TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP3507

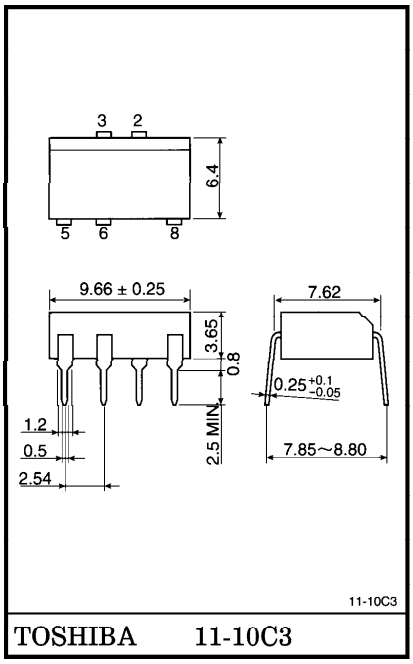
TRIAC DRIVER

PROGRAMMABLE CONTROLLERS

AC-OUTPUT MODULE

SOLID STATE RELAY

Unit in mm



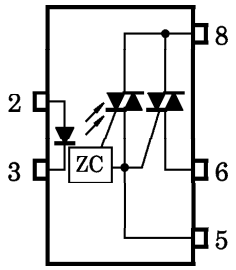
TOSHIBA 11-10C3

Weight : 0.52g

The TOSHIBA TLP3507 consists of a zero voltage crossing turn-on photo-triac optically coupled to a gallium arsenide infrared emitting diode in a 8 lead plastic DIP package.

- Peak Off-State Voltage : 600V (MIN.)
- Trigger LED Current : 10mA (MAX.)
- On-State Current : $0.5A_{rms}$ (MAX.)
- Isolation Voltage : $2500V_{rms}$ (MIN.)
- Zero Crossing Fanction
- UL Recognized : UL1577, File No. E67349

PIN CONFIGURATIONS (TOP VIEW)



2 : ANODE
3 : CATHODE
5 : TRIAC GATE
6 : TRIAC T1
8 : TRIAC T2

MAXIMUM RATINGS (Ta = 25°C)

	CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current		I_F	50	mA
	Forward Current Derating (Ta ≥ 53°C)		ΔI_F / °C	−0.7	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 = 40°C	$I_{T\,(RMS)}$	0.5	A
		Ta = 60°C		0.35	
	On-State Current Derating (Ta ≧ 40°C)		ΔI_T / °C	−7.2	mA / °C
	Peak Current from Snubber Circuit (100μs pulse, 120pps)		I_{SP}	2	A
	Peak Nonrepetitive Surge Current (50Hz, Peak)		I_{TSM}	5	A
	Junction Temperature		T_j	110	°C
Storage Temperature Range			T_{stg}	−40~125	°C
Operating Temperature Range			T_{opr}	−20~80	°C
Lead Soldering Temperature (10s)			T_{sol}	260	°C
Isolation Voltage (AC, 1 min., R.H. ≦ 60%) (Note)			BV_S	2500	V_{rms}

(Note) Device considereded a two-terminal device : Pins 2 and 3 shorted together, and pins 5, 6 and 8 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	240	V_{ac}
Forward Current	I_F	15	20	25	mA
Peak Current from Snubber Circuit	I_{SP}	—	—	1	A
Operating Temperature	T_{opr}	−20	—	80	°C

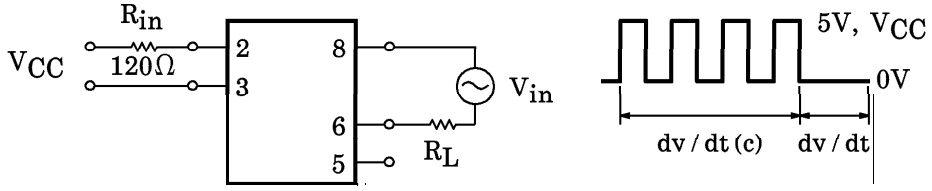
INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F = 10mA	1.0	1.15	1.3	V
	Reverse Current	I_R	V_R = 5V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1MHz	—	30	—	pF
DETECTOR	Peak Off-State Current	I_{DRM}	V_{DRM} = 600V, Ta = 110°C	—	—	100	μA
	Peak On-State Voltage	V_{TM}	I_{TM} = 0.75A	—	—	3.0	V
	Holding Current	I_H	R_L = 100Ω	—	—	25	mA
	Critical Rate of Rise of Off-State Voltage	dv / dt	V_{in} = 240V_{rms} (Fig.1)	—	500	—	V / μs
	Critical Rate of Rise of Commutating Voltage	dv / dt (c)	V_{in} = 240V_{rms}, I_T = 0.5A_{rms} (Fig.1)	—	5	—	V / μs

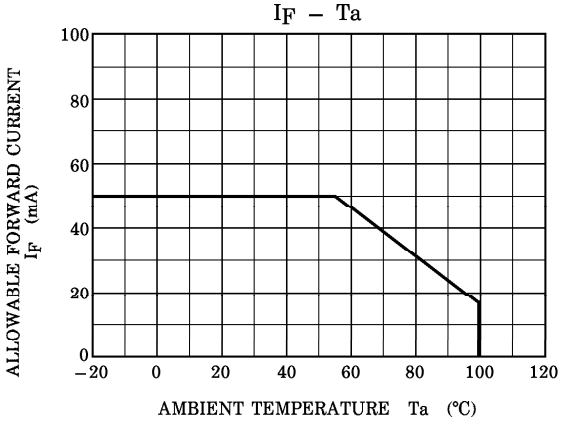
COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	V_T = 6V	—	—	10	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	—	μA
Capacitance (Input to Output)	C_S	V_S = 0, f = 1MHz	—	1.5	—	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	—	V_{dc}

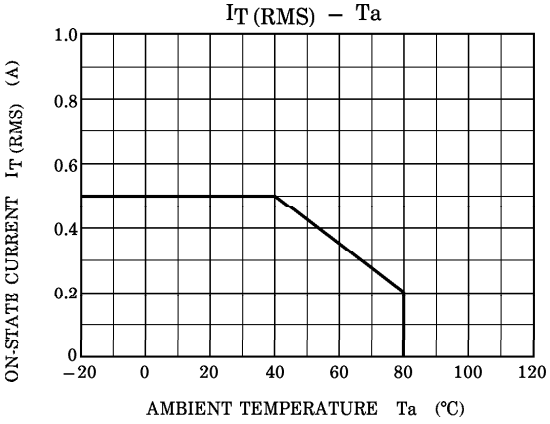
Fig.1 : dv / dt TEST CIRCUIT



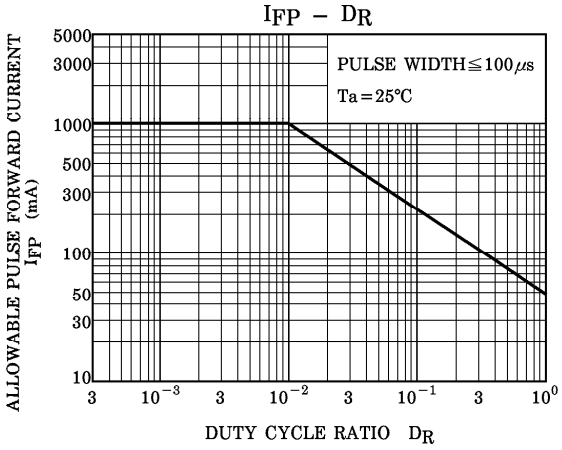
I_F – Ta



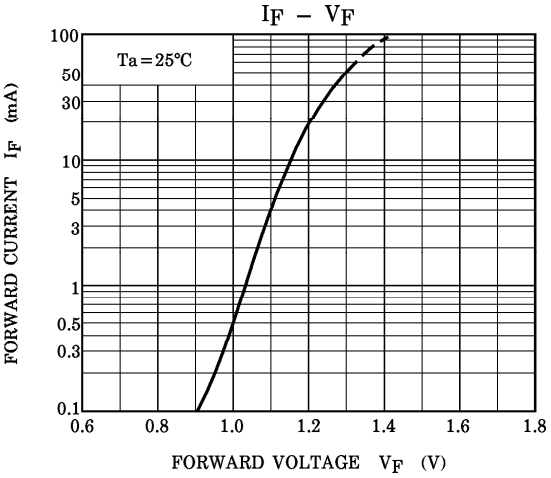
$I_{T\,(RMS)}$ – Ta



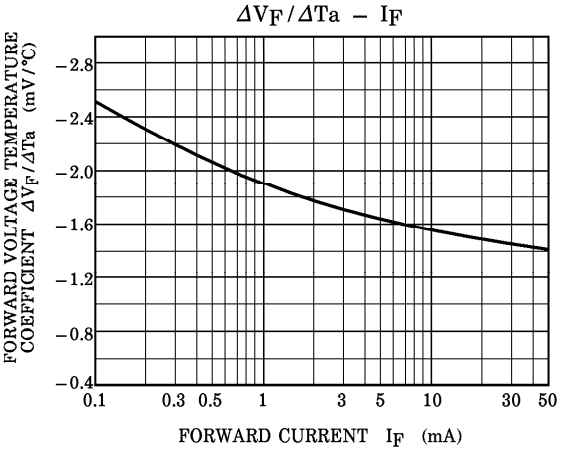
I_{FP} – D_R



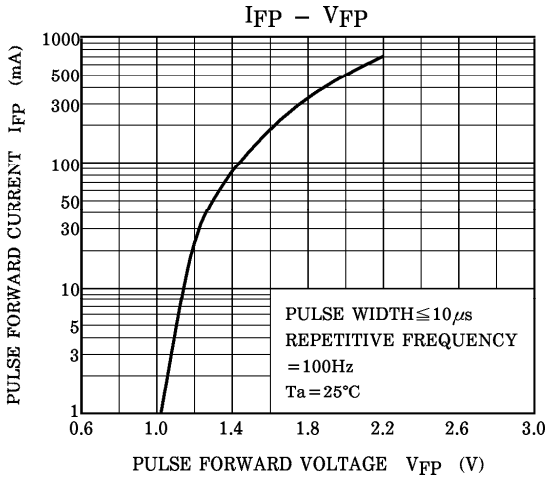
I_F – V_F



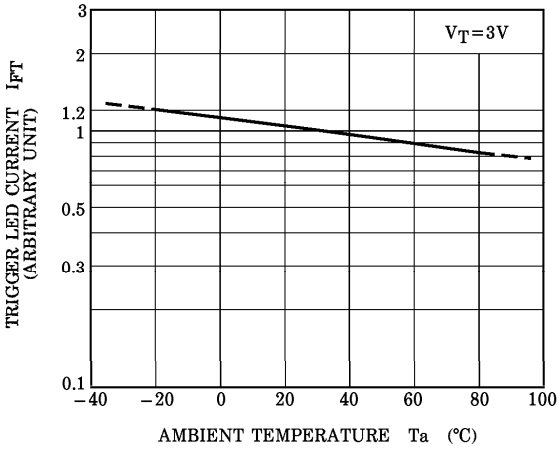
$\Delta V_F / \Delta Ta$ – I_F



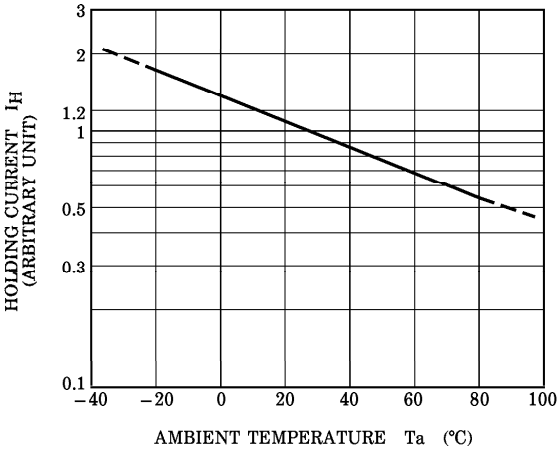
I_{FP} – V_{FP}



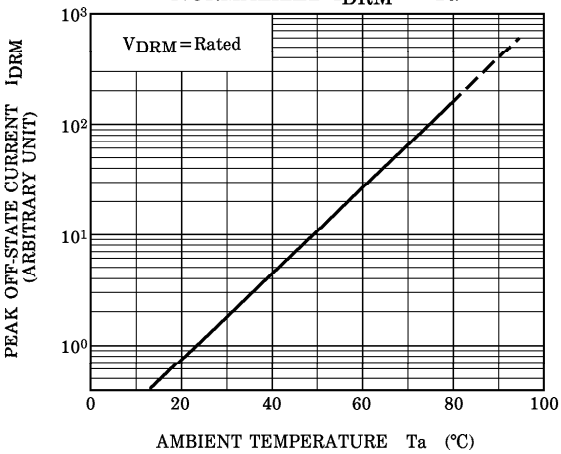
NORMALIZED I_{FT} – Ta



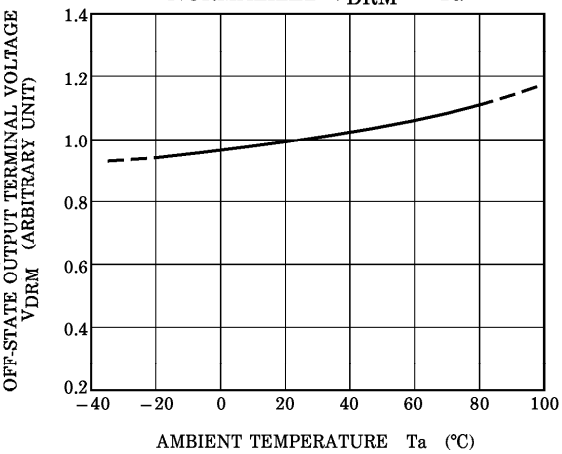
NORMALIZED I_H – Ta



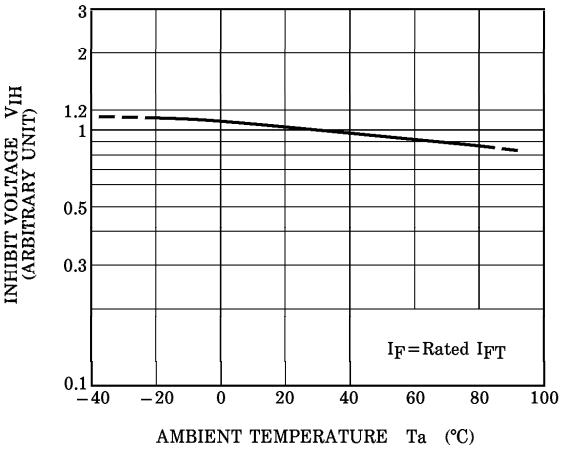
NORMALIZED I_{DRM} – Ta



NORMALIZED V_{DRM} – Ta



NORMALIZED V_{IH} – Ta



NORMALIZED I_{IH} – Ta