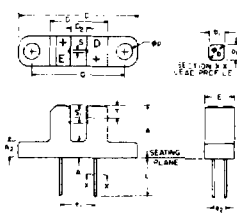
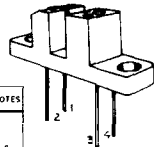


H21A4, H21A5, H21A6

Optointerrupter

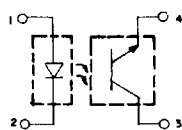
GaAs Infrared Emitting Diode and NPN Silicon Phototransistor Module with 1mm Aperture

The H21A 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.



SYMBOL	MILL METERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	11.0	11.0	0.432	0.433	
A ₁	3.0	3.2	0.119	0.125	
A ₂	3.0	3.2	0.119	0.125	
B	6.00	7.00	0.234	0.276	2
b	5.0 NOM		0.200 NOM		
D	24.3	24.4	0.957	0.972	
D ₁	1.6	12.0	0.057	0.472	
D ₂	3.0	3.5	0.119	0.138	
E	0.9	1.0	0.035	0.039	
F	2.3	2.8	0.091	0.110	
G	0.1	0.30	0.004	0.012	
L	2.50	6.30	0.098	0.248	
L ₁	0.2	0.4	0.008	0.016	
L ₂	0.2	0.4	0.008	0.016	
L ₃	0.2	0.4	0.008	0.016	
L ₄	0.2	0.4	0.008	0.016	
L ₅	0.2	0.4	0.008	0.016	
L ₆	0.2	0.4	0.008	0.016	
L ₇	0.2	0.4	0.008	0.016	
L ₈	0.2	0.4	0.008	0.016	
L ₉	0.2	0.4	0.008	0.016	
L ₁₀	0.2	0.4	0.008	0.016	
L ₁₁	0.2	0.4	0.008	0.016	
L ₁₂	0.2	0.4	0.008	0.016	
L ₁₃	0.2	0.4	0.008	0.016	
L ₁₄	0.2	0.4	0.008	0.016	
L ₁₅	0.2	0.4	0.008	0.016	
L ₁₆	0.2	0.4	0.008	0.016	
L ₁₇	0.2	0.4	0.008	0.016	
L ₁₈	0.2	0.4	0.008	0.016	
L ₁₉	0.2	0.4	0.008	0.016	
L ₂₀	0.2	0.4	0.008	0.016	
L ₂₁	0.2	0.4	0.008	0.016	
L ₂₂	0.2	0.4	0.008	0.016	
L ₂₃	0.2	0.4	0.008	0.016	
L ₂₄	0.2	0.4	0.008	0.016	
L ₂₅	0.2	0.4	0.008	0.016	
L ₂₆	0.2	0.4	0.008	0.016	
L ₂₇	0.2	0.4	0.008	0.016	
L ₂₈	0.2	0.4	0.008	0.016	
L ₂₉	0.2	0.4	0.008	0.016	
L ₃₀	0.2	0.4	0.008	0.016	
L ₃₁	0.2	0.4	0.008	0.016	
L ₃₂	0.2	0.4	0.008	0.016	
L ₃₃	0.2	0.4	0.008	0.016	
L ₃₄	0.2	0.4	0.008	0.016	
L ₃₅	0.2	0.4	0.008	0.016	
L ₃₆	0.2	0.4	0.008	0.016	
L ₃₇	0.2	0.4	0.008	0.016	
L ₃₈	0.2	0.4	0.008	0.016	
L ₃₉	0.2	0.4	0.008	0.016	
L ₄₀	0.2	0.4	0.008	0.016	
L ₄₁	0.2	0.4	0.008	0.016	
L ₄₂	0.2	0.4	0.008	0.016	
L ₄₃	0.2	0.4	0.008	0.016	
L ₄₄	0.2	0.4	0.008	0.016	
L ₄₅	0.2	0.4	0.008	0.016	
L ₄₆	0.2	0.4	0.008	0.016	
L ₄₇	0.2	0.4	0.008	0.016	
L ₄₈	0.2	0.4	0.008	0.016	
L ₄₉	0.2	0.4	0.008	0.016	
L ₅₀	0.2	0.4	0.008	0.016	

NOTES
 1. ALL DIMENSIONS ARE DERIVED FROM MILLI-METERS
 2. FOUR LEADS, LEAD CROSS SECTION IS CONTROLLED BETWEEN 1ST AND 1000" FROM SEATING PLANE AND THE END OF THE LEADS
 3. THE SEATING AREA IS DEFINED BY THE "E" DIMENSION AND BY DIMENSION "F" 1.075 MM ± 0.030 INCH



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 ≤ 1μs, 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}	55	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 = 10μA	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	55	-	-	V
Breakdown Voltage V _{(BR)ECO} I _E = 100μA	6	-	-	V
Collector Dark Current I _{CEO} V _{CE} = 45V	-	-	100	nA
Capacitance C _{ce} V _{CE} = 5V, f = 1 MHz	-	3.3	5	pF

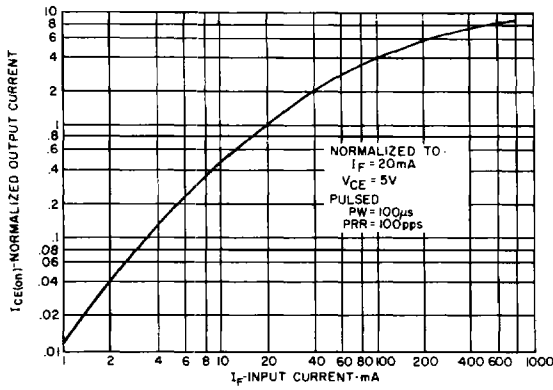
coupled electrical characteristics:(25°C) (See Note 1)

		H21A4			H21A5			H21A6			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

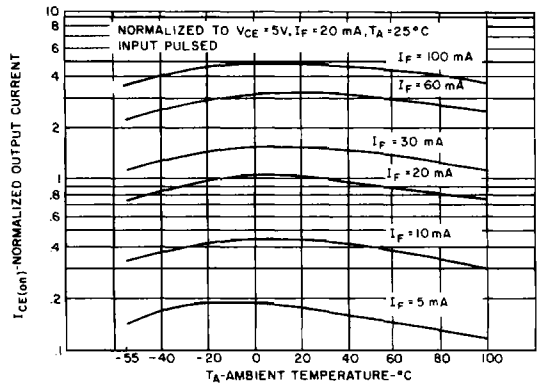
Note 1: Stray irradiation can alter values of characteristics. Adequate shielding should be provided.

H21A4, H21A5, H21A6

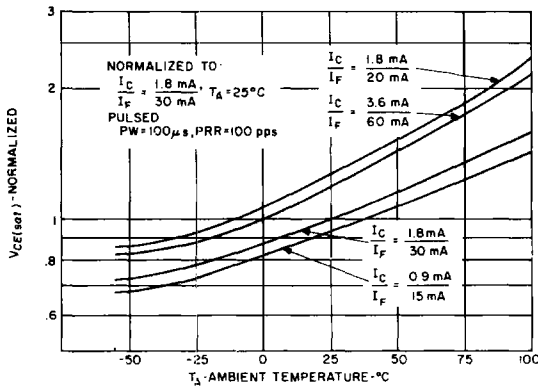
TYPICAL CHARACTERISTICS



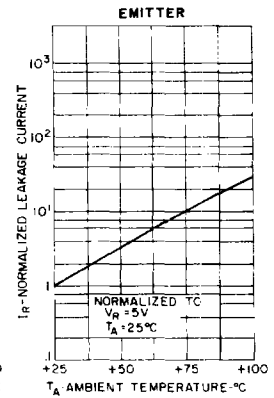
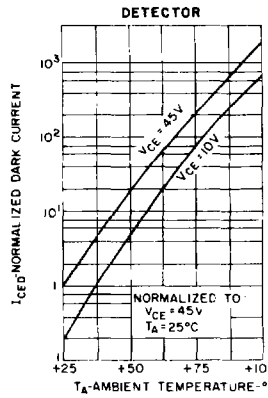
1. OUTPUT CURRENT VS. INPUT CURRENT



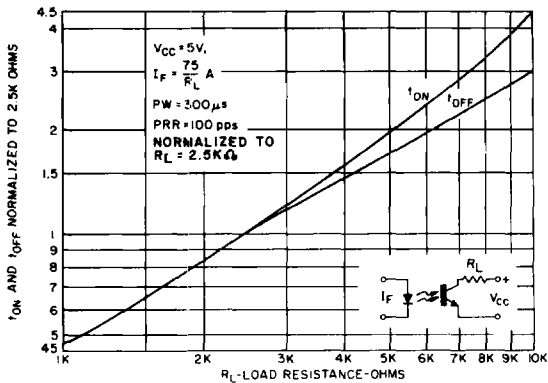
2. OUTPUT CURRENT VS. TEMPERATURE



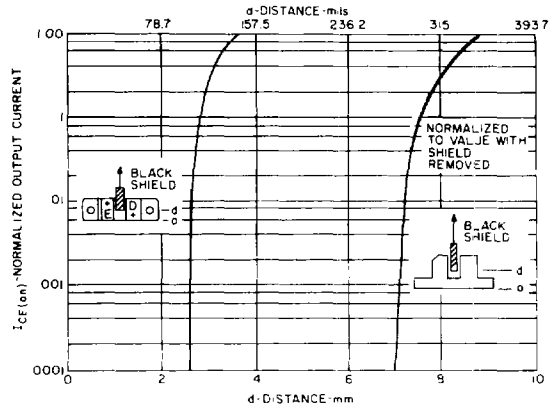
3. $V_{CE(sat)}$ VS. TEMPERATURE



4. LEAKAGE CURRENTS VS. TEMPERATURE



5. SWITCHING SPEED VS. R_L



6. OUTPUT CURRENT VS. SHIELD DISTANCE