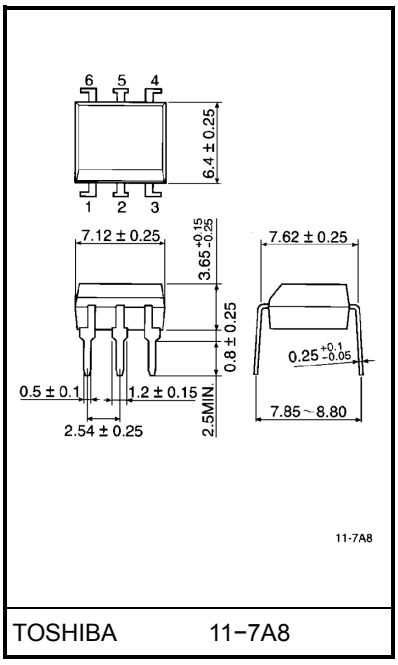
TOSHIBA Photocoupler GaAs Ired & Photo−Thyristor

TLP747J

Office Machine
Household Use Equipment
Solid State Relay
Switching Power Supply

Unit in mm



TOSHIBA 11−7A8

Weight: 0.42 g

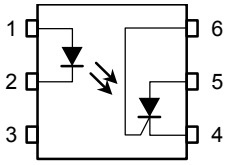
The TOSHIBA TLP747J consists of a photo−thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP.

- Peak off−state voltage: 600V min.
- Trigger LED current: 15mA max.
- On-state current: 150mA max.
- UL recognized: UL1577, file no. E67349
- BSI approved: BS EN60065: 1994,
  certificate no. 7364
  BS EN60950: 1992,
  certificate no. 7365
- SEMKO approved: SS4330784, certificate no. 9325163, 9522142
  Isoration voltage: 4000Vrms min.
- Option (D4) type
  VDE approved: DIN VDE0884 / 06.92
  Certificate no. 74286, 91808
  Maximum operating insulation voltage: 630,890V_{PK}
  Highest permissible over voltage: 6000, 8000V_{PK}

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

	7.62mm pich standard type	10.16mm pich TLP×××F type
• Creepage distance:	7.0mm (min.)	8.0mm (min.)
Clearance:	7.0mm (min.)	8.0mm (min.)
Isolation thickness:	0.5mm (min.)	0.5mm (min.)

Pin Configurations (top view)



1 : Anode
2 : Cathode
3 : NC
4 : Cathode
5 : Anode
6 : Gate

Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
LED	Forward current	I_F	60	mA
	Forward current derating (Ta ≥ 39°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	T_j	125	°C
Detector	Peak forward voltage (R_{GK} = 27kΩ)	V_{DRM}	600	V
	Peak reverse voltage (R_{GK} = 27kΩ)	V_{RRM}	600	V
	On−state current	$I_{T(RMS)}$	150	mA
	On−state current derating (Ta ≥ 25°C)	ΔI_T / °C	−2.0	mA / °C
	Peak on−state current (100μs pulse, 120pps)	I_{TP}	3	A
	Peak one cycle surge current	I_{TSM}	2	A
	Peak reverse gate voltage	V_{GM}	5	V
	Power dissipation	P_D	150	mW
	Power dissipation derating (Ta ≥ 25°C)	ΔP_D / °C	−2.0	mW / °C
	Junction temperature	T_j	100	°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
Total package power dissipation		P_T	250	mW
Total package power dissipation derating (Ta ≥ 25°C)		ΔP_T / °C	−3.3	mW / °C
Isolation voltage (AC, 1 min., R.H. ≤ 60%) (Note)		BV_S	4000	Vrms

(Note) Device considered a two terminal device: Pins 1, 2 and 3 shorted together, and pins 4, 5 and 6 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{AC}	—	—	240	Vac
Forward current	I_F	20	—	25	mA
Operating temperature	T_{opr}	−25	—	85	°C
Gate to cathode resistance	R_{GK}	—	10	27	kΩ
Gate to cathode capacity	C_{GK}	—	0.01	0.1	μF

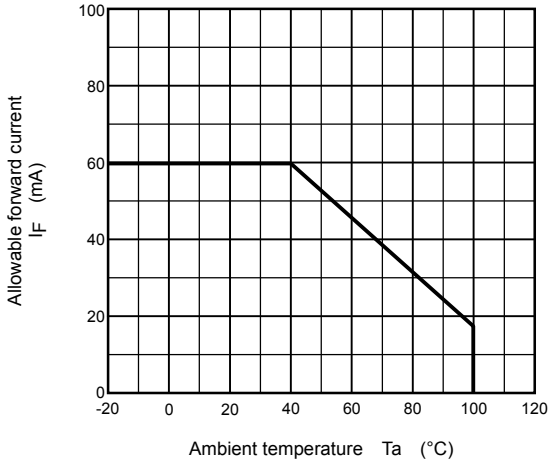
Individual Electrical Characteristics (Ta = 25°C)

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	Off−state current	I_{DRM}	V_{AK} = 400V R_{GK} = 27kΩ	Ta = 25°C	—	10	5000	nA
				Ta = 85°C	—	1	100	μA
	Reverse current	I_{RRM}	V_{KA} = 400V R_{GK} = 27kΩ	Ta = 25°C	—	10	5000	nA
				Ta = 85°C	—	1	100	μA
	On−state voltage	V_{TM}	I_{TM} = 100mA		—	0.9	1.3	V
	Holding current	I_H	R_{GK} = 27kΩ		—	0.2	—	mA
	Off−state dv / dt	dv / dt	V_{AK} = 280V, R_{GK} = 27kΩ		5	10	—	V / μs
	Capacitance	C_j	V = 0, f = 1MHz	Anode to gate	—	20	—	pF
				Gate to cathode	—	350	—	

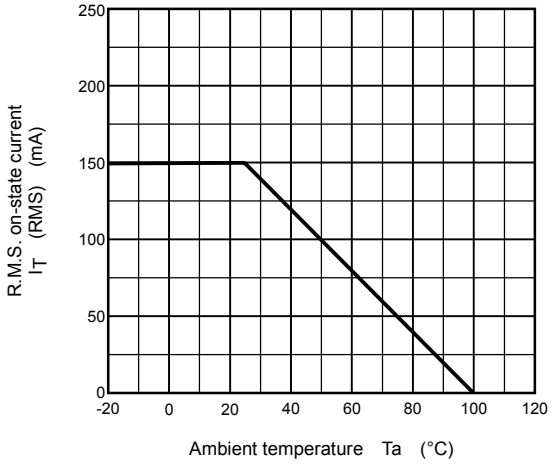
Coupled Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	V_{AK} = 6V, R_{GK} = 27kΩ	—	—	15	mA
Turn−on time	t_{ON}	I_F = 30mA, V_{AA} = 50V R_{GK} = 27kΩ	—	10	—	μs
Coupled dv / dt	dv / dt	V_S = 500V, R_{GK} = 27kΩ	500	—	—	V / μs
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	4000	—	—	Vrms
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	Vdc

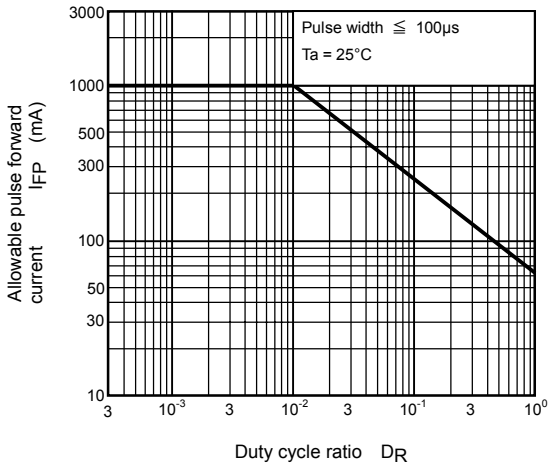
I_F – Ta



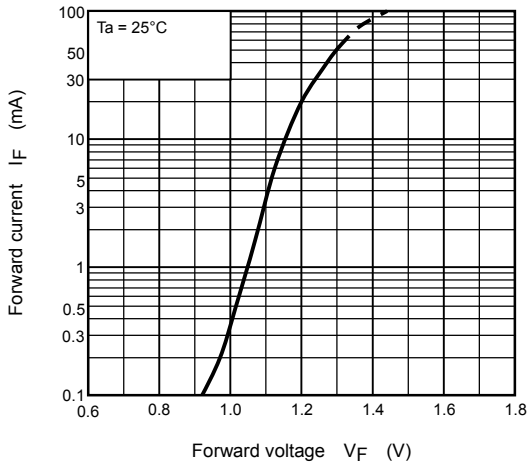
$I_{T\ (RMS)}$ – Ta



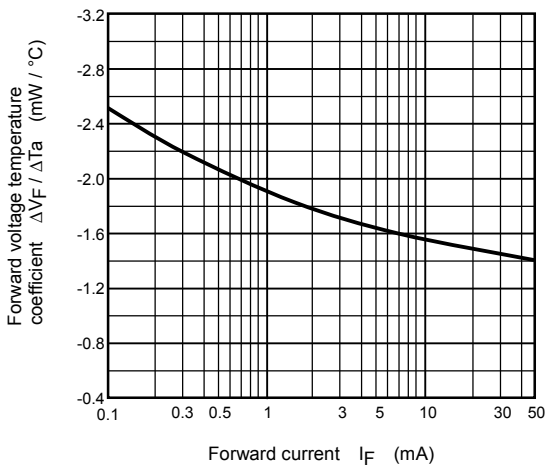
I_{FP} – D_R



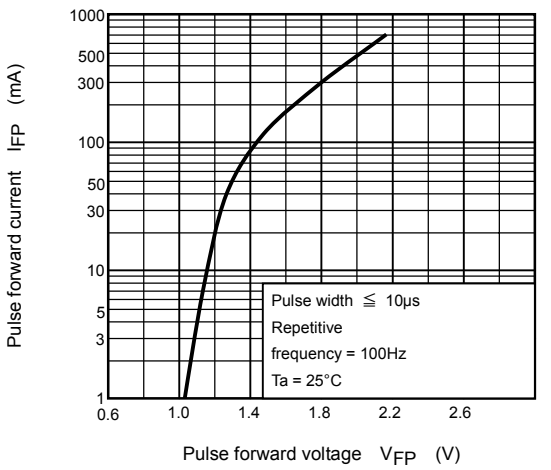
I_F – V_F



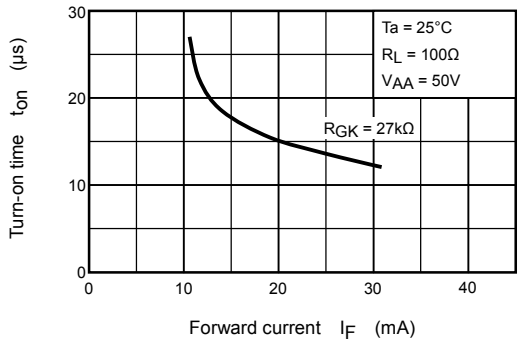
ΔV_F / ΔTa - I_F



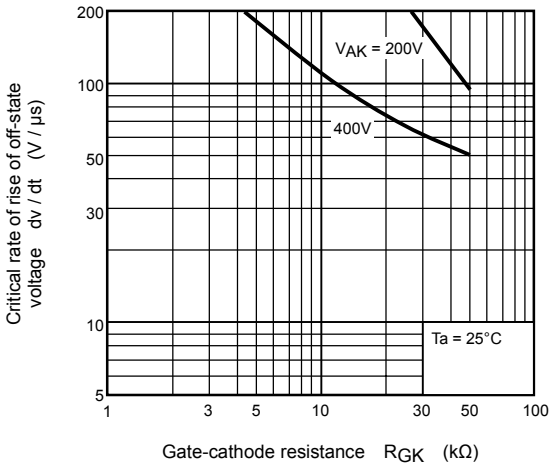
I_{FP} – V_{FP}



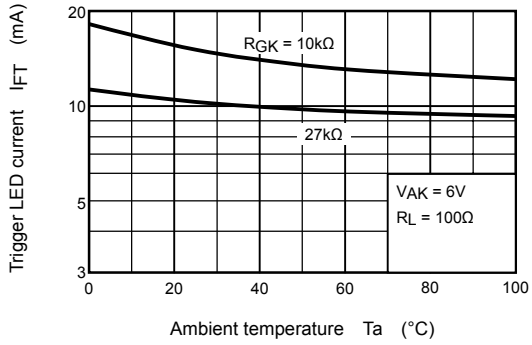
$t_{on} - I_F$



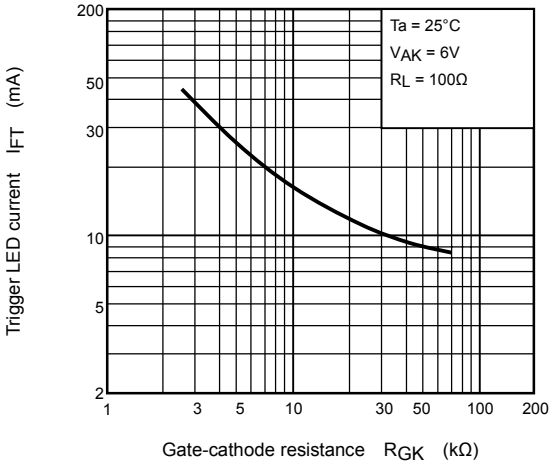
dv / dt - R_{GK}



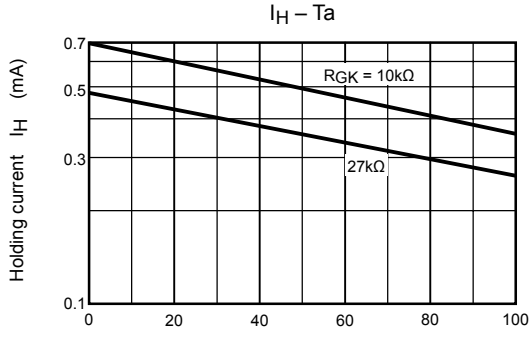
$I_{FT} - Ta$



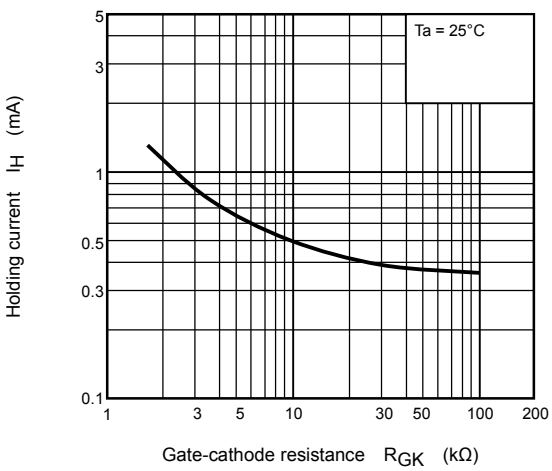
$I_{FT} - R_{GK}$



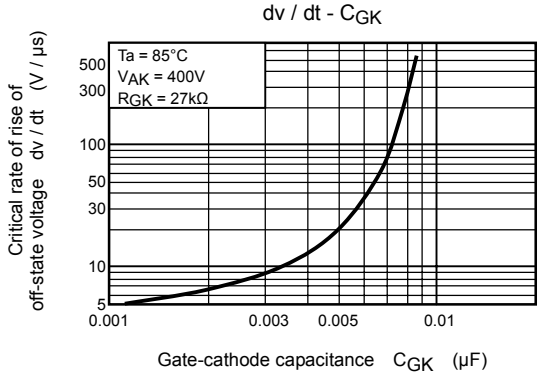
$I_H - Ta$



$I_H - R_{GK}$



dv / dt - C_{GK}



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