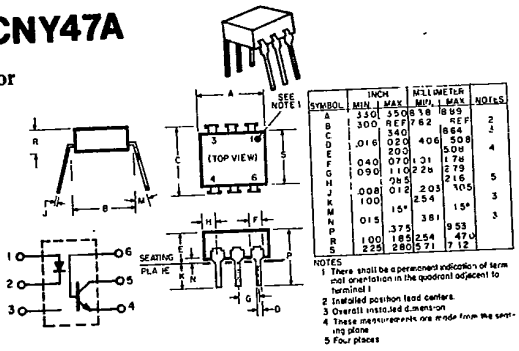
Photon Coupled Isolator CNY47, CNY47A

Ga As Infrared Emitting Diode & NPN Silicon Photo-Transistor

The GE Solid State CNY47 and CNY47A are gallium arsenide infrared emitting diodes coupled with a silicon photo-transistor in a dual-in-line package. These devices are also available in Surface-Mount packaging.



SYMBOL	INCH MIN.	INCH MAX	MILLIMETER MIN.	MILLIMETER MAX	NOTES
A	.330	.350	8.38	8.89	
B	.300	REF	7.62	REF	2
C		.340		8.64	2
D	.016	.020	.406	.508	4
E		.200		5.08	4
F	.040	.070	1.01	1.78	
G	.090	.110	2.29	2.79	5
H		.085		2.16	
J	.008	.012	.203	.305	3
K	100		2.54		3
M		15°		15°	
N	.015		.381		3
P		.375		9.53	
R	.100	.185	2.54	4.70	
S	.225	.280	5.71	7.12	

NOTES
1 There shall be a permanent indication of term mal orientation in the quadrant adjacent to terminal 1
2 Installed position lead centers.
3 Overall installed dimension
4 These measurements are made from the seating plane
5 Four places

absolute maximum ratings: (25°C)

INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	30	milliamps
Forward Current (Peak) (Pulse width 1 μs 300 pps)	3	ampere
Reverse Voltage	3	volts

*Derate 1.33mW/°C above 25°C ambient

PHOTO-TRANSISTOR		
Power Dissipation	**150	milliwatts
V_{CEO}	30	volts
V_{CBO}	50	volts
V_{EBO}	4	volts
Collector Current (Continuous)	30	milliamps

**Derate 2.0mW/°C above 25°C ambient

TOTAL DEVICE
Storage Temperature -55 to 150°C
Operating Temperature -55 to 100°C
Lead Soldering Time (at 260°C) 10 seconds
Surge Isolation Voltage (Input to Output).
2828$V_{(peak)}$ 2000$V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output).
1695$V_{(peak)}$ 1200$V_{(RMS)}$

individual electrical characteristics (25°C)

INFRARED EMITTING DIODE	TYP.	MAX.	UNITS
Forward Voltage (I_F = 10 mA)	1.1	1.5	volts
Reverse Current (V_R = 3 V)	—	100	microamps
Capacitance (V = 0, f = 1 MHz)	50	—	picofarads

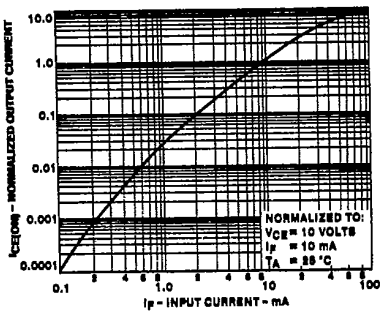
PHOTO-TRANSISTOR	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage—$V_{(BR)CEO}$ (I_C = 10mA, I_F = 0)	30	—	—	volts
Breakdown Voltage—$V_{(BR)CBO}$ (I_C = 100μA, I_F = 0)	50	—	—	volts
Breakdown Voltage—$V_{(BR)EBO}$ (I_E = 100μA, I_F = 0)	4	—	—	volts
Collector Dark Current—I_{CEO} (V_{CE} = 10V, I_F = 0)	—	5	100	nanoamps
Collector Dark Current—I_{CBO} (V_{CB} = 10V, I_F = 0)	—	—	20	nanoamps
Capacitance (V_{CE} = 10V, F = 1 MHz)	—	2	—	picofarads

coupled electrical characteristics (25°C)

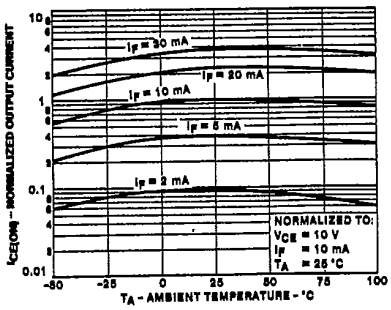
		MIN.	TYP.	MAX.	UNITS
DC Current Transfer Ratio (I_F = 10mA, V_{CE} = .4V)	CNY47	20	—	60	%
	CNY47A	40	—	—	%
Saturation Voltage — Collector to Emitter (I_F = 10mA, I_C = 2mA)	CNY47	—	0.1	0.4	volts
(I_F = 10mA, I_C = 4mA)	CNY47A			0.4	volts
Isolation Resistance (V_{IO} = 500V_{DC})		100	—		gigaohms
Input to Output Capacitance (V_{IO} = 0, f = 1 MHz)		—	—	2	picofarads
Switching Speeds:					
Rise/Fall Time (V_{CE} = 10V, I_{CE} = 2mA, R_L = 100Ω)		—	2	—	microseconds
Rise/Fall Time (V_{CB} = 10V, I_{CB} = 50μA, R_L = 100Ω)		—	300	—	nanoseconds

VDE Approved to 0883/6.80 0110b Certificate # 35025

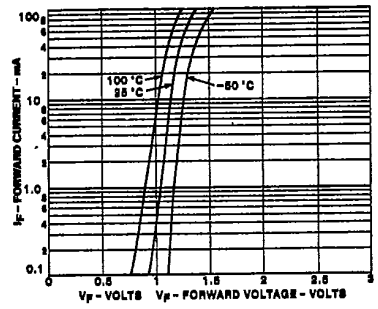
TYPICAL CHARACTERISTICS



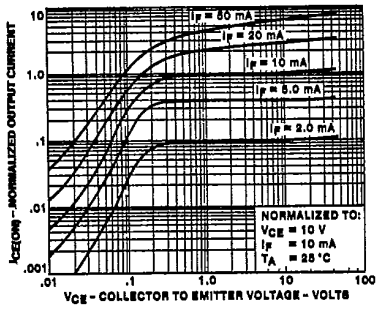
1. OUTPUT CURRENT VS INPUT CURRENT



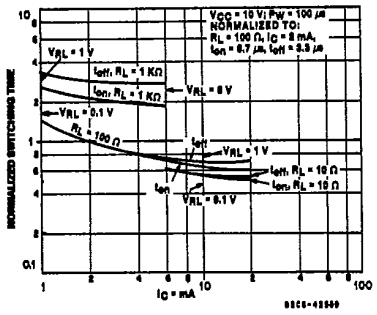
2. OUTPUT CURRENT VS TEMPERATURE



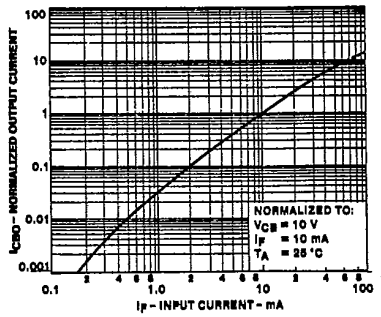
3. INPUT CHARACTERISTICS



4. OUTPUT CHARACTERISTICS



5. SWITCHING SPEED VS COLLECTOR CURRENT (NOT SATURATED)



6. OUTPUT CURRENT (I_{CEO}) VS INPUT CURRENT

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