

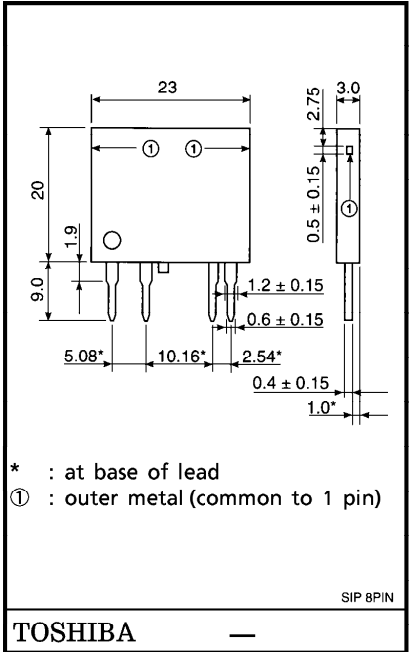
TENTATIVE

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



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.

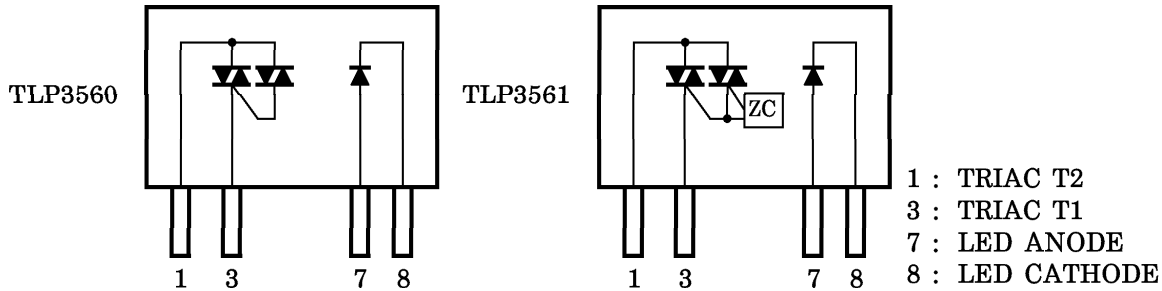
TLP3560 : Non Zero Crossing Type

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<sub>stg</sub> : -40~125°C
- T<sub>opr</sub> : -30~85°C

Weight : 3.6g

PIN CONFIGURATION (TOP VIEW)



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● 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.

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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)	$\Delta I_F / ^\circ\text{C}$	-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)	$\Delta I_T / ^\circ\text{C}$	-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) $BV_S$	2500	Vrms	

(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	$\mu\text{A}$
	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	$\mu\text{A}$
	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	—	$\mu\text{A}$
Capacitance (Input to Output)		$C_S$	$V_S = 0, f = 1\text{MHz}$	—	1.5	—	pF
Isolation Resistance		$R_S$	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	—	$10^{14}$	—	$\Omega$
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

