TOSHIBA TLP748J

TOSHIBA Photocoupler GaAs IRed & Photo-Thyristor

TENTATIVE

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 (scheduled): UL1577, file no. E67349
- BSI approved (scheduled): BS EN60065

BS EN60950:

SEMKO approved (scheduled): SS4330784,
 SS-EN60950

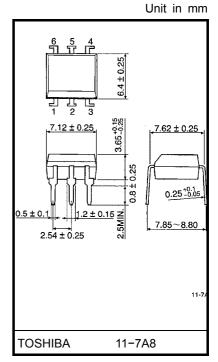
- Isolation voltage: 4000 Vrms (min.)
- Option (D4) type

VDE approved (scheduled): DIN EN 60747-5-2

Maximum operating insulation voltage: $630\ V_{pk}$, $890\ V_{pk}$ Highest permissible over voltage: $6000\ V_{pk}$, $8000\ V_{pk}$

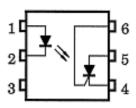
(Note) When a EN 60747-5-2 approved type is needed, please designate the "option (D4)"

		7.62 mm pich	10.16 mm pich			
		standard type	(LF2) type			
•	Creepage distance:	7.0 mm (min.)	8.0 mm (min.)			
	Clearance:	7.0 mm (min.)	8.0 mm (min.)			
	Insulation thickness:	0.5 mm (min.)	0.5 mm (min.)			



Weight: 0.42g

Pin Configuration (top view)



- 1: ANODE
- 2 : CATHODE
- 3: N.C.
- 4: CATHODE
- 5 : ANODE
- 6: GATE



Absolute Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit	
LED	Forward current	l _F	50	mA	
	Forward current derating (Ta ≥ 39°C)	ΔI _F / °C	-0.7	mA / °C	
<u>"</u>	Peak forward current (100 µs pulse, 100 pps)	I _{FP}	1	Α	
	Reverse voltage	V_{R}	5	٧	
	Peak forward voltage (R _{GK} = 27 kΩ)	V_{DRM}	600	V	
	Peak reverse voltage (R _{GK} = 27 kΩ)	V_{RRM}	600	V	
ō	On-state current	I _{T(RMS)}	150	mA	
Detector	On–state current derating (Ta ≥ 25°C)	ΔI _T / °C	-2.0	mA / °C	
ă	Peak on-state current (100µs pulse, 120 pps)	I _{TP}	3	Α	
	Peak one cycle surge current	I _{TSM}	2	Α	
	Peak reverse gate voltage	V_{GM}	5	V	
Storage temperature range		T _{stg}	-55~125	°C	
Operating temperature range		T _{opr}	-55~100	°C	
Lead soldering temperature (10 s)		T _{sol}	260	°C	
Isolatio	Isolation voltage (AC, 1 min., R.H.≤ 60%)		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).

Recommended Operating Conditions

Characteristic	Symbol	Min.	Тур.	Max.	Unit
Supply voltage	V _{AC}	_	_	240	V _{ac}
Forward current	lF	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
	Forward voltage	V _F	I _F = 10 mA		1.0	1.15	1.3	V
ЕÐ	Reverse current	I _R	V _R = 5 V		_	_	10	μA
	Capacitance	C _T	V = 0, f = 1 MHz		_	30	_	pF
	Off-state current	I _{DRM}	V _{AK} = 600 V, R _{GK} = 27 kΩ		_	_	5	μΑ
	Reverse current	I _{RRM}	$V_{KA} = 600 \text{ V}, R_{GK} = 27 \text{ k}\Omega$		_	_	5	μΑ
ō	On-state voltage	V _{TM}	I _{TM} = 100 mA		_	_	1.45	V
Detector	Holding current	lн	R _{GK} = 27 kΩ		_	_	1	mA
۵	Off–state dv / dt	dv / dt	V _{AK} = 420 V, R _{GK} = 27 kΩ		5	_	_	V/µs
	Compaitemen	V = 0, f = 1 MHz	Anode to gate	_	_	_	~F	
	Capacitance	Capacitance C_j $V = 0, f = 1 \text{ N}$	v = 0, i = 1 lVl \(\pi\)2	Gate to cathode		_	_	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	t _{ON}	I_F = 30 mA, V_{AA} = 50 V R_{GK} = 27 kΩ	_	_	_	μs	
Capacitance (input to output)	CS	V _S = 0, f = 1 MHz	_	0.8	_	рF	
Isolation resistance	R _S	V _S = 500 V	1×10 ¹²	10 ¹⁴	_	Ω	
	BVS	AC, 1 minute	4000	_	_	V	
Isolation voltage		AC, 1 second, in oil	_	10000	_	V _{rms}	
		DC, 1 minute, in oil	_	10000	_	V _{dc}	

TOSHIBA TLP748J

RESTRICTIONS ON PRODUCT USE

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