

1.本站收集的数据手册和产品资料都来自互联网,版权归原作者所有。如读者和版权方有任 何异议请及时告之,我们将妥善解决。

本站提供的中文数据手册是英文数据手册的中文翻译,其目的是协助用户阅读,该译文无法自动跟随原稿更新,同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。

3.本站提供的产品资料,来自厂商的技术支持或者使用者的心得体会等,其内容可能存在描 叙上的差异,建议读者做出适当判断。

4.如需与我们联系,请发邮件到marketing@iczoom.com,主题请标有"数据手册"字样。

Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.

2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.

3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.

4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets".

FAIRCHILD

PHOTOTRANSISTOR OPTOCOUPLERS

SEMICONDUCTOR®

H11AG1

H11AG2

H11AG3

DESCRIPTION

The H11AG series consists of a Gallium-Aluminum-Arsenide IRED emitting diode coupled with a silicon phototransistor in a dual in-line package. This device provides the unique feature of the high current transfer ratio at both low output voltage and low input current. This makes it ideal for use in low power logic circuits, telecommunications equipment and portable electronics isolation applications.

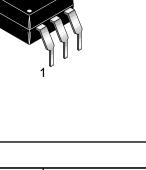
FEATURES

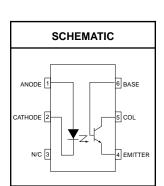
- High efficiency low degradation liquid epitaxial IRED
- Logic level compatible, input and output currents, with CMOS and LS/TTL
- High DC current transfer ratio at low input currents
- Underwriters Laboratory (UL) recognized File #E90700

APPLICATIONS

- CMOS driven solid state reliability
- Telephone ring detector
- Digital logic isolation

ABSOLUTE MAXIMUM RATINGS					
Parameters	Symbol	Device	Value	Units	
TOTAL DEVICE	т	A.II.		°C	
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 @ 25°C (LED plus detector)		A 11	260	mW	
Derate Linearly From 25°C	P _D All		3.5	mW/°C	
EMITTER	1	All	50	0	
Continuous Forward Current	١ _F	All	50	mA	
Reverse Voltage	V _R	All	6	V	
Forward Current - Peak (1 µs pulse, 300 pps)	l _F (pk)	All	3.0	А	
LED Power Dissipation 25°C Ambient	P	A 11	75	mW	
Derate Linearly From 25°C	P _D	All	1.0	mW/°C	
DETECTOR					
Detector Power Dissipation @ 25°C	P		150	mW	
Derate Linearly from 25°C	P _D	All	2.0	mW/°C	
Continuous Collector Current		All	50	mA	







SEMICONDUCTOR®

H11AG1

H11AG2

H11AG3

ELECTRICAL CHARACTERISTICS (T _A = 0-70°C Unless otherwise specified.)							
INDIVIDUAL COMPONENT CHARACTERISTICS							
Parameters	Test Conditions	Symbol	Device	Min	Тур	Max	Units
EMITTER							
Input Forward Voltage	I _F = 1 mA	V _F	All			1.5	V
	V _R = 5 V, T _A = 25°C	I _R	All			10	μA
Reverse Leakage Current	V _R = 5 V, T _A = 70°C	I _R	All			100	μA
Capacitance	V = 0, f = 1.0 MHz	CJ	All			100	pF
DETECTOR							
Breakdown Voltage							
Collector to Emitter	I _C = 1.0 mA, I _F = 0	BV _{CEO}	All	30			V
Collector to Base	$I_{C} = 100 \ \mu A, \ I_{F} = 0$	BV _{CBO}	All	70			V
Emitter to Collector	I _C = 100 μA, I _F = 0	BV _{ECO}	All	7			V
Leakage Current							
Collector to Emitter	$V_{CE} = 10 \text{ V}, I_F = 0$	I _{CEO}	All		5	10	μA
Capacitance	V _{CE} = 10 V, f = 1 MHz	C _{CE}	All		2		pF

ISOLATION CHARACTERISTICS						
Parameters	Test Conditions	Symbol	Min	Тур	Max	Units
Input-Output Isolation Voltage	$I_{I-0} \le 1 \ \mu A, \ t = 1 \ min.$	V _{ISO}	5300			Vac(rms)

TRANSFER CHARACTERISTICS (T _A = 25°C Unless otherwise specified.)							
DC Characteristics	Test Conditions	Symbol	Device	Min	Тур	Max	Units
		V _{CE} =5V CTR H11AG1 300 H11AG2 200 H11AG3 100	H11AG1	300			
	$I_{\rm F} = 1 {\rm mA}, {\rm V}_{\rm CE} = 5 {\rm V}$		H11AG2	200			
Current Transfer Ratio			H11AG1	100	100		%
	$I_{\rm F}$ = 1 mA, $V_{\rm CE}$ = 0.6 V	CTR	H11AG2	50			
			H11AG3	20			
		OTD	H11AG1	100			
	I _F = 0.2 mA, V _{CE} = 1.5 V	CTR	H11AG2	50			
Saturation Voltage	I _F = 2.0 mA, I _C = 0.5 mA	V _{CE(SAT)}	All			.40	V
AC Characteristics	Test Conditions	Symbol	Device	Min	Тур	Max	Units
Non-Saturated Switching Times							
Turn-On Time	R_L = 100 Ω , I_F = 1 mA, V_{CC} = 5 V	t _{on}	All		5		μS
Turn-Off Time	R_L = 100 Ω , I_F = 1 mA, V_{CC} = 5 V	t _{off}	All		5		μS



H11AG1

H11AG2

H11AG3

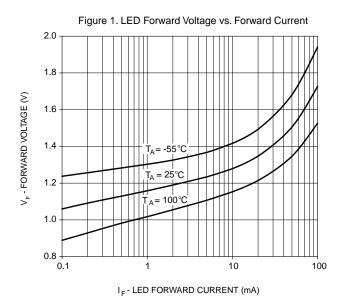
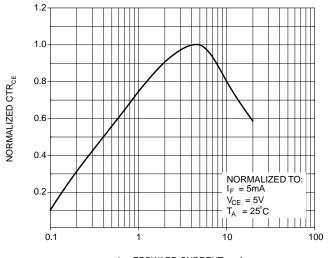


Figure 2. Normalized Current Transfer Ratio vs. Forward Current



I_F - FORWARD CURRENT - mA

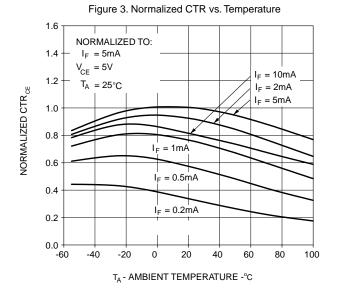
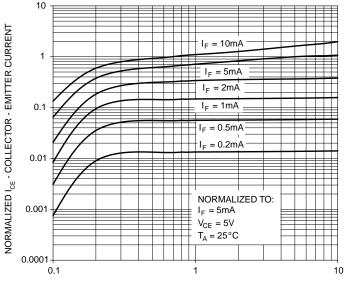


Figure 4. Normalized Collector vs. Collector - Emitter Voltage



V_{CE} - COLLECTOR - EMITTER VOLTAGE - V



H11AG1

H11AG2

H11AG3

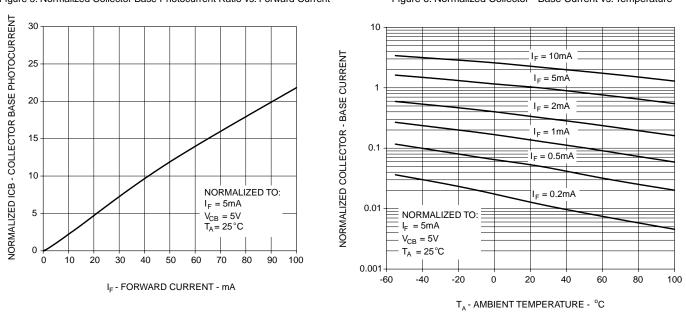


Figure 5. Normalized Collector Base Photocurrent Ratio vs. Forward Current

Figure 6. Normalized Collector - Base Current vs. Temperature

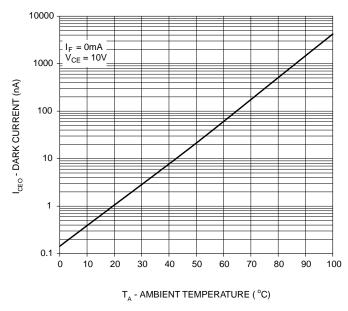


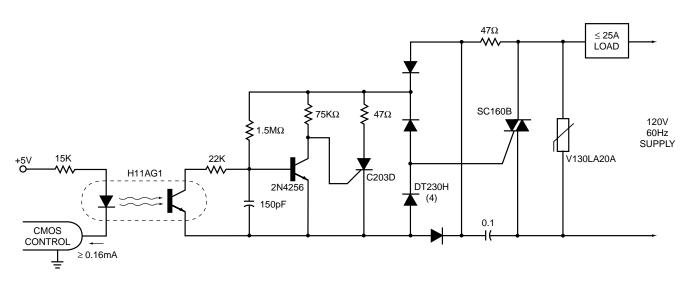
Figure 7. Collector-Emitter Dark Current vs. Ambient Temperature



H11AG1

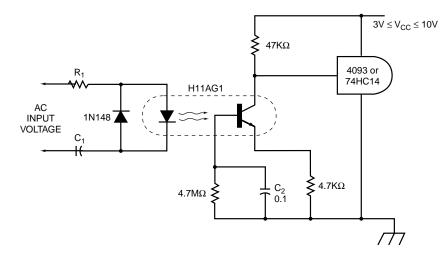
H11AG2

H11AG3





The H11AG1's superior performance at low input currents allows standard CMOS logic circuits to directly operate a 25A solid state relay. Circuit operation is as follows: power switching is provided by the SC160B, 25A triac. Its gate is controlled by the C203B via the DT230H rectifier bridge. The C203B turn-on is inhibited by the 2N4256 when line voltage is above 12V and/or the H11AG is off. False trigger and dv/dt protection are provided by the combination of the MOV[®] varistor and RC snubber network.



INPUT	R ₁	С ₁	Z	
40-90 VRMS	75 K	0.1 μF	4001/	
20 Hz	1/10 W	100 V	109K	
95-135 VRMS	180 K	12 ηF	00514	
60 Hz	1/10 W	200 V	285K	
200-280 VRMS	390 K	6.80 ηF	55014	
50/60 Hz	1/4 W	400 V	550K	

DC component of input voltage is ignored due to C1



The H11AG1 uses less input power than the neon bulb traditionally used to monitor telephone and line voltages. Additionally. response time can be tailored to ignore telephone dial tap, switching transients and other undesired signals by modifying the value of C2. The high impedance to line voltage also can simply board layout spacing requirements.

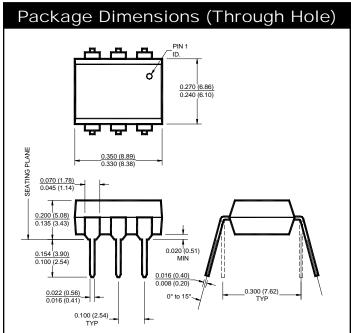


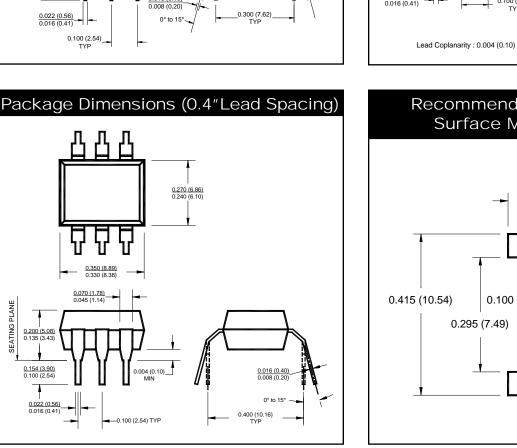
0.350 (8.89) 0.330 (8.38)

H11AG1

H11AG2

H11AG3





NOTE

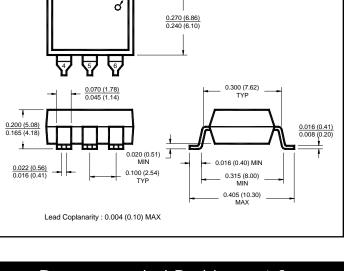
SEATING PLANE

0.200 (5.08)

0.154 (3.90) 0.100 (2.54)

0.022 (0.56) 0.016 (0.41)

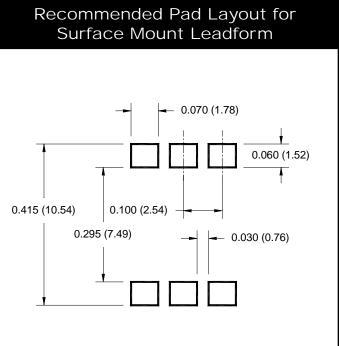
All dimensions are in inches (millimeters)



Package Dimensions (Surface Mount)

PIN 1

ID.



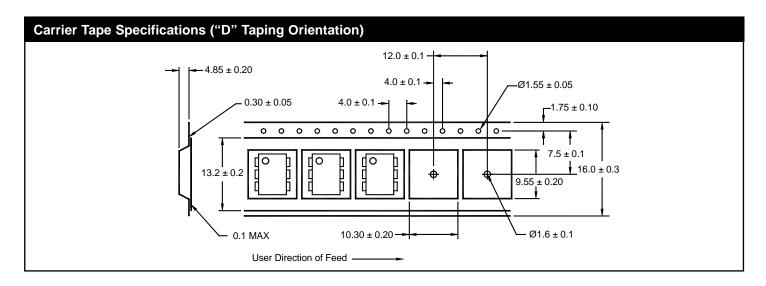


H11AG1

H11AG2

H11AG3

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



NOTE

All dimensions are millimeters



H11AG1

H11AG2

H11AG3

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE 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:

- 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 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.