

Features

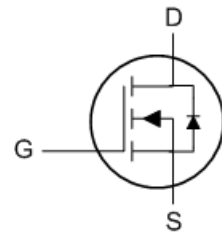
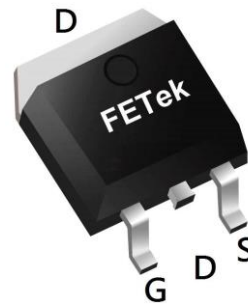
- Advanced Trench MOS Technology
- Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available

Applications

- Load Switch
- LED Applications
- Networking Applications
- Quick Charger

Product Summary


| BVDSS | RDSON | ID |
|-------|-------|-----|
| 200V | 170mΩ | 18A |

TO263 Pin Configuration

Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|-----------------------|--|------------|------------|
| V_{DS} | Drain-Source Voltage | 200 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D@T_C=25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | 18 | A |
| $I_D@T_C=100^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | 11.7 | A |
| I_{DM} | Pulsed Drain Current ² | 40 | A |
| EAS | Single Pulse Avalanche Energy ³ | 15 | mJ |
| I_{AS} | Avalanche Current | 10 | A |
| $P_D@T_C=25^\circ C$ | Total Power Dissipation ³ | 83 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ C$ |
| T_J | Operating Junction Temperature Range | -55 to 150 | $^\circ C$ |

Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|-----------------|--|------|------|--------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient ¹ | --- | 60 | $^\circ C/W$ |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case ¹ | --- | 1.1 | $^\circ C/W$ |

**Electrical Characteristics (T_J=25 °C, unless otherwise noted)**

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|--|--|------|------|------|------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 200 | --- | --- | V |
| R _{DS(ON)} | Static Drain-Source On-Resistance ² | V _{GS} =10V, I _D =9A | --- | --- | 170 | mΩ |
| | Static Drain-Source On-Resistance ² | V _{GS} =4.5V, I _D =9A | --- | --- | 180 | mΩ |
| V _{GS(th)} | Gate Threshold Voltage | V _{GS} =V _{DS} , I _D =250uA | 1.2 | --- | 2.5 | V |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} =160V, V _{GS} =0V, T _J =25°C | --- | --- | 1 | uA |
| | | V _{DS} =160V, V _{GS} =0V, T _J =55°C | --- | --- | 5 | |
| I _{GSS} | Gate-Source Leakage Current | V _{GS} =±20V, V _{DS} =0V | --- | --- | ±100 | nA |
| g _{fs} | Forward Transconductance | V _{DS} =5V, I _D =9A | --- | 22 | --- | S |
| R _g | Gate Resistance | V _{DS} =0V, V _{GS} =0V, f=1MHz | --- | 2 | --- | Ω |
| Q _g | Total Gate Charge (10V) | V _{DS} =80V, V _{GS} =10V, I _D =9A | --- | 45 | --- | nC |
| Q _{gs} | Gate-Source Charge | | --- | 9 | --- | |
| Q _{gd} | Gate-Drain Charge | | --- | 10.5 | --- | |
| T _{d(on)} | Turn-On Delay Time | V _{DD} =50V, V _{GS} =10V, R _G =3.3Ω I _D =9A | --- | 13 | --- | ns |
| T _r | Rise Time | | --- | 8.2 | --- | |
| T _{d(off)} | Turn-Off Delay Time | | --- | 25 | --- | |
| T _f | Fall Time | | --- | 11 | --- | |
| C _{iss} | Input Capacitance | V _{DS} =25V, V _{GS} =0V, f=1MHz | --- | 2047 | --- | pF |
| C _{oss} | Output Capacitance | | --- | 109 | --- | |
| C _{rss} | Reverse Transfer Capacitance | | --- | 70 | --- | |

Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--|---|------|------|------|------|
| I _S | Continuous Source Current ^{1,5} | V _G =V _D =0V, Force Current | --- | --- | 18 | A |
| I _{SM} | Pulsed Source Current ^{2,5} | | --- | --- | 40 | A |
| V _{SD} | Diode Forward Voltage ² | V _{GS} =0V, I _S =1A, T _J =25°C | --- | --- | 1.2 | V |
| t _{rr} | Reverse Recovery Time | I _F =10A, dI/dt=100A/μs, | --- | 37 | --- | nS |
| Q _{rr} | Reverse Recovery Charge | T _J =25°C | --- | 103 | --- | nC |

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
- 3.The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=10A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Characteristics

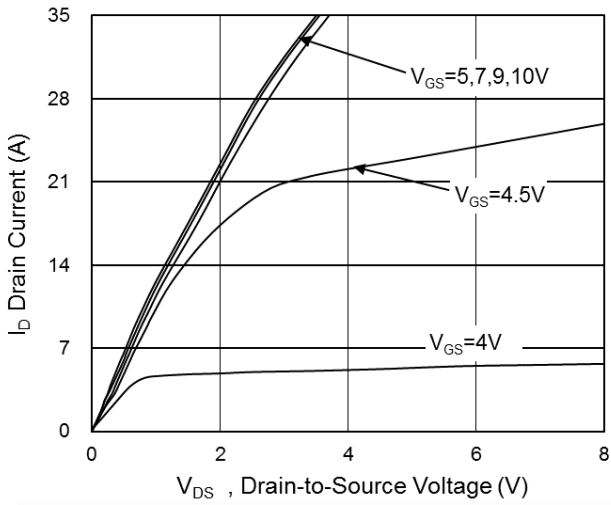


Fig.1 Typical Output Characteristics

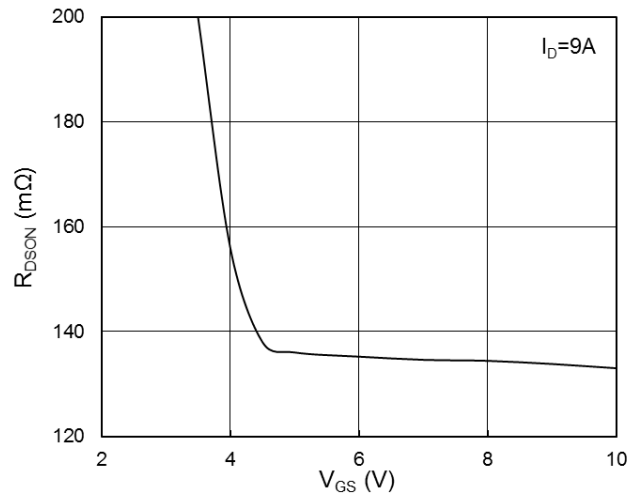


Fig.2 On-Resistance vs G-S Voltage

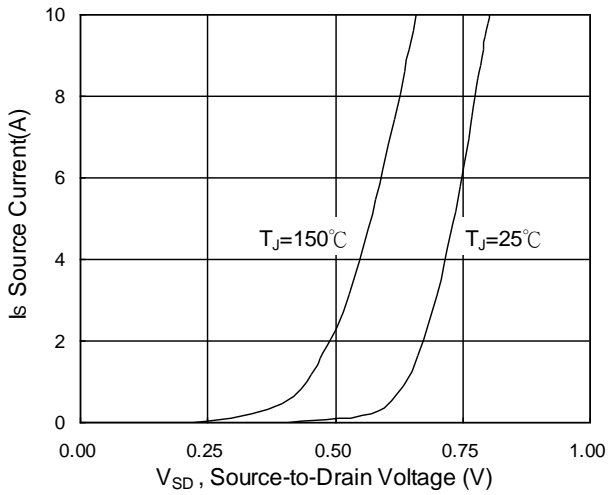


Fig.3 Source Drain Forward Characteristics

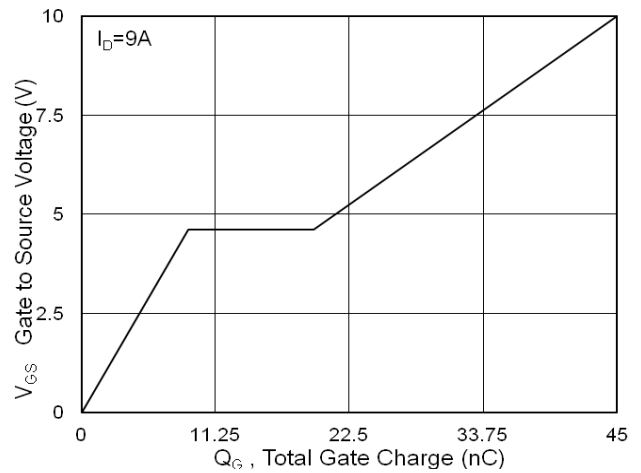


Fig.4 Gate-Charge Characteristics

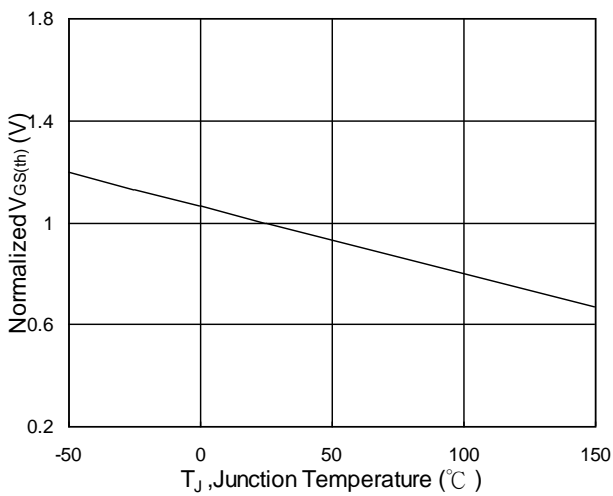


Fig.5 Normalized $V_{GS(th)}$ vs T_J

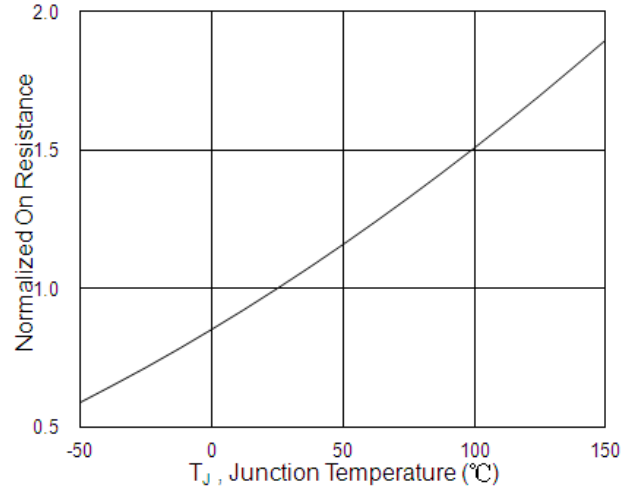


Fig.6 Normalized R_{DSON} vs T_J

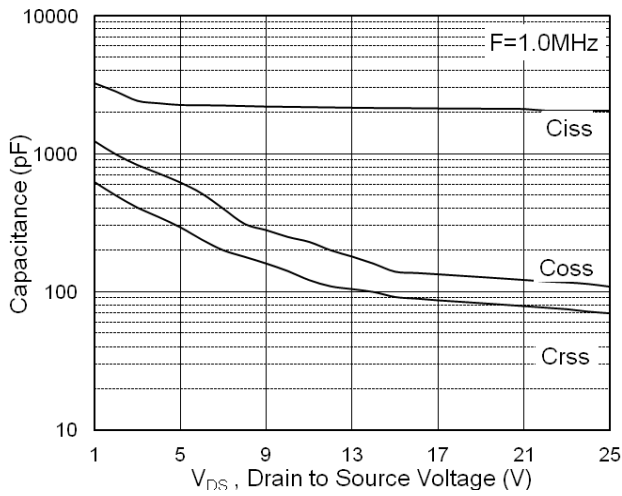


Fig.7 Capacitance

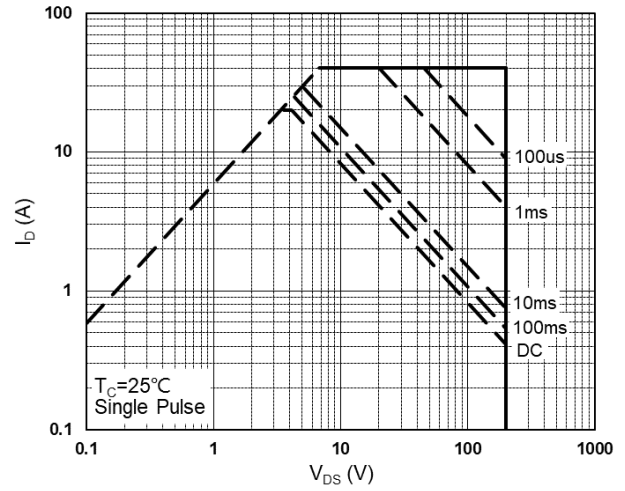


Fig.8 Safe Operating Area

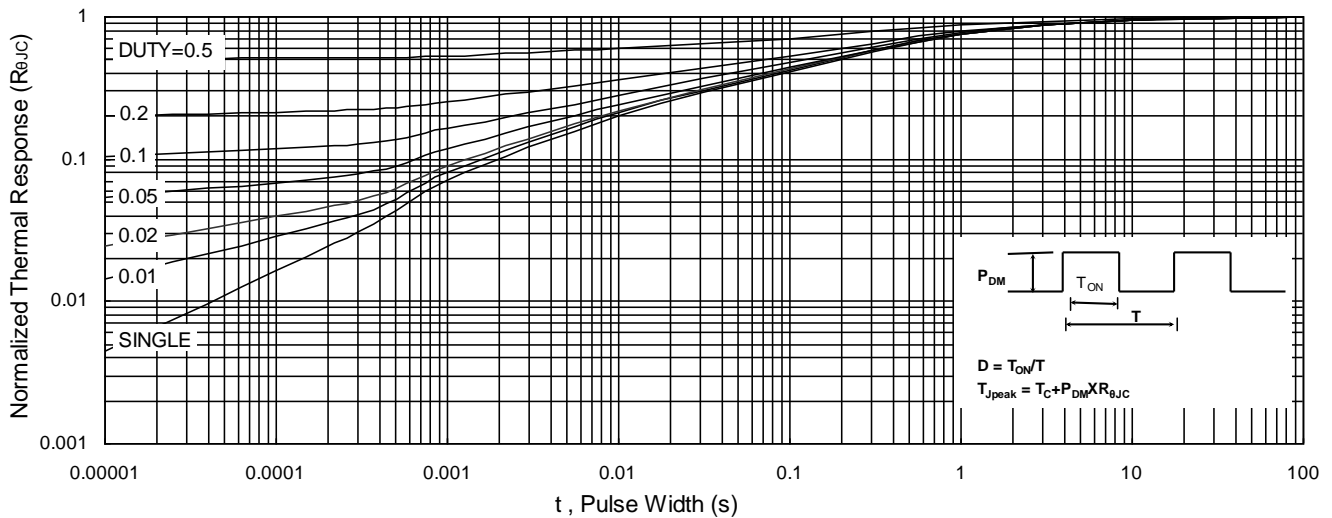


Fig.9 Normalized Maximum Transient Thermal Impedance



Fig.10 Switching Time Waveform



Fig.11 Unclamped Inductive Waveform