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TOSHIBA Photocoupler GaAs IRed & Photo-Thyristor

TLP748J

Office Machine Household Use Equipment Solid State Relay Switching Power Supply

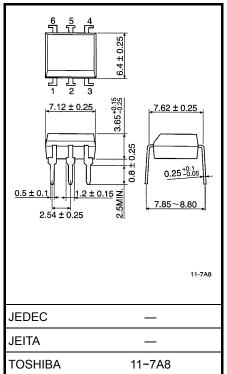
The TOSHIBA TLP748J consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

- Peak OFF-state voltage: 600 V (min)
- Trigger LED current: 10 mA (max)
- ON-state current: 150 mA (max)
- UL recognized: UL1577, file no. E67349
- BSI approved : BS EN60065:2002,
- BS EN60950-1:2006
 SEMKO approved : EN60065:2002,
 - EN60950-1:2006
- Isolation voltage: 4000 Vrms (min)
- Option (D4) type VDE approved : DIN EN 60747-5-2

 $\label{eq:maximum} \begin{array}{l} \mbox{Maximum operating insulation voltage: $890 V_{pk}} \\ \mbox{Highest permissible over voltage: $8000 V_{pk}} \end{array}$

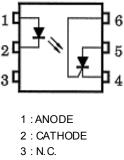
(Note) When a EN 60747-5-2 approved type is needed, please designate the "option (D4)"

		7.62 mm pitch	10.16 mm pitch
		standard type	TLPxxxxF type
٠	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)



Weight: 0.42 g (typ.)

Pin Configuration (top view)



4 : CATHODE

5 : ANODE

6 : GATE

Unit in mm

Absolute Maximum Ratings (Ta = 25°C)

	Characteristic	Symbol	Rating	Unit	
LED	Forward current	١ _F	50	mA	
	Forward current derating (Ta ≥ 53 °C)	ΔI _F / °C	-0.7	mA / °C	
Щ	Peak forward current (100 μ s pulse, 100 pps)	I _{FP}	1	A	
	Reverse voltage	V _R	5	V	
	Peak forward voltage (R_{GK} = 27 k Ω)	V _{DRM}	600	V	
	Peak reverse voltage (R_{GK} = 27 k Ω)	V _{RRM}	600	V	
<u> </u>	ON-state current	I _{T(RMS)}	150	mA	
Detector	ON–state current derating (Ta ≥ 25°C)	ΔI _T / °C	-2.0	mA / °C	
Det	Peak ON–state current (100 μ s pulse, 120 pps)	I _{TP}	3	А	
	Peak one cycle surge current	ITSM	2	А	
	Peak reverse gate voltage	V _{GM}	5	V	
Storag	e temperature range	T _{stg}	–55 to 125	°C	
Operat	ing temperature range	T _{opr}	-40 to 100	°C	
Lead s	oldering temperature (10 s)	T _{sol}	260	°C	
Isolatio	on voltage (AC, 1 min., R.H.≤ 60%) (Note 1)	BVS	4000	V _{rms}	

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 : pins 1,2 and 3 shorted together and pins 4,5 and 6 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min	Тур.	Max	Unit
Supply voltage	V _{AC}	_	_	240	Vac
Forward current	١ _F	15	-	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

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

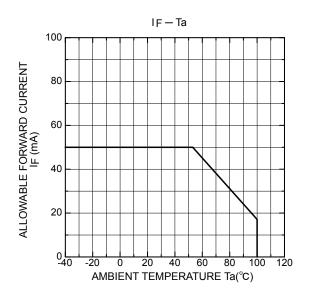
Individual Electrical Characteristics (Ta = 25°C)

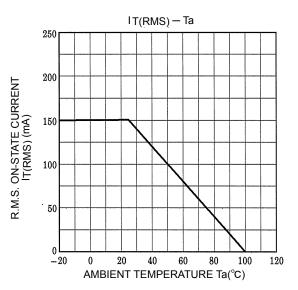
Characteristic		Symbol	Test Condition		Min	Тур.	Max	Unit
LED	Forward voltage	V _F	I _F = 10 mA		1.0	1.15	1.3	V
	Reverse current	l _R	V _R = 5 V			_	10	μA
	Capacitance	CT	V = 0 V, f = 1 MHz			30	_	pF
	OFF-state current	I _{DRM}	V _{AK} = 600 V, R _{GK} = 27 kΩ			_	5	μA
	Reverse current	I _{RRM}	V _{KA} = 600 V, R _{GK} = 27 kΩ			_	5	μA
ъ	ON-state voltage	V _{TM}	I _{TM} = 100 mA			_	1.45	V
Detector	Holding current	IH	R _{GK} = 27 kΩ		-	_	1	mA
Ğ	OFF-state dv / dt	dv / dt	V _{AK} = 420 V, R _{GK} = 27 kΩ		5	_	_	V/μs
		V = 0 V,	Anode to gate	_	5	_	~ [
	Capacitance	Cj	f = 1 MHz	Gate to cathode	-	500	_	pF

Coupled Characteristics (Ta = 25°C)

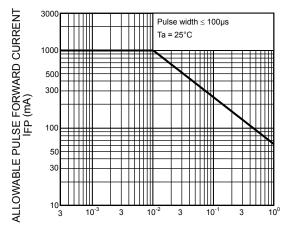
Characteristic	Symbol	Test Condition	Min	Тур.	Max	Unit	
Trigger LED current	I _{FT}	V_{AK} = 6 V, R_{GK} = 27 k Ω	_	_	10	mA	
Turn–on time	ton	I _F = 30 mA, V _{AA} = 50 V R _{GK} = 27 kΩ		15	_	μS	
Capacitance (input to output)	CS	V _S = 0 V, f = 1 MHz	-	0.8	_	pF	
Isolation resistance	R _S	R _S V _S = 500 V, R.H.≤ 60%		10 ¹⁴	_	Ω	
	BVS	AC, 1 minute	4000	-	_	- V _{rms}	
Isolation voltage		AC, 1 second, in oil	_	10000	_		
		DC, 1 minute, in oil	_	10000	_	V _{dc}	

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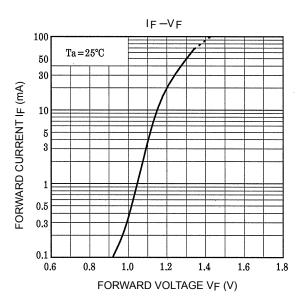


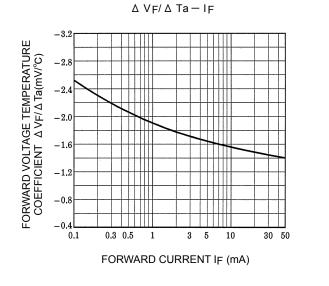


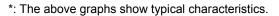




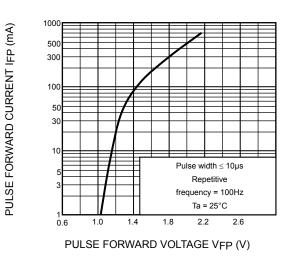
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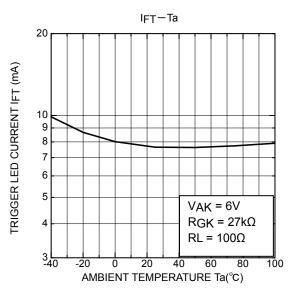


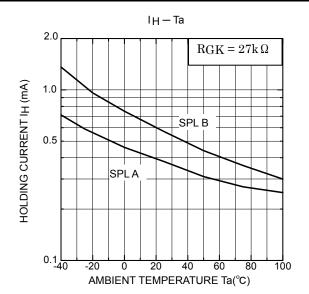


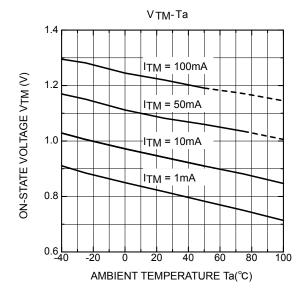
IFP -VFP



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*: The above graphs show typical characteristics.

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