

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG300J1US51

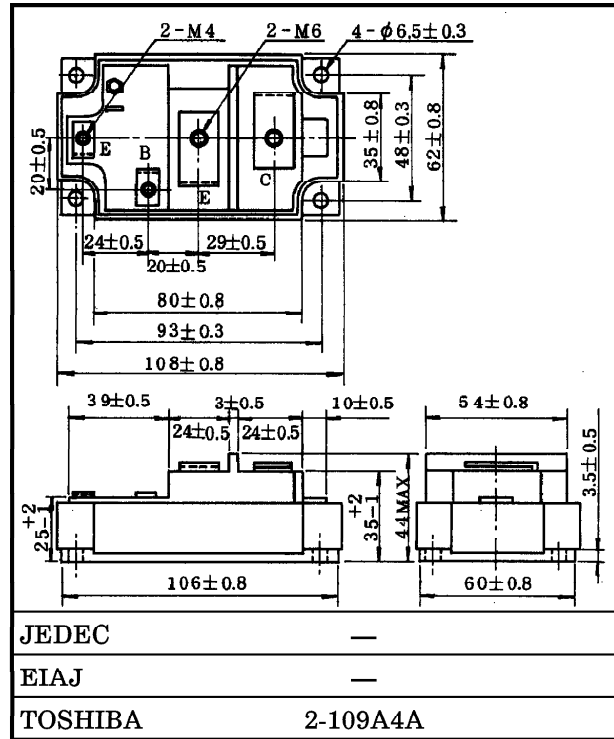
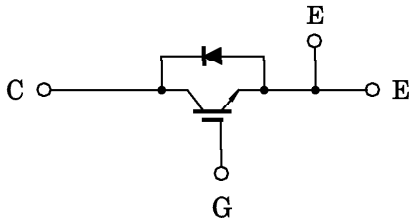
HIGH POWER SWITCHING APPLICATIONS.

Unit in mm

MOTOR CONTROL APPLICATIONS.

- The Electrodes are Isolated from Case.
- High Input Impedance
- Includes a Complete Half Bridge in One Package.
- Enhancement-Mode
- High Speed : $t_f=0.30\mu s$ (MAX.) ($I_C=300A$)
 $t_{rr}=0.15\mu s$ (MAX.) ($I_F=300A$)
- Low Saturation Voltage
: $V_{CE(sat)}=2.70V$ (MAX.) ($I_C=300A$)

EQUIVALENT CURCUIT



Weight : 465g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|--|-----|------------|------------------|------|
| Collector-Emitter Voltage | | V_{CES} | 600 | V |
| Gate-Emitter Voltage | | V_{GES} | ± 20 | V |
| Collector Current | DC | I_C | 300 | A |
| | 1ms | I_{CP} | 600 | |
| Forward Current | DC | I_F | 300 | A |
| | 1ms | I_{FM} | 600 | |
| Collector Power Dissipation (Tc=25°C) | | P_C | 1300 | W |
| Junction Temperature | | T_j | 150 | °C |
| Storage Temperature Range | | T_{stg} | -40~125 | °C |
| Isolation Voltage | | V_{Isol} | 2500 (AC 1 min.) | V |
| Screw Torque (Terminal / M4 / M6 / Mounting) | | — | 2 / 3 / 3 | N·m |

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|---------------------|----------------|--|------|-------|-----------|-----------------|
| Gate Leakage Current | | I_{GES} | $V_{GE} = \pm 20V, V_{CE} = 0$ | — | — | ± 500 | nA |
| Collector Cut-off Current | | I_{CES} | $V_{CE} = 600V, V_{GE} = 0$ | — | — | 4.0 | mA |
| Gate-Emitter Cut-off Voltage | | $V_{GE (off)}$ | $I_C = 30mA, V_{CE} = 5V$ | 5.0 | 7.0 | 8.0 | V |
| Collector-Emitter Saturation Voltage | | $V_{CE (sat)}$ | $I_C = 300A, V_{GE} = 15V$ | — | 2.10 | 2.70 | V |
| Input Capacitance | | C_{ies} | $V_{CE} = 10V, V_{GE} = 0$ $f = 1MHz$ | — | 28400 | — | pF |
| Switching Time | Turn-on Delay Time | $t_d (on)$ | Inductive Load $V_{CC} = 300V$ $I_C = 300A$ $V_{GE} = \pm 15V$ $R_G = 3.0\Omega$ (Note 1) | — | 0.20 | 0.40 | μs |
| | Rise Time | t_r | | — | 0.15 | 0.30 | |
| | Turn-on Time | t_{on} | | — | 0.60 | 1.20 | |
| | Turn-off Delay Time | $t_d (off)$ | | — | 0.20 | 0.40 | |
| | Fall Time | t_f | | — | 0.15 | 0.30 | |
| | Turn-off Time | t_{off} | | — | 0.50 | 1.00 | |
| Forward Voltage | | V_F | $I_F = 300A, V_{GE} = 0$ | — | 2.30 | 3.00 | V |
| Reverse Recovery Time | | t_{rr} | $I_F = 300A, V_{GE} = -10V$ $di / dt = 400A / \mu s$ | — | 0.08 | 0.15 | μs |
| Thermal Resistance | | $R_{th (j-c)}$ | Transistor Stage | — | — | 0.096 | $^{\circ}C / W$ |
| | | | Diode Stage | — | — | 0.20 | |

Note 1 Switching Time Test Circuit & Timing Chart

