

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

# MG75J1ZS40

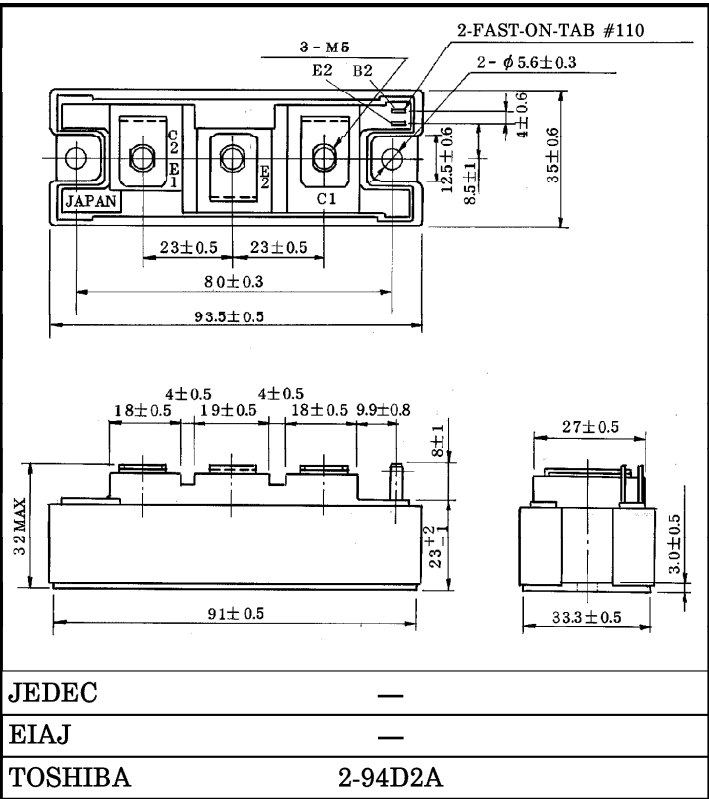
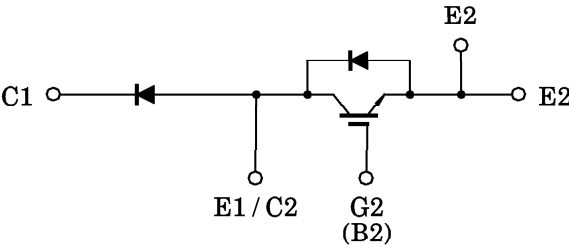
HIGH POWER SWITCHING APPLICATIONS.

Unit in mm

MOTOR CONTROL APPLICATIONS.

- High Input Impedance
- High Speed :  $t_f = 0.35\mu s$  (Max.)  
 $t_{rr} = 0.15\mu s$  (Max.)
- Low Saturation Voltage  
:  $V_{CE(sat)} = 3.5V$  (Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 202g

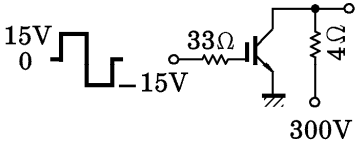
MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC                          |     | SYMBOL     | RATING              | UNIT |
|-----------------------------------------|-----|------------|---------------------|------|
| Collector-Emitter Voltage               |     | $V_{CES}$  | 600                 | V    |
| Gate-Emitter Voltage                    |     | $V_{GES}$  | ± 20                | V    |
| Collector Current                       | DC  | $I_C$      | 75                  | A    |
|                                         | 1ms | $I_{CP}$   | 150                 |      |
| Forward Current                         | DC  | $I_F$      | 75                  | A    |
|                                         | 1ms | $I_{FM}$   | 150                 |      |
| Collector Power Dissipation (Tc = 25°C) |     | $P_C$      | 350                 | 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 / Mounting)      |     | —          | 3 / 3               | Nm   |

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## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                       |               | SYMBOL         | TEST CONDITION                                                                     | MIN. | TYP. | MAX.      | UNIT          |
|--------------------------------------|---------------|----------------|------------------------------------------------------------------------------------|------|------|-----------|---------------|
| Gate Leakage Current                 |               | $I_{GES}$      | $V_{GE} = \pm 20V, V_{CE} = 0$                                                     | —    | —    | $\pm 500$ | nA            |
| Collector Cut-off Current            |               | $I_{CES}$      | $V_{CE} = 600V, V_{GE} = 0$                                                        | —    | —    | 1.0       | mA            |
| Collector-Emitter Breakdown Voltage  |               | $V_{(BR) CES}$ | $I_C = 10mA, V_{GE} = 0$                                                           | 600  | —    | —         | V             |
| Gate-Emitter Cut-off Voltage         |               | $V_{GE (off)}$ | $I_C = 75mA, V_{CE} = 5V$                                                          | 3.0  | —    | 6.0       | V             |
| Collector-Emitter Saturation Voltage |               | $V_{CE (sat)}$ | $I_C = 75A, V_{GE} = 15V$                                                          | —    | 2.7  | 3.5       | V             |
| Input Capacitance                    |               | $C_{ies}$      | $V_{CE} = 10V, V_{GE} = 0,$<br>$f = 1MHz$                                          | —    | 6800 | —         | pF            |
| Switching Time                       | Rise Time     | $t_r$          |  | —    | 0.30 | 0.60      | $\mu s$       |
|                                      | Turn-on Time  | $t_{on}$       |                                                                                    | —    | 0.40 | 0.80      |               |
|                                      | Fall Time     | $t_f$          |                                                                                    | —    | 0.18 | 0.35      |               |
|                                      | Turn-off Time | $t_{off}$      |                                                                                    | —    | 0.60 | 1.00      |               |
| Forward Voltage                      |               | $V_F$          | $I_F = 75A, V_{GE} = 0$                                                            | —    | 1.7  | 2.5       | V             |
| Reverse Recovery Time                |               | $t_{rr}$       | $I_F = 75A, V_{GE} = -10V,$<br>$di/dt = 100A/\mu s$                                | —    | 0.08 | 0.15      | $\mu s$       |
| Thermal Resistance                   |               | $R_{th (j-c)}$ | Transistor                                                                         | —    | —    | 0.35      | $^{\circ}C/W$ |
|                                      |               |                | Diode                                                                              | —    | —    | 0.83      |               |

