

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

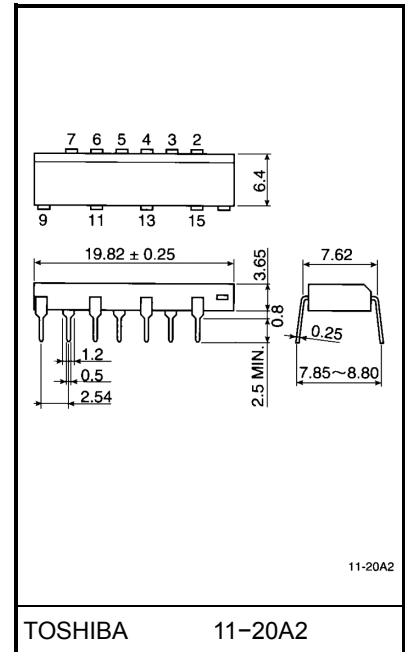
Classi- fication *	Trigger LED Current (mA)		Marking Of Classification
	V _T = 6 V, T _a = 25°C		
	Min.	Max.	
(IFT5)	—	5.0	T5
(IFT7)	—	7.0	T5, T7
Standard	—	10	T5, T7, blank

*Ex. (IFT5); TLP3521 (IFT5)

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

TLP3521 (IFT5): TLP3521

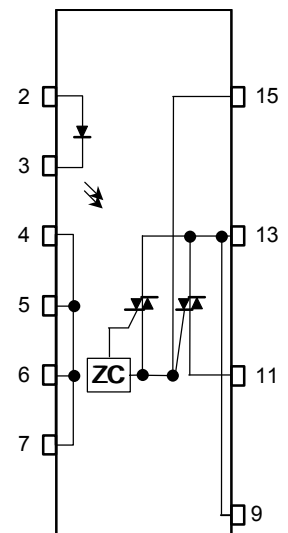
Unit in mm



Weight: 1.13g

Pin Configuration (top view)

- 2 : Anode
- 3 : Cathode
- 4,5,6,7 : N.C.
- 9,13 : Triac T2
- 11 : Triac T1
- 15 : Triac gate



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

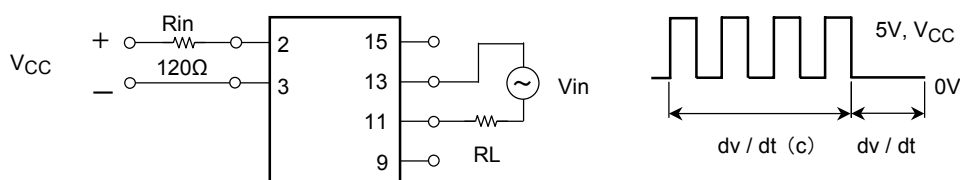
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{AC}	—	—	120	V_{ac}
Forward current	I_F	15	20	25	mA
Peak current from snubber circuit	I_{SP}	—	—	1	A
Operating temperature	T_{opr}	-20	—	80	°C

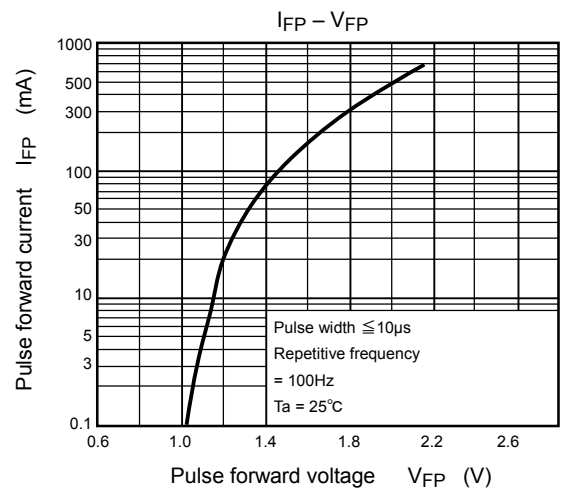
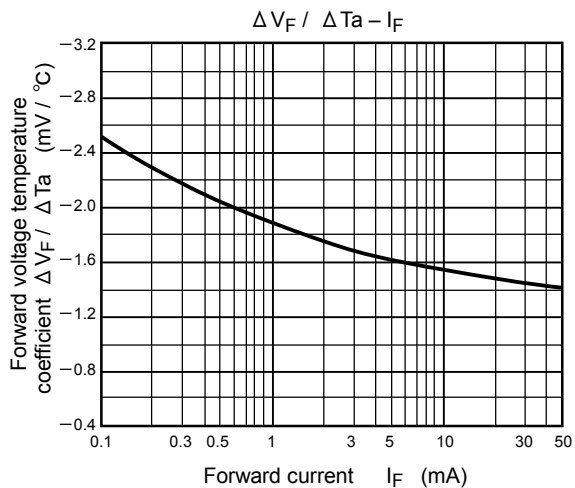
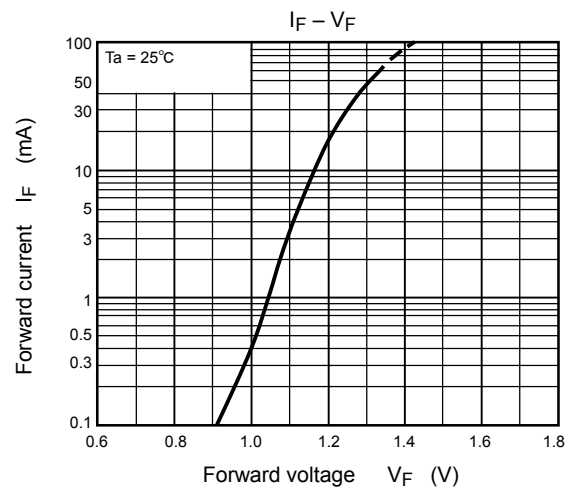
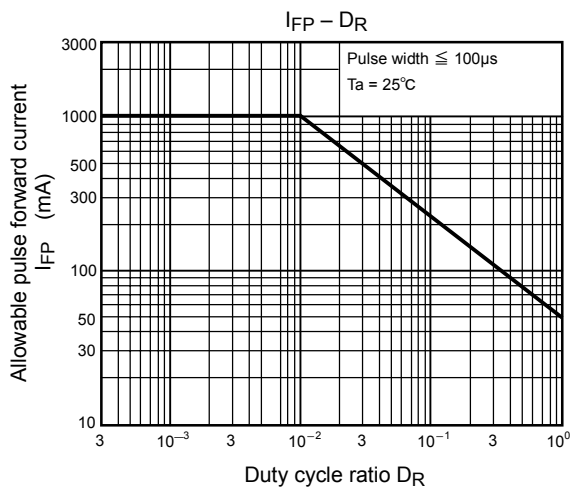
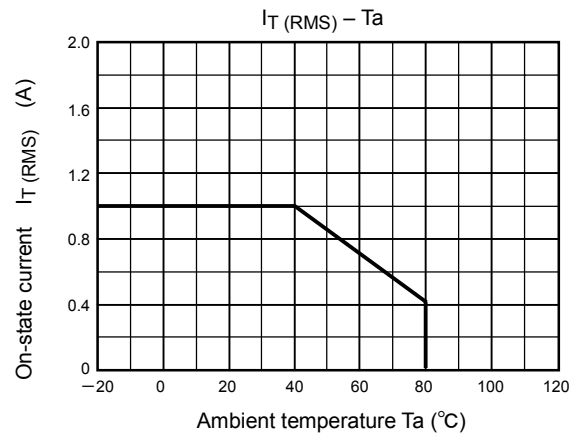
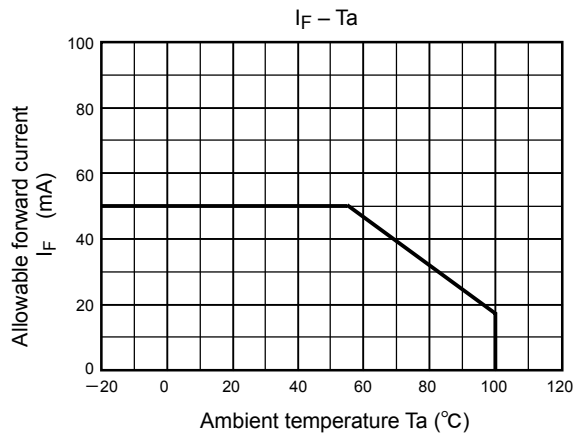
Individual Electrical Characteristics (Ta = 25°C)

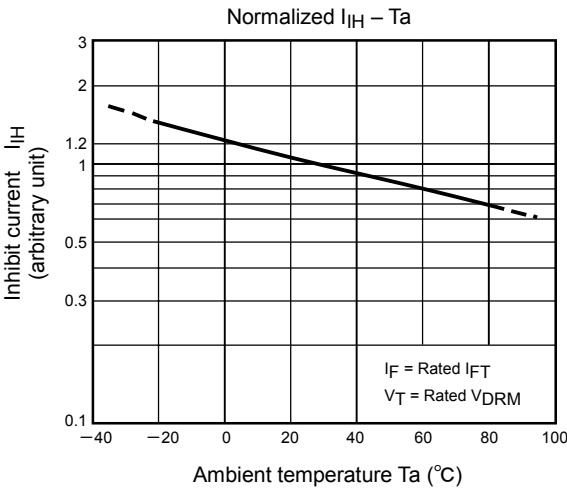
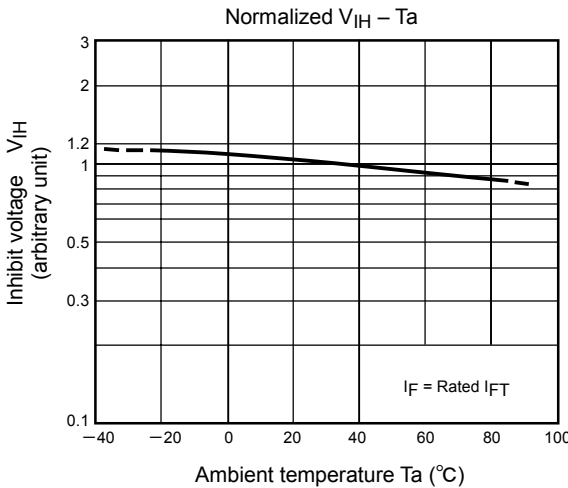
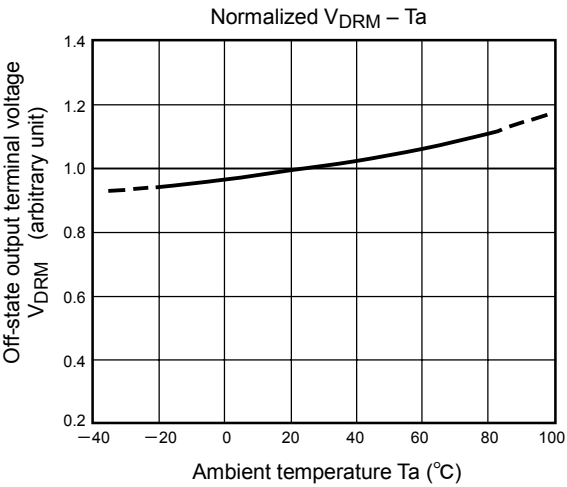
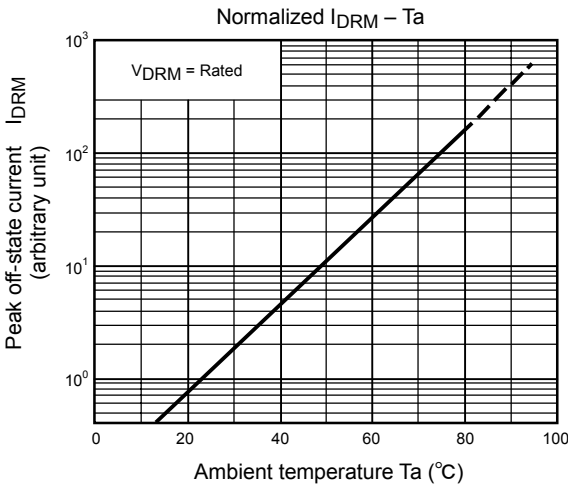
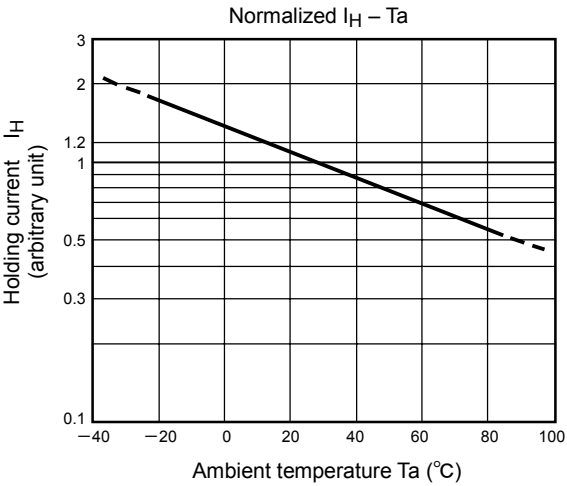
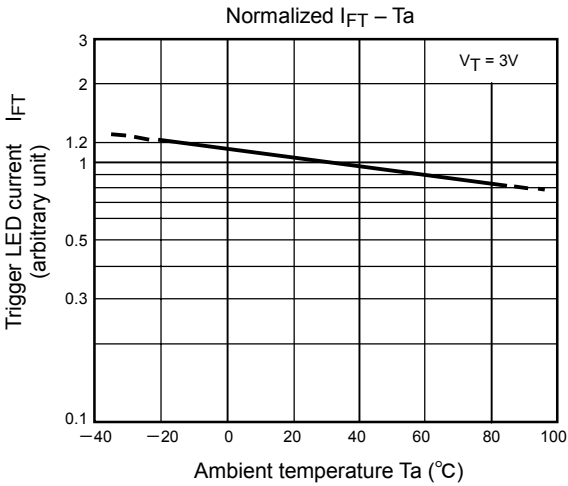
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	30	—	pF
Detector	Peak off-state current	I_{DRM}	$V_{\text{DRM}} = 400\text{V}, T_a = 110^\circ\text{C}$	—	—	100	μA
	Peak on-state voltage	V_{TM}	$I_{\text{TM}} = 1.5\text{A}$	—	—	3.0	V
	Holding current	I_H	$R_L = 100\Omega$	—	—	25	mA
	Critical rate of rise of off-state voltage	dv/dt	$V_{\text{in}} = 120\text{V}_{\text{rms}}$ (Fig.1)	200	500	—	V / μs
	Critical rate of rise of commutating voltage	$dv/dt(c)$	$V_{\text{in}} = 120\text{V}_{\text{rms}}, I_T = 1.0\text{A}_{\text{rms}}$ (Fig.1)	—	5	—	V / μs

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	$V_T = 6\text{V}$	—	—	10	mA
Inhibit voltage	V_{IH}	$I_F = \text{rated } I_{\text{FT}}$	—	—	50	V
Leakage in inhibited state	I_{IH}	$I_F = \text{rated } I_{\text{FT}}$ $V_T = \text{rated } V_{\text{DRM}}$	—	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	—	
		DC, 1 minute, in oil	—	5000	—	V_{dc}

 Fig.1: dv/dt test circuit






RESTRICTIONS ON PRODUCT USE

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