

H22A1, H22A2, H22A3

Optointerrupter

GaAs Infrared Emitting Diode and NPN Silicon Photo-Transistor Amplifier Module with 1mm Aperture

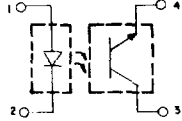
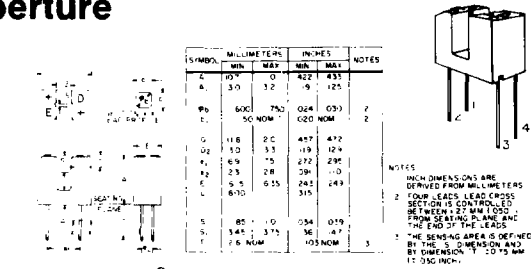
The H22A Interrupter Module is a gallium arsenide infrared emitting diode coupled to a silicon phototransistor in a plastic housing. The packaging system is designed to optimize the mechanical resolution, coupling efficiency, ambient light rejection, cost, and reliability. The gap in the housing provides a means of interrupting the signal with an opaque material, switching the output from an "ON" into an "OFF" state.

absolute maximum ratings: (25°C)

TOTAL DEVICE		
Storage Temperature	T _{STG}	-55°C to +100°C
Operating Temperature	T _J	-55°C to +100°C
Lead Soldering Temperature (5 seconds maximum)	T _L	260°C

INFRARED EMITTING DIODE			
Power Dissipation	P _E	*100	mW
Forward Current (Continuous)	I _F	60	mA
Forward Current (Peak) (Pulse Width ≤ 1 μs PRR ≤ 300 pps)	I _F	3	A
Reverse Voltage	V _R	6	V

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



PHOTOTRANSISTOR			
Power Dissipation	P _D	**150	mW
Collector Current (Continuous)	I _C	100	mA
Collector-Emitter Voltage	V _{CEO}	30	V
Emitter-Collector Voltage	V _{ECO}	6	V

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

individual electrical characteristics:(25°C) (See Note 1)

EMITTER	MIN.	TYP.	MAX.	UNITS
Reverse Breakdown Voltage V _{(BR)R} I _R = 10 μA	6	—	—	V
Forward Voltage V _F I _F = 60 mA	—	—	1.7	V
Reverse Current I _R V _R = 3V	—	—	1	μA
Capacitance C _i V = 0, f = 1 MHz	—	30	—	pF

DETECTOR	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage V _{(BR)CEO} I _C = 1 mA	30	—	—	V
Breakdown Voltage V _{(BR)ECO} I _E = 100 μA	6	—	—	V
Collector Dark Current I _{CEO} V _{CE} = 25V	—	—	100	nA
Capacitance C _{ce} V _{CE} = 5V, f = 1 MHz	—	3.3	5	pF

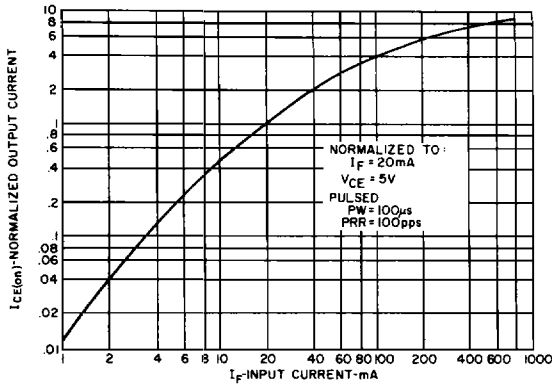
coupled electrical characteristics:(25°C) (See Note 1)

	H22A1			H22A2			H22A3			UNITS
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
I _{CE(on)} I _F = 5mA, V _{CE} = 5V	0.15	—	—	0.30	—	—	0.60	—	—	mA
I _{CE(on)} I _F = 20mA, V _{CE} = 5V	1.0	—	—	2.0	—	—	4.0	—	—	mA
I _{CE(on)} I _F = 30mA, V _{CE} = 5V	1.9	—	—	3.0	—	—	5.5	—	—	mA
V _{CE(sat)} I _F = 20mA, I _C = 1.8mA	—	—	—	—	—	0.40	—	—	0.40	V
V _{CE(sat)} I _F = 30mA, I _C = 1.8mA	—	—	0.40	—	—	—	—	—	—	V
t _{on} V _{CC} = 5V, I _F = 30mA, R _L = 2.5KΩ	—	8	—	—	8	—	—	8	—	μs
t _{off} V _{CC} = 5V, I _F = 30mA, R _L = 2.5KΩ	—	50	—	—	50	—	—	50	—	μs

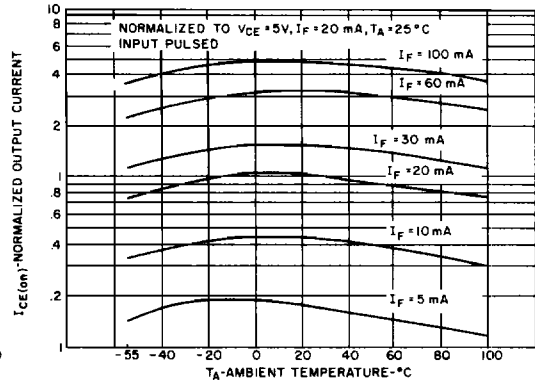
Note 1: Stray irradiation can alter values of characteristics. Adequate shielding should be provided.

H22A1, H22A2, H22A3

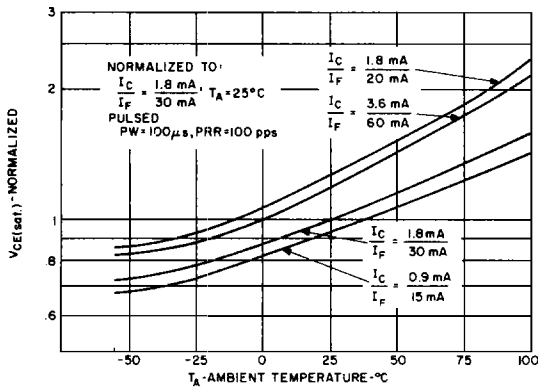
TYPICAL CHARACTERISTICS



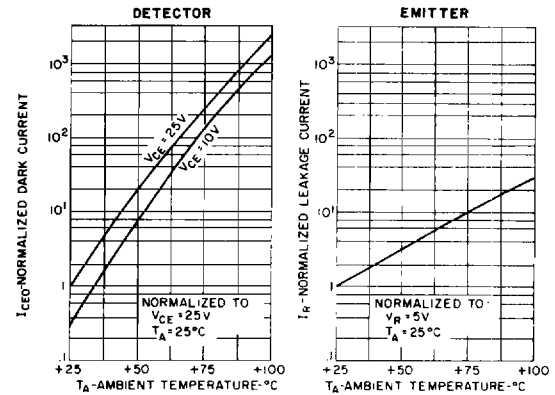
1. OUTPUT CURRENT VS. INPUT CURRENT



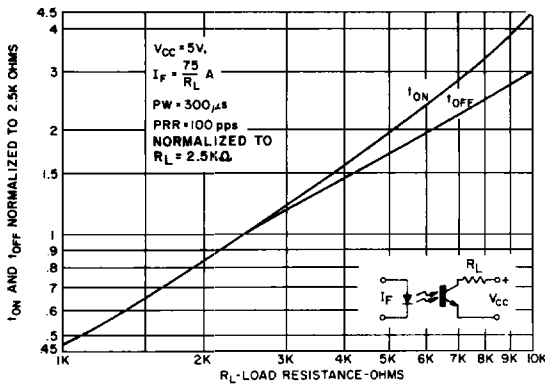
2. OUTPUT CURRENT VS. TEMPERATURE



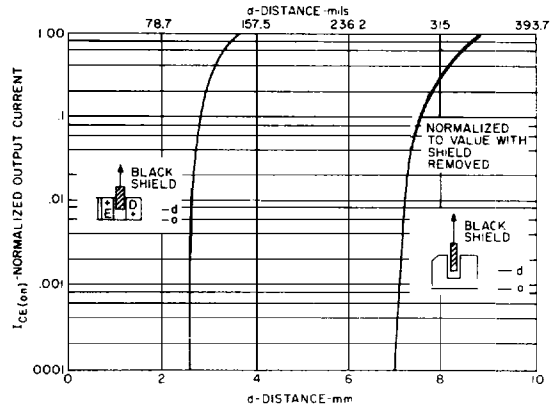
3. $V_{CE(sat)}$ VS. TEMPERATURE



4. LEAKAGE CURRENTS VS. TEMPERATURE



5. SWITCHING SPEED VS. R_L



6. OUTPUT CURRENT VS. SHIELD DISTANCE