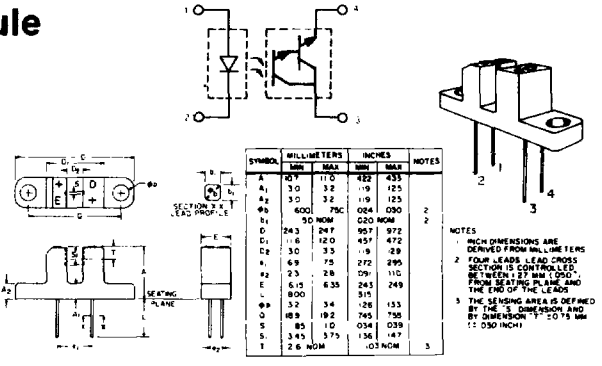
CNY29
Optointerrupter
GaAs Infrared Emitting Diode and NPN Silicon Photo-Darlington Amplifier Module



SYMBOL	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX	NOTES
A	10.7	11.0	.422	.435	
A_1	3.0	3.2	.119	.125	
A_2	3.0	3.2	.119	.125	
ϕb	0.60	0.76	.024	.030	2
b_1	.50 NOM		.020 NOM		2
D	24.3	24.7	.957	.972	
D_1	11.6	12.0	.457	.472	
D_2	3.0	3.3	.119	.129	
e	6.9	7.5	.272	.295	
e_2	2.5	2.8	.091	.110	
E	6.15	6.35	.243	.249	
L	8.00		.315		
ϕs	3.2	3.4	.126	.133	
Q	18.9	19.2	.745	.755	
S	.85	1.0	.034	.039	
S	3.45	3.75	.136	.147	
T	2.6 NOM		.103 NOM		3

The CNY29 is a gallium arsenide, infrared emitting diode coupled with a silicon photo-Darlington in a plastic housing. The gap in the housing provides a means of interrupting the signal with tape, cards, shaft encoders, or other opaque material, switching the output transistor from an "ON" into an "OFF" state.

FEATURES:

- Low cost, plastic module
- Non-contact switching
- Solid-state reliability
- I/O compatible with integrated circuits

absolute maximum ratings: (25°C) (unless otherwise specified)

Storage and Operating Temperature -55° to 85°C. Lead Soldering Time (at 260°C) 10 seconds.

INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (peak, 100 μs, 1% duty cycle)	1	amp
Reverse Voltage	3	volts
*Derate 1.67mW/°C above 25°C ambient		

PHOTO-DARLINGTON		
Power Dissipation	**150	milliwatts
Collector Current (Continuous)	100	milliamps
V_{CEO}	25	volts
V_{ECO}	7	volts
**Derate 2.5mW/°C above 25°C ambient		

individual electrical characteristics (25°C)

INFRARED EMITTING DIODE		TYP.	MAX.	UNITS
Forward Voltage (I_F = 10 mA)	V_F	1.2	1.7	volts
Reverse Current (V_R = 2V)	I_R	–	10	μamps
Capacitance (V = 0, f = 1 MHz)	C_j	150	–	pf

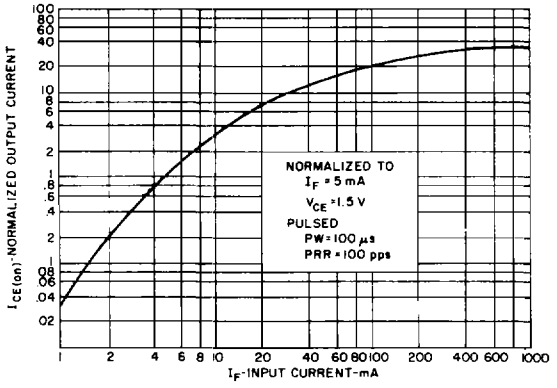
PHOTO-DARLINGTON	MIN.	MAX.	UNITS
Breakdown Voltage $V_{(BR)CEO}$ (I_C = 10 mA)	25	–	volts
Breakdown Voltage $V_{(BR)ECO}$ (I_E = 100μa)	7	–	volts
Collector Dark Current I_{CEO} (V_{CE}= 10V, I_F=0, H=0)	–	100	nA

coupled electrical characteristics (25°C)

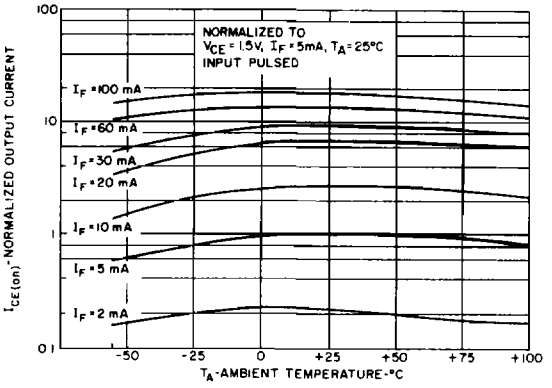
	MIN.	TYP.	MAX.	UNITS
Output Current (I_F = 20mA, V_{CE} = 5V)	2500	–	–	μamps
Saturation Voltage (I_F = 20mA, I_C = 0.5 mA)	–	–	1.2	volts
Switching Speeds (V_{CE} = 10V, I_C = 2 mA, R_L = 100Ω)				
On Time ($t_d + t_r$)	–	150	–	μsecs
Off Time ($t_s + t_f$)	–	150	–	μsecs

CNY29

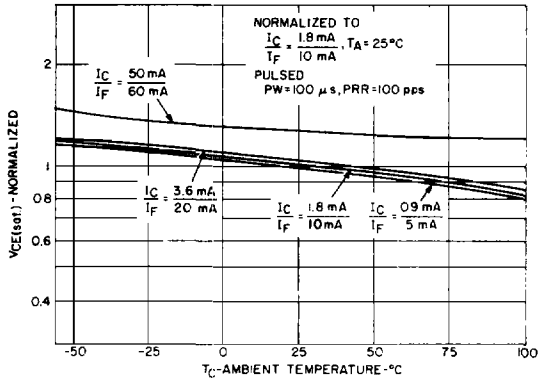
TYPICAL CHARACTERISTICS



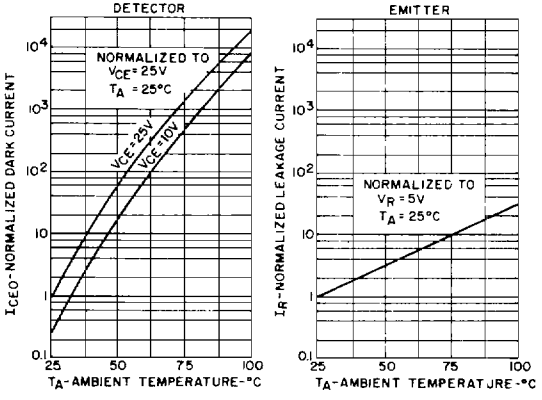
1. OUTPUT CURRENT VS. INPUT CURRENT



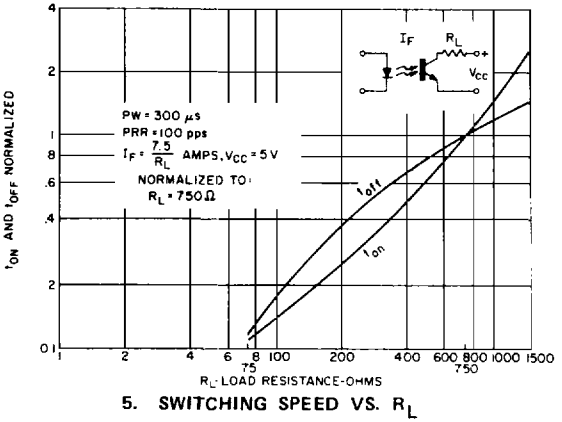
2. OUTPUT CURRENT VS. TEMPERATURE



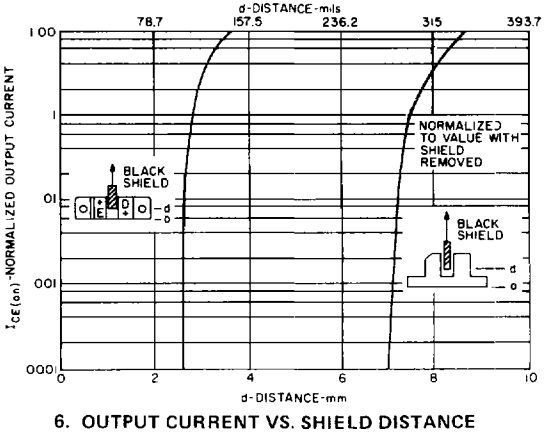
3. $V_{CE\,(sat)}$ VS. TEMPERATURE



4. LEAKAGE CURRENTS VS. TEMPERATURE



5. SWITCHING SPEED VS. R_L



6. OUTPUT CURRENT VS. SHIELD DISTANCE

14