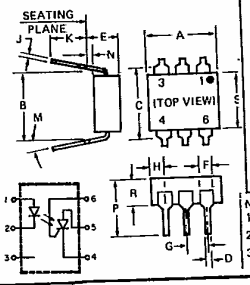
Photon Coupled Isolator CNY30-CNY34

Ga As Infrared Emitting Diode & Light Activated SCR

The GE Solid State CNY30 and CNY34 consist of a gallium arsenide, infrared emitting diode coupled with a light activated silicon controlled rectifier in a dual-in-line package. 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)

INFRARED EMITTING DIODE		
Power Dissipation (-55°C to 50°C)	*100	milliwatts
Forward Current (Continuous) (-55°C to 50°C)	60	milliamps
Forward Current (Peak) (-55°C to 50°C) (100 μs 1% duty cycle)	1	ampere
Reverse Voltage (-55°C to 50°C)	6	volts

*Derate 2.0mW/°C above 50°C.

PHOTO-SCR			
Off-State and Reverse Voltage (-55°C to 100°C)	CNY30	200	volts
	CNY34	400	volts
Peak Reverse Gate Voltage (-55°C to 50°C)		6	volts
Direct On-State Current (-55°C to 50°C)		300	milliamps
Surge (non-rep) On-State Current (-55°C to 50°C)		10	amps
Peak Gate Current (-55°C to 50°C)		10	milliamps
Output Power Dissipation (-55°C to 50°C)**		400	milliwatts

**Derate 8mW/°C above 50°C.

TOTAL DEVICE
Storage Temperature Range -55°C to 150°C
Operating Temperature Range -55°C to 100°C
Normal Temperature Range (No Derating) -55°C to 80°C
Soldering Temperature (10 seconds) 260°C
Total Device Dissipation (-55°C to 50°C), 450 milliwatts
Linear Derating Factor (above 50°C), 9.0mW/°C
Surge Isolation Voltage (Input to Output). $2500V_{(peak)}$ $1770V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output). $1500V_{(peak)}$ $1060V_{(RMS)}$

individual electrical characteristics (25°C) (unless otherwise specified)

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

PHOTO-SCR		MIN.	MAX.	UNITS
Peak Off-State Voltage—V_{DM} (R_{GK} = 10KΩ, T_A = 100°C)	CNY30	200	–	volts
	CNY34	400	–	volts
Peak Reverse Voltage—V_{RM} (T_A = 100°C)	CNY30	200	–	volts
	CNY34	400	–	volts
On-State Voltage—V_T (I_T = 300mA)			1.3	volts
Off-State Current—I_D (V_D=200V, T_A=100°C, I_F=0, R_{GK}=10K)	CNY30		50	microamps
Off-State Current—I_D (V_D=400V, T_A=100°C, I_F=0, R_{GK}=10K)	CNY34		150	microamps
Reverse Current—I_R (V_R = 200V, T_A = 100°C, I_F = 0)	CNY30		50	microamps
Reverse Current—I_R (V_R = 400V, T_A = 100°C, I_F = 0)	CNY34		150	microamps

coupled electrical characteristics (25°C)

			MIN.	MAX.	UNITS
Input Current to Trigger	V_{AK} = 50V, R_{GK} = 10KΩ	I_{FT}	–	20	milliamps
	V_{AK} = 100V, R_{GK} = 27KΩ	I_{FT}	–	11	milliamps
Isolation Resistance	V_{IO} = 500V_{DC}	r_{IO}	100	–	gigaohms
Turn-On Time – V_{AK} = 50V, I_F = 30mA, R_{GK} = 10KΩ, R_L = 200Ω		t_{on}	–	50	microseconds
Coupled dv/dt, Input to Output (See Figure 13)			500	–	volts microsec.
Input to Output Capacitance (V_{IO} = 0, f = 1 MHz)			–	2	picofarads

VDE Approved to 0883/6.80 0110b Certificate # 35025

TYPICAL CHARACTERISTICS

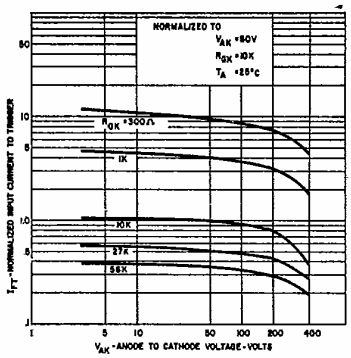


FIGURE 1. INPUT CURRENT TO TRIGGER VS. ANODE-CATHODE VOLTAGE

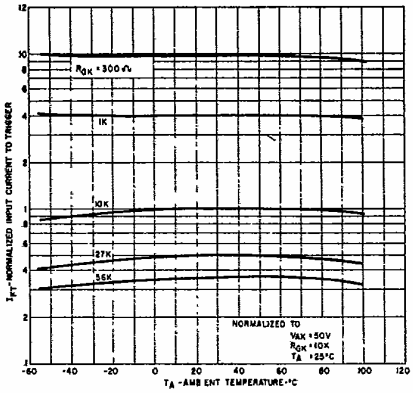


FIGURE 2. INPUT CURRENT TO TRIGGER VS. TEMPERATURE

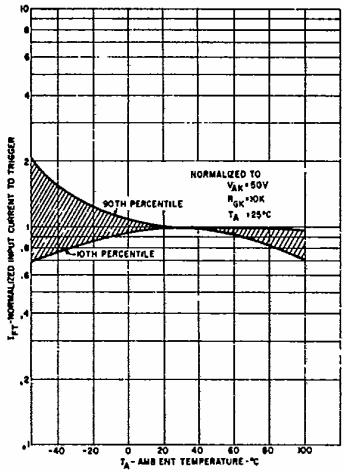


FIGURE 3. INPUT CURRENT TO TRIGGER DISTRIBUTION VS. TEMPERATURE

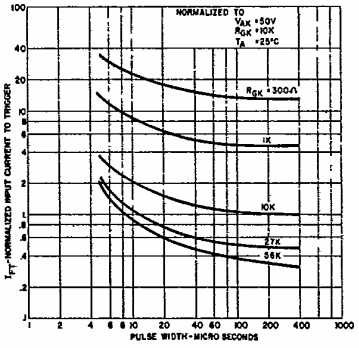


FIGURE 4. INPUT CURRENT TO TRIGGER VS. PULSE WIDTH

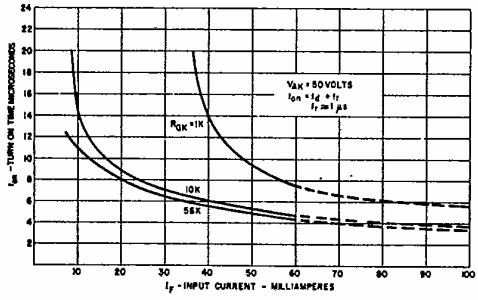


FIGURE 5. TURN-ON TIME VS. INPUT CURRENT

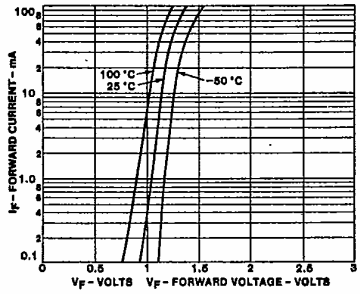


FIGURE 6. INPUT CHARACTERISTICS I_F VS. V_F

TYPICAL CHARACTERISTICS OF OUTPUT (SCR)

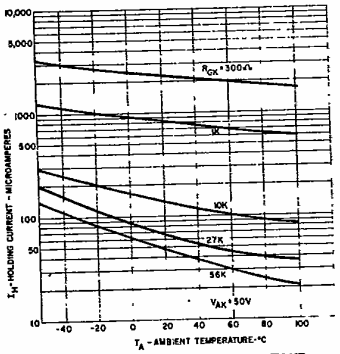


FIGURE 7. HOLDING CURRENT VS. TEMPERATURE

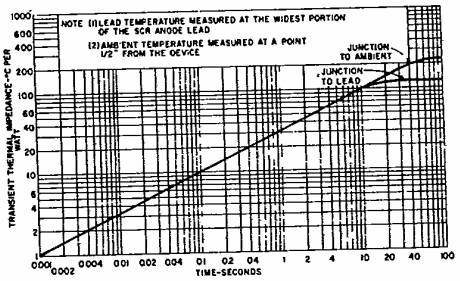


FIGURE 8. MAXIMUM TRANSIENT THERMAL IMPEDANCE

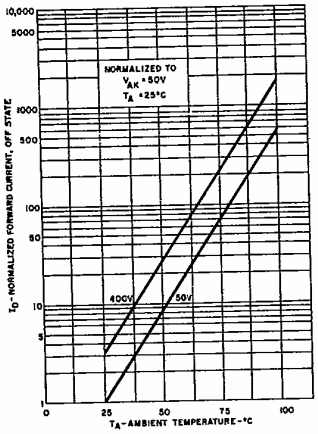


FIGURE 9. OFF-STATE FORWARD CURRENT VS. TEMPERATURE

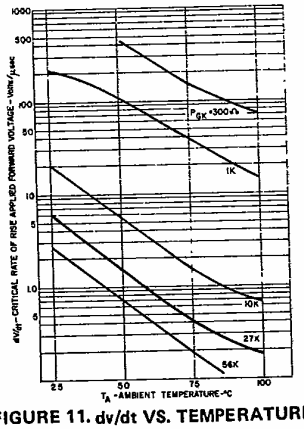


FIGURE 11. dv/dt VS. TEMPERATURE

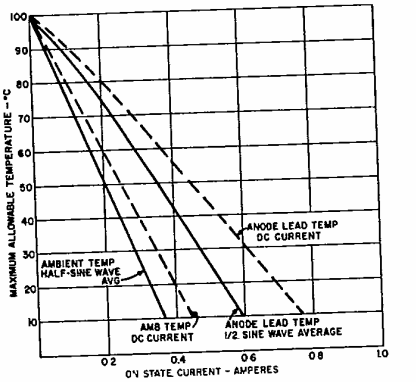


FIGURE 10. ON-STATE CURRENT VS. MAXIMUM ALLOWABLE TEMPERATURE

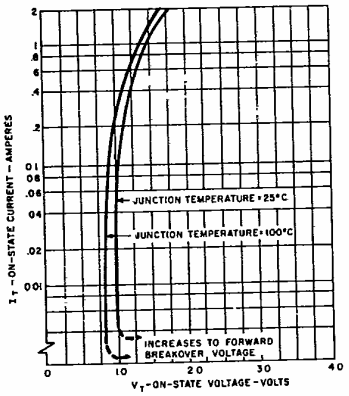
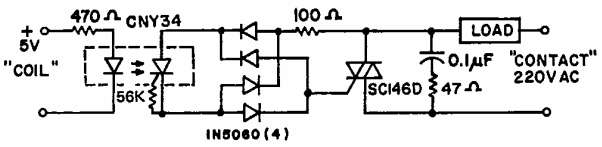


FIGURE 12. ON-STATE CHARACTERISTICS

TYPICAL APPLICATIONS

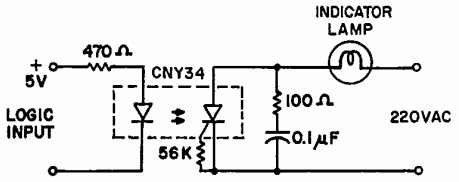
10A, T^2L COMPATIBLE, SOLID STATE RELAY

Use of the CNY34 for high sensitivity, 2500V isolation capability, provides this highly reliable solid state relay design. This design is compatible with 74, 74S and 74H series T^2L logic systems inputs and 220V AC loads up to 10A.



25W LOGIC INDICATOR LAMP DRIVER

The high surge capability and non-reactive input characteristics of the device allow it to directly couple, without buffers, T^2L and DTL logic to indicator and alarm devices, without danger of introducing noise and logic glitches.



400V SYMMETRICAL TRANSISTOR COUPLER

Use of the high voltage PNP portion of the CNY34 provides a 400V transistor capable of conducting positive and negative signals with current transfer ratios of over 1%. This function is useful in remote instrumentation, high voltage power supplies and test equipment. Care should be taken not to exceed the CNY34 400 mW power dissipation rating when used at high voltages.

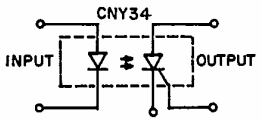


FIGURE 13
COUPLED dv/dt – TEST CIRCUIT