

Fuji Discrete Package IGBT

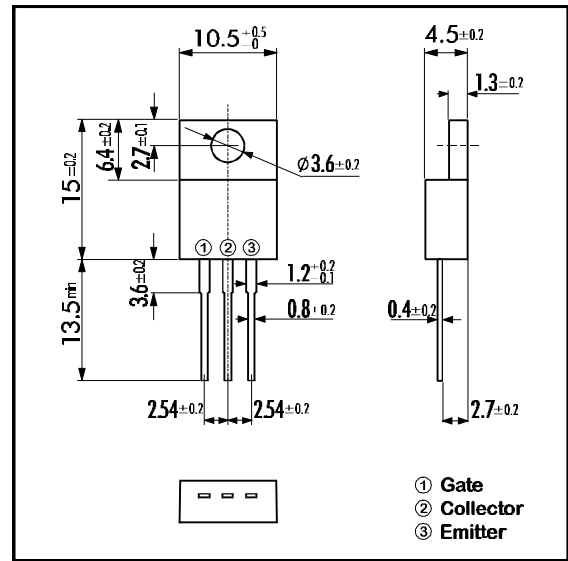
■ Features

- Square RBSOA
- Low Saturation Voltage
- Less Total Power Dissipation
- Minimized Internal Stray Inductance

■ Applications

- High Power Switching
- A.C. Motor Controls
- D.C. Motor Controls
- Uninterruptible Power Supply

■ Outline Drawing

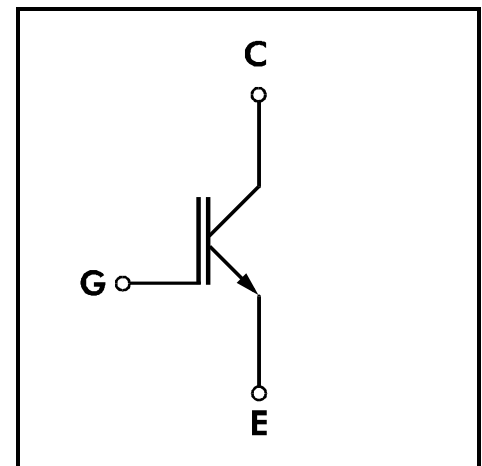


■ Maximum Ratings and Characteristics

• Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)

| Items | Symbols | Ratings | Units |
|-----------------------------|----------------------------|--------------|------------------|
| Collector-Emitter Voltage | V_{CES} | 600 | V |
| Gate -Emitter Voltage | V_{GES} | ± 20 | V |
| Collector Current | DC $T_c=25^\circ\text{C}$ | I_{C25} | 24 |
| | DC $T_c=80^\circ\text{C}$ | I_{C80} | 15 |
| | 1ms $T_c=25^\circ\text{C}$ | I_{CPULSE} | 96 |
| IGBT Max. Power Dissipation | P_C | 90 | W |
| Operating Temperature | T_j | +150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 ~ +150 | $^\circ\text{C}$ |
| Mounting Screw Torque | | 40 | Nm |

■ Equivalent Circuit



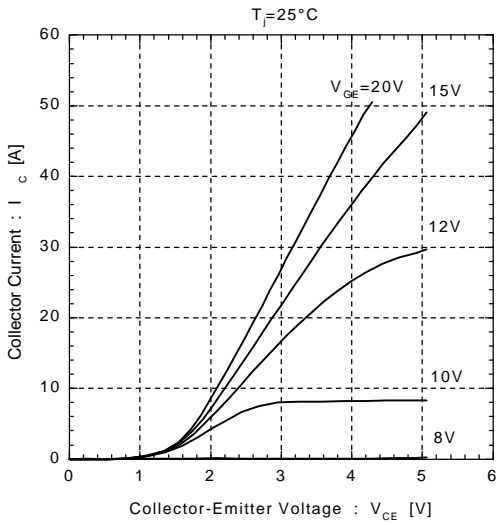
• Electrical Characteristics (at $T_j=25^\circ\text{C}$)

| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|---------------|--------------------------------|------------------|------|------|---------------|
| Zero Gate Voltage Collector Current | I_{CES} | $V_{GE}=0V$ $V_{CE}=600V$ | | | 1.0 | mA |
| Gate-Emitter Leakage Current | I_{GES} | $V_{CE}=0V$ $V_{GE}=\pm 20V$ | | | 20 | μA |
| Gate-Emitter Threshold Voltage | $V_{GE(th)}$ | $V_{GE}=20V$ $I_C=15\text{mA}$ | 5.5 | | 8.5 | V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $V_{GE}=15V$ $I_C=15\text{A}$ | | | 3.0 | V |
| Input capacitance | C_{ies} | $V_{GE}=0V$ | | 1000 | | pF |
| Output capacitance | C_{oes} | $V_{CE}=10V$ | | 200 | | |
| Reverse Transfer capacitance | C_{res} | $f=1\text{MHz}$ | | 40 | | |
| Switching Time | Turn-on Time | t_{ON} | $V_{CC}=300V$ | | 1.2 | μs |
| | | t_r | $I_C=15\text{A}$ | | 0.6 | |
| | Turn-off Time | t_{OFF} | $V_{GE}=\pm 15V$ | | 1.0 | |
| | | t_f | $R_G=160\Omega$ | | 0.35 | |
| | Turn-on Time | t_{ON} | $V_{CC}=300V$ | | 0.16 | μs |
| | | t_r | $I_C=15\text{A}$ | | 0.11 | |
| Turn-off Time | | t_{OFF} | $V_{GE}=+15V$ | | 0.30 | |
| | | t_f | $R_G=16\Omega$ | | 0.35 | |

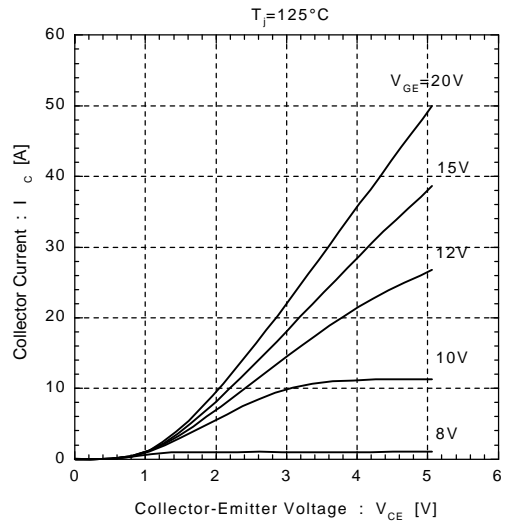
• Thermal Characteristics

| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|---------------|-----------------|------|------|------|--------------------|
| Thermal Resistance | $R_{th(j-c)}$ | | | | 1.04 | $^\circ\text{C/W}$ |

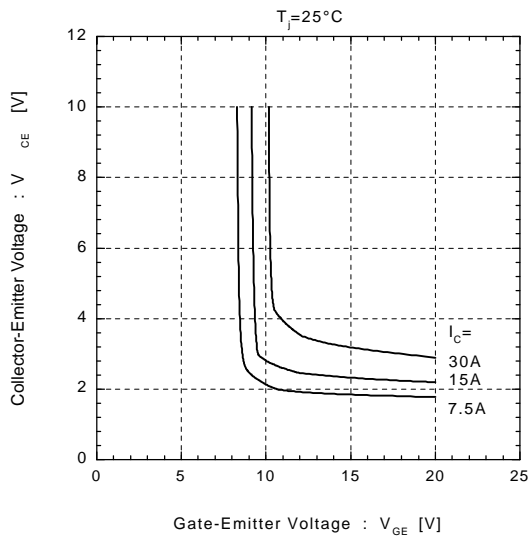
Collector Current vs. Collector-Emitter Voltage



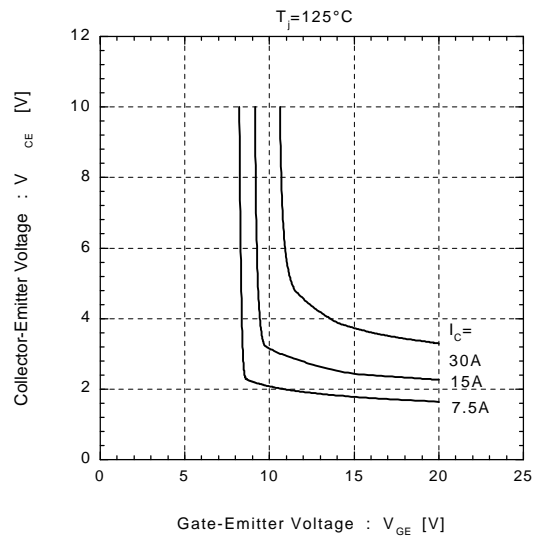
Collector Current vs. Collector-Emitter Voltage



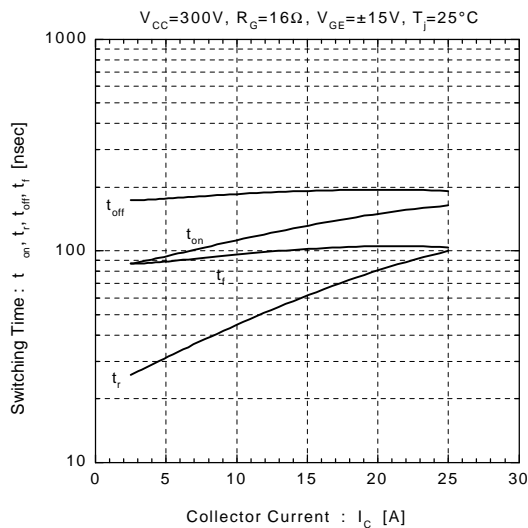
Collector-Emitter Voltage vs. Gate-Emitter Voltage



Collector-Emitter Voltage vs. Gate-Emitter Voltage



Switching Time vs. Collector Current



Switching Time vs. Collector Current

