

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP3507

TRIAC DRIVER

PROGRAMMABLE CONTROLLERS

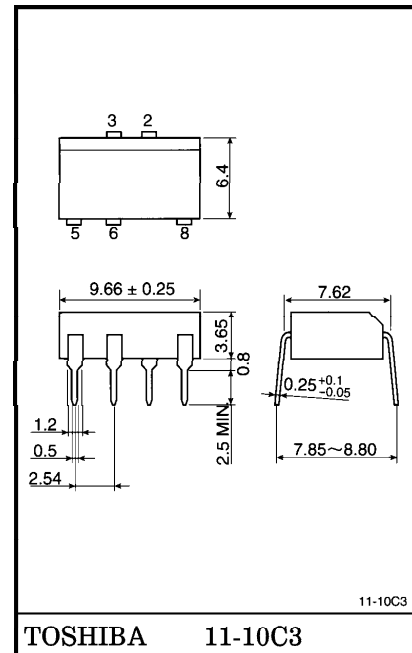
AC-OUTPUT MODULE

SOLID STATE RELAY

The TOSHIBA TLP3507 consists of a zero voltage crossing turn-on photo-triac optically coupled to a gallium arsenide infrared emitting diode in a 8 lead plastic DIP package.

- Peak Off-State Voltage : 600V (MIN.)
- Trigger LED Current : 10mA (MAX.)
- On-State Current : 0.5A_{rms} (MAX.)
- Isolation Voltage : 2500V_{rms} (MIN.)
- Zero Crossing Function
- UL Recognized : UL1577, File No. E67349

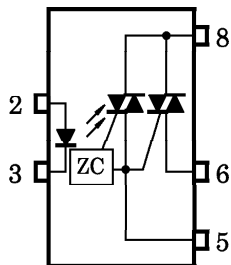
Unit in mm



TOSHIBA 11-10C3

Weight : 0.52g

PIN CONFIGURATIONS (TOP VIEW)



- 2 : ANODE
- 3 : CATHODE
- 5 : TRIAC GATE
- 6 : TRIAC T1
- 8 : TRIAC T2

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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)	0.5	A
		Ta=60°C		0.35	
	On-State Current Derating (Ta≥40°C)		ΔI _T /°C	−7.2	mA/°C
	Peak Current from Snubber Circuit (100μs pulse, 120pps)		I _{SP}	2	A
	Peak Nonrepetitive Surge Current (50Hz, Peak)		I _{TSM}	5	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, 1 min., R.H.≤60%) (Note)		BV _S	2500	V _{rms}	

(Note) Device considered a two-terminal device : Pins 2 and 3 shorted together, and pins 5, 6 and 8 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}	$I_{\text{TM}} = 0.75\text{A}$	—	—	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	$dv/dt(c)$	$V_{\text{in}} = 240\text{V}_{\text{rms}}, I_T = 0.5\text{A}_{\text{rms}}$ (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	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	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

