Optoelectronic Devices

Order code	Manufacturer code	Description
58-0880	CNY17-1	CNY17-1 TRANSISTOR OPTOISOLATOR
58-0884	CNY17-2	CNY17-2 TRANSISTOR OPTOISOLATOR
58-0886	CNY17-3	CNY17-3 TRANSISTOR OPTOISOLATOR

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High Collector-Emitter Voltage Type Photocoupler

CNY17 Series

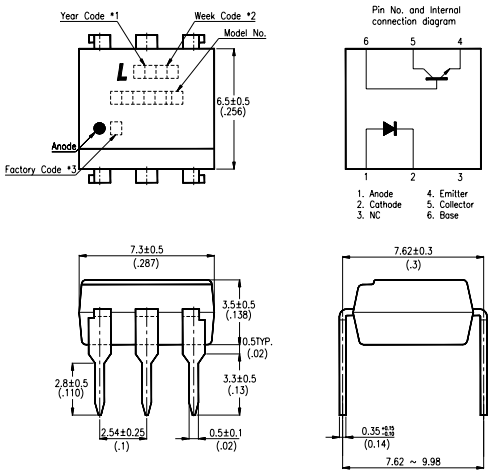
Features

- High collector-emitter voltage (V_{CEO} : 70V)
- High input-output isolation voltage : (V_{ISO} : 5,000Vrms)
- Directly connectable to TTL
- UL approved (No. E113898)
- VDE approved (No. 094722)
- FIMKO approved (No. 209049)
- SEMKO approved (No. 9943380/01-20)
- NEMKO approved (No. P99102464)
- DEMKO approved (No. 99-04182)
- CSA approve in progress
- Options Available :
  - Leads with 0.4" (10.16mm) Spacing (M Type)
  - Lead Bends for Surface Mounting (S Type)
  - Tape and Reel of Type I for SMD (Add "-TA" Suffix)
  - Tape and Reel of Type II for SMD (Add "-TA1" Suffix)
  - VDE 0884 Approvals (Add "-V" Suffix)

Applications

1. Telephone sets, telephone exchangers
2. System appliances, measuring instruments
3. Signal transmission between circuits of different potentials and impedances

Package Dimensions



NOTES :
1. Year date code.
2. 2-digit work week.
3. Factory code shall be marked (Z : Taiwan, Y : Thailand).
4. Model No.: CNY17-1 ; CNY17-2 ; CNY17-3 ; CNY17-4
5. All dimensions are in millimeters (inches).
6. Tolerance is ±0.25mm (.010") unless otherwise noted.
7. Specifications are subject to change without notice.

Ordering Information

Part Number	Package	Safety Standard Approval	Application part number
CNY17-1 CNY17-1M CNY17-1S CNY17-1S-TA CNY17-1S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)	• UL approved • FIMKO approved • SEMKO approved • NEMKO approved • DEMKO approved • CSA approve in progress	CNY17-1
CNY17-2 CNY17-2M CNY17-2S CNY17-2S-TA CNY17-2S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		CNY17-2
CNY17-3 CNY17-3M CNY17-3S CNY17-3S-TA CNY17-3S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		CNY17-3
CNY17-4 CNY17-4M CNY17-4S CNY17-4S-TA CNY17-4S-TA1	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		CNY17-4
CNY17-1-V CNY17-1M-V CNY17-1S-V CNY17-1STA-V CNY17-1STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)	• VDE approved	CNY17-1
CNY17-2-V CNY17-2M-V CNY17-2S-V CNY17-2STA-V CNY17-2STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		CNY17-2
CNY17-3-V CNY17-3M-V CNY17-3S-V CNY17-3STA-V CNY17-3STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		CNY17-3
CNY17-4-V CNY17-4M-V CNY17-4S-V CNY17-4STA-V CNY17-4STA1-V	6-pin DIP 6-pin (leads with 0.4" spacing) 6-pin (lead bends for surface mount) 6-pin (tape and reel packaging of type I) 6-pin (tape and reel packaging of type II)		CNY17-4

Ratings and Characteristics
Absolute Maximum Ratings

(Ta=25℃)

Parameter		Symbol	Rating	Unit
Input	Forward Current	I_F	60	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P	100	mW
Output	Collector-Emitter Voltage	V_{CEO}	70	V
	Emitter-Collector Voltage	V_{ECO}	7	V
	Collector-Base Voltage	V_{CBO}	70	V
	Cllector Current	I_C	150	mA
	Collector Power Dissipation	P_C	150	mW
Total Power Dissipation		P_{tot}	250	mW
*1.Isolation Voltage		V_{iso}	5,000	Vrms
Operating Temperature		T_{opr}	-55~+100	℃
Storage Temperature		T_{stg}	-55~+150	℃
*2.Soldering Temperature		T_{sol}	260	℃

*1. AC for 1 minute, R.H. = 40 ~ 60%
Isolation voltage shall be measured using the following method.
(1) Short between anode and cathode on the primary side and between collector, emitter and base on the secondary side.
(2) The isolation voltage tester with zero-cross circuit shall be used.
(3) The waveform of applied voltage shall be a sine wave.

*2. For 10 seconds

Absolute Maximum Ratings

(Ta=25℃)

Parameter			Symbol	Min.	Typ.	Max.	Unit.	Conditions
Input	Forward Voltage		V_F	–	1.45	1.65	V	I_F=60mA
	Reverse Current		I_R	–	–	10	μA	V_R=6V
	Terminal Capacitance		C_t	–	–	100	pF	V=0, f=1MHz
Output	Collector Dark Current		I_{CEO}	–	–	50	nA	V_{CE}=10V, I_F=0
	Collector-Emitter Breakdown Voltage		BV_{CEO}	70	–	–	V	I_C=0.1mA I_F=0
	Emitter-Collector Breakdown Voltage		BV_{ECO}	7	–	–	V	I_E=10 μA I_F=0
	Collector-Base Breakdown Voltage		BV_{CBO}	70	–	–	V	I_C=0.1mA I_F=0
Transfer Characteristics	*1 Transfer Ratio	CNY17-1	CTR	40	–	80	%	I_F=10mA V_{CE}=5V
		CNY17-2		63	–	125		
		CNY17-3		100	–	200		
		CNY17-4		160	–	320		
	Collector-Emitter Saturation Voltage		V_{CE}(sat)	–	–	0.3	V	I_F=10mA I_C=2.5mA
	Isolation Resistance		R_{iso}	100	–	–	GΩ	DC500V 40~`60%R.H.
	Floating Capacitance		C_f	–	–	2	pF	V=0, f=1MHZ
	Response Time (Rise)		t_r	–	5	10	μS	V_{CC}=10V, I_C=2mA
	Response Time (Fall)		t_f	–	5	10	μS	R_L=100Ω

*1 CTR= $\frac{I_C}{I_F} \times 100\%$

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Typical Electrical/Optical Characteristic Curves
(25℃Ambient Temperature Unless Otherwise Noted)

Fig.1 Forward Current vs. Ambient Temperature

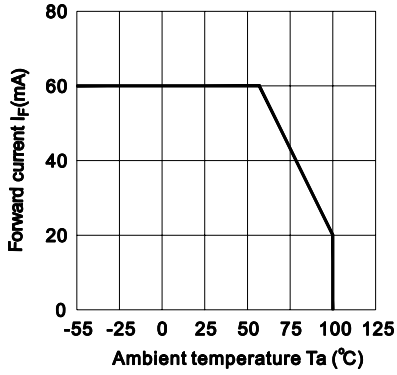


Fig.2 Collector Power Dissipation vs. Ambient Temperature

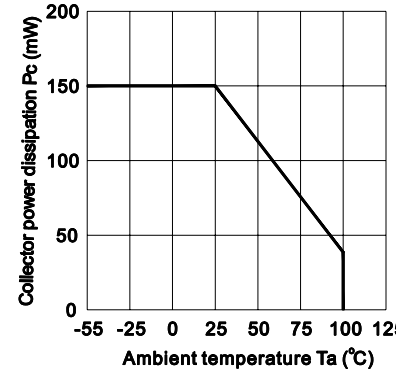


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

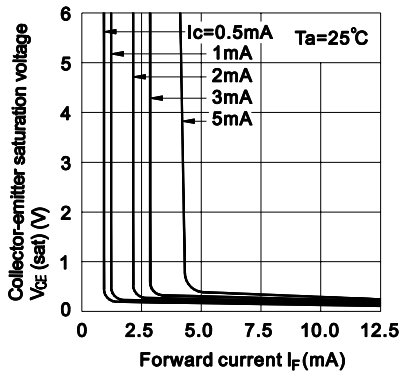


Fig.4 Forward Current vs. Forward Voltage

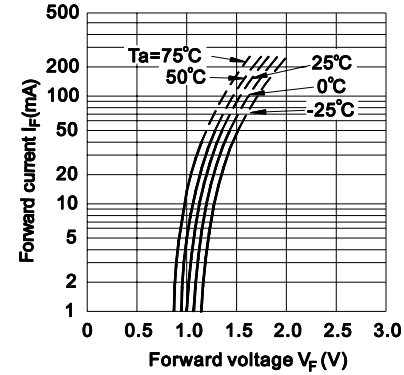


Fig.5 Current Transfer Ratio vs. Forward Current

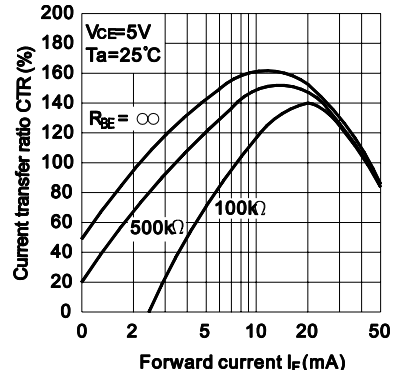


Fig.6 Collector Current vs. Collector-emitter Voltage

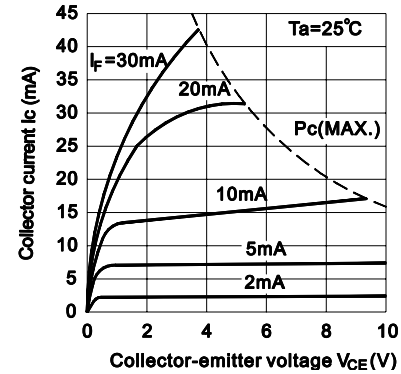


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

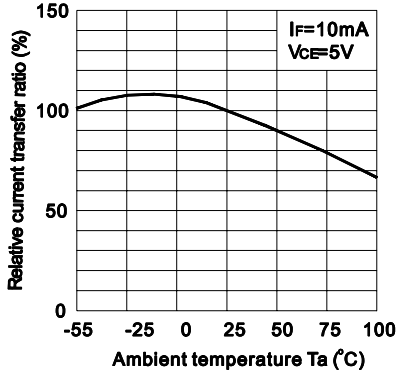


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

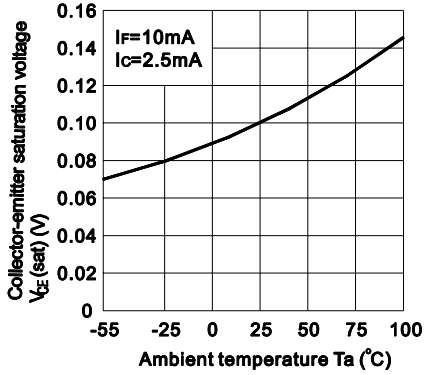


Fig.9 Collector Dark Current vs. Ambient Temperature

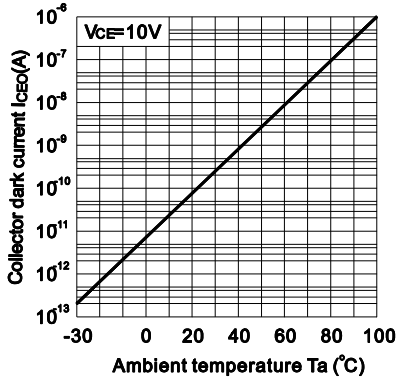


Fig.10 Response Time vs. Load Resistance

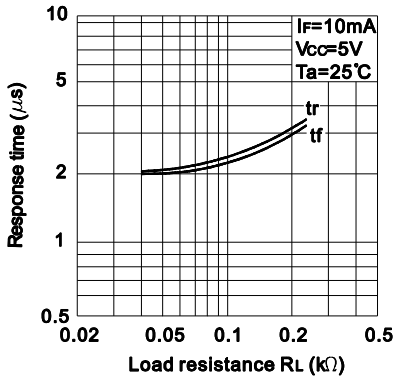
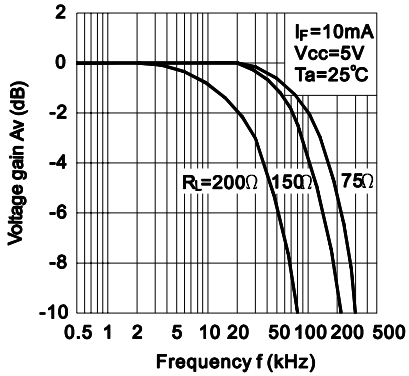
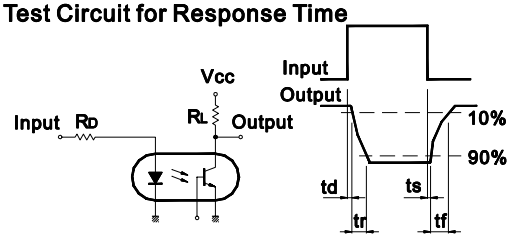


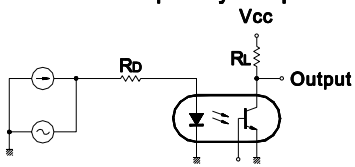
Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response



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