

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP3521

TRIAC DRIVER

PROGRAMMABLE CONTROLLERS

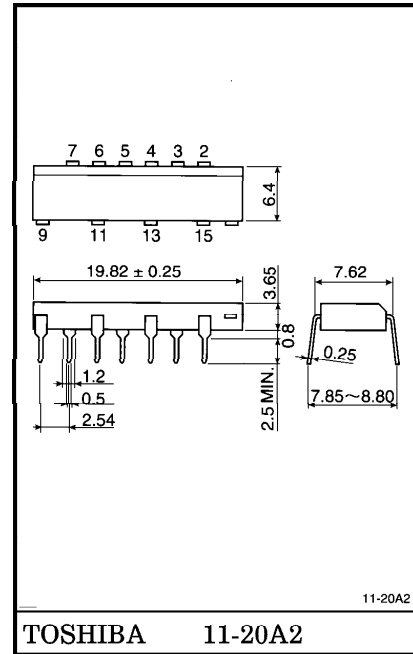
AC-OUTPUT MODULE

SOLID STATE RELAY

The TOSHIBA TLP3521 consists of a zero voltage crossing turn-on 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 : 1.0A_{rms} (MAX.)
- Isolation Voltage : 2500V_{rms} (MIN.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current

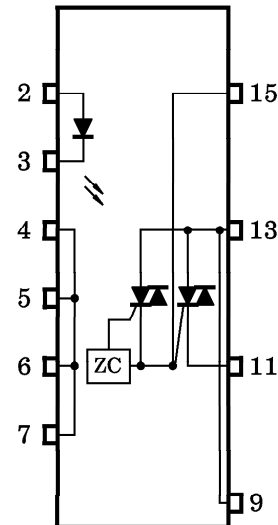
Unit in mm



Weight : 1.13g

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

PIN CONFIGURATION (TOP VIEW)



*Ex. (IFT5) ; TLP3521 (IFT5)

(Note) Application type name for certification test, please use standard product type name, i.e. TLP3521 (IFT5) : TLP3521

- 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)	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}	400	V	
	On-State RMS Current	Ta = 40°C	I _T (RMS)	1.0	A
		Ta = 60°C		0.7	
	On-State Current Derating (Ta ≥ 40°C)	ΔI _T / °C	-14.3	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	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 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	μA
	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	μA
	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
Inhibit Voltage	V_{IH}	$I_F = \text{Rated } I_{FT}$	—	—	50	V
Leakage in Inhibited State	I_{IH}	$I_F = \text{Rated } I_{FT}$ $V_T = \text{Rated } V_{DRM}$	—	200	—	μA
Capacitance (Input to Output)	C_S	$V_S = 0, f = 1\text{MHz}$	—	1.5	—	pF
Isolation Resistance	R_S	$V_S = 500\text{V}$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second, in oil	—	5000	—	V_{rms}
		DC, 1 minute, in oil	—	5000	—	V_{dc}

Fig.1 : dv/dt TEST CIRCUIT

