Unit in mm

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

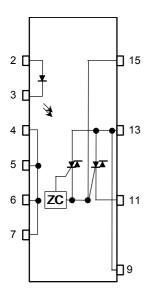
9 11 13 15 19.82 ± 0.25 12.54 7.62 7.62 7.62 7.62 7.85~8.80

11-20A2

Weight: 1.13g

TOSHIBA

Pin Configurations (top view)



2 : Anode

3: Cathode

4,5,6,7 : N.C.

9,13 : Triac T2

11 : Triac T1

15: Triac gate

1

Maximum Ratings (Ta = 25°C)

Characteristic			Symbol	Rating	Unit	
LED	Forward current	lF	50	mA		
	Forward current derating (Ta ≥	ΔI _F / °C	-0.7	mA / °C		
	Peak forward current (100µs pu	I _{FP}	1	Α		
	Reverse voltage	V _R	5	V		
	Junction temperature	Tj	125	°C		
	Off-state output terminal voltag	V_{DRM}	600	V		
	On-state RMS current	Ta=40°C	l= (p. 10)	1.0	Α	
_		Ta=60°C	I _T (RMS)	0.7		
Detector	On-state current derating (Ta ≥	ΔI _T / °C	-14.3	mA / °C		
Det	Peak current from snubber circl (100µs pulse, 120pps)	I _{SP}	2	А		
	Peak nonrepetitive surge currer	I _{TSM}	10	Α		
	Junction temperature	Тj	110	°C		
Storage temperature range			T _{stg}	−40 ~ 125	°C	
Operat	ing temperature range	T _{opr}	-20~80	°C		
Lead soldering temperature (10s)			T _{sol}	260	°C	
Isolation voltage (AC, 1min., R.H. ≤ 60%) (Note)			BVS	2500	V _{rms}	

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

2

Recommended Operating Conditions

Characteristic	Symbol	Min.	Тур.	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	Α
Operating temperature	T _{opr}	-20	_	80	°C

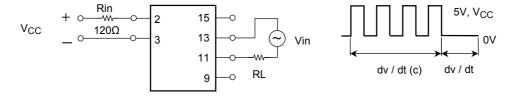
Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition		Min.	Тур.	Max.	Unit
LED	Forward voltage	V _F	I _F =10mA		1.0	1.15	1.3	V
	Reverse current	I _R	V _R =5V		ı	_	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	lΗ	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

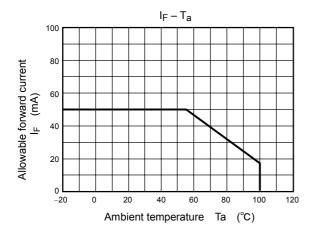
Coupled Electrical Characteristics (Ta = 25°C)

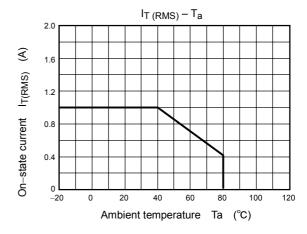
Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Trigger LED current	I _{FT}	V _T =6V	_	_	10	mA
Inhibit voltage	V _{IH}	I _F =Rated I _{FT}	_	_	50	V
Leakage in inhibited state	lіН	I _F =Rated I _{FT} V _T =Rated V _{DRM}	_	200	1	μΑ
Capacitance (input to output)	C _S	V _S =0, f=1MHz	_	1.5	١	pF
Isolation resistance	R _S	V _S =500V	5×10 ¹⁰	10 ¹⁴	_	Ω
	BVS	AC, 1 minute	2500	_	_	- V _{rms}
Isolation voltage		AC, 1 second, in oil	_	5000	_	
		DC, 1 minute, in oil	_	5000	_	V _{dc}

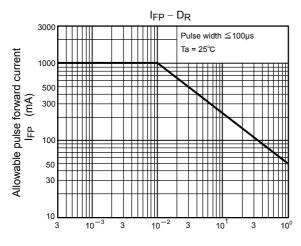
Fig.1: dv / dt test circuit

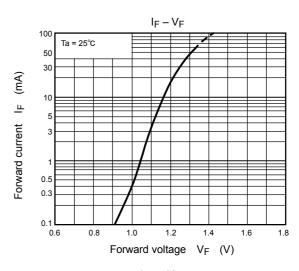


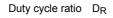
3 2002-09-25

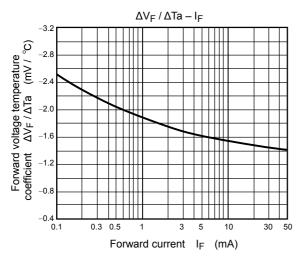


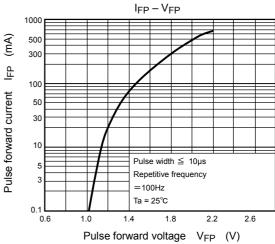




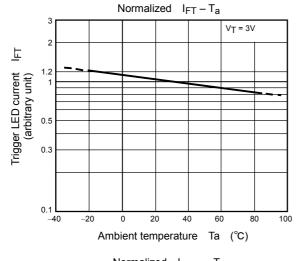


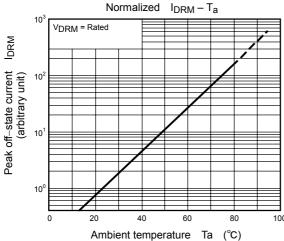


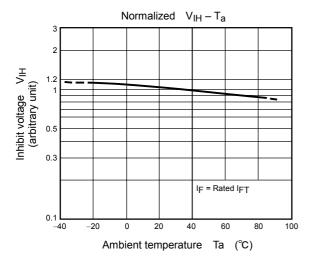


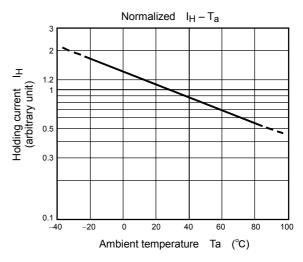


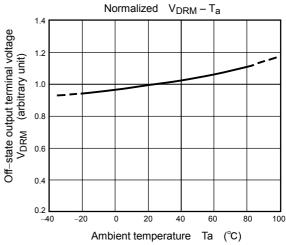
4

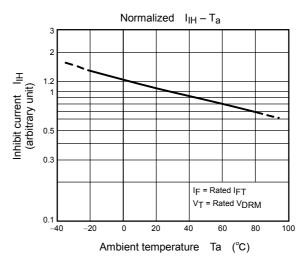












5

RESTRICTIONS ON PRODUCT USE

000707EBC

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes
 are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the
 products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with
 domestic garbage.
- The products described in this document are subject to the foreign exchange and foreign trade laws.
- The information contained herein is presented only as a guide for the applications of our products. No
 responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other
 rights of the third parties which may result from its use. No license is granted by implication or otherwise under
 any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.