

TLP561J

Triac Driver
Programmable Controllers
AC-Output Module
Solid State Relay

The TOSHIBA TLP561J consists of a zero voltage crossing turn-on photo-triac optically coupled to an infrared emitting diode in a six lead plastic DIP package.

- Peak off-state voltage: 600 V (min)
- Trigger LED current: 10 mA (max)
- On-state current: 100 mA (max)
- Isolation voltage: 2500 V_{rms} (min)
- UL-recognized: UL 1577, File No.E67349
- cUL-recognized: CSA Component Acceptance Service No.5A
File No.E67349
- VDE-approved: EN 60747-5-5 (Note 1)

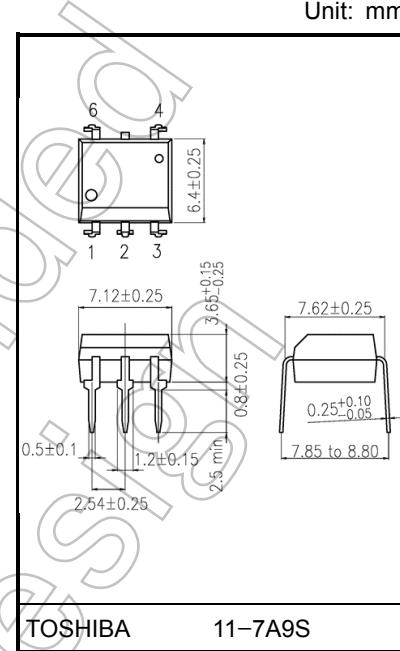
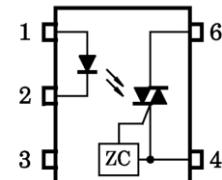
Note 1 : When a VDE approved type is needed,
please designate the **Option(D4)**.

- Trigger LED current

Classification (Note2)	Trigger LED Current (mA)		Marking of Classification	
	V _T =6V, Ta=25°C			
	Min	Max		
(IFT7)	—	7	T7	
Standard	—	10	T7, blank	

Note: Application type name for certification test, please
use standard product type name, i.e.
TLP561J(IFT7): TLP561J

(Note 2): Specify both the part number and a rank in this format when
ordering. Example: TLP561J (IFT7)

**Pin Configuration (top view)**

1 : ANODE
2 : CATHODE
3 : N.C.
4 : TERMINAL
6 : TERMINAL

Start of commercial production
1986-11

Absolute 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, 100 pps)	I _{FP}	1	A
	Reverse voltage	V _R	5	V
	Input power dissipation	P _D	100	mW
	Input power dissipation derating (Ta ≥ 53°C)	ΔP _D /°C	-1.39	mW/°C
	Junction temperature	T _j	125	°C
Detector	Off-state output terminal voltage	V _{DRM}	600	V
	On-state RMS current	I _T (RMS)	100	mA
			50	
	On-state current derating (Ta ≥ 25°C)	ΔI _T /°C	-1.1	mA/°C
	Peak on-state current (100 µs pulse, 120 pps)	I _{TP}	2	A
	Peak non-repetitive surge current (P _w = 10ms)	I _{TSM}	1.2	A
	Output power dissipation	P _O	300	mW
	Output power dissipation derating (Ta ≥ 25°C)	ΔP _O /°C	-3.0	mW/°C
	Junction temperature	T _j	115	°C
	Storage temperature range	T _{stg}	-55 to 125	°C
Operating temperature range		T _{opr}	-40 to 100	°C
Lead soldering temperature (10 s)		T _{sol}	260	°C
Isolation voltage (AC, 60 s, R.H. ≤ 60 %)(Note 3)		B _{VS}	2500	V _{rms}

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

(Note 3) Device considered a two terminal device: Pins 1, 2 and 3 shorted together pin 4 and 6 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min	Typ.	Max	Unit
Supply voltage	V _{AC}	—	—	240	V _{ac}
Forward current	I _F	15	20	25	mA
Peak on-state current	I _{TP}	—	—	1	A
Operating temperature	T _{opr}	-25	—	85	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the devices. Each item also has its own independent guideline document. In developing designs using these products, please confirm the specified characteristics shown in these documents.

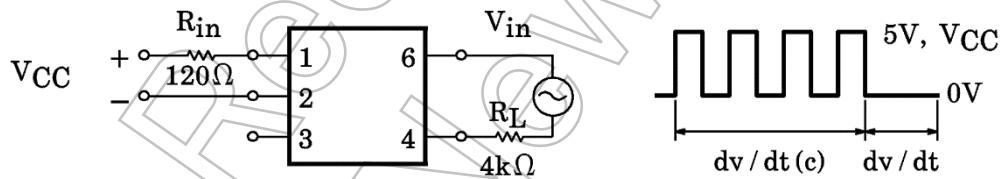
Individual Electrical Characteristics (Ta = 25°C)

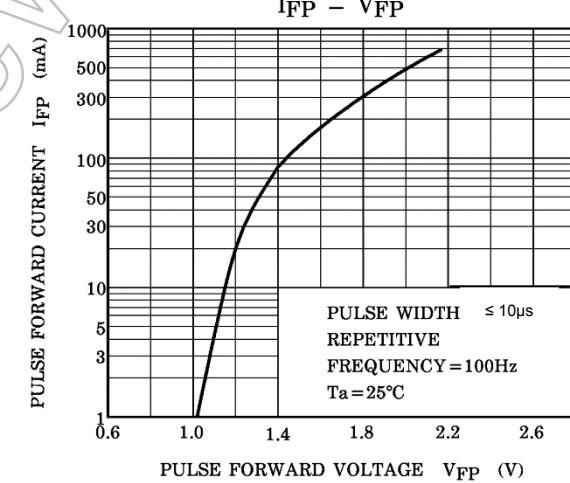
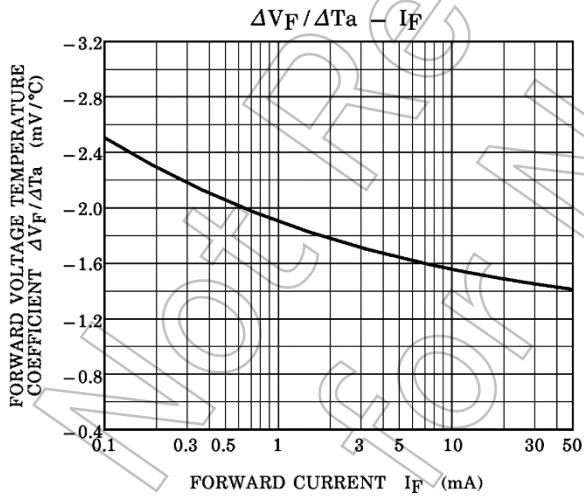
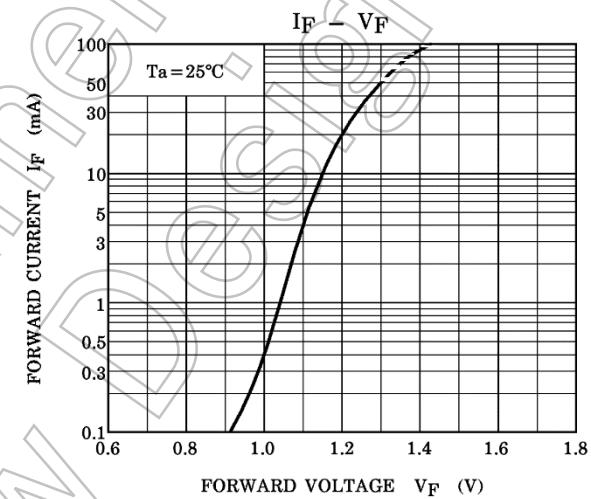
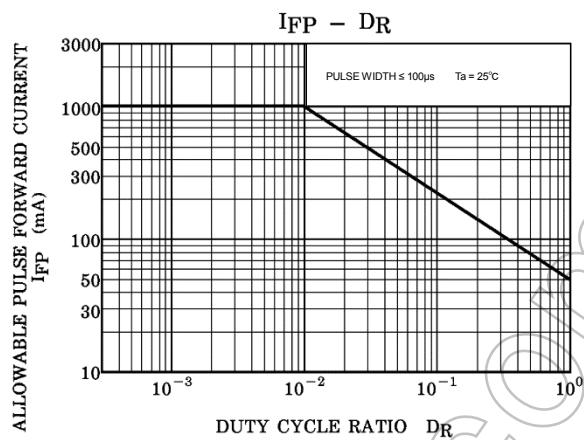
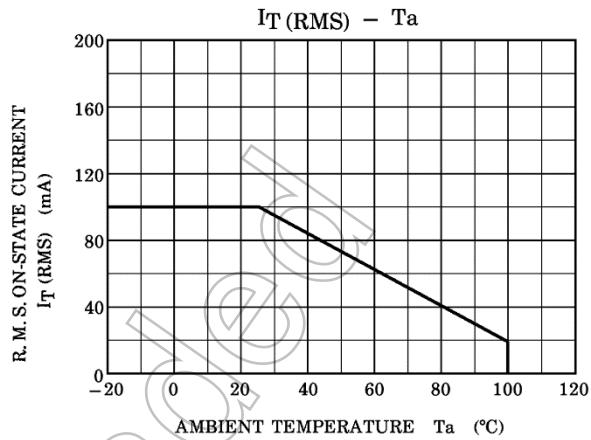
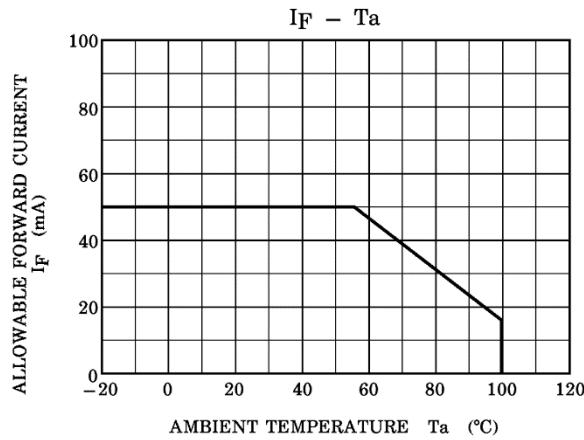
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
LED	Forward voltage	V _F	I _F = 10 mA	1.0	1.15	1.3	V
	Reverse current	I _R	V _R = 5 V	—	—	10	µA
	Capacitance	C _T	V = 0 V, f = 1 MHz	—	30	—	pF
Detector	Peak off-state current	I _{DRM}	V _{DRM} = 600 V	—	10	1000	nA
	Peak on-state voltage	V _{TM}	I _{TM} = 100 mA	—	1.7	3.0	V
	Holding current	I _H	—	—	0.6	—	mA
	Critical rate of rise of off-state voltage	dv / dt	V _{in} = 240 V _{rms} , Ta = 85 °C (Fig.1)	200	500	—	V / µs
	Critical rate of rise of commutating voltage	dv / dt(c)	V _{in} = 60 V _{rms} , I _T = 15 mA (Fig.1)	—	0.2	—	V / µs

Coupled Electrical Characteristics (Ta = 25°C)

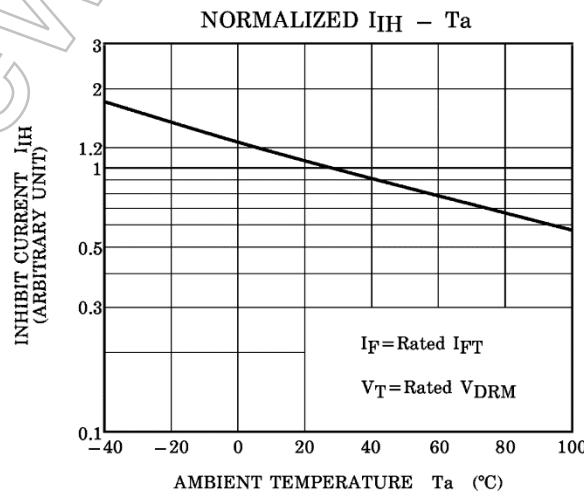
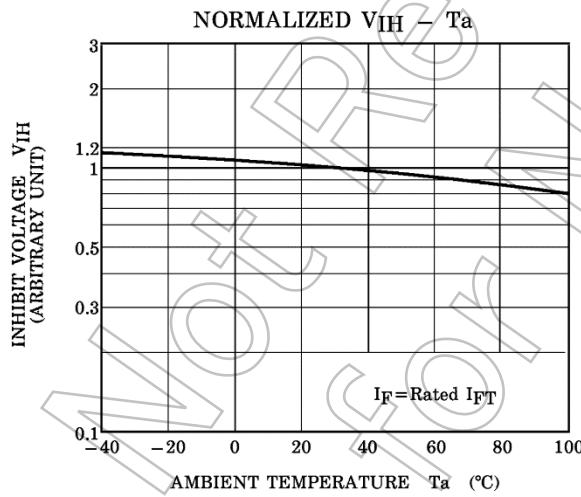
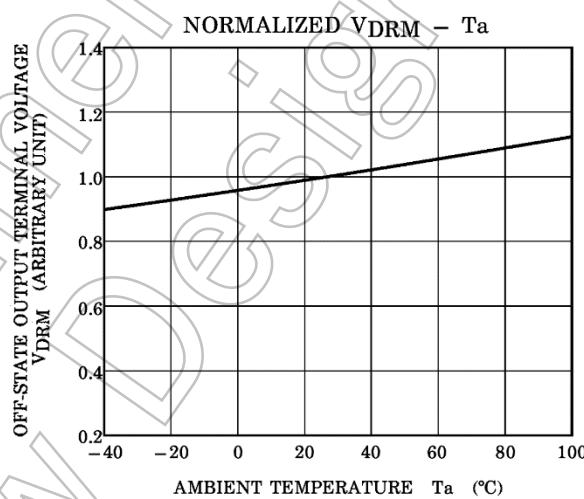
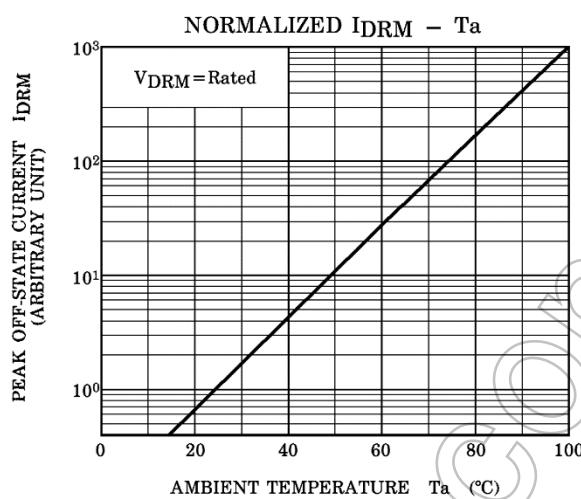
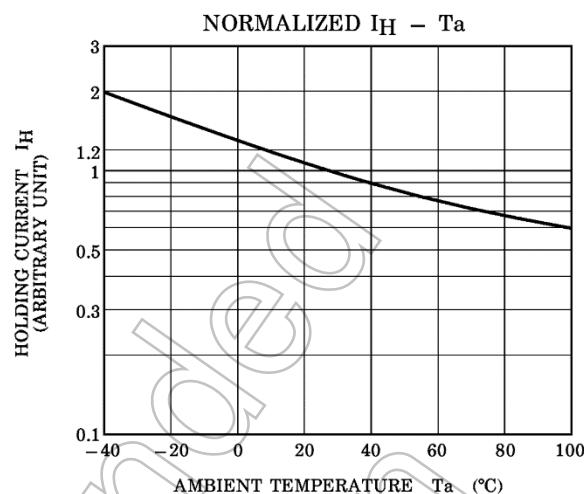
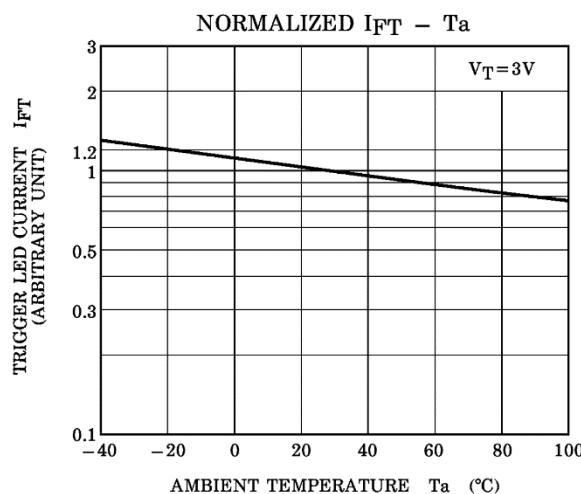
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I _{FT}	V _T = 6 V, R _L = 100 Ω	—	5	10	mA
Inhibit voltage	V _{IH}	I _F = Rated I _{FT}	—	—	50	V
Leakage in inhibited state	I _{IH}	I _F = Rated I _{FT} V _T = Rated V _{DRM}	—	200	600	µA
Capacitance (input to output)	C _S	V _S = 0 V, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R _S	V _S = 500 V, R.H. ≤ 60 %	5×10 ¹⁰	10 ¹⁴	—	Ω
Isolation voltage	B _V S	AC, 60 s	2500	—	—	V _{rms}

Fig.1: dv / dt test circuit





NOTE: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.



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