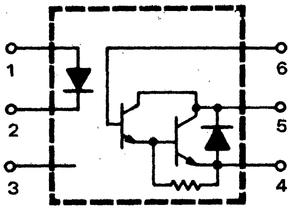
SOLID STATE

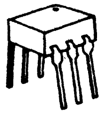
OPTOELECTRONICS

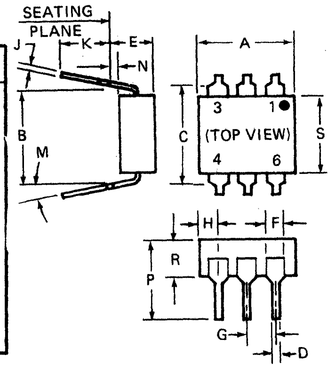
Photon Coupled Isolator H11G1-H11G2

Ga As Infrared Emitting Diode & NPN Silicon Darlington Connected Phototransistor

The General Electric H11G series consists of a gallium arsenide, infrared emitting diode coupled with a silicon, darlington connected, phototransistor which has an integral base-emitter resistor to optimize switching speeds and elevated temperature characteristics.







SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	8.38	8.89	.330	.350	
B	7.62 REF.		.300 REF.		1
C	–	8.64	–	.340	2
D	.406	.508	.016	.020	
E	–	5.08	–	.200	3
F	1.01	1.78	.040	.070	
G	2.28	2.80	.090	.110	
H	–	2.16	–	.085	4
J	.203	.305	.008	.012	
K	2.54	–	.100	–	
M	–	15°	–	15°	
N	.381	–	.015	–	
P	–	9.53	–	.375	
R	2.92	3.43	.115	.135	
S	6.10	6.86	.240	.270	

NOTES:
1. INSTALLED POSITION LEAD CENTERS.
2. OVERALL INSTALLED DIMENSION.
3. THESE MEASUREMENTS ARE MADE FROM THE SEATING PLANE.
4. FOUR PLACES.

absolute maximum ratings: (25°C)

INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak)		
(Pulse width 300 μsec, 2% Duty Cycle)	0.5	amperes
(Pulse width 1 μsec, 300 Hz)	3	amperes
Reverse Voltage	6	volts

*Derate 1.33 mW/°C above 25°C ambient.

DARLINGTON CONNECTED PHOTO-TRANSISTOR		
Power Dissipation	**150	milliwatts
V_{CEO} – H11G1	100	volts
– H11G2	80	volts
V_{CBO} – H11G1	100	volts
– H11G2	80	volts
V_{EBO}	7	volts
Collector Current (Continuous) – Forward	150	milliamps
Collector Current (Continuous) – Reverse	10	milliamps

**Derate 2.0 mW/°C above 25°C ambient.

TOTAL DEVICE

Storage Temperature -55°C to +150°C
Operating Temperature -55°C to +100°C
Lead Soldering Time (at 260°C) 10 seconds
Surge Isolation Voltage (Input to Output)
3535 $V_{(peak)}$ 2500 $V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output)
2125 $V_{(peak)}$ 1500 $V_{(RMS)}$

individual electrical characteristics:(25°C)

EMITTER	TYP.	MAX.	UNITS
Forward Voltage (I_F = 10 mA)	1.1	1.5	volts
Reverse Current (V_R = 3 V)	–	10	microamps
Capacitance (V = 0, f = 1 MHz)	50	–	picofarads

DETECTOR	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage – $V_{(BR)CEO}$				
(I_C = 1.0 mA, I_F = 0) – H11G1	100	–	–	volts
– H11G2	80	–	–	volts
Breakdown Voltage – $V_{(BR)CBO}$				
(I_C = 100 μA, I_F = 0) – H11G1	100	–	–	volts
– H11G2	80	–	–	volts
Breakdown Voltage – $V_{(BR)EBO}$ (I_E = 100 μA, I_F = 0)	7	–	–	volts
Collector Dark Current – I_{CEO}				
(V_{CE} = 80 V, I_F = 0) – H11G1	–	–	100	nanoamps
(V_{CE} = 60 V, I_F = 0) – H11G2	–	–	100	nanoamps
(V_{CE} = 80 V, I_F = 0, T_A = 80°C) – H11G1	–	–	100	microamps
(V_{CE} = 60 V, I_F = 0, T_A = 80°C) – H11G2	–	–	100	microamps
Capacitance (V_{CE} = 10 V, f = 1 MHz)	–	6	–	picofarads

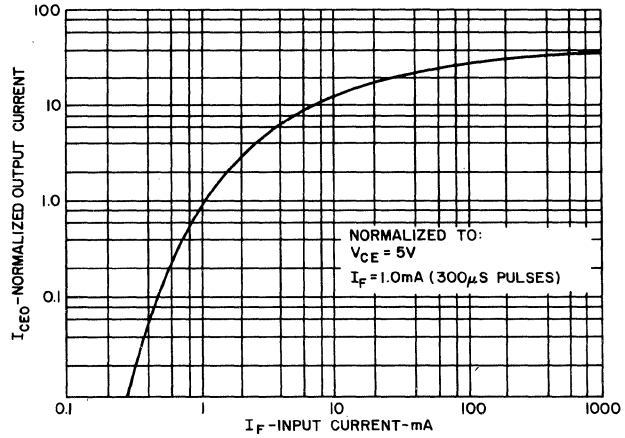
ʀᴜ Covered under U.L. component recognition program, reference file E51868

VDE Approved to 0883/6.80 0110b Certificate # 35025

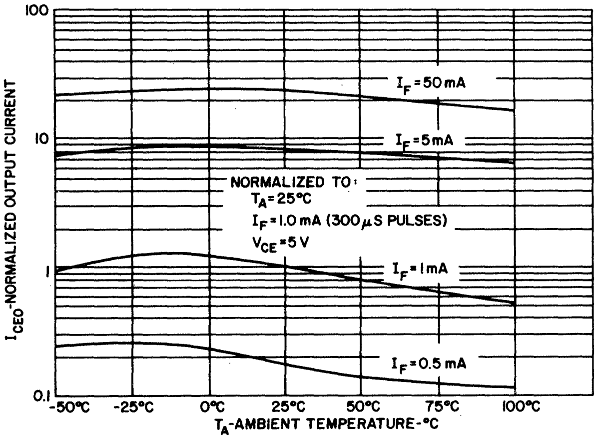
coupled electrical characteristics:(25°C)

	MIN.	TYP.	MAX.	UNITS
DC Current Transfer Ratio – (I_F = 10 mA, V_{CE} = 1 V)	1000	–	–	%
– (I_F = 1 mA, V_{CE} = 5 V)	500	–	–	%
Saturation Voltage – Collector to Emitter – (I_F = 1 mA, I_C = 1 mA)	–	0.75	1.0	volts
– (I_F = 16 mA, I_C = 50 mA)	–	0.85	1.0	volts
Isolation Resistance (Input to Output Voltage = 500 V_{DC})	100	–	–	gigaohms
Input to Output Capacitance (Input to Output Voltage = 0,f = 1 MHz)	–	–	2	picofarads
Switching Speeds:				
On-Time – (V_{CE} = 5 V, R_L = 100Ω, I_F = 10 mA)	–	5	–	microseconds
Off-Time – (Pulse width ⩽ 300 μsec, f ⩽ 30 Hz)	–	100	–	microseconds

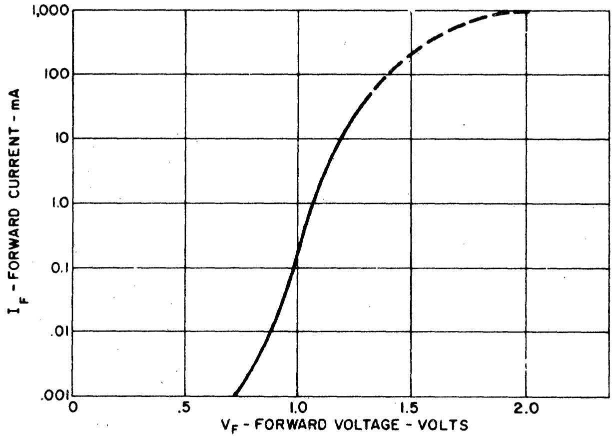
TYPICAL CHARACTERISTICS



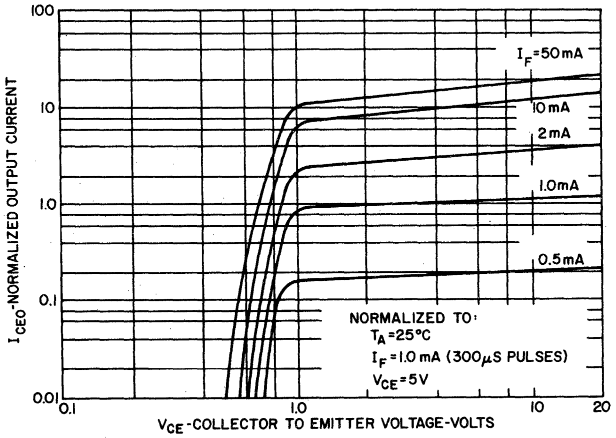
OUTPUT VS. INPUT CURRENT



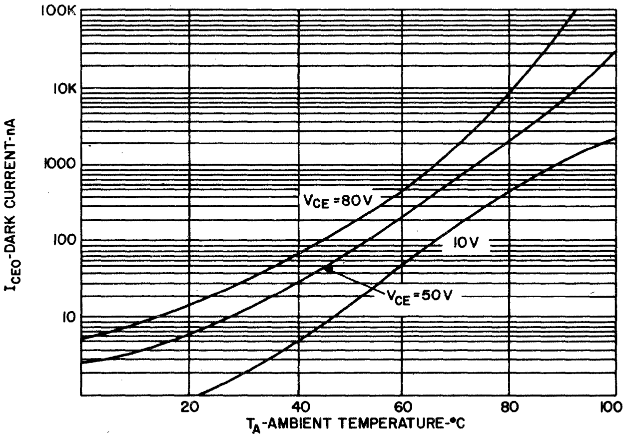
OUTPUT VS. TEMPERATURE



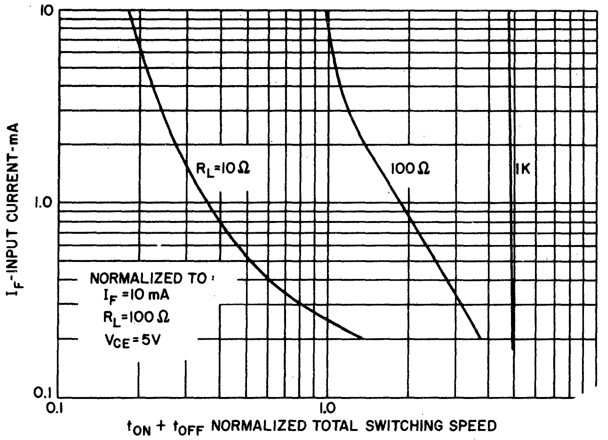
INPUT CHARACTERISTICS



OUTPUT CHARACTERISTICS



DARK CURRENT



SWITCHING SPEED