

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

## SM10LZ47

### AC POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage :  $V_{DRM} = 800V$
- R.M.S. On-State Current :  $I_T (RMS) = 10A$
- High Commutation ( $dv / dt$ )
- Isolation Voltage :  $V_{ISOL} = 1500V AC$

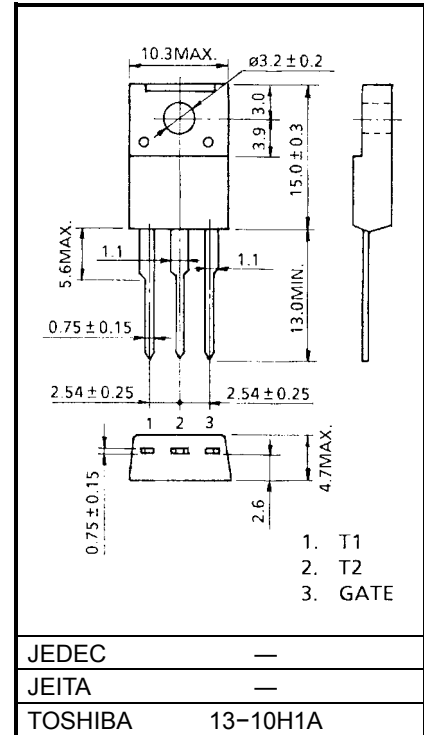
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### MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	$V_{DRM}$	800	V
R.M.S On-State Current (Full Sine Waveform)	$I_T (RMS)$	10	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	100 (50Hz)	A
		110 (60Hz)	
$I^2t$ Limit Value	$I^2t$	50	$A^2s$
Critical Rate of Rise of On-State Current (Note)	$di / dt$	50	$A / \mu s$
Peak Gate Power Dissipation	$P_{GM}$	5	W
Average Gate Power Dissipation	$P_G (AV)$	0.5	W
Peak Gate Voltage	$V_{FGM}$	10	V
Peak Gate Current	$I_{GM}$	2	A
Junction Temperature	$T_j$	-40~125	$^{\circ}C$
Storage Temperature Range	$T_{stg}$	-40~125	$^{\circ}C$
Isolation Voltage (AC, t = 1min.)	$V_{ISOL}$	1500	V

Note:  $di / dt$  test condition  
 $V_{DRM} = 0.5 \times \text{Rated}$ ,  $I_{TM} \leq 15A$ ,  $t_{gw} \geq 10\mu s$ ,  
 $t_{gr} \leq 250ns$ ,  $i_{gp} = I_{GT} \times 2.0$

Unit: mm

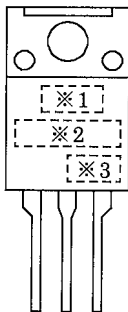


Weight: 1.7g

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM} = \text{Rated}$	—	—	20	$\mu\text{A}$	
Gate Trigger Voltage	I	$V_D = 12\text{V}$ , $R_L = 20\Omega$	T2 (+), Gate (+)		—	1.5	V
	II		T2 (+), Gate (-)		—	1.5	
	III		T2 (-), Gate (-)		—	1.5	
Gate Trigger Current	I	$V_D = 12\text{V}$ , $R_L = 20\Omega$	T2 (+), Gate (+)		—	30	mA
	II		T2 (+), Gate (-)		—	30	
	III		T2 (-), Gate (-)		—	30	
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 15\text{A}$	—	—	1.5	V	
Gate Non-Trigger Voltage	$V_{GD}$	$V_D = \text{Rated}$ , $T_c = 125^\circ\text{C}$	0.2	—	—	V	
Holding Current	$I_H$	$V_D = 12\text{V}$ , $I_{TM} = 1\text{A}$	—	—	50	mA	
Thermal Resistance	$R_{th(j-c)}$	Junction to Case, AC	—	—	3.4	$^\circ\text{C}/\text{W}$	
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{DRM} = 600\text{V}$ , $T_j = 125^\circ\text{C}$ Exponential Rise	—	300	—	$\text{V}/\mu\text{s}$	
Critical Rate of Rise of Off-State Voltage at Commutation	$(dv/dt)_c$	$V_{DRM} = 400\text{V}$ , $T_j = 125^\circ\text{C}$ $(di/dt)_c = -5.5\text{A}/\text{ms}$	10	—	—	$\text{V}/\mu\text{s}$	

## MARKING



NUMBER	SYMBOL	MARK
*1	TOSHIBA PRODUCT MARK	
*2	TYPE	SM10LZ47
*3	<p>Lot Number</p> <p>Month (Starting from Alphabet A)</p> <p>Year (Last Decimal Digit of the Current Year)</p>	<p>Example</p> <p>8A: January 1998</p> <p>8B: February 1998</p> <p>8L: December 1998</p>

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