

TOSHIBA

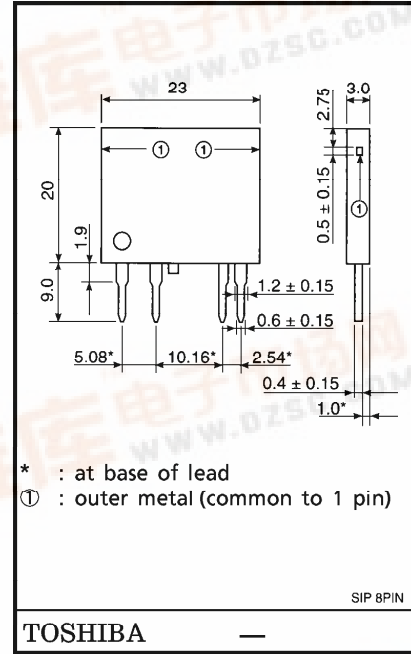
TLP3560, TLP3561

TENTATIVE TOSHIBA PHOTOCOUPLER GaAs LED + PHOTO-TRIAC + TRIAC

TLP3560, TLP3561

- INVERTER FOR AIR CONDITIONER
- HOUSEHOLD USE EQUIPMENT
- VENDING MACHINE
- GAME MACHINE
- AC-OUTPUT MODULE

Unit in mm



Weight : 3.6g

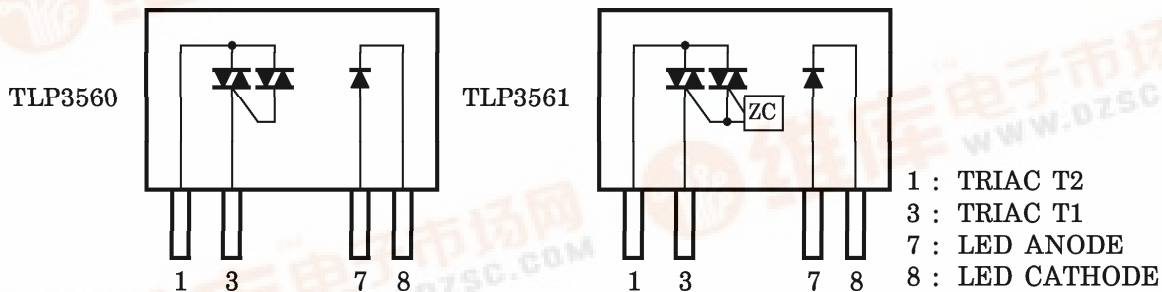
The TOSHIBA TLP3560 series consist of a GaAs infrared LED optically coupled to photo-triac and main triac in a 4 pin plastic SIP package.

TLP3560 : Non Zero Crossing Type

TLP3561 : Zero Crossing Type

- Peak Off-State Voltage : 400V (MIN.)
- Trigger LED Current : 10mA (MAX.)
- On-State Current : 2Arms (MAX.) @Ta = 40°C
- Isolation Voltage : 2500Vrms (MIN.)
- Nonrepetitive Surge Current : 12A peak @1cycle (MAX.)
- Isolation Creepage Path : 6.4mm (MIN.)
- Distance Between T1 and T2 : 3.5mm (MIN.) (5.08mm Pitch)
- T_{stg} : -40~125°C
- T_{opr} : -30~85°C

PIN CONFIGURATION (TOP VIEW)



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● TOSHIBA is continually working to improve the quality and the 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 observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product 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 products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

● 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 foreign exchange and foreign trade control laws.

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● The information contained herein is subject to change without notice.



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	50	mA
	Forward Current Derating (Ta ≥ 25°C)	ΔI _F / °C	-0.5	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}	400	V
	On-State RMS Current	Ta = 40°C	2.0	A
		Ta = 60°C	1.5	
	On-State Current Derating (Ta ≥ 40°C)	ΔI _T / °C	-25	mA / °C
	Peak Current from snubber Circuit (100μs Pulse, 120pps)	I _{SP}	2	A
	Peak Nonrepetitive Surge Current (50Hz, peak)	I _{TSM}	12	A
	Junction Temperature	T _j	120	°C
Storage Temperature Range	T _{stg}	-40~125	°C	
Operating Temperature Range	T _{opr}	-30~85	°C	
Lead Soldering Temperature (10s)	T _{sol}	260	°C	
Isolation Voltage (AC, 1min., R.H. ≤ 60%)	(Note 1) B _V S	2500	V _{rms}	

(Note 1) Device considered a two-terminal device : Pins 1 and 3 shorted together, and Pins 7 and 8 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{AC}	—	—	120	V _{ac}
Forward Current	I _F	15	20	25	mA
Peak Current from Snubber Circuit	I _{SP}	—	—	1	A
Operating Temperature	T _{opr}	-30	—	85	°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}	$V_{DRM} = 400\text{V}, T_a = 110^\circ\text{C}$	—	—	100	μA
	Peak On-State Voltage	V_{TM}	$I_{TM} = 1.5\text{A}$	—	—	3.0	V
	Holding Current	I_H	$R_L = 100\Omega$	—	—	25	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{in} = 250\text{V}$	200	500	—	$\text{V}/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$I_T = 1.0\text{A}$ $V_{in} = 120\text{Vrms}$	—	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 (Note 2)	V_{IH}	$I_F = \text{Rated } I_{FT}$	—	—	50	V
Leakage in Inhibited State (Note 2)	I_{IH}	$I_F = \text{Rated } I_{FT}$ $V_T = \text{Rated } V_{DRM}$	—	200	—	μA
Capacitance (Input to Output)	C_S	$V_S = 0, f = 1\text{MHz}$	—	1.5	—	pF
Isolation Resistance	R_S	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	—	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc

(Note 2) Applicable to TLP3561

