

# SM10LZ47

### AC POWER CONTROL APPLICATIONS

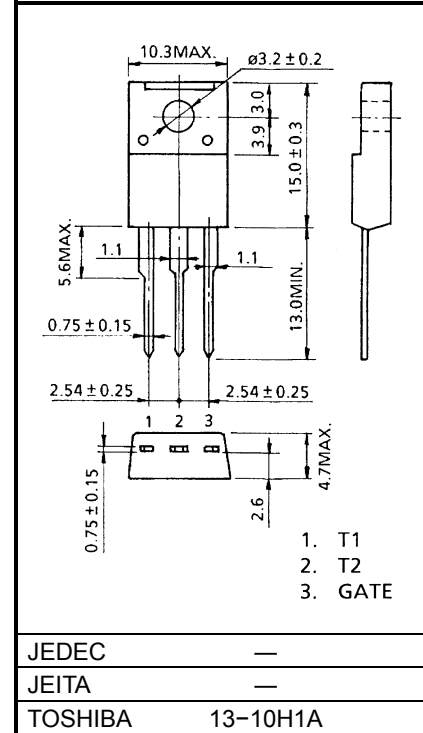
- Repetitive Peak Off-State Voltage :  $V_{DRM} = 800V$
- R.M.S. On-State Current :  $I_T (RMS) = 10A$
- High Commutation ( $dv / dt$ )
- Isolation Voltage :  $V_{ISOL} = 1500V AC$

### MAXIMUM RATINGS

| CHARACTERISTIC                                            | SYMBOL      | RATING                   | UNIT        |
|-----------------------------------------------------------|-------------|--------------------------|-------------|
| Repetitive Peak Off-State Voltage                         | $V_{DRM}$   | 800                      | V           |
| R.M.S On-State Current<br>(Full Sine Waveform)            | $I_T (RMS)$ | 10                       | A           |
| Peak One Cycle Surge On-State<br>Current (Non-Repetitive) | $I_{TSM}$   | 100 (50Hz)<br>110 (60Hz) | A           |
| $I^2t$ Limit Value                                        | $I^2t$      | 50                       | $A^2s$      |
| Critical Rate of Rise of On-State<br>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

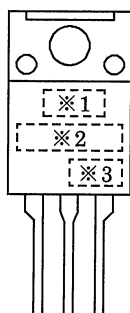


Weight: 1.7g

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                                            |     | SYMBOL        | TEST CONDITION                                                                                  |                   | MIN | TYP. | MAX | UNIT                        |
|-----------------------------------------------------------|-----|---------------|-------------------------------------------------------------------------------------------------|-------------------|-----|------|-----|-----------------------------|
| Repetitive Peak Off-State Current                         |     | $I_{DRM}$     | $V_{DRM} = \text{Rated}$                                                                        |                   | —   | —    | 20  | $\mu\text{A}$               |
| Gate Trigger Voltage                                      | I   | $V_{GT}$      | $V_D = 12\text{V}$ ,<br>$R_L = 20\Omega$                                                        | T2 (+) , Gate (+) | —   | —    | 1.5 | V                           |
|                                                           | II  |               |                                                                                                 | T2 (+) , Gate (-) | —   | —    | 1.5 |                             |
|                                                           | III |               |                                                                                                 | T2 (-) , Gate (-) | —   | —    | 1.5 |                             |
| Gate Trigger Current                                      | I   | $I_{GT}$      | $V_D = 12\text{V}$ ,<br>$R_L = 20\Omega$                                                        | 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                |     | $dv / dt$     | $V_{DRM} = 600\text{V}$ , $T_j = 125^\circ\text{C}$<br>Exponential Rise                         |                   | —   | 300  | —   | $\text{V} / \mu\text{s}$    |
| Critical Rate of Rise of Off-State Voltage at Commutation |     | $(dv / dt)_c$ | $V_{DRM} = 400\text{V}$ , $T_j = 125^\circ\text{C}$<br>$(di / dt)_c = -5.5\text{A} / \text{ms}$ |                   | 10  | —    | —   | $\text{V} / \mu\text{s}$    |

## MARKING



| NUMBER | SYMBOL               |          | MARK                                                                  |
|--------|----------------------|----------|-----------------------------------------------------------------------|
| *1     | TOSHIBA PRODUCT MARK |          |                                                                       |
| *2     | TYPE                 | SM10LZ47 | M10LZ47                                                               |
| *3     | Lot Number<br>       |          | Example<br>8A: January 1998<br>8B: February 1998<br>8L: December 1998 |

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