

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG400Q1US41

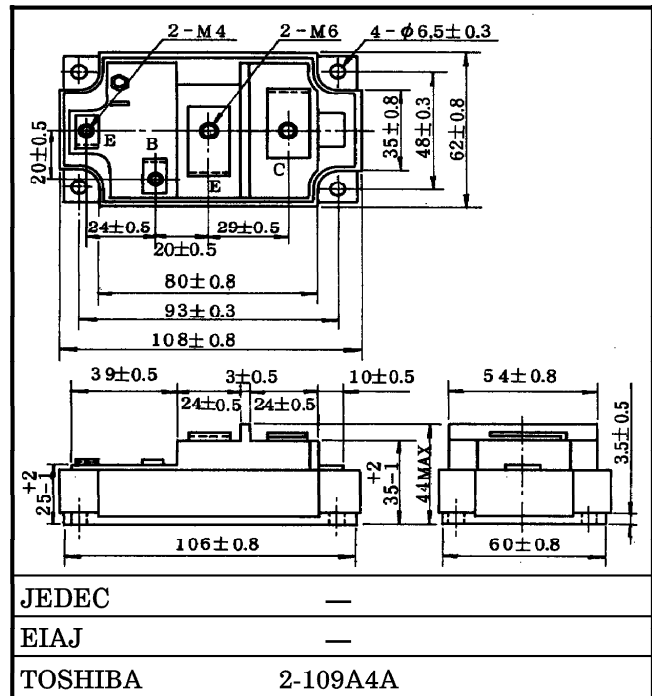
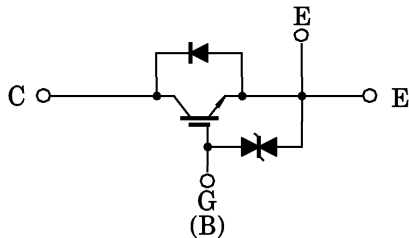
HIGH POWER SWITCHING APPLICATIONS.

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 : $V_{CE(sat)} = 4.0 V$ (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 | A |
| | 1ms | I_{CP} | |
| Forward Current | DC | I_F | A |
| | 1ms | I_{FM} | |
| Collector Power Dissipation (Tc = 25°C) | P_C | 2400 | W |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature Range | T_{stg} | -40~125 | °C |
| Isolation Voltage | V_{Isol} | 2500 (AC 1 minute) | 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} | $V_{GE} = \pm 20V, V_{CE} = 0$ | — | — | ± 40 | μA |
| Collector Cut-off Current | | I_{CES} | $V_{CE} = 1200V, V_{GE} = 0$ | — | — | 4 | mA |
| Gate-Emitter Cut-off Voltage | | $V_{GE(OFF)}$ | $I_C = 400mA, V_{CE} = 5V$ | 3.0 | — | 6.0 | V |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | $I_C = 400A, V_{GE} = 15V$ | — | 3.0 | 4.0 | V |
| Input Capacitance | | C_{ies} | $V_{CE} = 10V, V_{GE} = 0, f = 1MHz$ | — | 48000 | — | 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 | | — | 2.0 | 3.0 | V |
| Reverse Recovery Time | | t_{rr} | $I_F = 400A, V_{GE} = -10V$ $di/dt = 300A/\mu s$ | — | 0.25 | 0.5 | μS |
| Thermal Resistance | | $R_{th(j-c)}$ | Transistor | — | — | 0.052 | $^{\circ}C/W$ |
| | | | Diode | — | — | 0.2 | |

