TOSHIBA Photocoupler GaAlAs IRed & Photo-Triac

TLP168J

Triac Driver
Programmable Controllers
AC-Output Modules
Solid State Relays

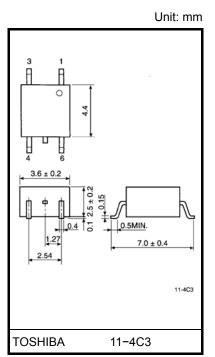
The TOSHIBA mini-flat coupler TLP168J is a small-outline coupler suitable for surface mount assembly.

The TLP168J consists of a GaAlAs infrared emitting diode optically coupled to a triac-output photocoupler.

- Zero-voltage crossing turn-on
- Peak off-state voltage: 600 V (min)
- Trigger LED current: 3 mA (max)
- On-state current: 70 mA (max)
- Isolation voltage: 2500 Vrms (min)

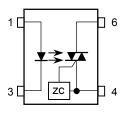
Absolute Maximum Ratings (Ta = 25°C)

	Characteristic		Symbol	Rating	Unit
	Forward current		lF	20	mA
LED	Forward current derating (Ta ≥ 25°C)		ΔI _F / °C	-0.2	mA / °C
	Peak forward current (100 µs pulse, 100 pps)	I _{FP}	1	А	
	Reverse voltage	V _R	5	V	
	Junction temperature	Tj	125	°C	
	Off–state output terminal voltage		V_{DRM}	600	V
	On-state RMS current	Ta = 25°C	I	70	mA
Detector		Ta = 70°C	I _{T(RMS)}	40	mA
	On–state current derating (Ta ≥ 25°C)		ΔI _T / °C	-0.67	mA / °C
	Peak on–state current (100 µs pulse, 120 pps)		I _{TP}	2	А
	Peak nonrepetitive surge current (PW=10 ms, DC=10%)		I _{TSM}	1.2	А
	Junction temperature		Tj	115	°C
Stora	age temperature range	T _{stg}	-55 to 125	°C	
Operating temperature range		T _{opr}	-40 to 100	°C	
Lead	d soldering temperature (10 s)		T _{sol}	260	°C
Isolation voltage (AC, 1 min., R.H. ≤ 60%) (Note 1)		BVS	2500	Vrms	



Weight: 0.09 g (typ.)

Pin Configurations



- 1: Anode
- 3: Cathode
- 4: Terminal 1
- 6: Terminal 2

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 and 3 shorted together and Pin 4 and 6 shorted together.



Recommended Operating Conditions

Characteristic	Symbol	Min	Тур.	Max	Unit
Supply voltage	V _{AC}	_	_	240	Vac
Forward current	lF	4.5	6	7.5	mA
Peak on-state current	I _{TP}	_	_	1	Α
Operating temperature	T _{opr}	-10	_	85	°C

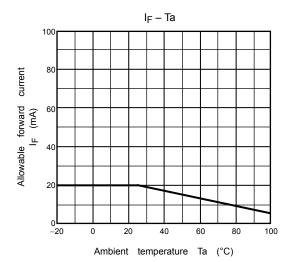
Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

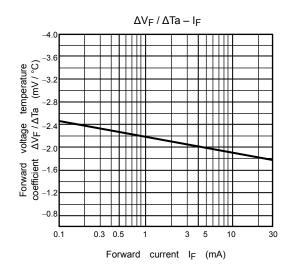
Individual Electrical Characteristics (Ta = 25°C)

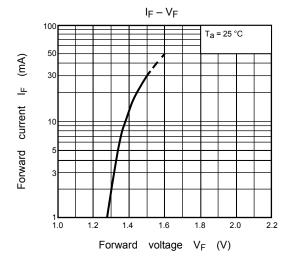
Characteristic		Symbol	Test Condition	Min	Тур.	Max	Unit
LED	Forward voltage	V _F	I _F =10 mA	1.2	1.4	1.7	V
	Reverse current	I _R	V _R = 3 V	_	_	10	μA
	Capacitance	C _T	V = 0, f = 1 MHz	_	30	_	pF
Detector	Peak off-state current	I _{DRM}	V _{DRM} = 600 V	_	10	1000	nA
	Peak on-state voltage	V _{TM}	I _{TM} = 70 mA	_	1.7	2.8	V
	Holding current	lΗ	_	_	0.6	_	mA
	Critical rate of rise of off– state voltage	dv / dt	V _{in} = 240 Vrms, Ta = 85°C	200	500	_	V / µs
	Critical rate of rise of commutating voltage	dv / dt(c)	V _{in} = 60 Vrms I _T = 15 mA		0.2	_	V / µs

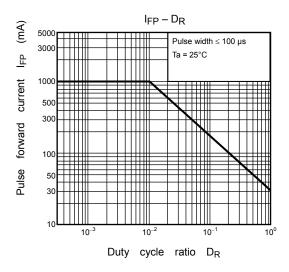
Coupled Electrical Characteristics (Ta = 25°C)

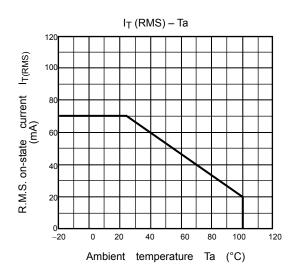
Characteristic	Symbol	Test Condition	Min	Тур.	Max	Unit
Trigger LED current	I _{FT}	V _T = 3V	_	_	3	mA
Inhibit voltage	V _{IH}	I _F = Rated I _{FT}	_	_	50	V
Leakage in inhibited state	lін	I _F = Rated I _{FT} V _T = Rated V _{DRM}	_	200	600	μΑ
Capacitance (input to output)	Cs	V _S = 0, f = 1 MHz	_	0.8	_	pF
Isolation resistance	R _S	V _S = 500 V, R.H. ≤ 60%	5×10 ¹⁰	10 ¹⁴	_	Ω
	BVS	AC, 1 minute	2500	_	_	Vrms
Isolation voltage		AC, 1 second, in oil	_	5000	_	
		DC, 1 minute, in oil	_	5000	_	Vdc



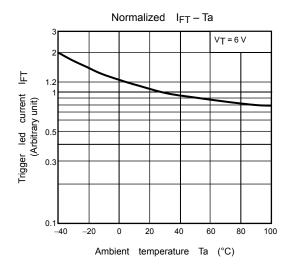


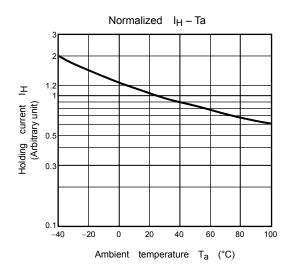


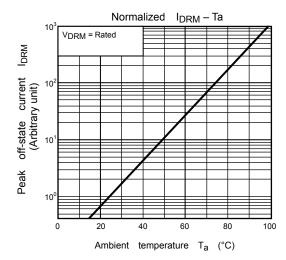


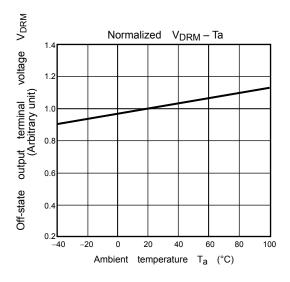


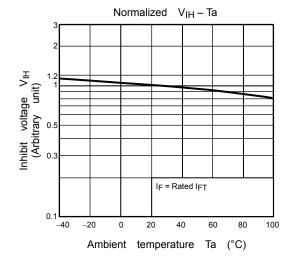
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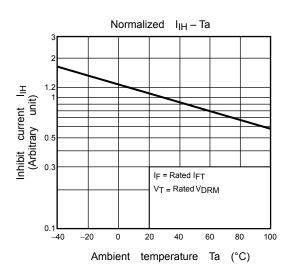












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