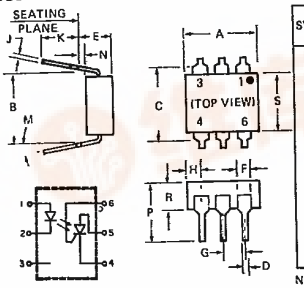
Photon Coupled Isolator H74C1, H74C2

Ga As Infrared Emitting Diode & Light Activated SCR

TTL Interface

The GE Solid State H74C1 and H74C2 are gallium arsenide infrared emitting diodes coupled with light activated silicon controlled rectifiers. They are specifically designed to operate from TTL logic inputs and allow control of 120 or 240V AC power with 7400, 74H00 and 74S00 series logic gates. It can also control up to 400V DC power circuits. They are guaranteed and specified to operate over TTL voltage and temperature ranges using standard tolerance components. The H74C1 and H74C2 are mounted in dual-in-line packages. These devices are also available in Surface-Mount packaging.



SYMBOL	MILLIMETERS MIN.	MILLIMETERS MAX.	INCHES MIN.	INCHES MAX	NOTES
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) (unless otherwise specified)

INFRARED EMITTING DIODE

Power Dissipation	*100 milliwatts
Forward Current (Continuous)	60 milliamps
Forward Current (Peak 100μsec 1% duty cycle)	1 ampere
Reverse Voltage	6 volts

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

PHOTO – SCR

Peak Forward Voltage		
H74C1	200	volts
H74C2	400	volts
RMS Forward Current	300	milliamps
Forward Current (Peak, 100μsec 1% duty cycle)	10	amperes
Surge Current (10 msec)	5	amperes
Reverse Gate Voltage	6	volts
Power Dissipation (25°C Ambient)	** 400	milliwatts
Power Dissipation (25°C Case)	***1000	milliwatts

**Derate 5.3 mW/°C above 25°C ambient.
***Derate 13.3 mW/°C above 25°C case.

electrical characteristics of H74C

*All specifications refer to the following bias configuration (Figure 1) over the full operating temperature (0°C to 70°C) and logic supply voltage range (4.5 to 5.5 V_{DC}) unless otherwise noted.

SCR Leakage, Logic Gate $V_{OUT(1)}$, Both Directions	50	μA Max.
SCR Drop, Anode Positive, Logic Gate $V_{OUT(0)}$, I_{TM} = 250mA	1.3	V Max.
Coupled dv/dt to Trigger, V_{DC} to V_{AC} (25°)	500	V/μsec. Min.
Capacitance (Input to Output Voltage = O, f = 1 MHz)	2	pF Max.
Isolation Resistance (Input to Output Voltage = 500 V_{DC})	100	Gigaohms Min.
Turn-On Time of SCR; $V_{OUT(0)}$, Input to Output (25°C)	200	μsec. Max.

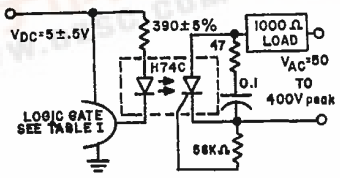


Figure 1. H74C BIAS CIRCUIT

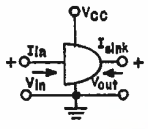


Figure 2..

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

VDE Approved to 0883/6.80 0110b Certificate # 35025, except type H74C2.

T-41-87

absolute maximum ratings – total device

SCR Current	See Figure 5
Operating Temperature Range	0°C to 70°C
Operating Voltage Range, V_{DC}	4.5 to 5.5V_{DC}
Operating Voltage Range, H74C1	50 to 200 V_{pk}
Operating Voltage Range, H74C2	50 to 400 V_{pk}
Storage Temperature Range	-55°C to 150°C
Lead Soldering Time (at 260°C)	10 sec. Max.
Surge Isolation Voltage (Input to Output)	
$3535V_{(peak)}$	$2500V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output)	
$3180V_{(peak)}$	$2250V_{(RMS)}$

TABLE 1. Characteristics required of TTL gate which is to be interfaced with H74C.

PARAMETER	TEST CONDITIONS, FIGURE 2						LIMITS		
	V_{CC}		I_{IN}		I_{SINK}		MIN.	MAX.	UNITS
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.			
$V_{OUT}(1)$	4.5V					-0.4mA	2.4		Volts
$V_{OUT}(0)$	4.5V				12.0mA			0.4	Volts

TYPICAL CHARACTERISTICS OF OUTPUT (SCR)

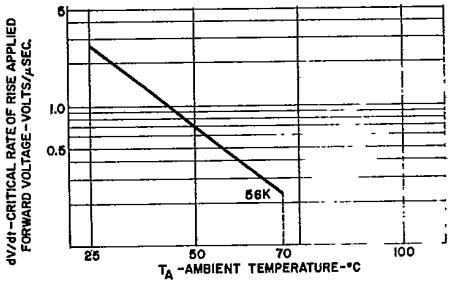


FIGURE 2. dv/dt VS. TEMPERATURE

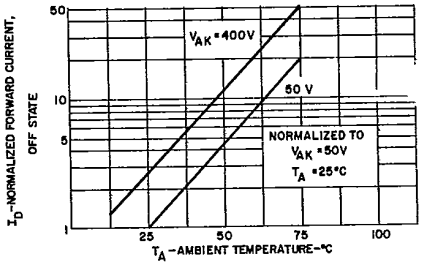


FIGURE 4. OFF-STATE FORWARD CURRENT VS. TEMPERATURE

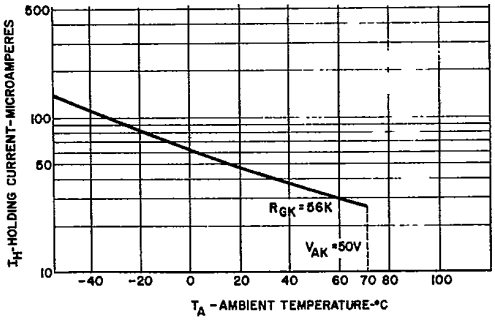


FIGURE 6. HOLDING CURRENT VS. TEMPERATURE

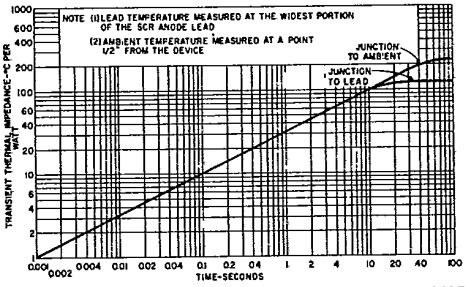


FIGURE 3. MAXIMUM TRANSIENT THERMAL IMPEDANCE

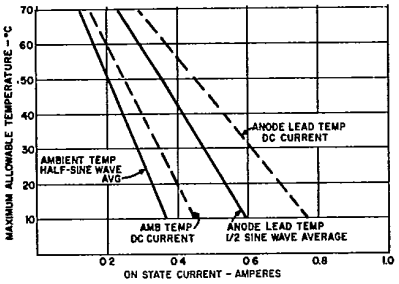


FIGURE 5. ON-STATE CURRENT VS. MAXIMUM ALLOWABLE TEMPERATURE

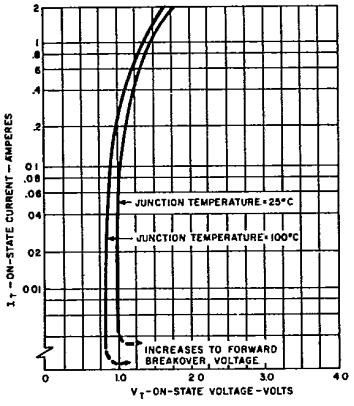


FIGURE 7. ON-STATE CHARACTERISTICS

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