

TLP260J

Triac Drivers
 Programmable Controllers
 AC-Output Modules
 Solid-State Relays

The TOSHIBA mini-flat coupler TLP260J is a small-outline coupler suitable for surface mount assembly.

The TLP260J consists of a photo-triac optically coupled to a gallium arsenide infrared-emitting diode.

- Peak off-state voltage : 600 V (min)
- Trigger LED current : 10 mA (max)
- On-state current : 70 mA (max)
- Isolation voltage : 3000 Vrms (min)
- UL approved: UL1577, File No.E67349
- Option (V4) VDE approved : EN60747-5-5 (Note1)

Note 1 : When a EN60747-5-5 approved type is needed, please designate "Option(V4)"

Maximum operating insulation voltage : 565 Vpk
 Highest permissible overvoltage : 6000 Vpk

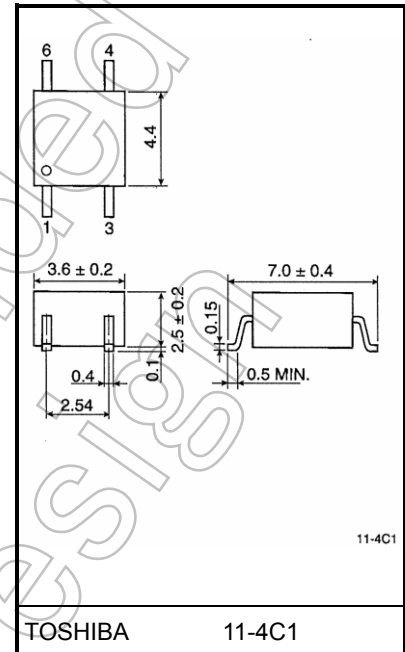
- Construction Mechanical Rating
 - Creepage distance : 4.0 mm (min)
 - Clearance : 4.0 mm (min)
 - Insulation thickness : 0.4 mm (min)

Trigger LED Current

Classification	Trigger LED Current (mA)		Product Classification Marking
	V _T = 6 V, T _a = 25°C		
	Min	Max	
Standard	—	10	Blank

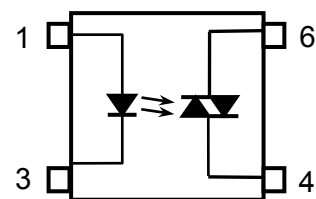
Note: Be sure to use standard product type names when submitting type names for safety certification testing, i.e., TLP260J.

Unit: mm



Weight: 0.09 g (typ.)

Pin Configuration (top View)



- 1. Anode
- 3. Cathode
- 4. Triac Terminal
- 6. Triac Terminal

Start of commercial production
 1996-07

Absolute Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit	
LED	Forward current	I_F	50	mA	
	Forward current derating (Ta ≥ 53°C)	$\Delta I_F / ^\circ\text{C}$	-0.7	mA / °C	
	Peak forward current (100 μs pulse, 100 pps)	I_{FP}	1	A	
	Reverse voltage	V_R	5	V	
	Diode power dissipation	P_D	100	mW	
	Diode power dissipation derating (Ta ≥ 53°C)	$\Delta P_D / ^\circ\text{C}$	-1.4	mW/°C	
	Junction temperature	T_j	125	°C	
Detector	Off-state output terminal voltage	V_{DRM}	600	V	
	On-state RMS current	$I_{T(RMS)}$	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 (100 μs pulse, 120 pps)	I_{TP}	2	A	
	Peak nonrepetitive surge current (PW = 10 ms)	I_{TSM}	1.2	A	
	Output power dissipation	P_o	200	mW	
	Output power dissipation derating (Ta ≥ 25°C)	$\Delta P_o / ^\circ\text{C}$	-2.0	mW / °C	
	Junction temperature	T_j	100	°C	
Storage temperature range	T_{stg}	-55 to 125	°C		
Operating temperature range	T_{opr}	-40 to 100	°C		
Lead soldering temperature (10 s)	T_{sol}	260	°C		
Isolation voltage (AC, 60 s, R.H. ≤ 60%) (Note 1)	BV_S	3000	Vrms		

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 as a two-terminal device: Pins 1 and 3 shorted together and pins 4 and 6 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min	Typ.	Max	Unit
Supply voltage	V_{AC}	—	—	240	Vac
Forward current	I_F	15	20	25	mA
Peak on-state current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	-25	—	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.

Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
LED	Forward voltage	V_F	$I_F = 10 \text{ mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5 \text{ V}$	—	—	10	μA
	Capacitance	C_T	$V_F = 0 \text{ V}, f = 1 \text{ MHz}$	—	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	—	—	1.0	—	mA
	Critical rate of rise of off-state voltage	dv / dt	$V_{in} = 240 \text{ Vrms}, T_a = 85^\circ\text{C}$ (Fig. 1)	—	500	—	$\text{V} / \mu\text{s}$
	Critical rate of rise of commutating voltage	$dv / dt(c)$	$I_T = 15 \text{ mA}, V_{in} = 60 \text{ Vrms}$ (Fig. 1)	—	0.2	—	$\text{V} / \mu\text{s}$

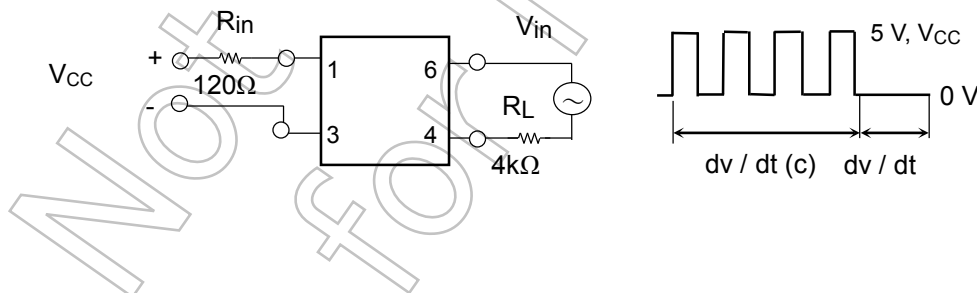
Coupled Electrical Characteristics (Ta = 25°C)

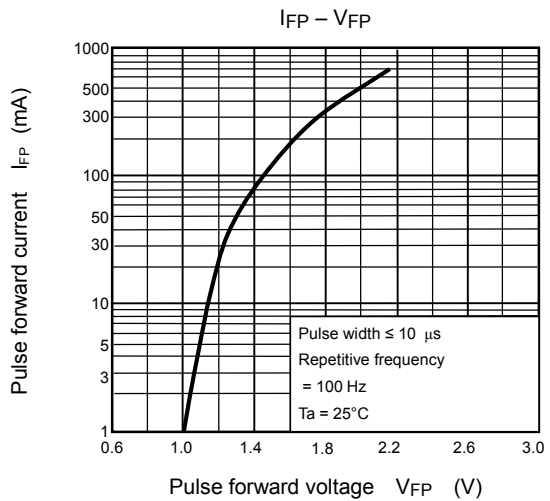
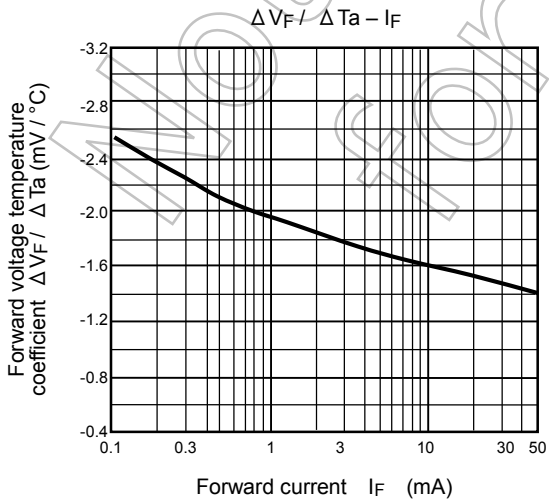
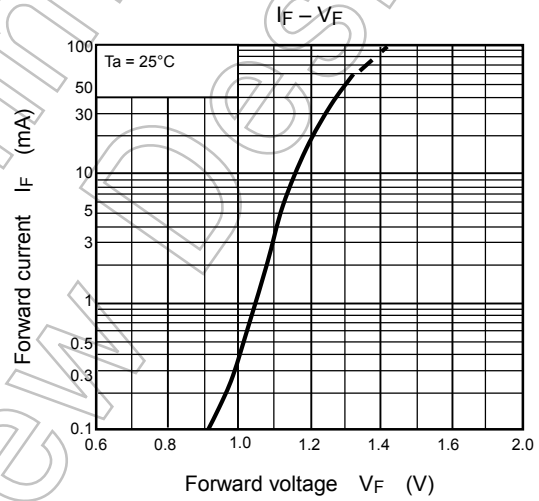
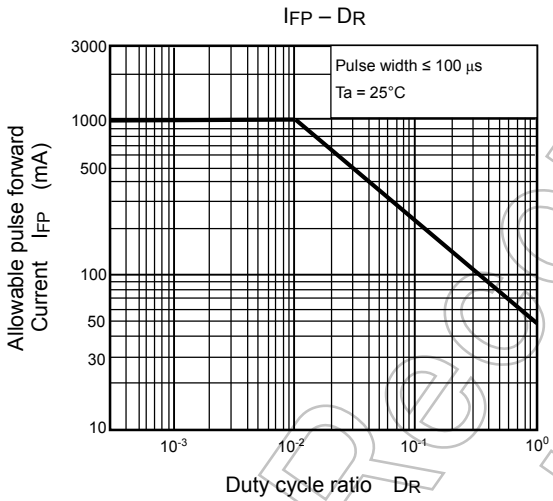
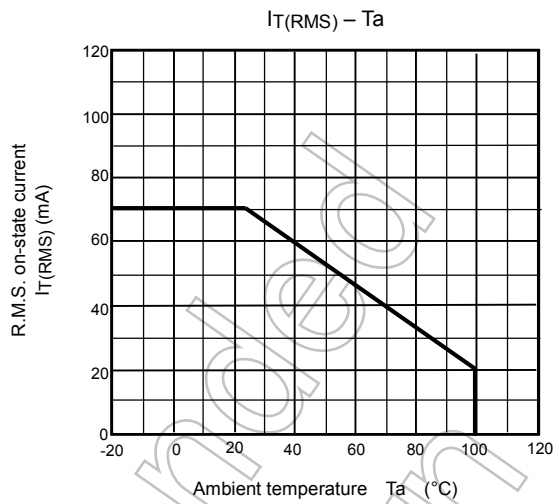
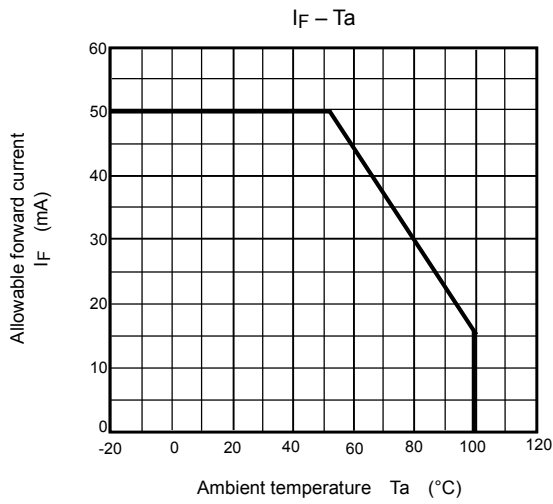
Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I_{FT}	$V_T = 6 \text{ V}$	—	5	10	mA
Turn-on time	t_{ON}	$V_D = 6 \rightarrow 4 \text{ V}, R_L = 100\Omega$ $I_F = \text{rated } I_{FT} \times 1.5$	—	30	100	μs

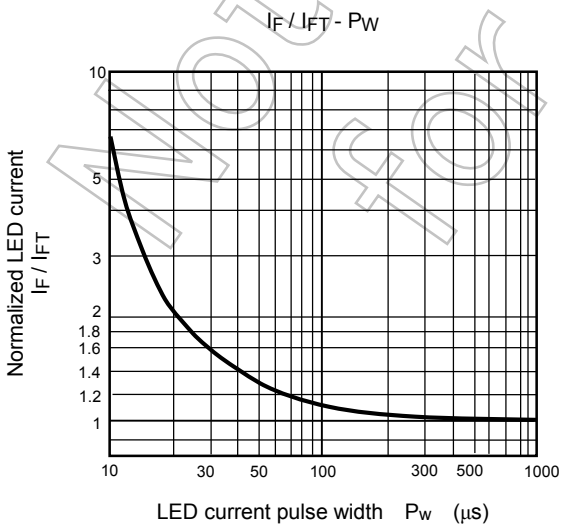
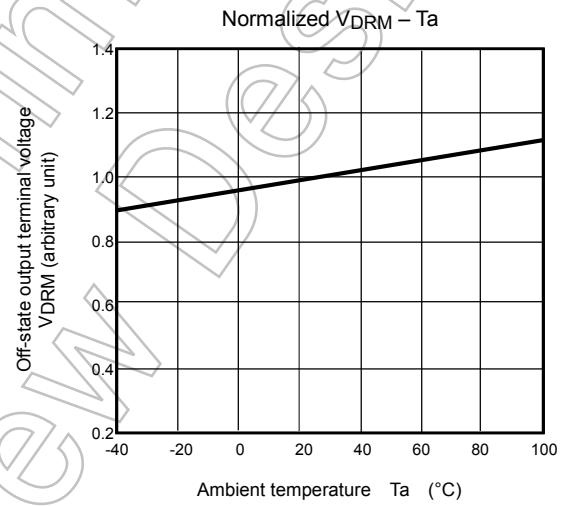
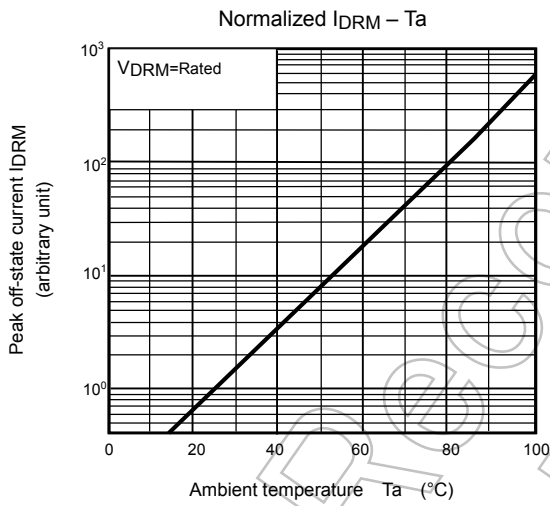
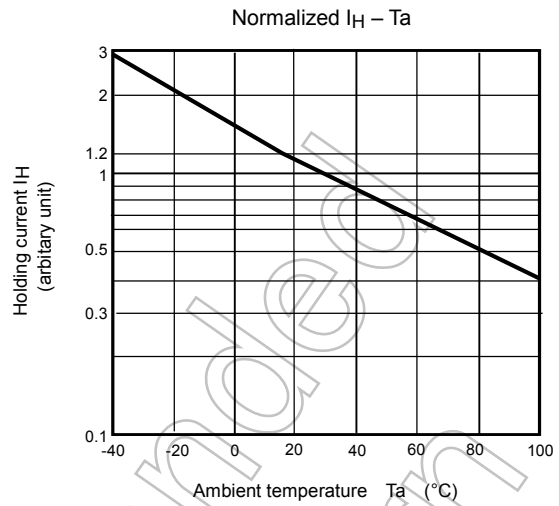
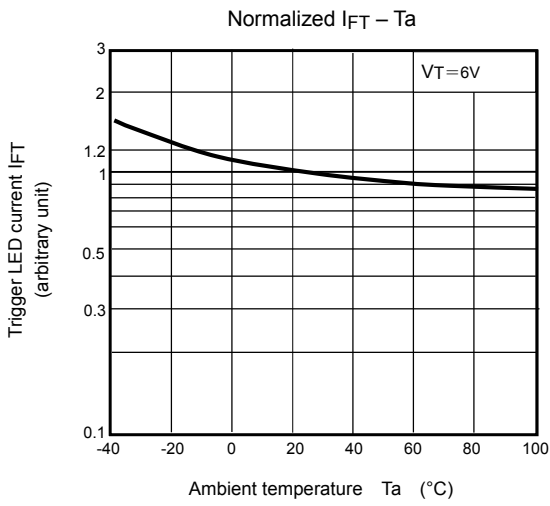
Isolation Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance input to output	C_S	$V_S = 0 \text{ V}, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 60 s	3000	—	—	Vrms
		AC, 1 s, in oil	—	5000	—	
		DC, 60 s, in oil	—	5000	—	Vdc

Fig. 1: dv / dt test circuit







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