

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

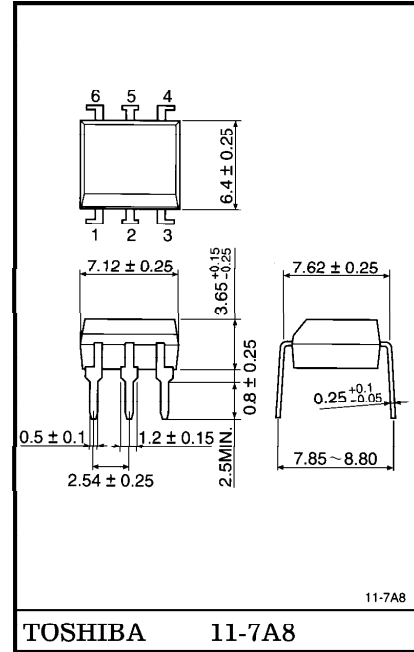
HIGH FREQUENCY POWER SUPPLY FEEDBACK CONTROL

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.

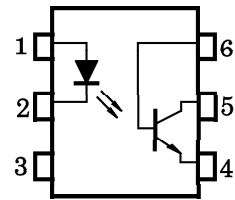
- Small Package Size and Low Cost
- Fast Switching Speeds :  $5\mu\text{s}$  (TYP.)
- High DC Current Transfer Ratio : CTR ( $I_F = 10\text{mA}$ ,  $V_{CE} = 5\text{V}$ )  
 CNY17-2 : 63~125%  
 CNY17-3 : 100~200%  
 CNY17-4 : 160~320%
- High Isolation Resistance :  $10^{11}\Omega$  (TYP.)
- High Isolation Voltage : 4400V (MIN.)

Unit in mm



Weight : 0.4g

## PIN CONFIGURATION



- 1 : ANODE
- 2 : CATHODE
- 3 : N.C.
- 4 : EMITTER
- 5 : COLLECTOR
- 6 : BASE

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● Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I <sub>F</sub>	60	mA
	Forward Current Derating	ΔI <sub>F</sub> /°C	0.8*	mA/°C
	Peak Forward Current (Note)	I <sub>PF</sub>	3	A
	Power Dissipation	P <sub>D</sub>	100	mW
	Power Dissipation Derating	ΔP <sub>D</sub> /°C	1.33*	mW/°C
	Reverse Voltage	V <sub>R</sub>	6	V
PHOTO-TRANSISTOR	Collector-Emitter Voltage	BV <sub>CEO</sub>	70	V
	Collector-Base Voltage	BV <sub>CBO</sub>	70	V
	Emitter-Collector Voltage	BV <sub>ECO</sub>	7	V
	Collector Current	I <sub>C</sub>	100	mA
	Power Dissipation	P <sub>C</sub>	150	mW
	Power Dissipation Derating	ΔP <sub>C</sub> /°C	2.0*	mW/°C
COUPLED	Storage Temperature	T <sub>stg</sub>	-55~150	°C
	Operating Temperature	T <sub>opr</sub>	-55~100	°C
	Lead Soldering Temperature (10s)	T <sub>sol</sub>	260	°C
	Total Package Dissipation	P <sub>T</sub>	200	mW
	Total Package Power Dissipation Derating	ΔP <sub>T</sub> /°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	$\mu\text{A}$	
	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	$R_S$	$V = 500\text{V}$	—	$10^{11}$	—	$\Omega$	
	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	$\mu\text{s}$	
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		

