

**TENTATIVE**

TOSHIBA Photocoupler GaAlAs IRed & Photo-Triac

# TLP168J

Triac Drive

Programmable Controllers

AC-Output Module

Solid State Relay

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

The TLP168J consists of a photo triac, optically coupled to a GaAlAs infrared emitting diode.

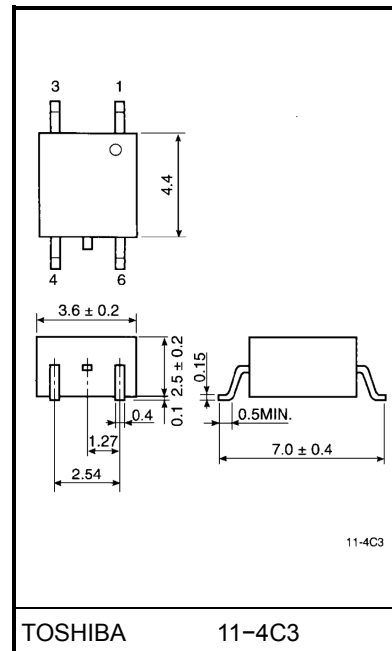
- Zero-voltage crossing turn-on
- Peak off-state voltage: 600 V (min.)
- Trigger LED current: 3 mA (max.)
- On-state current: 70 mA (max.)
- Isolation voltage: 2500 Vrms (min.)

## Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
LED	Forward current	$I_F$	20	mA
	Forward current derating (Ta ≥ 25°C)	$\Delta I_F / ^\circ\text{C}$	-0.2	mA / °C
	Peak forward current (100µs pulse, 100 pps)	$I_{FP}$	1	A
	Reverse voltage	$V_R$	5	V
	Junction temperature	$T_j$	125	°C
Detector	Off-state output terminal voltage	$V_{DRM}$	600	V
	On-state RMS current	Ta=25°C	70	mA
		Ta=70°C	40	
	On-state current derating (Ta ≥ 25°C)	$\Delta I_T / ^\circ\text{C}$	-0.67	mA / °C
	Peak on-state current (100µs pulse, 120 pps)	$I_{TP}$	2	A
	Peak nonrepetitive surge current (PW=10ms, DC=10%)	$I_{TSM}$	1.2	A
	Junction temperature	$T_j$	115	°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
Isolation voltage (AC, 1 min., R.H. ≤ 60%) (Note)		BVS	2500	Vrms

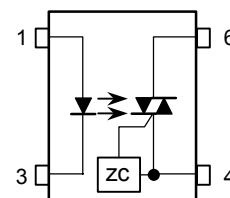
(Note) Device considered a two terminal device: Pins 1 and 3 shorted together and pins 4 and 6 shorted together.

Unit in mm



Weight: 0.09 g

## Pin Configurations



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

## Recommended Operating Conditions

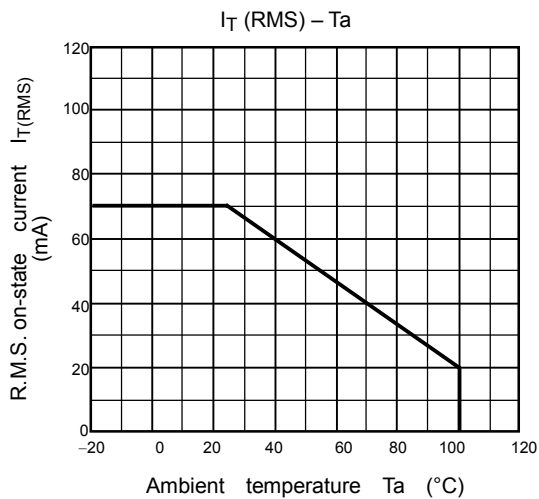
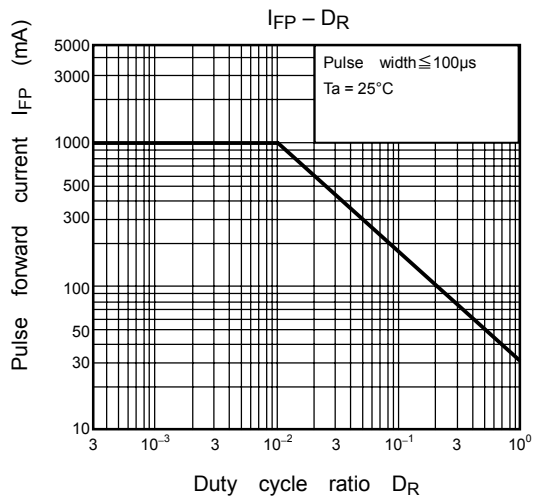
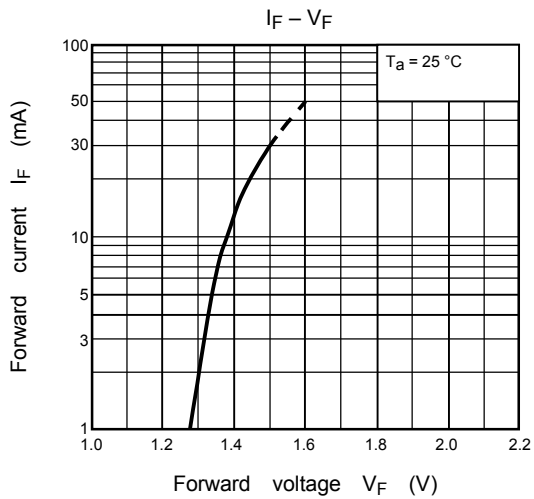
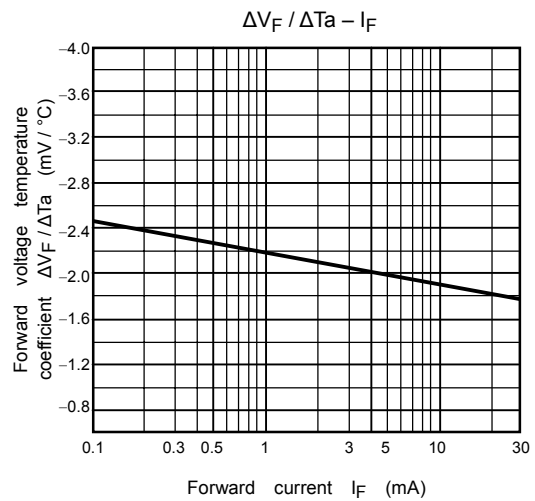
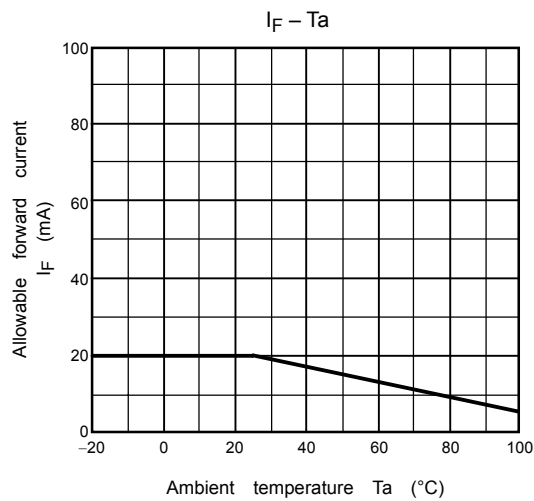
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	$V_{AC}$	—	—	240	$V_{ac}$
Forward current	$I_F$	4.5	6	7.5	mA
Peak on-state current	$I_{TP}$	—	—	1	A
Operating temperature	$T_{opr}$	-10	—	85	°C

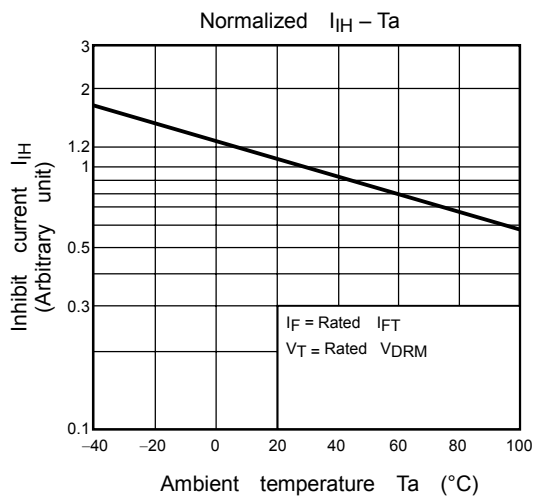
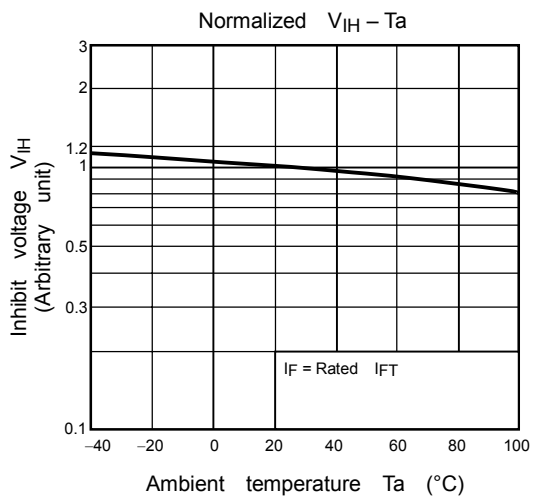
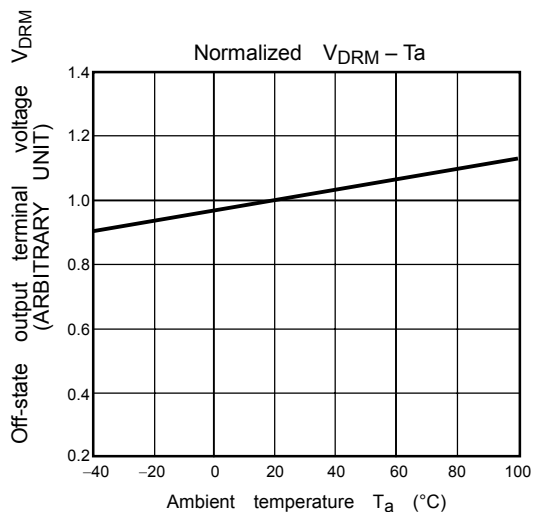
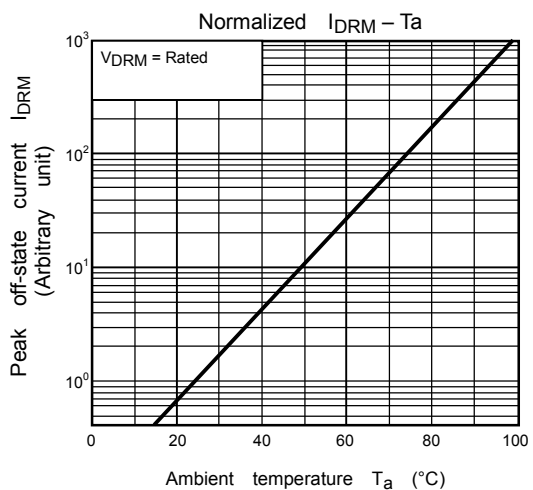
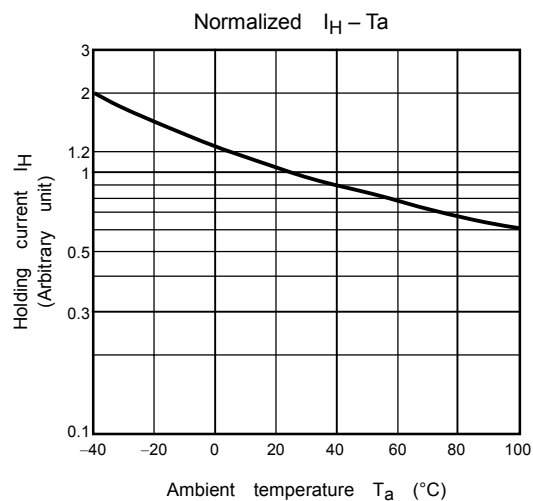
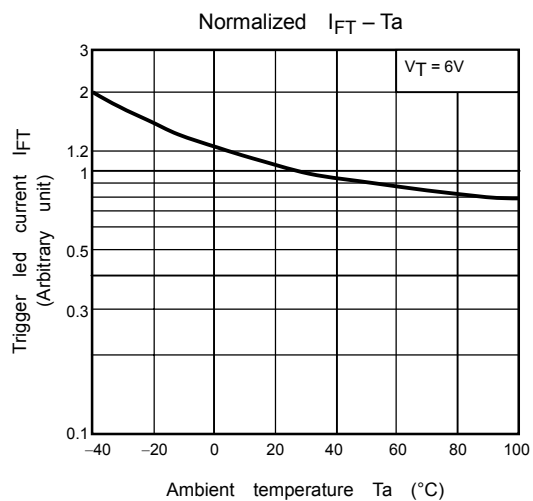
## Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	$V_F$	$I_F=10\text{mA}$	1.2	1.4	1.7	V
	Reverse current	$I_R$	$V_R=3\text{V}$	—	—	10	$\mu\text{A}$
	Capacitance	$C_T$	$V=0, f=1\text{MHz}$	—	30	—	pF
Detector	Peak off-state current	$I_{DRM}$	$V_{DRM}=600\text{V}$	—	10	1000	nA
	Peak on-state voltage	$V_{TM}$	$I_{TM}=70\text{mA}$	—	1.7	2.8	V
	Holding current	$I_H$	—	—	0.6	—	mA
	Critical rate of rise of off-state voltage	$dv / dt$	$V_{in}=240\text{Vrms}, T_a=85^\circ\text{C}$	200	500	—	$\text{V} / \mu\text{s}$
	Critical rate of rise of commutating voltage	$dv / dt(c)$	$V_{in}=60\text{Vrms}$ $I_T=15\text{mA}$	—	0.2	—	$\text{V} / \mu\text{s}$

## Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	$I_{FT}$	$V_T=6\text{V}$	—	—	3	mA
Inhibit voltage	$V_{IH}$	$I_F=\text{Rated } I_{FT}$	—	—	50	V
Leakage in inhibited state	$I_{IH}$	$I_F=\text{Rated } I_{FT}$ $V_T=\text{Rated } V_{DRM}$	—	200	600	$\mu\text{A}$
Capacitance (input to output)	$C_S$	$V_S=0, f=1\text{MHz}$	—	0.8	—	pF
Isolation resistance	$R_S$	$V_S=500\text{V}, \text{R.H.} \leq 60\%$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
Isolation voltage	$BV_S$	AC, 1 minute	2500	—	—	$V_{rms}$
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc





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