

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

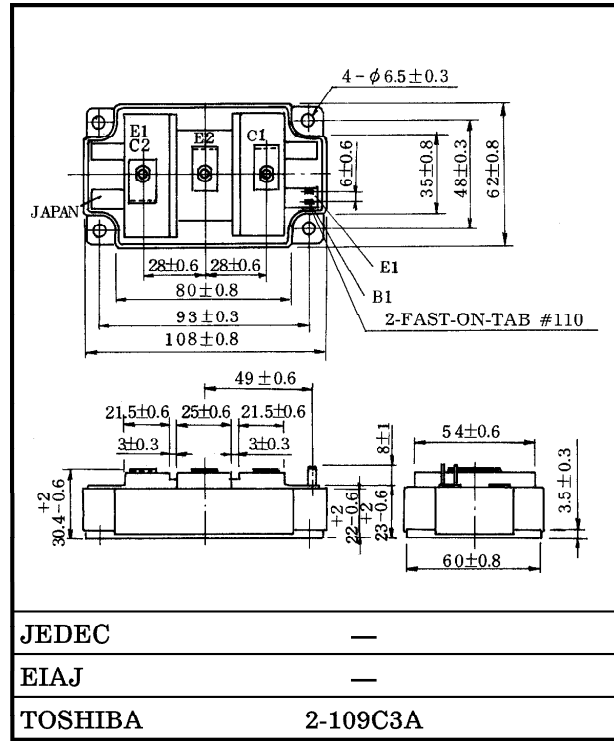
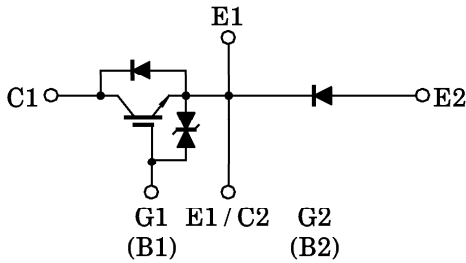
# MG200Q1JS40

HIGH POWER SWITCHING APPLICATIONS.  
CHOPPER APPLICATIONS.

Unit in mm

- 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 : 430g

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         | $I_C$            | 200  |
|   | 1ms        | $I_{CP}$         | 400  |
| Forward Current                         | DC         | $I_F$            | 200  |
|   | 1ms        | $I_{FM}$         | 400  |
| 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/Mounting)        | —          | 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 <sub>GES</sub>      | V <sub>GE</sub> = ±20V, V <sub>CE</sub> = 0                          | —    | —     | ±20   | μA     |
| Collector Cut-off Current            |               | I <sub>CES</sub>      | V <sub>CE</sub> = 1200V, V <sub>GE</sub> = 0                         | —    | —     | 2.0   | mA     |
| Gate-Emitter Cut-off Voltage         |               | V <sub>GE (OFF)</sub> | V <sub>CE</sub> = 5V, I <sub>C</sub> = 200mA                         | 3.0  | —     | 6.0   | V      |
| Collector-Emitter Saturation Voltage |               | V <sub>CE (sat)</sub> | I <sub>C</sub> = 200A, V <sub>GE</sub> = 15V                         | —    | 3.0   | 4.0   | V      |
| Input Capacitance                    |               | C <sub>ies</sub>      | V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0<br>f = 1MHz               | —    | 24000 | —     | pF     |
| Switching Time                       | Rise Time     | t <sub>r</sub>        |  | —    | 0.3   | 0.6   | μs     |
|                                      | Turn-on Time  | t <sub>on</sub>       |  | —    | 0.4   | 0.8   |        |
|                                      | Fall Time     | t <sub>f</sub>        |  | —    | 0.2   | 0.5   |        |
|                                      | Turn-off Time | t <sub>off</sub>      |  | —    | 0.8   | 1.5   |        |
| Forward Voltage                      |               | V <sub>F</sub>        | I <sub>F</sub> = 200A, V <sub>GE</sub> = 0                           | —    | 2.0   | 3.0   | V      |
| Reverse Recovery Time                |               | t <sub>rr</sub>       | I <sub>F</sub> = 200A, V <sub>GE</sub> = -10V<br>di / dt = 300A / μs | —    | 0.25  | 0.5   | μs     |
| Thermal Resistance                   | Transistor    | R <sub>th (j-c)</sub> |  | —    | —     | 0.096 | °C / W |
|                                      | Diode         |                       |  | —    | —     | 0.25  |        |

