

TOSHIBA Photocoupler GaAs Ired & Photo-Transistor

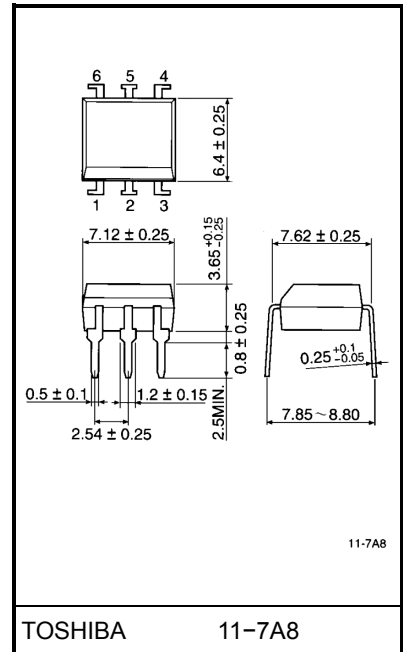
CNY17-2,CNY17-3,CNY17-4

- AC Line / Digital Logic Isolator
- Digital Logic / Digital Logic Isolator
- Telephone Line Receiver
- Twisted Pair Line Receiver
- High Frequency Power Supply Feedback Control
- Relay Contact Monitor

The TOSHIBA Corporation CNY17 consist of a gallium arsenide infrared emitting diode coupled with a silicon photo transistor in a dual in-line package.

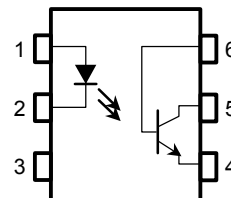
- Small package size and low cost
- Fast switching speeds: 5µs (typ.)
- High DC current transfer ratio: CTR(I_F = 10mA, V_{CE} = 5V)
 - CNY17-2: 63~125%
 - CNY17-3: 100~200%
 - CNY17-4: 160~320%
- High isolation resistance: 10¹¹Ω (typ.)
- High isolation voltage: 4400V (min.)

Unit in mm



Weight: 0.4 g

Pin Configuration



- 1 : Anode
- 2 : Cathode
- 3 : N.C.
- 4 : Emitter
- 5 : Collector
- 6 : Base

Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
LED	Forward current	I_F	60	mA
	Forward current derating	$\Delta I_F / ^\circ\text{C}$	0.8 *	mA / °C
	Peak forward current (Note)	I_{PF}	3	A
	Power dissipation	P_D	100	mW
	Power dissipation derating	$\Delta P_D / ^\circ\text{C}$	1.33 *	mW / °C
	Reverse voltage	V_R	6	V
Photo-transistor	Collector-emitter voltage	BV_{CEO}	70	V
	Collector-base voltage	BV_{CBO}	70	V
	Emitter-collector voltage	BV_{ECO}	7	V
	Collector current	I_C	100	mA
	Power dissipation	P_C	150	mW
	Power dissipation derating	$\Delta P_C / ^\circ\text{C}$	2.0 *	mW / °C
Coupled	Storage temperature	T_{stg}	-55~150	°C
	Operating temperature	T_{opr}	-55~100	°C
	Lead soldering temperature (10 s)	T_{sol}	260	°C
	Total package dissipation	P_T	200	mW
	Total package power dissipation derating	$\Delta P_T / ^\circ\text{C}$	2.6 *	mW / °C

(Note)Pulse width 1μs, 300pps.

* Above 25°C ambient.

Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit	
LED	Forward voltage	V_F	$I_F = 60 \text{ mA}$	—	1.35	1.65	V	
	Reverse current	I_R	$V_R = 3 \text{ V}$	—	—	10	μA	
	Capacitance	C_D	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF	
Photo-transistor	DC forward current gain	h_{FE}	$V_{CE} = 5, I_C = 500 \mu\text{A}$	100	200	—		
	Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1 \text{ mA}, I_F = 0$	70	—	—	V	
	Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 100 \mu\text{A}, I_F = 0$	70	—	—	V	
	Emitter-collector breakdown voltage	$V_{(BR)ECO}$	$I_E = 100 \mu\text{A}, I_F = 0$	7	—	—	V	
	Collector dark current	I_{CEO}	$V_{CE} = 10 \text{ V}, I_F = 0$	—	1	50	nA	
	Collector dark current	I_{CBO}	$V_{CB} = 10 \text{ V}, I_F = 0$	—	0.1	20	nA	
	Collector-emitter capacitance	C_{CE}	$V = 0, f = 1 \text{ MHz}$	—	10	—	pF	
Coupled	Current transfer ratio	CNY17-2	$I_F = 10 \text{ mA}, V_{CE} = 5 \text{ V}$	CTR	63	—	125	%
		CNY17-3			100	—	200	
		CNY17-4			160	—	320	
	Saturation voltage	$V_{CE(sat)}$	$I_F = 10 \text{ mA}, I_C = 2.5 \text{ mA}$	—	—	0.4	V	
	Capacitance input to output	C_S	$V = 0, f = 1 \text{ MHz}$	—	0.8	—	pF	
	Isolation resistance	R_S	$V = 500 \text{ V}$	—	10^{11}	—	Ω	
	DC isolation voltage	BV_S	DC 1 minute	4400	—	—	V	
Rise fall time	t_r / t_f	$V_{CE} = 10 \text{ V}, I_C = 2 \text{ mA}$ $R_L = 100 \Omega$	—	5	10	μs		
Rise / fall time photo diode	t_r / t_f	$V_{CB} = 10 \text{ V}, I_{CB} = 50 \mu\text{A}$ $R_L = 100\Omega$	—	200	—	ns		

