

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG500Q1US1

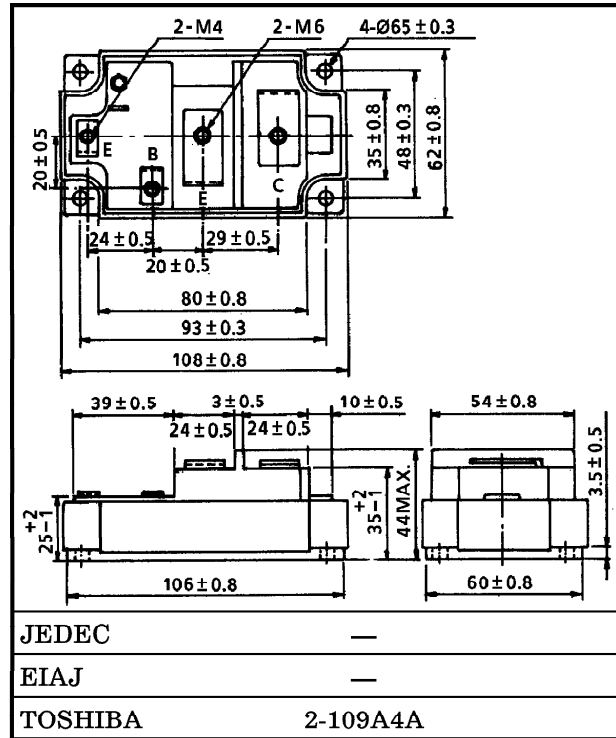
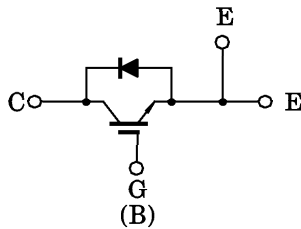
HIGH POWER SWITCHING APPLICATIONS

Unit in mm

MOTOR CONTROL APPLICATIONS

- High Input Impedance
- High Speed : $t_f = 0.5 \mu s$ (Max.)
 $t_{rr} = 0.5 \mu s$ (Max.)
- Low Saturation Voltage
: $V_{CE(sat)} = 4.0V$ (Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 465g

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|--|------------|------------------|------|
| Collector-Emitter Voltage | V_{CES} | 1200 | V |
| Gate-Emitter Voltage | V_{GES} | ±20 | V |
| Collector Current | DC | I_C | 500 |
| | 1ms | I_{CP} | 1000 |
| Forward Current | DC | I_F | 500 |
| | 1ms | I_{FM} | 1000 |
| Collector Power Dissipation (Tc = 25°C) | P_C | 2900 | W |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature Range | T_{stg} | -40~125 | °C |
| Isolation Voltage | V_{Isol} | 2500 (AC, 1min.) | 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} = ±20V, V _{CE} = 0 | — | — | ±500 | nA |
| Collector Cut-off Current | | I _{CES} | V _{CE} = 1200V, V _{GE} = 0 | — | — | 4.0 | mA |
| Gate-Emitter Cut-off Voltage | | V _{GE (OFF)} | I _C = 500mA, V _{CE} = 5V | 3.0 | — | 6.0 | V |
| Collector-Emitter Saturation Voltage | | V _{CE (sat)} | I _C = 500A, V _{GE} = 15V | — | 3.0 | 4.0 | V |
| Input Capacitance | | C _{ies} | V _{CE} = 10V, V _{GE} = 0, f = 1MHz | — | 80000 | — | pF |
| Switching Time | Rise Time | t _r | | — | 0.3 | 0.6 | μs |
| | Turn-on Time | t _{on} | | — | 0.4 | 0.8 | |
| | Fall Time | t _f | | — | 0.2 | 0.5 | |
| | Turn-off Time | t _{off} | | — | 0.8 | 1.5 | |
| Forward Voltage | | V _F | I _F = 500A, V _{GE} = 0 | — | — | 3.0 | V |
| Reverse Recovery Time | | t _{rr} | I _F = 500A, V _{GE} = -10V di / dt = 300A / μs | — | 0.25 | 0.5 | μs |
| Thermal Resistance | | R _{th (j-c)} | Transistor | — | — | 0.042 | °C / W |
| | | | Diode | — | — | 0.20 | |

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