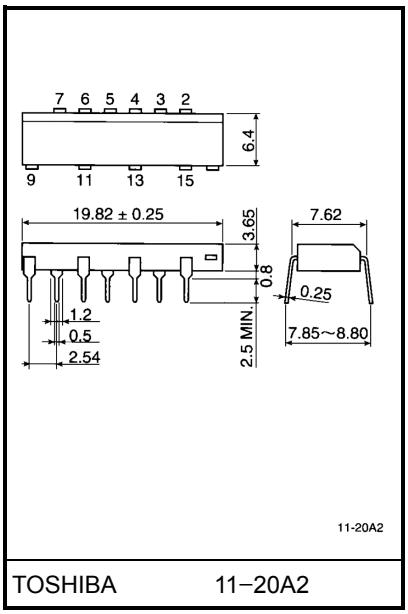
TOSHIBA Photocoupler GaAs Ired & Photo−Triac

TLP3527

Triac Driver
Programmable Controllers
AC−Output Module
Solid State Relay

Unit in mm



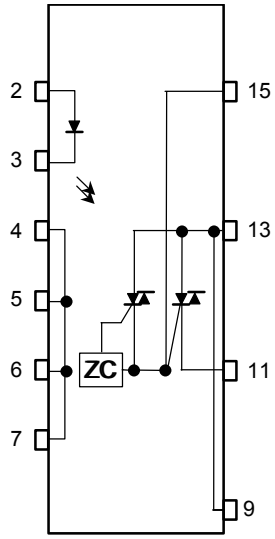
TOSHIBA 11−20A2

Weight: 1.13g

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

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)		ΔI_F / °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)		ΔI_T / °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

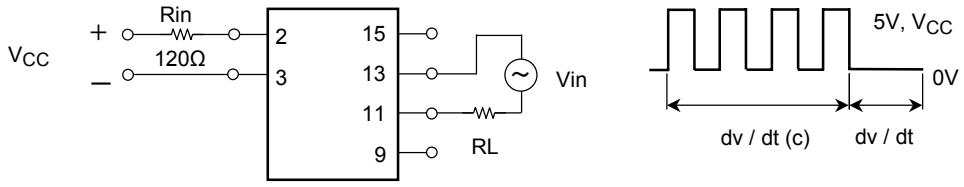
Individual Electrical Characteristics (Ta = 25°C)

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

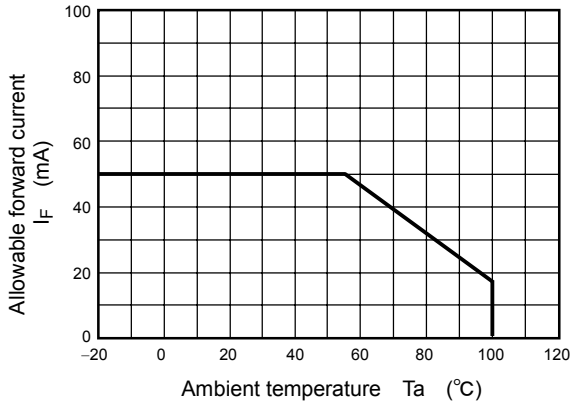
Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	V_T=6V	—	—	10	mA
Inhibit voltage	V_{IH}	I_F=Rated I_{FT}	—	—	50	V
Leakage in inhibited state	I_{IH}	I_F=Rated I_{FT} V_T=Rated V_{DRM}	—	200	—	μA
Capacitance (input to output)	C_S	V_S=0, f=1MHz	—	1.5	—	pF
Isolation resistance	R_S	V_S=500V	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}

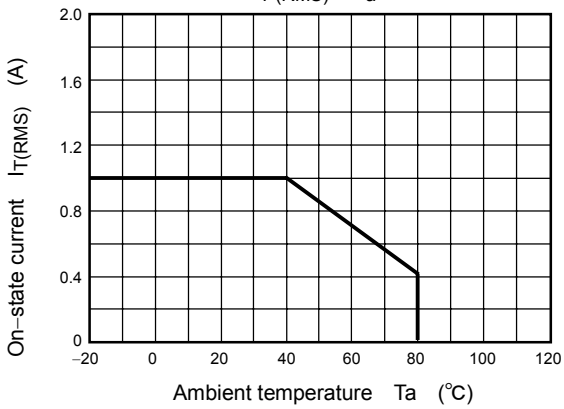
Fig.1: dv / dt test circuit



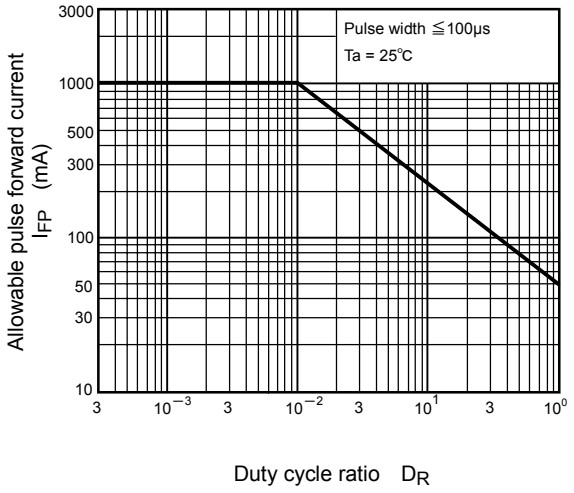
$I_F - T_a$



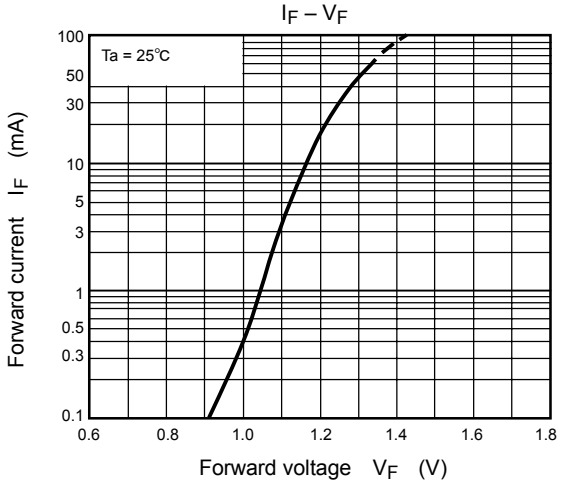
$I_{T\,(RMS)} - T_a$



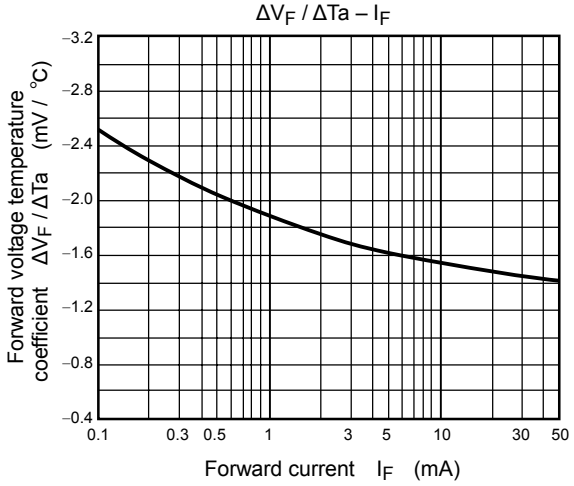
$I_{FP} - D_R$



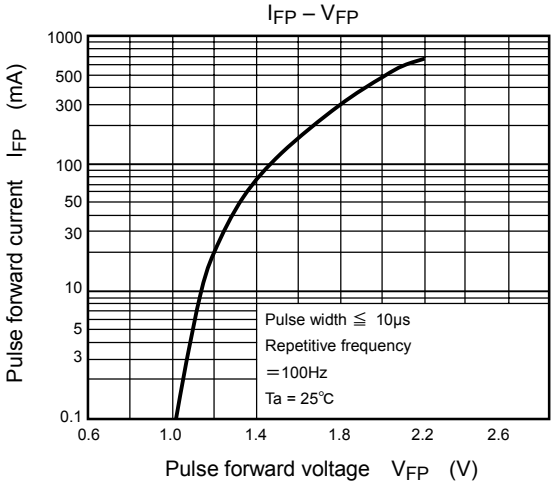
$I_F - V_F$



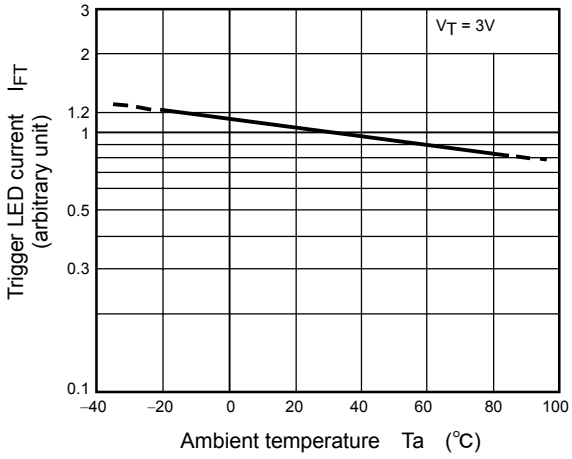
$\Delta V_F / \Delta Ta - I_F$



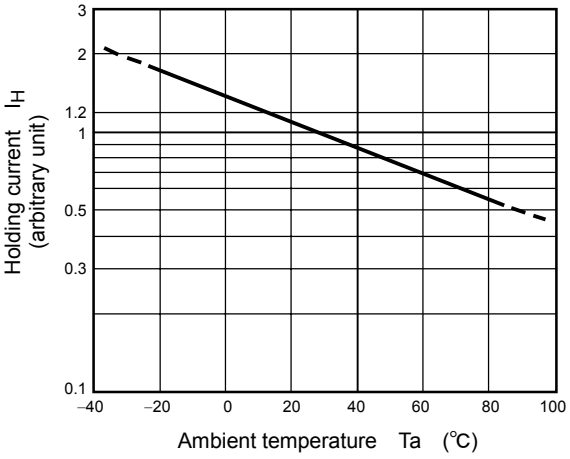
$I_{FP} - V_{FP}$



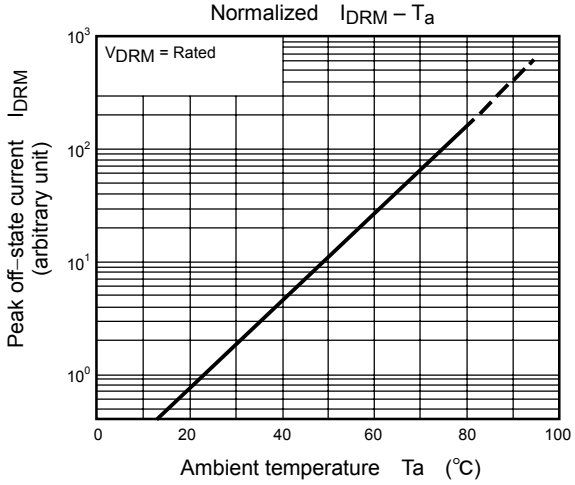
Normalized $I_{FT} - T_a$



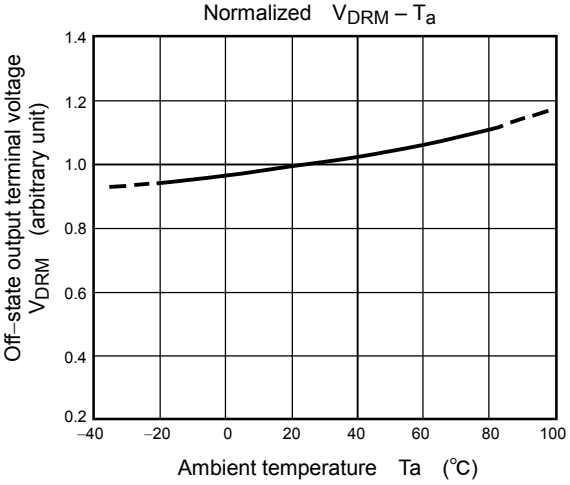
Normalized $I_H - T_a$



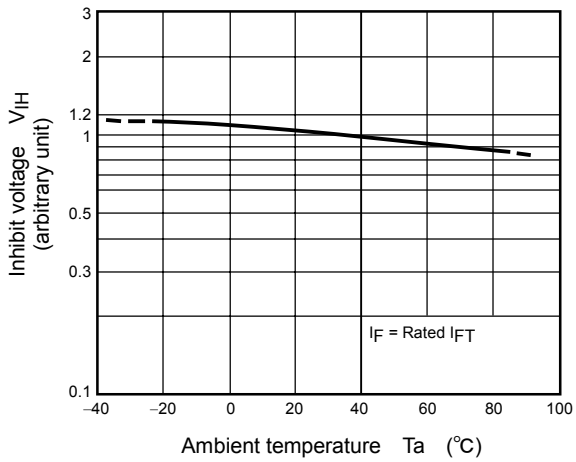
Normalized $I_{DRM} - T_a$



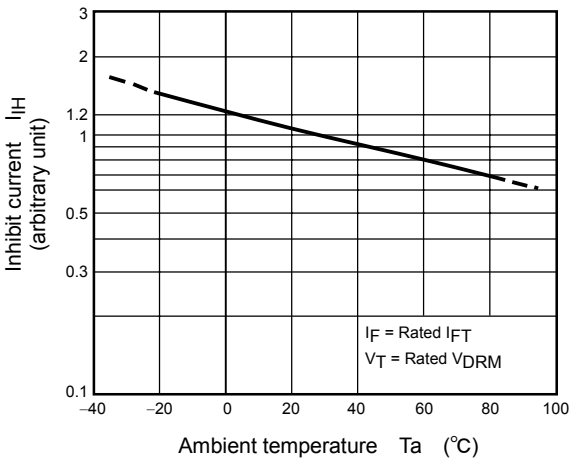
Normalized $V_{DRM} - T_a$



Normalized $V_{IH} - T_a$



Normalized $I_{IH} - T_a$



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