

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

# MG75J1ZS50

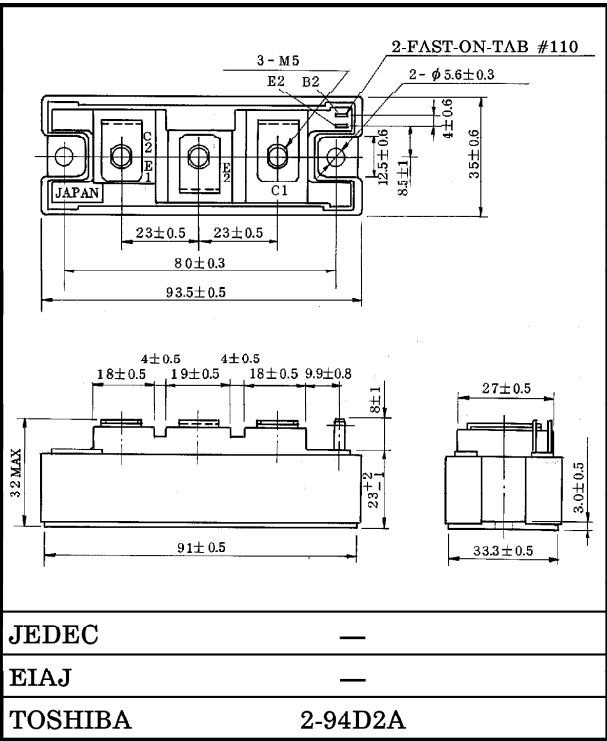
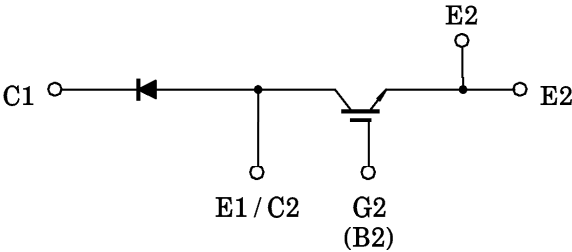
HIGH POWER SWITCHING APPLICATIONS.

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.) ( $I_C=75A$ )  
 $t_{rr}=0.15\mu s$  (MAX.) ( $I_F=75A$ )
- Low Saturation Voltage  
:  $V_{CE(sat)}=2.70V$  (MAX.) ( $I_C=75A$ )

EQUIVALENT CIRCUIT



Weight : 202g (Typ.)

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC                                        |     | SYMBOL     | RATING           | UNIT       |
|-------------------------------------------------------|-----|------------|------------------|------------|
| Collector-Emitter Voltage                             |     | $V_{CES}$  | 600              | V          |
| Gate-Emitter Voltage                                  |     | $V_{GES}$  | $\pm 20$         | 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<br>( $T_c = 25^\circ C$ ) |     | $P_C$      | 390              | W          |
| Junction Temperature                                  |     | $T_j$      | 150              | $^\circ C$ |
| Storage Temperature Range                             |     | $T_{stg}$  | $-40 \sim 125$   | $^\circ C$ |
| Isolation Voltage                                     |     | $V_{Isol}$ | 2500 (AC 1 min.) | V          |
| Screw Torque (Terminal / Mounting)                    |     | —          | 3 / 3            | N·m        |

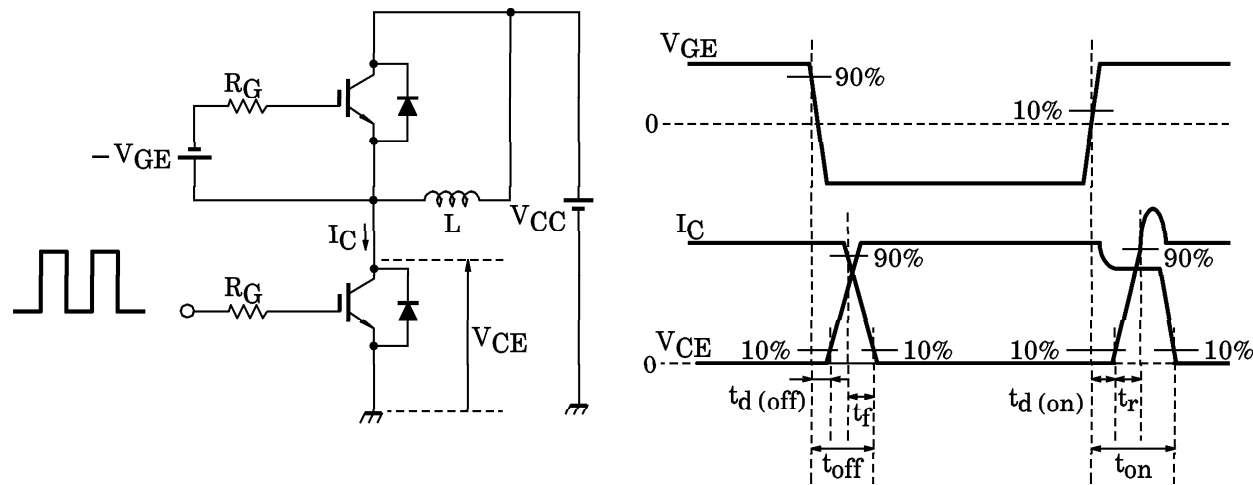
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                       |                     | SYMBOL    | TEST CONDITION                                                                 | MIN. | TYP. | MAX. | UNIT   |
|--------------------------------------|---------------------|-----------|--------------------------------------------------------------------------------|------|------|------|--------|
| Gate Leakage Current                 |                     | IGES      | VGE = ±20V, VCE = 0                                                            | —    | —    | ±500 | nA     |
| Collector Cut-off Current            |                     | ICES      | VCE = 600V, VGE = 0                                                            | —    | —    | 1.0  | mA     |
| Gate-Emitter Cut-off Voltage         |                     | VGE (off) | IC = 7.5mA, VCE = 5V                                                           | 5.0  | 7.0  | 8.0  | V      |
| Collector-Emitter Saturation Voltage |                     | VCE (sat) | IC = 75A, VGE = 15V                                                            | —    | 2.10 | 2.70 | V      |
| Input Capacitance                    |                     | Cies      | VCE = 10V, VGE = 0, f = 1MHz                                                   | —    | 7100 | —    | pF     |
| Switching Time                       | Turn-on Delay Time  | td (on)   | Inductive Load<br>VCC = 300V<br>IC = 75A<br>VGE = ±15V<br>RG = 18Ω<br>(Note 1) | —    | 0.08 | 0.16 | μs     |
|                                      | Rise Time           | tr        |                                                                                | —    | 0.12 | 0.24 |        |
|                                      | Turn-on Time        | ton       |                                                                                | —    | 0.40 | 0.80 |        |
|                                      | Turn-off Delay Time | td (off)  |                                                                                | —    | 0.20 | 0.40 |        |
|                                      | Fall Time           | tf        |                                                                                | —    | 0.15 | 0.30 |        |
|                                      | Turn-off Time       | toff      |                                                                                | —    | 0.50 | 1.00 |        |
| Forward Voltage                      |                     | VF        | IF = 75A, VGE = 0                                                              | —    | 2.10 | 2.80 | V      |
| Reverse Recovery Time                |                     | trr       | IF = 75A, VGE = -10V<br>di / dt = 100A / μs                                    | —    | 0.08 | 0.15 | μs     |
| Thermal Resistance                   |                     | Rth (j-c) | Transistor Stage                                                               | —    | —    | 0.32 | °C / W |
|                                      |                     |           | Diode Stage                                                                    | —    | —    | 0.69 |        |

Note 1 Switching Time Test Circuit & Timing Chart



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