

TOSHIBA Insulated Gate Bipolar Transistor Silicon N Channel MOS Type

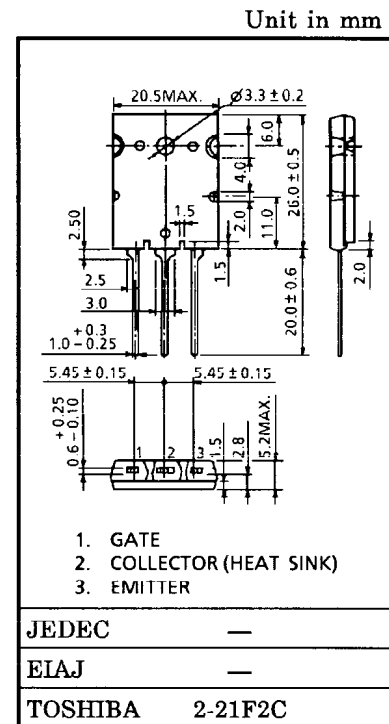
GT60N321

High Power Switching Applications
The 4th Generation

- FRD Included Between Emitter and Collector
- Enhancement-Mode
- High Speed IGBT : $t_f = 0.25 \mu s$ (typ.) (@ $I_C = 60 A$)
FRD : $t_{rr} = 0.8 \mu s$ (typ.) (@ $di/dt = -20 A/\mu s$)
- Low Saturation Voltage $V_{CE(sat)} = 2.3 V$ (typ.) ($I_C = 60 A$)

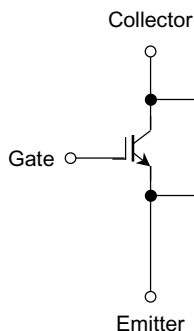
Maximum Ratings ($T_a = 25^\circ C$)

| Characteristics | | symbol | Rating | Unit |
|--|------|------------|----------|------------|
| Collector-Emitter Voltage | | V_{CES} | 1000 | V |
| Gate-Emitter Voltage | | V_{GES} | ± 25 | V |
| Collector Current | DC | I_C | 60 | A |
| | 1 ms | I_{CP} | 120 | |
| Emitter-Collector Forward Current | DC | I_{ECF} | 15 | A |
| | 1 ms | I_{ECFP} | 120 | |
| Collector Power Dissipation ($T_c = 25^\circ C$) | | P_C | 170 | W |
| Junction Temperature | | T_j | 150 | $^\circ C$ |
| Storage Temperature | | T_{stg} | -55~150 | $^\circ C$ |
| Screw Torque | | — | 0.8 | N·m |



Weight : 9.75g

Equivalent Circuit



961001EAA1

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Electrical Characteristics (Ta = 25°C)

| Characteristic | | 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} | $V_{CE} = 1000 \text{ V}, V_{GE} = 0$ | — | — | 1.0 | mA |
| Gate-Emitter Cut-off Voltage | | $V_{GE} \text{ (OFF)}$ | $I_C = 60 \text{ mA}, V_{CE} = 5 \text{ V}$ | 3.0 | — | 6.0 | V |
| Collector-Emitter Saturation Voltage | | $V_{CE} \text{ (sat) (1)}$ | $I_C = 10 \text{ A}, V_{GE} = 15 \text{ V}$ | — | 1.6 | 2.3 | V |
| Collector-Emitter Saturation Voltage | | $V_{CE} \text{ (sat) (2)}$ | $I_C = 60 \text{ A}, V_{GE} = 15 \text{ V}$ | — | 2.3 | 2.8 | V |
| Input Capacitance | | C_{ies} | $V_{CE} = 10 \text{ V}, V_{GE} = 0, f = 1 \text{ MHz}$ | — | 4000 | — | pF |
| Switching Time | Rise Time | t_r | | — | 0.23 | — | μs |
| | Turn-on Time | t_{on} | | — | 0.33 | — | |
| | Fall Time | t_f | | — | 0.25 | 0.40 | |
| | Turn-off Time | t_{off} | | — | 0.70 | — | |
| Emitter-Collector Forward Voltage | | V_{ECF} | $I_{EC} = 15 \text{ A}, V_{GE} = 0$ | — | 1.5 | 2.0 | V |
| Reverse Recovery Time | | t_{rr} | $I_F = 15 \text{ A}, V_{GE} = 0, di/dt = -20 \text{ A}/\mu\text{s}$ | — | 0.8 | 2.5 | μs |
| Thermal Resistance | | $R_{th(j-c)}$ | — | — | — | 0.74 | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance | | $R_{th(j-c)}$ | — | — | — | 4.0 | $^{\circ}\text{C}/\text{W}$ |

