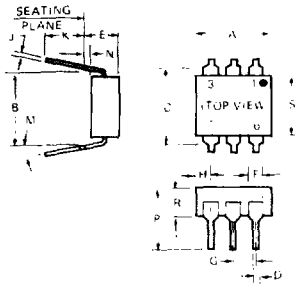
CNY17
Optoisolator
GaAs Infrared Emitting Diode and NPN Silicon Phototransistor

The CNY17 consists of a gallium arsenide, infrared emitting diode coupled with a silicon phototransistor in a dual in-line package. This device is also available in surface-mount packaging.

FEATURES:

- Fast switching speeds
- High DC current transfer ratio
- High isolation resistance
- High isolation voltage
- I/O compatible with integrated circuits



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

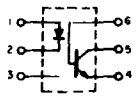
INFRARED EMITTING DIODE		
Power Dissipation – T_A	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak) (Pulse width 1μs, 300 P Ps)	3	ampere
Reverse Voltage	3	volts
*Derate 1.33 mW/°C above 25°C		

PHOTO-TRANSISTOR		
Power Dissipation – T_A	**150	milliwatts
V_{CEO}	70	volts
V_{CBO}	70	volts
V_{ECO}	7	volts
Collector Current (Continuous	150	milliamps
**Derate 2.0 mW/°C above 25°C		

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).
$5000V_{(peak)}$ $3000V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output).
$4000V_{(peak)}$ $2830V_{(RMS)}$

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	8.38	8.89	.330	.350	
B	7.62 REF		.300 REF		1
C		8.64		.340	2
D	.406	.508	.016	.020	
E		5.08		.200	3
F	1.01	1.78	.040	.070	
G	2.28	2.80	.090	.110	
H		2.16		.085	4
J	.203	.305	.008	.012	
K	2.54		.100		
M		15°		15°	
N	.381		.015		
P		9.53		.375	
R	2.92	3.43	.115	.135	
S	6.10	6.86	.240	.270	

NOTES
1 INSTALLED POSITION LEAD CENTERS
2 OVERALL INSTALLED D MENSION
3 THESE MEASUREMENTS ARE MADE FROM THE SEATING PLANE
4 FOUR PLACES



Ⓤ Covered under U.L. component recognition program, reference file E51868

VDE approved to C883/6.80 0110/11.72

CNY17

individual electrical characteristics (25°C) (unless otherwise specified)

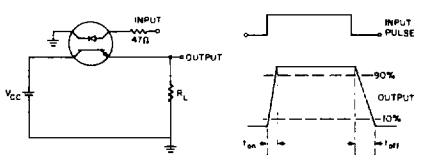
INFRARED EMITTING DIODE	MIN.	MAX.	UNITS
Forward Voltage – V_F (I_F = 60mA)	.8	1.65	volts
Reverse Current – I_R (V_R = 3V)	–	10	microamps
Capacitance – C_J (V = O,f = 1 MHz)	–	100	picofarads

PHOTO-TRANSISTOR	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage – $V_{(BR)CEO}$ (I_C = 10mA, I_F = O)	70	–	–	volts
Breakdown Voltage – $V_{(BR)CBO}$ (I_C = 100μA, I_F = O)	70	–	–	volts
Breakdown Voltage – $V_{(BR)ECO}$ (I_E = 100μA, I_F = 0)	7	–	–	volts
Collector Dark Current – I_{CEO} (V_{CE} = 10V, I_F = O)	–	5	50	nanoamps
Capacitance – C_{CE} (V_{CE} = 10V, f = 1MHz)	–	2	–	picofarads
Current Transfer Ratio –h_{FE} (V_{CE} = 5V, I_C = 100μA)	100	–	–	

coupled electrical characteristics (25°C) (unless otherwise specified)

		MIN.	TYP.	MAX.	UNITS
DC Current Transfer Ratio (I_F = 10mA, V_{CE} = 5V)	CNY17 I	40	–	80	%
	CNY17 II	63	–	125	%
	CNY17 III	100	–	200	%
	CNY17 IV	160	–	320	%
Saturation Voltage – Collector to Emitter (I_F = 10mA, I_C = 2.5mA)		–	–	0.3	volts
Isolation Resistance (V_{IO} = 500V_{DC}) (See Note 1)		100	–	–	gigaohms
Input to Output Capacitance (V_{IO} = O,f = 1 MHz) (See Note 1)		–	–	2	picofarads
Turn-On Time – t_{on} (V_{CC} = 10V, I_C = 2mA, R_L = 100Ω) (See Figure 1)		–	5	10	microseconds
Turn-Off Time – t_{off} (V_{CC} = 10V, I_C = 2mA, R_L = 100Ω) (See Figure 1)		–	5	10	microseconds

Note 1: Tests of input to output isolation current resistance, and capacitance are performed with the input terminals (diode) shorted together and the output terminals (transistor) shorted together.

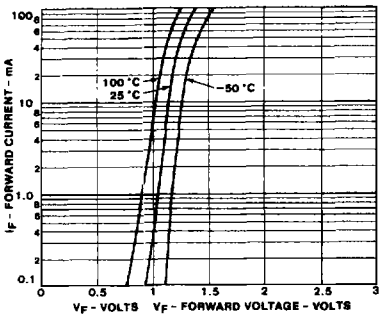


Adjust Amplitude of Input Pulse for Output (I_C) of 2 mA

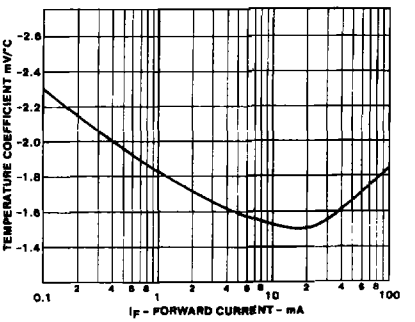
TEST CIRCUIT AND VOLTAGE WAVEFORMS

CNY17

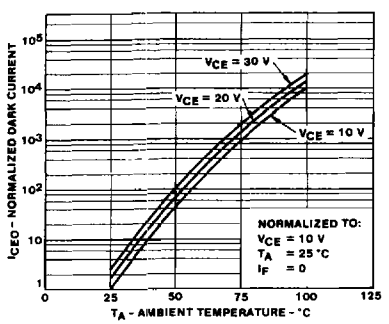
TYPICAL CHARACTERISTICS



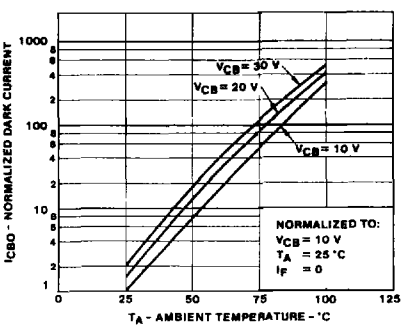
1. INPUT CHARACTERISTICS



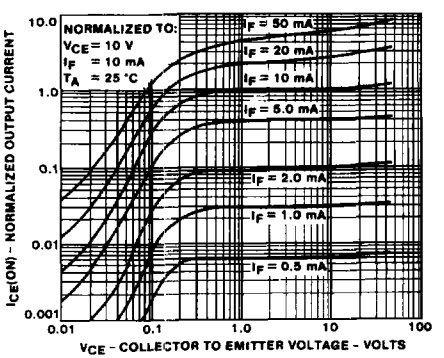
2. FORWARD VOLTAGE TEMPERATURE COEFFICIENT



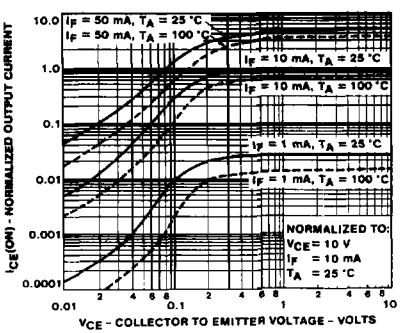
3. DARK I_{CEO} CURRENT VS TEMPERATURE



4. I_{CBO} VS TEMPERATURE

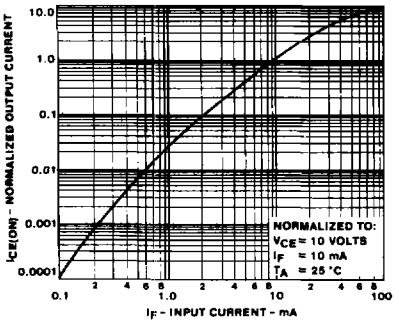


5. OUTPUT CHARACTERISTICS

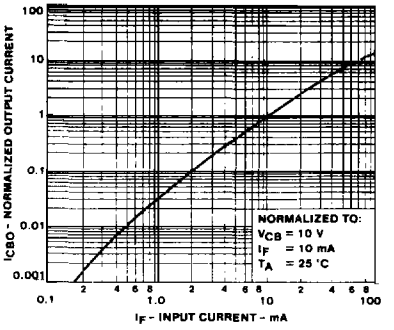


6. OUTPUT CHARACTERISTICS

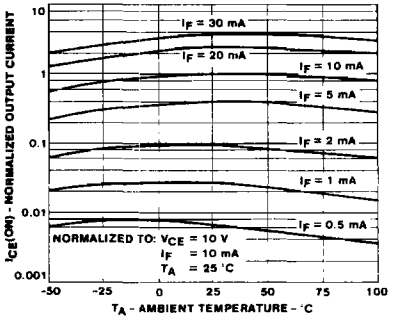
TYPICAL CHARACTERISTICS



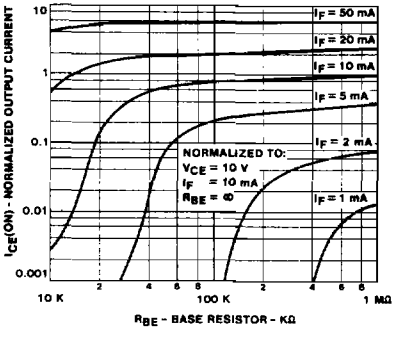
7. OUTPUT CURRENT VS INPUT CURRENT



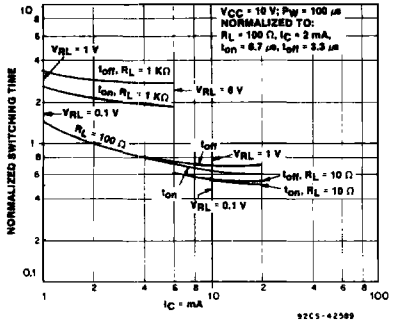
8. OUTPUT CURRENT – COLLECTOR TO BASE VS INPUT CURRENT



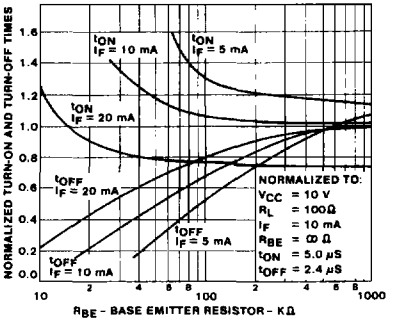
9. OUTPUT CURRENT VS TEMPERATURE



10. OUTPUT CURRENT VS BASE EMITTER RESISTANCE



11. SWITCHING TIMES VS OUTPUT CURRENT



12. SWITCHING TIME VS R_{BE}

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