

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

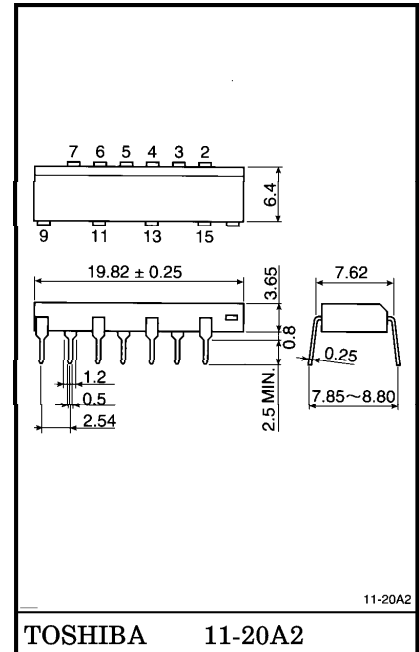
# TLP3520A

TRIAC DRIVER  
 PROGRAMMABLE CONTROLLERS  
 AC-OUTPUT MODULE  
 SOLID STATE RELAY

Unit in mm

The TOSHIBA TLP3520A consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a 16 lead plastic DIP package.

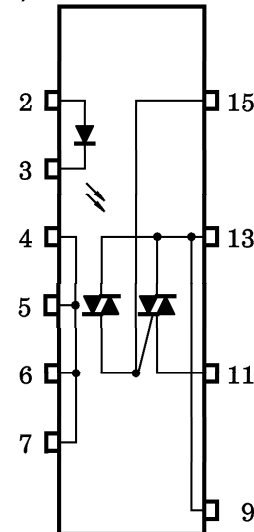
- Peak Off-State Voltage : 400V (MIN.)
- Trigger LED Current : 10mA (MAX.)
- On-State Current : 1.2A<sub>rms</sub> (MAX.)
- Isolation Voltage : 2500V<sub>rms</sub> (MIN.)
- Trigger LED Current



Weight : 1.13g

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)



\*Ex. (IFT5) ; TLP3520A (IFT5)  
 (Note) Application type name for certification test, please use standard product type name, i.e. TLP3520A (IFT5) : TLP3520A

- 2 : ANODE
- 3 : CATHODE
- 4, 5, 6, 7 : N.C.
- 9, 13 : TRIAC T2
- 11 : TRIAC T1
- 15 : TRIAC GATE

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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	$I_F$	50	mA
	Forward Current Derating (Ta ≥ 53°C)	$\Delta I_F / ^\circ\text{C}$	-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	$V_{DRM}$	400	V
	On-State RMS Current	Ta = 40°C	1.2	A
		Ta = 60°C	0.9	
	On-State Current Derating (Ta ≥ 40°C)	$\Delta I_T / ^\circ\text{C}$	-15	mA / °C
	Peak Current from Snubber Circuit (100μs pulse, 120pps)	$I_{SP}$	2	A
	Peak Nonrepetitive Surge Current (50Hz, Peak)	$I_{TSM}$	10	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	$V_F$	$I_F = 10\text{mA}$	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	$V_{TM}$	$I_{TM} = 1.5\text{A}$	—	—	3.0	V
	Holding Current	$I_H$	$R_L = 100\Omega$	—	—	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	$dv/dt(c)$	$V_{in} = 120\text{V}_{rms}, I_T = 1.0\text{A}_{rms}$ (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

