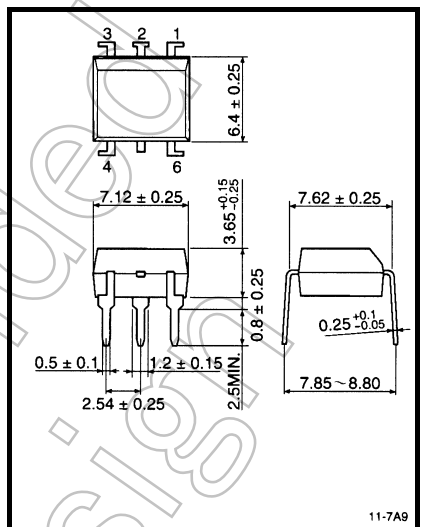
TOSHIBA Photocoupler GaAs IRED & Photo−Triac

TLP3082(S)

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	11-7A9

Weight: 0.39 g (Typ.)

Office Machine

Household Use Equipment

Triac Driver

Solid State Relay

The TOSHIBA TLP3082(S) consists of a zero voltage crossing turn-on photo-triac optically coupled to a GaAs infrared emitting diode in a six lead plastic DIP package.

Features

- Peak off-state voltage: 800 V (min)
- Trigger LED current: 10 mA (max)
- On-state current: 100 mA (max)
- Isolation voltage: 5000 Vrms (min)
- UL recognized: UL1577, file No. E67349
- Option(D4) type

  VDE approved: DIN EN 60747-5-2

  Certificate No. 40009302

  Maximum operating insulation voltage : 890Vpk

  Highest permissible over voltage : 8000Vpk

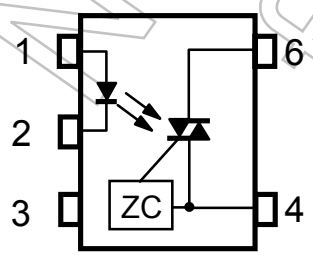
  (Note) When an EN60747-5-2 approved type is needed, please designate the “Option(D4)”.

  (Note) When specifying the application type name for certification testing, be sure to use the standard product type name, e.g. TLP3082

- Construction mechanical rating

	7.62 mm pitch standard type	10.16 mm pitch TLPXXXF type
Creepage distance	7.0 mm (min)	8.0 mm (min)
Clearance	7.0 mm (min)	8.0 mm (min)
Insulation thickness	0.4 mm (min)	0.4 mm (min)

Pin configuration (top view)



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

ZC:Zero-cross Circuit

Start of commercial production
2007/01

Absolute 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		Tj	125	°C
Detector	Off-state output terminal voltage		V_{DRM}	800	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)		I_{TSM}	1.2	A
	Junction temperature		T_j	115	°C
Storage temperature range			T_{stg}	−55 to 125	°C
Operating temperature range			T_{opr}	−40 to 100	°C
Lead soldering temperature (10s)			T_{sol}	260	°C
Isolation voltage (AC,1 minute, R.H. ≤60%)		(Note 1)	BV_S	5000	Vrms

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

(Note 1) Device considered a two terminal device: Pins1, 2 and 3 shorted together and pin4 and pin6 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-state current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	−25	—	85	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the devices. Each item also has its own independent guideline document. In developing designs using these products, please confirm the specified characteristics shown in these documents.

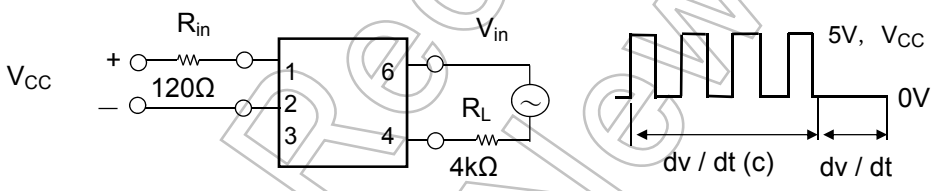
Electrical Characteristics (Ta = 25°C)

	Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
LED	Forward voltage	V_F	I_F = 10 mA	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} = 800V	—	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	Vin = 240 Vrms , Ta = 85°C (Note 2)	200	500	—	V/μs
	Critical rate of rise of commutating voltage	dv/dt(c)	Vin = 60 Vrms , I_T = 15 mA (Note 2)	—	0.2	—	V/μs

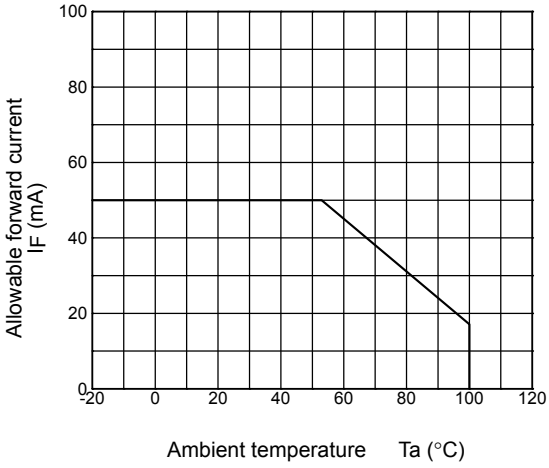
Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I_{FT}	V_T = 3V	—	5	10	mA
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 = 500 V, R.H.≦60%	1×10^{12}	10^{14}	—	Ω
Isolation voltage	BV_S	AC , 1minute	5000	—	—	Vrms
		AC , 1second, in oil	—	10000	—	
		DC , 1minute, in oil	—	10000	—	Vdc

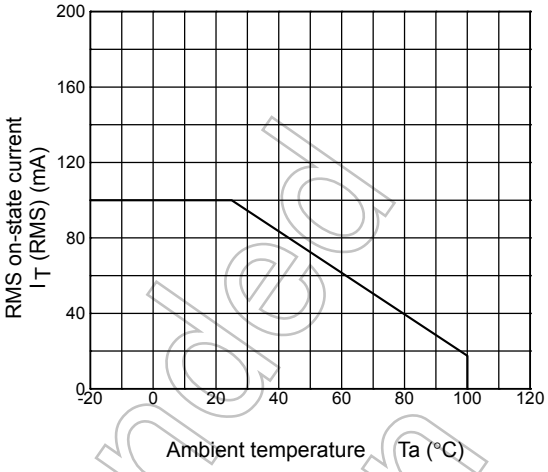
(Note 2) dv / dt test circuit



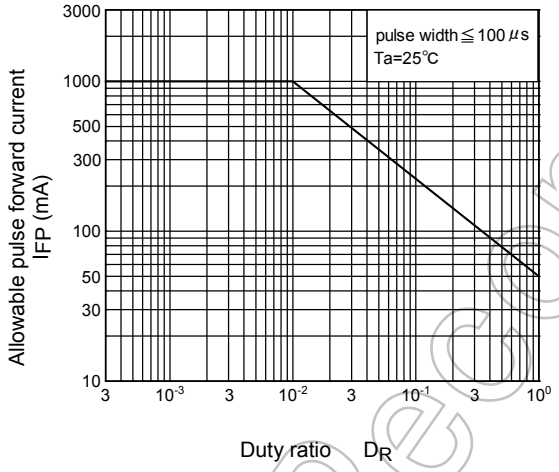
I_F – Ta



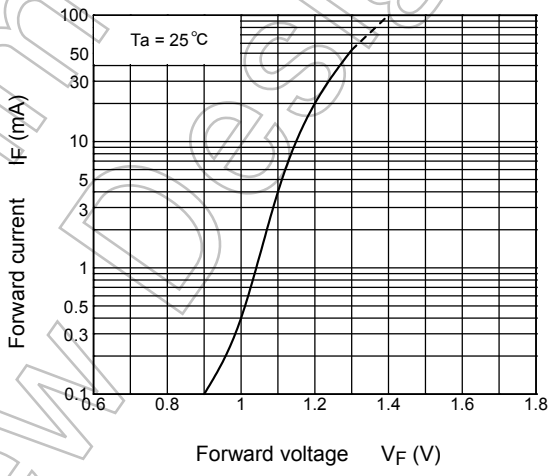
I_T (RMS) – Ta



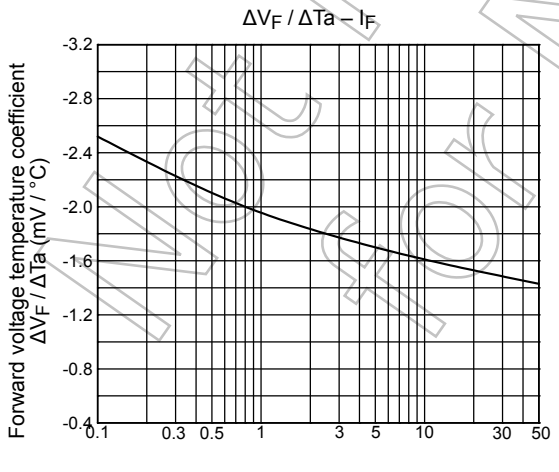
I_{FP} – D_R



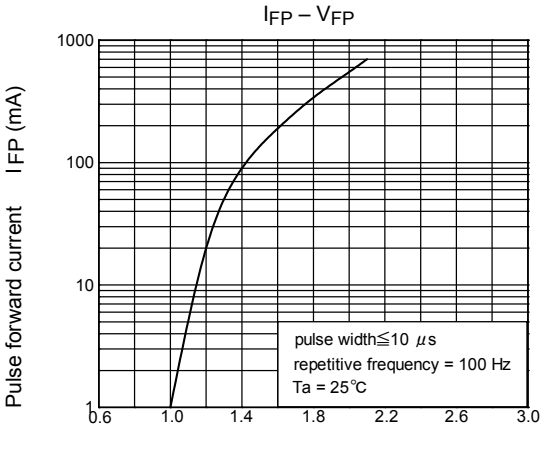
I_F – V_F



$\Delta V_F / \Delta Ta$ – I_F

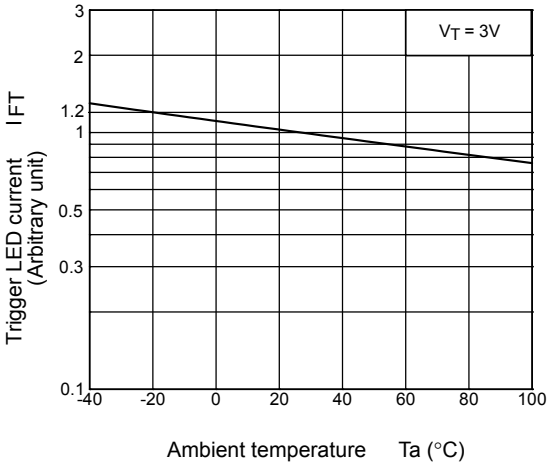


I_{FP} – V_{FP}

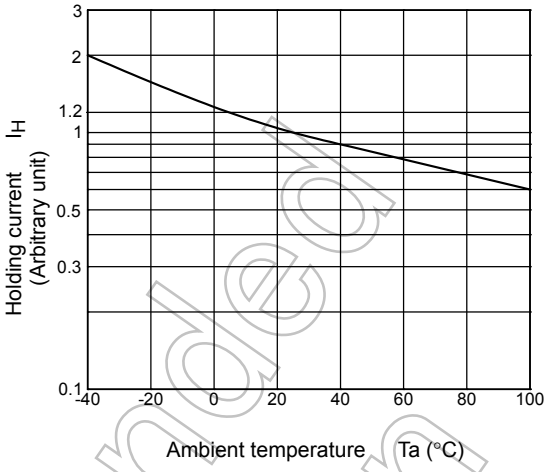


* The above graphs show typical characteristics.

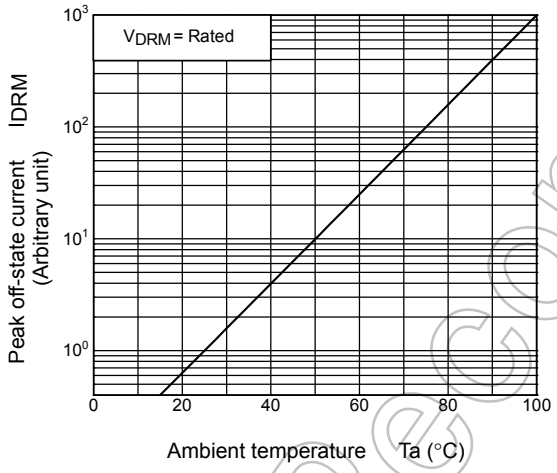
Normalized I_{FT} – Ta



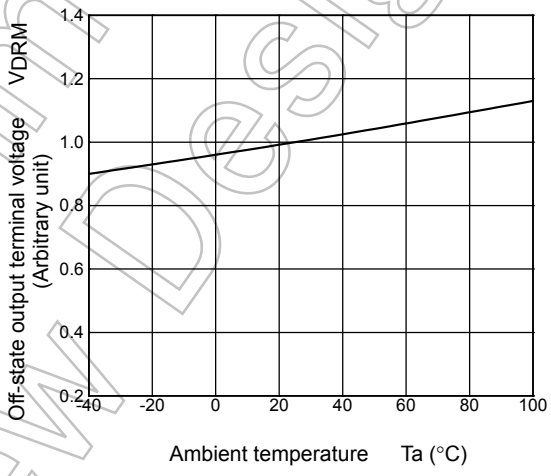
Normalized I_H – Ta



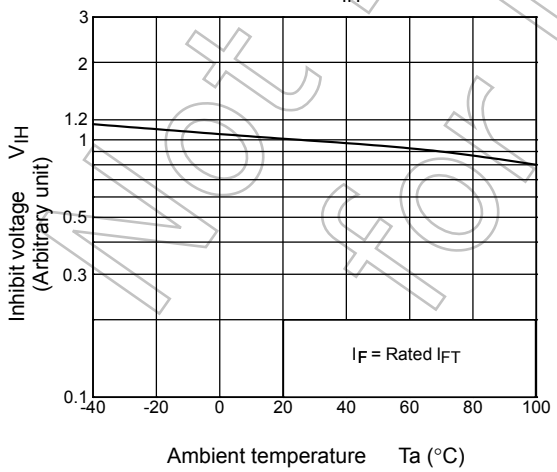
Normalized I_{DRM} – Ta



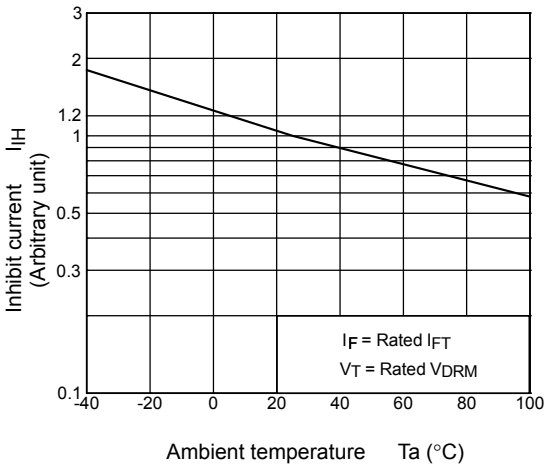
Normalized V_{DRM} – Ta



Normalized V_{IH} – Ta



Normalized I_{IH} – Ta



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