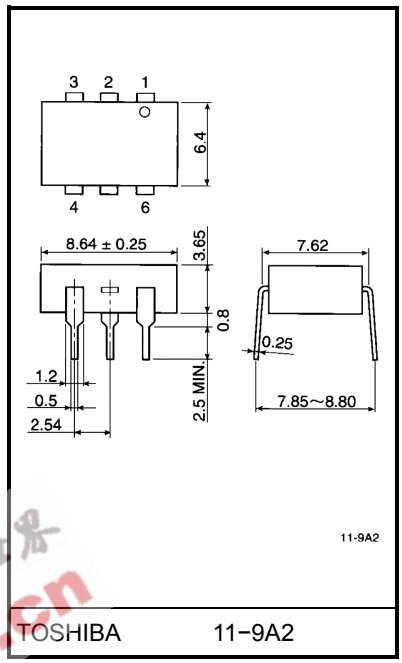
TOSHIBA Photocoupler GaAs Ired & Photo−Triac

TLP665G

Office Machine
Household Use Equipment
Triac Driver
Solid State Relay

Unit in mm



TOSHIBA 11−9A2

Weight: 0.44g

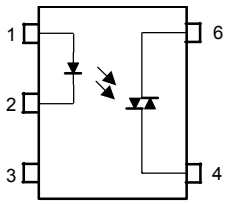
The TOSHIBA TLP665G consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP.

- 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.)

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

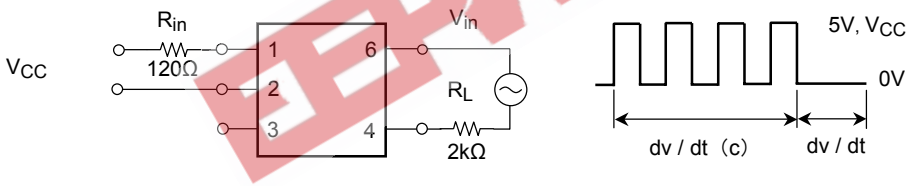
Electrical Characteristics (Ta = 25°C)

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

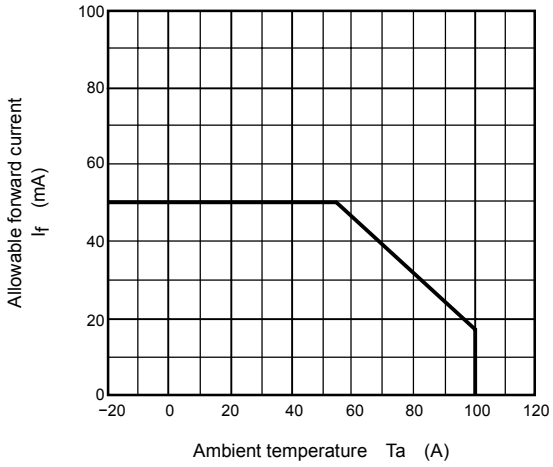
Coupled Electrical Characteristics (Ta = 25°C)

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

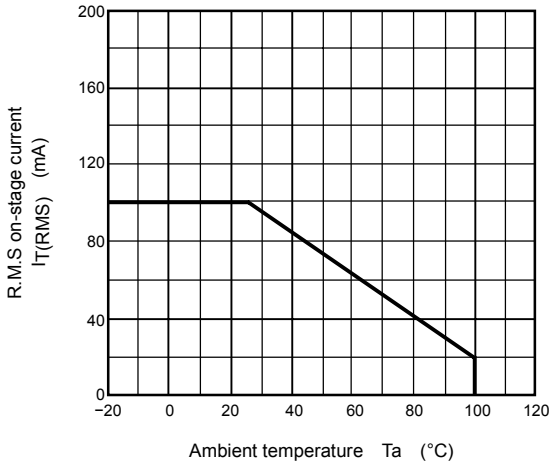
(Note 2) dv / dt test circuit



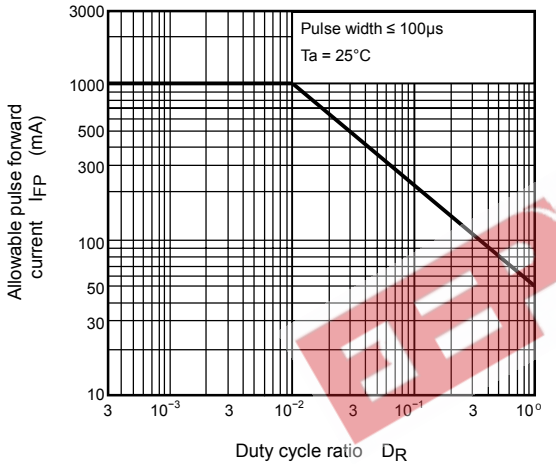
I_F – Ta



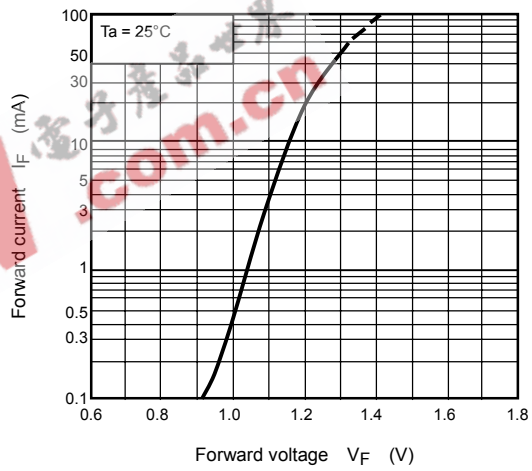
$I_{T\ (RMS)}$ – Ta



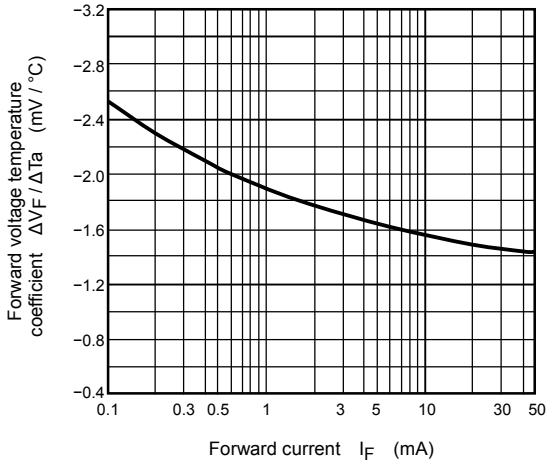
I_{FP} – D_R



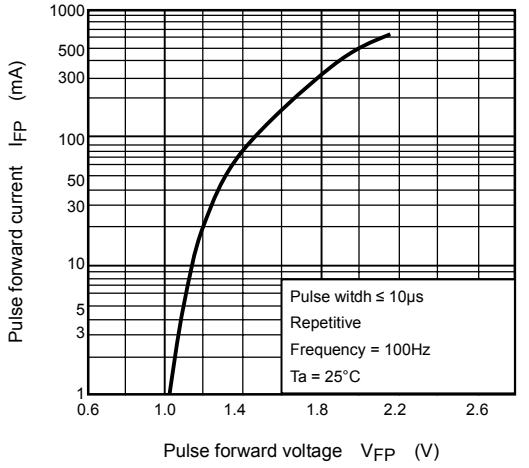
I_F – V_F



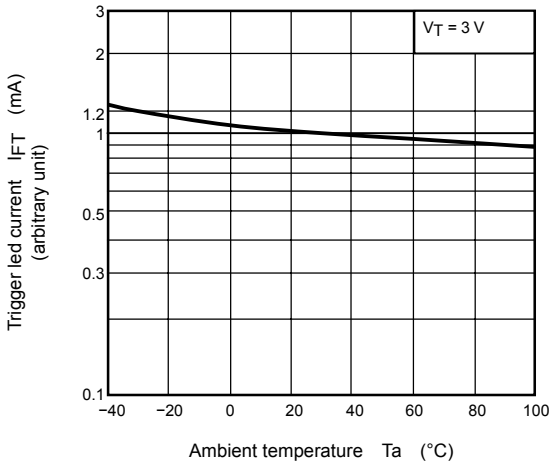
$\Delta V_F / \Delta Ta$ – I_F



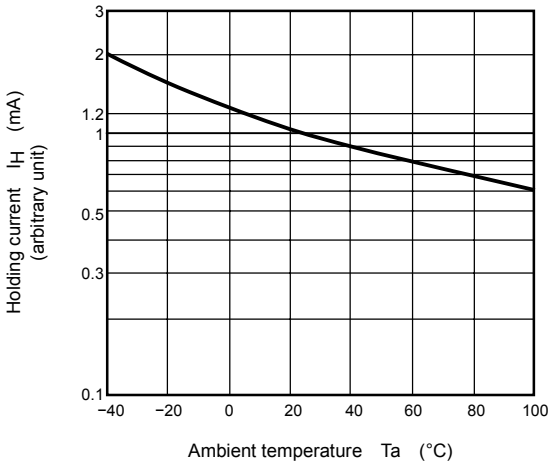
I_{FP} – V_{FP}



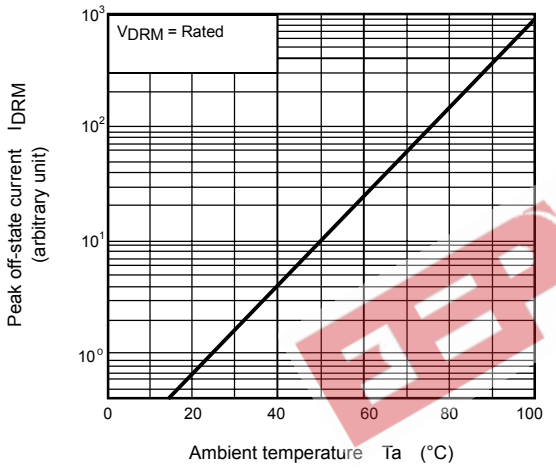
Normalized I_{FT} – Ta



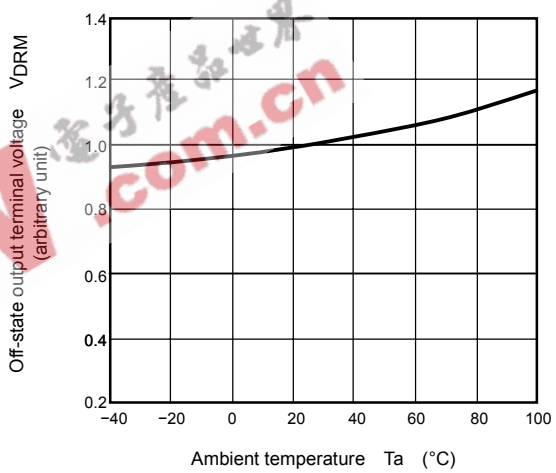
Normalized I_H – Ta



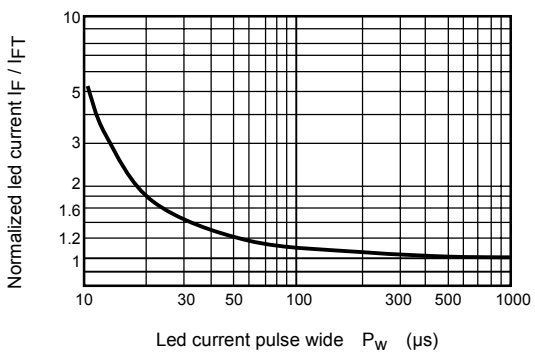
Normalized I_{DRM} – Ta



Normalized V_{DRM} – Ta



Normalized I_F / I_{FT} – P_w



RESTRICTIONS ON PRODUCT USE

000707EAA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer’s own risk.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.