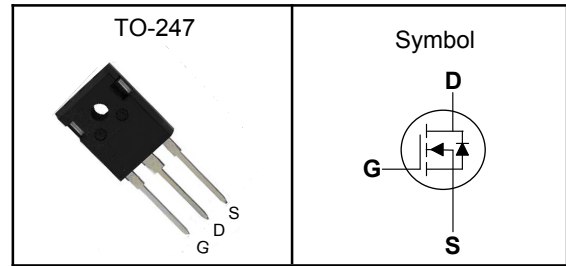


600V Super Junction Power MOSFET
Features

- Low drain-source on-resistance: $R_{DS(ON)}=0.062\Omega(\text{typ})$
- Easy to control gate switching
- Enhancement mode: $V_{th} = 3$ to $5V$
- 100% avalanche tested
- RoHS compliant

Applications

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- Charger, Lighting

Pin Description


| | | |
|------------------|-----|------------|
| V_{DSS} | 600 | V |
| $R_{DS(ON)-Typ}$ | 62 | m Ω |
| I_D | 46 | A |

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$, Unless Otherwise Noted)

| Symbol | Parameter | Rating | Unit | |
|--------------|--|-------------------------|------------------|---|
| V_{DSS} | Drain-Source Voltage | 600 | V | |
| V_{GSS} | Gate-Source Voltage | ± 30 | V | |
| T_J | Maximum Junction Temperature | -55 to 150 | $^\circ\text{C}$ | |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ\text{C}$ | |
| E_{AS} | Single Pulse Avalanche Energy | 1000 | mJ | |
| $I_{DM}^{①}$ | 300 μs Pulse Drain Current Tested | 140 | A | |
| I_D | Continuous Drain Current | $T_C=25^\circ\text{C}$ | 46 | A |
| | Continuous Drain Current | $T_C=100^\circ\text{C}$ | 28 | A |
| P_D | Maximum Power Dissipation | $T_C=25^\circ\text{C}$ | 347 | W |
| I_{AS} | Avalanche Current | 1.8 | A | |

Thermal Characteristics

| Symbol | Parameter | Rating | Unit |
|---------------------|--|--------|---------------------------|
| $R_{\theta JA}^{③}$ | Thermal Resistance Junction-Ambient ₁ | 40 | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case ₁ | 0.36 | $^\circ\text{C}/\text{W}$ |

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C .

Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.



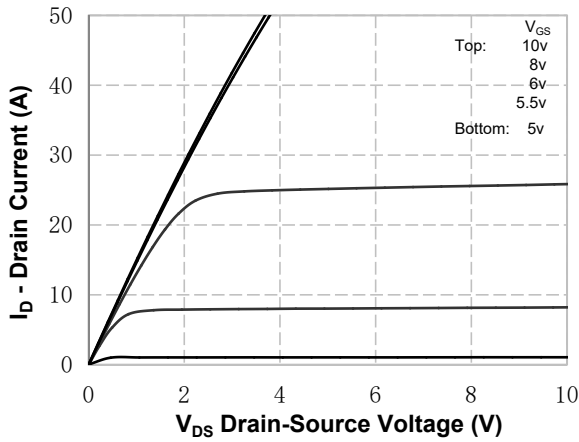
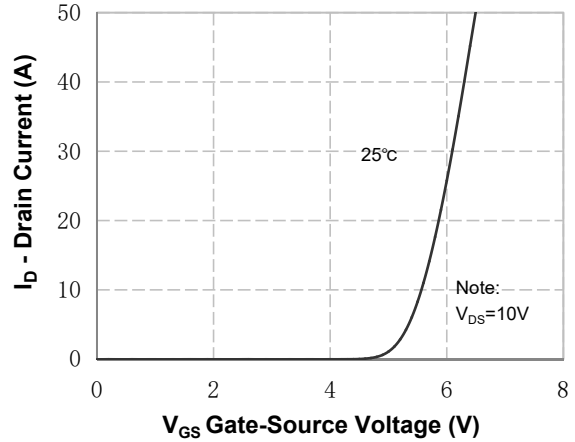
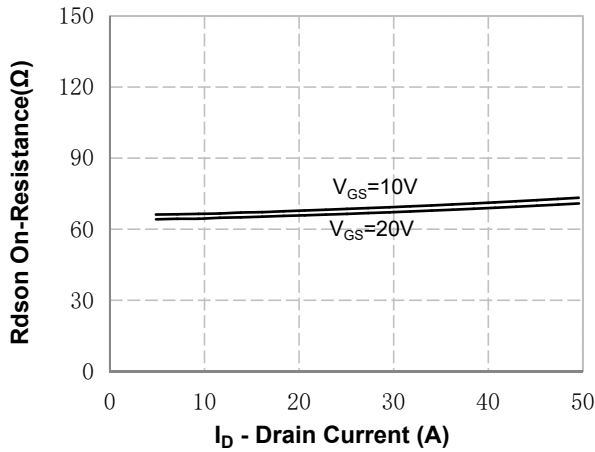
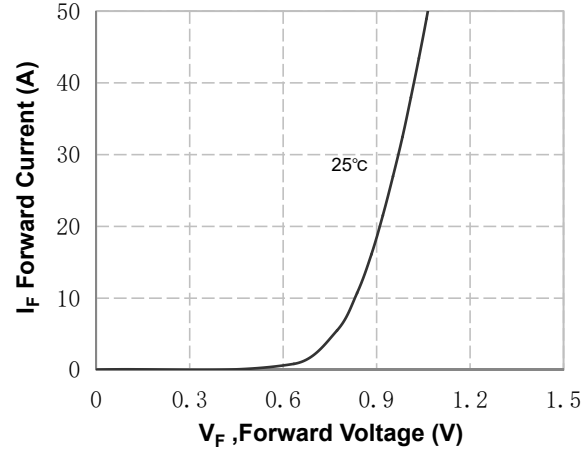
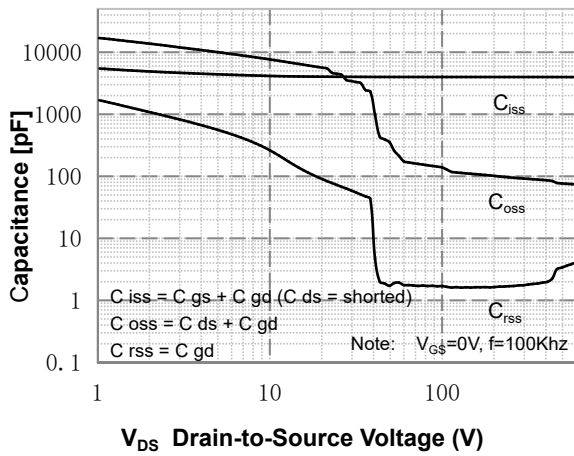
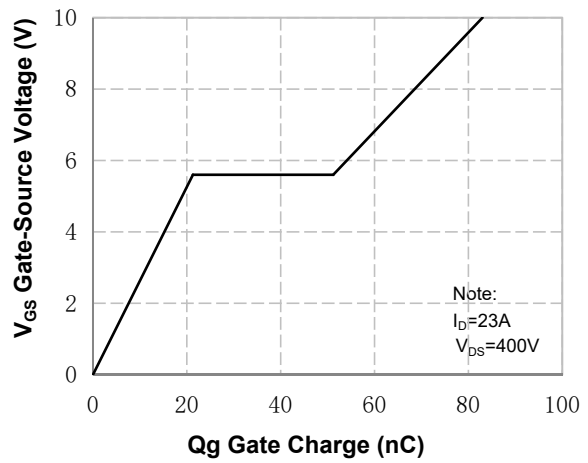
600V Super Junction Power MOSFET

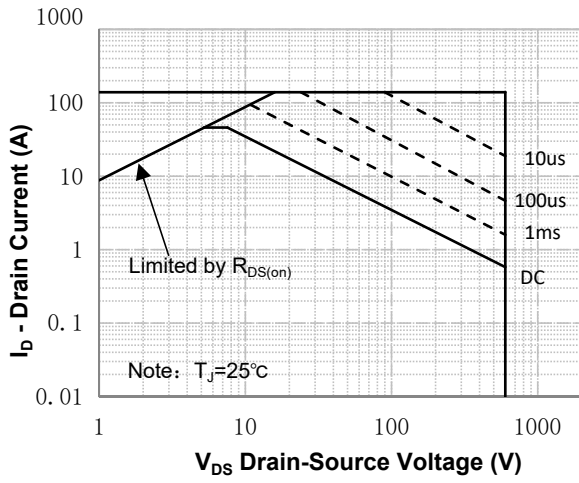
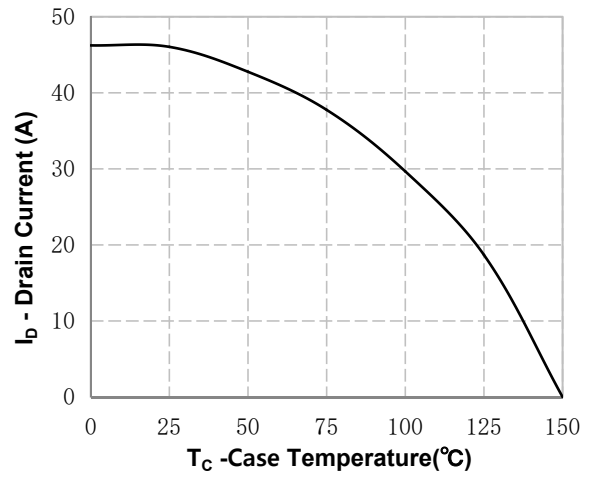
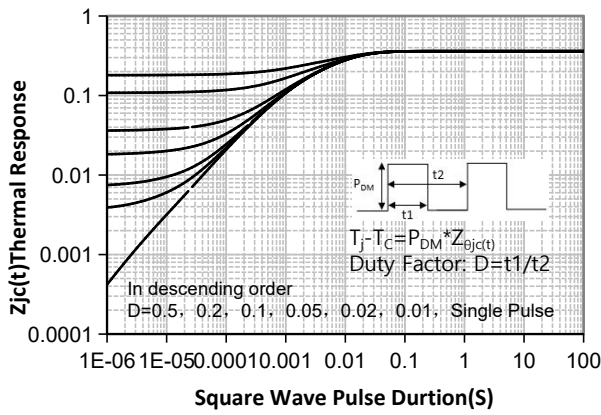
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

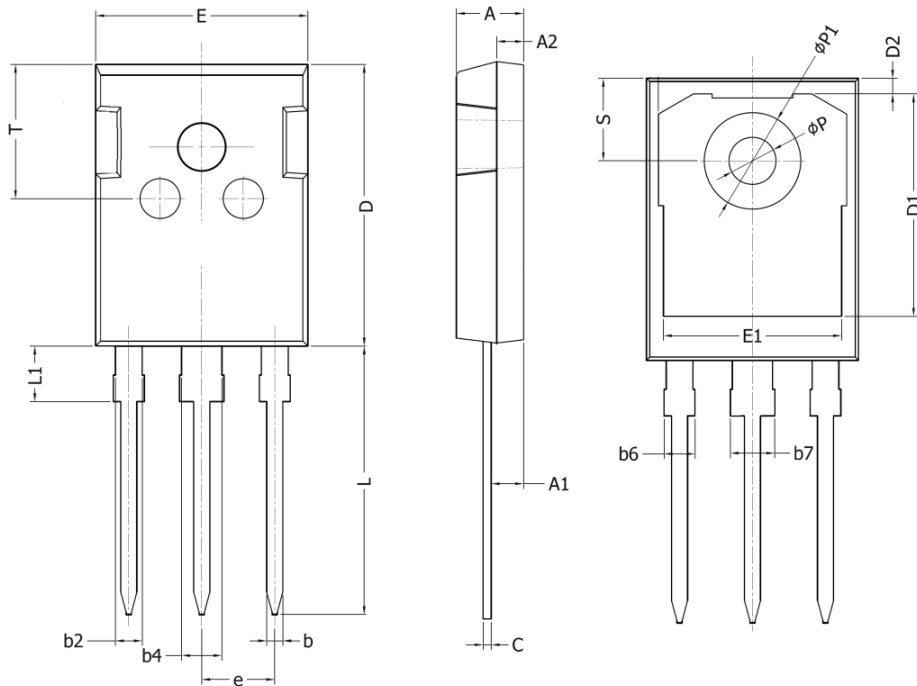
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|-----|------|-----------|------------|
| Static Electrical Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=1mA$ | 600 | --- | --- | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=600V, V_{GS}=0V$ | --- | --- | 10 | μA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=2.5mA$ | 3.0 | --- | 5.0 | V |
| I_{GSS} | Gate Leakage Current | $V_{GS}=\pm 30V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| $R_{DS(on)}$ | Drain-Source On-state Resistance | $V_{GS}=10V, I_D=23A$ | --- | 62 | 75 | m Ω |
| Dynamic Characteristics ^⑤ | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS}=0V,$ $V_{DS}=100V,$ Freq.=100KHz | --- | 3990 | --- | pF |
| C_{oss} | Output Capacitance | | --- | 87 | --- | |
| C_{rss} | Reverse Transfer Capacitance | | --- | 2 | --- | |
| $T_{d(on)}$ | Turn-on Delay Time | $V_{GS}=10V, V_{DD}=400V$ $I_D=23A, R_G=4.7\Omega$ | --- | 31 | --- | nS |
| T_r | Turn-on Rise Time | | --- | 66 | --- | |
| $T_{d(off)}$ | Turn-off Delay Time | | --- | 74 | --- | |
| T_f | Turn-off Fall Time | | --- | 7 | --- | |
| Q_g | Total Gate Charge | $V_{GS}=10V, V_{DD}=400V, I_D=23A$ | --- | 83 | --- | nC |
| Q_{gs} | Gate-Source Charge | | --- | 22 | --- | |
| Q_{gd} | Gate-Drain Charge | | --- | 30 | --- | |
| R_g | Gate resistance | f=1 MHz, open drain | --- | 0.85 | --- | Ω |
| Source-Drain Characteristics | | | | | | |
| I_S | Continuous Source Current | | --- | --- | 46 | A |
| I_{SM} | Maximum Pulsed Drain-Source Diode Forward Current | | --- | --- | 140 | A |
| V_{SD} | Diode Forward Voltage | $I_S=46A, V_{GS}=0V$ | --- | --- | 1.4 | V |
| t_{rr} | Reverse recovery time | $I_S=23A, V_{GS}=0V$ $diF/dt=140A/\mu s$ | --- | 145 | --- | ns |
| Q_{rr} | Reverse recovery charge | | --- | 1.2 | --- | nC |
| I_{rrm} | Peak Reverse Recovery Current | | --- | 35 | --- | A |

Note ④: Pulse test (pulse width \leq 300 μs , duty cycle \leq 2%).

Note ⑤: Guaranteed by design, not subject to production testing.

600V Super Junction Power MOSFET
Typical Characteristics

Figure 1. On-Region Characteristics

Figure 2. Transfer Characteristics

Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

Figure 5. Capacitance Characteristics

Figure 6. Gate Charge Characteristics

600V Super Junction Power MOSFET

Figure 7. Maximum Safe Operating Area

Figure 8. Maximum Drain Current vs Case Temperature

Figure 9. Transient Thermal Response Curve

600V Super Junction Power MOSFET
TO-247 Package Outline Dimensions


| Symbol | Dimensions In Millimeters | |
|--------|---------------------------|-------|
| | Min. | Max. |
| A | 4.90 | 5.20 |
| A1 | 2.31 | 2.51 |
| A2 | 1.9 | 2.1 |
| b | 1.16 | 1.26 |
| b2 | 1.96 | 2.06 |
| b4 | 2.96 | 3.06 |
| b6 | - | 2.25 |
| b7 | - | 3.25 |
| C | 0.59 | 0.66 |
| D | 20.90 | 21.20 |
| D1 | 16.25 | 16.85 |
| D2 | 1.05 | 1.35 |
| E | 15.75 | 16.10 |
| E1 | 13.00 | 13.60 |
| e | 5.436 BSC | |
| L | 19.80 | 20.20 |
| L1 | - | 4.30 |
| P | 3.40 | 3.60 |
| P1 | 7.00 | 7.40 |
| S | 6.05 | 6.25 |
| T | 9.80 | 10.20 |



印字说明

印字说明

FS60R075IGD

AABBCC

第一行标记为物料型号代码

第二行为AA为内部识别码，BB为表示年份，例如22即表示2022年，CC表示周期，例如01即表示第一周；2201即表示2022年第一周生产。