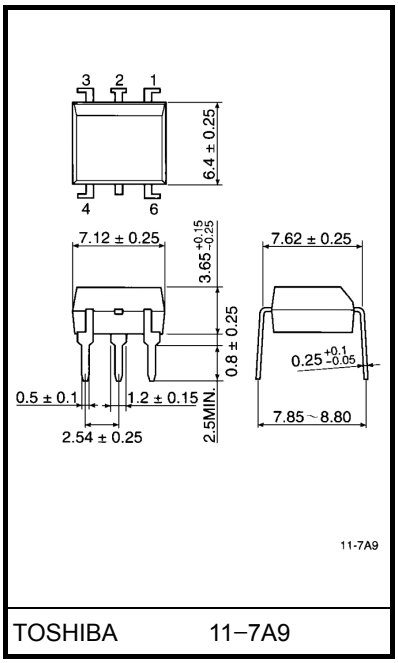
TOSHIBA Photocoupler GaAs IRed & Photo−Triac

TLP561J

Triac Driver
Programmable Controllers
AC−Output Module
Solid State Relay

Unit in mm



TOSHIBA 11−7A9

Weight: 0.39g

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.

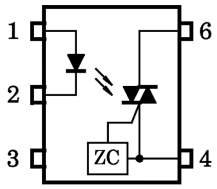
- Peak off−state voltage: 600V(min.)
- On−state current: 100mA(max.)
- Isolation voltage: 2500V_{rms}(min.)
- UL recognized: UL1577, file no. E67349
- Isolation operating voltage: 2500V_{ac} or 300V_{dc} for isolation Groupe C*1
- Trigger LED current

Classi−Fication*	Trigger LED Current (mA) V_T=6V, Ta=25°C		Marking Of Classification
	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.

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)		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}	600	V
	On−state RMS current	Ta = 25°C	$I_{T(RMS)}$	100	mA
		Ta = 70°C		50	
	On−state current derating (Ta ≥ 25°C)		ΔI_T / °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_{rms}

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}	—	—	—	A
Operating temperature	T_{opr}	−25	—	85	°C

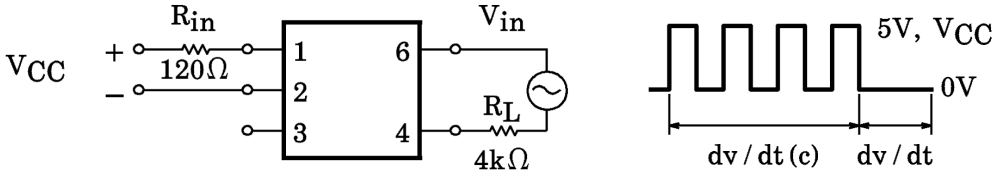
Individual Electrical Characteristics (Ta = 25°C)

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

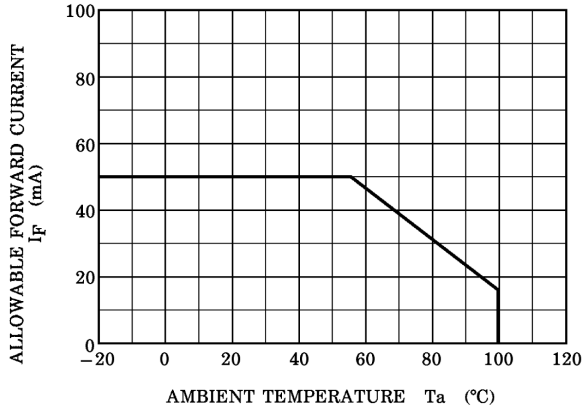
Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	V_T = 6V, R_L = 100Ω	—	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, f = 1MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S = 500V	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}

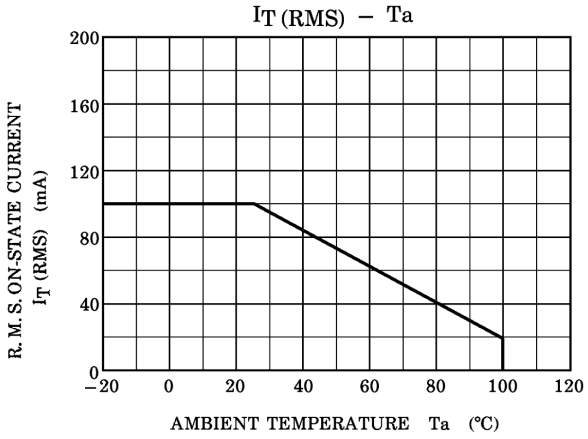
Fig.1: dv / dt test circuit



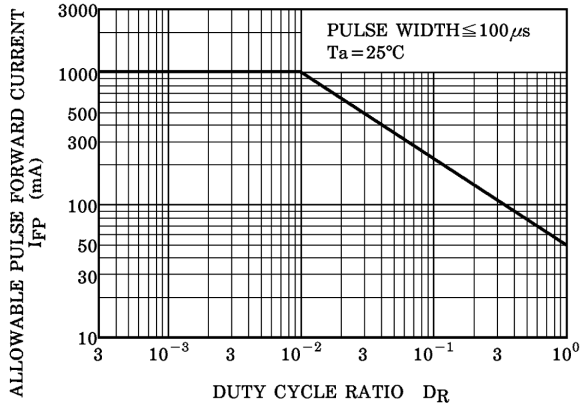
I_F – Ta



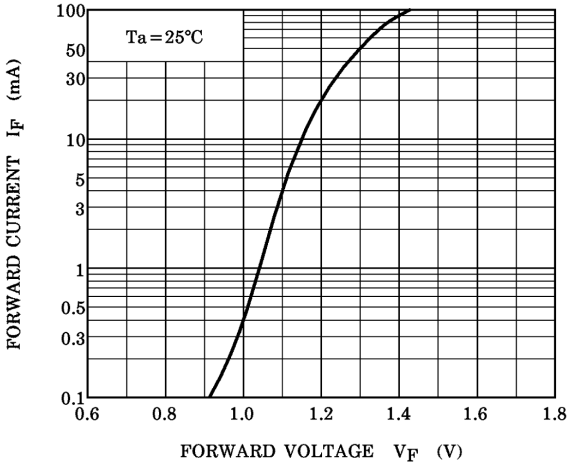
$I_{T\,(RMS)}$ – Ta



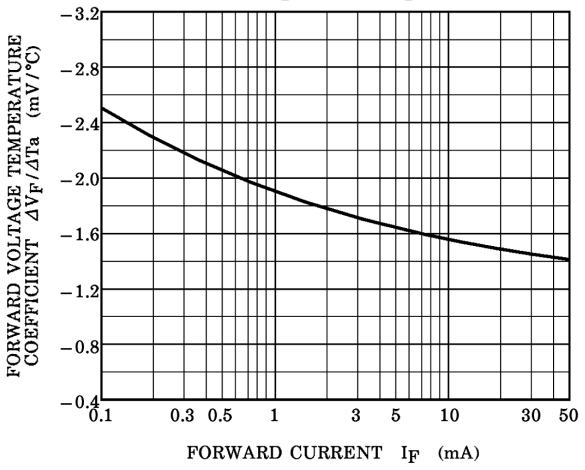
I_{FP} – D_R



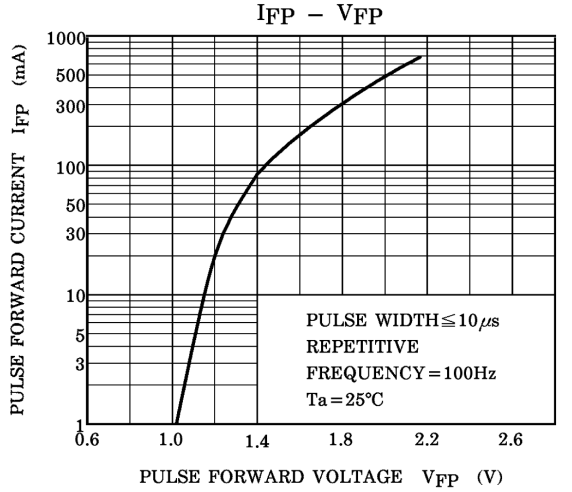
I_F – V_F



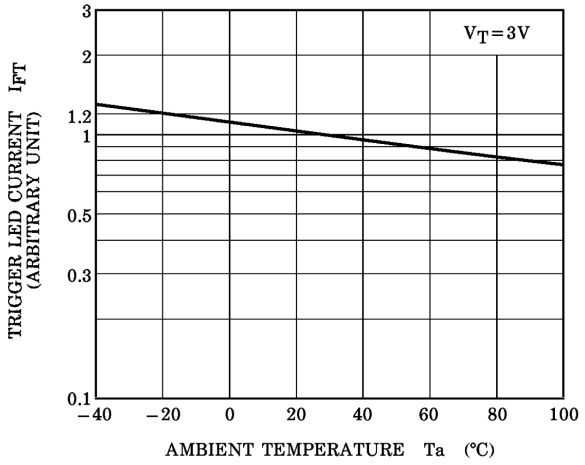
$\Delta V_F / \Delta Ta$ – I_F



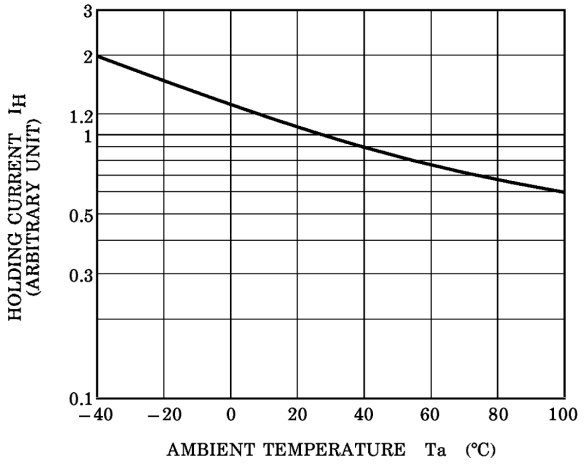
I_{FP} – V_{FP}



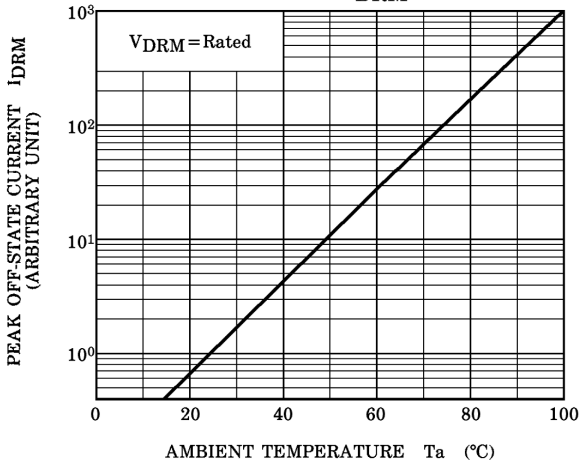
NORMALIZED I_{FT} – Ta



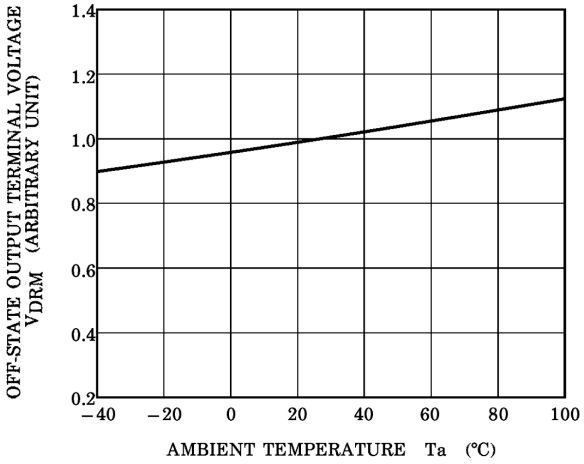
NORMALIZED I_H – Ta



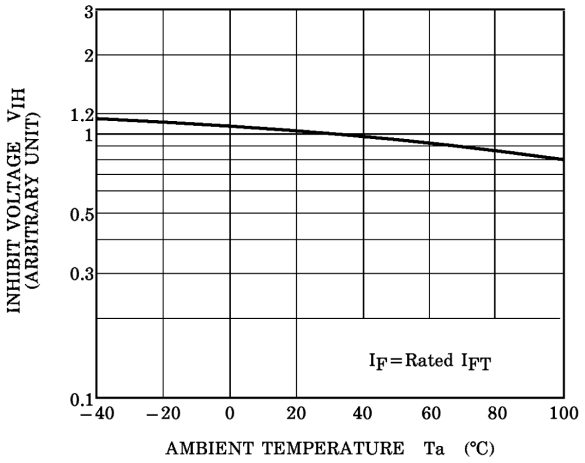
NORMALIZED I_{DRM} – Ta



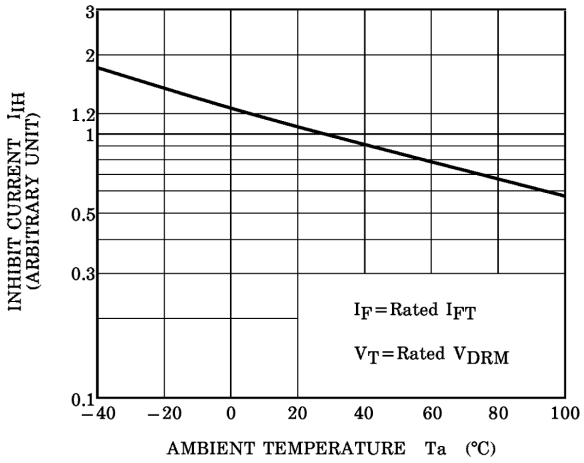
NORMALIZED V_{DRM} – Ta



NORMALIZED V_{IH} – Ta



NORMALIZED I_{IH} – Ta



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