

Features

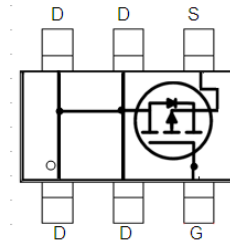
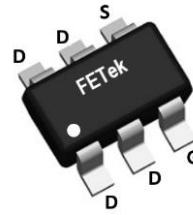
- Advanced Trench MOS Technology
- Low Gate Charge
- Green Device Available

Applications

- Load Switch for Portable Devices.

Product Summary

| BVDSS | RDSON | ID |
|-------|-------|-------|
| -20V | 100mΩ | -2.3A |

SOT363 Pin Configuration

Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|--------------------------------|--|------------|------------------|
| V_{DS} | Drain-Source Voltage | -20 | V |
| V_{GS} | Gate-Source Voltage | ± 12 | V |
| $I_D @ T_A = 25^\circ\text{C}$ | Continuous Drain Current, $-V_{GS} @ -4.5\text{V}^1$ | -2.3 | A |
| $I_D @ T_A = 70^\circ\text{C}$ | Continuous Drain Current, $-V_{GS} @ -4.5\text{V}^1$ | -1.8 | A |
| I_{DM} | Pulsed Drain Current ² | -10 | A |
| $P_D @ T_A = 25^\circ\text{C}$ | Total Power Dissipation ³ | 0.76 | W |
| $P_D @ T_A = 70^\circ\text{C}$ | Total Power Dissipation ³ | 0.48 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature Range | -55 to 150 | $^\circ\text{C}$ |

Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|-----------------|--|------|------|---------------------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient ¹ | --- | 165 | $^\circ\text{C}/\text{W}$ |

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|-------|------|-----------|------------|
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=-250\mu A$ | -20 | --- | --- | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance ² | $V_{GS}=-4.5V, I_D=-1.8A$ | --- | 90 | 100 | m Ω |
| | | $V_{GS}=-2.5V, I_D=-1.5A$ | --- | 130 | 155 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{GS}=V_{DS}, I_D=-250\mu A$ | -0.45 | --- | -1.0 | V |
| I_{DSS} | Drain-Source Leakage Current | $V_{DS}=-16V, V_{GS}=0V, T_J=25^\circ\text{C}$ | --- | --- | -1 | uA |
| | | $V_{DS}=-16V, V_{GS}=0V, T_J=85^\circ\text{C}$ | --- | --- | -30 | |
| I_{GSS} | Gate-Source Leakage Current | $V_{GS}=\pm 12V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| Q_g | Total Gate Charge | $V_{DS}=-10V, V_{GS}=-4.5V, I_D=-1.8A$ | --- | 3.8 | --- | nC |
| Q_{gs} | Gate-Source Charge | | --- | 0.75 | --- | |
| Q_{gd} | Gate-Drain Charge | | --- | 0.7 | --- | |
| $T_{d(on)}$ | Turn-On Delay Time | $V_{DD}=-10V, V_{GS}=-4.5, R_G=1\Omega, I_D=-1.8A$ | --- | 3 | --- | ns |
| T_r | Rise Time | | --- | 23.5 | --- | |
| $T_{d(off)}$ | Turn-Off Delay Time | | --- | 11 | --- | |
| T_f | Fall Time | | --- | 20 | --- | |
| C_{iss} | Input Capacitance | $V_{DS}=-10V, V_{GS}=0V, f=1\text{MHz}$ | --- | 312 | --- | pF |
| C_{oss} | Output Capacitance | | --- | 51 | --- | |
| C_{rSS} | Reverse Transfer Capacitance | | --- | 47 | --- | |

Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|----------|--|---|------|------|------|------|
| I_S | Continuous Source Current ^{1,4} | $V_G=V_D=0V$, Force Current | --- | --- | -2.3 | A |
| V_{SD} | Diode Forward Voltage ² | $V_{GS}=0V, I_S=-0.42A, T_J=25^\circ\text{C}$ | --- | --- | -1.2 | V |

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 $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation

Typical Characteristics

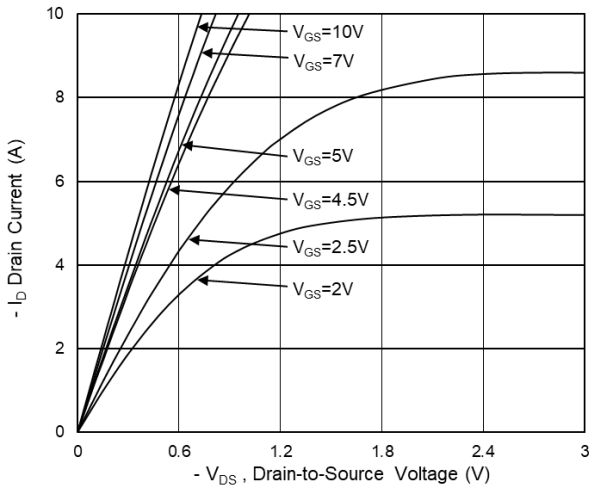


Fig.1 Typical Output Characteristics

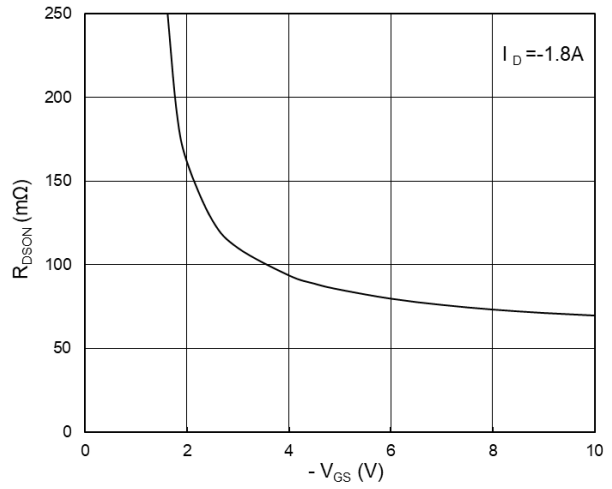


Fig.2 On-Resistance vs G-S Voltage

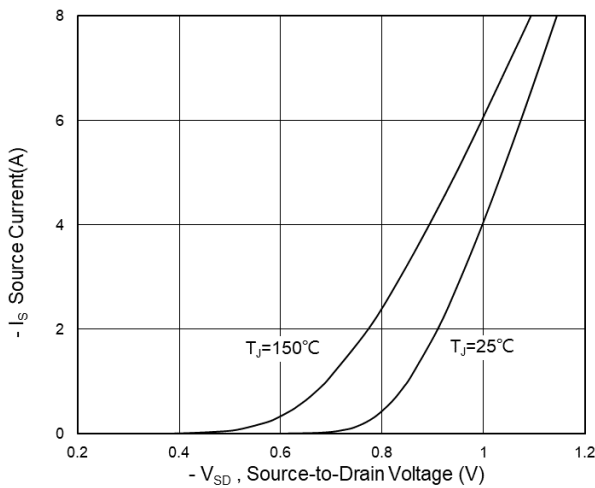


Fig.3 Source Drain Forward Characteristics

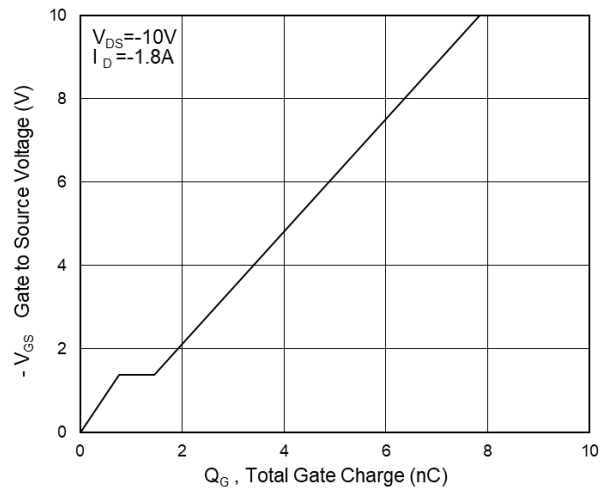


Fig.4 Gate-Charge Characteristics

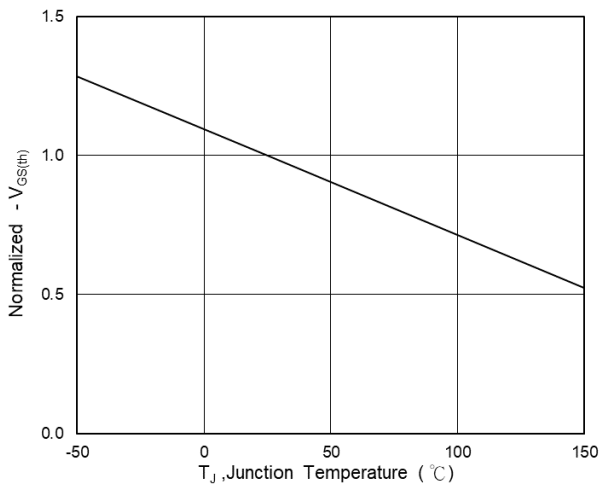


Fig.5 Normalized $V_{GS(th)}$ vs T_J

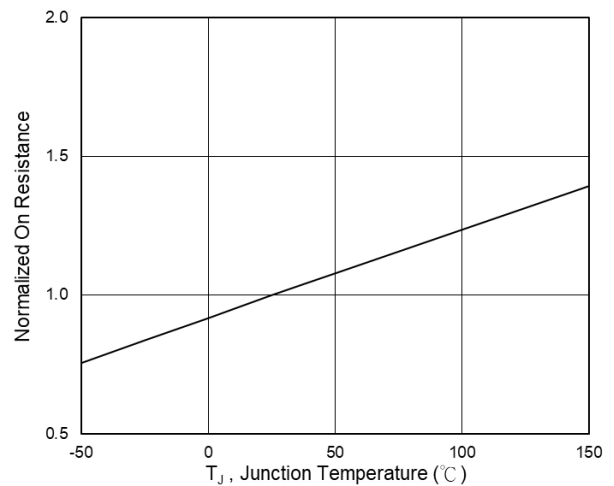


Fig.6 Normalized $R_{DS(on)}$ vs T_J

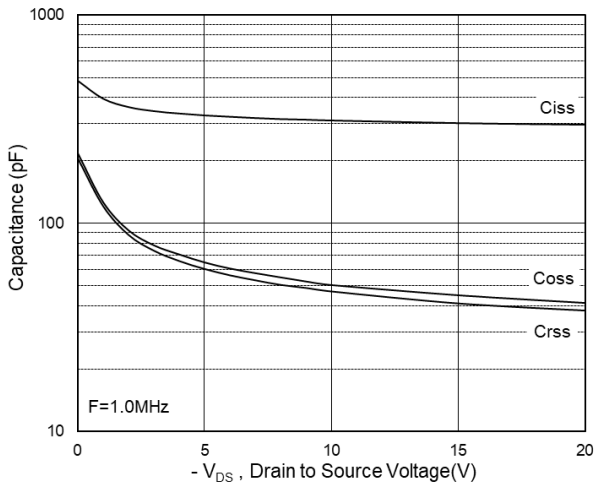


Fig.7 Capacitance

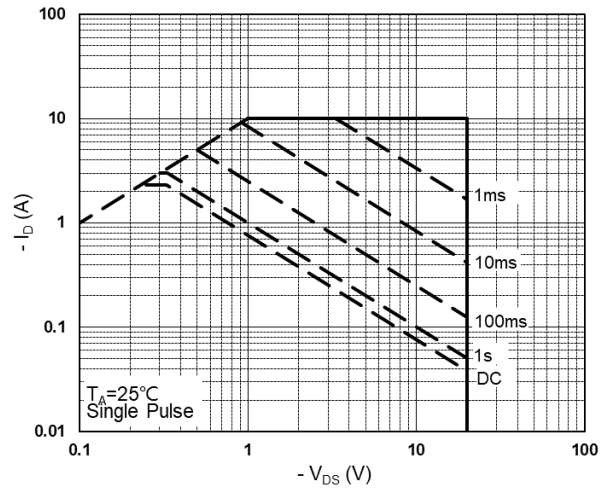


Fig.8 Safe Operating Area

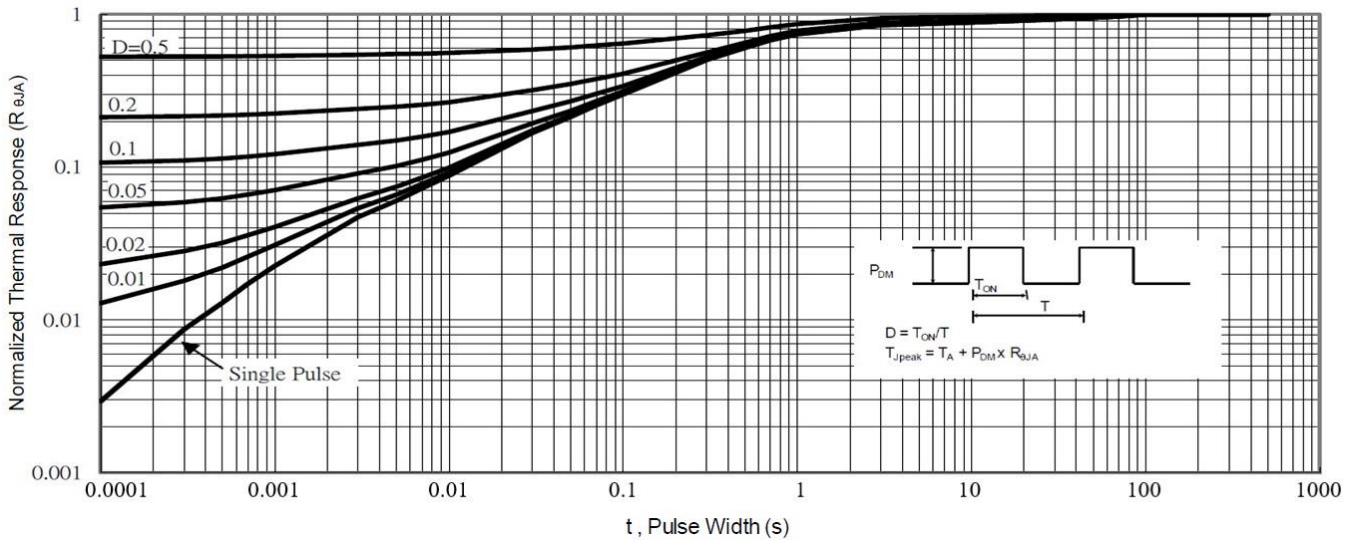


Fig.9 Normalized Maximum Transient Thermal Impedance

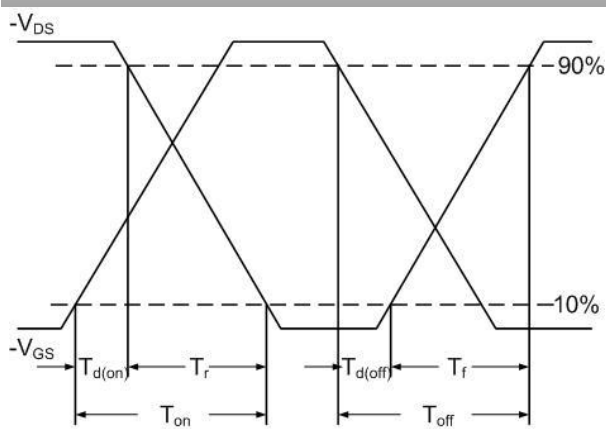


Fig.10 Switching Time Waveform

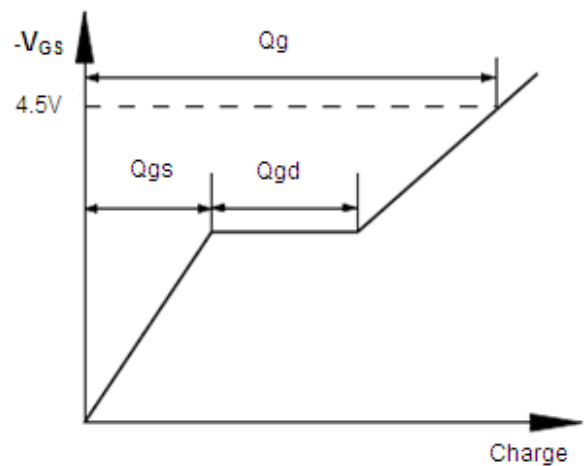


Fig.11 Gate Charge Waveform