

# 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 a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

- Peak off-state voltage: 600V(min.)
- On-state current: 100mA(max.)
- Isolation voltage: 2500V<sub>rms</sub>(min.)
- UL recognized: UL1577, file no. E67349
- Isolation operating voltage: 2500V<sub>ac</sub> or 300V<sub>dc</sub> for isolation Groupe C\*1
- Trigger LED current

Classi- Fication*	Trigger LED Current (mA)		Marking Of Classification
	V <sub>T</sub> =6V, T <sub>a</sub> =25°C		
	Min.	Max.	
(IFT7)	—	7	T7
Standard	—	10	T7, blank

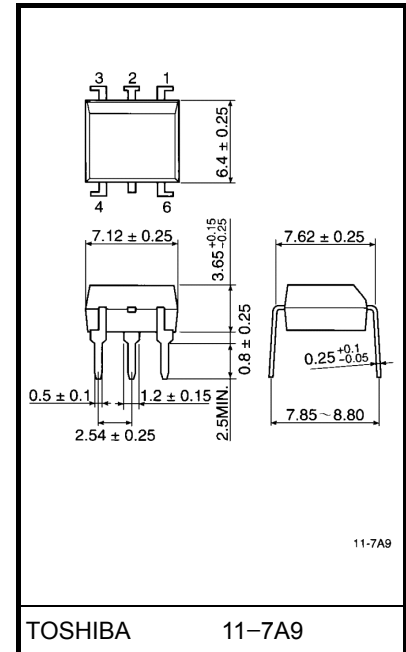
\*Ex. (IFT7); TLP561J(IFT7)

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

TLP561J(IFT7): TLP561J

\*1: According to VDE0110, table 4.

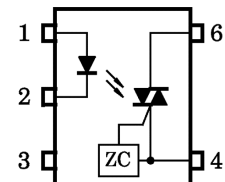
Unit in mm



TOSHIBA 11-7A9

Weight: 0.39g

### Pin Configuration (top view)



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

## 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	$V_{DRM}$	600	V	
	On-state RMS current	$I_{T(RMS)}$	Ta = 25°C	100	mA
			Ta = 70°C	50	
	On-state current derating (Ta ≥ 25°C)	$\Delta I_T / ^\circ\text{C}$	-1.1	mA / °C	
	Peak on-state current (100µs pulse, 120pps)	$I_{TP}$	2	A	
	Peak nonrepetitive surge current (Pw = 10ms, DC = 10%)	$I_{TSM}$	1.2	A	
	Junction temperature	$T_j$	115	°C	
Storage temperature range	$T_{stg}$	-55~125	°C		
Operating temperature range	$T_{opr}$	-40~100	°C		
Lead soldering temperature (10s)	$T_{sol}$	260	°C		
Isolation voltage (AC, 1min., R.H. ≤ 60%)	$BV_S$	2500	V <sub>rms</sub>		

## Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	$V_{AC}$	—	—	240	V <sub>ac</sub>
Forward current	$I_F$	15	20	25	mA
Peak on-state current	$I_{TP}$	—	—	—	A
Operating temperature	$T_{opr}$	-25	—	85	°C

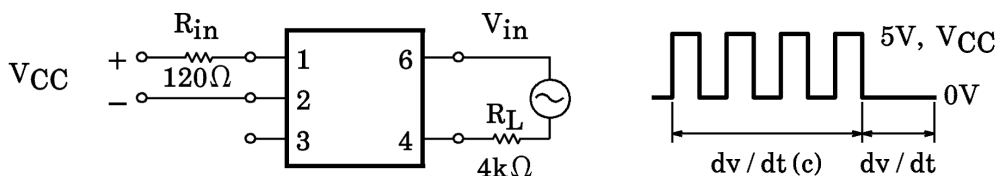
## Individual Electrical Characteristics (Ta = 25°C)

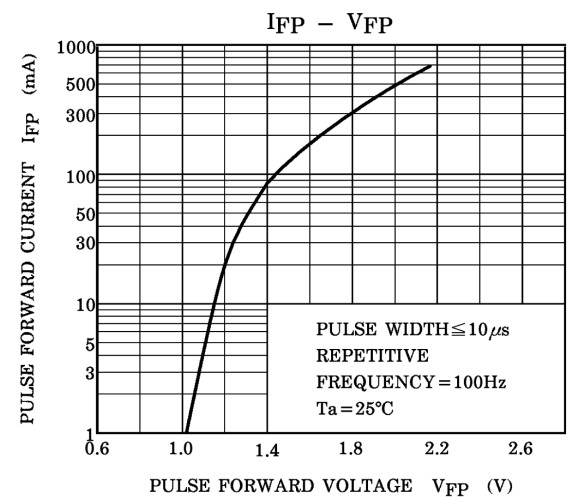
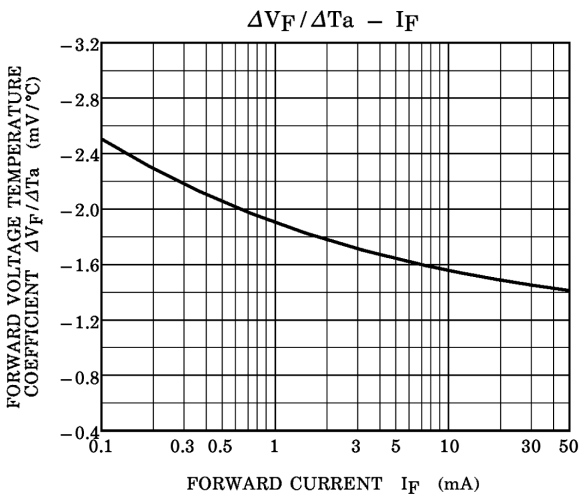
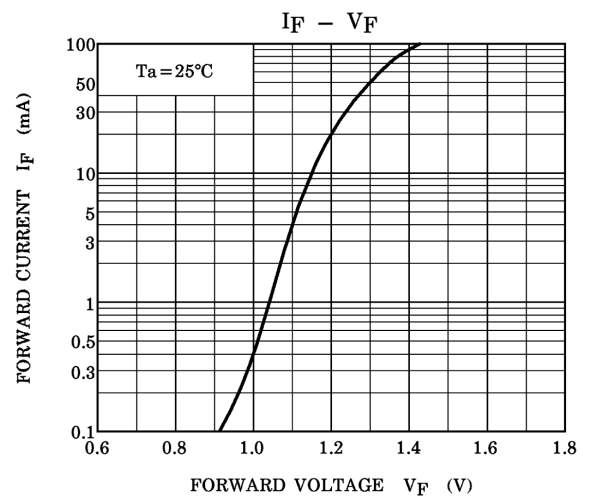
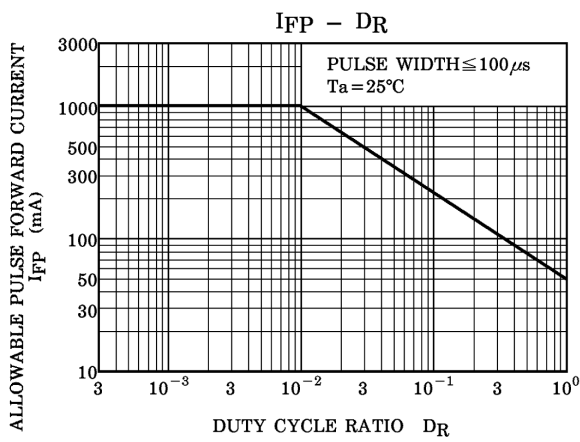
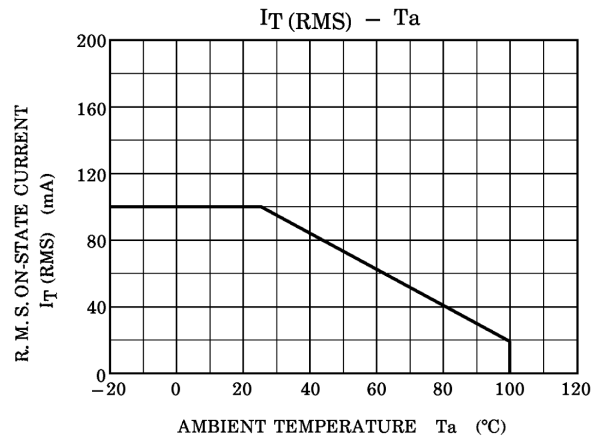
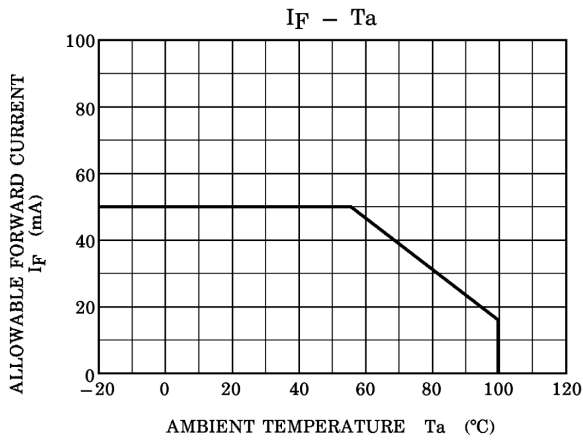
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	$V_F$	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse current	$I_R$	$V_R = 5\text{V}$	—	—	10	$\mu\text{A}$
	Capacitance	$C_T$	$V = 0, f = 1\text{MHz}$	—	30	—	pF
Detector	Peak off-state current	$I_{DRM}$	$V_{DRM} = 600\text{V}$	—	10	1000	nA
	Peak on-state voltage	$V_{TM}$	$I_{TM} = 100\text{mA}$	—	1.7	3.0	V
	Holding current	$I_H$	—	—	0.6	—	mA
	Critical rate of rise of off-state voltage	$dv/dt$	$V_{in} = 240\text{V}_{rms}, T_a = 85^\circ\text{C}$ (Fig.1)	200	500	—	V / $\mu\text{s}$
	Critical rate of rise of commutating voltage	$dv/dt(c)$	$V_{in} = 60\text{V}_{rms}, I_T = 15\text{mA}$ (Fig.1)	—	0.2	—	V / $\mu\text{s}$

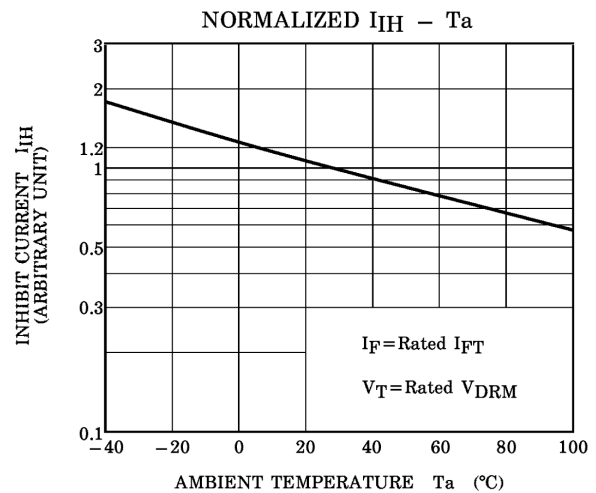
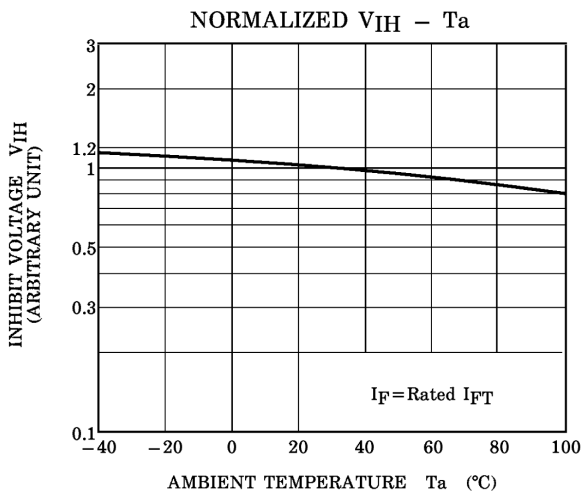
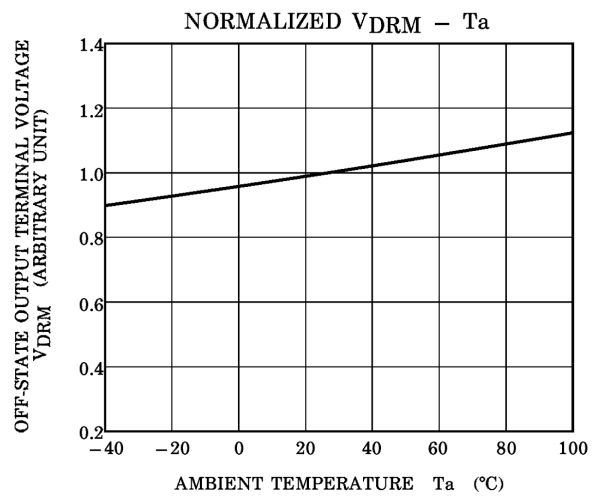
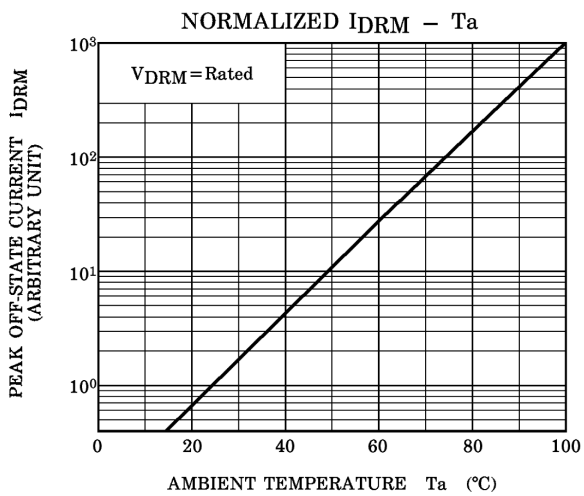
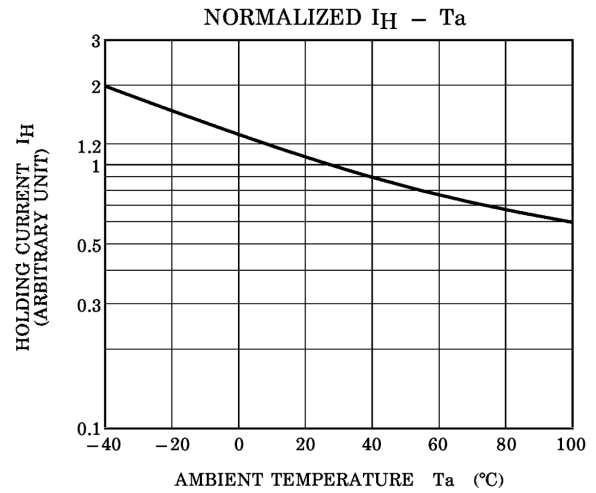
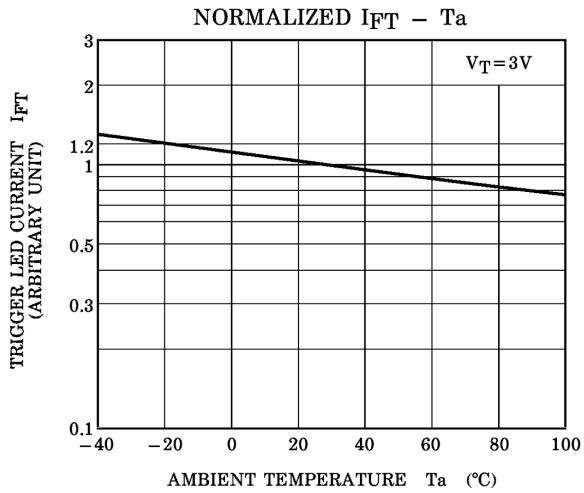
## Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	$I_{FT}$	$V_T = 6\text{V}, R_L = 100\Omega$	—	5	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	600	$\mu\text{A}$
Capacitance (input to output)	$C_S$	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	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







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20070701-EN

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