

TENTATIVE

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG300Q2YS50

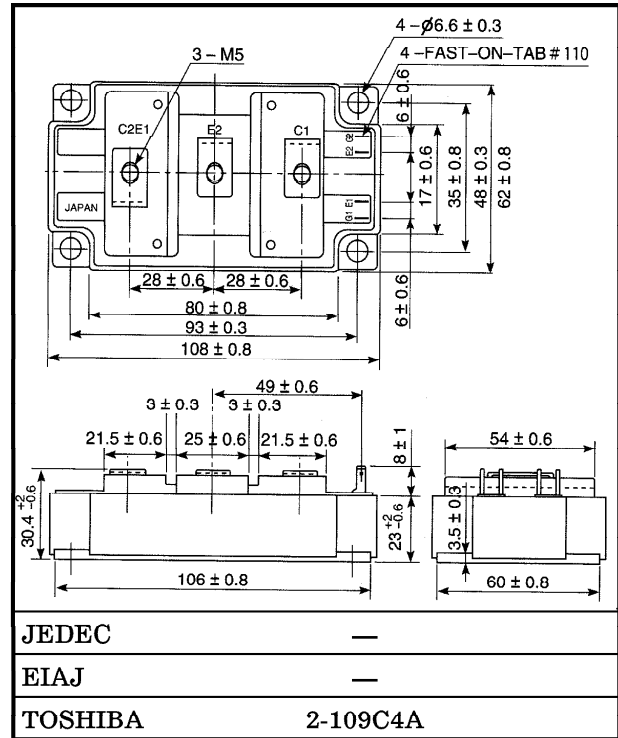
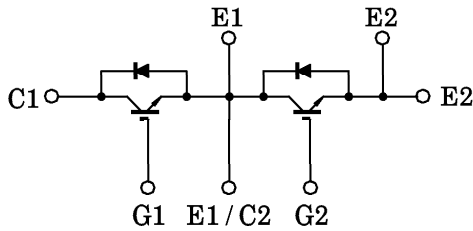
HIGH POWER SWITCHING APPLICATIONS.

Unit in mm

MOTOR CONTROL APPLICATIONS.

- High Input Impedance
- High Speed : $t_f = 0.3 \mu s$ (Max.)
 ◎ Inductive Load
- Low Saturation Voltage
 : $V_{CE(sat)} = 3.6V$ (Max.)
- Enhancement-Mode
- Includes a Complete Half Bridge in One Package.
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 430g

961001FAA1

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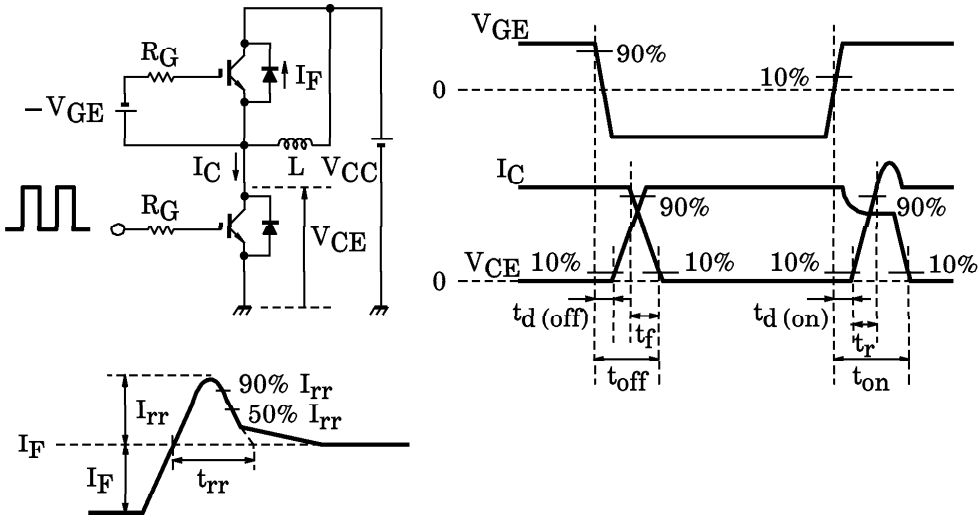
MAXIMUM RATINGS (Ta = 25°C)

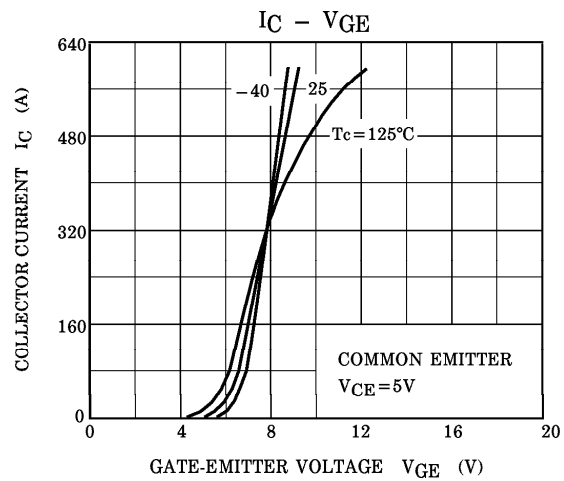
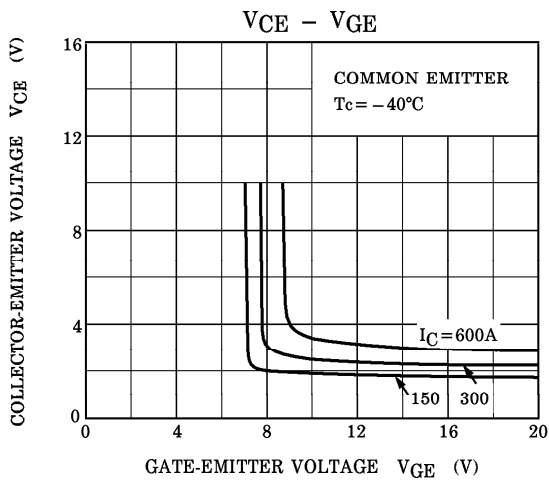
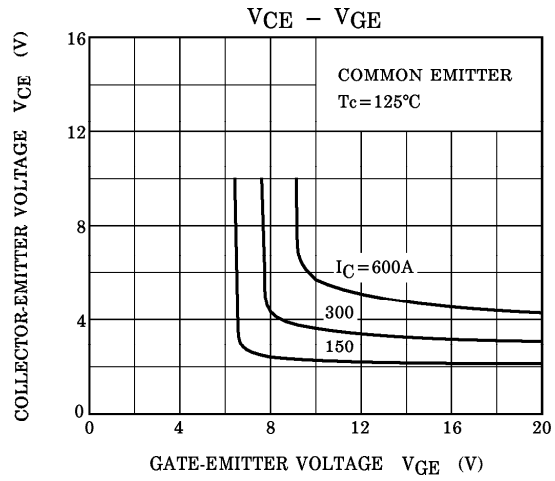
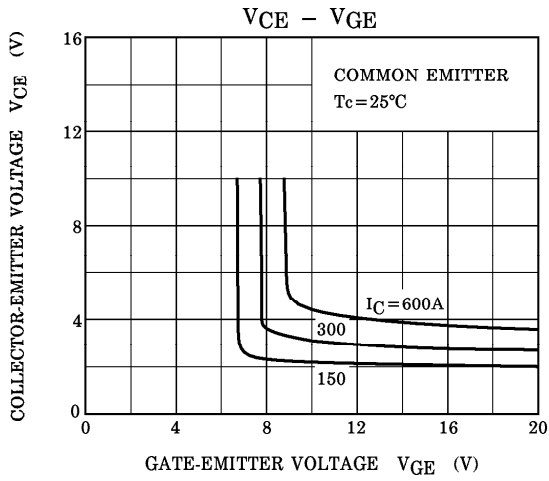
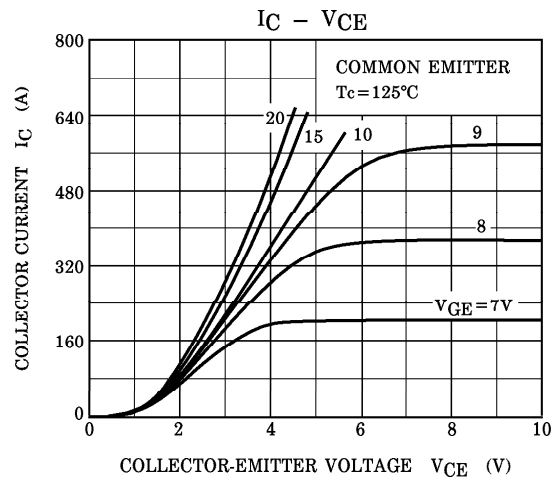
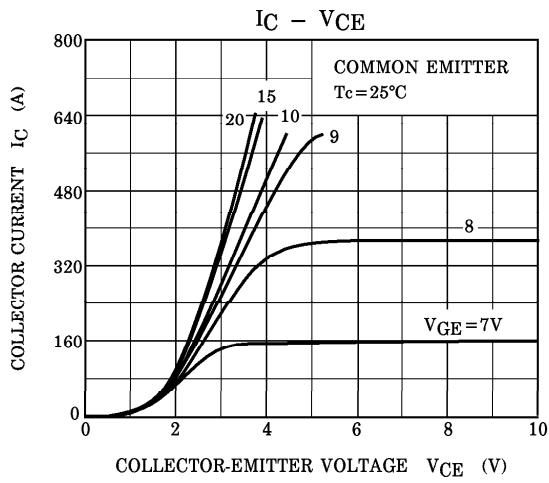
| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|--|-----|----------------------------------|-----------------------|------|
| Collector-Emitter Voltage | | V _{CE} S | 1200 | V |
| Gate-Emitter Voltage | | V _{GE} S | ±20 | V |
| Collector Current | DC | I _C (25°C / 80°C) | — / 300 | A |
| | 1ms | I _{CP} (25°C / 80°C) | — / 600 | A |
| Forward Current | DC | I _F | 300 | A |
| | 1ms | I _{FM} | 600 | A |
| Collector Power Dissipation (Tc = 25°C) | | P _C | 2000 | 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 | N·m |

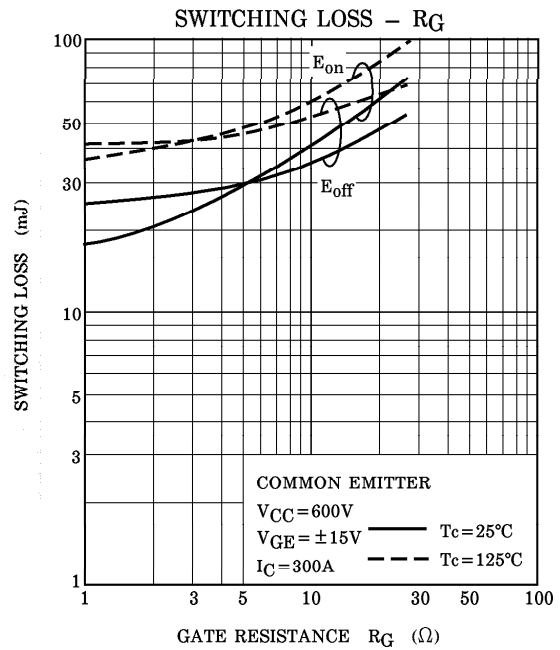
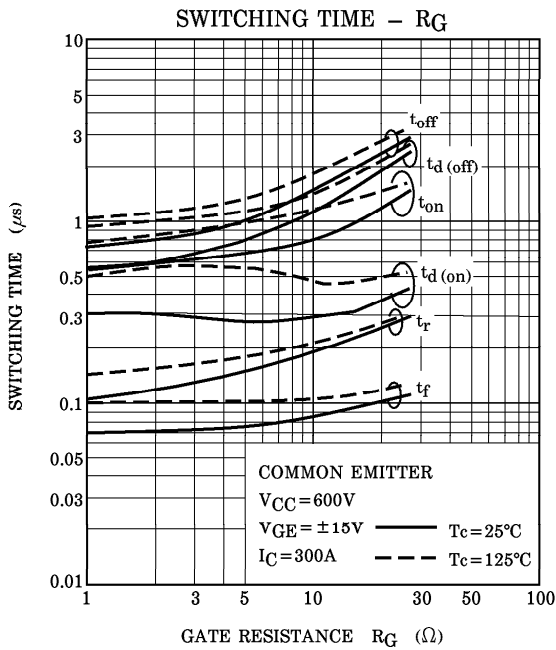
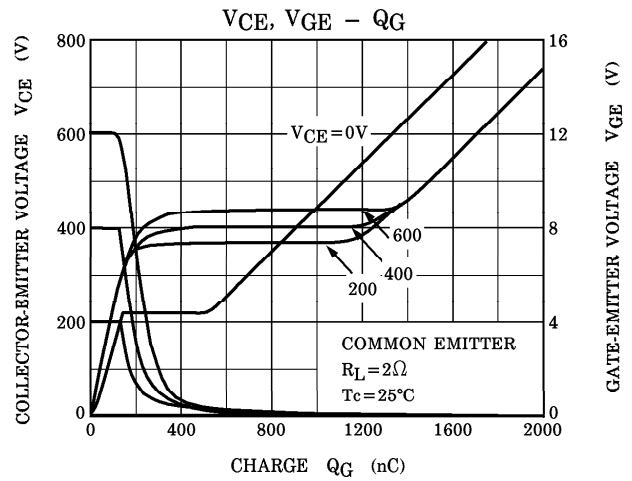
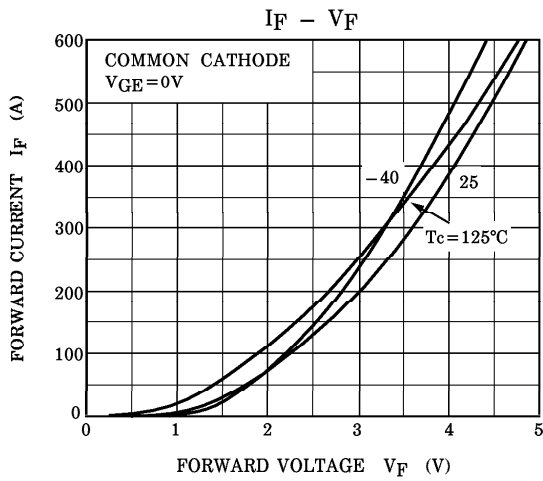
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|--------------------------------------|---------------------|-----------------------|--|------------------------|------|------|--------|---|
| Gate Leakage Current | | I _{GES} | V _{GE} = ±20V, V _{CE} = 0 | — | — | ±500 | nA | |
| Collector Cut-Off Current | | I _{CES} | V _{CE} = 1200V, V _{GE} = 0 | — | — | 2.0 | mA | |
| Gate-Emitter Cut-Off Voltage | | V _{GE} (off) | I _C = 300mA, V _{CE} = 5V | 3.0 | — | 6.0 | V | |
| Collector-Emitter Saturation Voltage | | V _{CE} (sat) | I _C = 300A, V _{GE} = 15V | T _j = 25°C | — | 2.8 | 3.6 | V |
| | | | | T _j = 125°C | — | 3.1 | 4.0 | |
| Input Capacitance | | C _{ies} | V _{CE} = 10V, V _{GE} = 0, f = 1MHz | — | 30.0 | — | nF | |
| Switching Time | Turn-On Delay Time | t _d (on) | Inductive Load V _{CC} = 600V I _C = 300A V _{GE} = ±15V R _G = 2.7Ω (Note 1) | — | 0.05 | — | μs | |
| | Rise Time | t _r | | — | 0.05 | — | | |
| | Turn-On Time | t _{on} | | — | 0.2 | — | | |
| | Turn-Off Delay Time | t _d (off) | | — | 0.5 | — | | |
| | Fall Time | t _f | | — | 0.1 | 0.3 | | |
| | Turn-Off Time | t _{off} | | — | 0.6 | — | | |
| Forward Voltage | | V _F | I _F = 300A, V _{GE} = 0 | — | 3.0 | 4.0 | V | |
| Reverse Recovery Time | | t _{rr} | I _F = 300A, V _{GE} = −10V di / dt = 1000A / μs (Note 1) | — | 0.1 | 0.25 | μs | |
| Thermal Resistance | | R _{th} (j-c) | Transistor Stage | — | — | 0.06 | °C / W | |
| | | | Diode Stage | — | — | 0.24 | | |

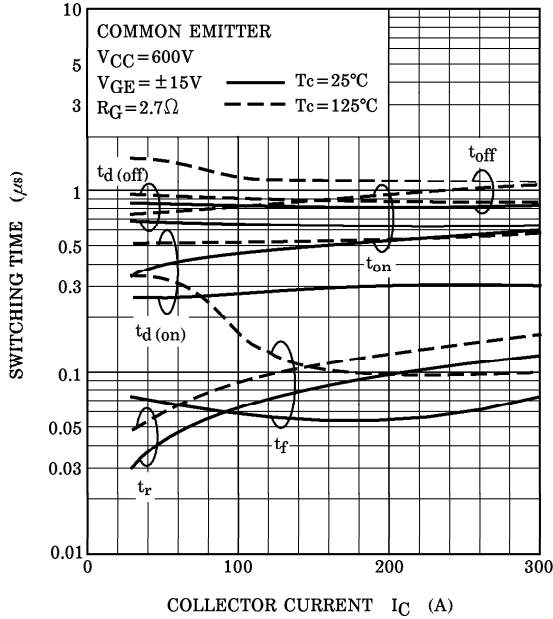
(Note 1) Switching Time and Reverse Recovery Time Test Circuit & Timing Chart



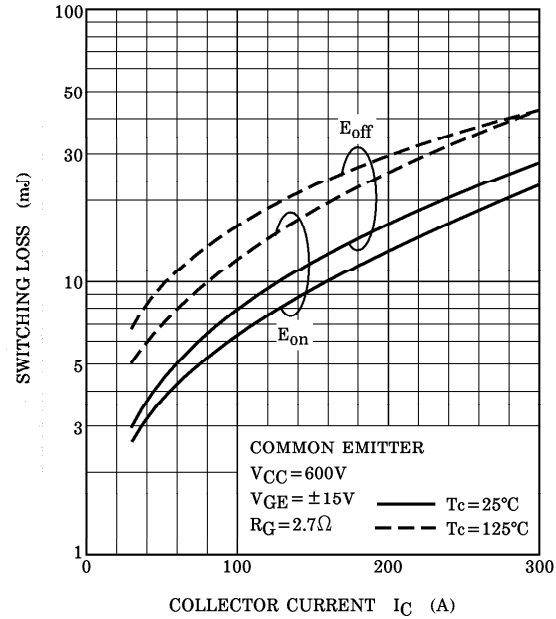




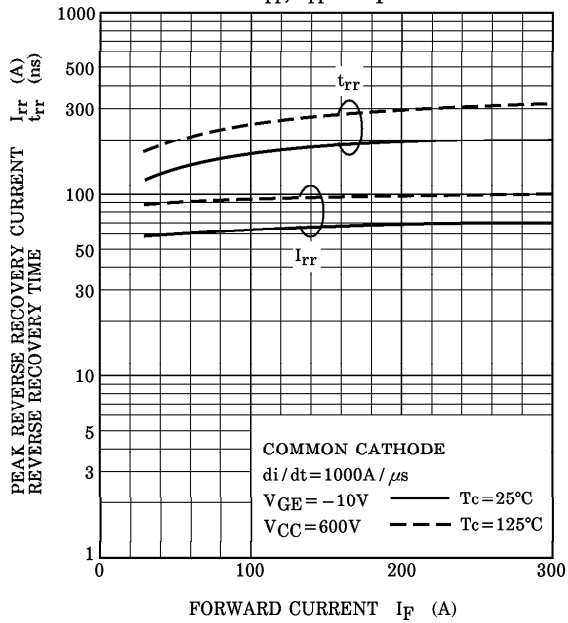
SWITCHING TIME - I_C



SWITCHING LOSS - I_C



I_{rr}, t_{rr} - I_F



E_{dsw} - I_F

