

TOSHIBA Photocoupler GaAs Ired & Photo-Triac

TLP665G

Office Machine
Household Use Equipment
Triac Driver
Solid State Relay

The TOSHIBA TLP665G consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP.

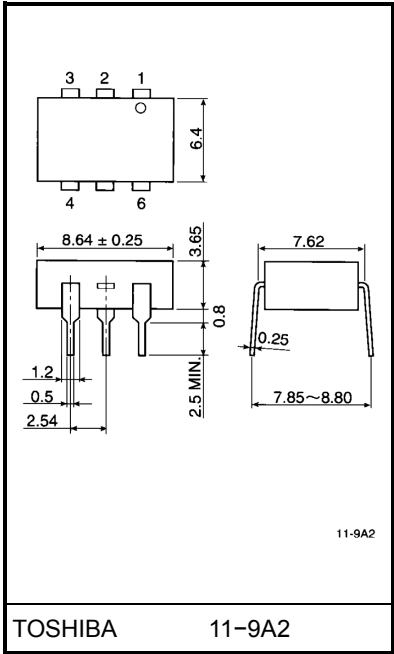
- Peak off-state voltage: 400V (min.)
- Trigger LED current: 10mA (max.)
- On-state current: 100mA (max.)
- UL recognized: UL1577, file No. E67349
- Isolation voltage: 5000V_{rms} (min.)
- Option (D4) type
VDE approved: DIN VDE0884 / 08.87,
certificate No. 68383
Maximum operating insulation voltage: 630V_{PK}
Highest permissible over voltage: 6000V_{PK}

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

- Structural parameter

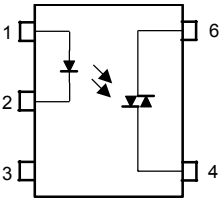
	7.62mm pitch standard type
Creepage distance	7.0 mm (min.)
Clearance	7.0 mm (min.)
Insulation thickness	0.5 mm (min.)

Unit in mm



Weight: 0.44g

Pin Configuration (top view)



- 1 : Anode
- 2 : Cathode
- 3 : N.C.
- 4 : Terminal 1
- 6 : Terminal 2

Maximum Ratings (Ta = 25°C)

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
	Junction temperature		T _j	125	°C
Detector	Off-state output terminal voltage		V _{DRM}	400	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 (P _W = 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 1)			BV _S	5000	V _{rms}

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

Recommended Operating Conditions

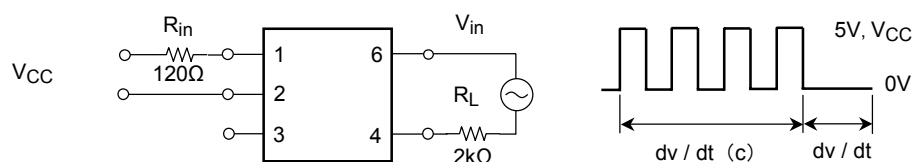
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{AC}	—	—	120	Vac
Forward current	I_F	15	20	25	mA
Peak on-stage current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	-25	—	85	°C

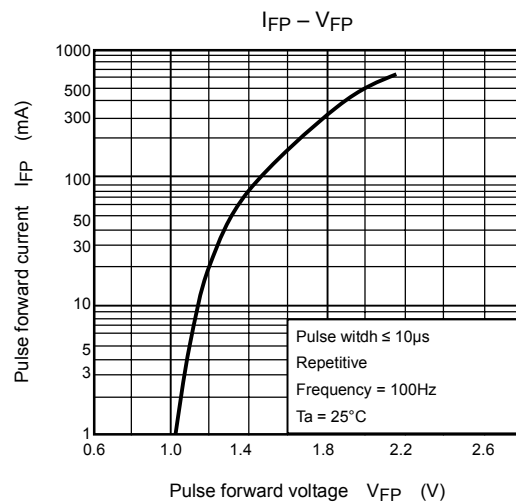
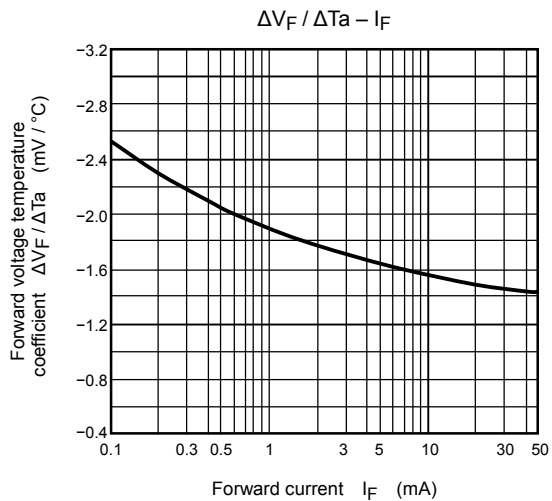
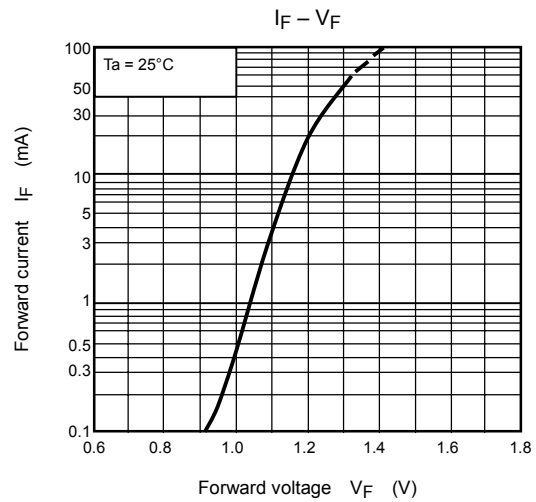
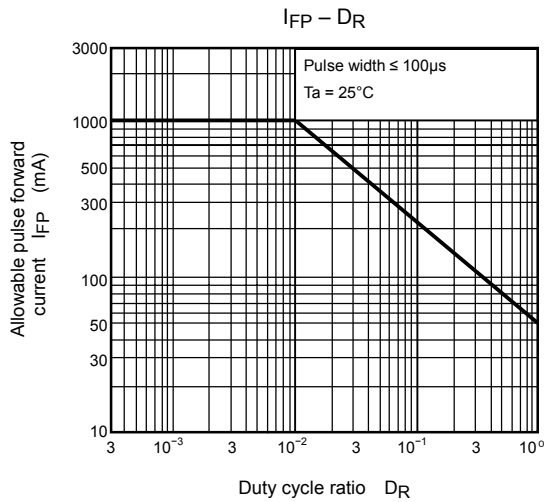
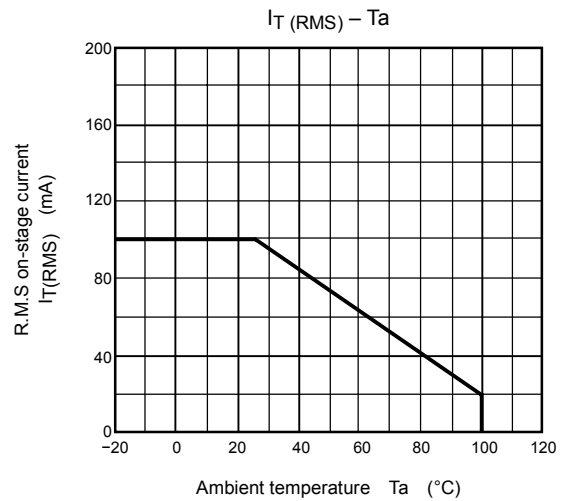
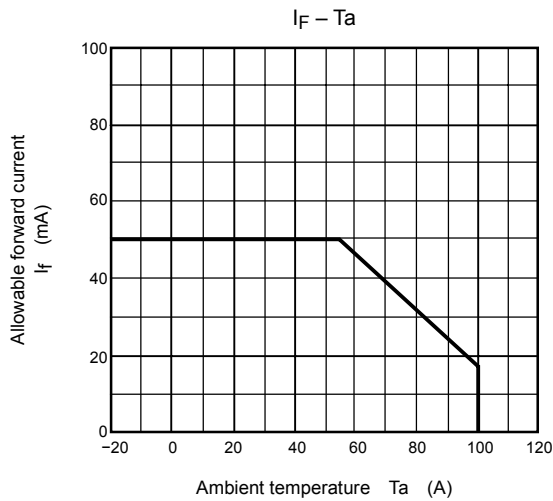
Electrical Characteristics (Ta = 25°C)

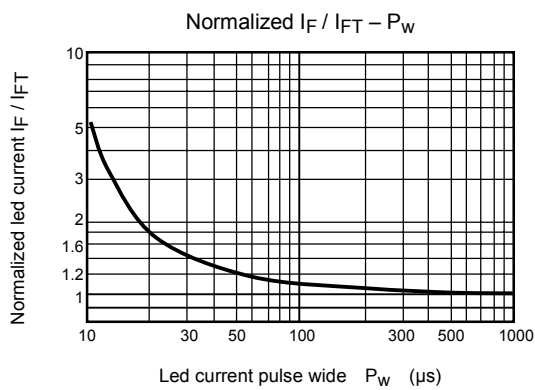
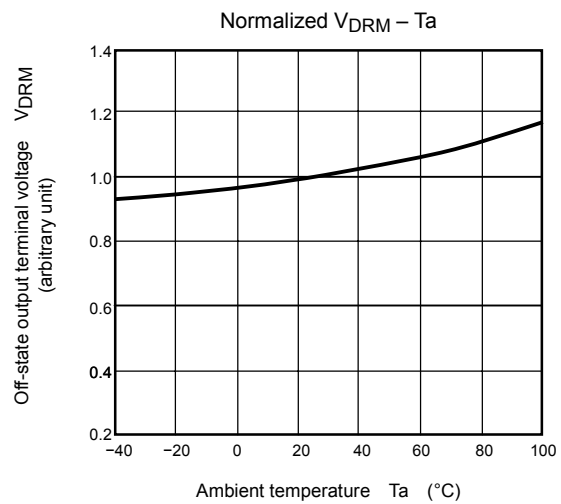
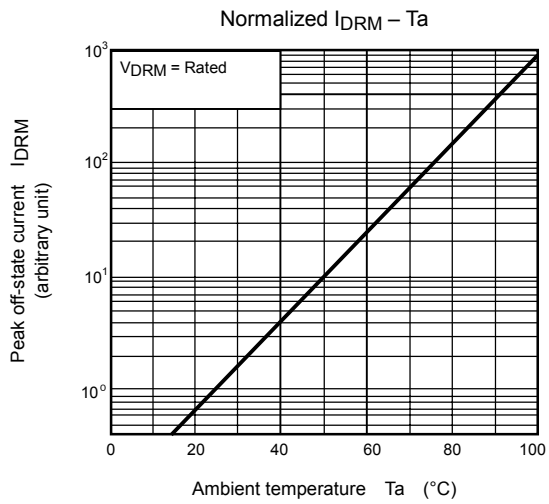
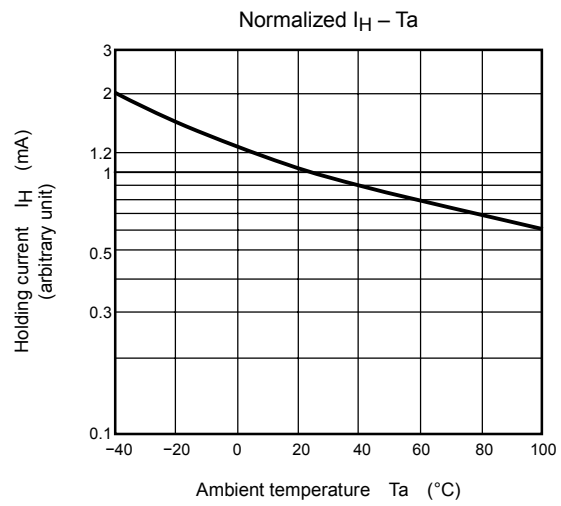
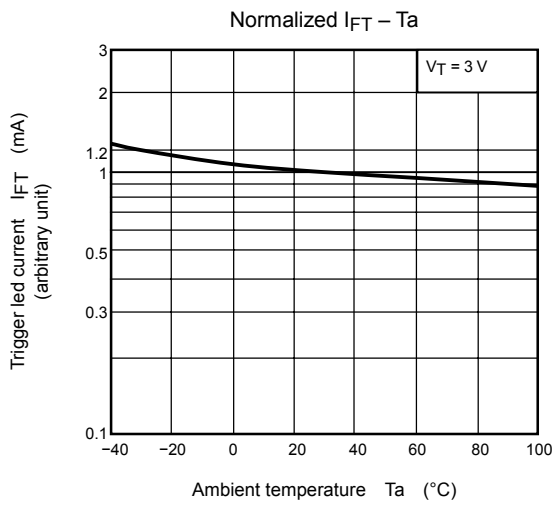
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	30	—	pF
Detector	Peak off-state current	I_{DRM}	$V_{\text{DRM}} = 400\text{V}$	—	10	100	nA
	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	$V_{\text{in}} = 120\text{V}, T_a = 85^\circ\text{C}$ (Note 2)	200	500	—	$\text{V} / \mu\text{s}$
	Critical rate of rise of commutating voltage	$dv / dt (c)$	$V_{\text{in}} = 30\text{V}_{\text{rms}}, I_T = 15\text{mA}$ (Note 2)	—	0.2	—	$\text{V} / \mu\text{s}$

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	$V_T = 3\text{V}$	—	5	10	mA
Capacitance (input to output)	C_S	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	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	—	V_{dc}

(Note 2) dv / dt test circuit





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