TOSHIBA TLP197G

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-MOS FET

TLP197G

MODEM FAX

PBX

MEASUREMENT INSTRUMENTATION

The TOSHIBA MINI FLAT PHOTO RELAY TLP197G is a small outline photo relay, suitable for surface mount assembly. The TLP197G consists of an gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead 2.1 mm height package, which enable TLP197G to be applied in CARD MODEMs. The TLP197G is a bi-directional switch which can replace mechanical relays in FAX machines and MODEMs etc.

SOP 6pin (2.54SOP6) : 1-Form-A Peak Off-State Voltage: 350 V (min) Trigger LED Current : 3m A (max) On-State Current : 120 mA (max) (A Connection)

On-State Resistance : 35 Ω (max) : 1500 V_{rms} (min) Isolation Voltage

: UL1577, File No. / E67349 **UL** Recognized

: BS EN60065 : 1994, Certificate No. 8273 **BSI** Approved

BS EN60950: 1992, Certificate No. 8274

SEMKO Approved: SS EN60065

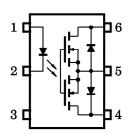
SS EN60950

Option (V4) type

TUV Approved: DIN VDE0884/06.92,

Certificate No. R9850580

PIN CONFIGURATION (TOP VIEW)

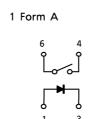


1.: ANODE 2. : CATHODE

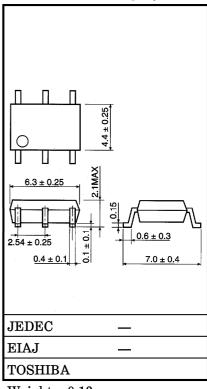
3.: NC

4. : DRAIN D1 5. : SOURCE

6. : DRAIN D2

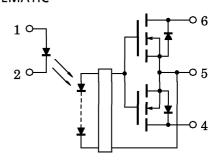


Unit in mm



Weight: 0.13 g

SCHEMATIC



000707EBC2

- O00707EBC2

 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, 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.

MAXIMUM RATINGS (Ta = 25°C)

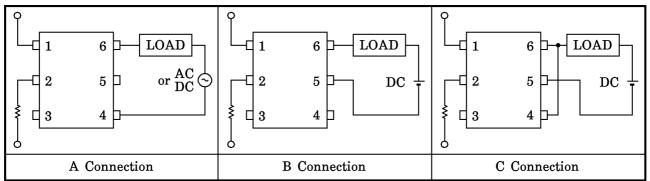
	CHARACTERISTIC		SYMBOL	RATING	UNIT	
	Forward Current	$I_{ m F}$	50	mA		
lα	Forward Current Derating (Ta ≥ 25°C)	ΔI _F /°C	-0.5	mA/°C		
LE	Peak Forward Current (100 µs pulse, 100 pps	I_{FP}	1	A		
-	Reverse Voltage		$v_{ m R}$	5	V	
	Junction Temperature	$T_{\rm j}$	125	°C		
	Off-State Output Terminal Voltage	$v_{ m OFF}$	350	V		
OR	On-State Current	A Connection		120		
		B Connection	I_{ON}		mA	
$_{ m CT}$		C Connection				
TE(On-State Current Derating (Ta ≥ 25 °C)	A Connection				
DE.		B Connection	$\Delta I_{ON} / ^{\circ}C$	-1.2	mA/°C	
		C Connection				
	Junction Temperature	$T_{ m j}$	125	°C		
Sto	rage Temperature Range	$\mathrm{T_{stg}}$	-55~125	°C		
Op	Operating Temperature Range			-40~85	°C	
Lea	Lead Soldering Temperature (10 s)			260	°C	
Iso	Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note 1)			1500	V_{rms}	

(Note 1): 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.	TYP.	MAX.	UNIT
Supply Voltage	v_{OFF}	_	_	280	V
Forward Current	$I_{\mathbf{F}}$	5	7.5	25	mA
On-State Current (A Connection)	ION	_	_	100	mA
Operating Temperature	$T_{ m opr}$	-20	_	65	°C

CIRCUIT CONNECTIONS



000707EBC2

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.

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Ω	Forward Voltage	$ m V_{ m F}$	$I_{ m F}=10~{ m mA}$	1.0	1.15	1.3	V
闰	Reverse Current	$I_{\mathbf{R}}$	$V_{R} = 5 V$	_	_	10	μ A
l	Capacitance	C_{T}	V = 0, $f = 1 MHz$	_	30	_	pF
DETECTOR	Off-State Current	I _{OFF}	$V_{ m OFF} = 350 m V$	ı		1	μ A
DETE	Capacitance	c_{OFF}	m V=0,~f=1~MHz	_	40	_	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current		I_{FT}	$I_{ON} = 120 \text{ mA}$	_	1	3	mA
			$I_{\mathrm{ON}} = 120\mathrm{mA},~I_{\mathrm{F}} = 5\mathrm{mA}$	_	22	35	
On-State Resistanc	A Connection	RON	$I_{ON} = 20 \sim 120 \text{ mA},$ $I_F = 5 \text{ mA}$	_	26	40	Ω

ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	$C_{\mathbf{S}}$	$V_S = 0$, $f = 1 MHz$	_	0.8		pF
Isolation Resistance	RS	$V_{S} = 500 \text{ V}, \text{ R.H.} \le 60\%$	$5 imes 10^{10}$	10^{14}		Ω
	$BV_{\mathbf{S}}$	AC, 1 minute	1500	_		V_{rms}
Isolation Voltage		AC, 1 second (in oil)	_	3000	_	
		DC, 1 minute (in oil)	_	3000		v_{DC}

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-On Time	$t_{ m ON}$	$R_L = 200 \Omega$ (Note 2)	_	0.3	1	ms
Turn-Off Time	${ m t_{OFF}}$	$ m V_{CC} = 20~V,~I_F = 5~mA$	_	0.1	1	1115

(Note 2): SWITCHING TIME TEST CIRCUIT

