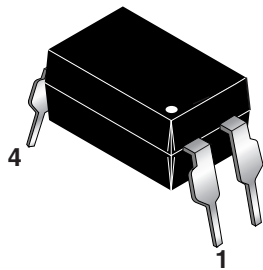


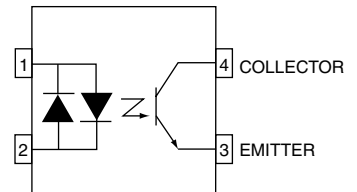
**H11AA814 SERIES**

**H11A817 SERIES**

**PACKAGE**



**H11AA814 SCHEMATIC**



**DESCRIPTION**

The H11AA814 Series consists of two gallium arsenide infrared emitting diodes, connected in inverse parallel, driving a single silicon phototransistor in a 4-pin dual in-line package.

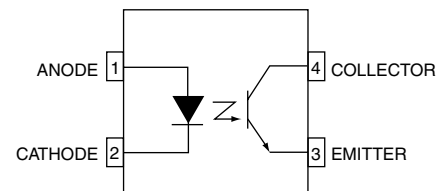
The H11A817 Series consists of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 4-pin dual in-line package.

**FEATURES**

- Compact 4-pin package
- Current transfer ratio in selected groups:
 

H11AA814: 20-300%	H11A817: 50-600%
H11AA814A: 50-150%	H11A817A: 80-160%
	H11A817B: 130-260%
	H11A817C: 200-400%
	H11A817D: 300-600%

**H11A817 SCHEMATIC**



**APPLICATIONS**

**H11AA814 Series**

- AC line monitor
- Unknown polarity DC sensor
- Telephone line interface

**H11A817 Series**

- Power supply regulators
- Digital logic inputs
- Microprocessor inputs

**H11AA814 SERIES**

**H11A817 SERIES**

Parameter	Symbol	Device	Value	Units
<b>TOTAL DEVICE</b>				
Storage Temperature	$T_{STG}$	All	-55 to +150	°C
Operating Temperature	$T_{OPR}$	All	-55 to +100	°C
Lead Solder Temperature	$T_{SOL}$	All	260 for 10 sec	°C
Total Device Power Dissipation (-55°C to 50 °C)	$P_D$	All	200	mW
<b>EMITTER</b>				
Continuous Forward Current	$I_F$	All	50	mA
Reverse Voltage	$V_R$	H11A817, H11A817A, H11A817B, H11A817C, H11A817C, H11A817D	5	V
Forward Current - Peak (1 $\mu$ s pulse, 300 pps)	$I_F(pk)$	All	1.0	A
LED Power Dissipation (25°C ambient) Derate above 25°C	$P_D$	All	100	mW
			1.33	mW/°C
<b>DETECTOR</b>				
Collector-Emitter Voltage	$V_{CEO}$	All	35	V
Emitter-Collector Voltage	$V_{ECO}$	All	6	V
Continuous Collector Current	$I_C$	All	50	mA
Detector Power Dissipation (25°C ambient) Derate above 25°C	$P_D$	All	150	mW
			2.0	mW/°C

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

**INDIVIDUAL COMPONENT CHARACTERISTICS**

Parameter	Test Conditions	Symbol	Device	Min	Typ	Max	Unit
EMITTER Input Forward Voltage	( $I_F = 20\text{ mA}$ )	$V_F$	H11A817, H11A17A, H11A817B, H11A817C, H11A817D		1.2	1.5	V
	( $I_F = \pm 20\text{ mA}$ )		H11AA814		1.2	1.5	
Reverse Leakage Current	(V <sub>R</sub> = 5.0 V)	$I_R$	H11A817, H11A17A,		.001	10	$\mu$ A
			H11A817B, H11A817C,				
			H11A817D				
<b>DETECTOR</b>							
Collector-Emitter Breakdown Voltage	( $I_C = 1.0\text{ mA}$ , $I_F = 0$ )	$BV_{CEO}$	ALL	35	100		V
Emitter-Collector Breakdown Voltage	( $I_E = 100\ \mu\text{A}$ , $I_F = 0$ )	$BV_{ECO}$	ALL	6	10		V
Collector-Emitter Dark Current	( $V_{CE} = 10\text{V}$ , $I_F = 0$ )	$I_{CEO}$	ALL		.025	100	nA
Collector-Emitter Capacitance	( $V_{CE} = 0\text{ V}$ , $f = 1\text{ MHz}$ )	$C_{CE}$	ALL		8		pF

**H11AA814 SERIES**

**H11A817 SERIES**

**TRANSFER CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  Unless otherwise specified.)

DC Characteristic	Test Conditions	Symbol	Device	Min	Typ	Max	Unit
Current Transfer Ratio	( $I_F = \pm 1 \text{ mA}$ , $V_{CE} = 5 \text{ V}$ ) (note 1)	CTR	H11AA814	20		300	%
	( $I_F = \pm 1 \text{ mA}$ , $V_{CE} = 5 \text{ V}$ ) (note 1)	CTR	H11AA814A	50		150	%
	( $I_F = 5 \text{ mA}$ , $V_{CE} = 5 \text{ V}$ ) (note 1)	CTR	H11A817	50		600	%
			H11A817A	80		160	%
			H11A817B	130		260	%
			H11A817C	200		400	%
H11A817D	300		600	%			
Collector-Emitter Saturation Voltage	( $I_C = 1 \text{ mA}$ , $I_F = \pm 20 \text{ mA}$ )	$V_{CE(SAT)}$	ALL		.1	.2	V
<b>AC Characteristic</b>							
Rise Time	( $I_C = 2 \text{ mA}$ , $V_{CE} = 2 \text{ V}$ , $R_L = 100\Omega$ ) (note 1)	$T_R$	ALL		2.4	18	$\mu\text{s}$
Fall Time	( $I_C = 2 \text{ mA}$ , $V_{CE} = 2 \text{ V}$ , $R_L = 100\Omega$ ) (note 1)	$T_F$	ALL		2.4	18	$\mu\text{s}$

**ISOLATION CHARACTERISTICS**

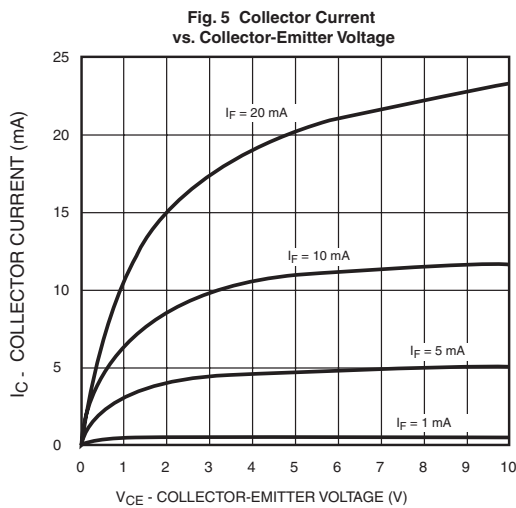
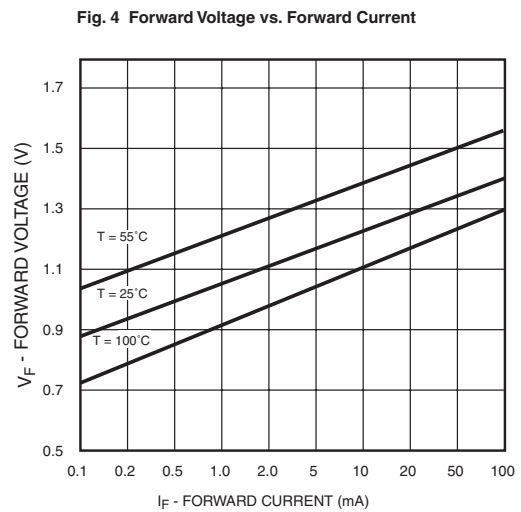
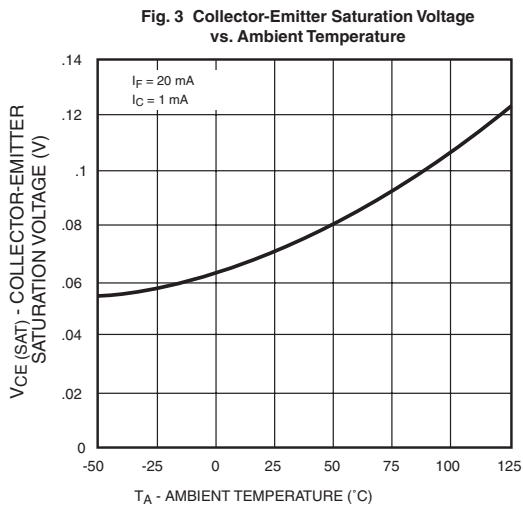
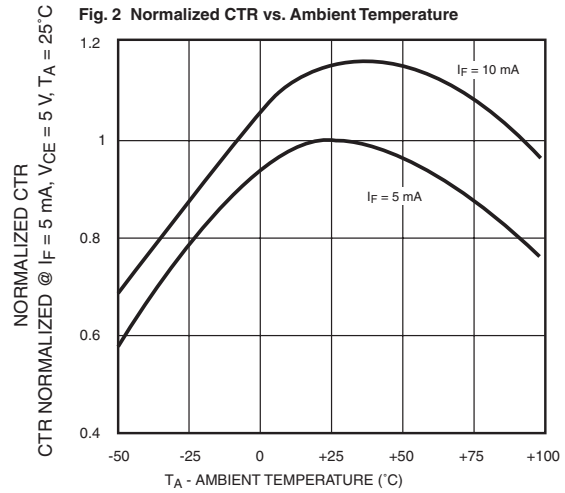
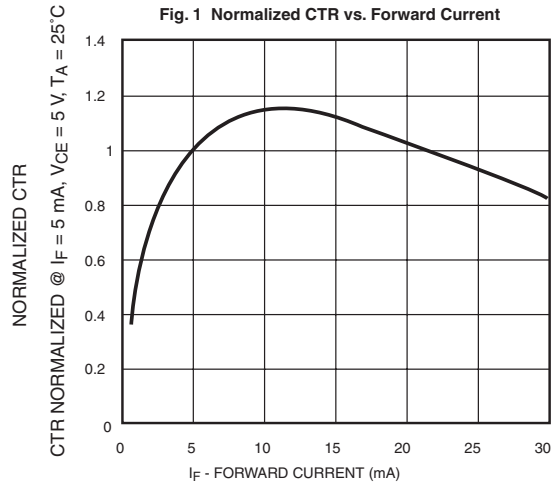
Characteristic	Test Conditions	Symbol	Min	Typ	Max	Units
Input-Output Isolation Voltage (note 3)	( $I_{I-O} [ 1 \mu\text{A}$ , 1 min.)	$V_{ISO}$	5300			Vac(rms)
Isolation Resistance	( $V_{I-O} = 500 \text{ VDC}$ )	$R_{ISO}$	$10^{11}$			$\Omega$
Isolation Capacitance	( $V_{I-O} = \&$ , $f = 1 \text{ MHz}$ )	$C_{ISO}$		0.5		pf

**NOTES**

1. Current Transfer Ratio (CTR) =  $I_C/I_F \times 100\%$ .
2. For test circuit setup and waveforms, refer to Figure 8.
3. For this test, Pins 1 and 2 are common, and Pins 4, 5 and 6 are common.

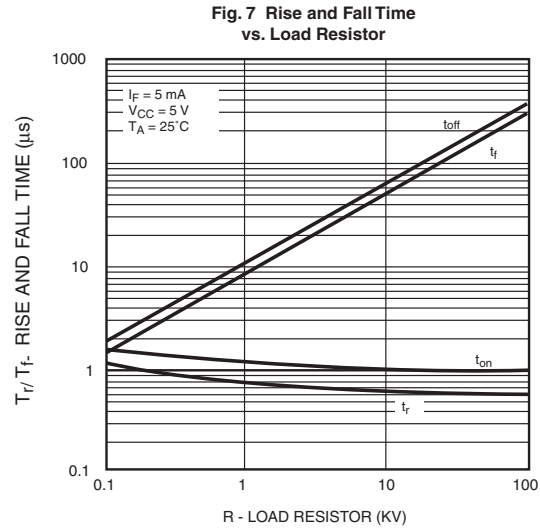
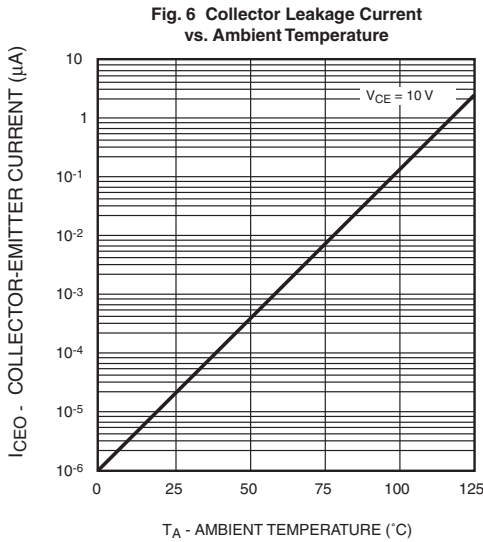
**H11AA814 SERIES**

**H11A817 SERIES**

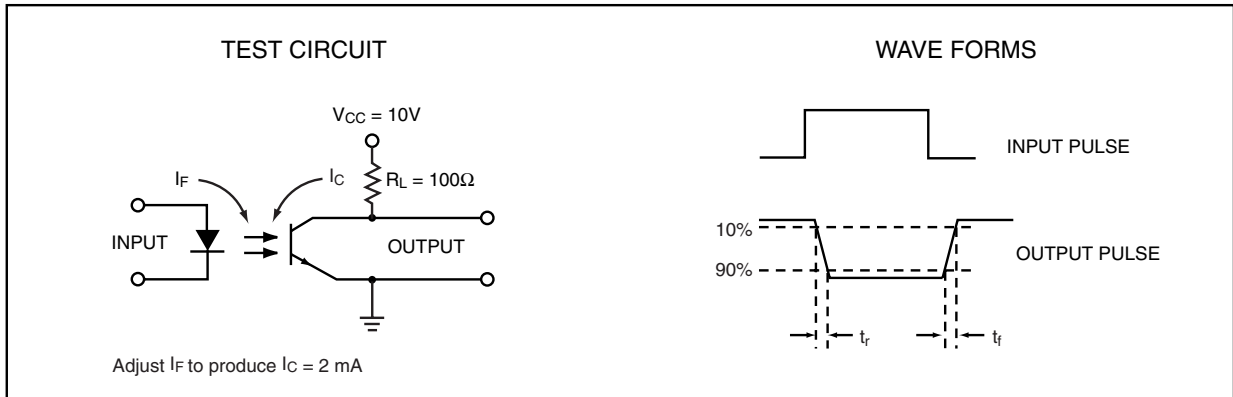


**H11AA814 SERIES**

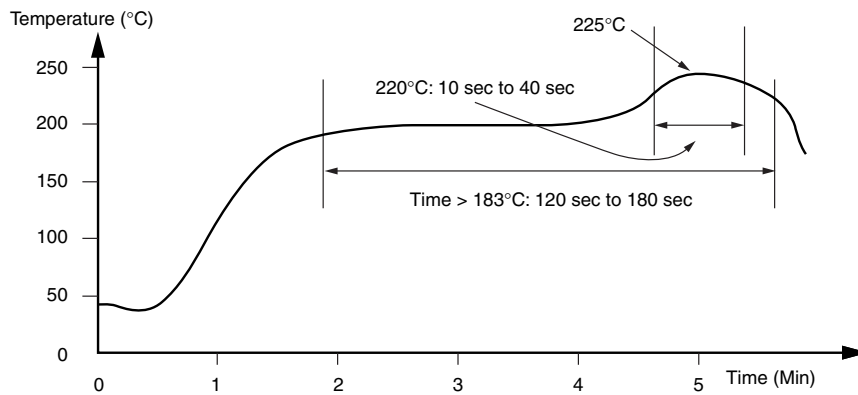
**H11A817 SERIES**



**Figure 8. Switching Time Test Circuit and Waveforms**



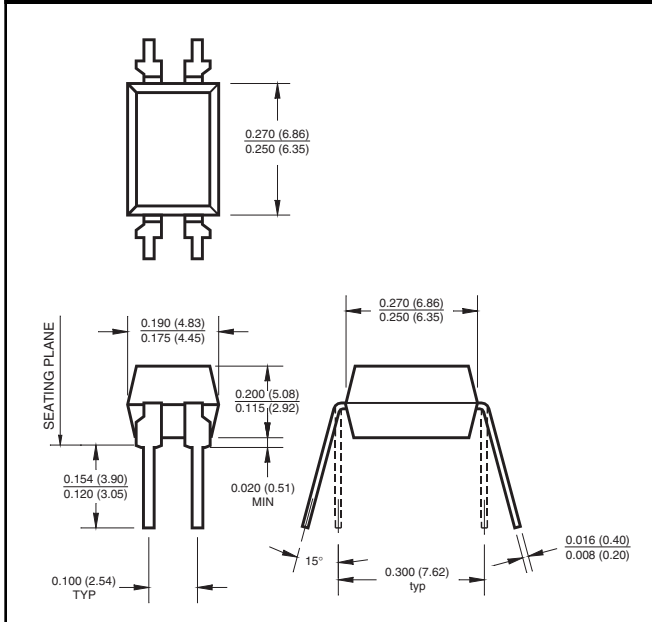
**Recommended Thermal Reflow Profile for Surface Mount DIP Package**



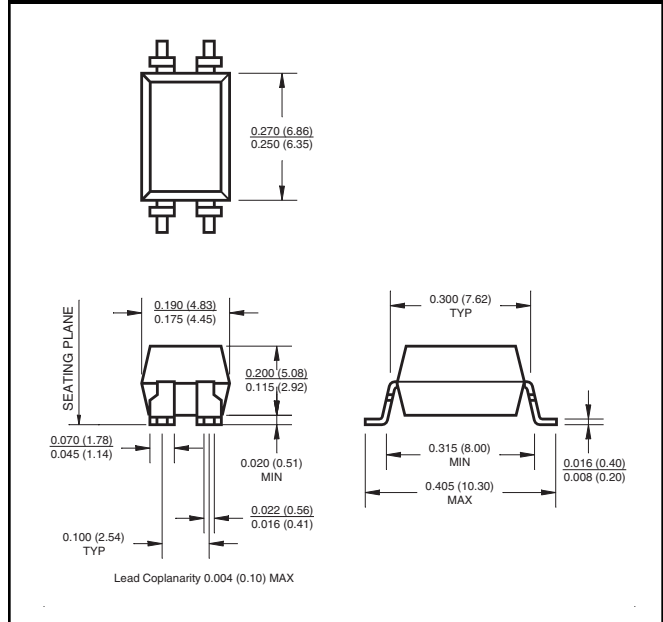
**H11AA814 SERIES**

**H11A817 SERIES**

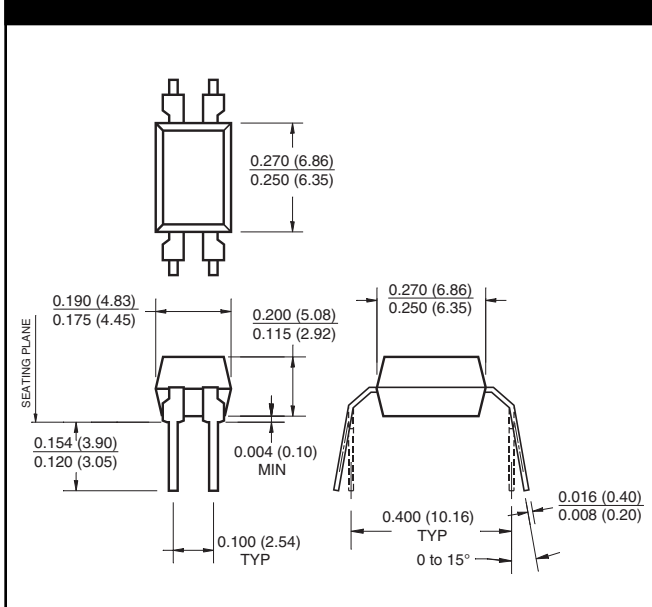
**Package Dimensions (Through Hole)**



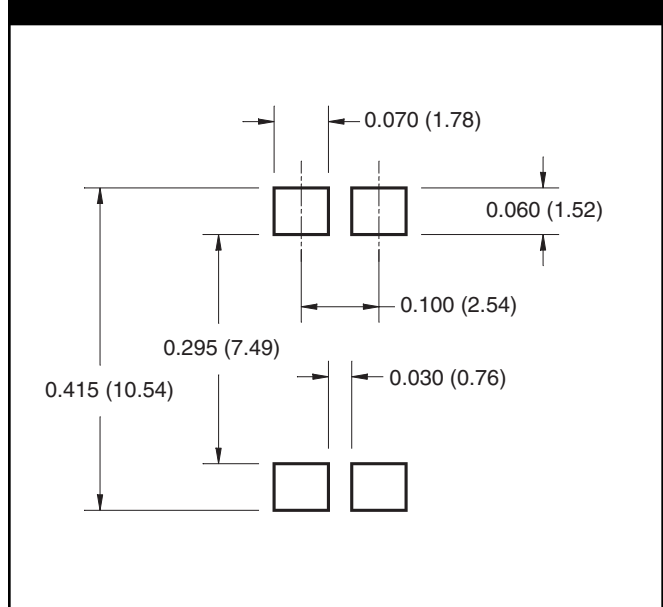
**Package Dimensions (Surface Mount)**



**Package Dimensions (0.4" Lead Spacing)**



**Footprint Dimensions (Surface Mount)**



**NOTE**

All dimensions are in inches (millimeters)

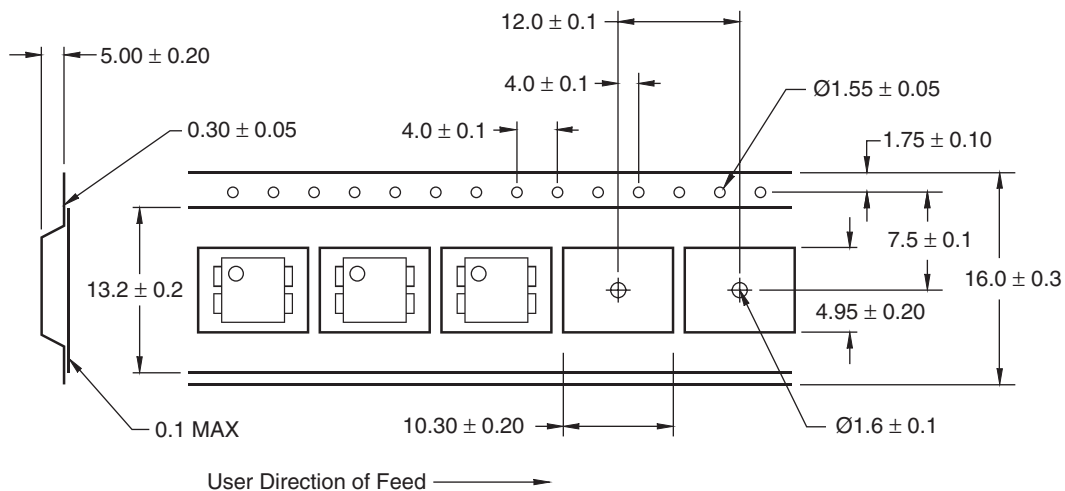
**H11AA814 SERIES**

**H11A817 SERIES**

**ORDERING INFORMATION**

Option	Order Entry Identifier	Description
S	.S	Surface Mount Lead Bend
SD	.SD	Surface Mount; Tape and reel
W	.W	0.4" Lead Spacing
300	.300	VDE 0884
300W	.300W	VDE 0884, 0.4" Lead Spacing
3S	.3S	VDE 0884, Surface Mount
3SD	.3SD	VDE 0884, Surface Mount, Tape & Reel

**Carrier Tape Specifications**



**NOTE**  
All dimensions are in millimeters

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**H11AA814 SERIES**

**H11A817 SERIES**

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