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

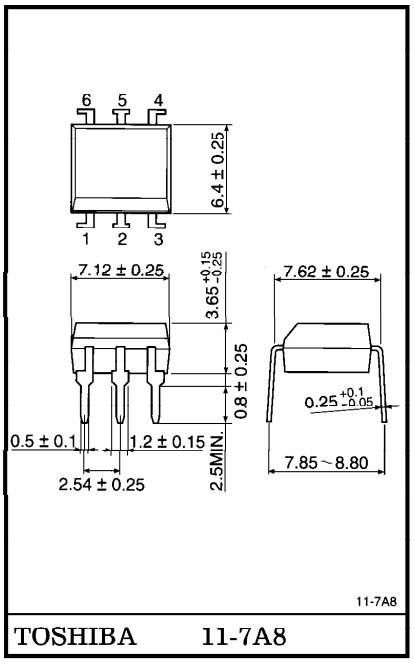
HIGH FREQUENCY POWER SUPPLY FEEDBACK CONTROL

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 : $10^{11}\Omega$ (TYP.)
- High Isolation Voltage : 4400V (MIN.)

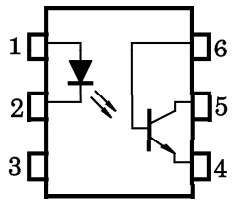
Unit in mm



TOSHIBA 11-7A8

Weight : 0.4g

PIN CONFIGURATION



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

961001EBC2

MAXIMUM RATINGS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	RATING	UNIT
LED	Forward Current	I_F	60	mA
	Forward Current Derating	ΔI_F / °C	0.8 *	mA / °C
	Peak Forward Current (Note)	I_{PF}	3	A
	Power Dissipation	P_D	100	mW
	Power Dissipation Derating	ΔP_D / °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	ΔP_C / °C	2.0 *	mW / °C
COUPLED	Storage Temperature	T_{stg}	−55~150	°C
	Operating Temperature	T_{opr}	−55~100	°C
	Lead Soldering Temperature (10s)	T_{sol}	260	°C
	Total Package Dissipation	P_T	200	mW
	Total Package Power Dissipation Derating	ΔP_T / °C	2.6 *	mW / °C

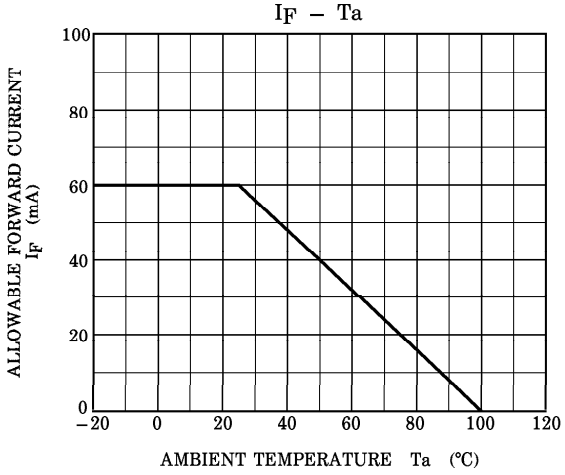
(Note) Pulse Width 1μs, 300pps.

* Above 25°C ambient.

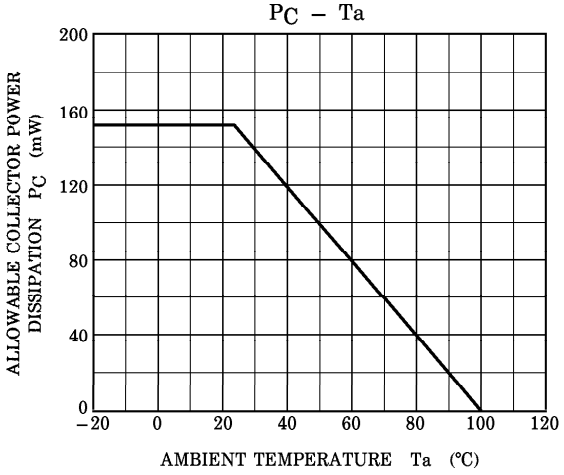
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage		V_F	I_F = 60mA	—	1.35	1.65	V
	Reverse Current		I_R	V_R = 3V	—	—	10	μA
	Capacitance		C_D	V = 0, f = 1MHz	—	30	—	pF
PHOTO−TRANSISTOR	DC Forward Current Gain		h_{FE}	V_{CE} = 5, I_C = 500μA	100	200	—	
	Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C = 1mA, I_F = 0	70	—	—	V
	Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	I_C = 100μA, I_F = 0	70	—	—	V
	Emitter-Collector Breakdown Voltage		$V_{(BR)ECO}$	I_E = 100μA, I_F = 0	7	—	—	V
	Collector Dark Current		I_{CEO}	V_{CE} = 10V, I_F = 0	—	1	50	nA
	Collector Dark Current		I_{CBO}	V_{CB} = 10V, I_F = 0	—	0.1	20	nA
	Collector-Emitter Capacitance		C_{CE}	V = 0, f = 1MHz	—	10	—	pF
COUPLED	Current Transfer Ratio	CNY17-2	CTR	I_F = 10mA, V_{CE} = 5V	63	—	125	%
		CNY17-3			100	—	200	
		CNY17-4			160	—	320	
	Saturation Voltage		$V_{CE(sat)}$	I_F = 10mA, I_C = 2.5mA	—	—	0.4	V
	Capacitance Input to Output		C_S	V = 0, f = 1MHz	—	0.8	—	pF
	Isolation Resistance		R_S	V = 500V	—	10^{11}	—	Ω
	DC Isolation Voltage		BV_S	DC 1 minute	4400	—	—	V
	Rise Fall Time		t_r / t_f	V_{CE} = 10V, I_C = 2mA R_L = 100Ω	—	5	10	μs
	Rise / Fall Time Photo Diode		t_r / t_f	V_{CB} = 10V, I_{CB} = 50μA R_L = 100Ω	—	200	—	ns

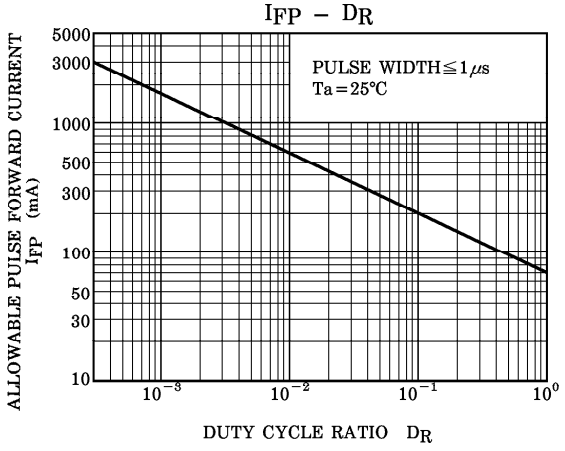
I_F – Ta



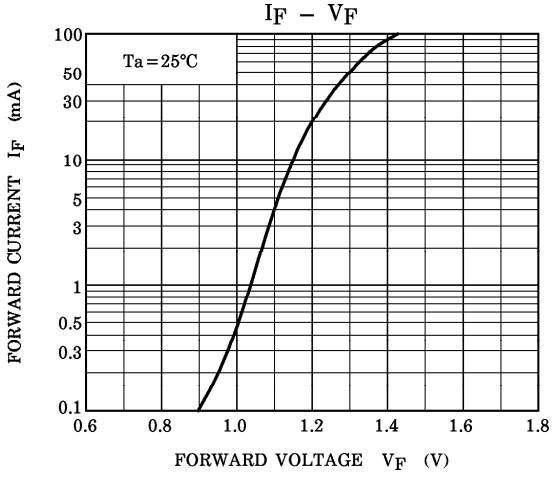
P_C – Ta



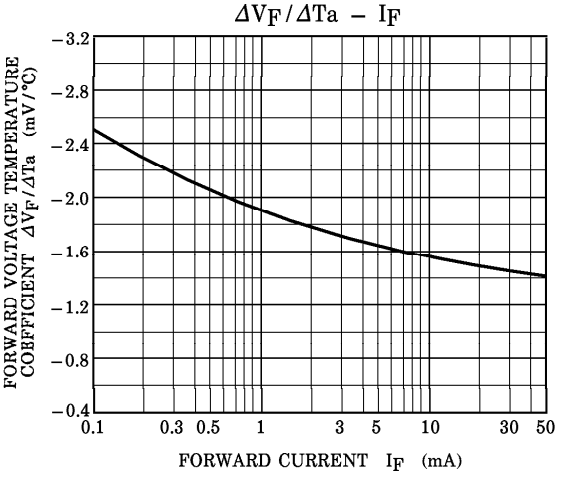
I_{FP} – D_R



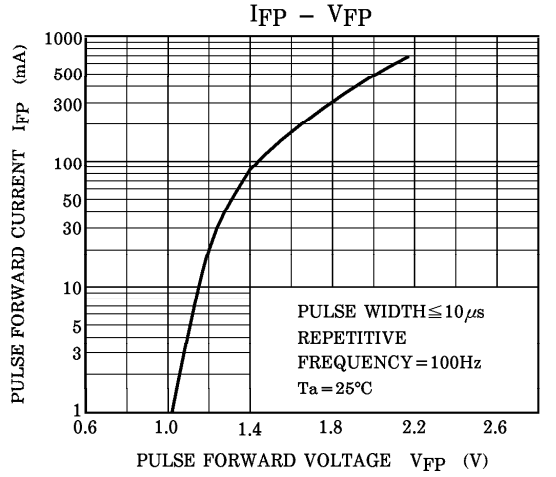
I_F – V_F



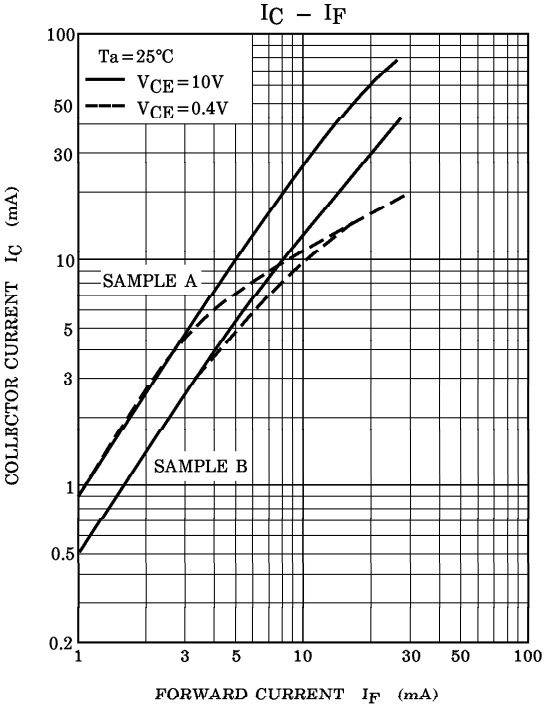
$\Delta V_F / \Delta Ta$ – I_F



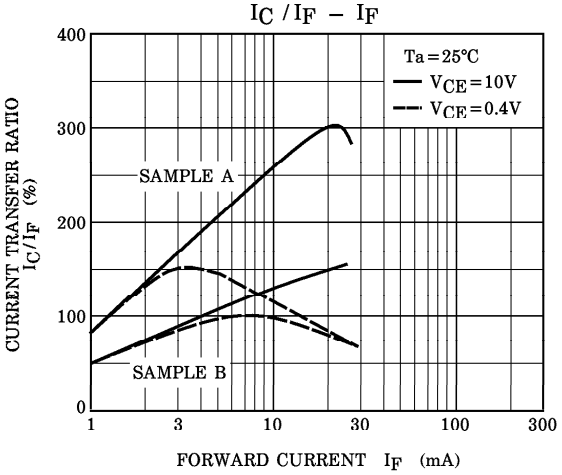
I_{FP} – V_{FP}



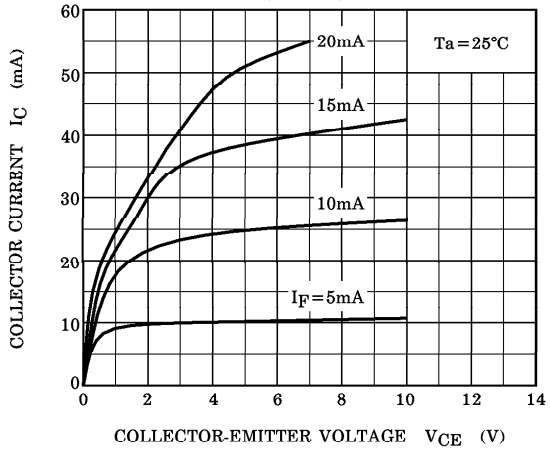
$I_C - I_F$



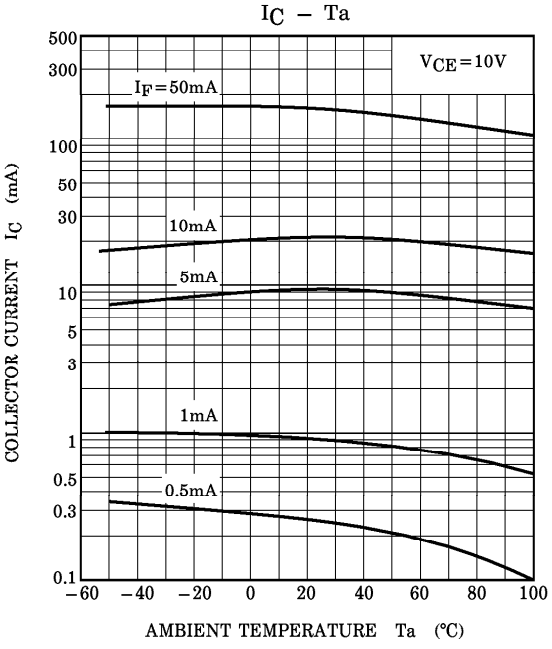
$I_C / I_F - I_F$



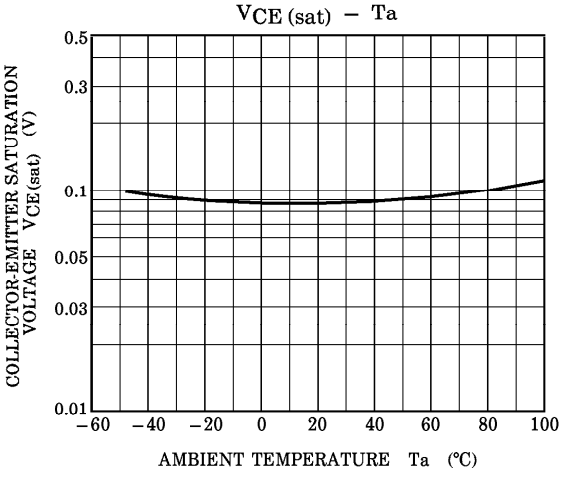
$I_C - V_{CE}$



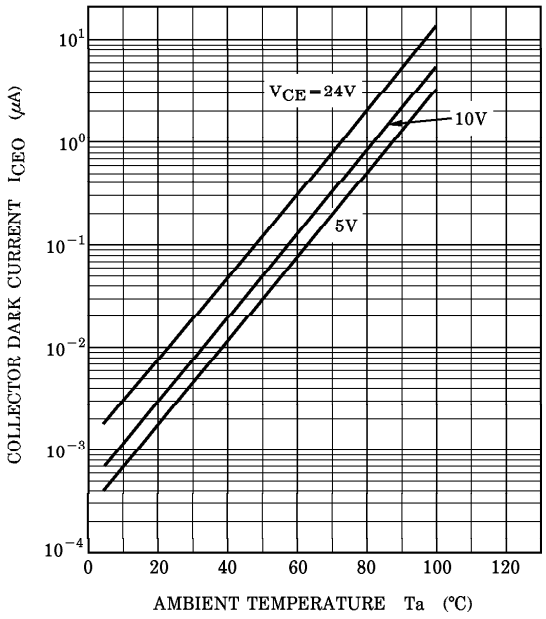
$I_C - Ta$



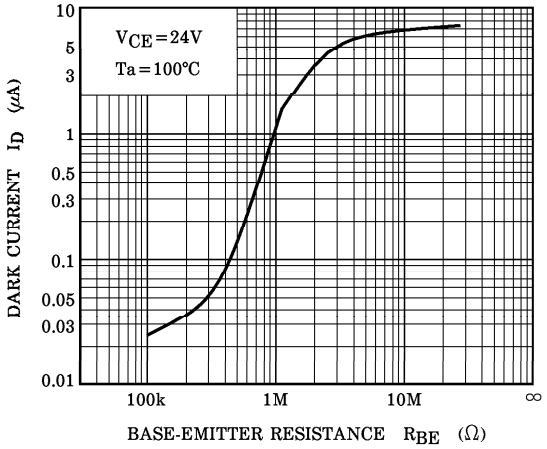
$V_{CE\,(sat)} - Ta$



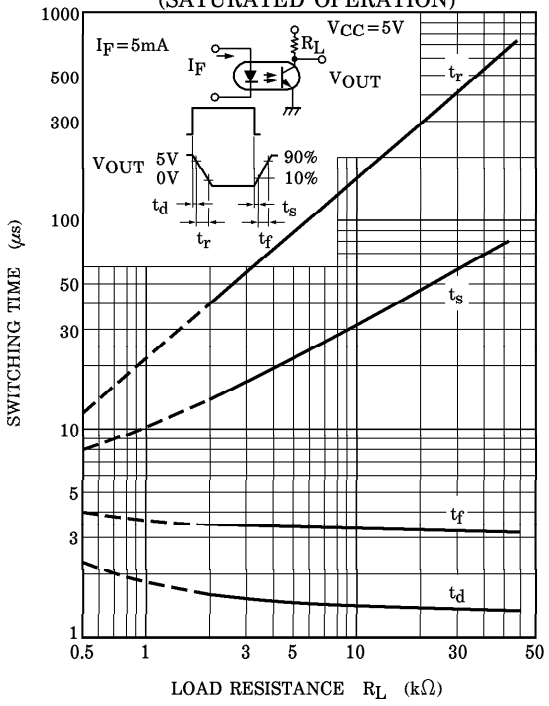
I_{CEO} – Ta



I_D – R_{BE}



SWITCHING CHARACTERISTICS – R_L
(SATURATED OPERATION)



R_{BE} – SWITCHING CHARACTERISTICS
(SATURATED OPERATION)