

Preliminary

TOSHIBA Photocoupler GaAs IRED&Photo-triac

TLP260J

- Triac Drive
- Programmable Controllers
- AC-Output Module
- Solid State Relay

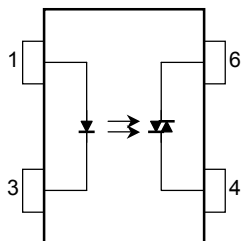
The TOSHIBA TLP260J is a photocoupler housed in a mini-flat package and consists of a phototriac which is optically coupled to a gallium arsenide infrared-emitting diode.

This type of photocoupler is suitable for use in hybrid ICs as it is thinner and smaller than a 6-pin DIP photocoupler.

TLP260J: 4-pin mini-flat package (MFSOP6)

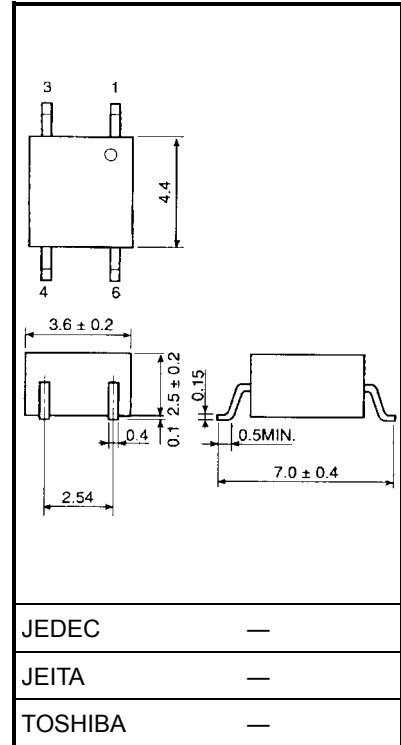
- Peak OFF-state voltage: 600 V (min)
- Trigger LED current: 10 mA (max)
- ON-state current: 70 mA (max)
- Isolation voltage: 3000 Vrms (min)

Pin Configuration (top view)



- 1: ANODE
- 3: CATHODE
- 4: TERMINAL1
- 6: TERMINAL2

Unit: mm



Weight: 0.09 g

Maximum Ratings (Ta = 25°C)

Characteristics		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	
	Junction temperature	T_j	125	°C	
Detector	OFF-state output terminal voltage	V_{DRM}	600	V	
	ON-state RMS current	Ta = 25°C	I_T (RMS)	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, DC = 10%)	I_{TSM}	1.2	A	
	Junction temperature	T_j	100	°C	
Storage temperature range	T_{stg}	-55~125	°C		
Operating temperature range	T_{opr}	-40~100	°C		
Lead soldering temperature (10 s)	T_{sol}	260	°C		
Isolation voltage (AC, 1 min, RH ≤ 60%) (Note1)	BV_S	3000	Vrms		

Note 1: Pins 1 and 3 shorted together, and pins 4 and 6 shorted together.

Recommended Operating Conditions

Characteristics	Symbol	Min	Typ.	Max	Unit
Supply voltage	V_{AC}	—	—	240	V_{ac}
Forward current	I_F	15	20	25	mA
Peak ON-state current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	-25	—	85	°C

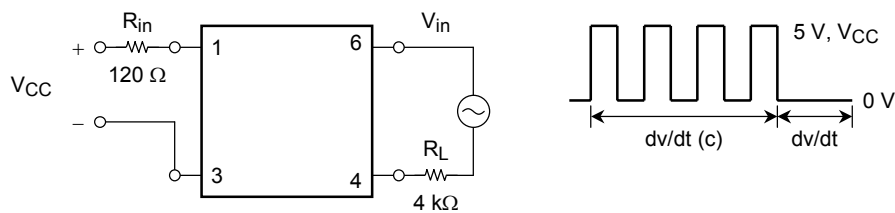
Individual Electrical Characteristics (Ta = 25°C)

Characteristics		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	$V = 0, f = 1 \text{ MHz}$	—	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	—	—	1.0	—	mA
	Critical rate of rise of OFF-state voltage	dv/dt	$V_{in} = 240 \text{ V}, T_a = 85^\circ\text{C}$ (Note2)	—	500	—	$\text{V}/\mu\text{s}$
	Critical rate of rise of commutating voltage	$dv/dt (c)$	$V_{in} = 60 \text{ Vrms}, I_T = 15 \text{ mA}$ (Note2)	—	0.2	—	$\text{V}/\mu\text{s}$

Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I_{FT}	$V_T = 6 \text{ V}$	—	—	10	mA
Capacitance input to output	C_S	$V_S = 0, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}, RH \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 min.	3000	—	—	Vrms
		AC, 1 s, in oil	—	5000	—	—
		DC, 1 min., in oil	—	5000	—	Vdc
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

Note 2: dv/dt test circuit



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