

TLP3616

Triac Drivers

Programmable Controllers

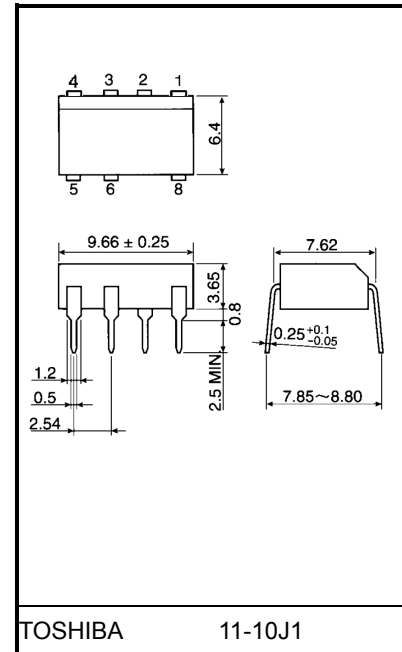
AC-Output Modules

Solid-State Relays

The TOSHIBA TLP3616 consists of a photo-triac optically coupled to a gallium arsenide infrared-emitting diode in an 8-lead plastic DIP package.

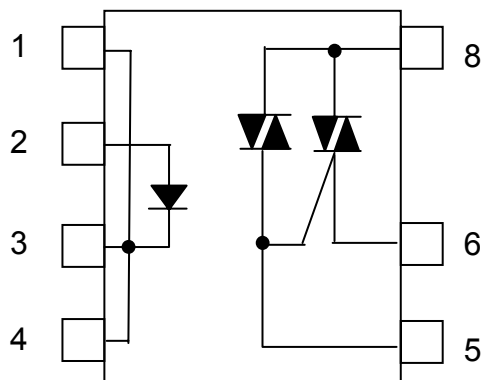
- Peak off-state voltage : 600 V (min.)
- Trigger LED current : 10 mA (max.)
- On-state current : 1.2 A_{rms} (max.)
- Isolation voltage : 2500 V_{rms} (min.)
- UL recognized :UL1577, File No. E67349

Unit: mm



Weight: 0.59 g(Typ.)

Pin Configuration (top view)



- 1: Cathode
- 2: Anode
- 3: Cathode
- 4: Cathode
- 5: Triac gate
- 6: Triac T1
- 8: Triac T2

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	$I_{T(RMS)}$	1.2	A
			1.0	
	On-state current derating (Ta ≥ 40°C)	$\Delta I_T / ^\circ\text{C}$	-13	mA / °C
	Peak current from snubber circuit (100-μs pulse, 120 pps)	I_{SP}	2	A
	Peak nonrepetitive surge current (50 Hz, peak)	I_{TSM}	10	A
	Junction temperature	T_j	115	°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 device: Pins 1, 2, 3 and 4 are shorted together, and pins 5, 6 and 8 are 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}	$I_{TM} = 1.2 \text{ A}$	—	—	3.0	V
	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	—	$\text{V} / \mu\text{s}$

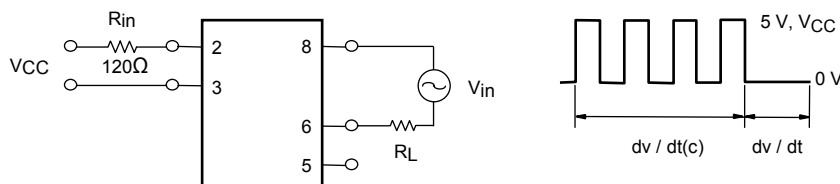
Coupled Electrical Characteristics (Ta = 25°C)

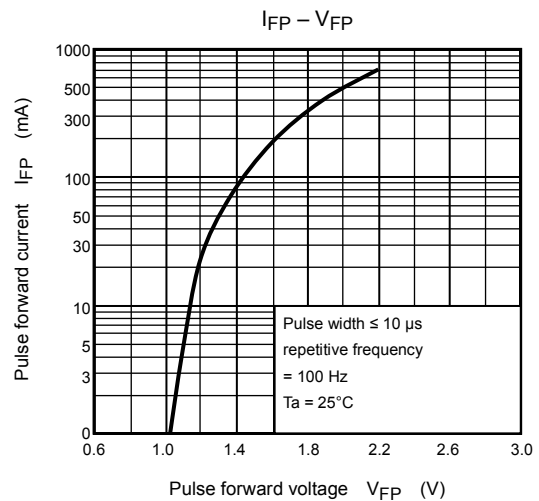
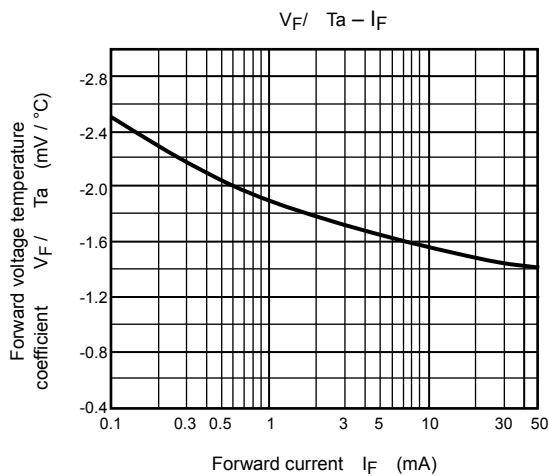
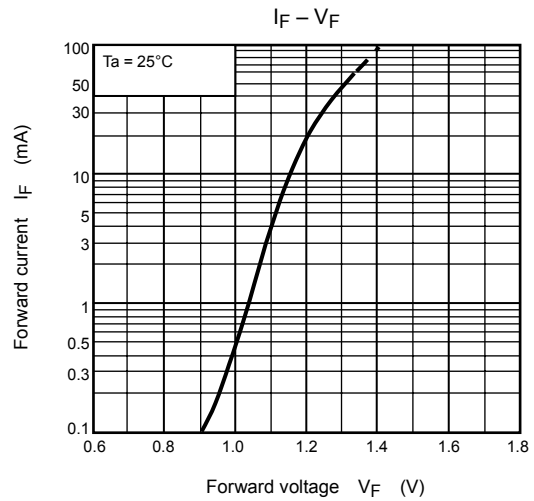
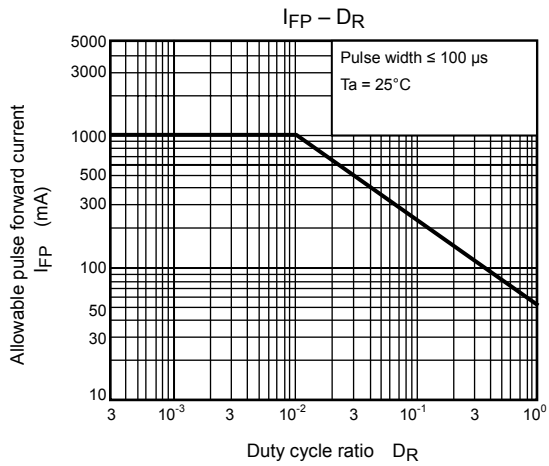
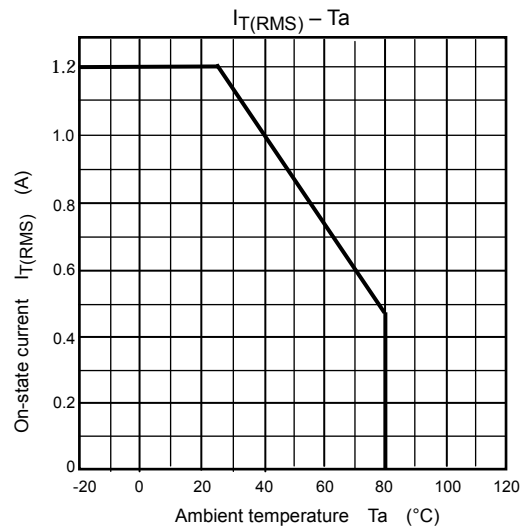
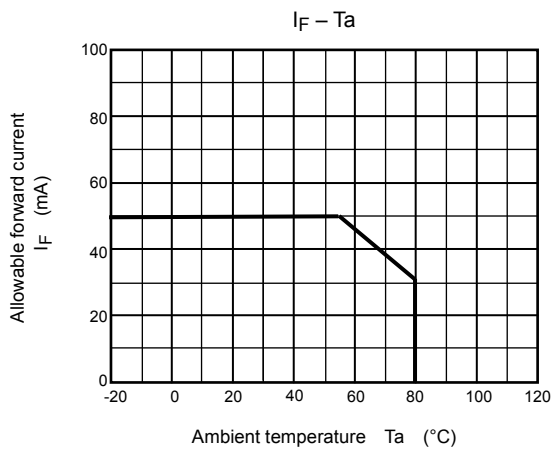
Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I_{FT}	$V_T = 6 \text{ V}$	—	—	10	mA

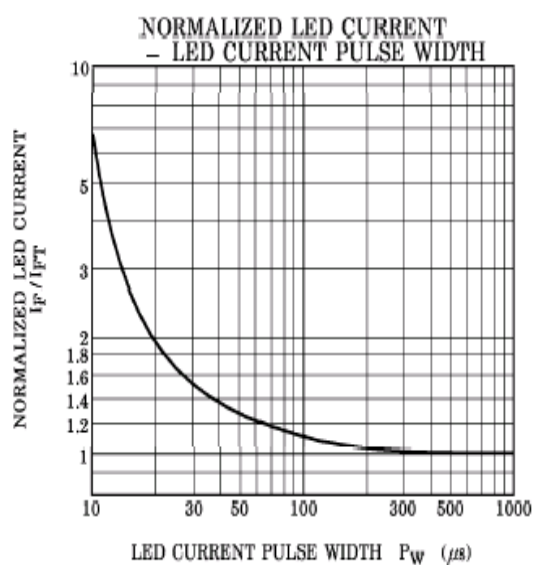
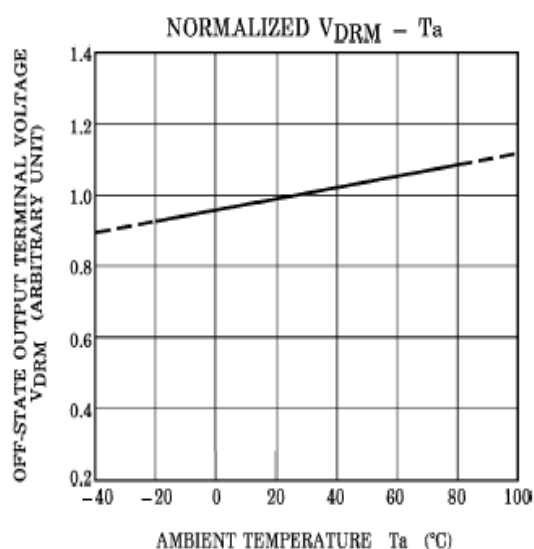
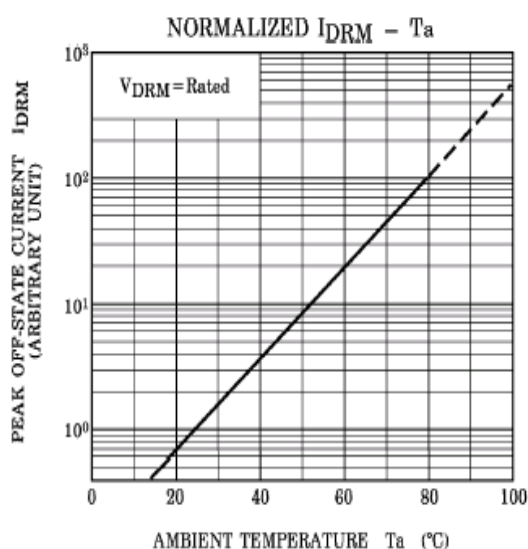
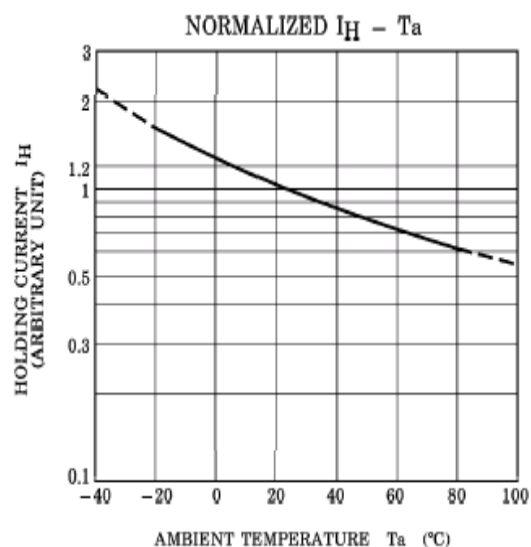
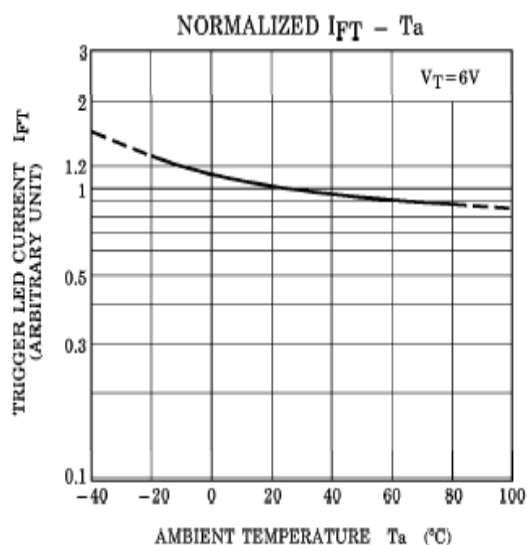
Isolation Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance (input to output)	C_S	$V_S = 0, f = 1 \text{ MHz}$	—	1.5	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	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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