

# SM10LZ47

## AC POWER CONTROL APPLICATIONS

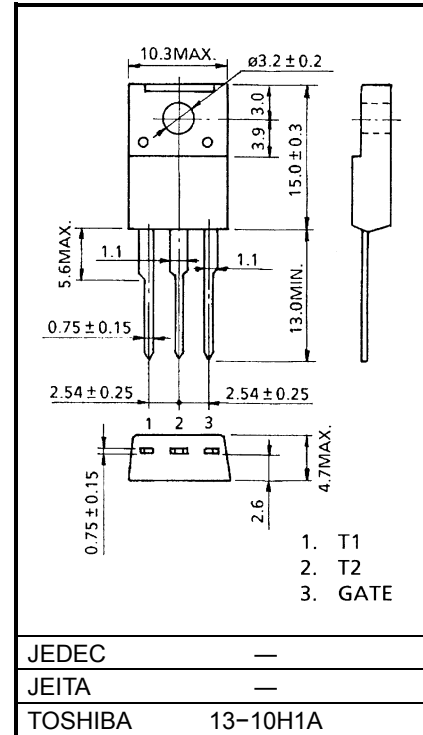
- Repetitive Peak Off-State Voltage :  $V_{DRM} = 800V$
- R.M.S. On-State Current :  $I_T (RMS) = 10A$
- High Commutation ( $dv / dt$ )
- Isolation Voltage :  $V_{ISOL} = 1500V AC$

## 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) 110 (60Hz)	A
$I^2t$ 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	°C
Storage Temperature Range	$T_{stg}$	-40~125	°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

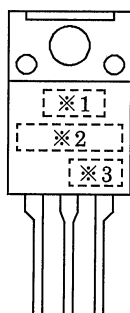


Weight: 1.7g

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

## MARKING



NUMBER	SYMBOL		MARK
*1	TOSHIBA PRODUCT MARK		
*2	TYPE	SM10LZ47	M10LZ47
*3	Lot Number  Month (Starting from Alphabet A) Year (Last Decimal Digit of the Current Year)		Example 8A: January 1998 8B: February 1998 8L: December 1998

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