

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

SSF7500 provides the designers with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. SOT-323 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

FEATURES

- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

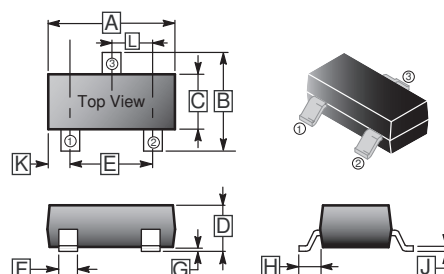
MARKING

C00

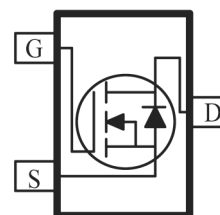
PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---------|-----|-------------|
| SOT-323 | 3K | 7 inch |

SOT-323



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 1.80 | 2.20 | G | 0.1 REF. | |
| B | 1.80 | 2.55 | H | 0.525 REF. | |
| C | 1.1 | 1.4 | J | 0.05 | 0.25 |
| D | 0.80 | 1.15 | K | 0.8 TYP. | |
| E | 1.20 | 1.40 | L | 0.65 TYP. | |
| F | 0.15 | 0.50 | | | |



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Rating | Unit | |
|--|-----------------|---------------------------------|-----------------------------|----------------------|
| Drain-Source Voltage | V_{DS} | 30 | V | |
| Gate-Source Voltage | V_{GS} | ± 12 | V | |
| Continuous Drain Current | I_D | 1.9 | A | |
| Pulsed Drain Current | I_{DM} | 7.6 | A | |
| Power Dissipation | P_D | $T_A=25^\circ\text{C}$ | 350 | mW |
| | | Derate above 25°C | 2.8 | mW/ $^\circ\text{C}$ |
| Typical Thermal Resistance from Junction to Ambient ³ | $R_{\theta JA}$ | 357 | $^\circ\text{C} / \text{W}$ | |
| Operating Junction and Storage Temperature | T_J, T_{STG} | -55~150 | $^\circ\text{C}$ | |

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|---|---------------------|------|------|------|------|--|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | B _{VDS} | 30 | - | - | V | V _{GS} =0, I _D =250μA |
| Gate-Threshold Voltage | V _{GS(th)} | 0.4 | 0.72 | 1.2 | V | V _{DS} =V _{GS} , I _D =250μA |
| Gate-Source Leakage Current | I _{GSS} | - | ±10 | ±100 | nA | V _{DS} =0V, V _{GS} = ±12V |
| Drain-Source Leakage Current | I _{DSS} | - | 0.01 | 1 | μA | V _{DS} =30V, V _{GS} =0 |
| Static Drain-Source On-Resistance | R _{DS(ON)} | - | 58 | 70 | mΩ | V _{GS} =10V, I _D =1.9A |
| | | - | 61 | 75 | | V _{GS} =4.5V, I _D =1.6A |
| | | - | 69 | 85 | | V _{GS} =2.5V, I _D =1.2A |
| | | - | 80 | 110 | | V _{GS} =1.8V, I _D =0.7A |
| Dynamic | | | | | | |
| Total Gate Charge ^{1,2} | Q _g | - | 4.8 | - | nC | V _{DS} =15V V _{GS} =10V I _D =1.9A |
| Gate-Source Charge ^{1,2} | Q _{gs} | - | 0.5 | - | | |
| Gate-Drain Change ^{1,2} | Q _{gd} | - | 0.7 | - | | |
| Input Capacitance | C _{iss} | - | 447 | - | pF | V _{DS} =15V V _{GS} =0 f=1MHz |
| Output Capacitance | C _{oss} | - | 34 | - | | |
| Reverse Transfer Capacitance | C _{rss} | - | 22 | - | | |
| Switching ^{1,2} | | | | | | |
| Turn-On Delay Time | T _{d(on)} | - | 2 | - | nS | V _{DD} =15V V _{GS} =10V R _G =6Ω I _D =1.9A |
| Rise Time | T _r | - | 38 | - | | |
| Turn-Off Delay Time | T _{d(off)} | - | 812 | - | | |
| Fall Time | T _f | - | 64 | - | | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I _S | - | - | 0.5 | V | |
| Diode Forward Voltage | V _{SD} | - | 0.77 | 1.2 | V | I _S =1A, V _{GS} =0 |

Notes:

1. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. Essentially independent of operating temperature typical characteristics.
3. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz square pad of copper.
4. The maximum current rating is limited by the package.

CHARACTERISTIC CURVES

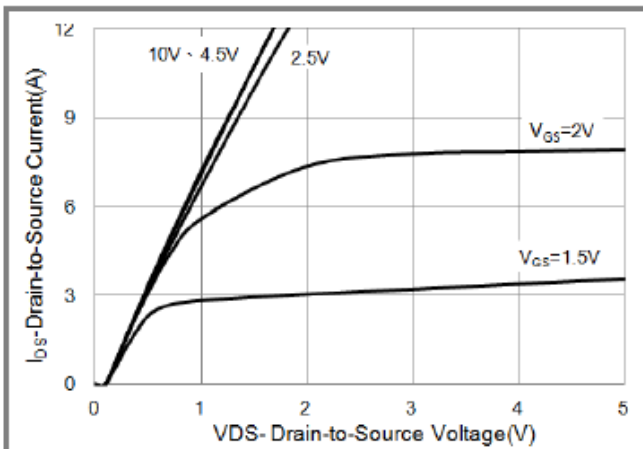


Fig.1 On-Region Characteristics

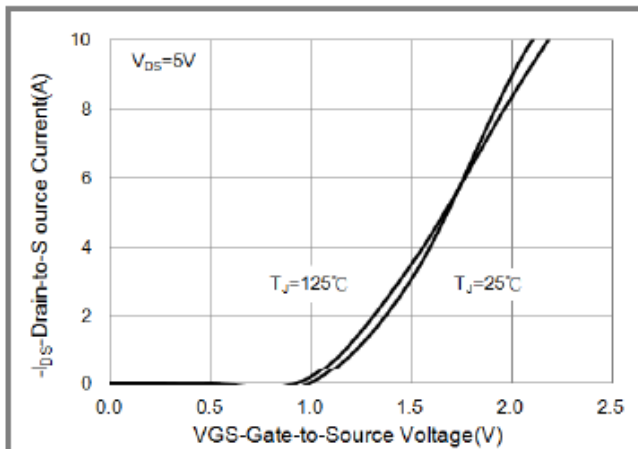


Fig.2 Transfer Characteristics

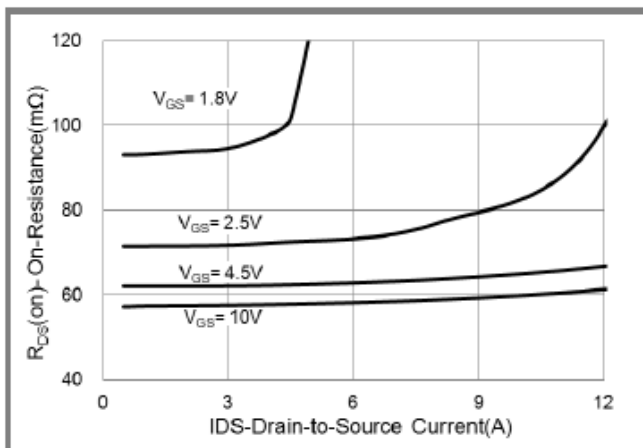


Fig.3 On-Resistance vs. Drain Current

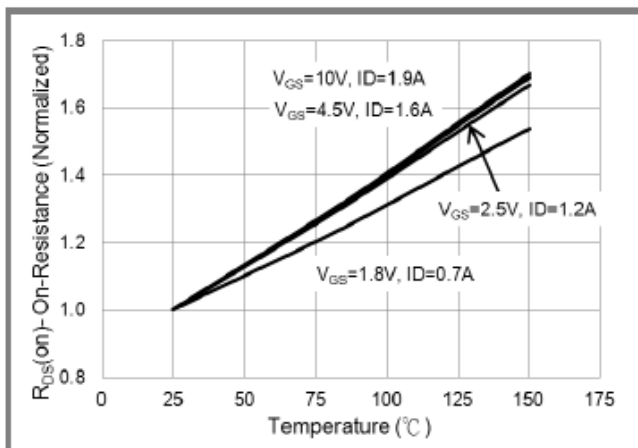


Fig.4 On-Resistance vs. Junction temperature

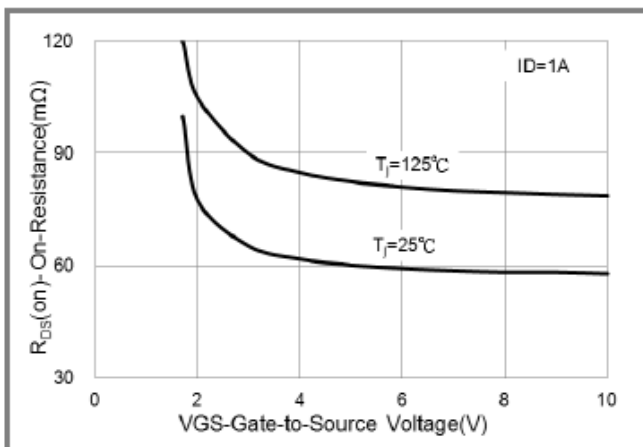


Fig.5 On-Resistance Variation with VGS.

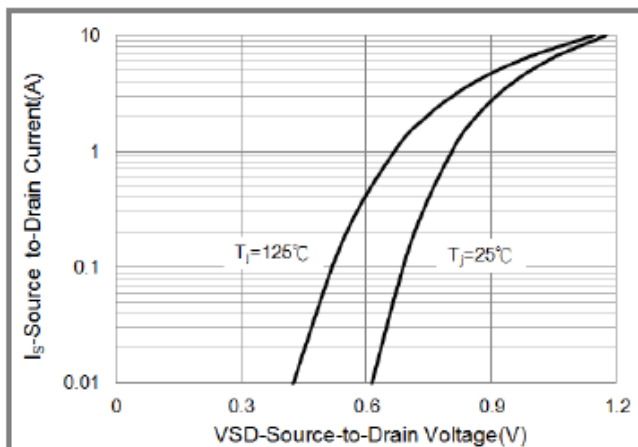


Fig.6 Body Diode Characteristics

CHARACTERISTIC CURVES

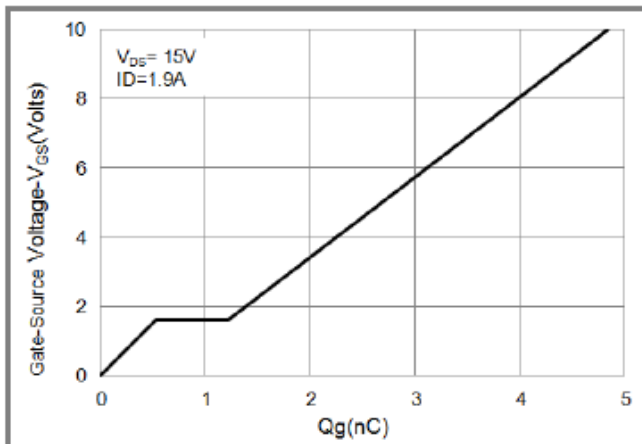


Fig.7 Gate-Charge Characteristics

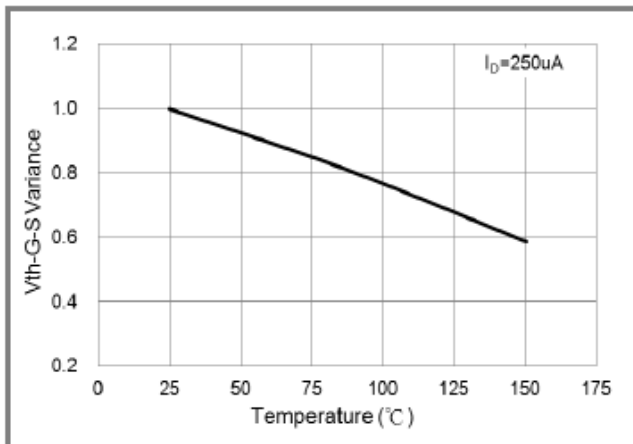


Fig.8 Threshold Voltage Variation with Temperature.

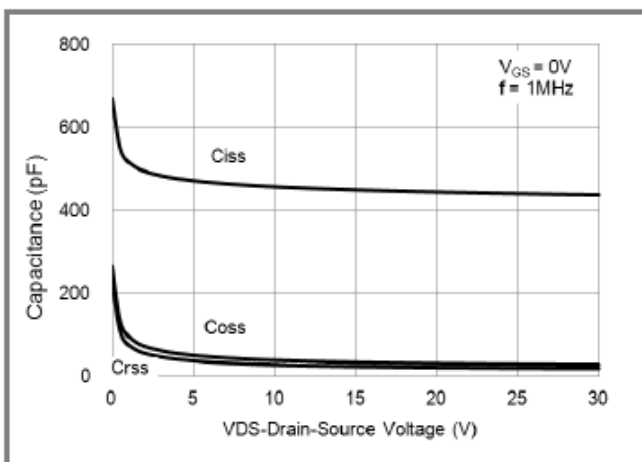


Fig.9 Capacitance vs. Drain-Source Voltage.