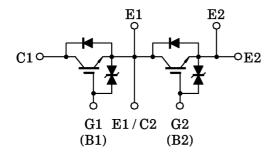
TOSHIBA GTR Module Silicon N Channel IGBT

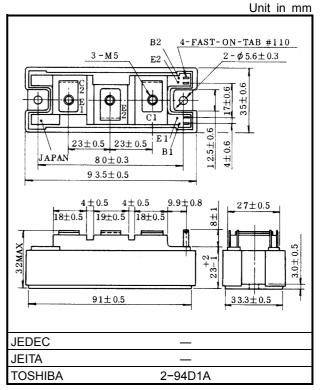
MG50Q2YS40

High Power Switching Applications. Motor Control Applications.

- High input impedance
- High speed: $tf = 0.5\mu s$ (max.) $trr = 0.5\mu s$ (max.)
- Low saturation voltage
 - $: V_{CE(sat)} = 4.0V \text{ (max.)}$
- Enhancement-mode
- Includes a complete half bridge in one package.
- The electrodes are isolated from case.

Equivalent Circuit





Weight: 202g

Maximum Ratings (Ta = 25°C)

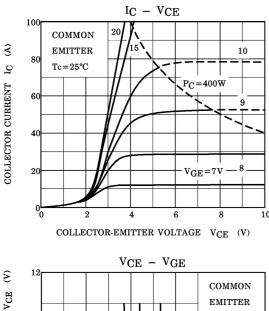
| Characteristic | | Symbol | Rating | Unit | |
|--------------------------------------|-------------------|--------------------|------------------|------|--|
| Collector–emitter voltage | | V _{CES} | 1200 | V | |
| Gate-emitter voltage | | V _{GES} | ±20 | V | |
| Collector current | DC | I _C | 50 | A | |
| | 1ms | I _{CP} | 100 | | |
| Forward current | DC | l _F | 50 | А | |
| | 1ms | I _{FM} | 100 | | |
| Collector power dissipation (Tc = 25 | PC | 400 | W | | |
| Junction temperature | | Tj | 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 | |

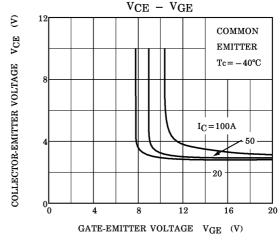
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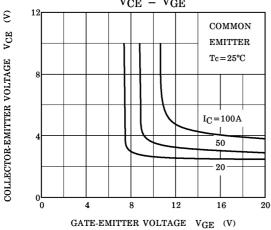
Electrical Characteristics (Ta = 25°C)

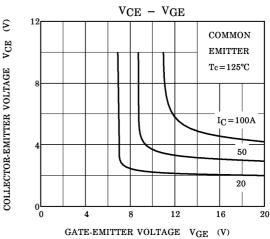
| Characteristic Symb | | Symbol | Test Condition | Min. | Тур. | Max. | Unit |
|--------------------------------------|---------------|----------------------|---|------|------|------|-------|
| Gate leakage current | | I _{GES} | V _{GE} = ±20V, V _{CE} = 0 | _ | _ | ±10 | μΑ |
| Collector cut-off current | | I _{CES} | V _{CE} = 1200V, V _{GE} = 0 | _ | _ | 1.0 | mA |
| Gate-emitter cut-off voltage | | V _{GE(off)} | I _C = 50mA, V _{CE} = 5V | 3.0 | _ | 6.0 | V |
| Collector–emitter saturation voltage | | V _{CE(sat)} | I _C = 50A, V _{GE} = 15V | _ | 3.0 | 4.0 | V |
| Input capacitance | | C _{ies} | V _{CE} = 10V, V _{GE} = 0, f = 1MHz | _ | 6000 | _ | pF |
| Switching time | Rise time | t _r | o | _ | 0.3 | 0.6 | - µs |
| | Turn-on time | t _{on} | $15V_{\square}$ 24Ω | _ | 0.4 | 0.8 | |
| | Fall time | t _f | 0 J L_15V 7600V | _ | 0.2 | 0.5 | |
| | Turn-off time | t _{off} | | _ | 0.8 | 1.5 | |
| Forward voltage V | | V _F | I _F = 50A, V _{GE} = 0 | - | 2.0 | 2.5 | V |
| Reverse recovery time | | t _{rr} | I _F = 50A, V _{GE} = -10V di / dt = 100A / µs | _ | 0.25 | 0.5 | μs |
| Thermal resistance | | R _{th(j-c)} | Transistor | _ | _ | 0.31 | °C/W |
| | | | Diode | _ | _ | 1.0 | _ C/W |

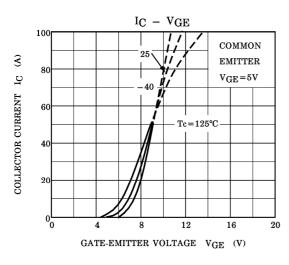
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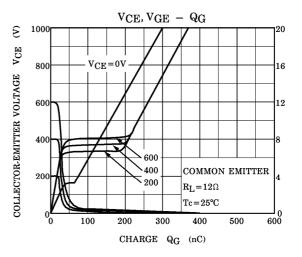




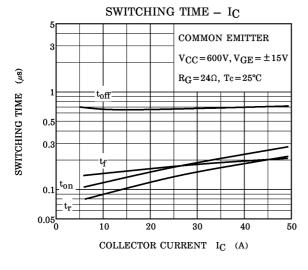


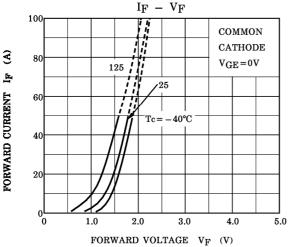


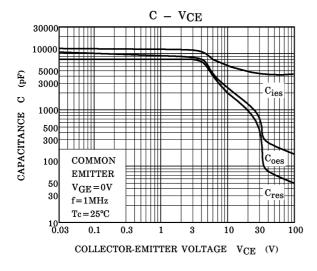


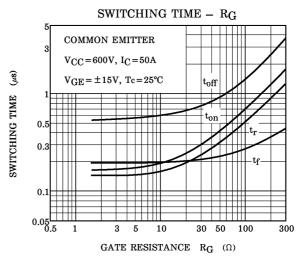


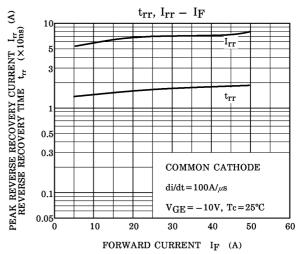
GATE-EMITTER VOLTAGE VGE (V)

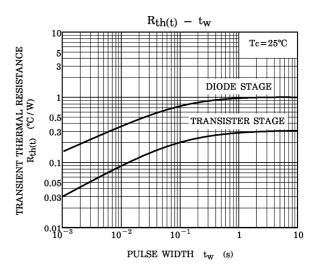


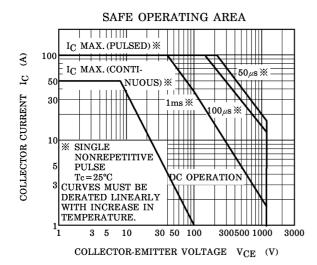


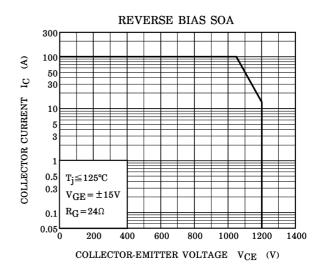












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