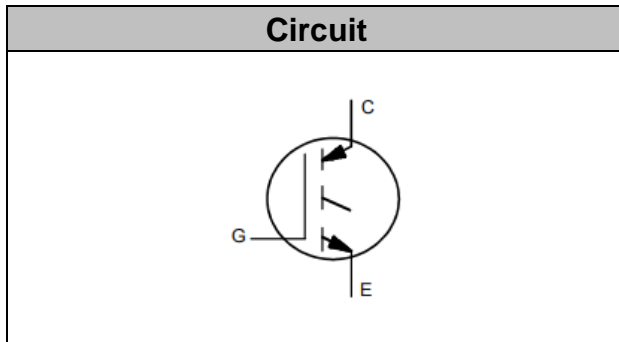




IGBT Discrete

| | | |
|-----------------------|-------------|----------|
| V_{CE} | 1200 | V |
| I_C | 80 | A |
| $V_{CE(SAT)} I_C=80A$ | 1.75 | V |
| P_D | 735 | W |



Applications

- PTC heater

Features

- High breakdown voltage to 1200V for improved reliability
- Maximum junction temperature 150°C
- Positive temperature coefficient

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--|-----------|------------|------|
| Collector-Emitter Breakdown Voltage | V_{CE} | 1200 | V |
| DC Collector Current, limited by T_{jmax} $T_C=25^\circ C$ $T_C=100^\circ C$ | I_C | 145* 80 | A |
| Continuous Gate-Emitter Voltage | V_{GE} | ± 20 | V |
| Transient Gate-Emitter Voltage ($t_p \leq 10\mu s, D < 0.010$) | V_{GE} | ± 30 | V |
| Turn off Safe Operating Area $V_{CE} \leq 1200V$, $T_j \leq 150^\circ C$ | | 240 | A |
| Pulsed Collector Current, $V_{GE}=15V$, t_p limited by T_{jmax} | I_{CM} | 240 | A |
| Power Dissipation, $T_j=150^\circ C$, $T_C=25^\circ C$ | P_{tot} | 735 | W |

*Bond wire current limit is 80A



| | | | |
|--|-------|------------|----|
| Operating Junction Temperature | T_j | -40...+150 | °C |
| Storage Temperature | T_s | -55...+150 | °C |
| Soldering Temperature, wave soldering 1.6mm (0.063in.) from case for 10s | | 260 | °C |

Electrical Characteristics of the IGBT ($T_j = 25^\circ\text{C}$ unless otherwise specified):

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|--|------|----------------------|-------------|------|
| Static | | | | | | |
| Collector-Emitter Breakdown Voltage | BV_{CES} | $V_{GE}=0V, I_C=250\mu A$ | 1200 | | - | V |
| Gate Threshold Voltage | $V_{GE(th)}$ | $V_{GE}=V_{CE}, I_C=2.6mA$ | 5.5 | 6.0 | 6.7 | V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $V_{GE}=15V, I_C=33A$ $T_j=25^\circ\text{C},$ $T_j=125^\circ\text{C}$ $T_j=150^\circ\text{C}$ | | 1.35 1.48 1.55 | 1.65 | V |
| | | $V_{GE}=15V, I_C=80A$ $T_j=25^\circ\text{C},$ $T_j=125^\circ\text{C}$ $T_j=150^\circ\text{C}$ | | 1.75 2.15 2.25 | 2.30 | V |
| Zero Gate Voltage Collector Current | I_{CES} | $V_{CE}=1200V, V_{GE}=0V$ $T_j=25^\circ\text{C},$ $T_j=150^\circ\text{C}$ | | | 0.25 1.0 | mA |
| Gate-Emitter Leakage Current | I_{GES} | $V_{CE}=0V, V_{GE}=\pm 20V$ | | | ± 100 | nA |

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|------------------------------|-----------|---|------|------|------|------|
| Dynamic | | | | | | |
| Input Capacitance | C_{ies} | $V_{CE}=25V, V_{GE}=0V,$ $f=1\text{MHz}$ | - | 7.94 | - | nF |
| Reverse Transfer Capacitance | C_{res} | | - | 0.19 | - | |
| Gate Charge | Q_G | $V_{CC}=960V, I_C=80A,$ $V_{GE}=15V$ | - | 0.65 | - | uC |

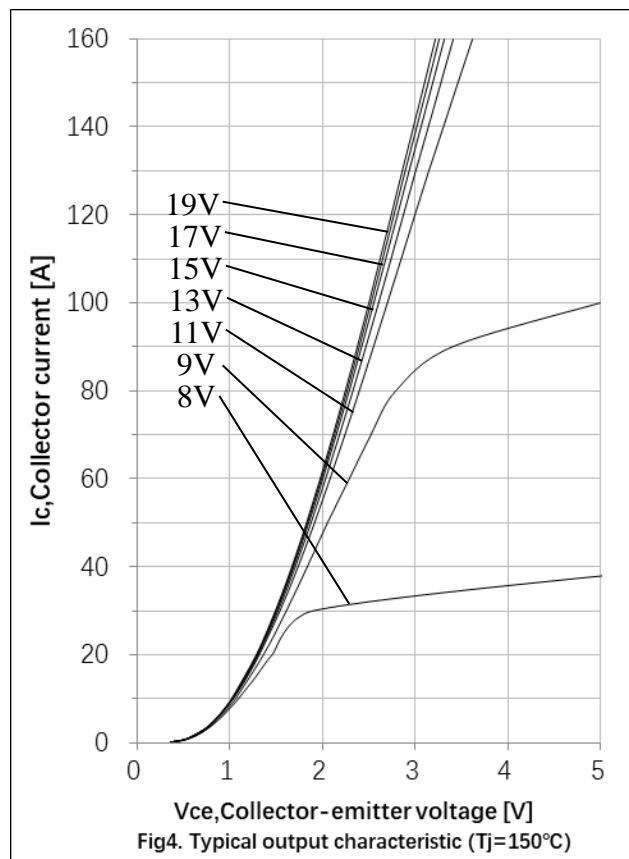
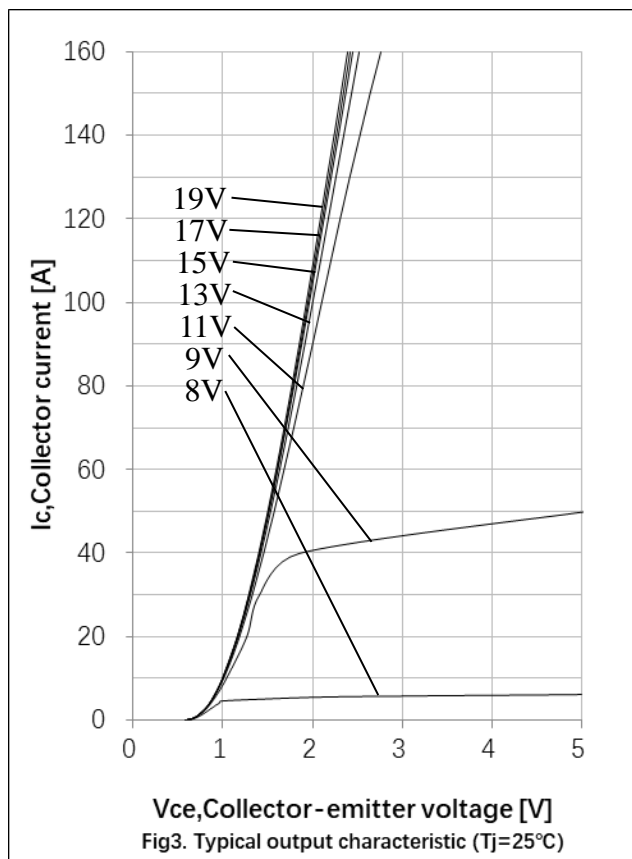
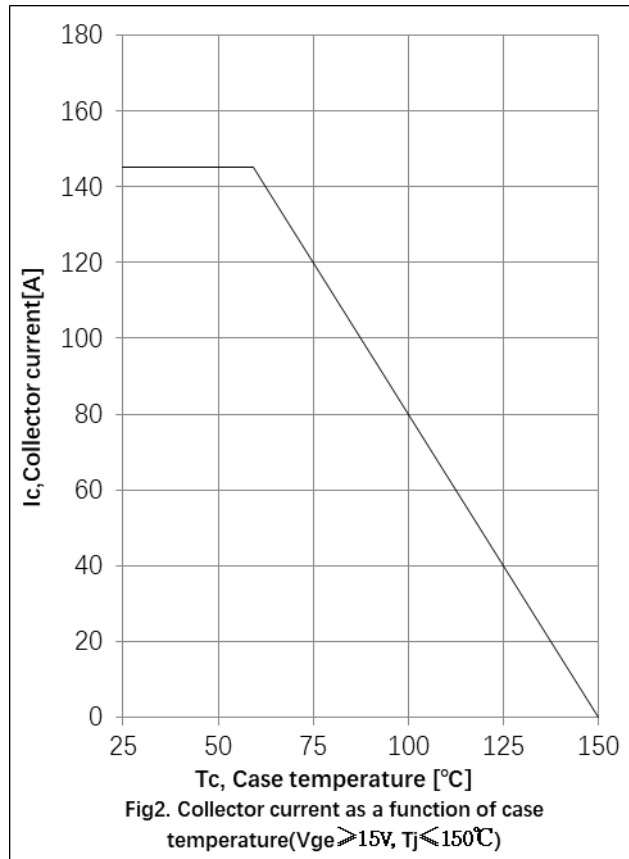
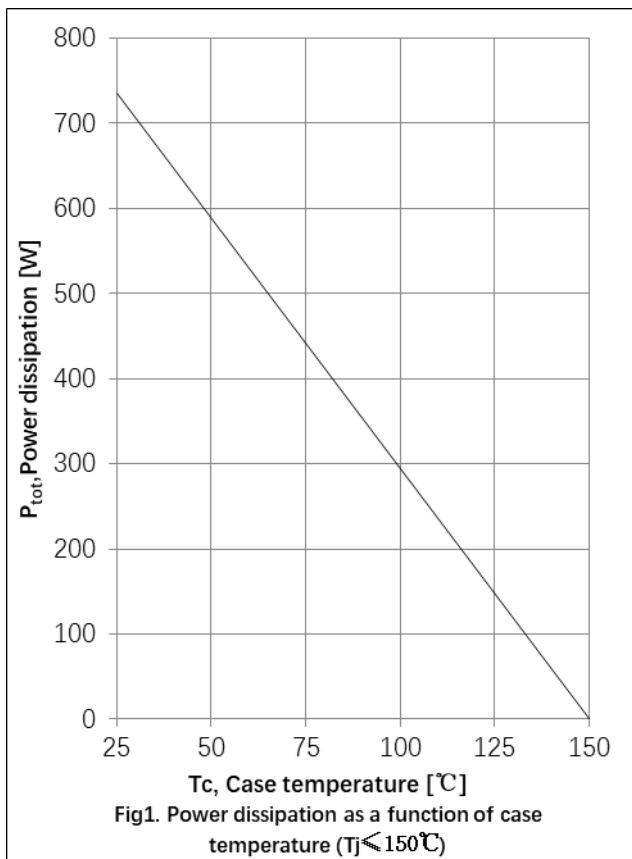


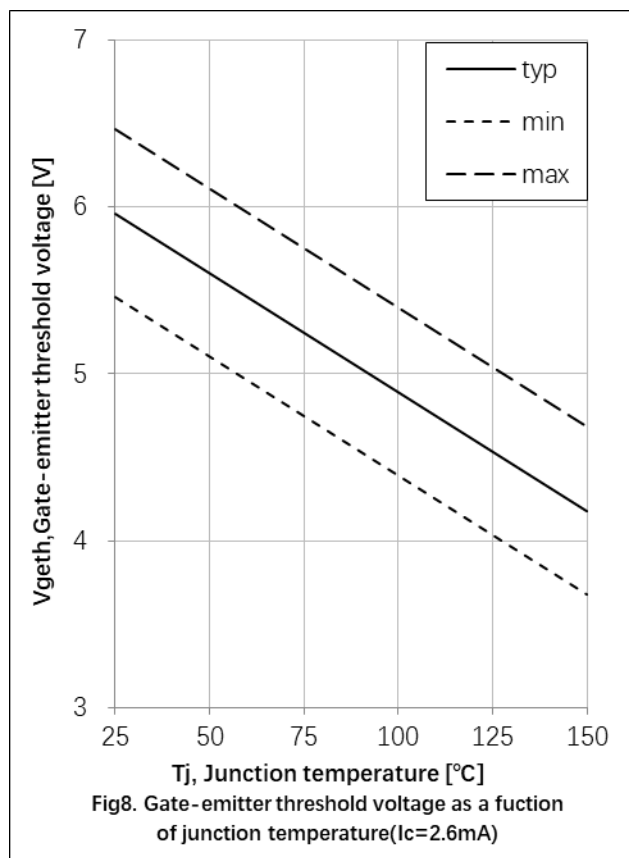
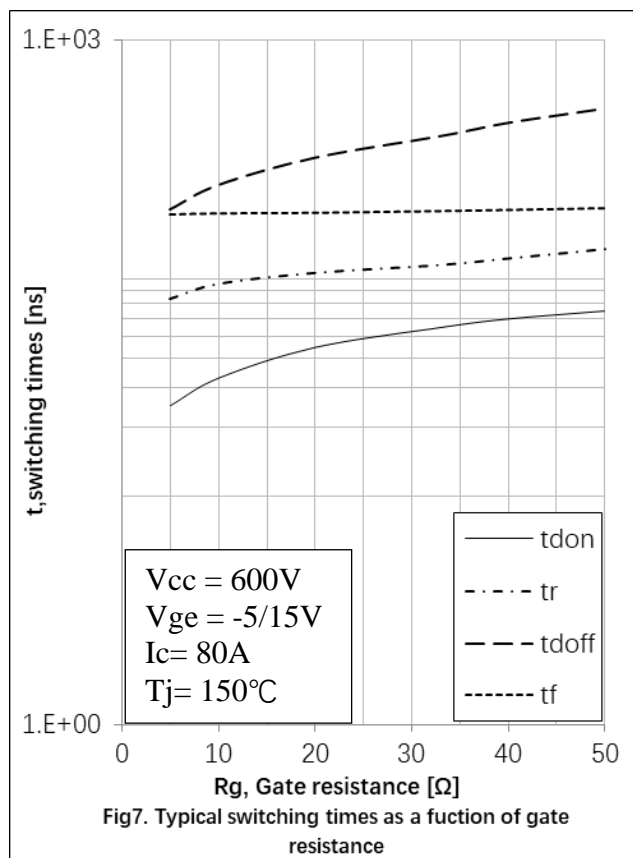
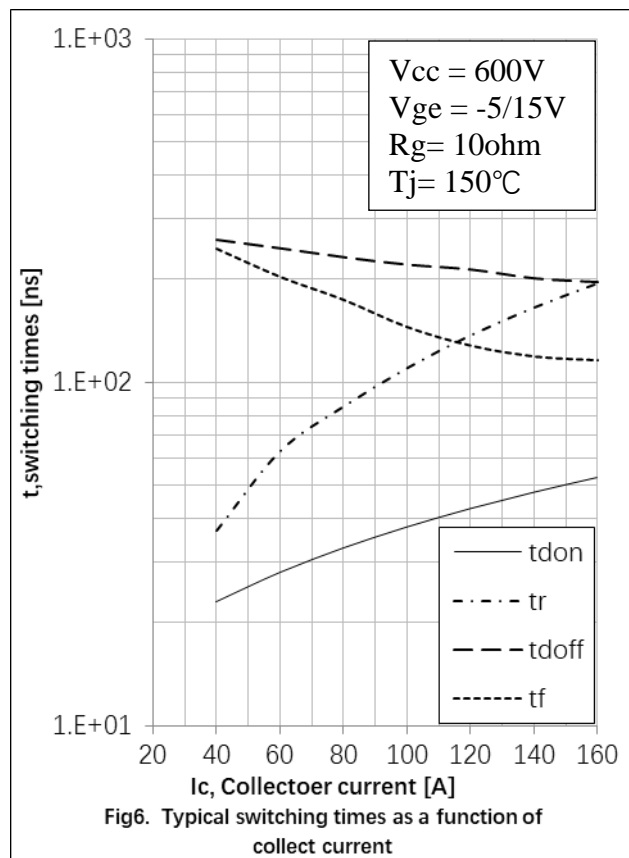
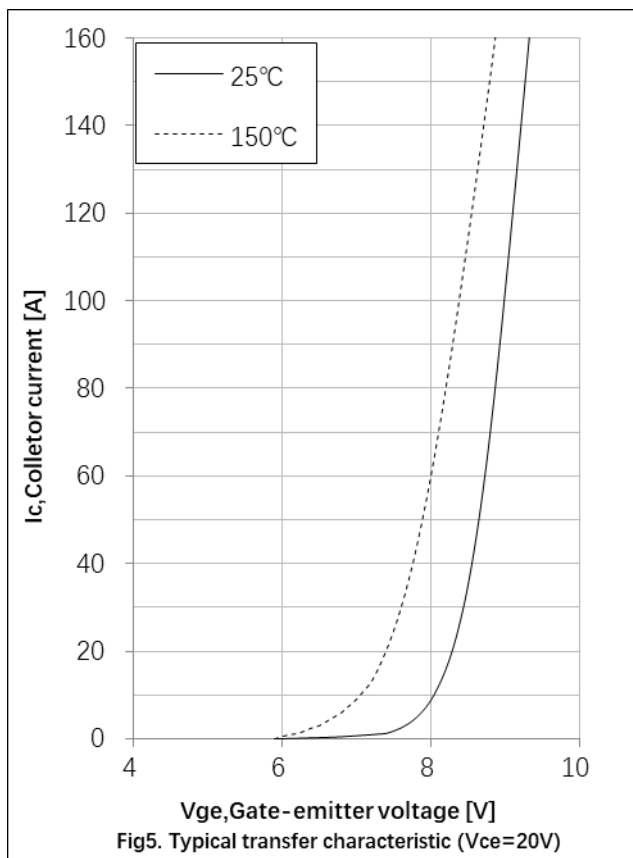
Switching Characteristic, Inductive Load

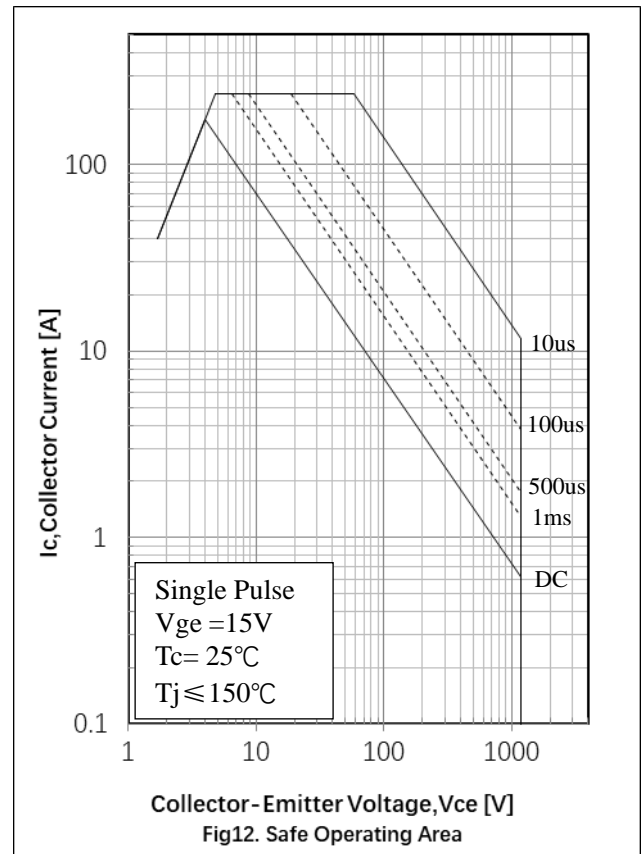
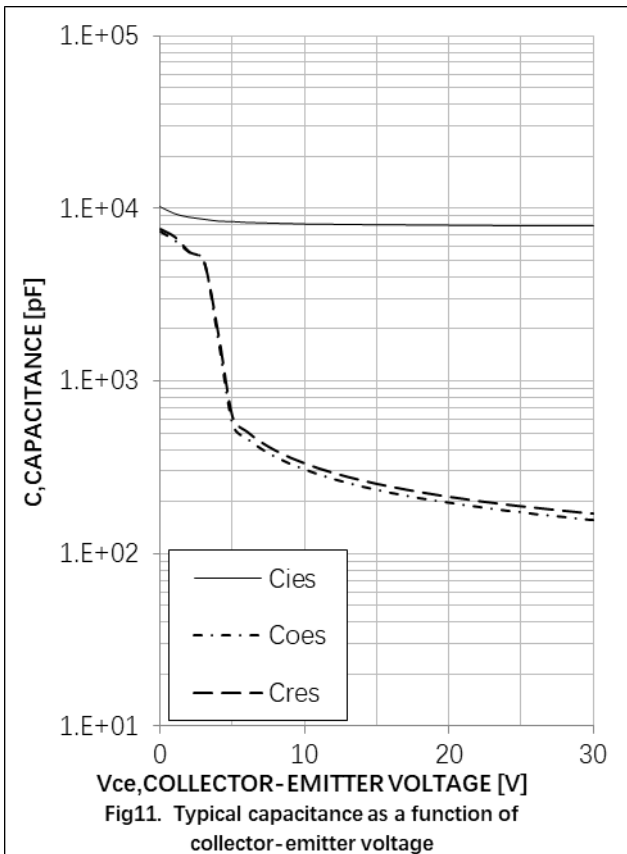
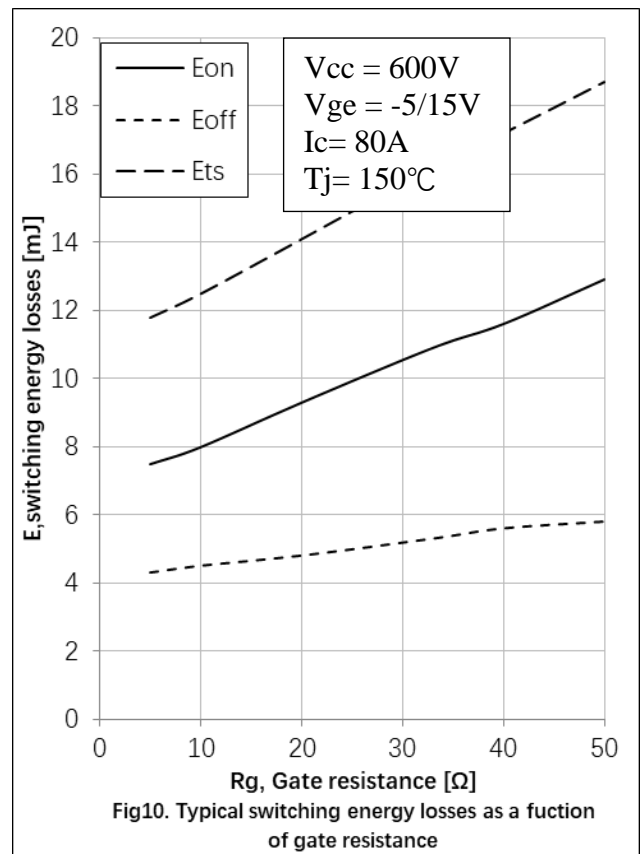
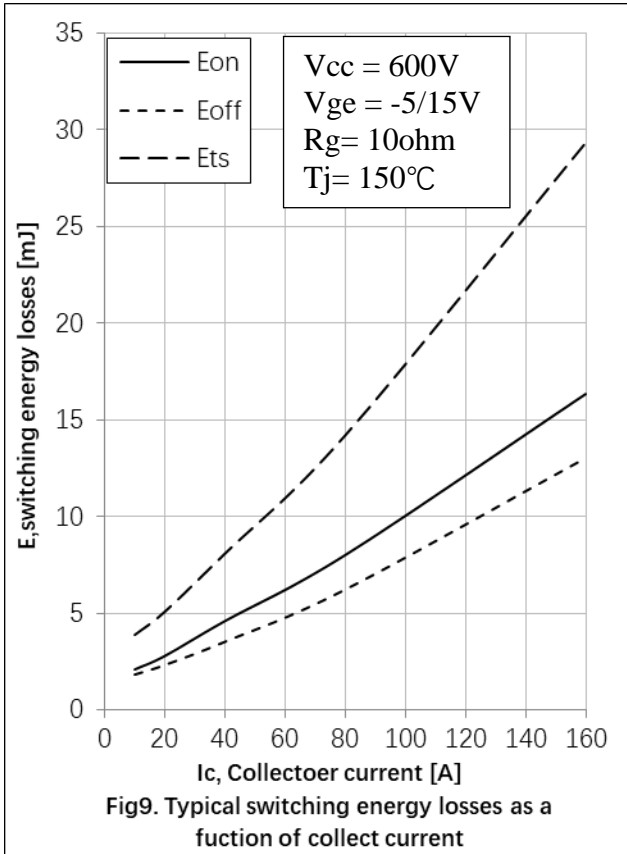
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--|---------------------|---|------|------|------|------|
| Dynamic , at T_j= 25°C | | | | | | |
| Turn-on Delay Time | t _{d(on)} | V _{CC} = 600V, I _C =80A, V _{GE} = -5V~15V, R _g =10Ω | - | 33 | - | ns |
| Rise Time | t _r | | - | 85 | - | ns |
| Turn-on Energy | E _{on} | | - | 7.5 | - | mJ |
| Turn-off Delay Time | t _{d(off)} | | - | 231 | - | ns |
| Fall Time | t _f | | - | 174 | - | ns |
| Turn-off Energy | E _{off} | | - | 4.6 | - | mJ |
| Dynamic , at T_j= 125°C | | | | | | |
| Turn-on Delay Time | t _{d(on)} | V _{CC} = 600V, I _C =80A, V _{GE} = -5V~15V, R _g =10Ω | - | 30 | - | ns |
| Rise Time | t _r | | - | 79 | - | ns |
| Turn-on Energy | E _{on} | | - | 7.8 | - | mJ |
| Turn-off Delay Time | t _{d(off)} | | - | 243 | - | ns |
| Fall Time | t _f | | - | 263 | - | ns |
| Turn-off Energy | E _{off} | | - | 5.5 | - | mJ |
| Dynamic , at T_j= 150°C | | | | | | |
| Turn-on Delay Time | t _{d(on)} | V _{CC} = 600V, I _C =80A, V _{GE} = -5V~15V, R _g =10Ω | - | 28 | - | ns |
| Rise Time | t _r | | - | 74 | - | ns |
| Turn-on Energy | E _{on} | | - | 8.0 | - | mJ |
| Turn-off Delay Time | t _{d(off)} | | - | 252 | - | ns |
| Fall Time | t _f | | - | 325 | - | ns |
| Turn-off Energy | E _{off} | | - | 6.2 | - | mJ |

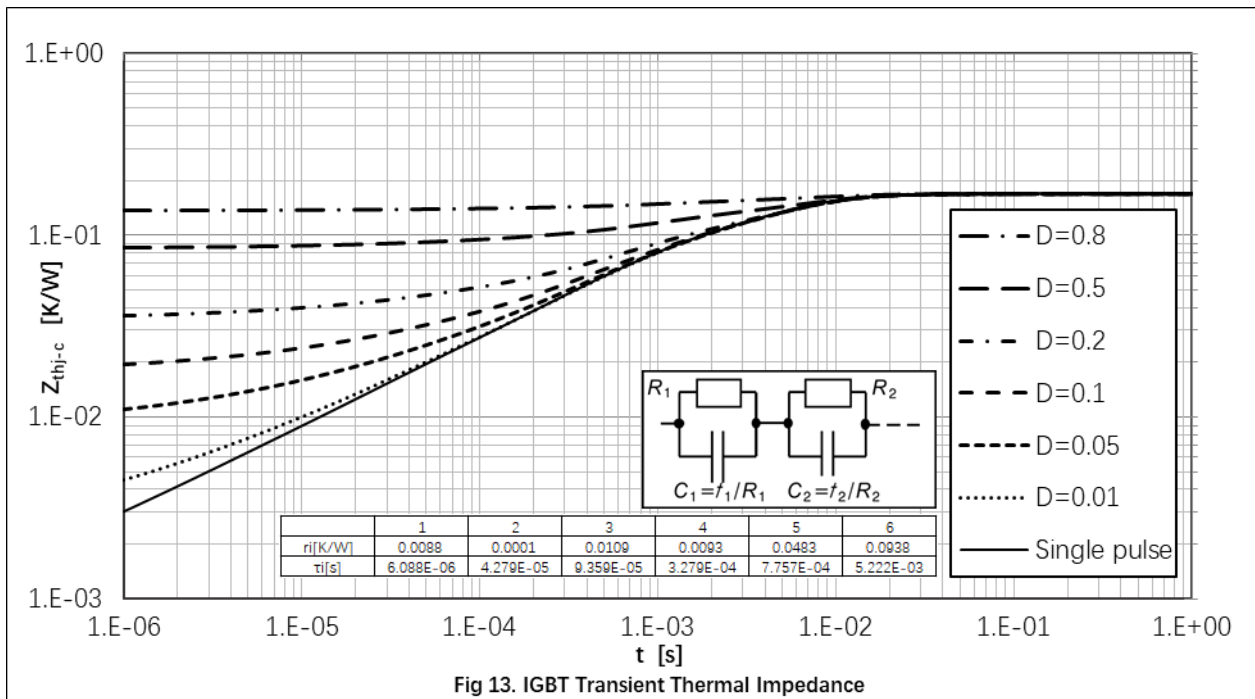
Thermal Resistance

| Parameter | Symbol | Max. Value | Unit |
|--|----------------------|------------|------|
| IGBT Thermal Resistance, Junction - Case | R _{th(j-c)} | 0.17 | K/W |
| Thermal Resistance, Junction - Ambient | R _{th(j-a)} | 62 | K/W |

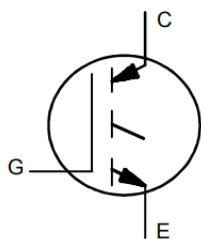






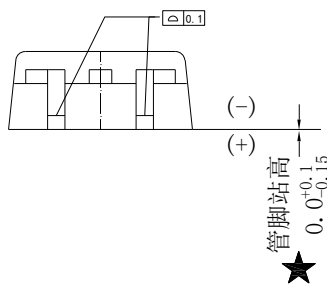
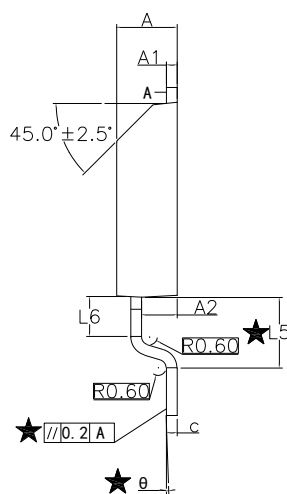
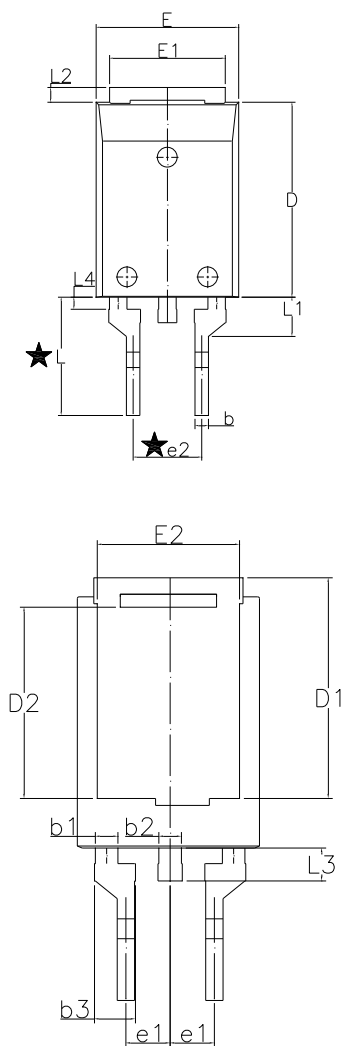


Circuit Diagram



● Package Outline Information

CASE: STO 263



| DIMENSIONS | | |
|------------|------------|-------|
| SYMBOL | Millimeter | |
| A | 4.34 | 4.74 |
| A1 | 0.70 | 1.00 |
| A2 | 2.50 | 3.00 |
| b | 0.70 | 1.30 |
| b1 | 1.25 | 1.65 |
| b2 | 1.25 | 1.65 |
| b3 | 2.16 | 2.36 |
| c | 0.70 | 1.00 |
| D | 14.00 | 15.00 |
| D1 | 12.50 | 13.50 |
| D2 | 10.54 | 11.54 |
| E | 10.00 | 11.00 |
| E1 | 8.00 | 9.00 |
| E2 | 7.70 | 8.70 |
| e1 | 2.55 BSC | |
| e2 | 4.90 | 5.30 |
| L | 8.50 | 8.90 |
| L1 | 2.65 | 3.15 |
| L2 | 0.50 | 1.50 |
| L3 | 1.40 | 2.40 |
| L4 | — | 1.50 |
| L5 | 5.05 | 5.45 |
| L6 | 2.97 BSC | |
| θ | -2° | 2° |
| // | - | 0.2 |
| ∅ | - | 0.1 |

★：关键尺寸