

TOSHIBA Photocoupler GaAs Ired & Photo-Triac

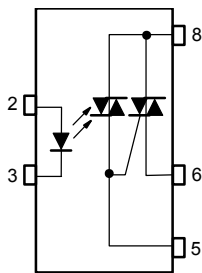
TLP3506

Triac Driver
 Programmable Controllers
 AC-Output Module
 Solid State Relay

The TOSHIBA TLP3506 consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a 8 lead plastic DIP.

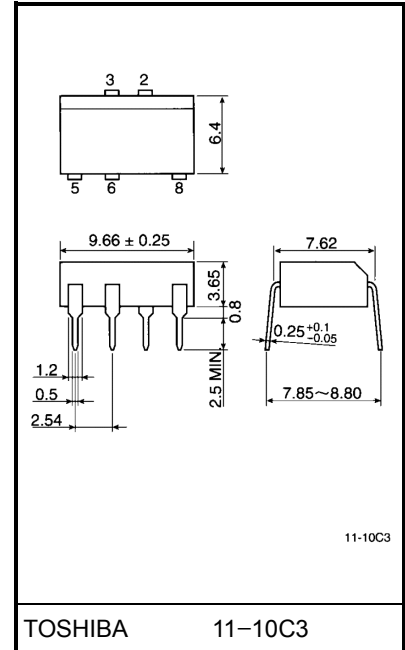
- Peak off-state voltage: 600 V (min.)
- Trigger LED current: 10 mA (max.)
- On-state current: 0.5A_{rms} (max.)
- Isolation voltage: 2500 V_{rms} (min.)
- UL recognized: UL1577, file no. E67349

Pin Configuration (top view)



- 2 : ANODE
- 3 : CATHODE
- 5 : TRIAC GATE
- 6 : TRIAC T1
- 8 : TRIAC T2

Unit in mm



Weight: 0.52 g

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	
	Junction temperature	T_j	125	°C	
Detector	Off-state output terminal voltage	V_{DRM}	600	V	
	On-state RMS current	$I_{T(RMS)}$	Ta = 40°C	0.5	A
			Ta = 60°C	0.35	
	On-state current derating (Ta ≥ 40°C)	$\Delta I_T / ^\circ\text{C}$	-7.2	mA / °C	
	Peak current from snubber circuit (100μs pulse, 120 pps)	I_{SP}	2	A	
	Peak nonrepetitive surge current (50 Hz, peak)	I_{TSM}	5	A	
	Junction temperature	T_j	110	°C	
Storage temperature range	T_{stg}	-40~125	°C		
Operating temperature range	T_{opr}	-20~80	°C		
Lead soldering temperature (10 s)	T_{sol}	260	°C		
Isolation voltage (AC, 1 min., R.H.≤ 60%) (Note)	BV_S	2500	V_{rms}		

(Note) Device considered a two terminal: LED side pins shorted together and detector side pins shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{AC}	—	—	240	V_{ac}
Forward current	I_F	15	20	25	mA
Peak current from snubber circuit	I_{SP}	—	—	1	A
Operating temperature	T_{opr}	-20	—	80	°C

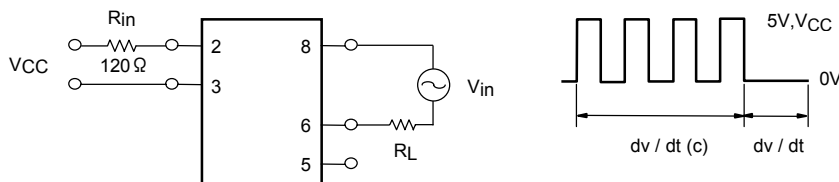
Individual Electrical Characteristics (Ta = 25°C)

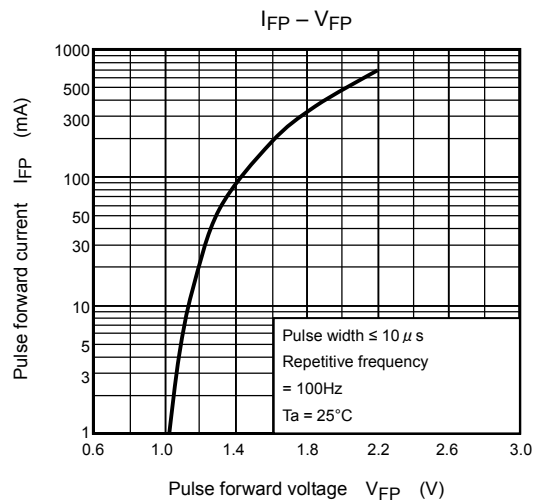
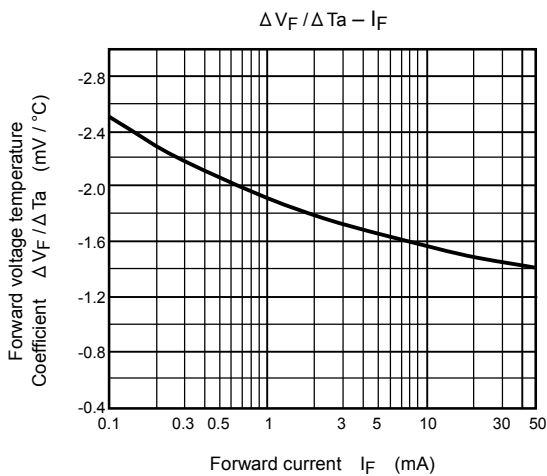
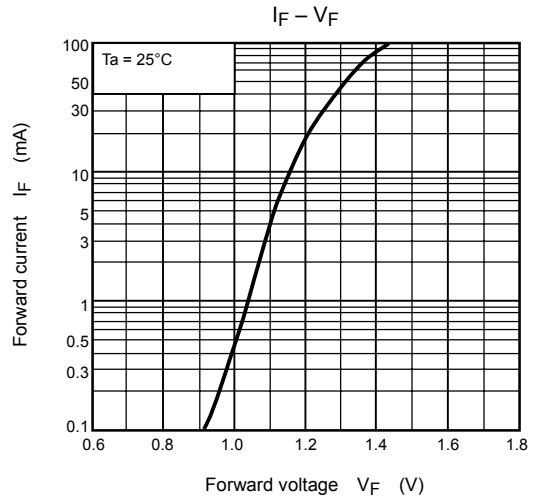
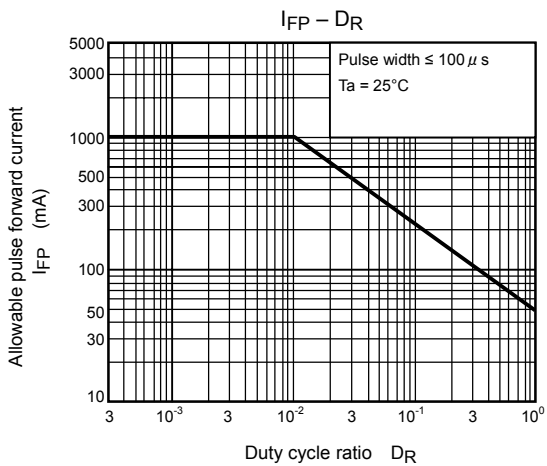
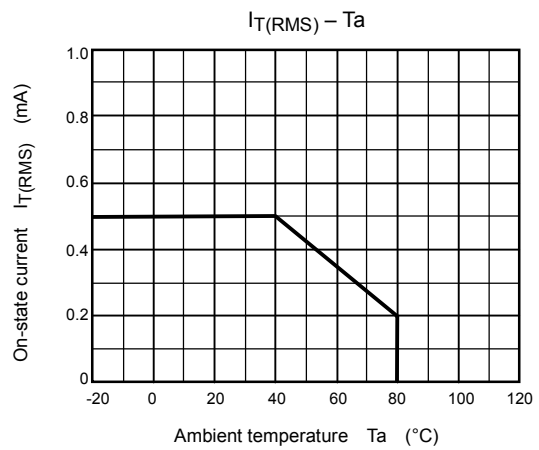
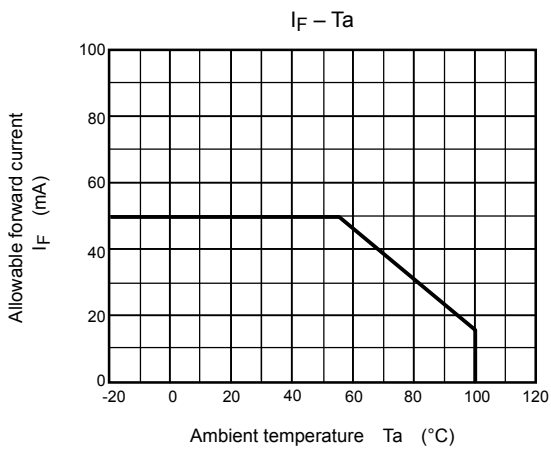
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	$I_F = 10 \text{ mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R = 5 \text{ V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
Detector	Peak off-state current	I_{DRM}	$V_{DRM} = 600 \text{ V}, T_a = 110^\circ\text{C}$	—	—	100	μA
	Peak on-state voltage	V_{TM}	$I_{TM} = 0.75 \text{ A}$	—	—	3.0	V
	Holding current	I_H	—	—	—	25	mA
	Critical rate of rise of off-state voltage	dv / dt	$V_{in} = 240 \text{ V}_{rms}$ (Fig.1)	—	500	—	$\text{V} / \mu\text{s}$
	Critical rate of rise of commutating voltage	$dv / dt (c)$	$V_{in} = 240 \text{ V}_{rms}, I_T = 0.5 \text{ A}_{rms}$ (Fig.1)	—	5	—	$\text{V} / \mu\text{s}$

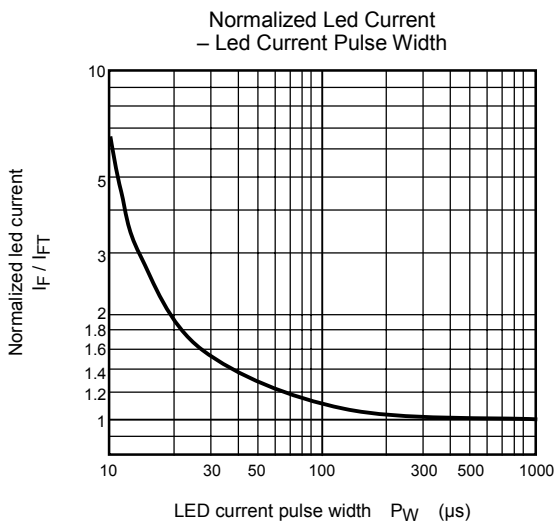
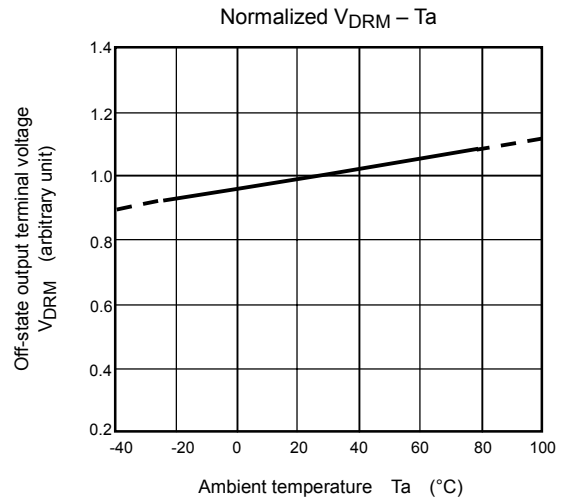
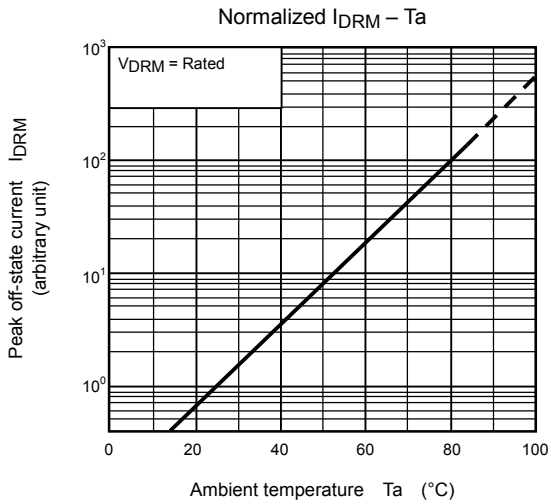
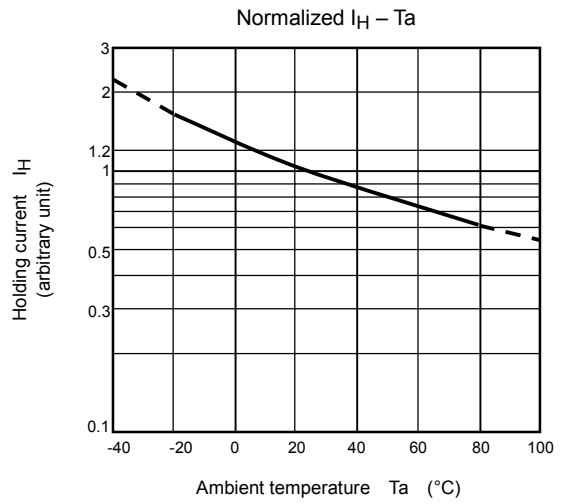
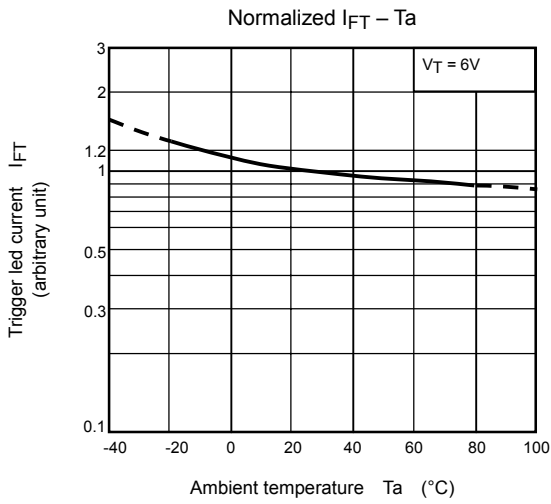
Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	$V_T = 6 \text{ V}$	—	—	10	mA
Capacitance (input to output)	C_S	$V_S = 0, f = 1 \text{ MHz}$	—	1.5	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	V_{dc}

Fig.1: dv / dt test circuit







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