

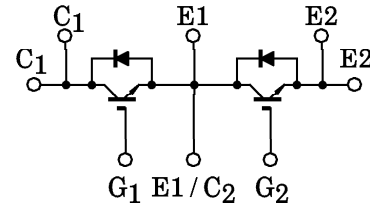
TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG180V2YS40

HIGH POWER SWITCHING APPLICATIONS

MOTOR CONTROL APPLICATIONS

EQUIVALENT CIRCUIT



- The Electrodes are Isolated from Case
- High Input Impedance
- Includes a Complete Half Bridge in One Package.
- Enhancement-Mode
- High Speed : $t_f = 1.5 \mu s$ (Max.) ($I_C = 180A$)
 $t_{rr} = 0.6 \mu s$ (Max.) ($I_F = 180A$)
- Outline : TOSHIBA 2-109D2A
(See page 3 for the device outline)
- Weight : 550g (Typ.)

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

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|--|-----|------------|------------------|------------|
| Collector-Emitter Voltage | | V_{CES} | 1700 | V |
| Gate-Emitter Voltage | | V_{GES} | ± 20 | V |
| Collector Current | DC | I_C | 180 | A |
| | 1ms | I_{CP} | 360 | |
| Forward Current | DC | I_F | 180 | A |
| | 1ms | I_{FM} | 360 | |
| Collector Power Dissipation ($T_c = 25^\circ C$) | | P_C | 1800 | W |
| Junction Temperature | | T_j | 150 | $^\circ C$ |
| Storage Temperature Range | | T_{stg} | -40~125 | $^\circ C$ |
| Isolation Voltage | | V_{Isol} | 4000 (AC 1 min.) | V |
| Screw Torque (Terminal / Mounting) | | — | 3 / 3 | N·m |

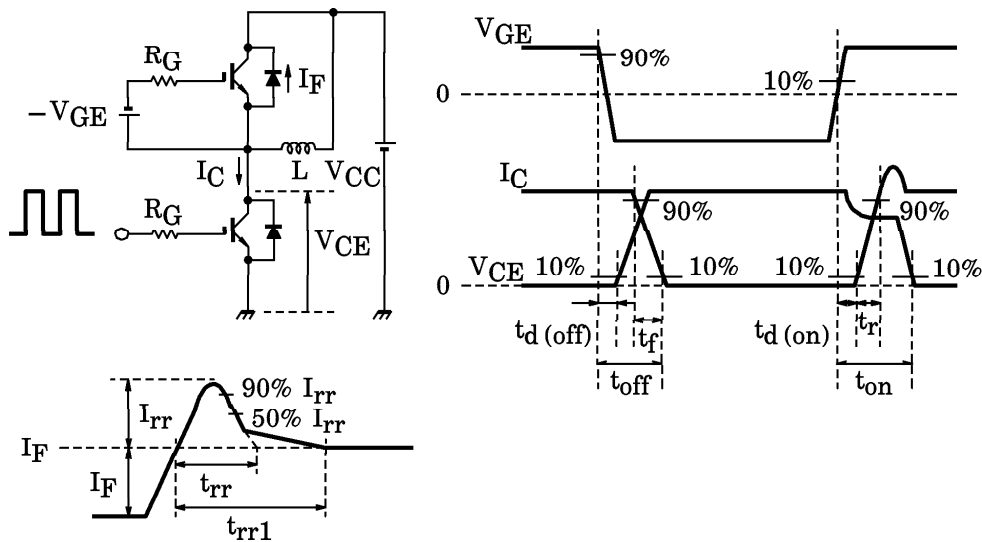
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

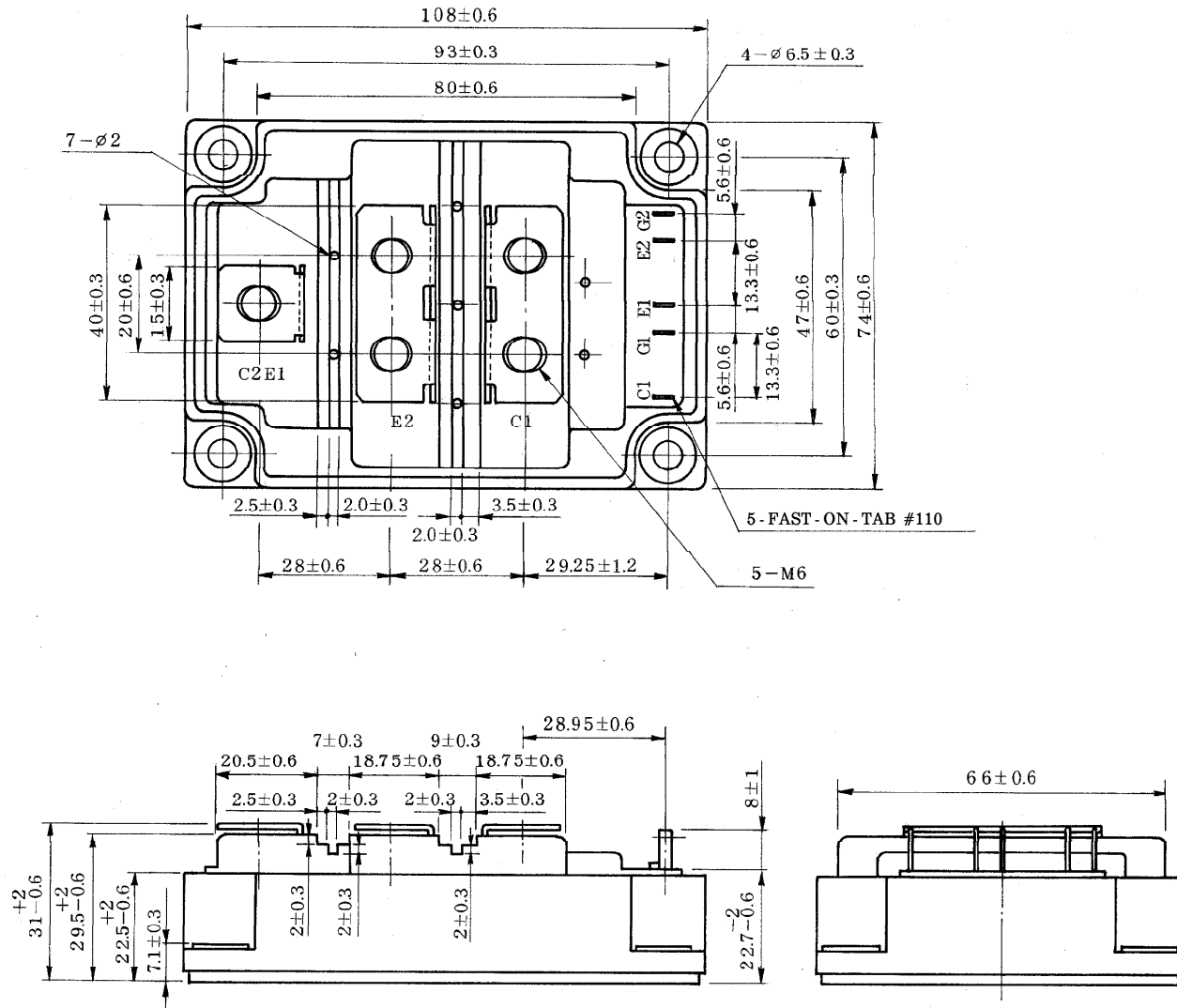
| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|---------------------|----------------|--|------|-------|-----------|-----------------|
| Gate Leakage Current | | I_{GES} | $V_{GE} = \pm 20V, V_{CE} = 0$ | — | — | ± 150 | nA |
| Collector Cut-off Current | | I_{CES} | $V_{CE} = 1700V, V_{GE} = 0$ | — | — | 1.5 | mA |
| Gate-Emitter Cut-off Voltage | | $V_{GE} (off)$ | $I_C = 180mA, V_{CE} = 5V$ | 4.0 | — | 8.0 | V |
| Collector-Emitter Saturation Voltage | | $V_{CE} (sat)$ | $I_C = 180A, V_{GE} = 15V$ | — | 3.2 | 4.5 | V |
| Input Capacitance | | C_{ies} | $V_{CE} = 10V, V_{GE} = 0,$ $f = 1MHz$ | — | 24600 | — | pF |
| Switching Time | Turn-on Delay Time | $t_d (on)$ | Inductive Load $V_{CC} = 900V$ $I_C = 180A$ $V_{GE} = \pm 15V$ $R_G = 2.7\Omega$ (Note 1) | — | 0.1 | — | μs |
| | Rise Time | t_r | | — | 0.1 | — | |
| | Turn-on Time | t_{on} | | — | 0.5 | — | |
| | Turn-off Delay Time | $t_d (off)$ | | — | 0.4 | — | |
| | Fall Time | t_f | | — | 0.5 | 1.5 | |
| | Turn-off Time | t_{off} | | — | 1.0 | — | |
| Forward Voltage | | V_F | $I_F = 180A, V_{GE} = 0$ | — | 3.7 | 5.0 | V |
| Reverse Recovery Time | | t_{rr} | $I_F = 180A, V_{GE} = -15V$ $di / dt = 1000A / \mu s$ (Note.1) | — | 0.3 | 0.6 | μs |
| Thermal Resistance | | $R_{th} (j-c)$ | Transistor Stage | — | — | 0.069 | $^{\circ}C / W$ |
| | | | Diode Stage | — | — | 0.25 | |

Note 1 Switching Time and Reverse Recovery Time Test Circuit & Timing Chart



OUTLINE : TOSHIBA 2-109D2A

Unit in mm



Weight : 550g (Typ.)

