

GT30J101

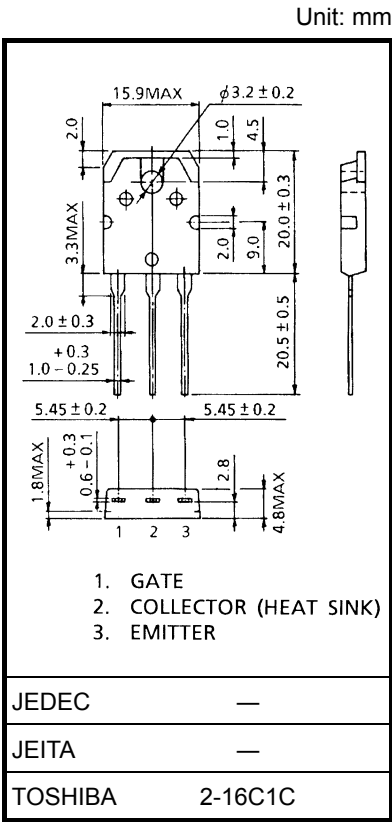
High Power Switching Applications

- Third-generation IGBT
- Enhancement mode type
- High speed:  $t_f = 0.30 \mu s$  (max)
- Low saturation voltage:  $V_{CE(sat)} = 2.7 V$  (max)

Absolute Maximum Ratings (Ta = 25°C)

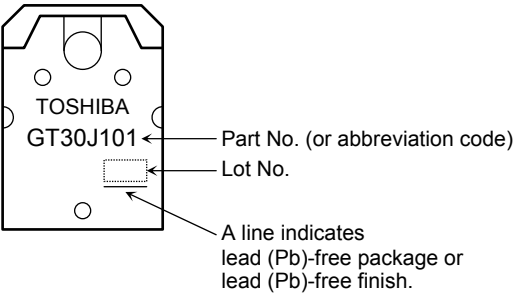
| Characteristic                          |      | Symbol    | Rating     | Unit |
|-----------------------------------------|------|-----------|------------|------|
| Collector-emitter voltage               |      | $V_{CES}$ | 600        | V    |
| Gate-emitter voltage                    |      | $V_{GES}$ | $\pm 20$   | V    |
| Collector current                       | DC   | $I_C$     | 30         | A    |
|                                         | 1 ms | $I_{CP}$  | 60         |      |
| Collector power dissipation (Tc = 25°C) |      | $P_C$     | 155        | W    |
| Junction temperature                    |      | $T_j$     | 150        | °C   |
| Storage temperature range               |      | $T_{stg}$ | -55 to 150 | °C   |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).



Weight: 4.6 g

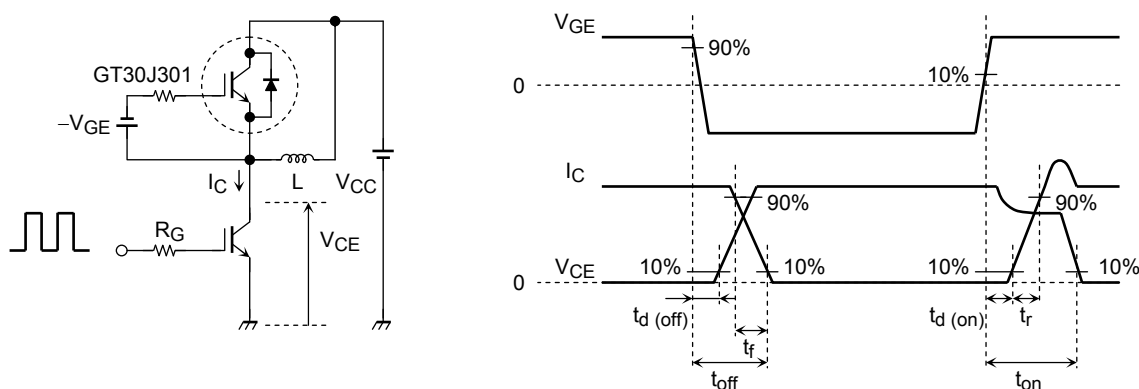
Marking



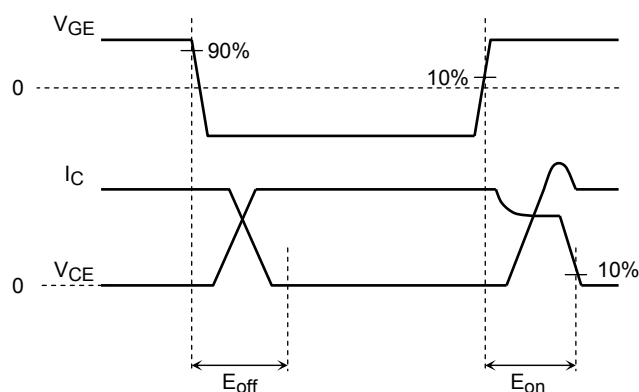
## Electrical Characteristics (Ta = 25°C)

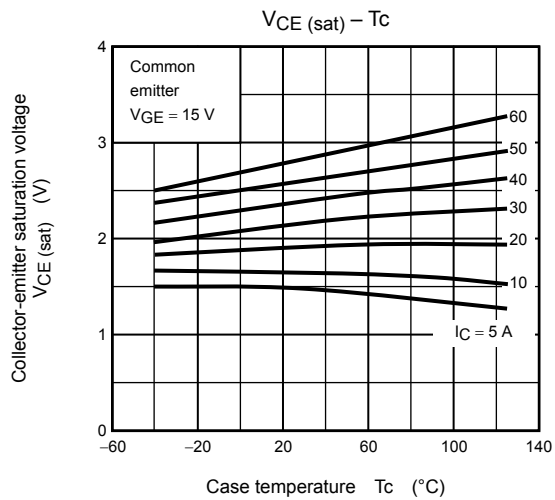
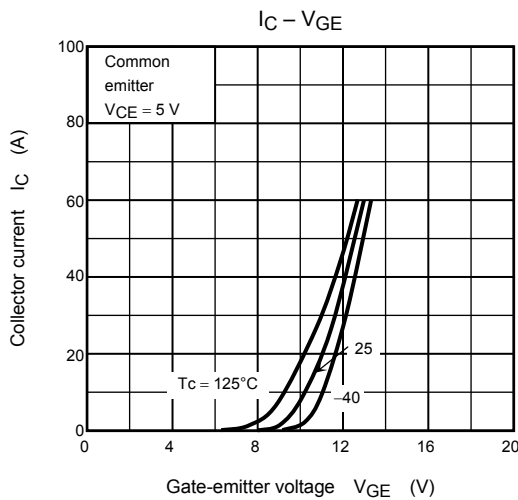
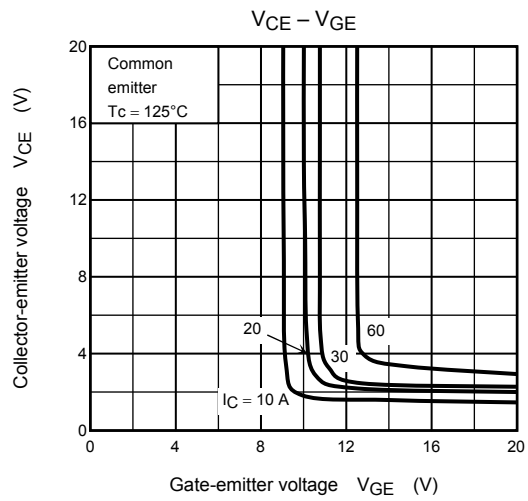
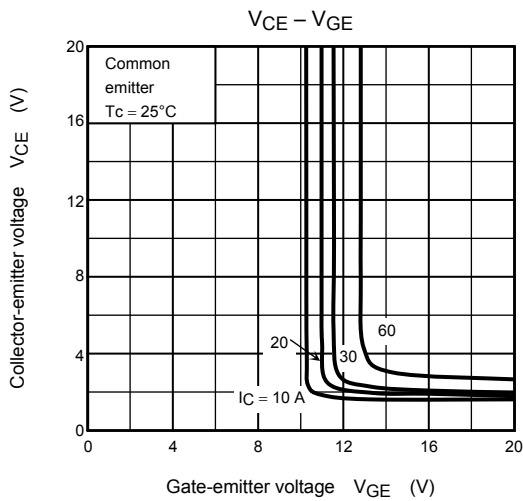
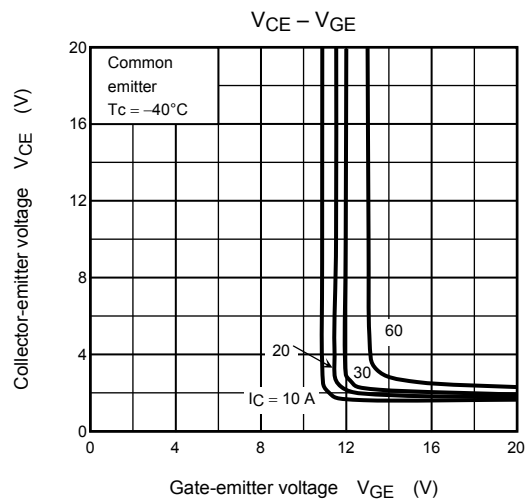
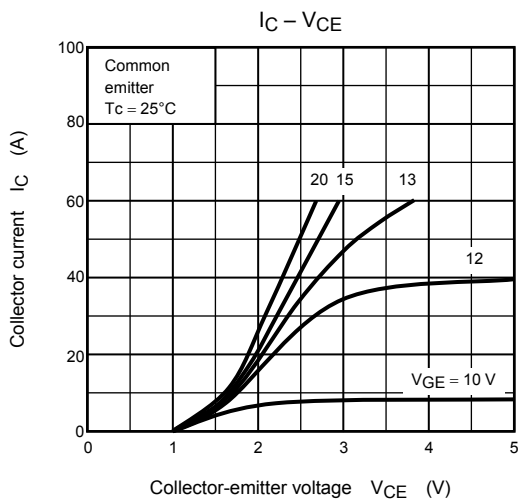
| Characteristic                       |               | Symbol               | Test Condition                                                                                                            | Min | Typ. | Max       | Unit                 |
|--------------------------------------|---------------|----------------------|---------------------------------------------------------------------------------------------------------------------------|-----|------|-----------|----------------------|
| Gate leakage current                 |               | $I_{GES}$            | $V_{GE} = \pm 20 \text{ V}, V_{CE} = 0$                                                                                   | —   | —    | $\pm 500$ | nA                   |
| Collector cut-off current            |               | $I_{CES}$            | $V_{CE} = 600 \text{ V}, V_{GE} = 0$                                                                                      | —   | —    | 1.0       | mA                   |
| Gate-emitter cut-off voltage         |               | $V_{GE}(\text{OFF})$ | $I_C = 3 \text{ mA}, V_{CE} = 5 \text{ V}$                                                                                | 5.0 | —    | 8.0       | V                    |
| Collector-emitter saturation voltage |               | $V_{CE}(\text{sat})$ | $I_C = 30 \text{ A}, V_{GE} = 15 \text{ V}$                                                                               | —   | 2.1  | 2.7       | V                    |
| Input capacitance                    |               | $C_{ies}$            | $V_{CE} = 20 \text{ V}, V_{GE} = 0, f = 1 \text{ MHz}$                                                                    | —   | 2200 | —         | pF                   |
| Switching time                       | Rise time     | $t_r$                | Inductive Load<br>$V_{CC} = 300 \text{ V}, I_C = 30 \text{ A}$<br>$V_{GG} = \pm 15 \text{ V}, R_G = 43 \Omega$<br>(Note1) | —   | 0.12 | —         | $\mu\text{s}$        |
|                                      | Turn-on time  | $t_{on}$             |                                                                                                                           | —   | 0.40 | —         |                      |
|                                      | Fall time     | $t_f$                |                                                                                                                           | —   | 0.15 | 0.30      |                      |
|                                      | Turn-off time | $t_{off}$            |                                                                                                                           | —   | 0.70 | —         |                      |
| Thermal resistance                   |               | $R_{th(j-c)}$        | —                                                                                                                         | —   | —    | 0.81      | $^{\circ}\text{C/W}$ |

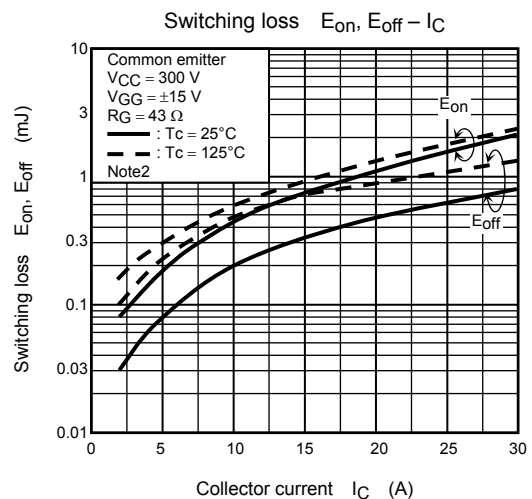
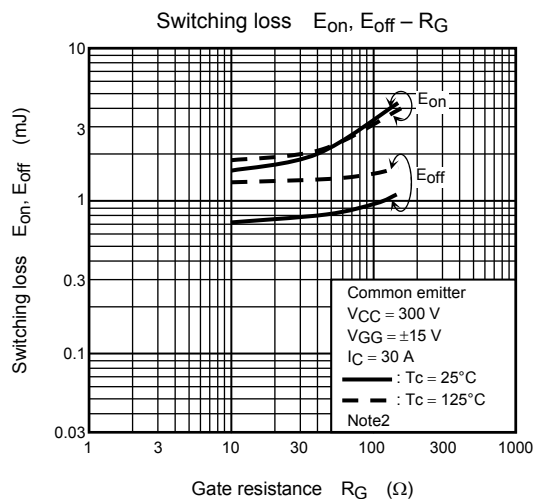
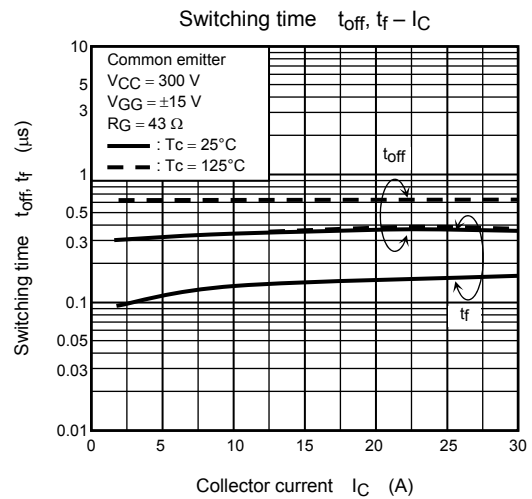
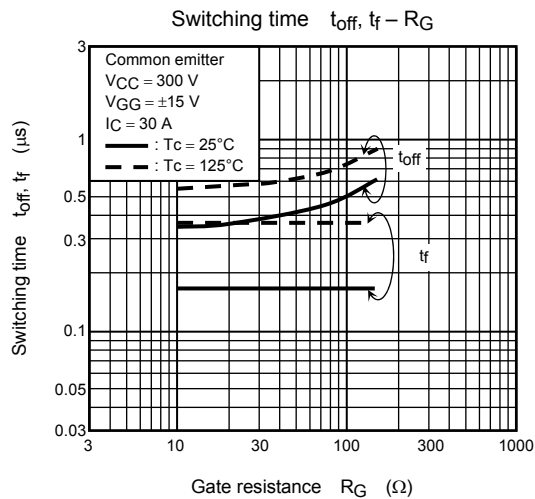
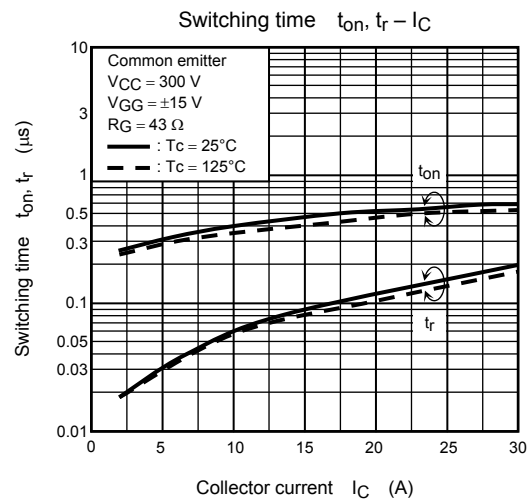
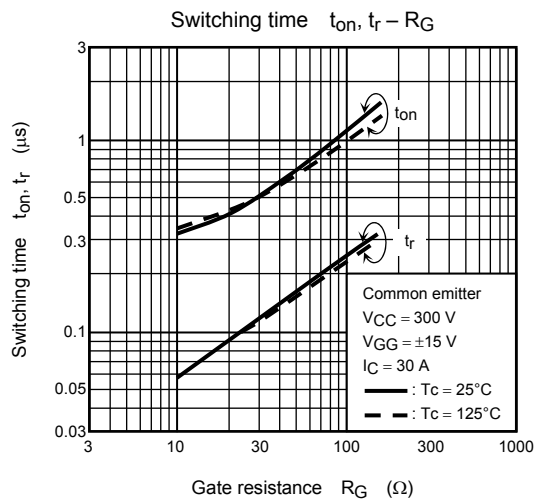
Note1: Switching time measurement circuit and input/output waveforms

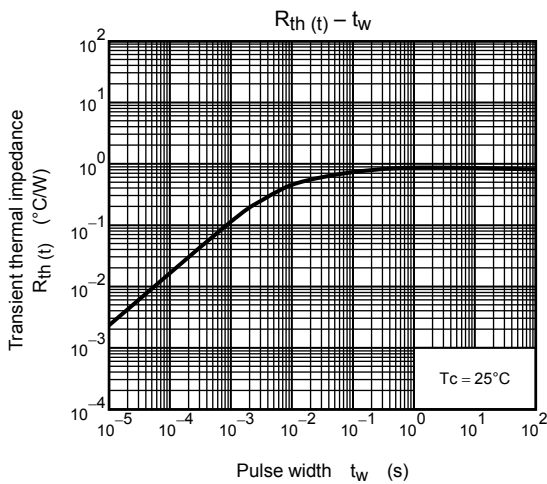
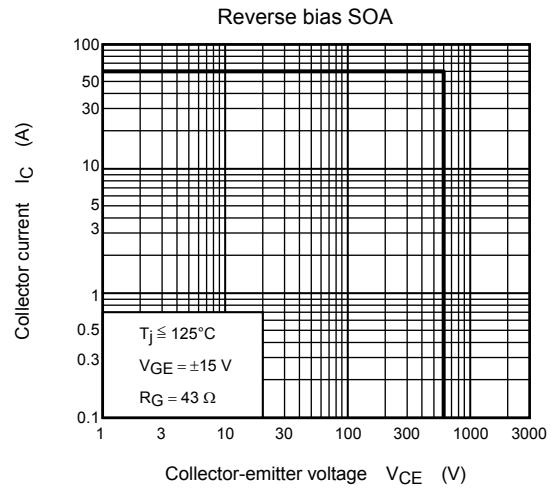
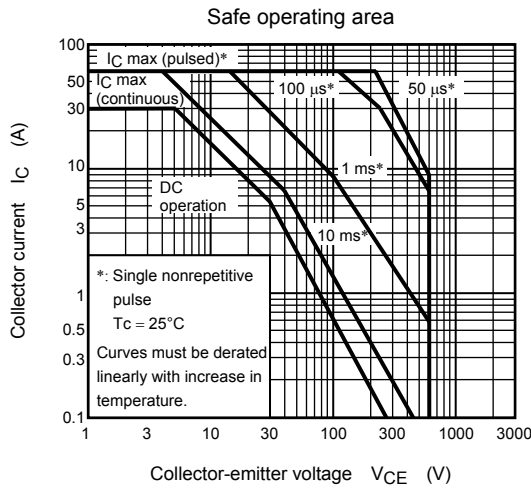
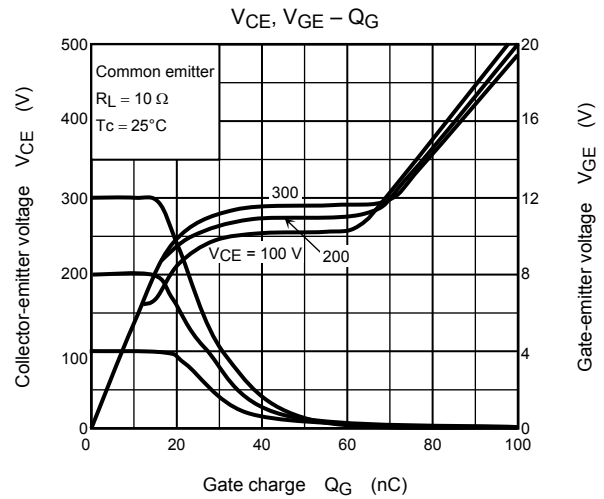
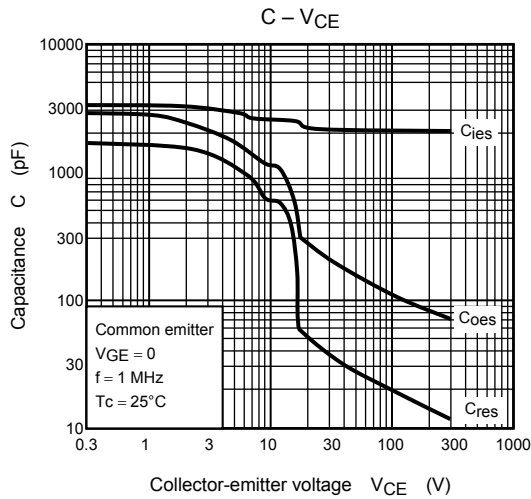


Note2: Switching loss measurement waveforms









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