

# Photon Coupled Isolator CNY48

Ga As Infrared Emitting Diode & NPN Silicon Photo-Darlington Amplifier

The GE Solid State CNY48 consists of a gallium arsenide, infrared emitting diode coupled with a silicon photo-darlington amplifier in a dual-in-line package. This device is also available in Surface-Mount packaging.

absolute maximum ratings: (25°C)

### INFRARED EMITTING DIODE

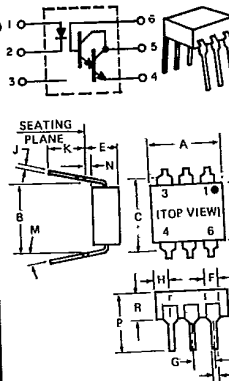
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak)	3	ampere
(Pulse width 1 μs 300 pps)		
Reverse Voltage	3	volts

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

### PHOTO-DARLINGTON

Power Dissipation	**150	milliwatts
V <sub>CEO</sub>	30	volts
V <sub>CBO</sub>	30	volts
V <sub>EBO</sub>	6	volts
Collector Current (Continuous)	100	milliamps

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



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	8.38	8.89	.330	.350	1
B	7.62 REF.		300 REF.		
C		8.64		.340	2
D	.406	5.08	.016	.200	
E		5.08		.200	3
F	1.01	1.78	.040	.070	
G	2.28	2.80	.090	.110	4
H		2.15		.085	
J	2.03	.305	.008	.012	4
K	2.54		.100		
M		15		15	4
N	.381		.015		
P		9.53		.375	4
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.

### TOTAL DEVICE

Storage Temperature	-65 to 150°C
Operating Temperature	-55 to 100°C
Lead Soldering Time (at 260°C)	10 seconds
Surge Isolation Voltage (Input to Output)	2120 <sub>(peak)</sub> 1500V <sub>(RMS)</sub>
Steady-State Isolation Voltage (Input to Output)	1270V <sub>(peak)</sub> 900V <sub>(RMS)</sub>

### individual electrical characteristics (25°C)

INFRARED EMITTING DIODE	TYP.	MAX.	UNITS
Forward Voltage (I <sub>F</sub> = 10mA)	1.1	1.3	volts
Reverse Current (V <sub>R</sub> = 3V)	—	10	microamps
Capacitance (V = 0, f = 1 MHz)	50	—	picofarads

PHOTO-DARLINGTON	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage—V <sub>(BR)CEO</sub> (I <sub>C</sub> = 10mA, I <sub>F</sub> = 0)	30	—	—	volts
Breakdown Voltage—V <sub>(BR)CBO</sub> (I <sub>C</sub> = 100μA, I <sub>F</sub> = 0)	30	—	—	volts
Breakdown Voltage—V <sub>(BR)EBO</sub> (I <sub>F</sub> = 100μA, I <sub>F</sub> = 0)	6	—	—	volts
Collector Dark Current—I <sub>CEO</sub> (V <sub>CE</sub> = 10V, I <sub>F</sub> = 0)	—	5	100	nanoamps
Capacitance (V <sub>CE</sub> = 10V, f = 1 MHz)	—	6	—	picofarads

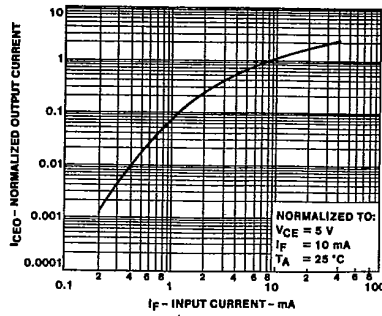
### coupled electrical characteristics (25°C)

	MIN.	TYP.	MAX.	UNITS
DC Current Transfer Ratio (I <sub>F</sub> = 10mA, V <sub>CE</sub> = 1V)	600	—	—	%
Saturation Voltage—Collector to Emitter (I <sub>F</sub> = 1mA I <sub>C</sub> = 2mA)	—	—	.8	volts
(I <sub>F</sub> = 5mA I <sub>C</sub> = 10mA)	—	—	.8	volts
(I <sub>F</sub> = 10mA, I <sub>C</sub> = 60mA)	—	—	1.0	volts
Isolation Resistance (V <sub>IO</sub> = 500V <sub>DC</sub> )	100	—	—	gigaohms
Input to Output Capacitance (V <sub>IO</sub> = 0, f = 1MHz)	—	—	2	picofarads
Switching Speeds: (V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA, R <sub>L</sub> = 100Ω)	On-Time	—	125	microseconds
	Off-Time	—	100	microseconds

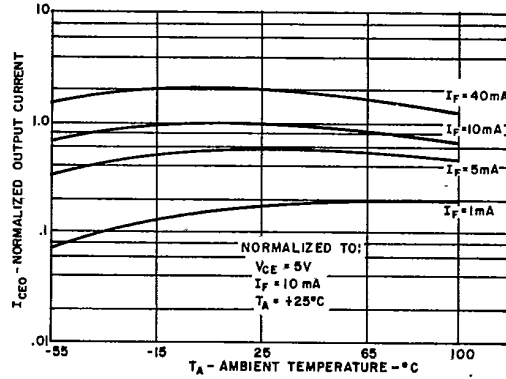
VDE Approved to 0883/6.80 01106 Certificate # 35025

TYPICAL CHARACTERISTICS

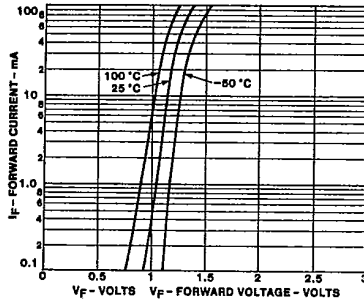
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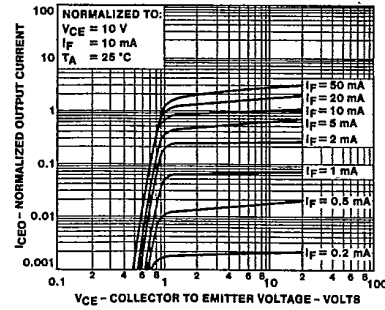
1. OUTPUT CURRENT VS INPUT CURRENT



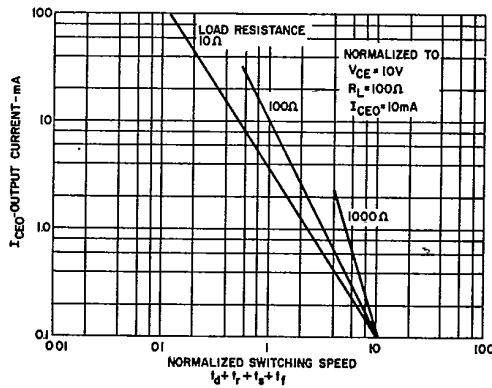
2. OUTPUT CURRENT VS TEMPERATURE



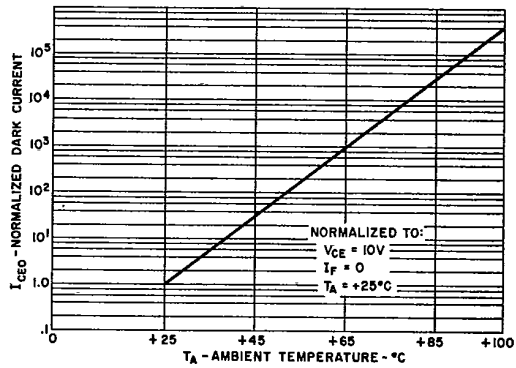
3. INPUT CHARACTERISTICS



4. OUTPUT CHARACTERISTICS



5. SWITCHING SPEED VS OUTPUT CURRENT



6. NORMALIZED DARK CURRENT VS TEMPERATURE

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