

GT50J122

Current Resonance Inverter Switching Application

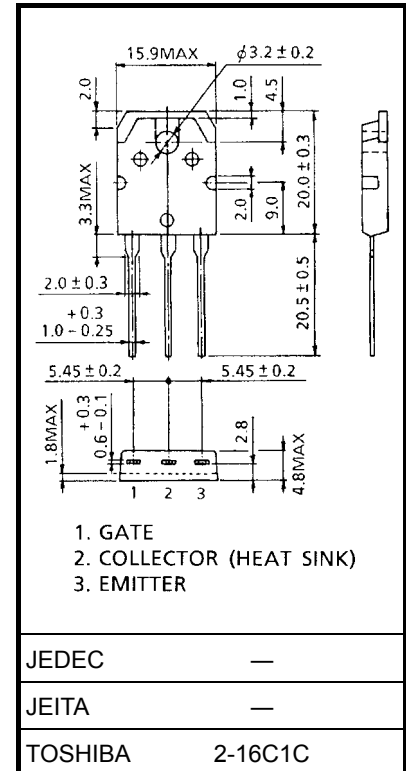
- Enhancement mode type
- High speed : $t_f = 0.16 \mu s$ (typ.) ($I_C = 60A$)
- Low saturation voltage: $V_{CE(sat)} = 1.9 V$ (typ.) ($I_C = 60A$)
- Fourth-generation IGBT
- TO-3P(N) (Toshiba package name)

Absolute Maximum Ratings ($T_a = 25^\circ C$)

| Characteristics | Symbol | Rating | Unit |
|------------------------------|-----------------------|------------|------------|
| Collector-emitter voltage | V_{CES} | 600 | V |
| Gate-emitter voltage | V_{GES} | ± 25 | V |
| Continuous collector current | @ $T_c = 100^\circ C$ | 31 | A |
| | @ $T_c = 25^\circ C$ | 50 | |
| Pulsed collector current | I_{CP} | 120 | A |
| Collector power dissipation | @ $T_c = 100^\circ C$ | 62 | W |
| | @ $T_c = 25^\circ C$ | 156 | |
| Junction temperature | T_j | 150 | $^\circ C$ |
| Storage temperature range | T_{stg} | -55 to 150 | $^\circ C$ |

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).

Unit: mm

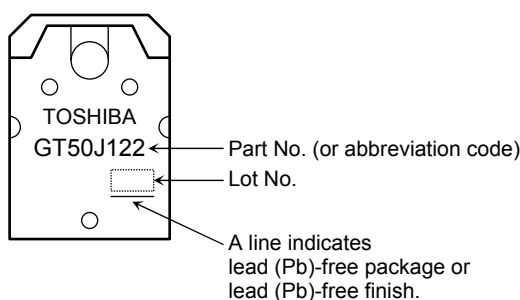


Weight: 4.6 g (typ.)

Thermal Characteristics

| Characteristics | Symbol | Max | Unit |
|--------------------|---------------|------|--------------|
| Thermal resistance | $R_{th(j-c)}$ | 0.80 | $^\circ C/W$ |

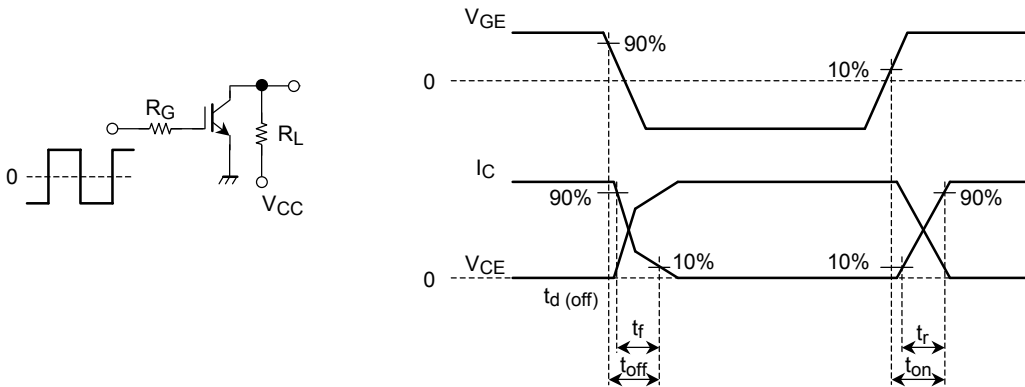
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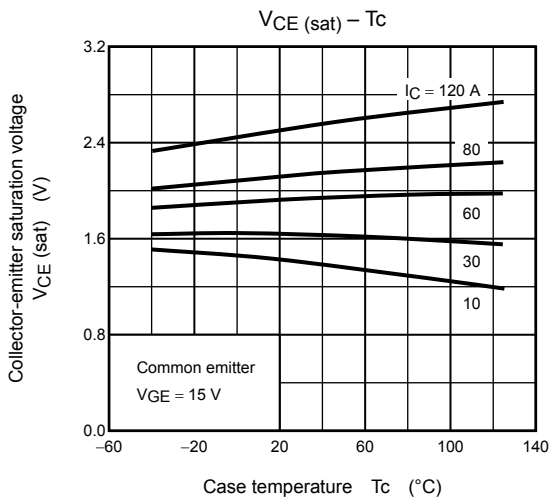
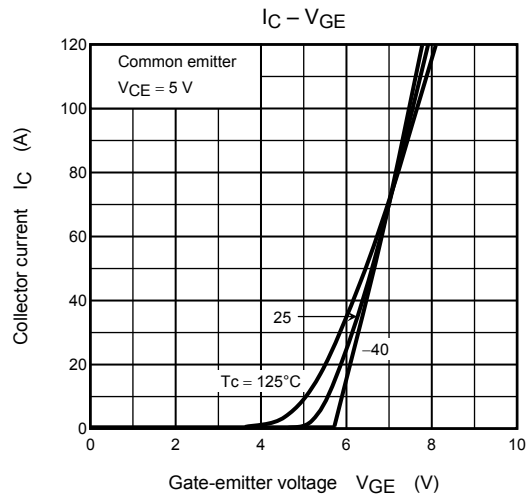
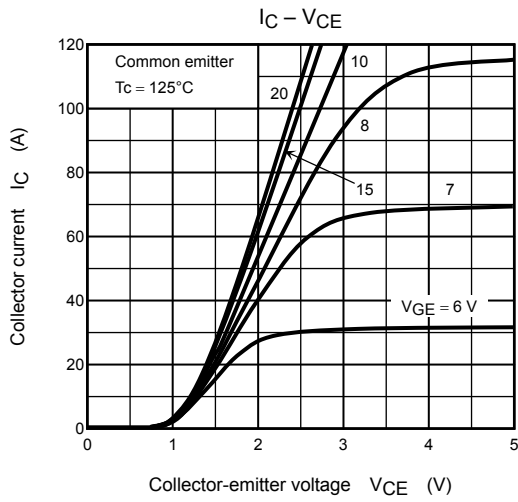
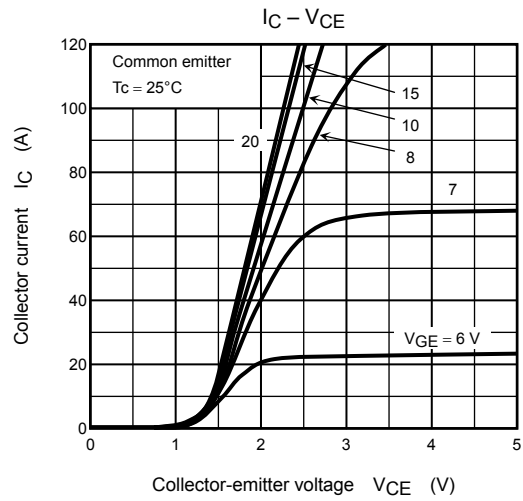
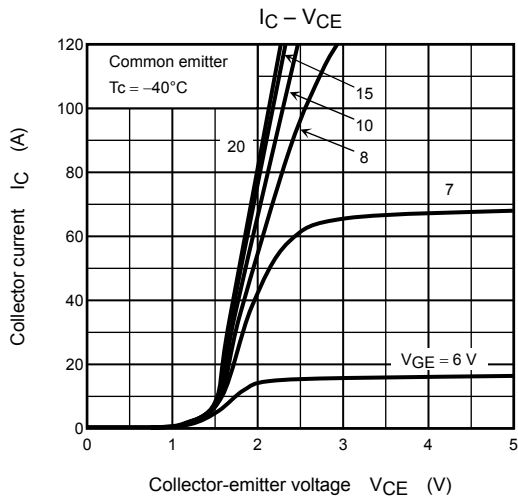


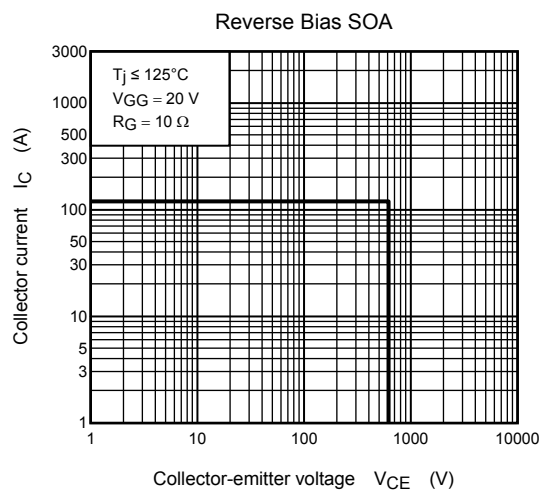
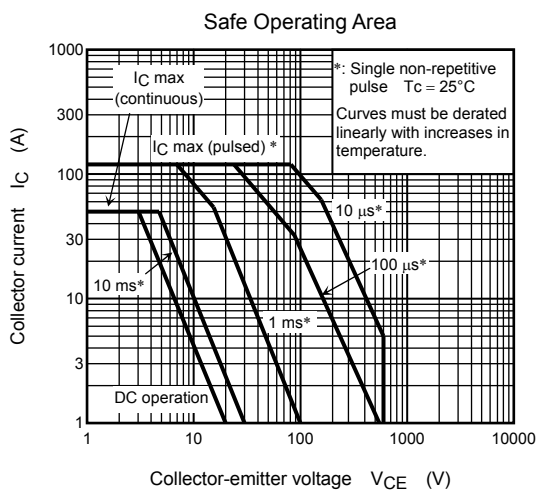
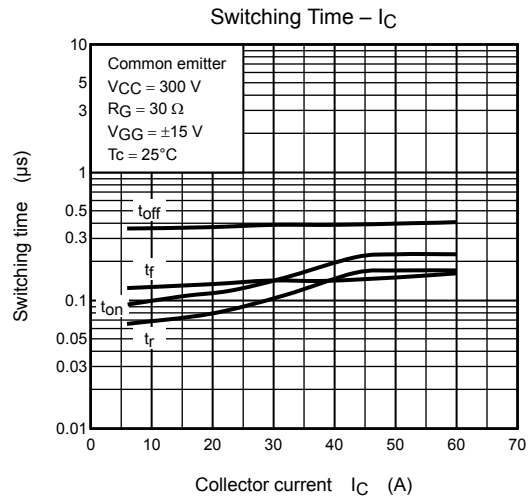
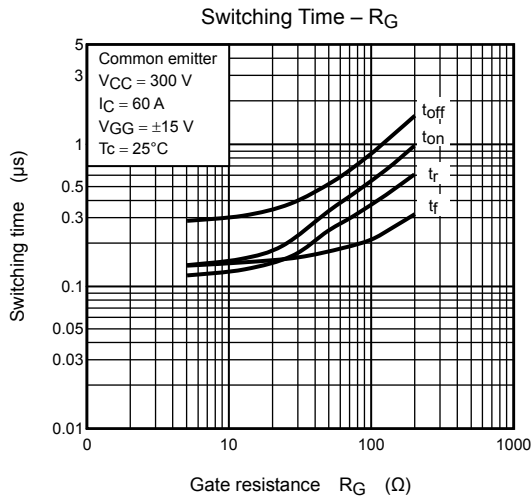
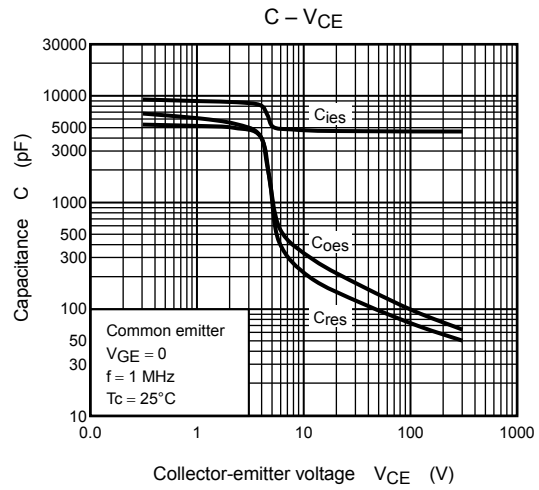
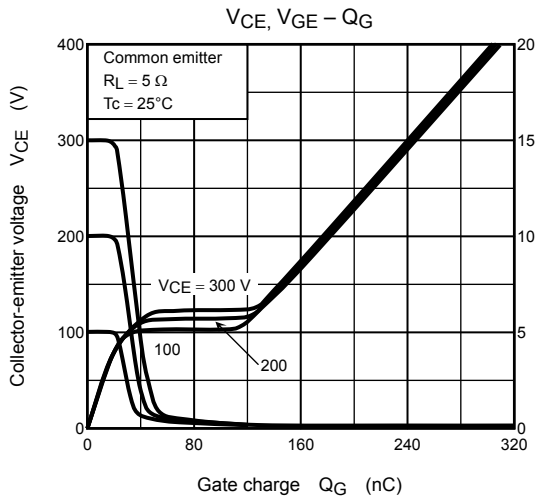
Electrical Characteristics (Ta = 25°C)

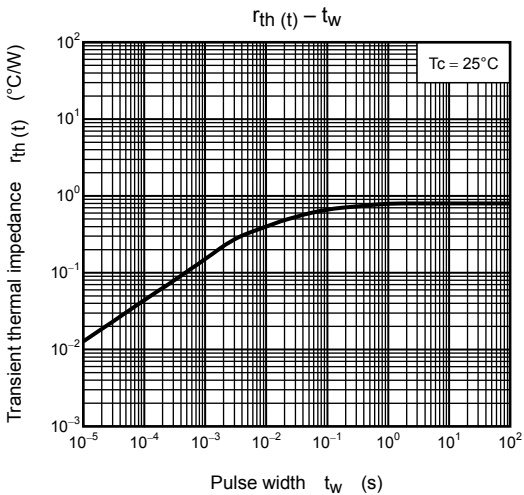
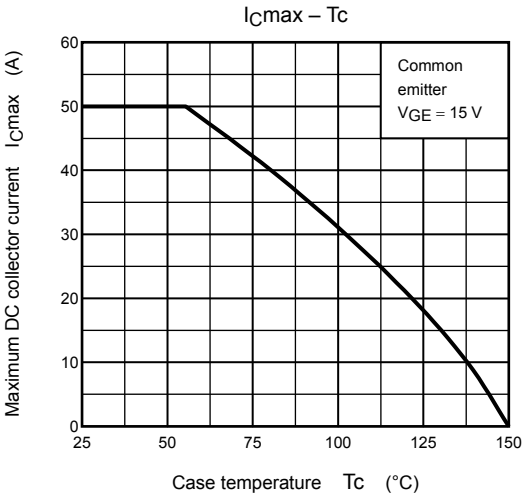
| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|---------------|--|-----|------|-----------|---------------|
| Gate leakage current | | I_{GES} | $V_{GE} = \pm 25\text{ V}, V_{CE} = 0$ | — | — | ± 500 | nA |
| Collector cut-off current | | I_{CES} | $V_{CE} = 600\text{ V}, V_{GE} = 0$ | — | — | 1.0 | mA |
| Gate-emitter cut-off voltage | | $V_{GE(OFF)}$ | $I_C = 60\text{ mA}, V_{CE} = 5\text{ V}$ | 3.0 | — | 6.0 | V |
| Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_C = 60\text{ A}, V_{GE} = 15\text{ V}$ | — | 1.9 | 2.5 | V |
| Input capacitance | | C_{ies} | $V_{CE} = 10\text{ V}, V_{GE} = 0, f = 1\text{ MHz}$ | — | 4800 | — | pF |
| Switching time | Rise time | t_r | Resistive Load $V_{CC} = 300\text{ V}, I_C = 60\text{ A}$ $V_{GG} = \pm 15\text{ V}, R_G = 30\ \Omega$ (Note 1) | — | 0.17 | — | μs |
| | Turn-on time | t_{on} | | — | 0.23 | — | |
| | Fall time | t_f | | — | 0.16 | 0.26 | |
| | Turn-off time | t_{off} | | — | 0.41 | — | |

Note 1: Switching time measurement circuit and input/output waveforms









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20070701-EN

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