TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP3502A

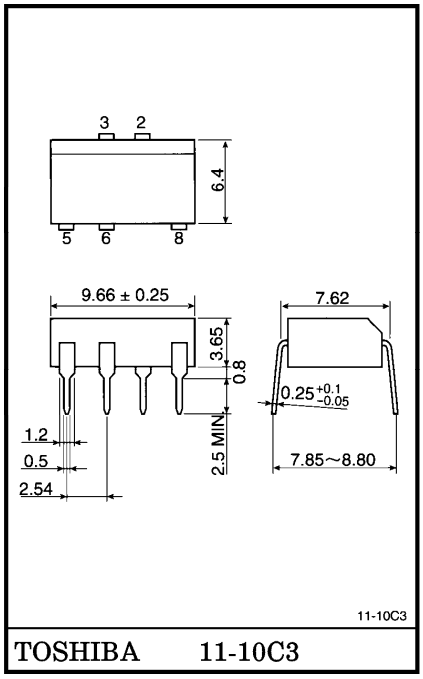
TRICA DRIVER

PROGRAMMABLE CONTROLLERS

AC-OUTPUT MODULE

SOLID STATE RELAY

Unit in mm



TOSHIBA 11-10C3

Weight : 0.52g

The TOSHIBA TLP3502A consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a 8 lead plastic DIP package.

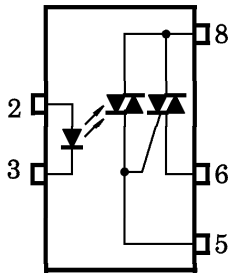
- Peak Off-State Voltage : 400V (MIN.)
- Trigger LED Current : 10mA (MAX.)
- On-State Current : $0.6A_{rms}$ (MAX.)
- Isolation Voltage : $2500V_{rms}$ (MIN.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current

CLASSIFICATION*	TRIGGER LED CURRENT (mA) V_T=6V, Ta=25°C		MARKING OF CLASSIFICATION
	MIN.	MAX.	
(IFT5)	—	5.0	T5
(IFT7)	—	7.0	T5, T7
Standard	—	10	T5, T7, Blank

*Ex. (IFT5) ; TLP3502A (IFT5)

(Note) Application type name for certification test, please use standard product type name, i.e.
TLP3502A (IFT5) : TLP3502A

PIN CONFIGURATION (TOP VIEW)



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

980508EBC2

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 (100 μs 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}	400	V
	On-State RMS Current	Ta = 40°C	$I_{T\,(RMS)}$	0.6	A
		Ta = 60°C		0.45	
	On-State Current Derating (Ta ≧ 40°C)		ΔI_T / °C	−7.5	mA / °C
	Peak Current from Snubber Circuit (100 μs pulse, 120pps)		I_{SP}	2	A
	Peak Nonrepetitive Surge Current (50Hz, Peak)		I_{TSM}	5	A
	Junction Temperature		T_j	120	°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 considered a two terminal : LED side pins shorted together and DETECTOR side pins shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	120	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

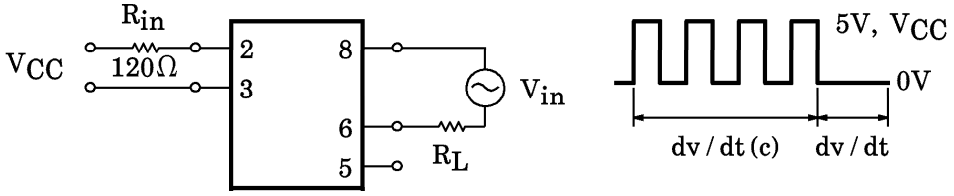
INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	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} = 400V, Ta = 110°C	—	—	100	μA
	Peak On-State Voltage	V_{TM}	I_{TM} = 0.75A	—	—	3.0	V
	Holding Current	I_H	—	—	—	25	mA
	Critical Rate of Rise of Off-State Voltage	dv / dt	V_{in} = 120V_{rms} (Fig.1)	200	500	—	V / μs
	Critical Rate of Rise of Commutating Voltage	dv / dt (C)	V_{in} = 120V_{rms}, I_T = 0.5A_{rms} (Fig.1)	—	5	—	V / μs

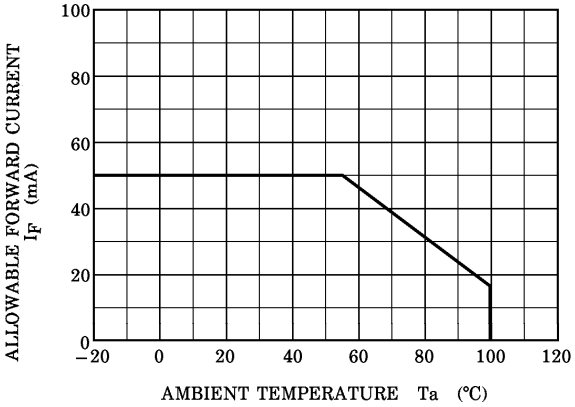
COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	V_T = 6V	—	—	10	mA
Capacitance (Input to Output)	C_S	V_S = 0, f = 1MHz	—	1.5	—	pF
Isolation Resistance	R_S	V_S = 500V	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	V_{dc}

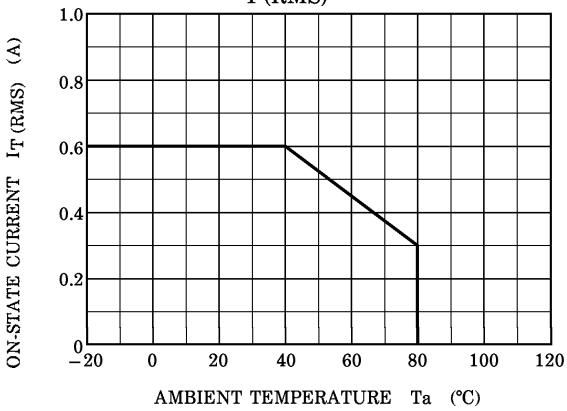
Fig.1 : dv / dt TEST CIRCUIT



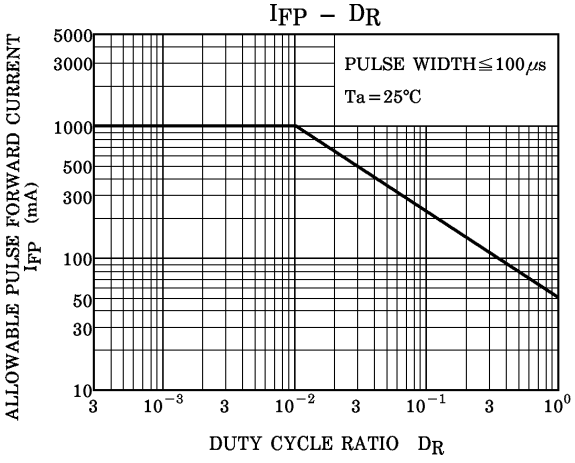
I_F – Ta



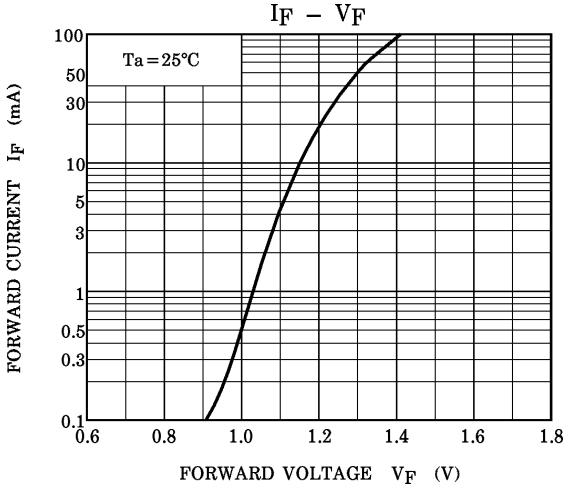
$I_{T\,(RMS)}$ – Ta



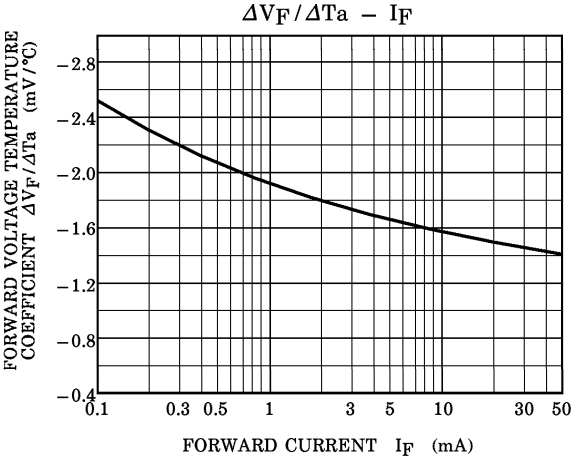
I_{FP} – D_R



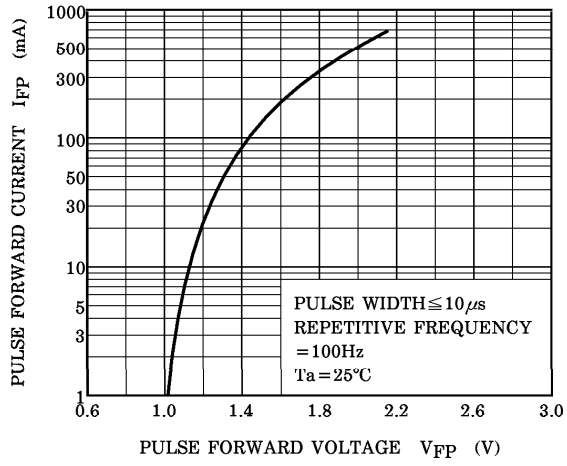
I_F – V_F



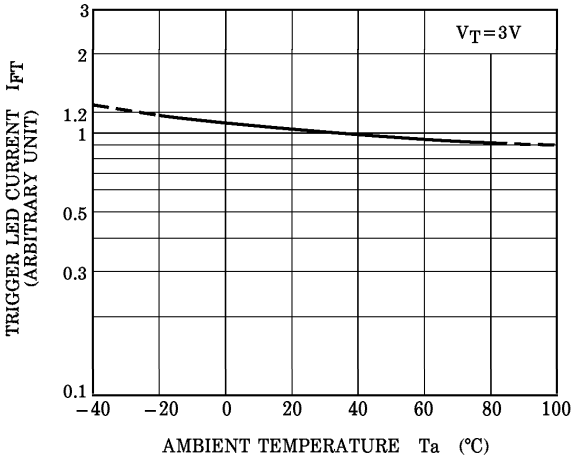
$\Delta V_F / \Delta Ta$ – I_F



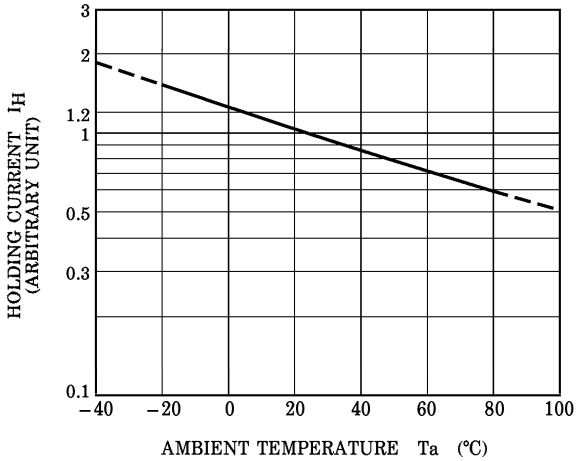
I_{FP} – V_{FP}



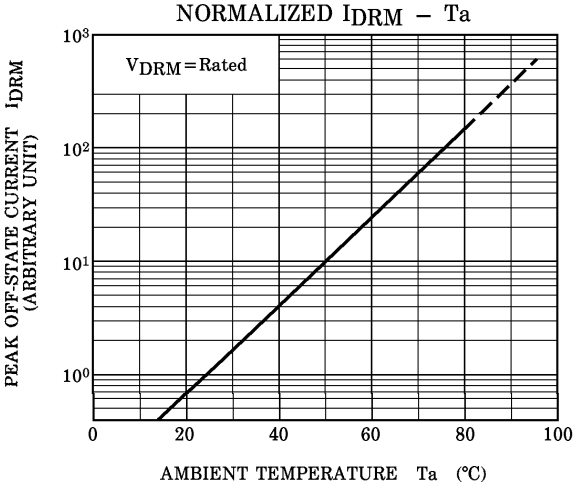
NORMALIZED I_{FT} – Ta



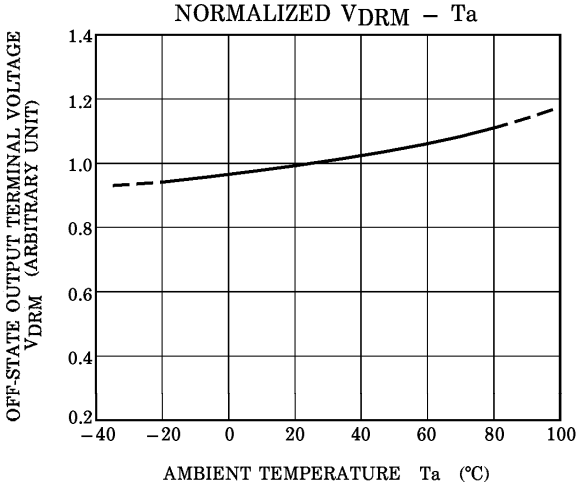
NORMALIZED I_H – Ta



NORMALIZED I_{DRM} – Ta



NORMALIZED V_{DRM} – Ta



NORMALIZED LED CURRENT – LED CURRENT PULSE WIDTH