

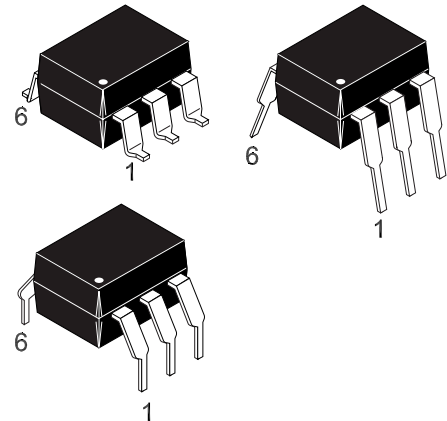
**H11G1
H11G2
H11G3**

DESCRIPTION

The H11GX series are photodarlington-type optically coupled optocouplers. These devices have a gallium arsenide infrared emitting diode coupled with a silicon darlington connected phototransistor which has an integral base-emitter resistor to optimize elevated temperature characteristics.

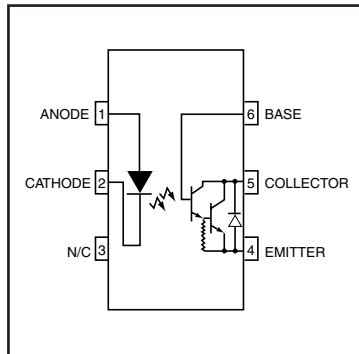
FEATURES

- High BV_{CEO}
 - Minimum 100 V for H11G1
 - Minimum 80 V for H11G2
 - Minimum 55 V for H11G3
- High sensitivity to low input current
Minimum 500 percent CTR at $I_F = 1 \text{ mA}$
- Low leakage current at elevated temperature
(maximum 100 μA at 80°C)
- Underwriters Laboratory (UL) recognized File# E90700



APPLICATIONS

- CMOS logic interface
- Telephone ring detector
- Low input TTL interface
- Power supply isolation
- Replace pulse transformer



NOTE

All dimensions are in inches (millimeters)

ABSOLUTE MAXIMUM RATINGS			
Parameter	Symbol	Value	Units
TOTAL DEVICE			
Storage Temperature	T_{STG}	-55 to +150	°C
Operating Temperature	T_{OPR}	-55 to +100	°C
Lead Solder Temperature	T_{SOL}	260 for 10 sec	°C
Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$	P_D	260	mW
Derate above 25°C		3.5	mW/°C
Input-Output Isolation Voltage	V_{ISO}	5300	Vac(rms)
EMITTER			
Forward Input Current	I_F	60	mA
Reverse Input Voltage	V_R	6.0	V
Forward Current - Peak (1 μs pulse, 300pps)	$I_{F(pk)}$	3.0	A
LED Power Dissipation @ $T_A = 25^\circ\text{C}$	P_D	100	mW
Derate above 25°C		1.8	mW/°C
DETECTOR			
Collector-Emitter Voltage	V_{CEO}	100	V
H11G1			
H11G2			
H11G3	55		
Detector Power Dissipation @ $T_A = 25^\circ\text{C}$	P_D	200	mW
Derate above 25°C		2.67	mW/°C

H11G1, H11G2, H11G3
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise specified.)

INDIVIDUAL COMPONENT CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Device	Min	Typ**	Max	Unit
EMITTER							
Forward Voltage	($I_F = 10\text{ mA}$)	V_F	ALL		1.3	1.50	V
Forward Voltage Temp. Coefficient		$\frac{\Delta V_F}{\Delta T_A}$	ALL		-1.8		mV/°C
Reverse Breakdown Voltage	($I_R = 10\text{ }\mu\text{A}$)	BV_R	ALL	3.0	25		V
Junction Capacitance	($V_F = 0\text{ V}$, $f = 1\text{ MHz}$)	C_J	ALL		50		pF
	($V_F = 1\text{ V}$, $f = 1\text{ MHz}$)		ALL		65		pF
Reverse Leakage Current	($V_R = 3.0\text{ V}$)	I_R	ALL		0.001	10	μA
DETECTOR							
Breakdown Voltage Collector to Emitter	($I_C = 1.0\text{ mA}$, $I_F = 0$)	BV_{CEO}	H11G1 H11G2 H11G3	100 80 55			V
Collector to Base	($I_C = 100\text{ }\mu\text{A}$)	BV_{CBO}	H11G1 H11G2 H11G3	100 80 55			
Emitter to Base		BV_{EBO}	ALL	7	10		
Leakage Current Collector to Emitter	($V_{CE} = 80\text{ V}$, $I_F = 0$)	I_{CEO}	H11G1			100	nA
	($V_{CE} = 60\text{ V}$, $I_F = 0$)		H11G2				
	($V_{CE} = 30\text{ V}$, $I_F = 0$)		H11G3				
	($V_{CE} = 80\text{ V}$, $I_F = 0$, $T_A = 80^\circ\text{C}$)		H11G1		100	μA	
	($V_{CE} = 60\text{ V}$, $I_F = 0$, $T_A = 80^\circ\text{C}$)		H11G2				

TRANSFER CHARACTERISTICS

DC Characteristic	Test Conditions	Symbol	Device	Min	Typ**	Max	Unit
EMITTER							
Current Transfer Ratio Collector to Emitter	($I_F = 10\text{ mA}$, $V_{CE} = 1\text{ V}$)	CTR	H11G1/2	100 (1000)			mA (%)
	($I_F = 1\text{ mA}$, $V_{CE} = 5\text{ V}$)		H11G1/2	5 (500)			
			H11G3	2 (200)			
Saturation Voltage	($I_F = 16\text{ mA}$, $I_C = 50\text{ mA}$)	$V_{CE(SAT)}$	H11G1/2		0.85	1.0	V
	($I_F = 1\text{ mA}$, $I_C = 1\text{ mA}$)		H11G1/2		0.75	1.0	
	($I_F = 20\text{ mA}$, $I_C = 50\text{ mA}$)		H11G3		0.85	1.2	

TRANSFER CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Device	Min	Typ**	Max	Unit
SWITCHING TIMES							
Turn-on Time	($R_L = 100\text{ }\Omega$, $I_F = 10\text{ mA}$)	t_{on}	ALL		5		μs
Turn-off Time	($V_{CE} = 5\text{ V}$) Pulse Width $\leq 300\text{ }\mu\text{s}$, $f \leq 30\text{ Hz}$)	t_{off}	ALL		100		

 ** All typical values at $T_A = 25^\circ\text{C}$

H11G1, H11G2, H11G3

Fig. 1 Output Current vs. Input Current

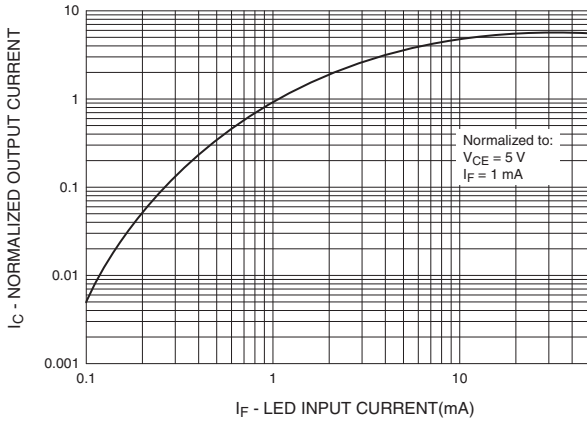


Fig. 2 Normalized Output Current vs. Temperature

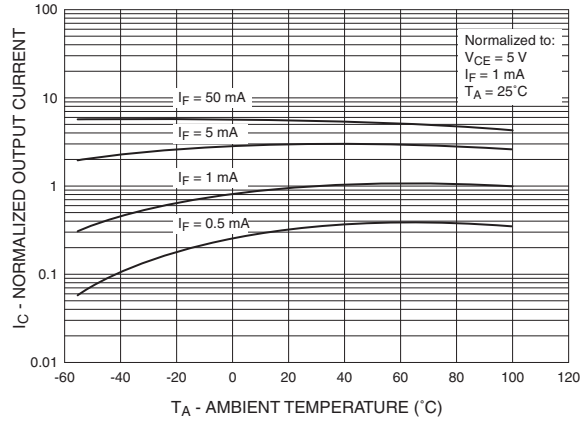


Fig. 3 Output Current vs. Collector - Emitter Voltage

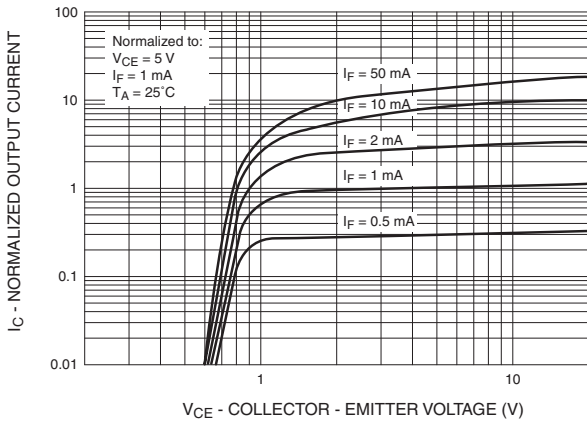


Fig. 4 Collector-Emitter Dark Current vs. Ambient Temperature

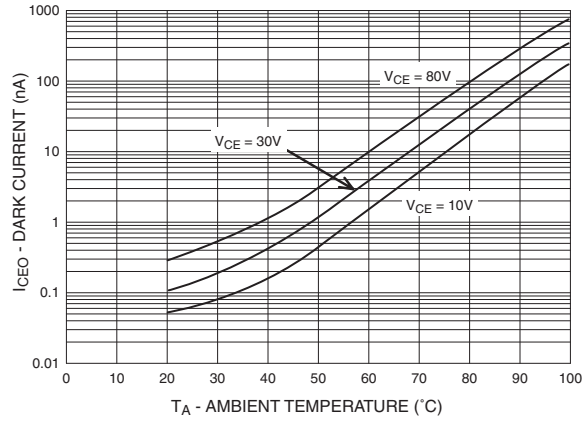
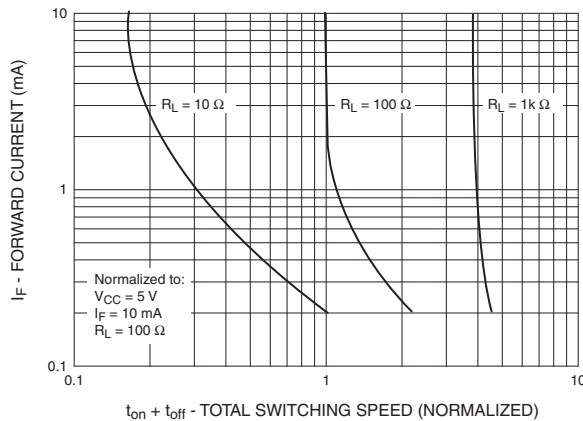


Fig. 5 Input Current vs. Total Switching Speed (Typical Values)

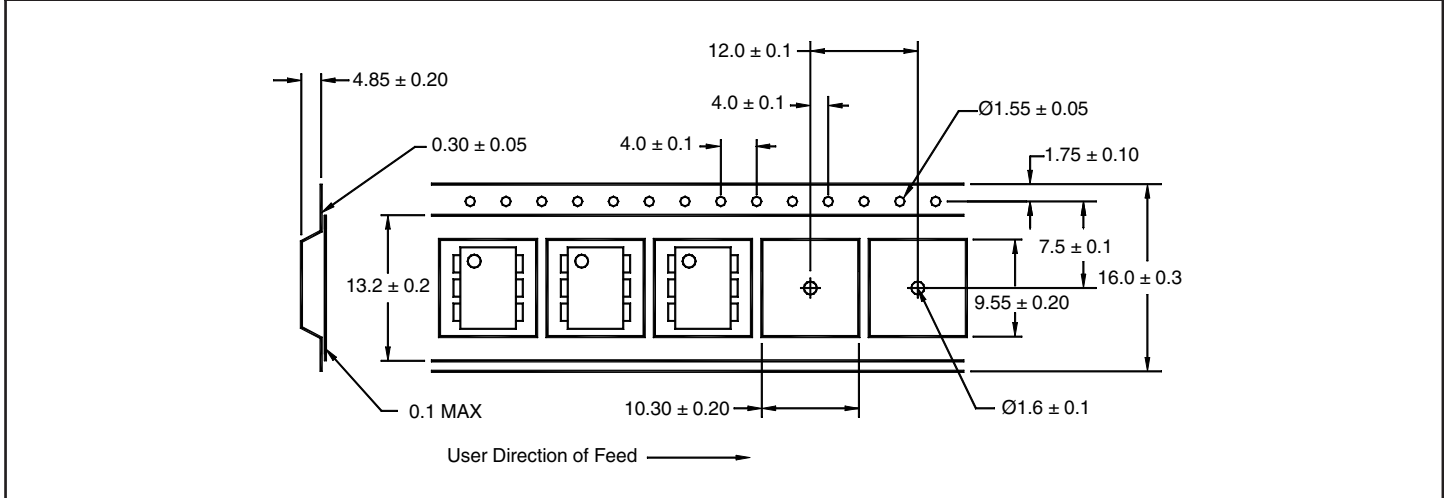


H11G1, H11G2, H11G3

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

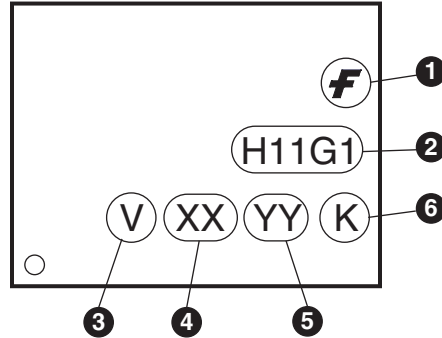
QT Carrier Tape Specifications ("D" Taping Orientation)



NOTE

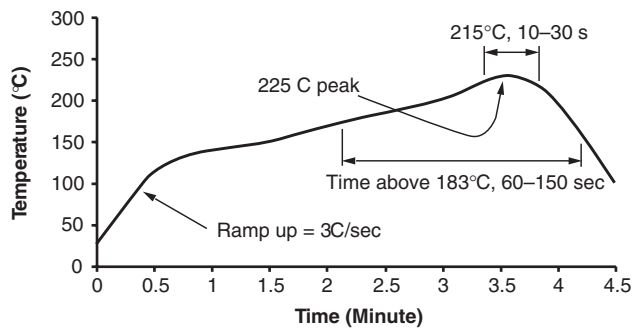
All dimensions are in millimeters

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	Two digit year code, e.g., '03'
5	Two digit work week ranging from '01' to '53'
6	Assembly package code

Reflow Profile (Black Package, No Suffix)



- Peak reflow temperature: 225°C (package surface temperature)
- Time of temperature higher than 183°C for 60–150 seconds
- One time soldering reflow is recommended

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Definition of Terms

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