

TOSHIBA Photocoupler GaAs Ired & Photo-Triac

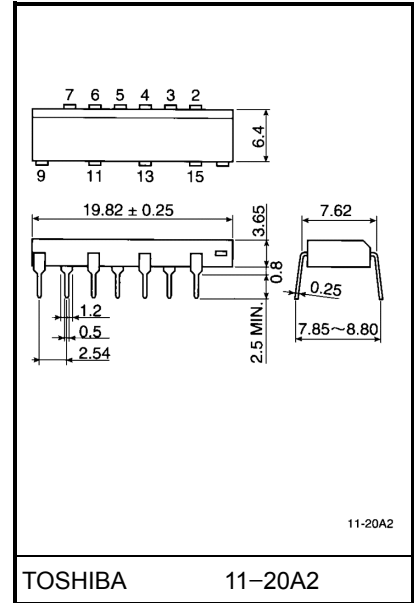
TLP3527

Triac Driver
 Programmable Controllers
 AC-Output Module
 Solid State Relay

The TOSHIBA TLP3527 consists of a zero voltage crossing turn-on photo-triac optically coupled to a gallium arsenide infrared emitting diode in a 16 lead plastic DIP package.

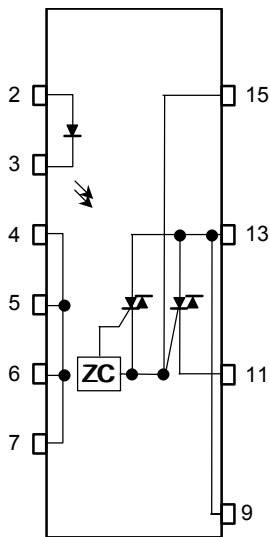
- Peak off-state voltage: 600V (min.)
- Trigger LED current: 10mA (max.)
- On-state current: 1.0A_{rms} (max.)
- Isolation voltage: 2500V_{rms} (min.)
- UL recognized: UL1577, file No.E67349

Unit in mm



Weight: 1.13g

Pin Configurations (top view)



- 2 : Anode
- 3 : Cathode
- 4,5,6,7 : N.C.
- 9,13 : Triac T2
- 11 : Triac T1
- 15 : Triac gate

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 (100µs pulse, 100pps)	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=40°C	I_T (RMS)	1.0	A
		Ta=60°C		0.7	
	On-state current derating (Ta ≥ 40°C)	$\Delta I_T / ^\circ\text{C}$	-14.3	mA / °C	
	Peak current from snubber circuit (100µs pulse, 120pps)	I_{SP}	2	A	
	Peak nonrepetitive surge current (50Hz, peak)	I_{TSM}	10	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 (10s)	T_{sol}	260	°C		
Isolation voltage (AC, 1min., 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

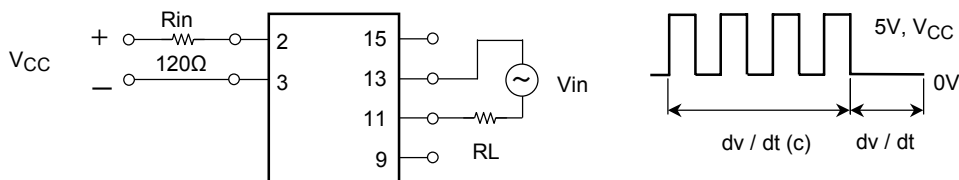
Individual Electrical Characteristics (Ta = 25°C)

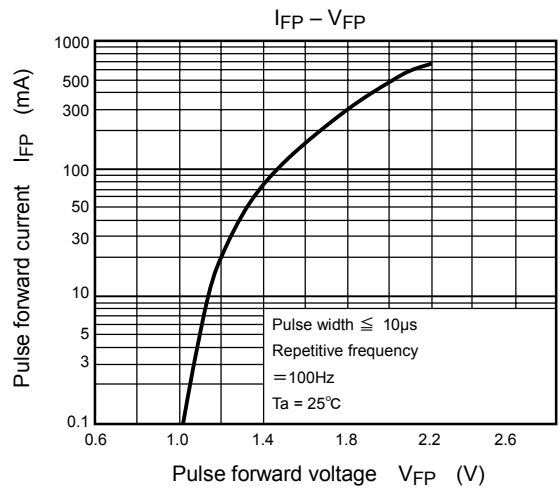
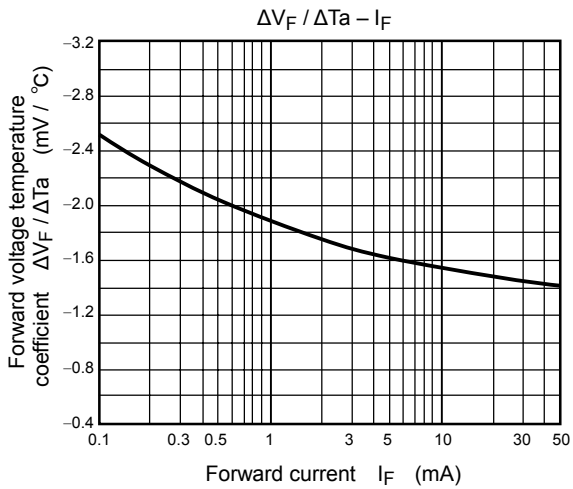
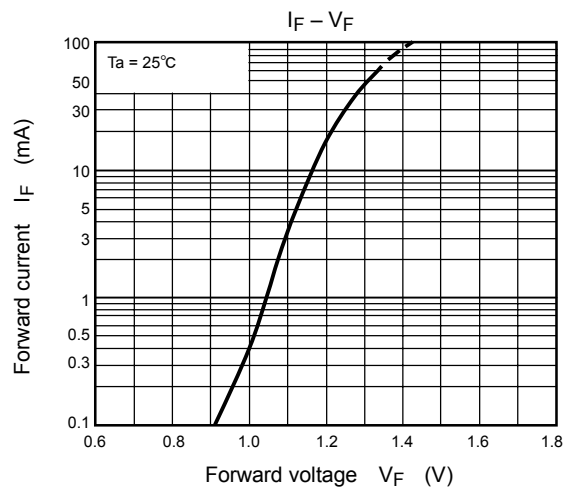
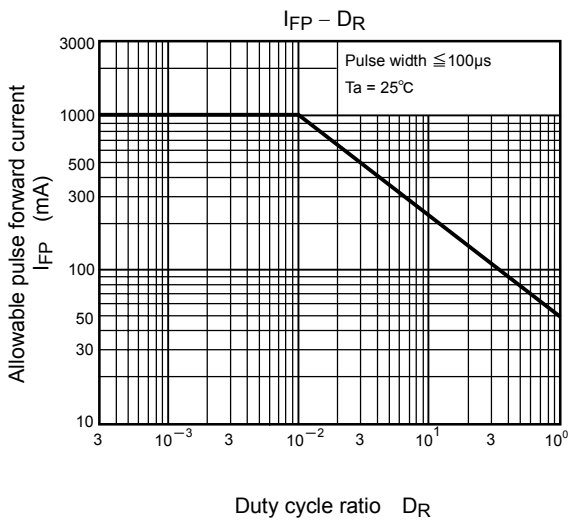
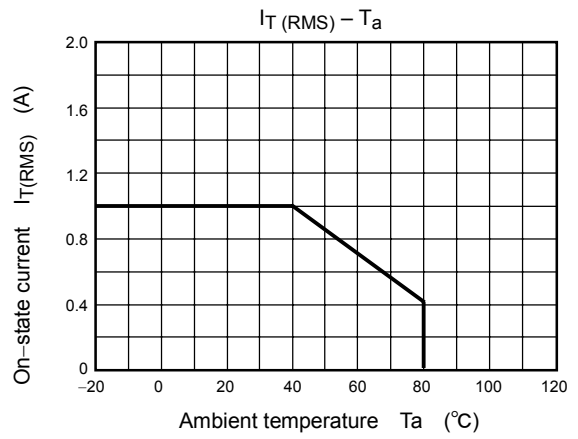
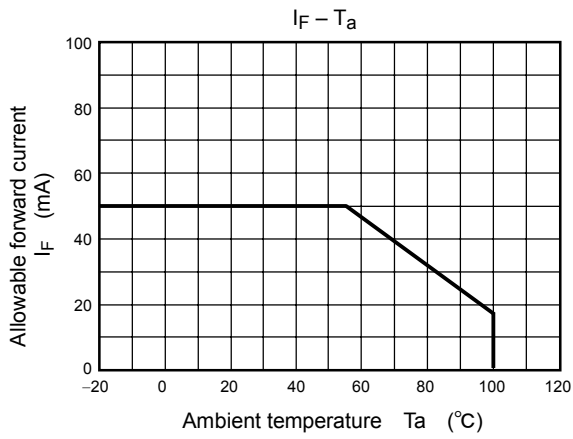
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	$I_F=10\text{mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R=5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V=0, f=1\text{MHz}$	—	30	—	pF
Detector	Peak off-state current	I_{DRM}	$V_{\text{DRM}}=600\text{V}, T_a=110^\circ\text{C}$	—	—	100	μA
	Peak on-state voltage	V_{TM}	$I_{\text{TM}}=1.5\text{A}$	—	—	3.0	V
	Holding current	I_H	$R_L=100\Omega$	—	—	25	mA
	Critical rate of rise of off-state voltage	dv/dt	$V_{\text{in}}=240\text{V}_{\text{rms}}$ (fig.1)	—	500	—	$\text{V}/\mu\text{s}$
	Critical rate of rise of commutating voltage	$dv/dt(c)$	$V_{\text{in}}=240\text{V}_{\text{rms}}, I_T=1.0\text{A}_{\text{rms}}$ (fig.1)	—	5	—	$\text{V}/\mu\text{s}$

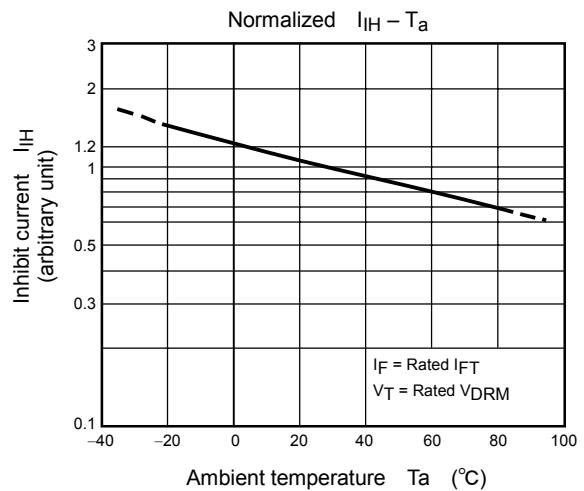
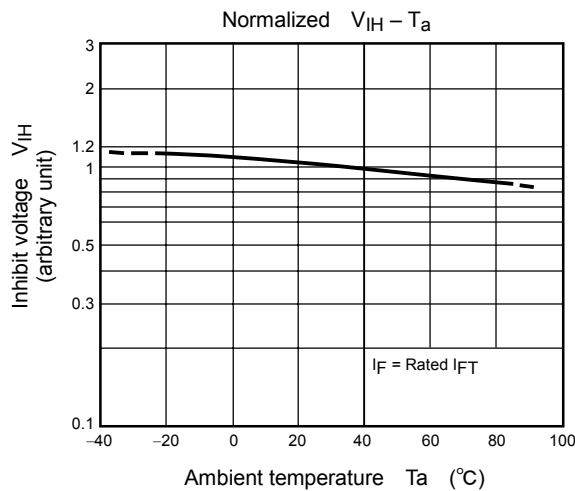
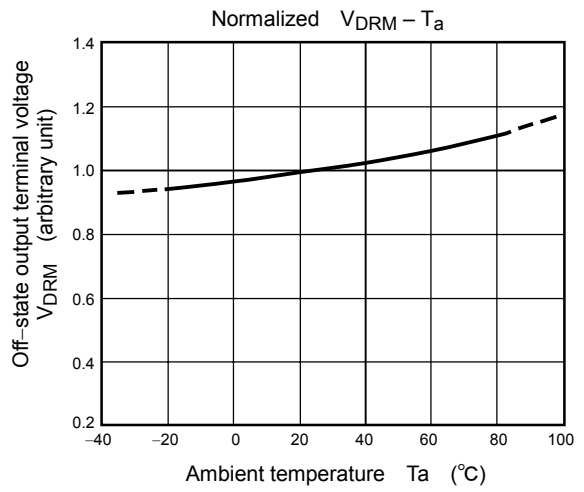
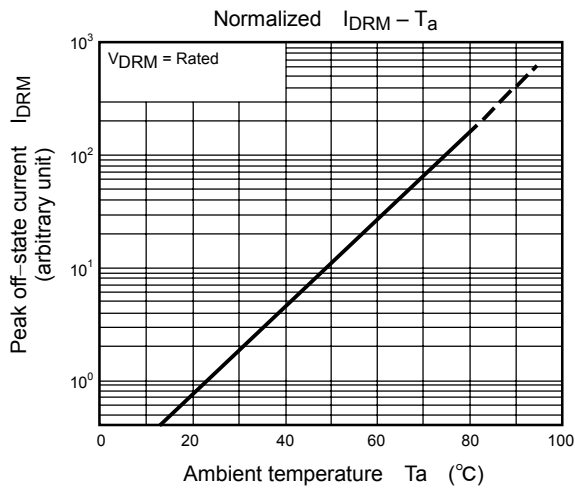
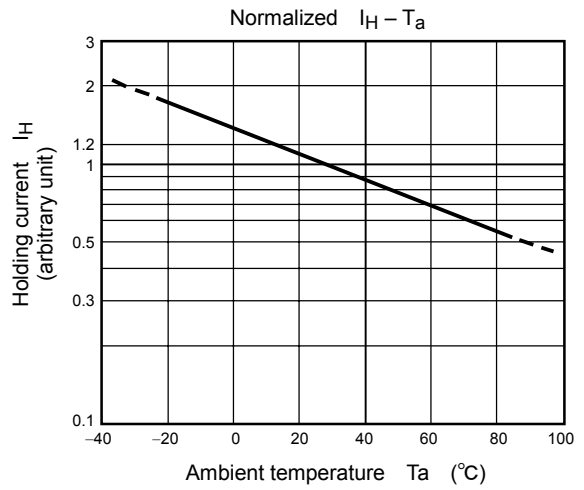
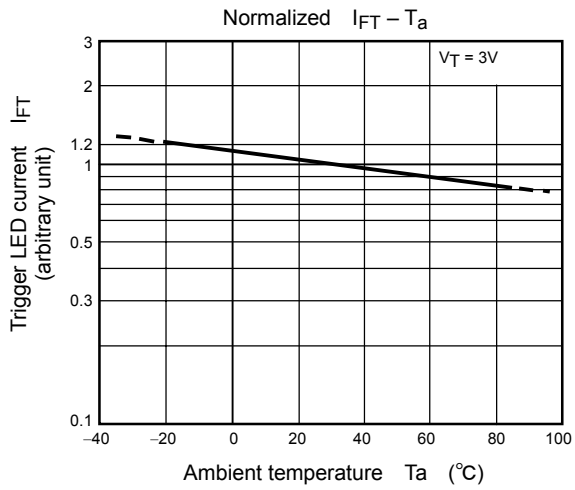
Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	$V_T=6\text{V}$	—	—	10	mA
Inhibit voltage	V_{IH}	$I_F=\text{Rated } I_{\text{FT}}$	—	—	50	V
Leakage in inhibited state	I_{IH}	$I_F=\text{Rated } I_{\text{FT}}$ $V_T=\text{Rated } V_{\text{DRM}}$	—	200	—	μA
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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