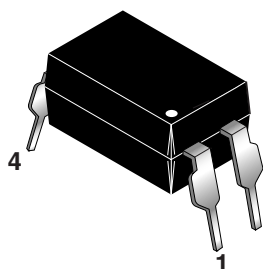


## H11AA814 SERIES

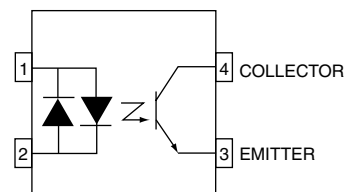
## H11A617 SERIES

## 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.

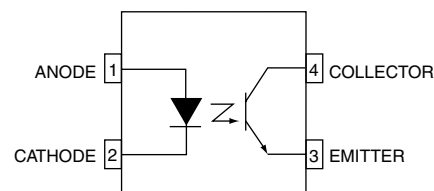
The H11A617 and H11A817 Series consists of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 4-pin dual in-line package.

### FEATURES

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

|            |           |           |          |
|------------|-----------|-----------|----------|
| H11AA814:  | 20-300%   | H11A817:  | 50-600%  |
| H11AA814A: | 50-150%   | H11A817A: | 80-160%  |
| H11A617A:  | 40%-80%   | H11A817B: | 130-260% |
| H11A617B:  | 63%-125%  | H11A817C: | 200-400% |
| H11A617C:  | 100%-200% | H11A817D: | 300-600% |
| H11A617D:  | 160%-320% |           |          |
- Minimum  $BV_{CEO}$  of 70V guaranteed

### H11A617 & H11A817 SCHEMATIC



### APPLICATIONS

#### H11AA814 Series

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

#### H11A617 and H11A817 Series

- Power supply regulators
- Digital logic inputs
- Microprocessor inputs

**H11AA814 SERIES**

**H11A617 SERIES**

**H11A817 SERIES**

| Parameter                                                      | Symbol             | Device                                          | Value          | Units |
|----------------------------------------------------------------|--------------------|-------------------------------------------------|----------------|-------|
| TOTAL DEVICE                                                   |                    |                                                 |                |       |
| Storage Temperature                                            | T <sub>STG</sub>   | All                                             | -55 to +150    | °C    |
| Operating Temperature                                          | T <sub>OPR</sub>   | All                                             | -55 to +100    | °C    |
| Lead Solder Temperature                                        | T <sub>SOL</sub>   | All                                             | 260 for 10 sec | °C    |
| Total Device Power Dissipation (-55°C to 50 °C)                | P <sub>D</sub>     | All                                             | 200            | mW    |
| EMITTER                                                        |                    |                                                 |                |       |
| Continuous Forward Current                                     | I <sub>F</sub>     | All                                             | 50             | mA    |
| Reverse Voltage                                                | V <sub>R</sub>     | H11A617A/B/C/D<br>H11A817/A/B/C/D               | 6<br>5         | V     |
| Forward Current - Peak (1 μs pulse, 300 pps)                   | I <sub>F(pk)</sub> | All                                             | 1.0            | A     |
| LED Power Dissipation (25°C ambient)<br>Derate above 25°C      | P <sub>D</sub>     | All                                             | 100            | mW    |
|                                                                |                    |                                                 | 1.33           | mW/°C |
| DETECTOR                                                       |                    |                                                 |                |       |
| Collector-Emitter Voltage                                      | V <sub>CEO</sub>   | All                                             | 70             | V     |
| Emitter-Collector Voltage                                      | V <sub>ECO</sub>   | H11AA814/A<br>H11A617A/B/C/D<br>H11A817/A/B/C/D | 6<br>7<br>6    | V     |
| Continuous Collector Current                                   | I <sub>C</sub>     | All                                             | 50             | mA    |
| Detector Power Dissipation (25°C ambient)<br>Derate above 25°C | P <sub>D</sub>     | 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 |
|-------------------------------------|-----------------------------------------------|-------------------|-----------------------------------------|-----|------|------|------|
| <b>EMITTER</b>                      |                                               |                   |                                         |     |      |      |      |
| Input Forward Voltage               | (I <sub>F</sub> = 60 mA)                      | V <sub>F</sub>    | H11A617A/B/C/D                          |     | 1.35 | 1.65 | V    |
|                                     | (I <sub>F</sub> = 20 mA)                      |                   | H11A817/A/B/C/D                         |     | 1.2  | 1.5  |      |
|                                     | (I <sub>F</sub> = ±20 mA)                     |                   | H11AA814/A                              |     | 1.2  | 1.5  |      |
| Reverse Leakage Current             | (V <sub>R</sub> = 6.0 V)                      | I <sub>R</sub>    | H11A617A/B/C/D                          |     | .001 | 10   | μA   |
|                                     | (V <sub>R</sub> = 5.0 V)                      |                   | H11A817/A/B/C/D                         |     |      |      |      |
| <b>DETECTOR</b>                     |                                               |                   |                                         |     |      |      |      |
| Collector-Emitter Breakdown Voltage | (I <sub>C</sub> = 1.0 mA, I <sub>F</sub> = 0) | BV <sub>CEO</sub> | ALL                                     | 70  | 100  |      | V    |
| Emitter-Collector Breakdown Voltage | (I <sub>E</sub> = 100 μA, I <sub>F</sub> = 0) | BV <sub>ECO</sub> | H11AA814/A                              | 6   | 10   |      | V    |
|                                     |                                               |                   | H11A617A/B/C/D                          | 7   |      |      |      |
|                                     |                                               |                   | H11A817/A/B/C/D                         | 6   |      |      |      |
| Collector-Emitter Dark Current      | (V <sub>CE</sub> = 10V, I <sub>F</sub> = 0)   | I <sub>CEO</sub>  | H11AA814/A, H11A817/A/B/C/D, H11A617C/D |     | 1    | 100  | nA   |
|                                     |                                               |                   | H11A617A/B                              |     |      | 50   |      |
| Collector-Emitter Capacitance       | (V <sub>CE</sub> = 0 V, f = 1 MHz)            | C <sub>CE</sub>   | ALL                                     |     | 8    |      | pF   |

\*Typical values at  $T_A = 25^\circ\text{C}$ .

**H11AA814 SERIES**

**H11A617 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 <sub>F</sub> = ±1 mA, V <sub>CE</sub> = 5 V) (note 1)                                                                                                 | CTR                   | H11AA814                                                | 20       |      | 300 | %    |
|                                      | (I <sub>F</sub> = ±1 mA, V <sub>CE</sub> = 5 V) (note 1)                                                                                                 |                       | H11AA814A                                               | 50       |      | 150 | %    |
|                                      | (I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 5 V) (note 1)                                                                                                 |                       | H11A617A                                                | 40       |      | 80  | %    |
|                                      |                                                                                                                                                          |                       | H11A617B                                                | 63       |      | 125 | %    |
|                                      |                                                                                                                                                          |                       | H11A617C                                                | 100      |      | 200 | %    |
|                                      |                                                                                                                                                          |                       | H11A617D                                                | 160      |      | 320 | %    |
|                                      |                                                                                                                                                          |                       | H11A817                                                 | 50       |      | 600 | %    |
|                                      | (I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 5 V) (note 1)                                                                                                  |                       | H11A817A                                                | 80       |      | 160 | %    |
|                                      |                                                                                                                                                          |                       | H11A817B                                                | 130      |      | 260 | %    |
|                                      |                                                                                                                                                          |                       | H11A817C                                                | 200      |      | 400 | %    |
|                                      |                                                                                                                                                          |                       | H11A817D                                                | 300      |      | 600 | %    |
|                                      |                                                                                                                                                          |                       | (I <sub>F</sub> = 1 mA, V <sub>CE</sub> = 5 V) (note 1) | H11A617A | 13   |     |      |
|                                      | H11A617B                                                                                                                                                 |                       |                                                         | 22       |      |     | %    |
|                                      | H11A617C                                                                                                                                                 |                       |                                                         | 34       |      |     | %    |
|                                      | H11A617D                                                                                                                                                 |                       |                                                         | 56       |      |     | %    |
| Collector-Emitter Saturation Voltage | (I <sub>C</sub> = 1 mA, I <sub>F</sub> = ±20 mA)<br>(I <sub>C</sub> = 2.5 mA, I <sub>F</sub> = 10 mA)<br>(I <sub>C</sub> = 1 mA, I <sub>F</sub> = 20 mA) | V <sub>CE (SAT)</sub> | H11AA814/A                                              |          |      | 0.2 | V    |
|                                      |                                                                                                                                                          |                       | H11A617A/B/C/D                                          |          |      | 0.4 |      |
|                                      |                                                                                                                                                          |                       | H11A817/A/B/C/D                                         |          |      | 0.2 |      |
| AC Characteristic                    |                                                                                                                                                          |                       |                                                         |          |      |     |      |
| Rise Time                            | (I <sub>C</sub> = 2 mA, V <sub>CE</sub> = 2 V, R <sub>L</sub> = 100V) (note 2)                                                                           | t <sub>r</sub>        | ALL                                                     |          | 2.4  | 18  | μs   |
| Fall Time                            | (I <sub>C</sub> = 2 mA, V <sub>CE</sub> = 2 V, R <sub>L</sub> = 100V) (note 2)                                                                           | t <sub>f</sub>        | ALL                                                     |          | 2.4  | 18  | μs   |

**ISOLATION CHARACTERISTICS**

| Characteristic                          | Test Conditions                         | Symbol    | Min       | Typ* | Max | Units    |
|-----------------------------------------|-----------------------------------------|-----------|-----------|------|-----|----------|
| Input-Output Isolation Voltage (note 3) | $f = 60\text{Hz}$ , $t = 1 \text{ min}$ | $V_{ISO}$ | 5300      |      |     | Vac(rms) |
| Isolation Resistance                    | ( $V_{I-O} = 500 \text{ VDC}$ )         | $R_{ISO}$ | $10^{11}$ |      |     | $\Omega$ |
| Isolation Capacitance                   | ( $V_{I-O} = 0$ , $f = 1 \text{ MHz}$ ) | $C_{ISO}$ |           | 0.5  |     | pf       |

\*Typical values at  $T_A = 25^\circ\text{C}$ .

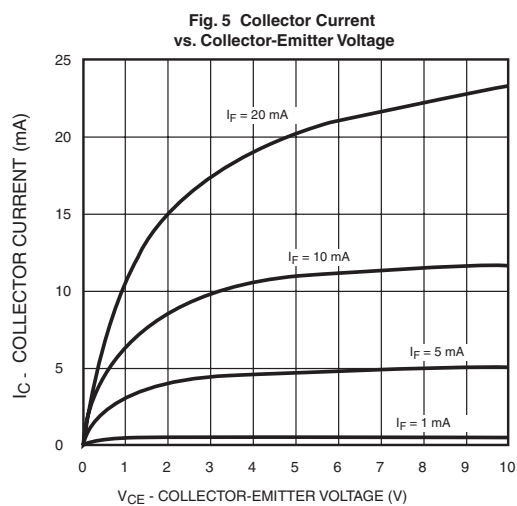
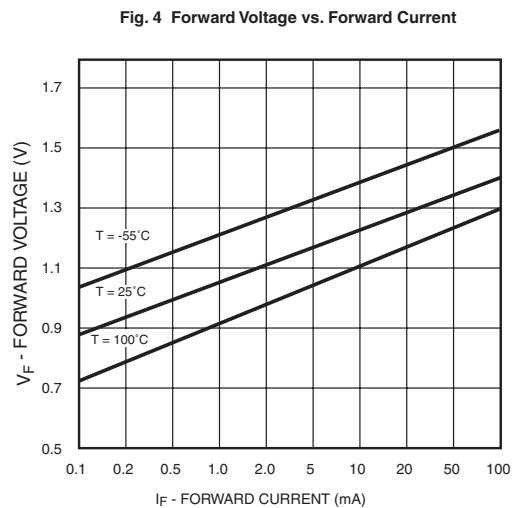
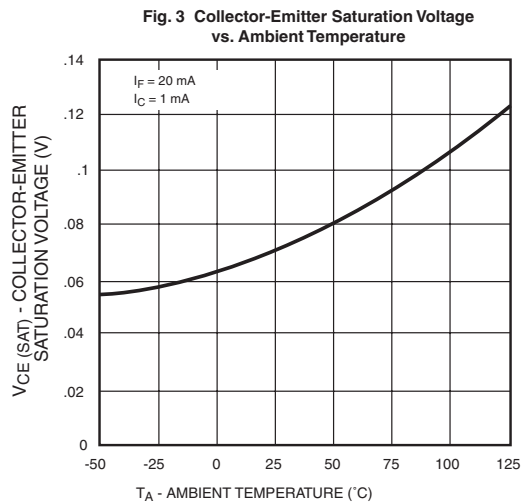
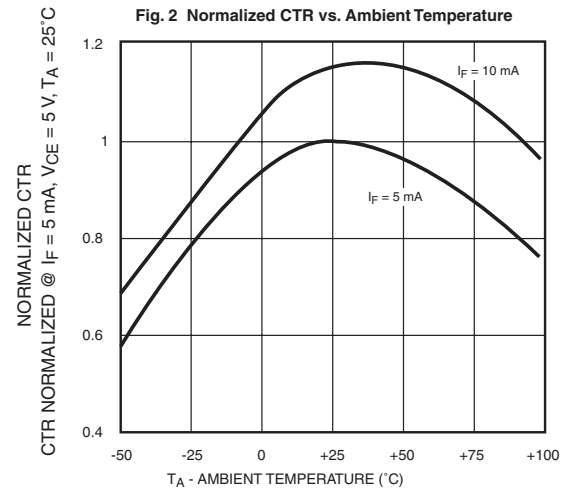
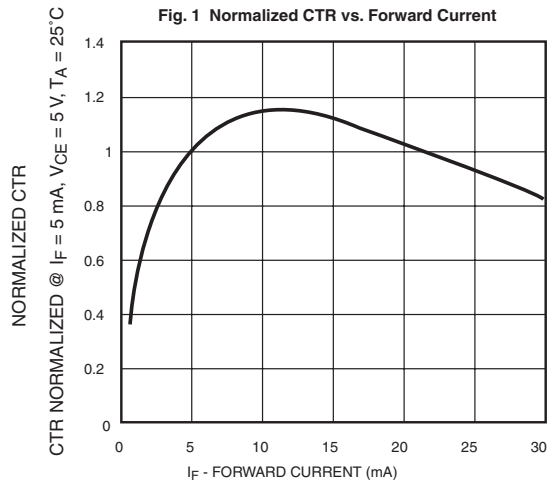
**NOTES**

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 3 and 4 are common.

## H11AA814 SERIES

## H11A617 SERIES

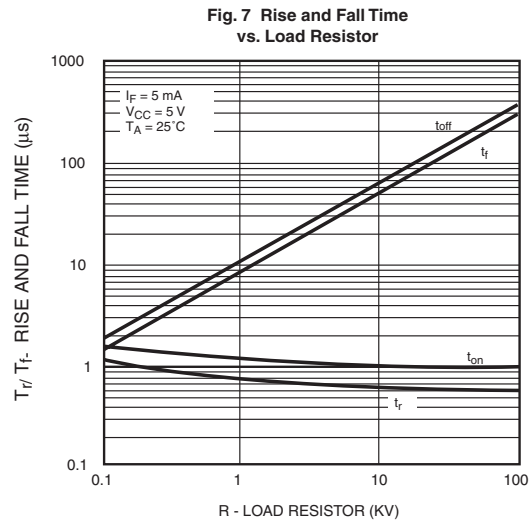
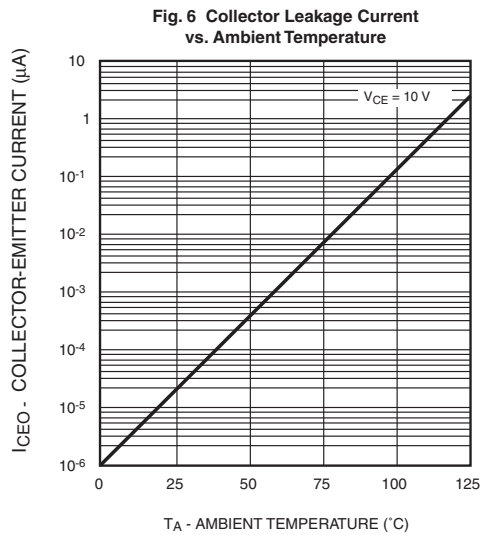
## H11A817 SERIES



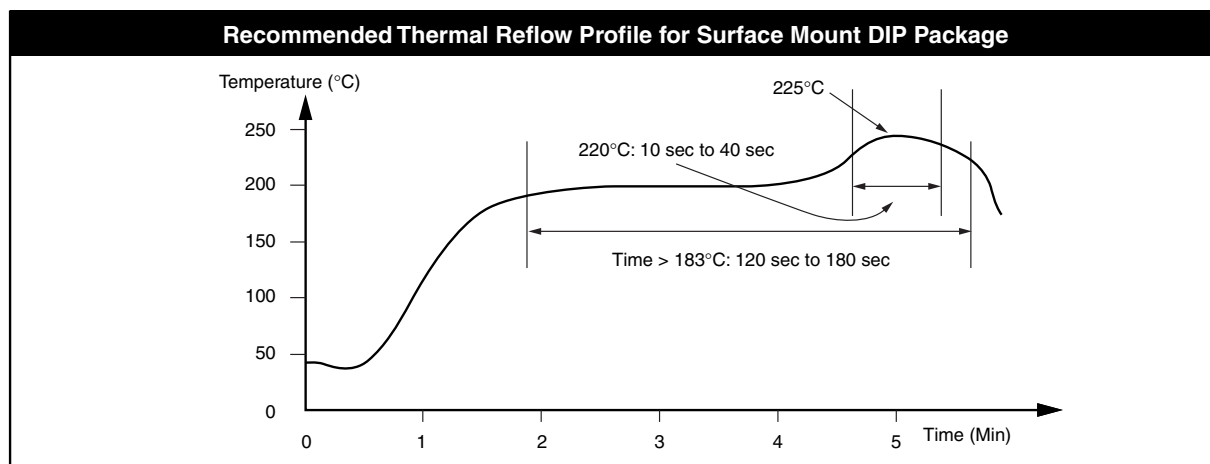
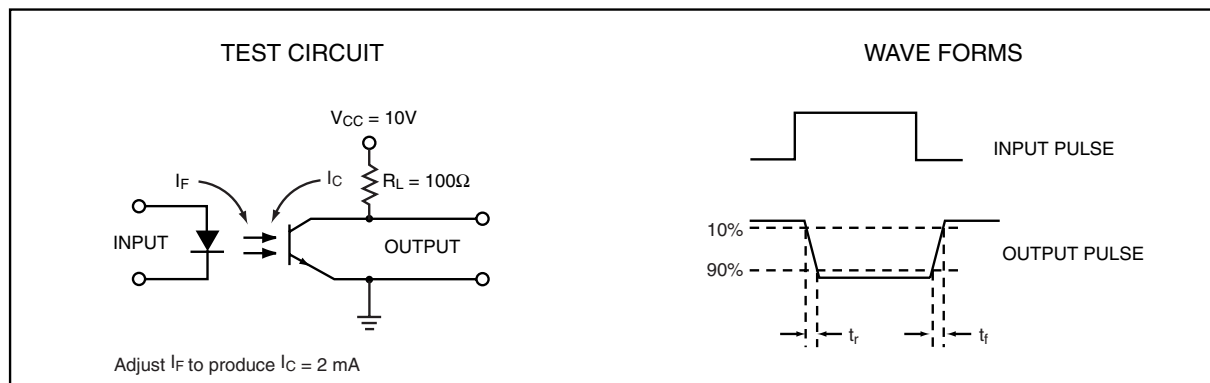
## H11AA814 SERIES

## H11A617 SERIES

## H11A817 SERIES



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

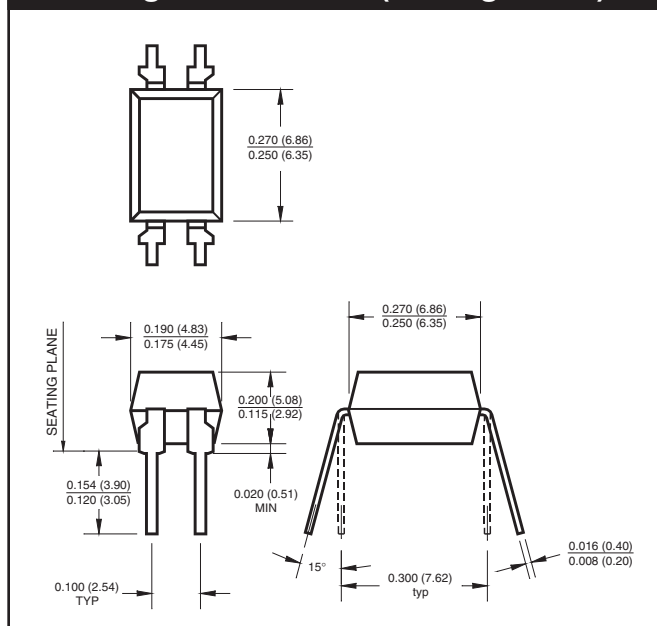


## H11AA814 SERIES

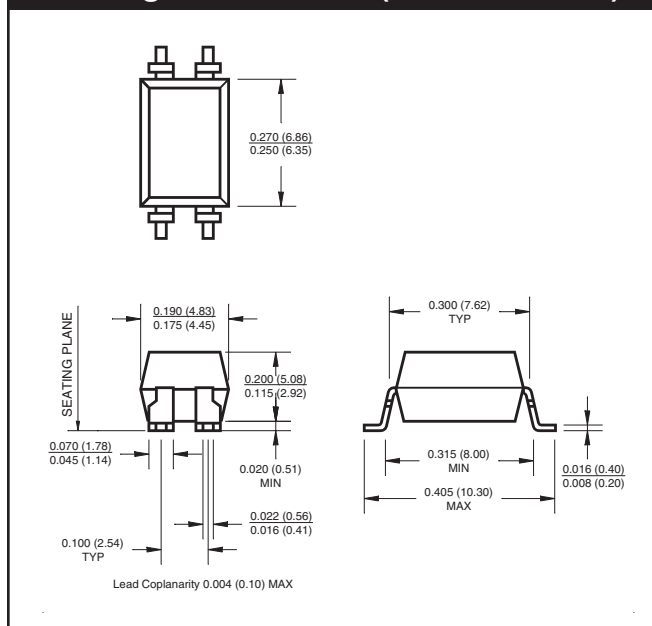
## H11A617 SERIES

## H11A817 SERIES

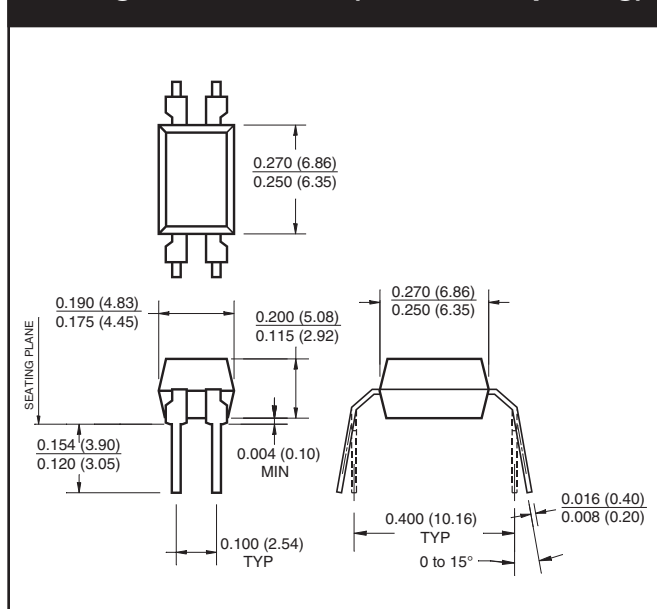
### Package Dimensions (Through Hole)



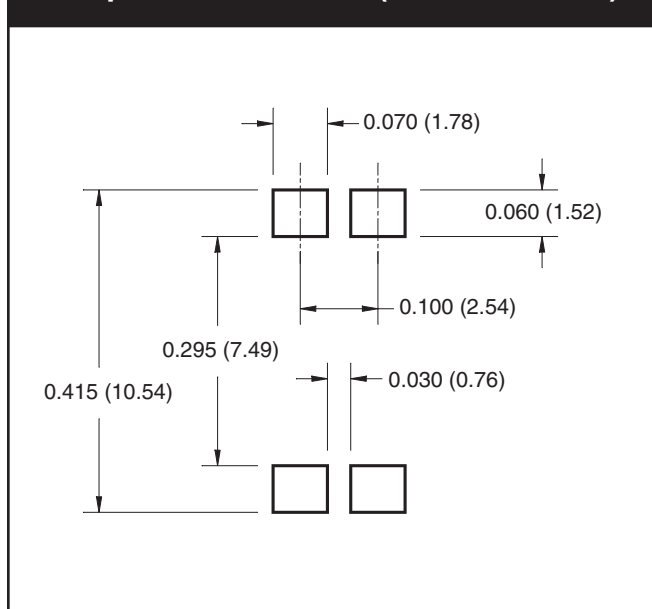
### Package Dimensions (Surface Mount)



### Package Dimensions (0.4" Lead Spacing)



### Footprint Dimensions (Surface Mount)



#### NOTE

All dimensions are in inches (millimeters)

## H11AA814 SERIES

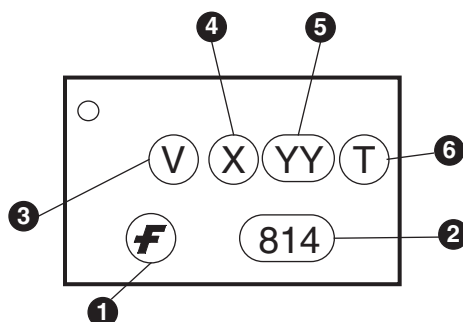
## H11A617 SERIES

## H11A817 SERIES

### ORDERING INFORMATION

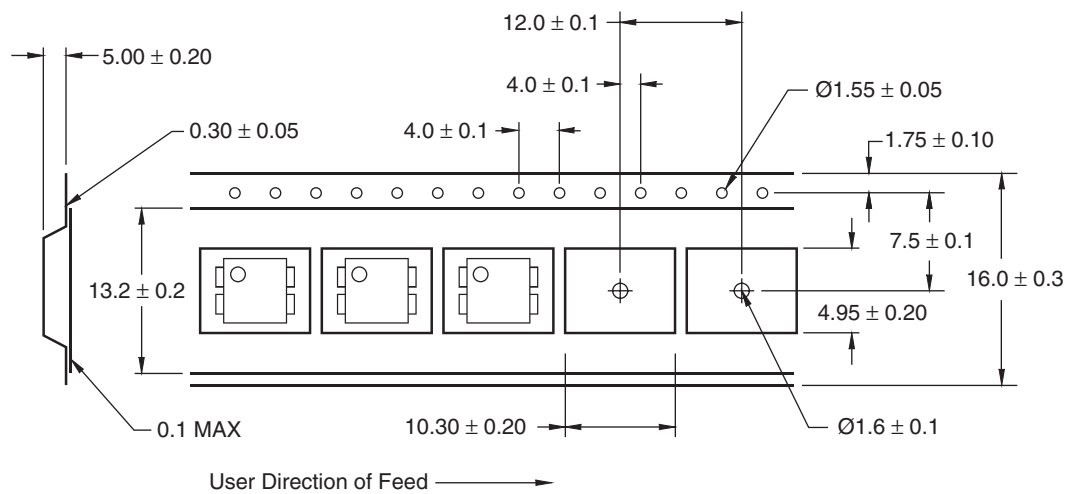
| Option | Order Entry Identifier | Description                          |
|--------|------------------------|--------------------------------------|
| S      | .S                     | Surface Mount Lead Bend              |
| SD     | .SD                    | Surface Mount; Tape and reel         |
| 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 |

### MARKING INFORMATION



| Definitions |                                                                                        |
|-------------|----------------------------------------------------------------------------------------|
| 1           | Fairchild logo                                                                         |
| 2           | Device number                                                                          |
| 3           | VDE mark (Note: Only appears on parts ordered with VDE option – See order entry table) |
| 4           | One digit year code                                                                    |
| 5           | Two digit work week ranging from '01' to '53'                                          |
| 6           | Assembly package code                                                                  |

## Carrier Tape Specifications



## NOTE

All dimensions are in millimeters

---

**H11AA814 SERIES**

**H11A617 SERIES**

**H11A817 SERIES**

---

**DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9