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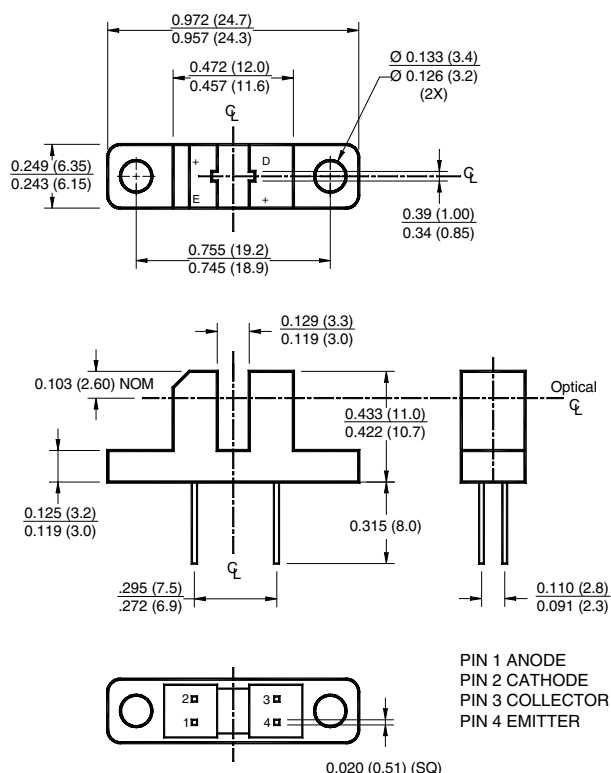
sales@integrated-circuit.com

FAIRCHILD
SEMICONDUCTOR®

PHOTOTRANSISTOR OPTICAL INTERRUPTER SWITCH

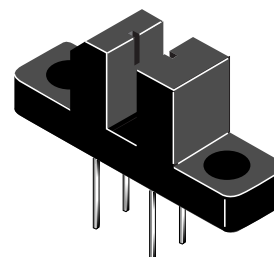
CNY28

PACKAGE DIMENSIONS

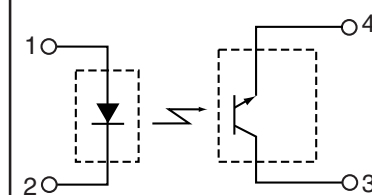


NOTES:

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of $\pm .010$ (.25) on all non-nominal dimensions unless otherwise specified.



SCHEMATIC



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.

FEATURES

- Opaque housing
- Low cost
- 0.035" apertures
- European "Pro Electron" registered

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Units
Operating Temperature	T_{OPR}	-55 to +85	$^\circ\text{C}$
Storage Temperature	T_{STG}	- 55 to +85	$^\circ\text{C}$
Soldering Temperature (Iron) ^(2,3,4)	T_{SOL-I}	240 for 5 sec	$^\circ\text{C}$
Soldering Temperature (Flow) ^(2,3)	T_{SOL-F}	260 for 10 sec	$^\circ\text{C}$
INPUT (EMITTER)			
Continuous Forward Current	I_F	50	mA
Reverse Voltage	V_R	6	V
Power Dissipation ⁽¹⁾	P_D	100	mW
OUTPUT (SENSOR)			
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter- Collector Voltage	V_{ECO}	4.5	V
Collector Current	I_C	20	mA
Power Dissipation ⁽¹⁾	P_D	150	mW

NOTES:

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

ELECTRICAL / OPTICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
INPUT (EMITTER)						
Forward Voltage	$I_F = 10\text{ mA}$	V_F	—	—	1.7	V
Reverse Leakage Current	$V_R = 2\text{ V}$	I_R	—	—	10	μA
OUTPUT (SENSOR)						
Emitter-Collector Breakdown	$I_E = 100\text{ }\mu\text{A}$, $E_e = 0$	BV_{ECO}	5.0	—	—	V
Collector-Emitter Breakdown	$I_C = 10\text{ mA}$, $E_e = 0$	BV_{CEO}	30	—	—	V
Collector-Emitter Leakage	$V_{CE} = 10\text{ V}$, $E_e = 0$	I_{CEO}	—	—	100	nA
COUPLED						
Collector Current	$I_F = 20\text{ mA}$, $V_{CE} = 10\text{ V}$	$I_{C(ON)}$	0.20	—	—	mA
Collector Emitter Saturation Voltage	$I_F = 20\text{ mA}$, $I_C = 25\text{ }\mu\text{A}$	$V_{CE(SAT)}$	—	—	0.40	V
Turn-On Time	$I_F = 30\text{ mA}$, $V_{CC} = 5\text{ V}$, $R_L = 2.5\text{ k}\Omega$	t_{on}	—	5	—	μs
Turn-Off Time	$I_F = 30\text{ mA}$, $V_{CC} = 5\text{ V}$, $R_L = 2.5\text{ k}\Omega$	t_{off}	—	5	—	μs

TYPICAL PERFORMANCE CURVES

Fig. 1 Output Current vs. Input Current

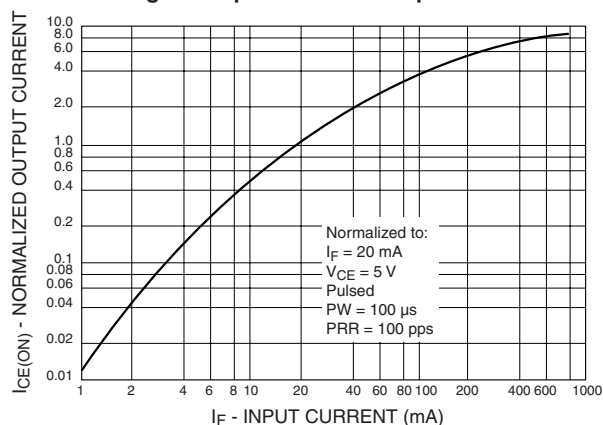


Fig. 2 Output Current vs. Temperature

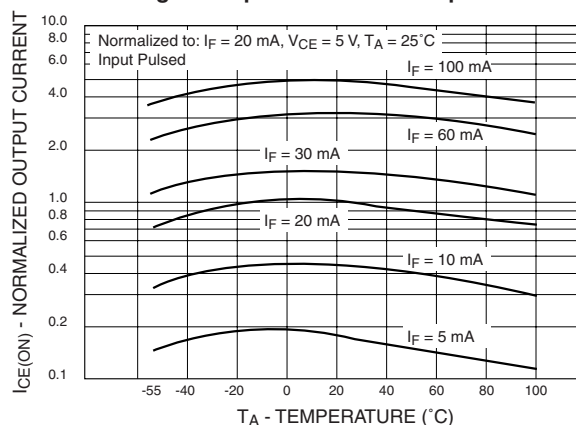
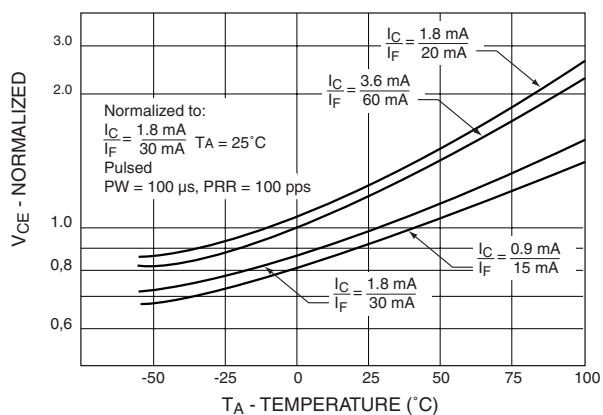
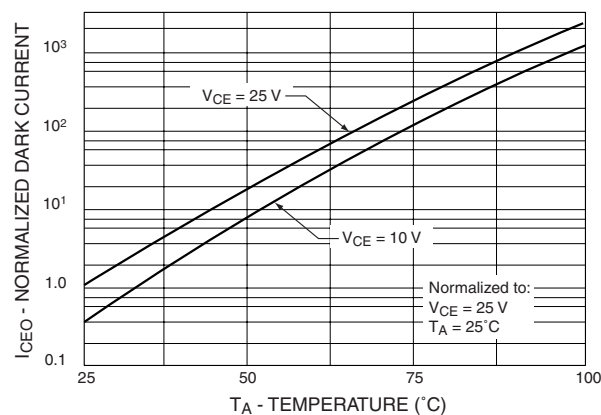


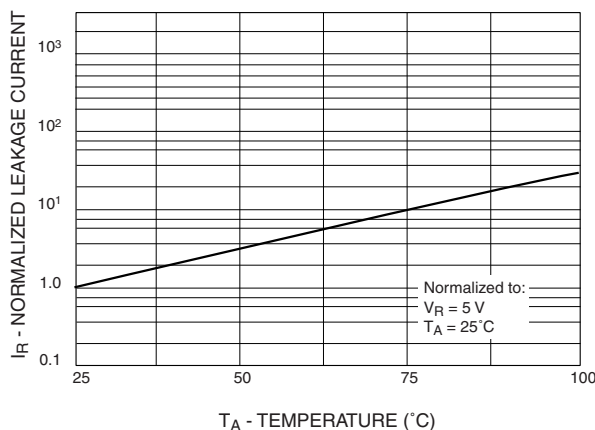
Fig. 3 Saturation Voltage vs. Ambient Temperature



**Fig. 4 Normalized Dark Current
vs. Ambient Temperature (Detector)**



**Fig. 5 Normalized Leakage Current
vs. Ambient Temperature (Emitter)**



TYPICAL PERFORMANCE CURVES

Fig. 6 Switching Time vs. Load Resistance

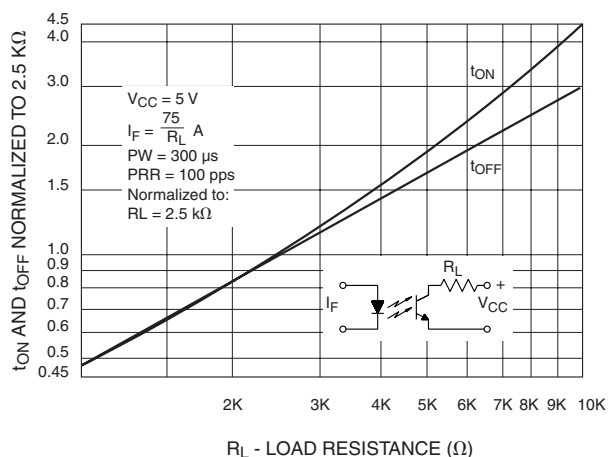
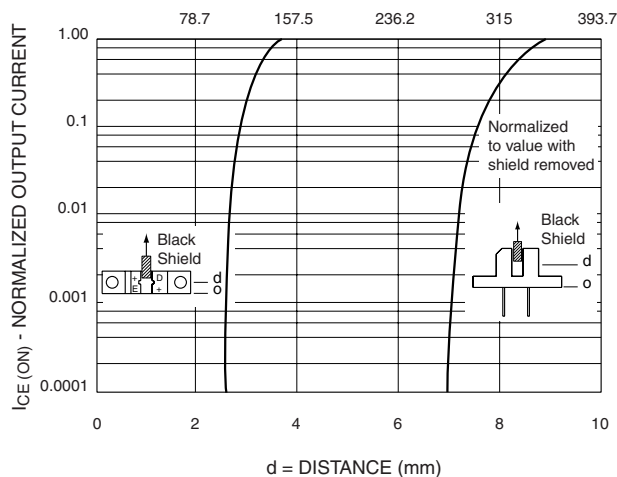


Fig. 7 Output Current vs. Distance



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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.