

TOSHIBA IGBT Module Silicon N Channel IGBT

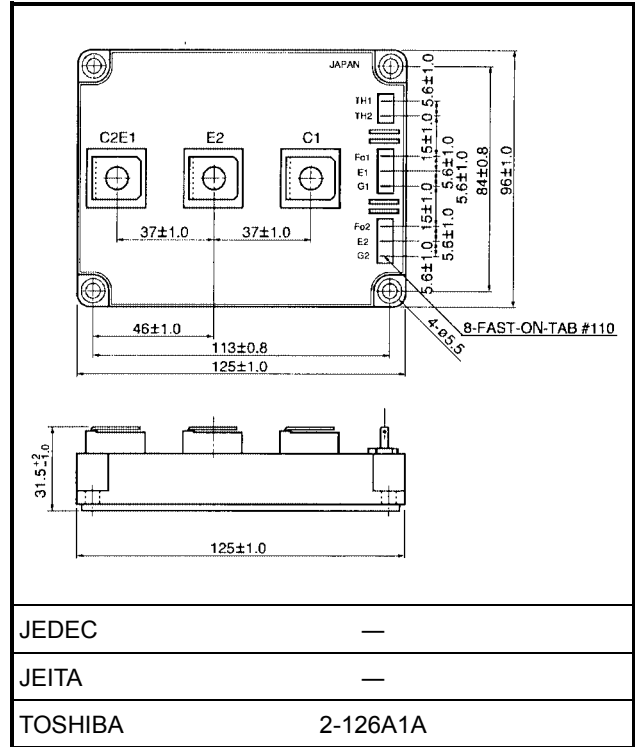
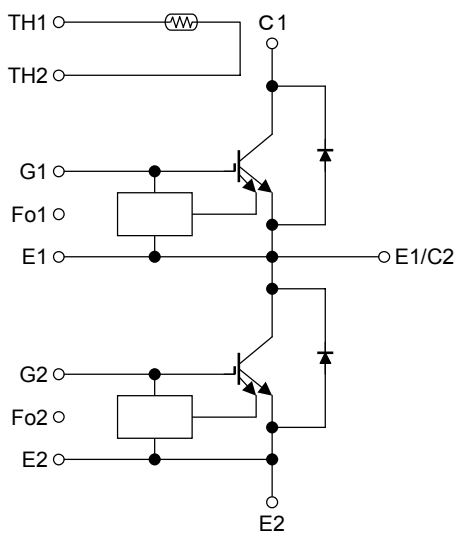
MG800J2YS50A

High power switching applications
 Motor control applications

Unit: mm

- The electrodes are isolated from case.
- Enhancement-mode
- Thermal output terminal (TH)

Equivalent Circuit



Weight: 680 g (typ.)

Maximum Ratings (Ta = 25°C)

| Characteristics | | Symbol | Rating | Unit |
|---|--------------|------------|-----------------|------|
| Collector-emitter voltage | | V_{CES} | 600 | V |
| Gate-emitter voltage | | V_{GES} | ±20 | V |
| Collector current | DC | I_C | 800 | A |
| Forward current | DC | I_F | 800 | A |
| Collector power dissipation (Tc = 25°C) | | P_C | 2900 | W |
| Junction temperature | | T_j | 150 | °C |
| Storage temperature range | | T_{stg} | -40~125 | °C |
| Isolation voltage | | V_{Isol} | 2500 (AC 1 min) | V |
| Screw torque | Terminal: M8 | — | 10 | N·m |
| | Mounting: M5 | — | 3 | N·m |

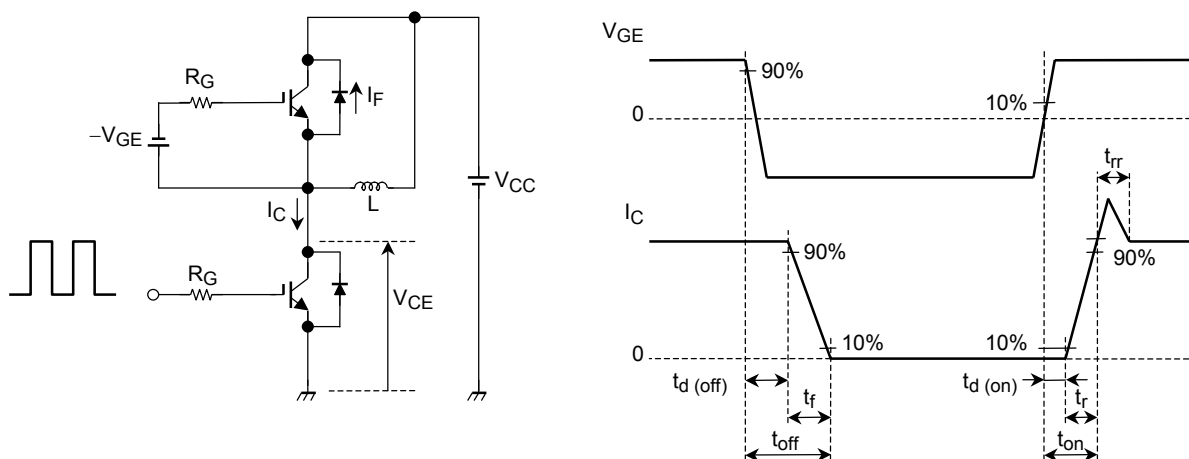
Electrical Characteristics (Ta = 25°C)

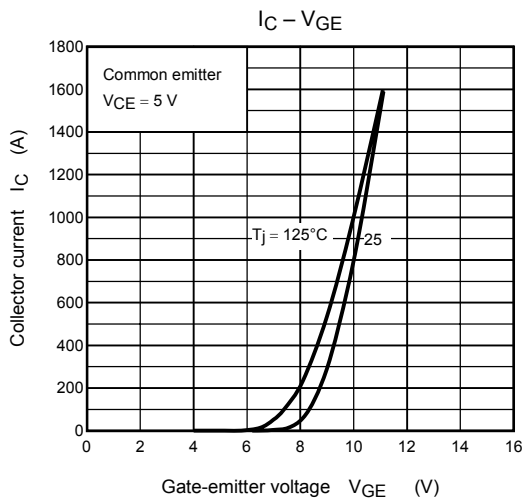
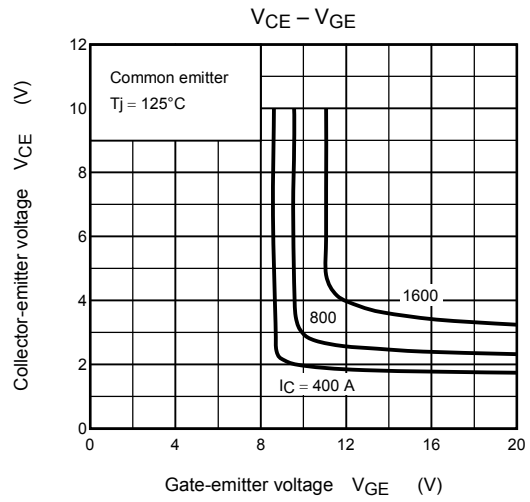
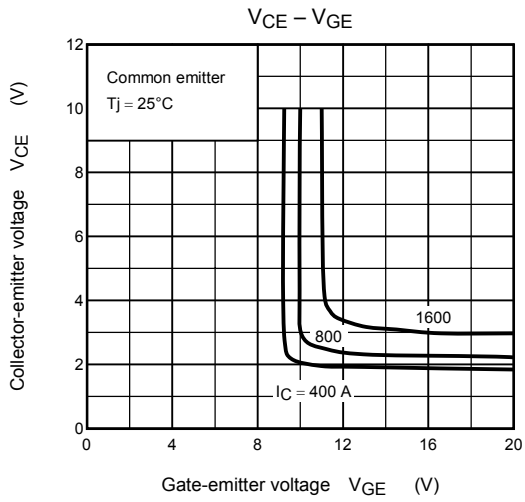
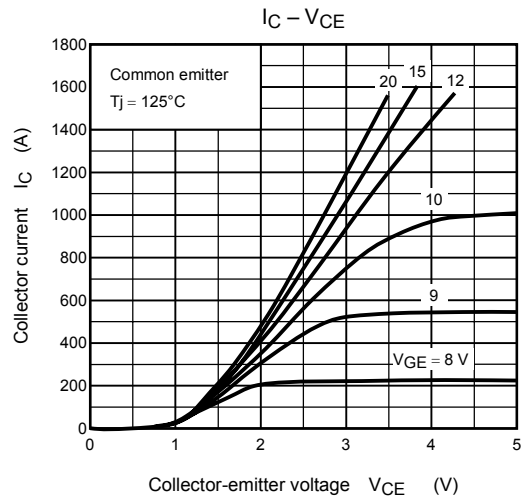
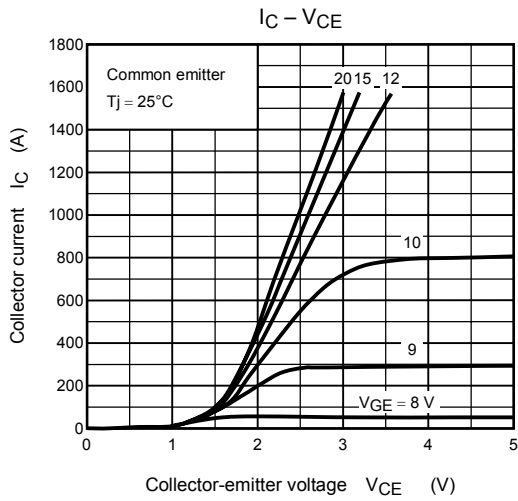
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit | |
|--------------------------------------|----------------|--|---------------------------|-------|----------|---------------|------|
| Gate Leakage current | I_{GES} | $V_{GE} = \pm 20 \text{ V}, V_{CE} = 0 \text{ V}$ | — | — | ± 10 | μA | |
| Collector cut-off current | I_{CES} | $V_{CE} = 600 \text{ V}, V_{GE} = 0 \text{ V}$ | — | — | 1 | mA | |
| Gate-emitter cut-off voltage | $V_{GE (off)}$ | $I_C = 800 \text{ mA}, V_{CE} = 5 \text{ V}$ | — | 6.5 | — | V | |
| Collector-emitter saturation voltage | $V_{CE (sat)}$ | $I_C = 800 \text{ A}, V_{GE} = 15 \text{ V}$ | $T_j = 25^\circ\text{C}$ | — | 2.4 | 3.0 | V |
| | | | $T_j = 125^\circ\text{C}$ | — | 2.6 | 3.3 | |
| Input capacitance | C_{ies} | $V_{CE} = 10 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ | — | 93000 | — | pF | |
| Gate-emitter voltage | V_{GE} | — | 13 | 15 | 17 | V | |
| Gate resistance | R_G | — | 4.7 | — | 15 | Ω | |
| Switching time | $t_d (on)$ | Inductive load $V_{CC} = 300 \text{ V}$ $I_C = 800 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$ $R_G = 4.7 \Omega$ | — | 0.3 | — | μs | |
| | t_r | | — | 0.25 | — | | |
| | t_{on} | | — | 0.55 | — | | |
| | $t_d (off)$ | | — | 0.85 | — | | |
| | t_f | | (Note) | — | 0.15 | | 0.30 |
| | t_{off} | | — | — | 1.05 | | — |
| Forward voltage | V_F | $I_F = 800 \text{ A}, V_{GE} = 0 \text{ V}$ | $T_j = 25^\circ\text{C}$ | — | 2.3 | 3.0 | V |
| | | | $T_j = 125^\circ\text{C}$ | — | 2.1 | — | |
| Reverse recovery time | t_{rr} | $I_F = 800 \text{ A}, V_{GE} = -10 \text{ V}$ $di/dt = 2000 \text{ A}/\mu\text{s}$ | — | — | 0.5 | μs | |
| Thermal resistance | $R_{th (j-c)}$ | Transistor stage | — | — | 0.043 | C/W | |
| | | Diode stage | — | — | 0.056 | | |
| RTC Operating current | I_{rtc} | $T_j = 25^\circ\text{C}$ | 1600 | — | — | A | |

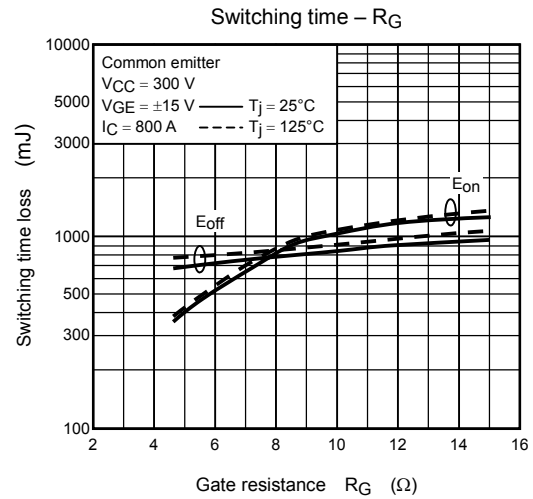
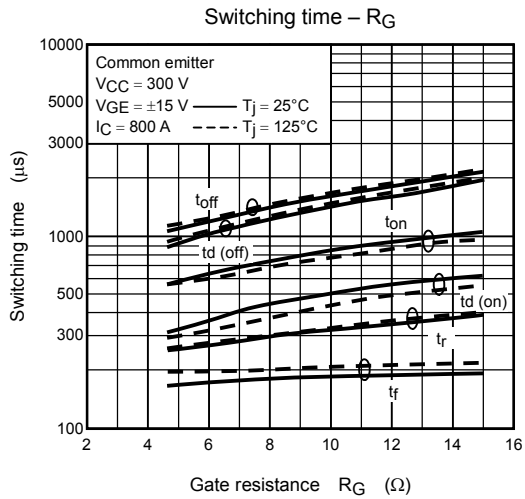
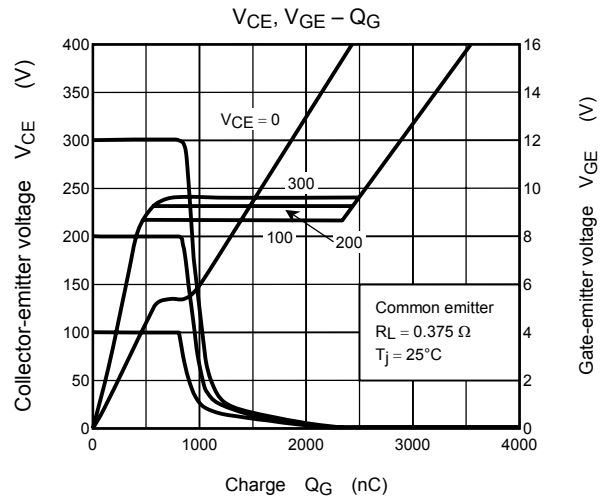
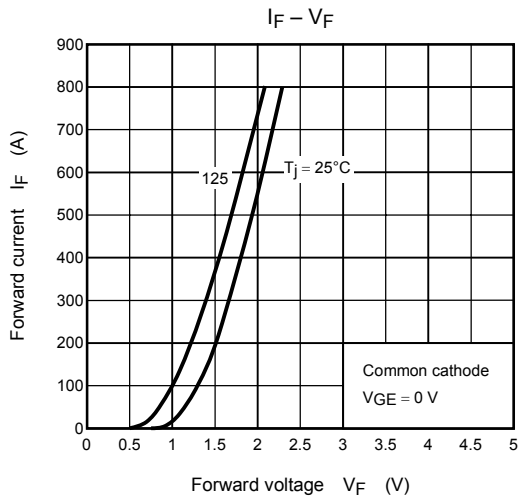
Thermistor

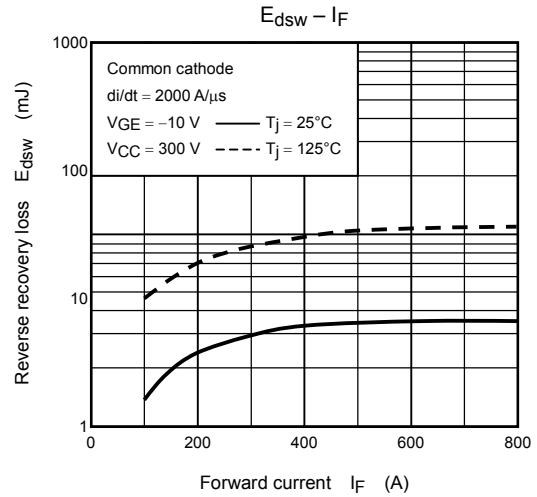
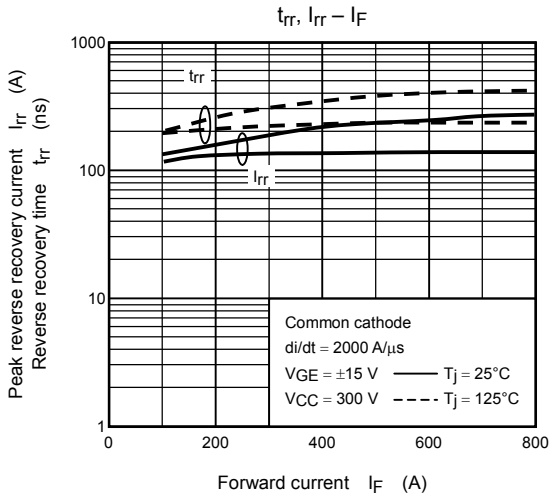
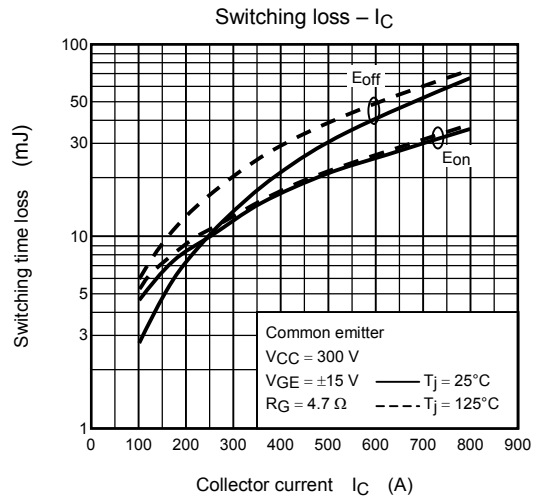
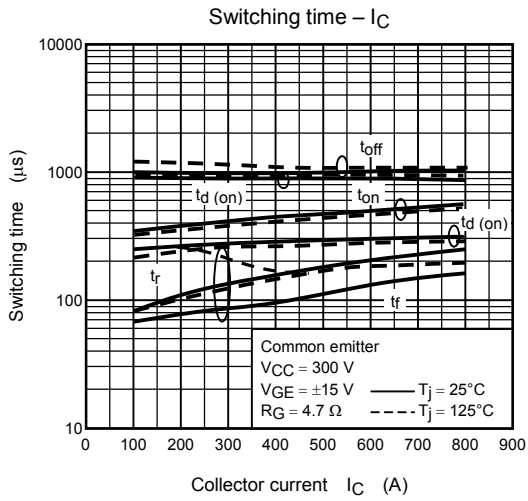
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|-----------------------|-------------|---|------|------|-----|-----------|
| Zero power resistance | R_{25} | $T_c = 25^\circ\text{C}$ | — | 100 | — | $k\Omega$ |
| B value | $R_{25/85}$ | $T_c = 25^\circ\text{C}/T_c = 85^\circ\text{C}$ | — | 4390 | — | K |
| Isolation voltage | | $T_c = 25^\circ\text{C}$ | 2500 | — | — | Vrms |

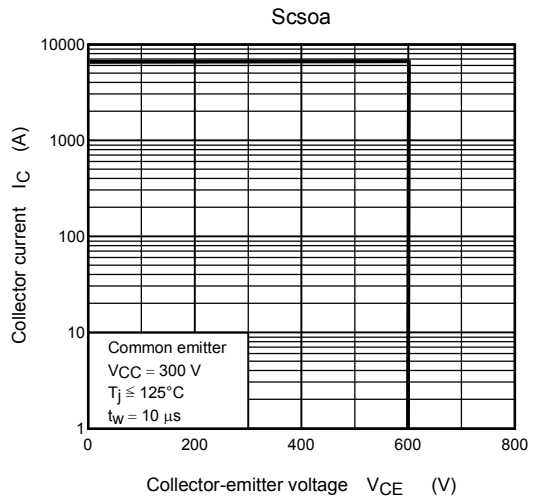
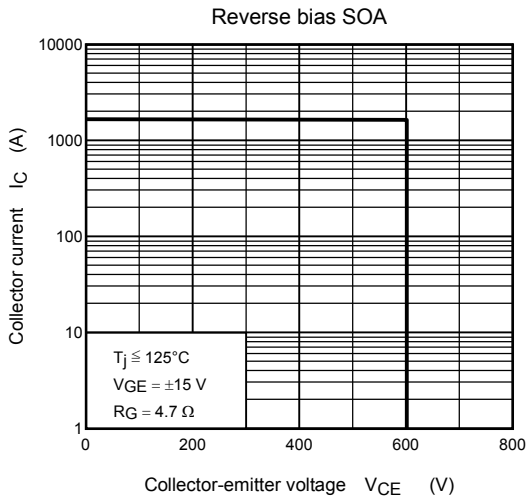
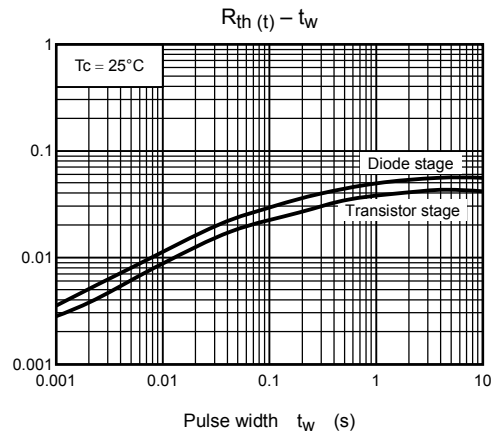
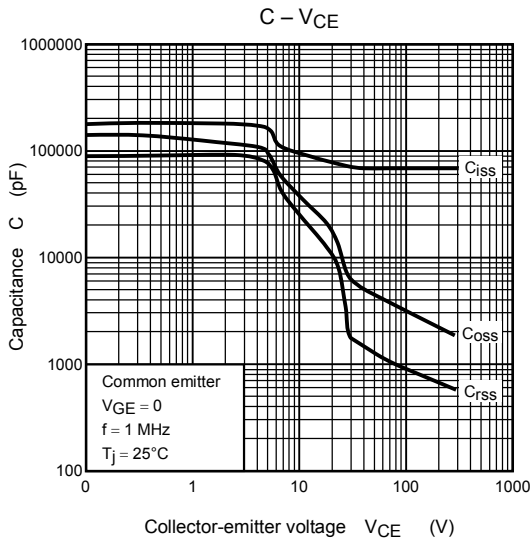
Note: Switching time measurement circuit and input/output waveforms











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