TENTATIVE TOSHIBA PHOTOCOUPLER GaAℓAs IRED & PHOTO-TRIAC

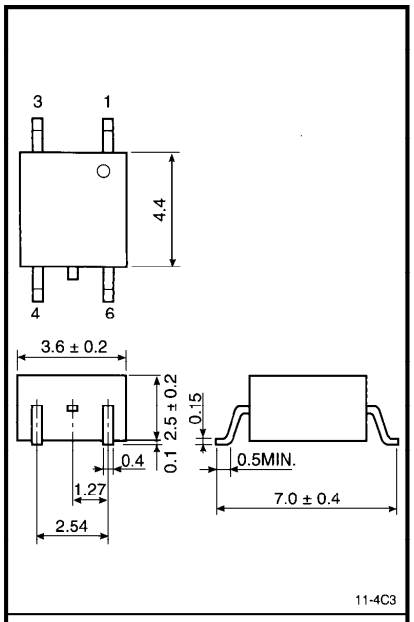
TLP168J

TRIAC DRIVE
PROGRAMMABLE CONTROLLERS
AC-OUTPUT MODULE
SOLID STATE RELAY

The TOSHIBA MINI FLAT COUPLER TLP168J is a small outline coupler, suitable for surface mount assembly.
The TLP168J consists of a photo triac, optically coupled to a GaAℓAs infrared emitting diode.

- Zero-Voltage Crossing Turn-on
- Peak Off-State Voltage : 600V (MIN.)
- Trigger LED Current : 3mA (MAX.)
- On-State Current : 70mA (MAX.)
- Isolation Voltage : 2500Vrms (MIN.)

Unit in mm



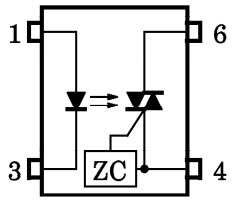
TOSHIBA 11-4C3

Weight : 0.09g

MAXIMUM RATINGS (Ta = 25°C)

	CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current		I_F	20	mA
	Forward Current Derating (Ta ≧ 25°C)		ΔI_F / °C	−0.2	mA / °C
	Peak Forward Current (100μs pulse, 100pps)		I_{FP}	1	A
	Reverse Voltage		V_R	5	V
	Junction Temperature		T_j	125	°C
DETECTOR	Off-State Output Terminal Voltage		V_{DRM}	600	V
	On-State RMS Current	Ta = 25°C	$I_{T\,(RMS)}$	70	mA
		Ta = 70°C		40	
	On-State Current Derating (Ta ≧ 25°C)		ΔI_T / °C	−0.67	mA / °C
	Peak On-State Current (100μs Pulse, 120pps)		I_{TP}	2	A
	Peak Nonrepetitive Surge Current (P_W = 10ms, DC = 10%)		I_{TSM}	1.2	A
	Junction Temperature		T_j	115	°C
Storage Temperature Range			T_{stg}	−55~125	°C
Operating Temperature Range			T_{opr}	−40~100	°C
Lead Soldering Temperature (10s)			T_{sol}	260	°C
Isolation Voltage (AC, 1min., R.H. ≦ 60%) (Note)			BV_S	2500	Vrms

PIN CONFIGURATIONS



1 : ANODE
3 : CATHODE
4 : TERMINAL 1
6 : TERMINAL 2

(Note) Device considered a two terminal device : Pins 1 and 3 shorted together and pins 4 and 6 shorted together.

961001EBC2

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	240	V_{ac}
Forward Current	I_F	4.5	6	7.5	mA
Peak On-State Current	I_{TP}	—	—	1	A
Operating Temperature	T_{opr}	−10	—	85	°C

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F = 10mA	1.2	1.4	1.7	V
	Reverse Current	I_R	V_R = 3V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1MHz	—	30	—	pF
DETECTOR	Peak Off-State Current	I_{DRM}	V_{DRM} = 600V	—	10	1000	nA
	Peak On-State Voltage	V_{TM}	I_{TM} = 70mA	—	1.7	2.8	V
	Holding Current	I_H	—	—	0.6	—	mA
	Critical Rate of Rise of Off-State Voltage	dv / dt	V_{in} = 240Vrms, Ta = 85°C	200	500	—	V / μs
	Critical Rate of Rise of Commutating Voltage	dv / dt (c)	V_{in} = 60Vrms, I_T = 15mArms	—	0.2	—	V / μs

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	V_T = 6V	—	—	3	mA
Inhibit Voltage	V_{IH}	I_F = Rated I_{FT}	—	—	50	V
Leakage in Inhibited State	I_{IH}	I_F = Rated I_{FT}, V_T = Rated V_{DRM}	—	200	600	μA
Capacitance (Input to Output)	C_S	V_S = 0, f = 1MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S = 500V, R.H. ≦ 60%	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc

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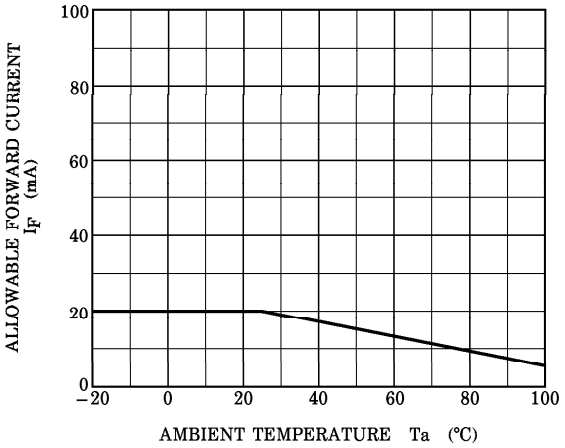
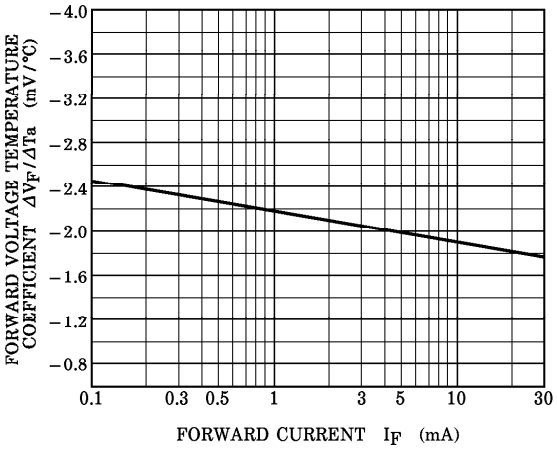
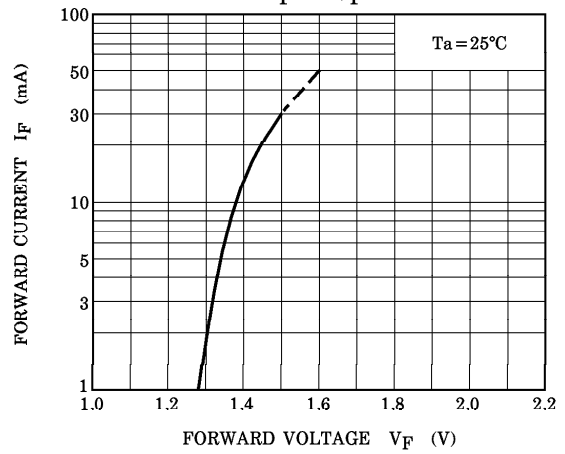
I_F – Ta



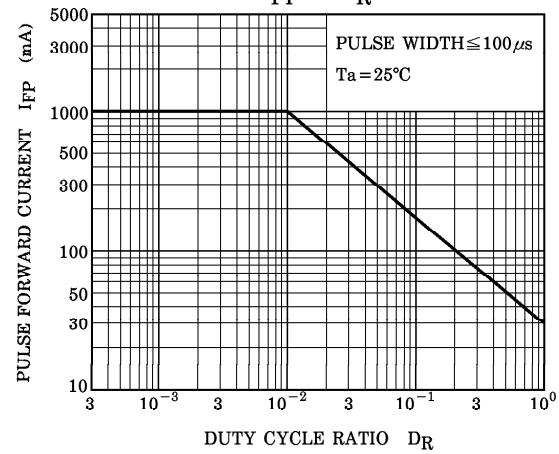
$\Delta V_F / \Delta Ta$ – I_F



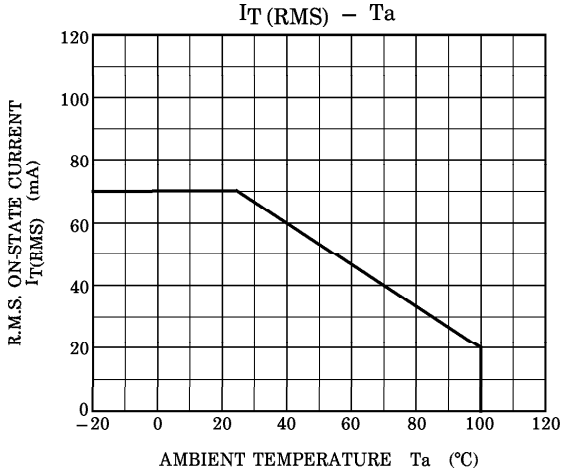
I_F – V_F



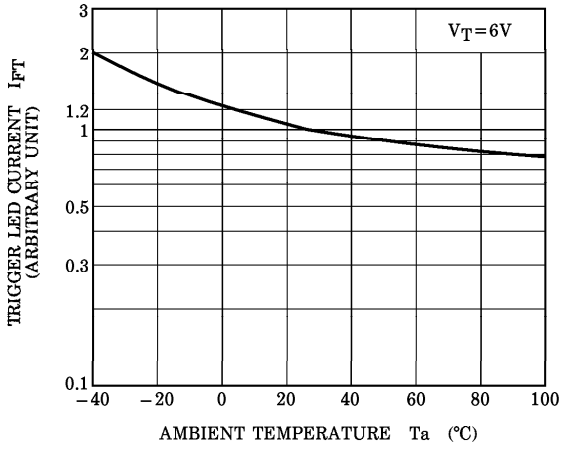
I_{FP} – D_R



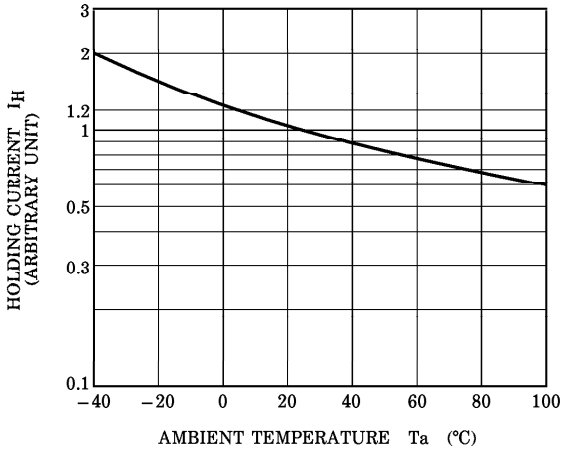
$I_{T\,(RMS)}$ – Ta



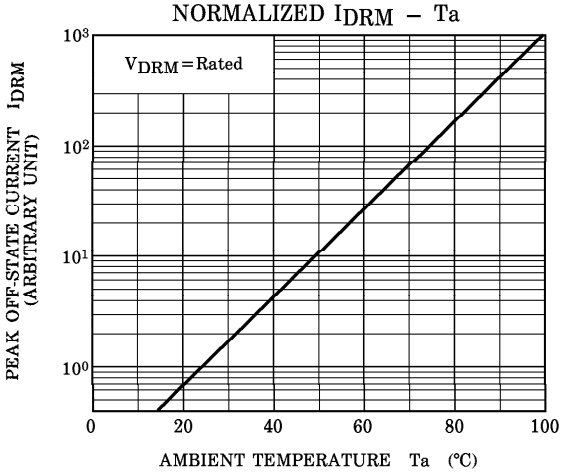
NORMALIZED I_{FT} – Ta



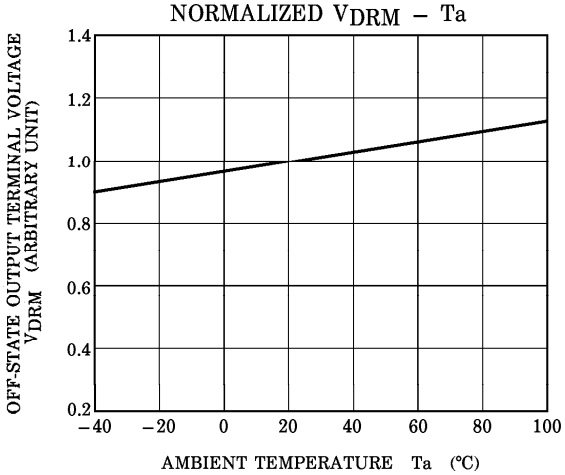
NORMALIZED I_H – Ta



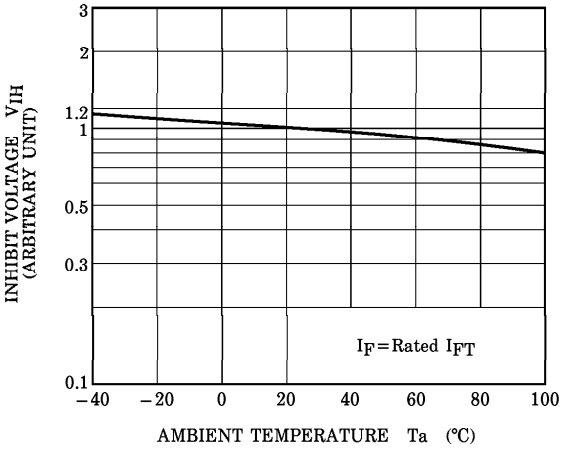
NORMALIZED I_{DRM} – Ta



NORMALIZED V_{DRM} – Ta



NORMALIZED V_{IH} – Ta



NORMALIZED I_{IH} – Ta