Unit in mm

TOSHIBA Photocoupler Photo Relay

TLP599G

Telecommunication

Data Acquisition

Measurement Instrumentation

The TOSHIBA TLP599G consists of a gallium arsenide infrared emitting diode optically coupled to a photo–MOS FET in a six lead plastic DIP package (DIP6).

The TLP599G is a bi-directional switch which can replace mechanical relays in many applications.

- Peak off-state voltage: 400V (min.)
- On-state current: 120mA (max.) (A connection)
- On-state resistance: 30Ω (max.) (A connection)
- Insulation thickness: 0.4mm (max.)
- Isolation voltage: 2500Vrms (min.)
- UL recognized: UL1577, file no. E67349
- Trigger LED current (Ta = 25°C)

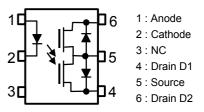
1 2 3	7.62 ± 0.25 7.62 ± 0.25 0.25 ± 0.05 7.85 ~ 8.80
TOSHIBA	11-7A8

Classification (Note 1)	Trigger LED Current (mA) @I _{ON} = 120mA		Marking Of Classification
, ,	Min.	Max.	
(IFT2)	_	2	T2
Standard	_	5	T2, blank

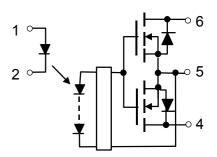
(Note 1): Application type name for certification test, please use standard product type name, i.e.

TLP599G (IFT2):TLP599G

Pin Configuration (top view)



Schematic



Maximum Ratings (Ta = 25°C)

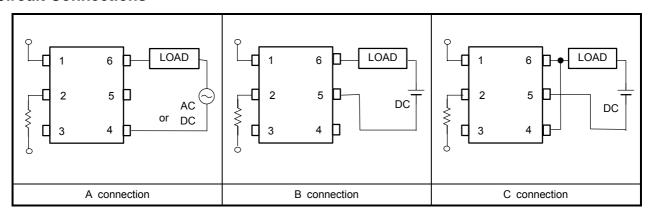
Characteristic			Symbol	Rating	Unit
	Forward current	ΙF	50	mA	
	Forward current derating (Ta ≥ 25°C)	ΔI _F / °C	-0.5	mA / °C	
LED	Peak forward current (100 µs pulse, 100 pp	os)	I _{FP}	1	Α
	Reverse voltage		V _R	5	V
	Junction temperature		Tj	125	°C
	Off-state output terminal voltage		V _{OFF}	400	V
	On-state RMS current	A connection		120	
		B connection	I _{ON}	150	mA
ctor		C connection		200	
Detector	On–state current derating (Ta ≥ 25°C)	A connection	Δl _{ON} / °C	-1.2	
		B connection		-1.5	mA / °C
		C connection		-2.0	
	Junction temperature		Tj	125	°C
Storage temperature range			T _{stg}	-55~125	°C
Operating temperature range		T _{opr}	− 40~85	°C	
Lead	soldering temperature (10 s)		T _{sol}	260	°C
Isolat	ion voltage (AC, 1 min., R.H.≤ 60%)	(Note 2)	BVS	2500	Vrms

(Note 2): Device considered a two–terminal device: Pins 1, 2 and 3 shorted together, and pins 4, 5 and 6 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min.	Тур.	Max.	Unit
Supply voltage	V_{DD}	_	_	320	V
Forward current	l _F	7.5	15	25	mA
On-state current	I _{ON}	_	_	120	mA
Operating temperature	T _{opr}	-20	_	80	°C

Circuit Connections



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Individual Electrical Characteristics (Ta = 25°C)

	Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
	Forward voltage	V _F	I _F = 10 mA	1.0	1.15	1.3	V
LED	Reverse current	I _R	$V_R = 5V$		_	10	μΑ
	Capacitance	C _T	V = 0, f = 1 MHz	_	30	_	pF
Detector	Off-state current	l _{OFF}	V _{OFF} = 400 V	1		1	μΑ
Dete	Capacitance	C _{OFF}	V = 0, f = 1 MHz	1			pF

Coupled Electrical Characteristics (Ta = 25°C)

Charae	cteristic	Symbol	Test Condition	Min.	Typ/	Max.	Unit
Trigger LED curre	nt	I _{FT}	I _{ON} = 120 mA	_	1	5	mA
	A connection		$I_{ON} = 120 \text{ mA}, I_F = 10 \text{ mA}$	_	20	30	
On–state Resistance	B connection	R _{ON}	$I_{ON} = 150 \text{ mA}, I_F = 10 \text{ mA}$	_	12	20	Ω
redictance	C connection		$I_{ON} = 200 \text{ mA}, I_F = 10 \text{ mA}$	-	6	10	

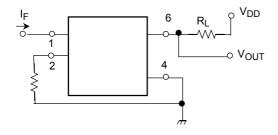
Isolation Characteristics (Ta = 25°C)

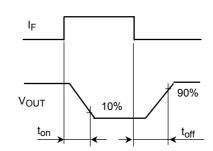
Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Capacitance input to output	CS	V _S = 0, f = 1 MHz	_	0.8	_	pF
Isolation resistance	R _S	V _S = 500 V, R.H.≤ 60%	5×10^{10}	10 ¹⁴	_	Ω
Isolation voltage	BVS	AC, 1 minute	2500	_	_	Vrms
		AC, 1 second (in oil)	_	5000	_	VIIIIS
		DC, 1 minute (in oil)	_	5000	_	V _{dc}

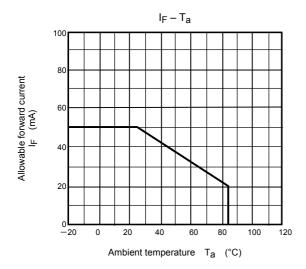
Switching Characteristics (Ta = 25°C)

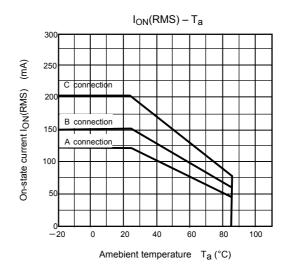
Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Turn-on time	t _{on}	$R_L = 200\Omega$	_	_	2	ms
Turn-off time	t _{off}	$V_{DD} = 20 \text{ V}, I_F = 10 \text{ mA}$			2	1113

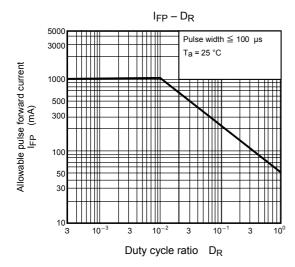
Switching Time Test Circuit

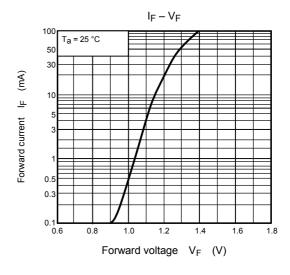


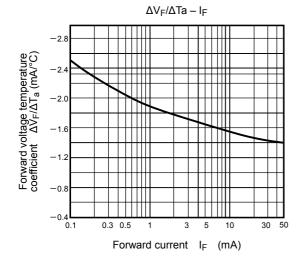


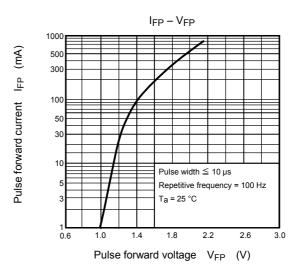


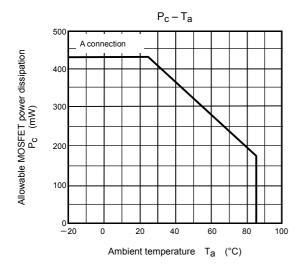


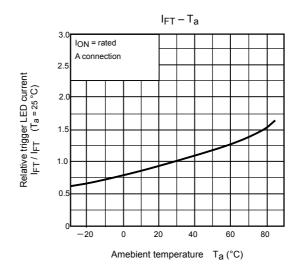


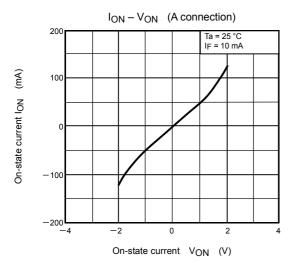


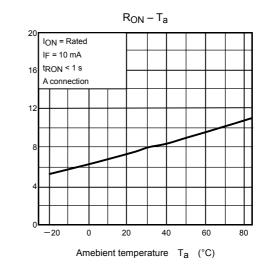






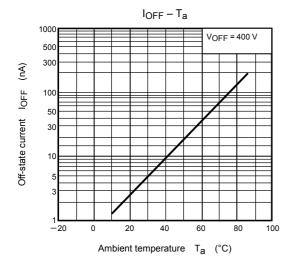


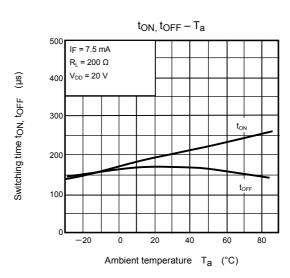




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On-state resistance RON(RMS)





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RESTRICTIONS ON PRODUCT USE

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