

TOSHIBA Photocoupler GaAs Ired & Photo-Triac

TLP666J

Office Machine
Household Use Equipment
Triac Driver
Solid State Relay

The TOSHIBA TLP666J 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.

- Peak off-state voltage: 600V(min.)
- Trigger LED current: 10mA(max.)
- On-state current: 100mA (max.)
- UL recognized: UL1577, file no. E67349
- Isolation voltage: 5000V_{rms}(min.)
- Option (D4) type

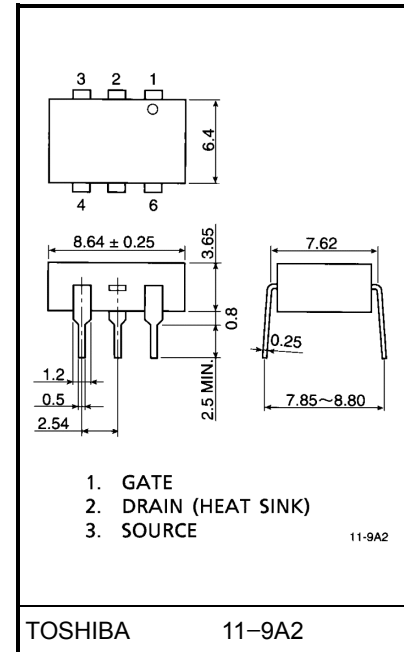
VDE approved: DIN VDE0884/08.87,
certificate no. 68383

Maximum operating insulation voltage: 630V_{PK}
Highest permissible over voltage: 6000V_{PK}

**(Note 1) When a VDE0884 approved type is needed,
please designate the "Option(D4)"**

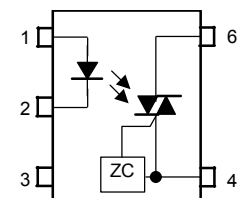
- Structural parameter
Creepage distance: 7.0mm(min.)
Clearance: 7.0mm(min.)
Insulation thickness: 0.5mm(min.)

Unit in mm



Weight: 0.44 g

Pin Configurations (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	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, 1 min., R.H. ≤ 60%) (Note 2)	BV_S	5000	V_{rms}	

(Note 2) Pins 1, 2 and 3 shorted together pin 4 and 6 shorted together.

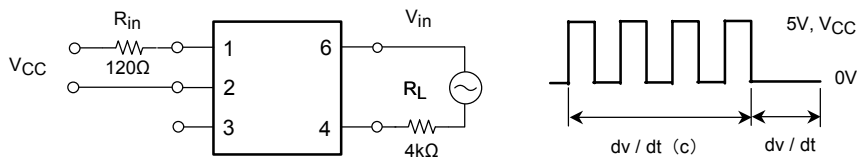
Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{AC}	—	—	240	Vac
Forward current	I_F	15	20	25	mA
Peak on-stage current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	-25	—	85	°C

Individual Electrical Characteristics (Ta = 25°C)

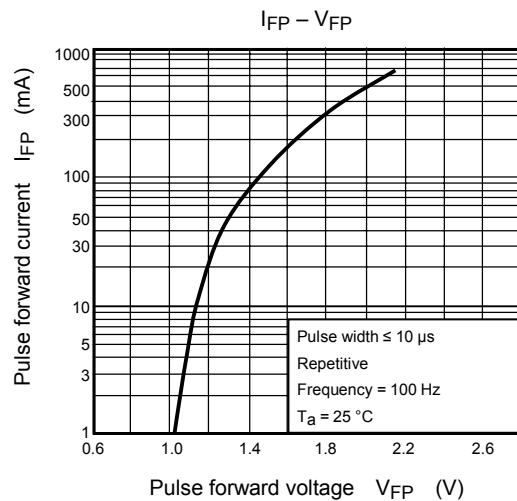
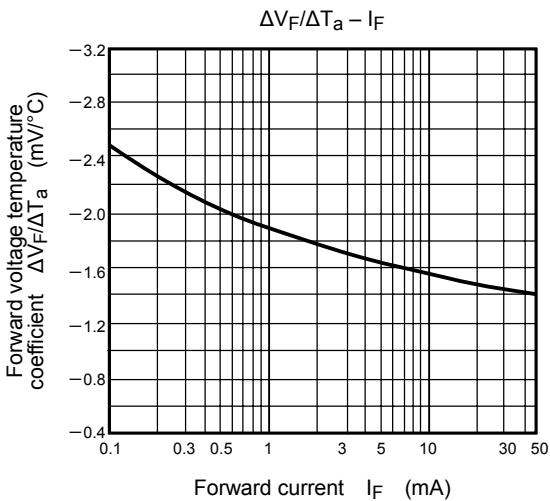
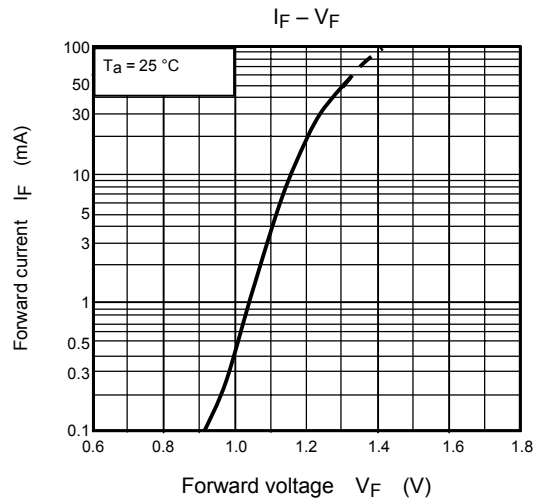
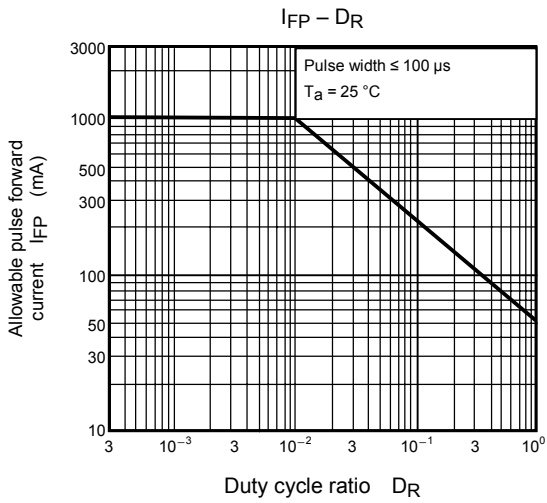
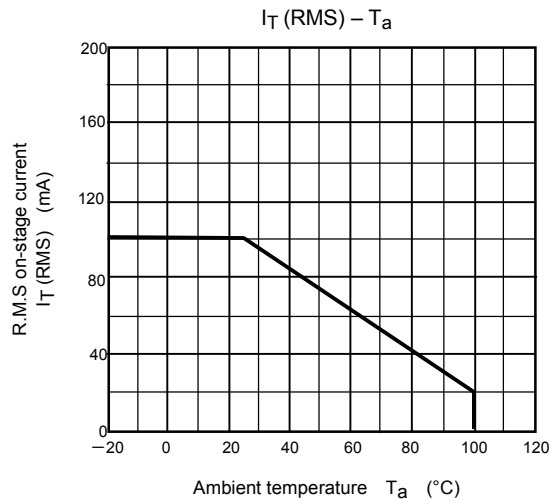
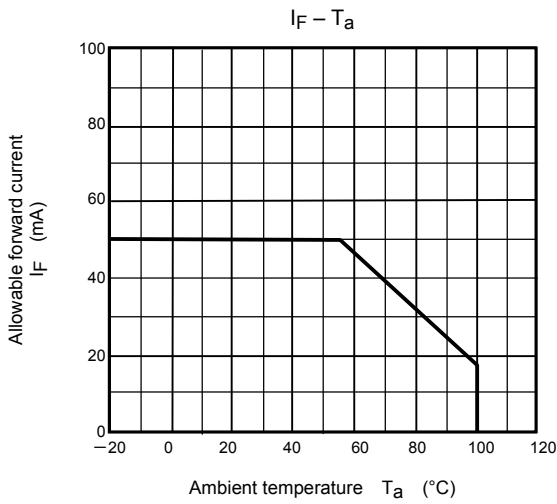
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	30	—	pF
Detector	Peak off-state current	I_{DRM}	$V_{\text{DRM}} = 600\text{V}$	—	10	1000	nA
	Peak on-state voltage	V_{TM}	$I_{\text{TM}} = 100\text{mA}$	—	1.7	3.0	V
	Holding current	I_H	—	—	0.6	—	mA
	Critical rate of rise of off-state voltage	dv/dt	$V_{\text{in}} = 240\text{V}, T_a = 85^\circ\text{C}$ (Note 3)	200	500	—	V / μs
	Critical rate of rise of commutating voltage	$dv/dt(c)$	$V_{\text{in}} = 60\text{V}_{\text{rms}}, I_T = 15\text{mA}$ (Note 3)	—	0.2	—	V / μs

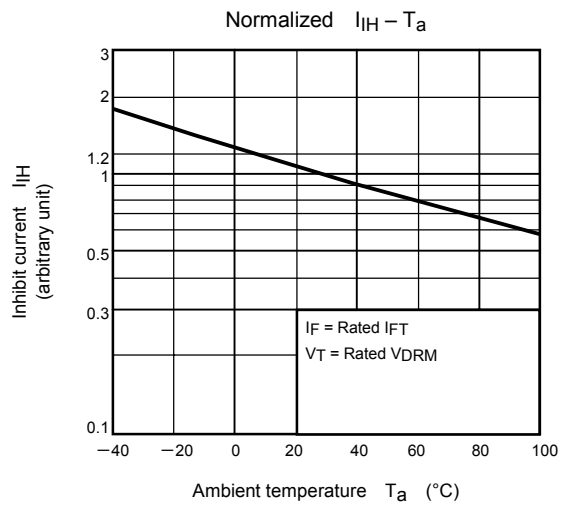
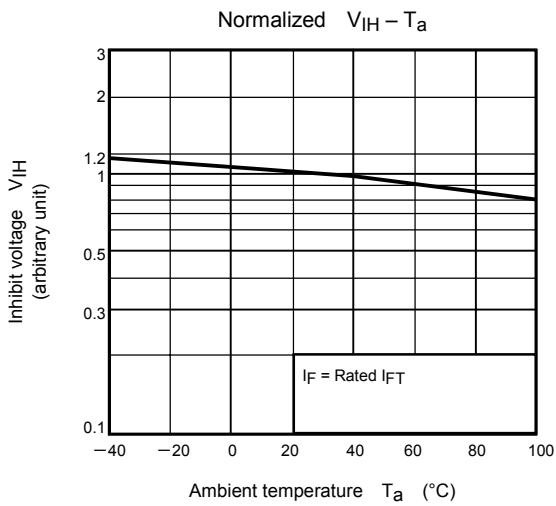
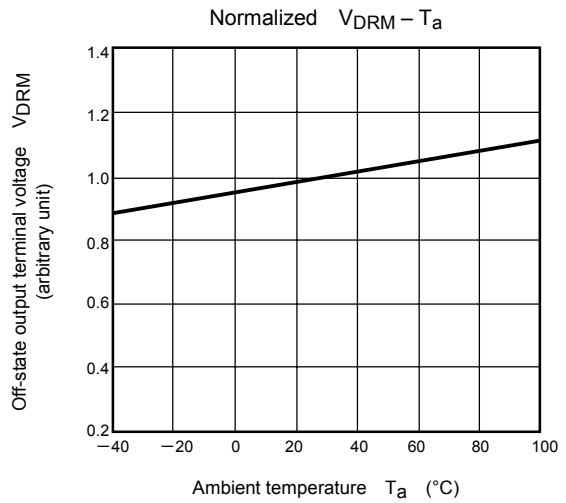
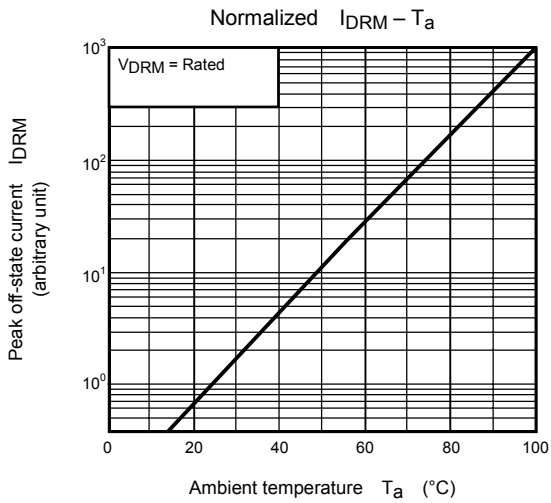
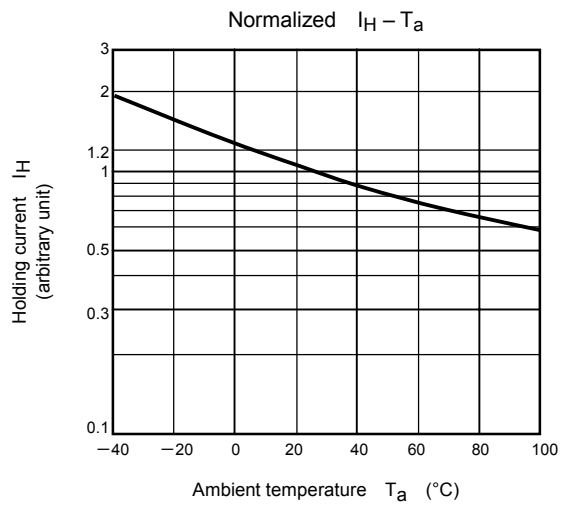
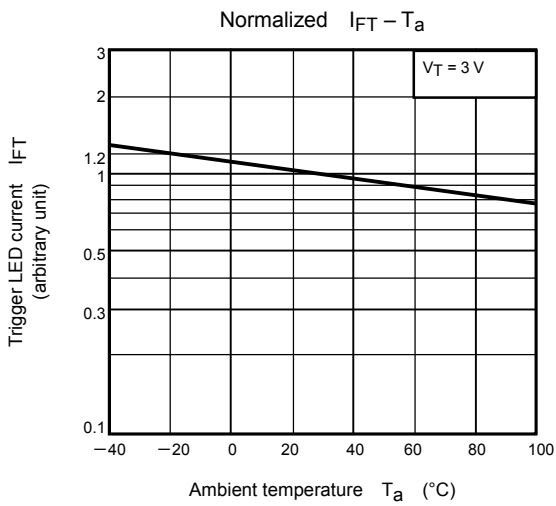
(Note 3) dv/dt test circuit



Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	$V_T = 6\text{V}$	—	5	10	mA
Inhibited 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	600	μA
Capacitance (input to output)	C_S	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	1×10^{12}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	5000	—	—	V_{rms}
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	Vdc





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