TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-THYRISTOR

TLP747J

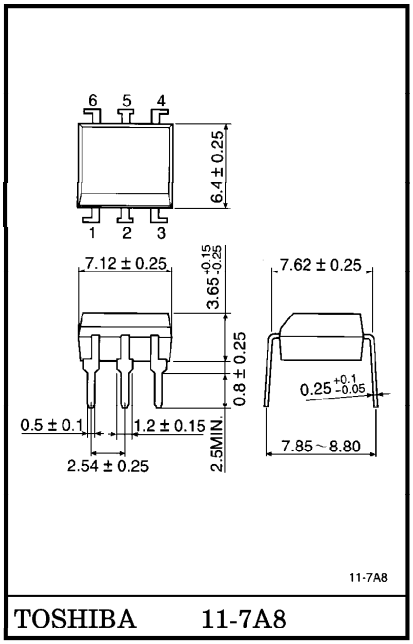
OFFICE MACHINE

HOUSEHOLD USE EQUIPMENT

SOLID STATE RELAY

SWITCHING POWER SUPPLY

Unit in mm



TOSHIBA 11-7A8

Weight : 0.42g

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

  Isolation Voltage : 4000Vrms Min.
- Option (D4) type

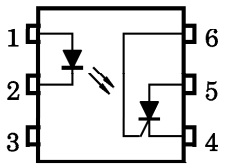
  VDE Approved : DIN VDE0884 / 06.92
  Certificate No. 74286, 91808

  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

961001EBC2

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-StateCurrent	$I_{T\,(RMS)}$	150	mA
	On-StateCurrent Derating (Ta ≧ 25°C)	ΔI_T / °C	−2.0	mA / °C
	Peak On-StateCurrent (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 Temperatur (10s)		Tsol	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, 1min., 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

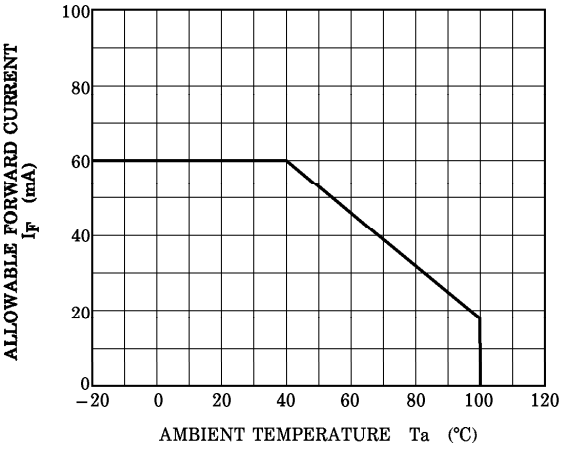
INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	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	—	

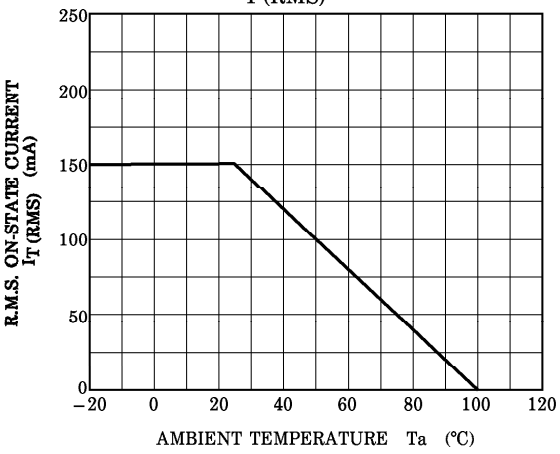
COUPLED CHARACTERISTICS (Ta = 25°C)

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

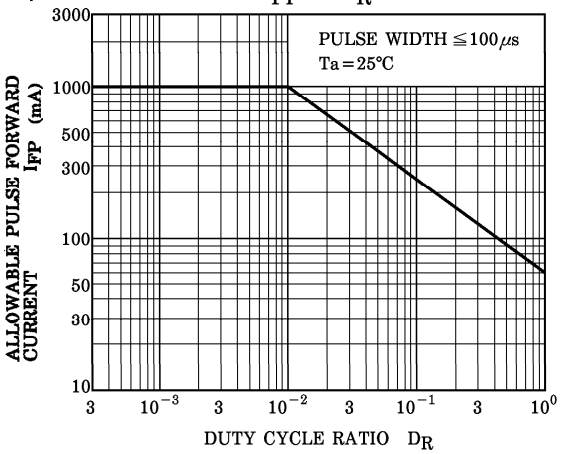
I_F – Ta



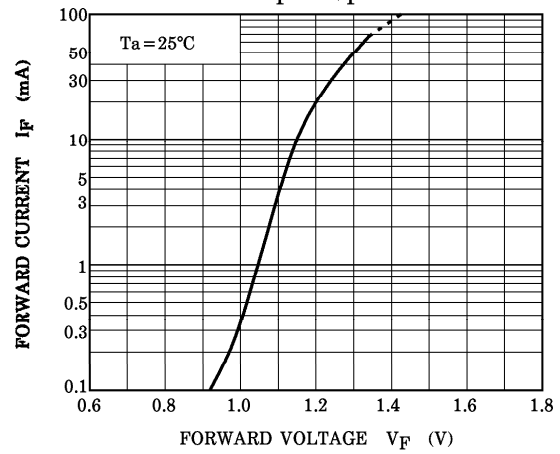
$I_{T\,(RMS)}$ – Ta



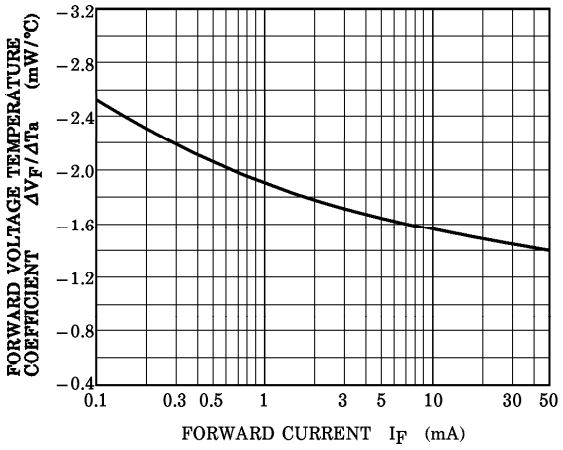
I_{FP} – D_R



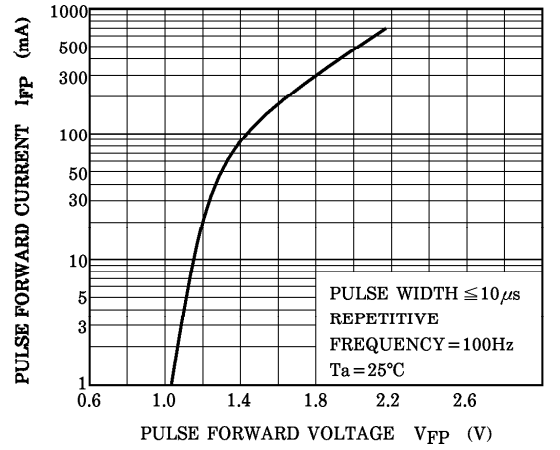
I_F – V_F



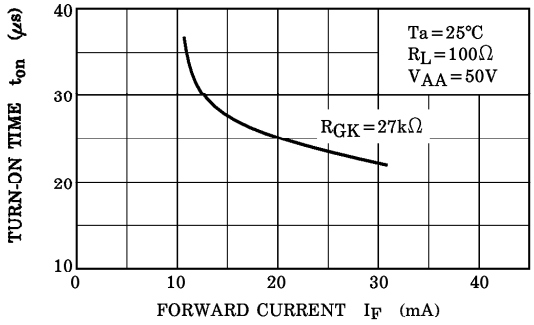
$\Delta V_F / \Delta Ta$ – I_F



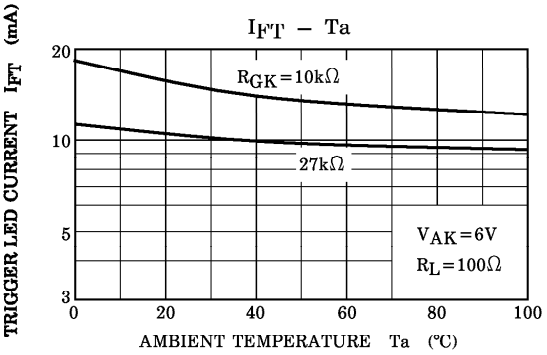
I_{FP} – V_{FP}



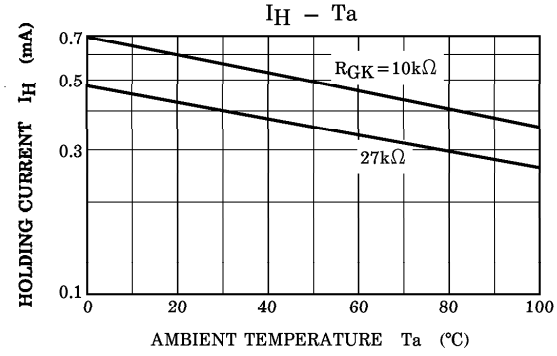
t_{on} – I_F



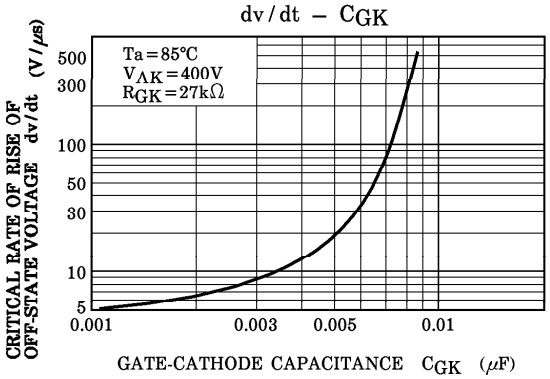
I_{FT} – Ta



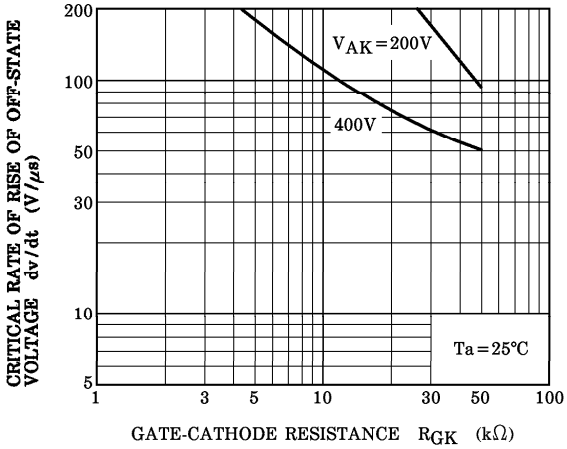
I_H – Ta



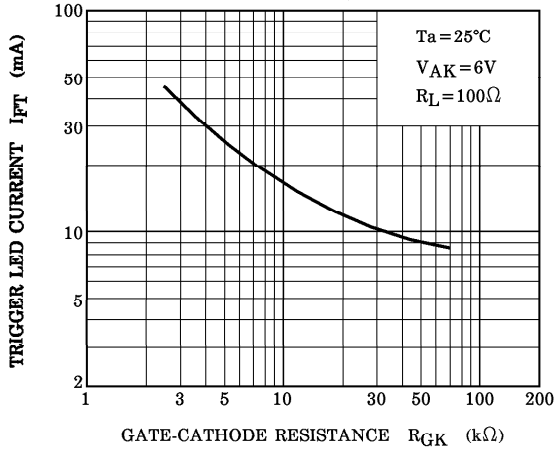
dv / dt – C_{GK}



dv / dt – R_{GK}



I_{FT} – R_{GK}



I_H – R_{GK}