

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

# TLP3502A

TRICA DRIVER

PROGRAMMABLE CONTROLLERS

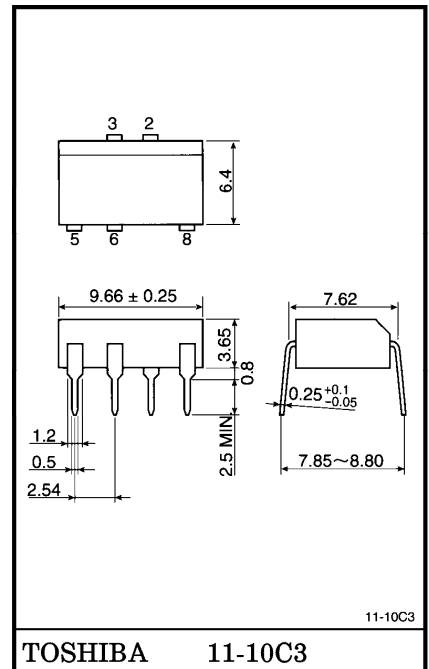
AC-OUTPUT MODULE

SOLID STATE RELAY

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<sub>rms</sub> (MAX.)
- Isolation Voltage : 2500V<sub>rms</sub> (MIN.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current

Unit in mm

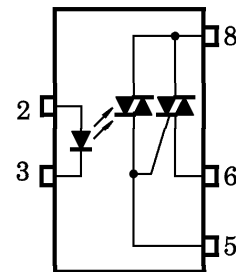


TOSHIBA 11-10C3

Weight : 0.52g

CLASSIFICATION*	TRIGGER LED CURRENT (mA)		MARKING OF CLASSIFICATION
	V <sub>T</sub> = 6V, T <sub>a</sub> = 25°C		
	MIN.	MAX.	
(IFT5)	—	5.0	T5
(IFT7)	—	7.0	T5, T7
Standard	—	10	T5, T7, Blank

PIN CONFIGURATION (TOP VIEW)



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

\*Ex. (IFT5) ; TLP3502A (IFT5)

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

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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>	50	mA
	Forward Current Derating (Ta ≥ 53°C)	ΔI <sub>F</sub> / °C	-0.7	mA / °C
	Peak Forward Current (100 μs pulse, 100pps)	I <sub>FP</sub>	1	A
	Reverse Voltage	V <sub>R</sub>	5	V
	Junction Temperature	T <sub>j</sub>	125	°C
DETECTOR	Off-State Output Terminal Voltage	V <sub>DRM</sub>	400	V
	On-State RMS Current	Ta = 40°C	0.6	A
		Ta = 60°C	0.45	
	On-State Current Derating (Ta ≥ 40°C)	ΔI <sub>T</sub> / °C	-7.5	mA / °C
	Peak Current from Snubber Circuit (100 μs pulse, 120pps)	I <sub>SP</sub>	2	A
	Peak Nonrepetitive Surge Current (50Hz, Peak)	I <sub>TSM</sub>	5	A
	Junction Temperature	T <sub>j</sub>	120	°C
Storage Temperature Range	T <sub>stg</sub>	-40~125	°C	
Operating Temperature Range	T <sub>opr</sub>	-20~80	°C	
Lead Soldering Temperature (10s)	T <sub>sol</sub>	260	°C	
Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note)	BV <sub>S</sub>	2500	V <sub>rms</sub>	

(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 <sub>AC</sub>	—	—	120	V <sub>ac</sub>
Forward Current	I <sub>F</sub>	15	20	25	mA
Peak Current from Snubber Circuit	I <sub>SP</sub>	—	—	1	A
Operating Temperature	T <sub>opr</sub>	-20	—	80	°C

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	$V_F$	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	$I_R$	$V_R = 5\text{V}$	—	—	10	$\mu\text{A}$
	Capacitance	$C_T$	$V = 0, f = 1\text{MHz}$	—	30	—	pF
DETECTOR	Peak Off-State Current	$I_{DRM}$	$V_{DRM} = 400\text{V}, T_a = 110^\circ\text{C}$	—	—	100	$\mu\text{A}$
	Peak On-State Voltage	$V_{TM}$	$I_{TM} = 0.75\text{A}$	—	—	3.0	V
	Holding Current	$I_H$	—	—	—	25	mA
	Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{in} = 120\text{V}_{rms}$ (Fig.1)	200	500	—	$\text{V}/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt (C)$	$V_{in} = 120\text{V}_{rms}, I_T = 0.5\text{A}_{rms}$ (Fig.1)	—	5	—	$\text{V}/\mu\text{s}$

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	$I_{FT}$	$V_T = 6\text{V}$	—	—	10	mA
Capacitance (Input to Output)	$C_S$	$V_S = 0, f = 1\text{MHz}$	—	1.5	—	pF
Isolation Resistance	$R_S$	$V_S = 500\text{V}$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
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

