H11A2S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A2
H11A3 H11A3M H11A3S H11A3S-TA H11A3S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A3
H11A4 H11A4M H11A4S H11A4S-TA H11A4S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A4
H11A5 H11A5M H11A5S H11A5S-TA H11A5S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A5
H11A1-V H11A1M-V H11A1S-V H11A1STA-V H11A1STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)	<ul style="list-style-type: none"> • VDE approved 	H11A1
H11A2-V H11A2M-V H11A2S-V H11A2STA-V H11A2STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A2
H11A3-V H11A3M-V H11A3S-V H11A3STA-V H11A3STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A3
H11A4-V H11A4M-V H11A4S-V H11A4STA-V H11A4STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A4
H11A5-V H11A5M-V H11A5S-V H11A5STA-V H11A5STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		H11A5

Ratings and Characteristics Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward Current	I _F	60	mA
	Reverse Voltage	V _R	6	V
	Power Dissipation	P	100	mW
Output	Collector-Emitter Voltage	V _{CEO}	30	V
	Emitter-Collector Voltage	V _{ECO}	7	V
	Collector-Base Voltage	V _{CBO}	70	V
	Collector Current	I _C	150	mA
	Collector Power Dissipation	P _C	150	mW
Total Power Dissipation		P _{tot}	250	mW
*1.Isolation Voltage		V _{iso}	5,000	V _{rms}
Operating Temperature		T _{opr}	-55~+100	°C
Storage Temperature		T _{stg}	-55~+150	°C
*2.Soldering Temperature		T _{sol}	260	°C

*1. AC for 1 minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.
- (2) The isolation voltage tester with zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

*2. For 10 seconds

Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	unit	Conditions	
Input	Forward Voltage	V _F	—	1.2	1.5	V	I _F =10mA	
	Reverse Current	I _R	—	—	10	μA	V _R =6V	
	Terminal Capacitance	C _t	—	18	—	pF	V=0, f=1MHz	
Output	Collector Dark Current	I _{CEO}	—	—	50	nA	V _{CE} =10V, I _F =0	
	Collector-Emitter Breakdown Voltage	BV _{CER}	30	—	—	V	I _C =0.1mA, I _F =0	
	Emitter-Collector Breakdown Voltage	BV _{ECO}	7	—	—	V	I _E =10 μA, I _F =0mA	
	Collector-Base Breakdown Voltage	BV _{ECO}	70	—	—	V	I _C =0.1mA, I _F =0	
	Collector-Emitter Capacitance	C _{CE}	—	12	—	pF	V=0V, f=1MHz	
	Collector-Base Capacitance	C _{CB}	—	17	—	pF	V _{CB} =0V, f=1MHz	
	Emitter-Base Capacitance	C _{EB}	—	25	—	pF	V _{EB} =0V, f=1MHz	
Transfer Characteristics	*1 Current Transfer Ratio	H11A1	CTR	50	—	—	%	I _F =10mA V _{CE} =10V
		H11A2		20	—	—		
		H11A3		20	—	—		
		H11A4		10	—	—		
		H11A5		30	—	—		
	Collector-emitter Saturation Voltage	V _{CE(sat)}	—	0.15	0.4	V	I _F =10mA, I _C =0.5mA	
	Isolation Resistance	R _{iso}	100	—	—	G Ω	DC500V 40~60% R.H.	
Floating Capacitance	C _f	—	0.3	—	pF	V=0, f=1MHz		
Response Time (Rise)	t _r	—	2.8	—	μs	V _{CC} =10V, I _C =10mA		
Response Time (Fall)	t _f	—	4.5	—	μs	R _L =100 Ω		

*1. CTR= $\frac{I_C}{I_F} \times 100\%$

PHOTOCOUPLER

Typical Electrical/Optical Characteristic Curves (25°C Ambient Temperature Unless Otherwise Noted)

Fig.1 Forward Current vs. Ambient Temperature

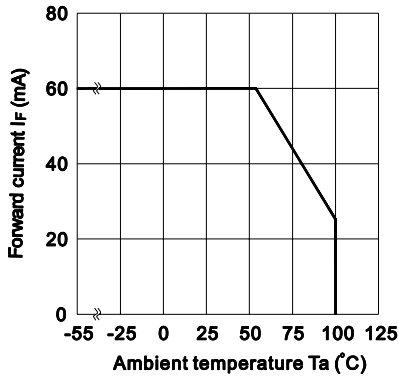


Fig.2 Collector Power Dissipation vs. Ambient Temperature

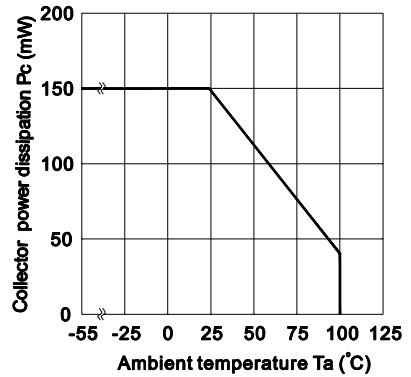


Fig.3 Collector-emitter saturation Voltage vs. Forward current

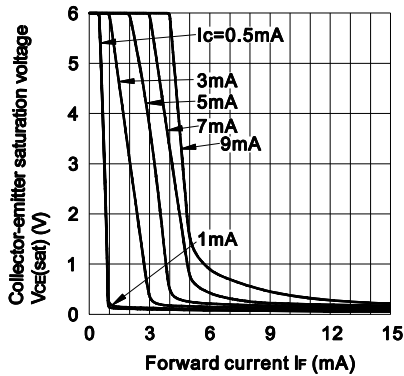


Fig.4 Turn-On Switching Times

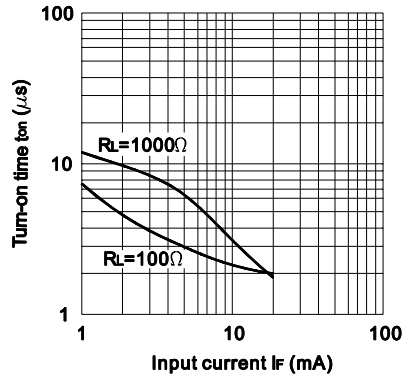


Fig.5 Current Transfer Ratio vs. Forward Current

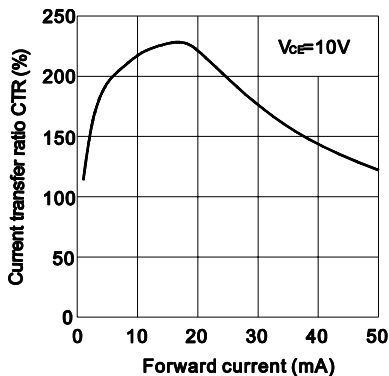


Fig.6 Collector Current vs. Collector-emitter Voltage

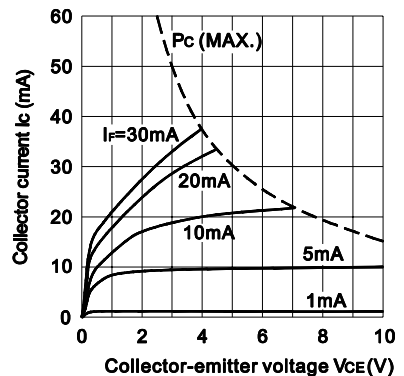


Fig.7 Rise and Fall Times

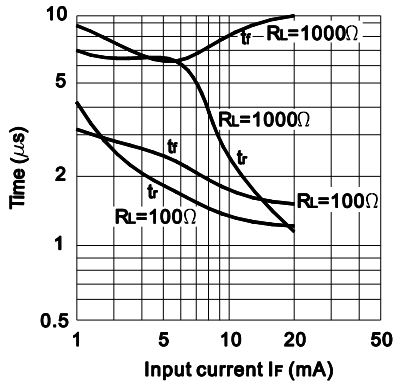
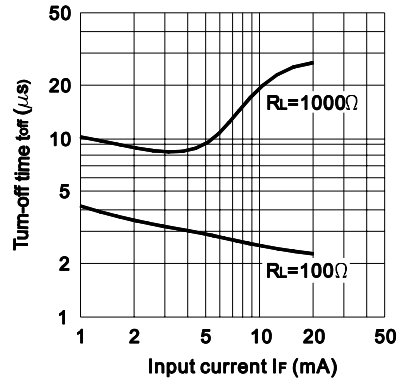
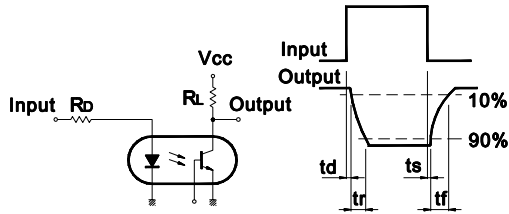


Fig.8 Turn-off Switching Times



Test Circuit for Response Time



Test Circuit for Frequency Response

