



IGBT Discrete

| | | |
|-----------------------|------|---|
| V_{CE} | 1200 | V |
| I_C | 15 | A |
| $V_{CE(sat)} I_C=15A$ | 1.85 | V |

- Uninterruptible power supply

Features

- Low $V_{CE(sat)}$ Trench-FS IGBT technology
- Maximum junction temperature P

AC a

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 | 30 15 | A |
| Diode Forward Current, limited by T_{jmax} $T_C=25^{\circ}C$ $T_C=100^{\circ}C$ | I_F | 30 15 | A |
| Continuous Gate-Emitter Voltage | V_{GE} | ± 20 | V |
| Transient Gate-Emitter Voltage | V_{GE} | ± 30 | V |
| Turn off Safe Operating Area $V_{CE} 1200V$, $T_j 150^{\circ}C$ | | 60 | A |
| Pulsed Collector Current, $V_{GE}=15V$, t_p limited by T_{jmax} | I_{CM} | 60 | A |
| Diode Pulsed Current, t_p limited by T_{jmax} | I_{Fpuls} | 60 | A |
| Short Circuit Withstand Time, $V_{GE}=15V$, $V_{CC}=900V$, $V_{CEM} \leq 1200V$ | T_{sc} | 10 | μs |
| Power Dissipation, $T_j=175^{\circ}C$, $T_C=25^{\circ}C$ | P_{tot} | 200 | W |



| | | | |
|--|-------|------------|----|
| Operating Junction Temperature | T_j | -40...+175 | °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 | $V_{GE(th)}$ | $V_{GE}=V_{CE}, I_C=0.5mA$ | 5.1 | 5.8 | 6.4 | V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $V_{GE}=15V, I_C=15A$ $T_j=25^\circ\text{C}$, $T_j=125^\circ\text{C}$ $T_j=150^\circ\text{C}$ | | 1.85 2.20 2.30 | 2.35 | 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 5.00 | 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} | $V_{CE}=25V, V_{GE}=0V,$ $f=1MHz$ | - | 1.2 | - | nF |
| Reverse Transfer Capacitance | C_{res} | | - | 0.04 | - | |
| Gate Charge | Q_G | $V_{CC}=960V, I_C=15A,$ $V_{GE}=15V$ | - | 0.14 | - | uC |
| Short Circuit Collector Current | I_{SC} | $V_{GE}=15V, t_{sc} 10\mu s,$ $V_{CC}=900V, T_j \leq 150^\circ\text{C}$ | - | 60 | - | A |



Electrical Characteristics of the Diode (T_j= 25°C unless otherwise specified):

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|----------------|--|------|----------------------|------|------|
| Static | | | | | | |
| Diode Forward Voltage | V _F | I _F = 15A T _j = 25°C, T _j = 125°C T _j = 150°C | | 2.00 1.80 1.70 | 2.40 | V |

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 =15A, V _{GE} = -15V~15V, R _g =33 Ω | - | 45 | - | ns |
| Rise Time | t _r | | - | 52 | - | ns |
| Turn-on Energy | E _{on} | | - | 1.5 | - | mJ |
| Turn-off Delay Time | t _{d(off)} | | - | 128 | - | ns |
| Fall Time | t _f | | - | 186 | - | ns |
| Turn-off Energy | E _{off} | | - | 0.9 | - | mJ |
| Dynamic , at T_j= 125°C | | | | | | |
| Turn-on Delay Time | t _{d(on)} | V _{CC} = 600V, I _C =15A, V _{GE} = -15V~15V, R _g =33 Ω | - | 50 | - | ns |
| Rise Time | t _r | | - | 55 | - | ns |
| Turn-on Energy | E _{on} | | - | 2.2 | - | mJ |
| Turn-off Delay Time | t _{d(off)} | | - | 160 | - | ns |
| Fall Time | t _f | | - | 135 | - | ns |
| Turn-off Energy | E _{off} | | - | 1.3 | - | mJ |
| Dynamic , at T_j= 150°C | | | | | | |
| Turn-on Delay Time | t _{d(on)} | V _{CC} = 600V, I _C =15A, V _{GE} = -15V~15V, R _g =33 Ω | - | 52 | - | ns |
| Rise Time | t _r | | - | 58 | - | ns |
| Turn-on Energy | E _{on} | | - | 2.4 | - | mJ |
| Turn-off Delay Time | t _{d(off)} | | - | 170 | - | ns |
| Fall Time | t _f | | - | 138 | - | ns |
| Turn-off Energy | E _{off} | | - | 1.45 | - | mJ |

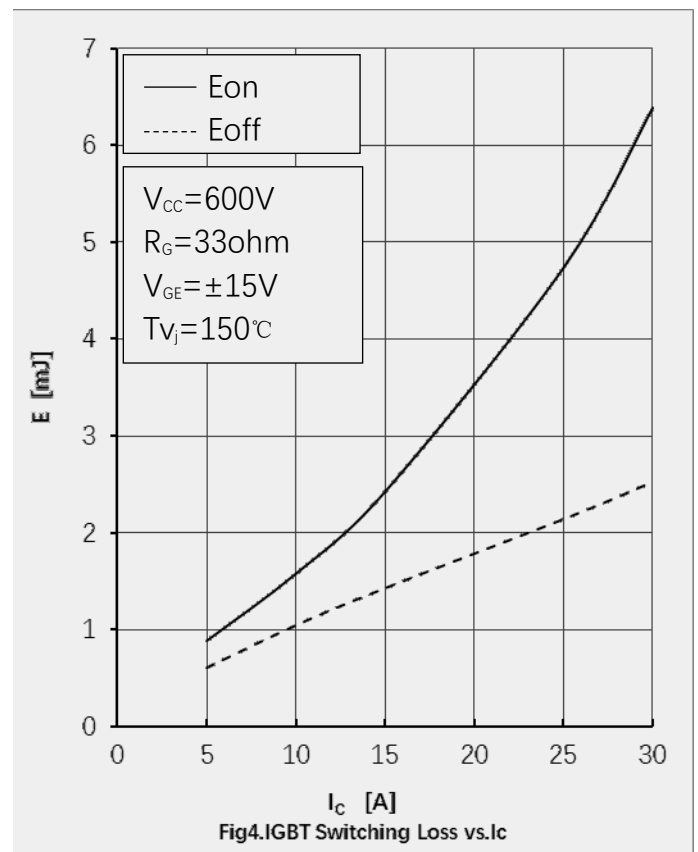
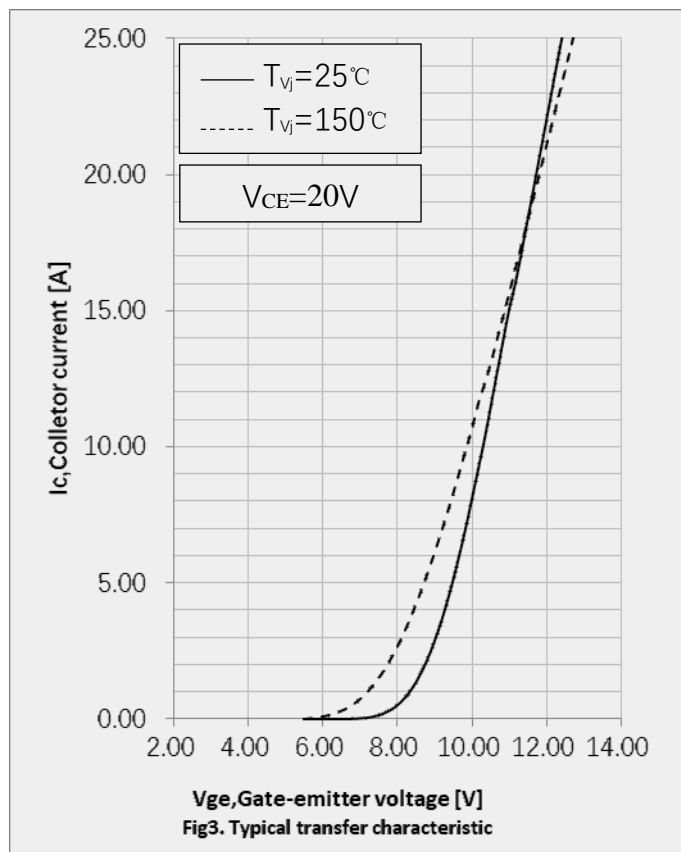
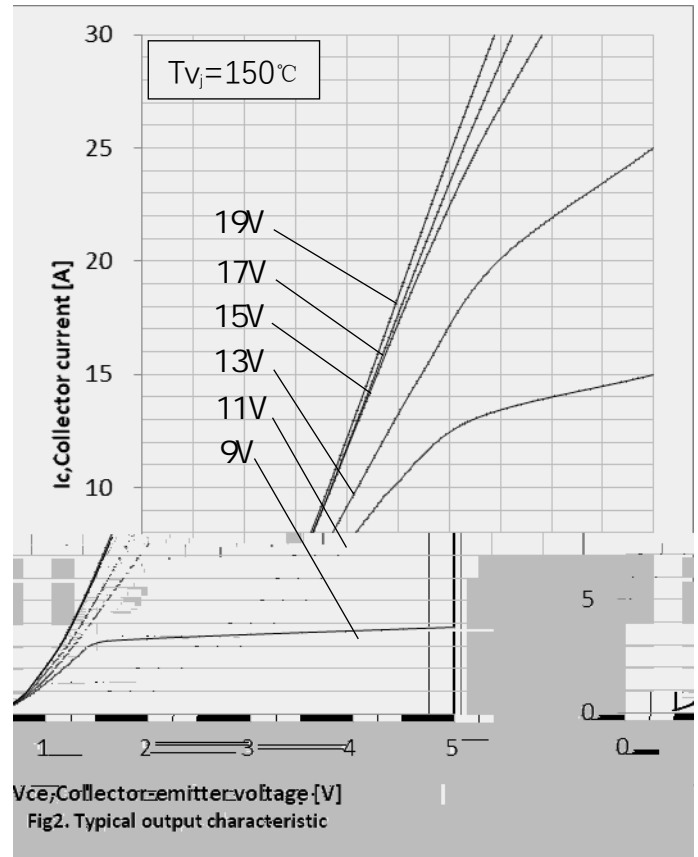
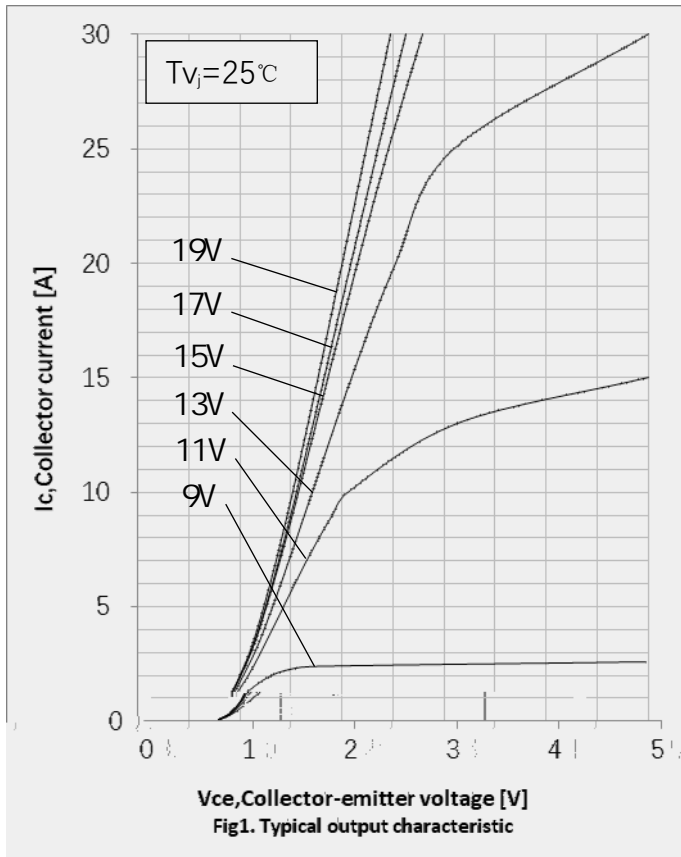


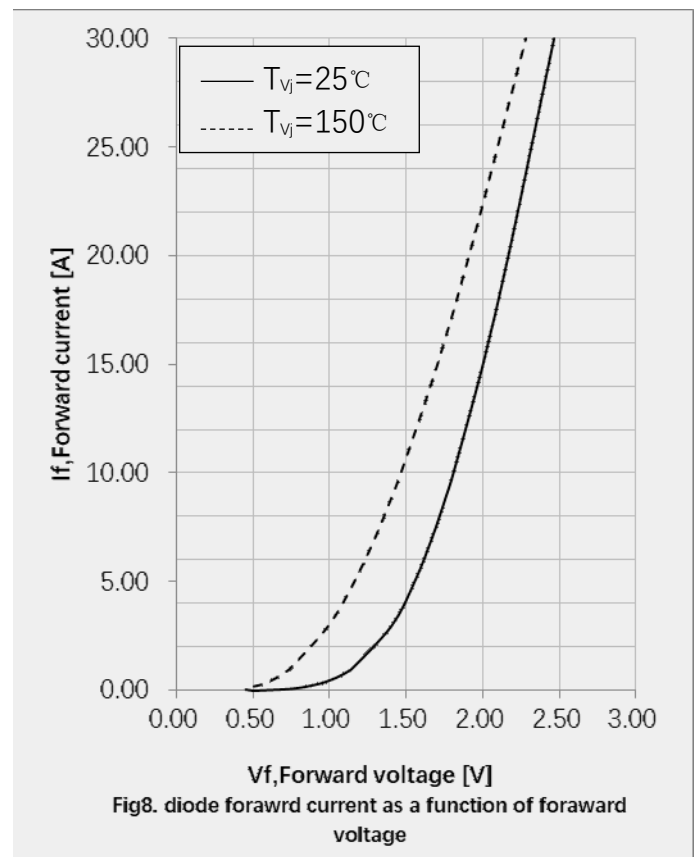
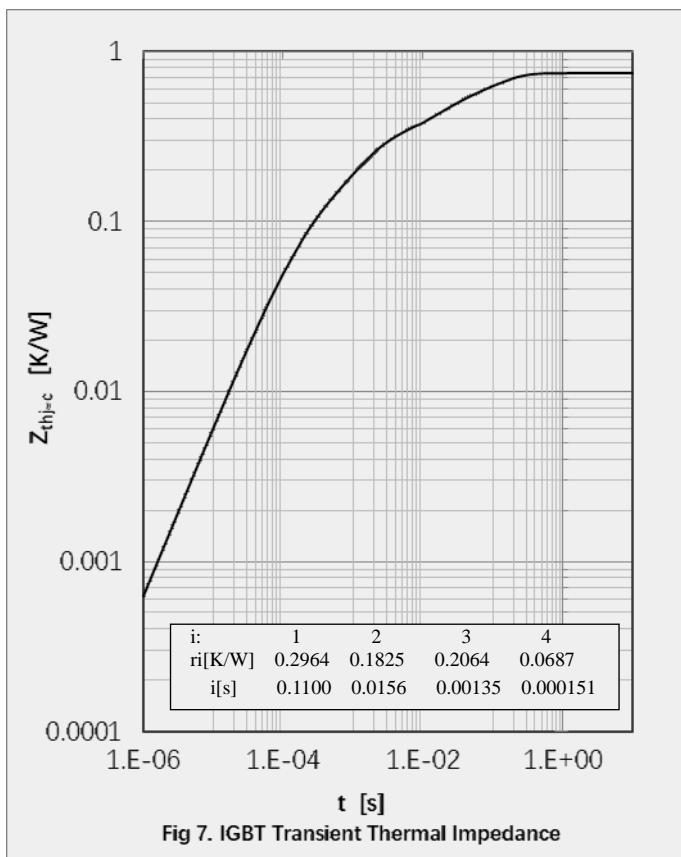
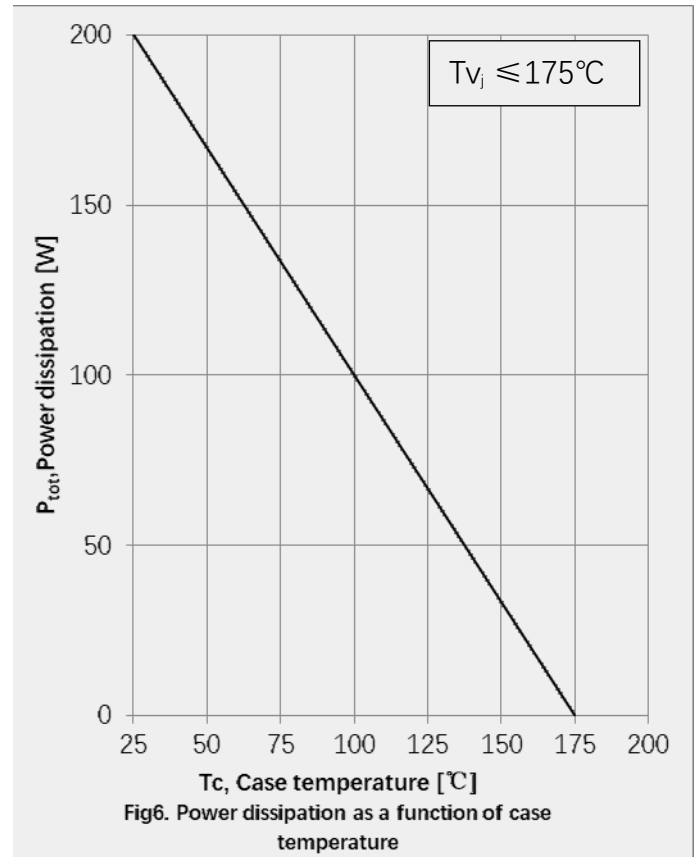
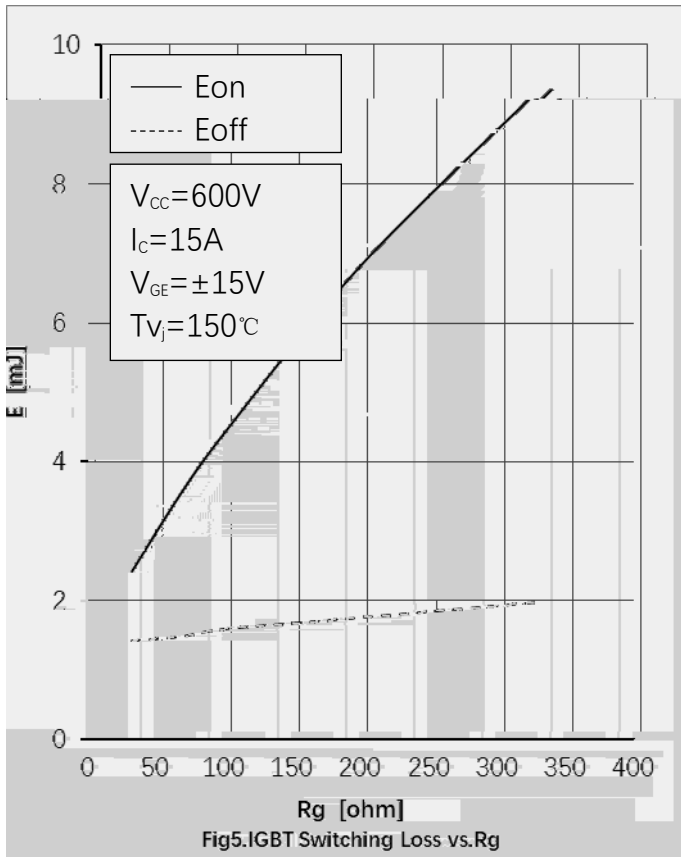
Electrical Characteristics of the DIODE

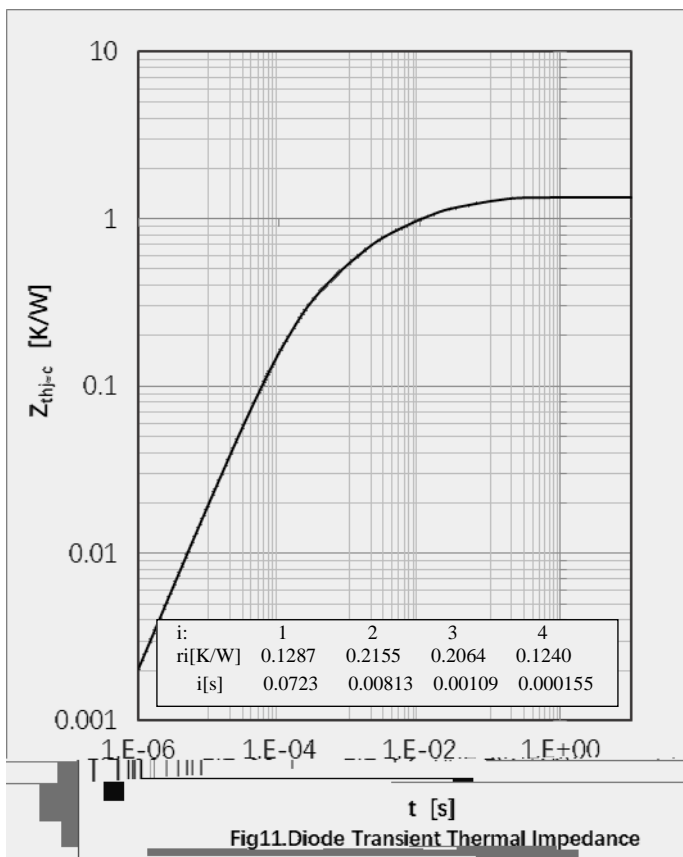
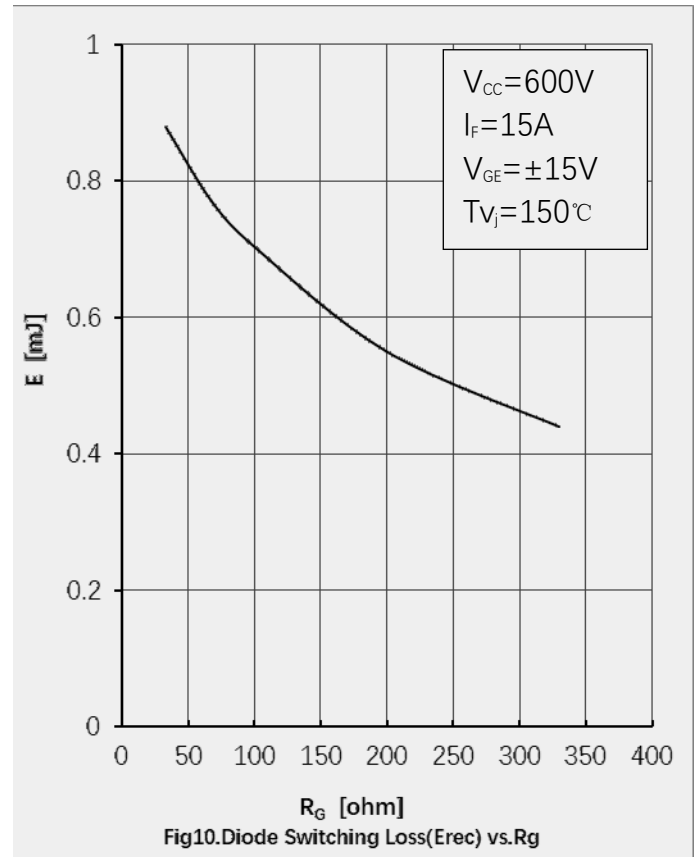
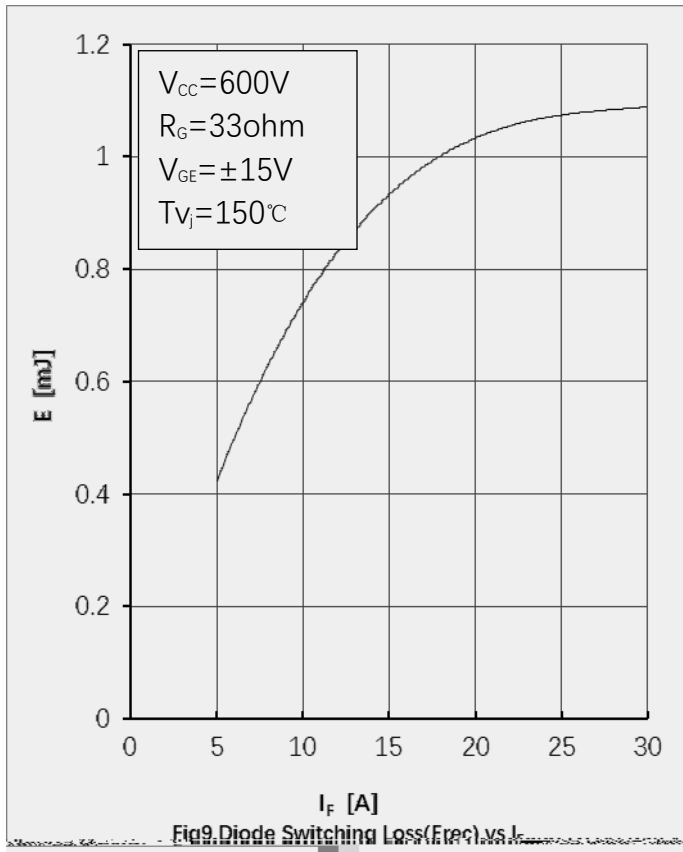
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|------------------|---|------|------|------|------|
| Dynamic , at T_j= 25°C | | | | | | |
| Diode Forward Voltage | V _{FM} | I _F = 15A | - | 1.90 | - | V |
| Reverse Recovery Current | I _{rr} | I _F =15A, V _R =600V, -di/dt=240A/μs, | - | 7.5 | - | A |
| Reverse Recovery Charge | Q _{rr} | | - | 1.8 | - | uC |
| Reverse Recovery Energy | E _{rec} | | - | 0.60 | | mJ |
| Dynamic , at T_j= 125 | | | | | | |
| Reverse Recovery Current | I _{rr} | I _F =15A, V _R =600V, -di/dt=240A/μs, | - | 9 | - | A |
| Reverse Recovery Charge | Q _{rr} | | - | 2.4 | - | uC |
| Reverse Recovery Energy | E _{rec} | | - | 0.9 | | mJ |
| Dynamic , at T_j= 150 | | | | | | |
| Reverse Recovery Current | I _{rr} | I _F =15A, V _R =600V, -di/dt=240A/μs, | - | 9.5 | - | A |
| Reverse Recovery Charge | Q _{rr} | | - | 2.6 | - | uC |
| Reverse Recovery Energy | E _{rec} | | - | 1.0 | | mJ |

Thermal Resistance

| Parameter | Symbol | Max. Value | Unit |
|---|----------------------|------------|------|
| IGBT Thermal Resistance, Junction - Case | R _{th(j-c)} | 0.75 | K/W |
| Diode Thermal Resistance, Junction - Case | R _{th(j-c)} | 1.35 | K/W |
| Thermal Resistance, Junction - Ambient | R _{th(j-a)} | 40 | K/W |

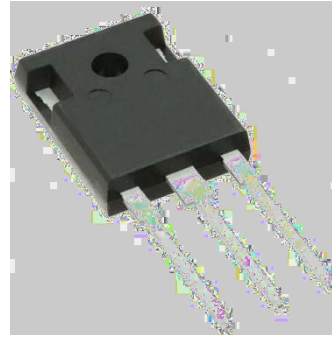
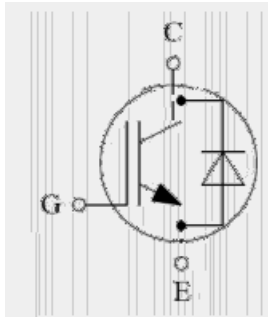








- Circuit Diagram



- Package Outline Information

