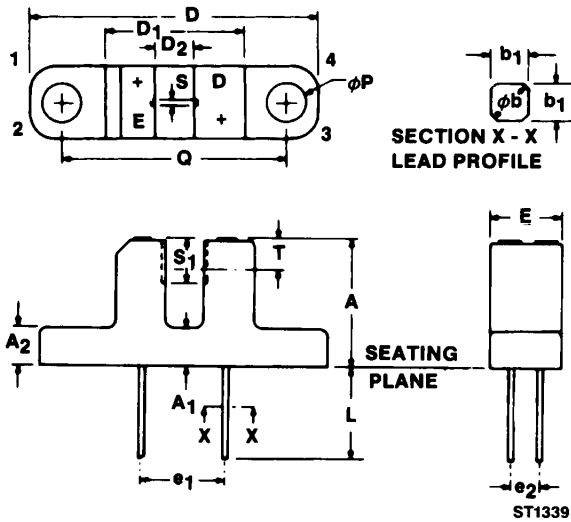
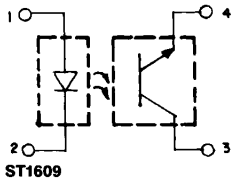


**PACKAGE DIMENSIONS**



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	10.7	11.0	.422	.433	
A <sub>1</sub>	3.0	3.2	.119	.125	
A <sub>2</sub>	3.0	3.2	.119	.125	
φb	.600	.750	.024	.030	2
b <sub>1</sub>	.50 NOM.		.020 NOM.		2
D	24.3	24.7	.957	.972	
D <sub>1</sub>	11.0	12.0	.457	.472	
D <sub>2</sub>	3.0	3.3	.119	.129	
e <sub>1</sub>	6.9	7.5	.272	.295	
e <sub>2</sub>	2.3	2.8	.091	.110	
E	.615	6.35	.243	.249	
L	6.00		.315		
φp	3.2	3.4	.126	.133	
Q	18.9	19.2	.745	.755	
S	.85	1.0	.034	.039	
S <sub>1</sub>	3.45	3.75	.136	.147	
T	2.6 NOM.		.103 NOM.		3

**PACKAGE OUTLINE**



ST1609

**DESCRIPTION**

The CNY28 is a gallium arsenide infrared emitting diode coupled with a silicon phototransistor 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 from an "ON" to an "OFF" state.

**NOTES:**

1. INCH DIMENSIONS ARE DERIVED FROM MILLIMETERS.
2. FOUR LEADS. LEAD CROSS SECTION IS CONTROLLED BETWEEN 1.27mm (.050") FROM SEATING PLANE AND THE END OF THE LEADS.
3. THE SENSING AREA IS DEFINED BY THE "S" DIMENSION AND BY DIMENSION "T" ±0.75mm (±.030 INCH).

**FEATURES**

- Opaque housing
- Low cost
- .035" apertures
- European "Pro Electron" registered



## SLOTTED OPTICAL SWITCH

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified)	
Storage Temperature .....	$-55^\circ\text{C}$ to $+85^\circ\text{C}$
Operating Temperature .....	$-55^\circ\text{C}$ to $+85^\circ\text{C}$
Soldering:	
Lead Temperature (Iron) .....	$240^\circ\text{C}$ for 5 sec. <sup>(3,4,5)</sup>
Lead Temperature (Flow) .....	$260^\circ\text{C}$ for 10 sec. <sup>(3,4)</sup>
<b>INPUT DIODE</b>	
Continuous Forward Current .....	60 mA
Reverse Voltage .....	3.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>
<b>OUTPUT TRANSISTOR</b>	
Collector-Emitter Voltage .....	30 Volts
Emitter-Collector Voltage .....	5 Volts
Power Dissipation .....	150 mW <sup>(2)</sup>

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
<b>INPUT DIODE</b>						
Forward Voltage	$V_F$	—		1.7	V	$I_F = 10\text{ mA}$
Reverse Leakage Current	$I_R$	—		10	$\mu\text{A}$	$V_R = 2\text{ V}$
<b>OUTPUT TRANSISTOR</b>						
Emitter-Collector Breakdown	$BV_{ECO}$	5.0		—	V	$I_E = 100\ \mu\text{A}$ , $E_e=0$
Collector-Emitter Breakdown	$BV_{CEO}$	30		—	V	$I_C = 10\text{ mA}$ , $E_e=0$
Collector-Emitter Leakage	$I_{CEO}$	—		100	nA	$V_{CE} = 10\text{ V}$ , $E_e=0$
<b>COUPLED</b>						
On-State Collector Current	$I_{C(ON)}$	0.20		—	mA	$I_F = 20\text{ mA}$ , $V_{CE} = 10\text{ V}$
Saturation Voltage	$V_{CE(SAT)}$	—		0.40	V	$I_F = 20\text{ mA}$ , $I_C = 25\ \mu\text{A}$
Turn-On Time	$t_{on}$		5		$\mu\text{S}$	$I_F = 30\text{ mA}$ , $V_{CC} = 5\text{ V}$ , $R_L = 2.5\text{K}\Omega$
Turn-Off Time	$t_{off}$		5		$\mu\text{S}$	$I_F = 30\text{ mA}$ , $V_{CC} = 5\text{ V}$ , $R_L = 2.5\text{K}\Omega$

<b>NOTES</b>
1. Derate power dissipation linearly $1.67\text{ mW}/^\circ\text{C}$ above $25^\circ\text{C}$ .
2. Derate power dissipation linearly $2.50\text{ mW}/^\circ\text{C}$ above $25^\circ\text{C}$ .
3. RMA flux is recommended.
4. Methanol or Isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron tip $1/16"$ (1.6 mm) from housing.

**TYPICAL CHARACTERISTICS**

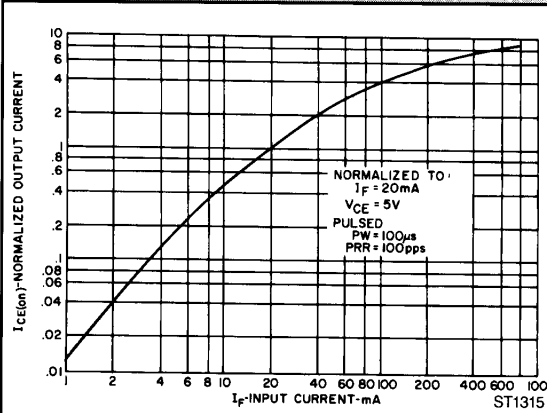


Fig. 1. Output Current vs. Input Current

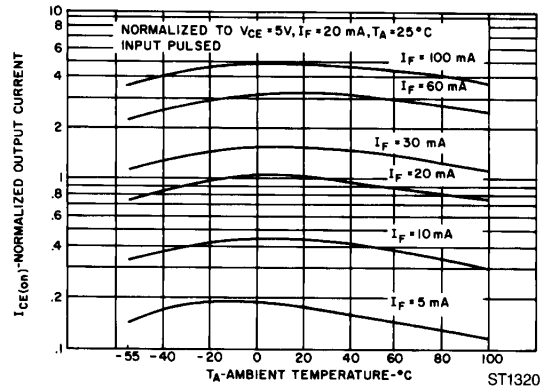


Fig. 2. Output Current vs. Temperature

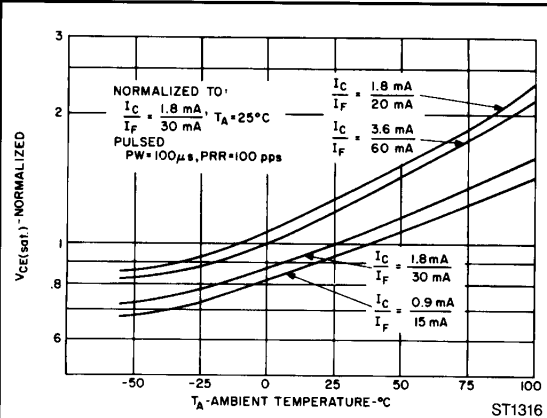


Fig. 3.  $V_{CE(SAT)}$  vs. Temperature

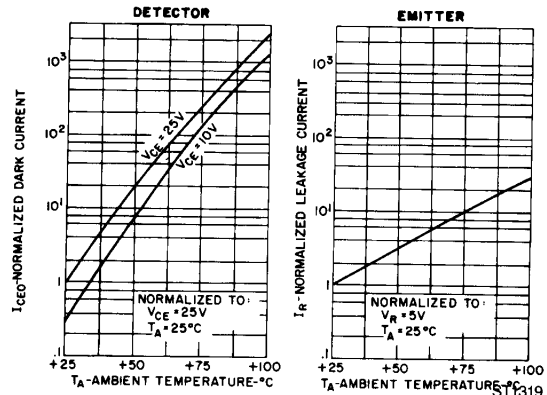


Fig. 4. Leakage Current vs. Temperature

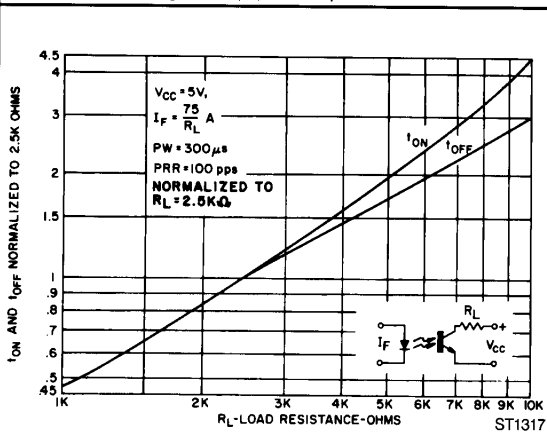


Fig. 5. Switching Speed vs.  $R_L$

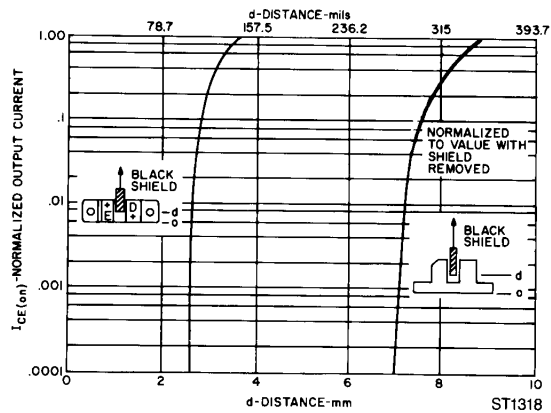


Fig. 6. Output Current vs. Distance