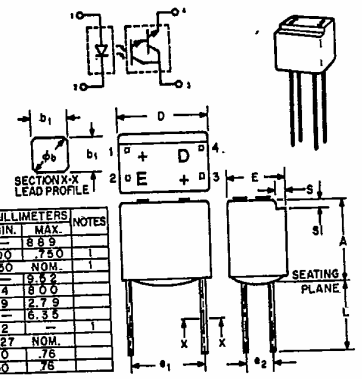
Photon Coupled Isolator CNY31

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

The GE Solid State CNY31 is a gallium arsenide, infrared emitting diode coupled with a silicon photo-darlington amplifier in a low-cost plastic package with lead spacing, compatible to dual-in-line package.



SYMBOL	INCHES MIN	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.	NOTES
A	—	.350	—	8.89	
ϕb	.024	.030	600	.750	1
b1	.020	NOM.	50	NOM.	1
D	—	.375	—	9.62	
$\theta 1$	285	315	7.24	800	
$\theta 2$	.090	.110	2.29	2.79	
E	—	.250	—	6.35	
L	.300	—	7.62	—	1
R	.050	NOM.	1.27	NOM.	
S	.020	.030	50	.76	
S1	.020	.030	.50	.76	

NOTE
1 FOUR LEADS. LEAD DIMENSIONS CONTROLLED BETWEEN .050" (1.27 MM) FROM THE SEATING PLANE AND THE END OF THE LEADS

absolute maximum ratings: (25°C)

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

*Derate 1.67 mW/°C above 25°C ambient.

PHOTO-DARLINGTON		
Power Dissipation	**150	milliwatts
V_{CEO}	30	volts
V_{ECO}	7	volts
Collector Current (Continuous)	100	milliamps

**Derate 2.5 mW/°C above 25°C ambient.

TOTAL DEVICE
Storage Temperature -55 to 85°C
Operating Temperature -55 to 85°C
Lead Soldering Time (at 260°C) 10 seconds
Surge Isolation Voltage (Input to Output). $5650V_{(peak)}$ $4000V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output). $5300V_{(peak)}$ $3750V_{(RMS)}$

individual electrical characteristics (25°C)

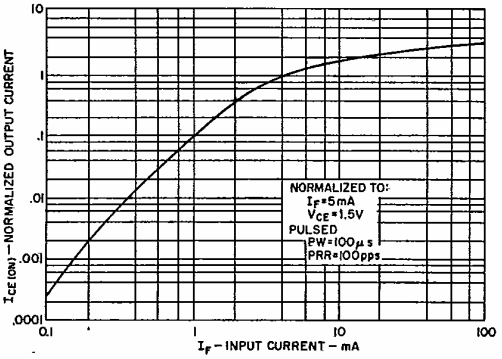
INFRARED EMITTING DIODE	TYP.	MAX.	UNITS
Forward Voltage (I_F = 10mA)	1.1	1.7	volts
Reverse Current (V_R = 3V)	—	10	microamps
Capacitance (V = 0, f = 1 MHz)	50	—	picofarads

PHOTO-DARLINGTON	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage – $V_{(BR)CEO}$ (I_C = 10mA, I_F = 0)	30	—	—	volts
Breakdown Voltage – $V_{(BR)ECO}$ (I_E = 100μA, I_F = 0)	7	—	—	volts
Collector Dark Current – I_{CEO} (V_{CE} = 10V, I_F = 0)	—	5	100	nanoamps
Capacitance (V_{CE} = 10V, f = 1 MHz)	—	6	—	picofarads

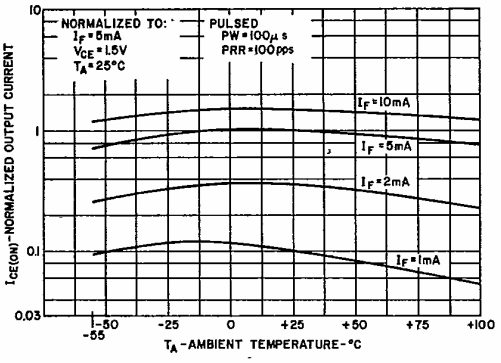
coupled electrical characteristics (25°C)

	MIN.	TYP.	MAX.	UNITS
DC Current Transfer Ratio (I_F = 5 mA, V_{CE} = 5V)	400	—	—	%
Saturation Voltage – Collector to Emitter (I_F = 5 mA, I_C = 2 mA)	—	0.8	1.4	volts
Isolation Resistance (Input to Output Voltage = 500V_{DC})	100	—	—	gigaohms
Input to Output Capacitance (Input to Output Voltage = 0, f = 1 MHz)	—	—	2	picofarads
Switching Speeds: Turn-On Time – (V_{CE} = 10V, I_C = 10mA, R_L = 100Ω)	—	125	—	microseconds
Turn-Off Time – (V_{CE} = 10V, I_C = 10mA, R_L = 100Ω)	—	100	—	microseconds

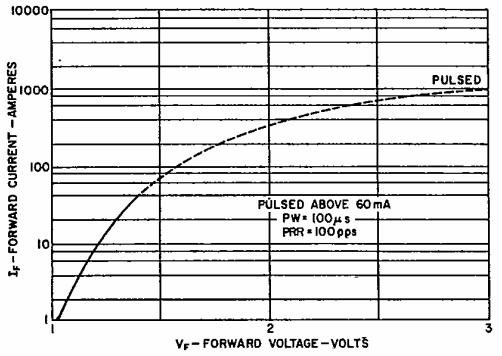
TYPICAL CHARACTERISTICS



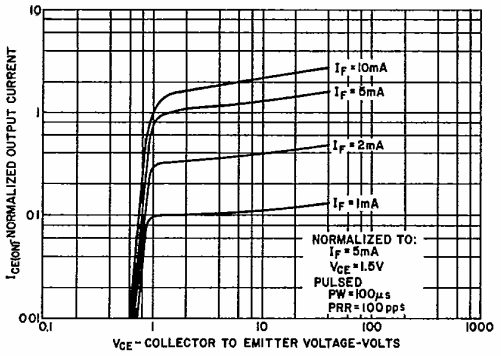
1. OUTPUT CURRENT VS. INPUT CURRENT



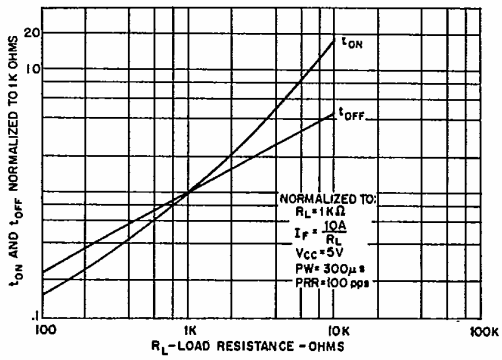
2. OUTPUT CURRENT VS. TEMPERATURE



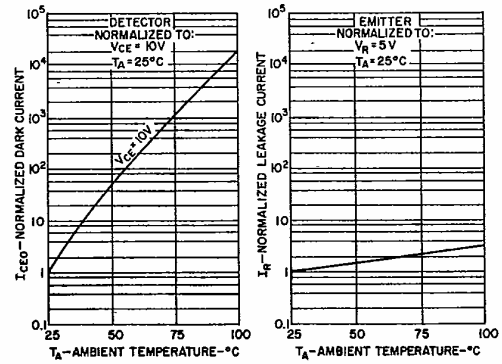
3. INPUT CHARACTERISTICS



4. OUTPUT CHARACTERISTICS



5. SWITCHING SPEED VS. RL



6. LEAKAGE CURRENTS VS. TEMPERATURE