

TOSHIBA Photocoupler GaAs IRed&Photo-Triac

TLP665J

Office Machine

Household Use Equipment

Triac Driver

Solid State Relay

The TOSHIBA TLP665J consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP.

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

VDE approved: DIN VDE0884 / 08.87,

Certificate No. 68383

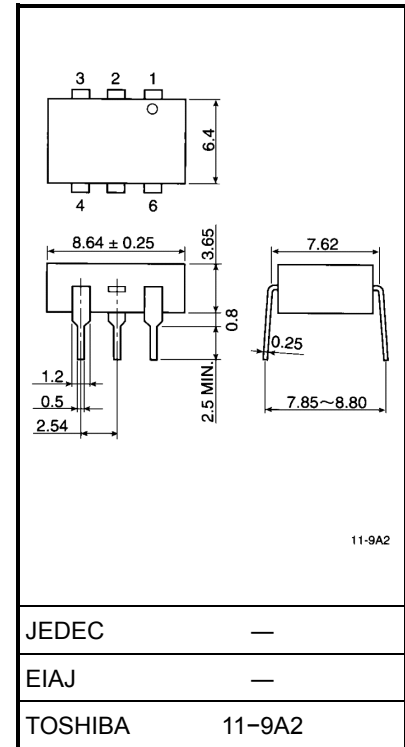
Maximum operating insulation voltage: 650V_{PK}

Highest permissible over voltage: 6000V_{PK}

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

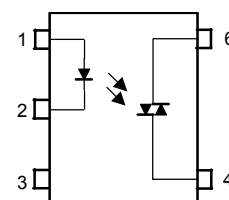
- Structural parameter
 - Creepage distance: 7.0 mm (min.)
 - Clearance: 7.0 mm (min.)
 - Insulation thickness: 0.5 mm (min.)

Unit in mm



Weight: 0.44 g

Pin Configurations (top view)



- 1 : Anode
- 2 : Cathode
- 3 : NC
- 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 (100 μs pulse, 100 pps)		I _{FP}	1	A
	Power dissipation		P _D	100	mW
	Power dissipation derating (Ta ≥ 25°C)		ΔP _D / °C	−1.0	mW / °C
	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, 120 pps)		I _{TP}	2	A
	Peak nonrepetitive surge current (P _W = 10 ms, DC = 10%)		I _{TSM}	1.2	A
	Total power dissipation		P _D	300	mW
	Total power dissipation derating (Ta = 25°C)		ΔP _D / °C	−4.0	mW / °C
	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 (10 s)			T _{sol}	260	°C
Total package power dissipation			P _T	330	mW
Total package power dissipation derating (Ta ≥ 25°C)			ΔP _T / °C	−4.4	mW / °C
Isolation voltage (AC, 1 min., R.H.≤ 60%) (Note 2)			BV _S	5000	V _{rms}

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

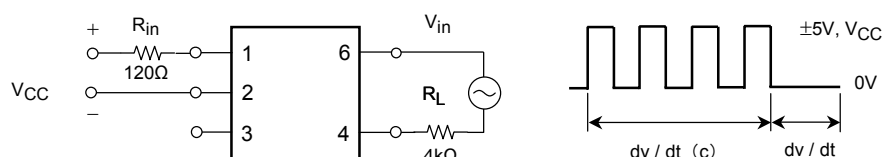
Recommended Operating Conditions

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

Electrical Characteristics (Ta = 25°C)

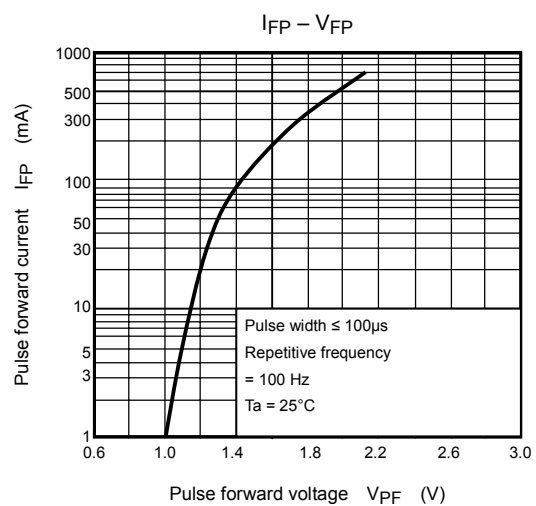
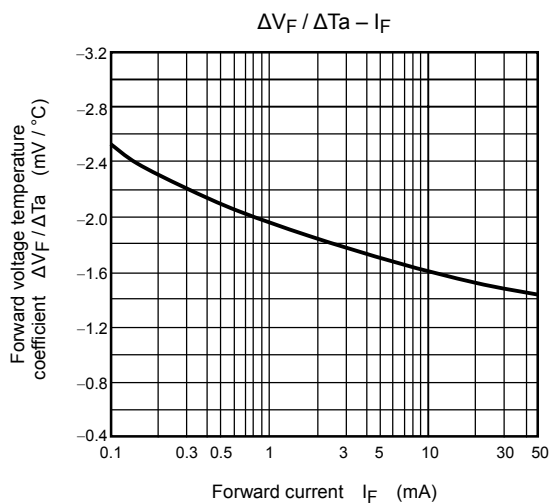
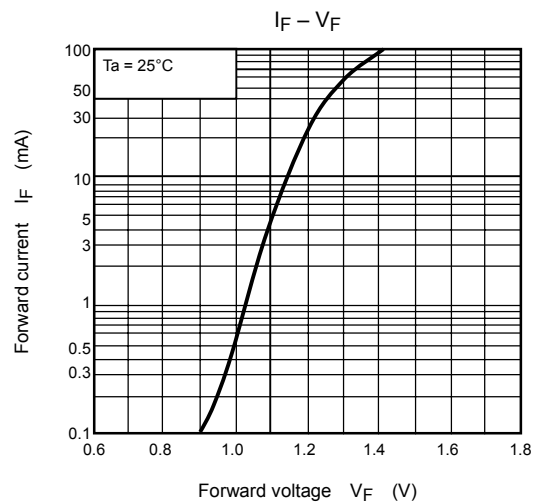
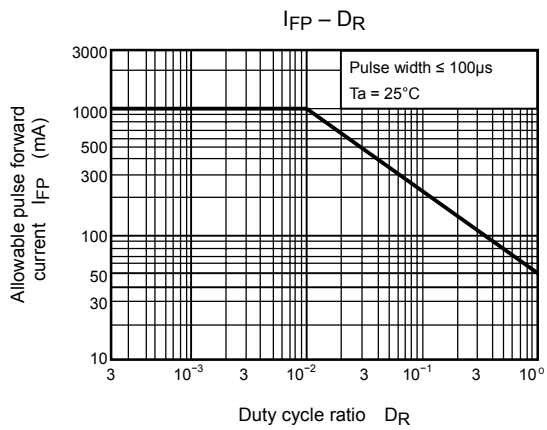
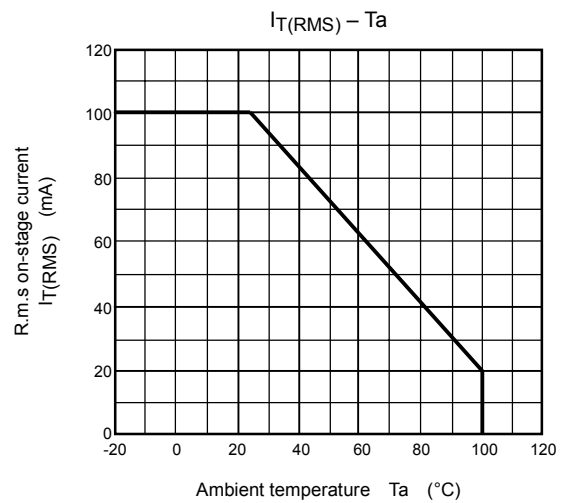
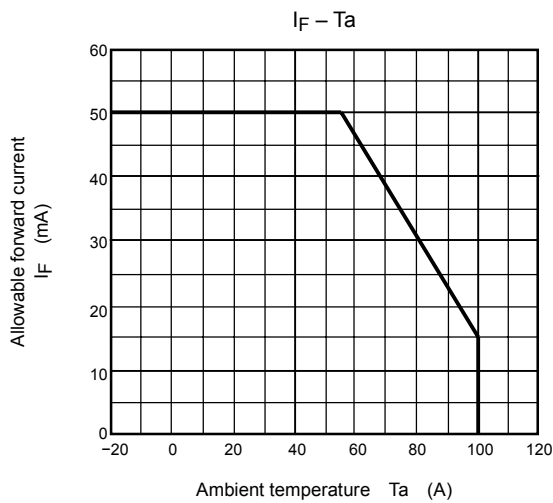
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	$I_F = 10 \text{ mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5 \text{ V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
Detector	Peak off-state current	I_{DRM}	$V_{DRM} = 600 \text{ V}$	—	10	1000	nA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

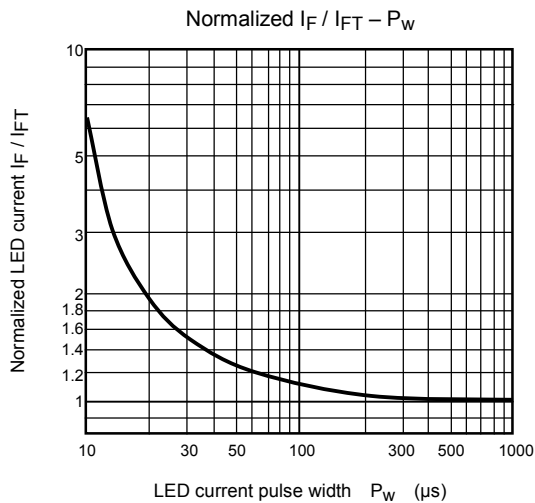
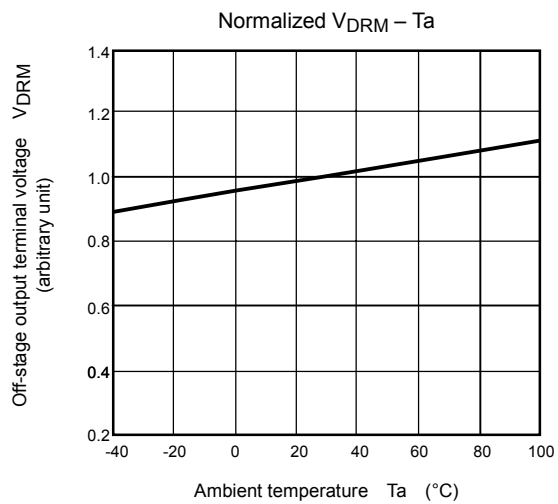
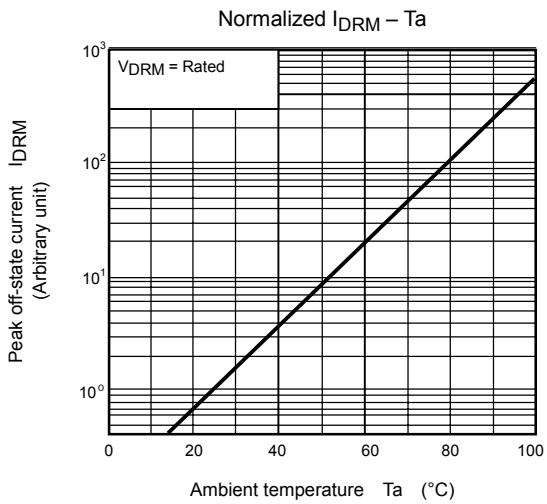
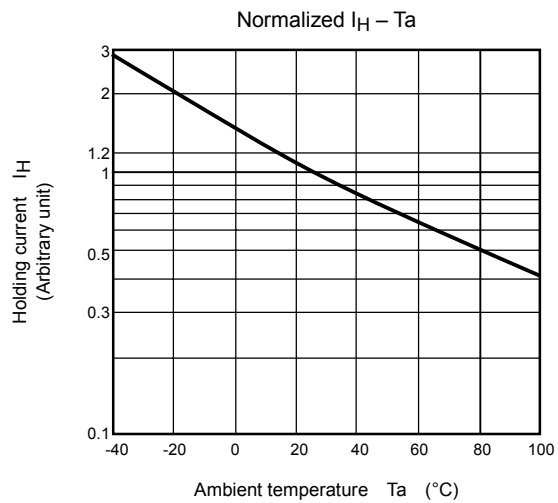
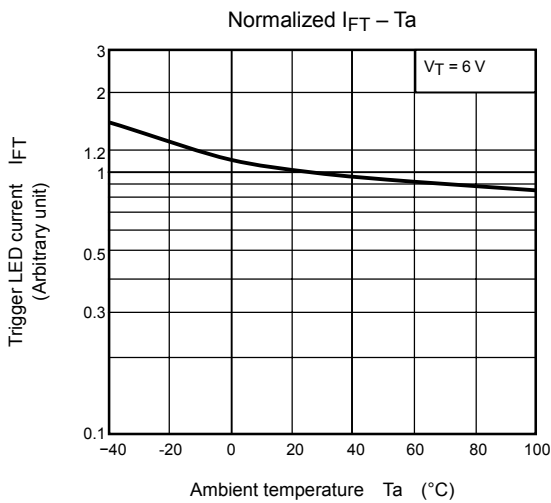
(Note 3) dv / dt test circuit



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
Capacitance (input to output)	C_S	$V_S = 0, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}$	5×10^{10}	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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