Elektronische Bauelemente

# SSF318NE-C

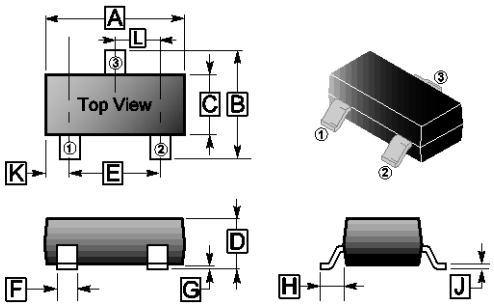
**0.25A, 60V, $R_{DS(ON)}$ 1.6Ω**
**N-Ch Enhancement Mode Power MOSFET**

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

## FEATURES

- 60V/250mA
  $R_{DS(ON)}$≦1.6Ω@$V_{GS}$=10V
  $R_{DS(ON)}$≦2.2Ω@$V_{GS}$=4.5V
  $R_{DS(ON)}$≦5Ω@$V_{GS}$=2.5V
- Reliable and Rugged
- Green Device Available
- ESD Protection

**SOT-323**




| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 1.80 | 2.20 | G | 0.10 REF. | |
| B | 1.80 | 2.55 | H | 0.525 REF. | |
| C | 1.10 | 1.40 | J | 0.05 | 0.25 |
| D | 0.80 | 1.15 | K | 0.35 REF. | |
| E | 1.20 | 2.00 | L | 0.65 TYP. | |
| F | 0.15 | 0.50 | | | |

## MARKING

**318**

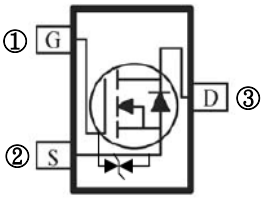
## PACKAGE INFORMATION

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

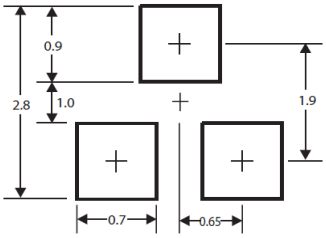
## ORDER INFORMATION

| Part Number | Type |
|---|---|
| SSF318NE-C | Lead (Pb)-free and Halogen-free |

**Top View**




**Mounting Pad Layout**




*Dimensions in millimeters

## MAXIMUM RATINGS ($T_A$=25°C unless otherwise specified)

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 60 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current @$V_{GS}$=10V [1] | $T_A$=25°C | $I_D$ | 0.25 | A |
| | $T_A$=85°C | | 0.18 | |
| Pulsed Drain Current [3] | | $I_{DM}$ | 1 | A |
| Power Dissipation [1] | $T_A$=25°C | $P_D$ | 340 | mW |
| Power Dissipation [2] | $T_A$=25°C | | 200 | |
| Operating Junction & Storage Temperature Range | | $T_J$, $T_{STG}$ | -55~150 | °C |
| **Thermal Resistance Ratings** | | | | |
| Thermal Resistance Junction-Ambient [1] | | $R_{\theta JA}$ | 367 | °C/W |
| Thermal Resistance Junction-Ambient [2] | | | 625 | |

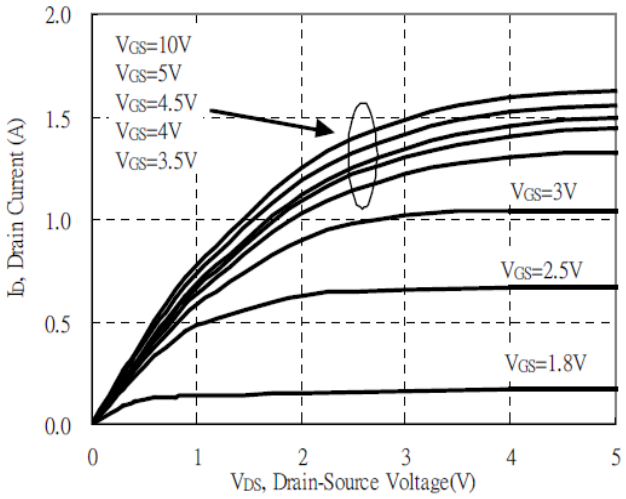
## ELECTRICAL CHARACTERISTICS ($T_J$=25°C unless otherwise specified)

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | | $BV_{DSS}$ | 60 | - | - | V | $V_{GS}$=0, $I_D$=250μA |
| Gate Threshold Voltage | | $V_{GS(th)}$ | 0.5 | - | 1.5 | V | $V_{DS}$=10V, $I_D$=1mA |
| Gate-Body Leakage Current | | $I_{GSS}$ | - | - | ±10 | μA | $V_{GS}$=±16V |
| Zero Gate Voltage Drain Current | $T_J$=25°C | $I_{DSS}$ | - | - | 1 | μA | $V_{DS}$=50V, $V_{GS}$=0 |
| | $T_J$=70°C | | - | - | 10 | | $V_{DS}$=40V, $V_{GS}$=0 |
| Static Drain-Source On-Resistance [4] | | $R_{DS(ON)}$ | - | - | 1.6 | Ω | $V_{GS}$=10V, $I_D$=220mA |
| | | | - | - | 2.2 | | $V_{GS}$=4.5V, $I_D$=220mA |
| | | | - | - | 5 | | $V_{GS}$=2.5V, $I_D$=100mA |
| Total Gate Charge | | $Q_g$ | - | 0.69 | - | nC | $I_{DS}$=100mA<br>$V_{DS}$=30V<br>$V_{GS}$=4.5V |
| Gate-Source Charge | | $Q_{gs}$ | - | 0.3 | - | | |
| Gate-Drain (“Miller”) Change | | $Q_{gd}$ | - | 0.18 | - | | |
| Turn-On Delay Time | | $T_{d(on)}$ | - | 7 | - | nS | $V_{DD}$=30V<br>$I_{DS}$=100mA<br>$V_{GS}$=4.5V<br>$R_{GEN}$=10Ω |
| Rise Time | | $T_r$ | - | 6.6 | - | | |
| Turn-Off Delay Time | | $T_{d(off)}$ | - | 20 | - | | |
| Fall Time | | $T_f$ | - | 80 | - | | |
| Input Capacitance | | $C_{iss}$ | - | 27 | - | pF | $V_{GS}$=0V<br>$V_{DS}$=25V<br>f=1MHz |
| Output Capacitance | | $C_{oss}$ | - | 13 | - | | |
| Reverse Transfer Capacitance | | $C_{rss}$ | - | 6 | - | | |
| **Source-Drain Diode** | | | | | | | |
| Diode Forward Voltage [4] | | $V_{SD}$ | - | - | 1.2 | V | $I_S$=200mA, $V_{GS}$=0V |

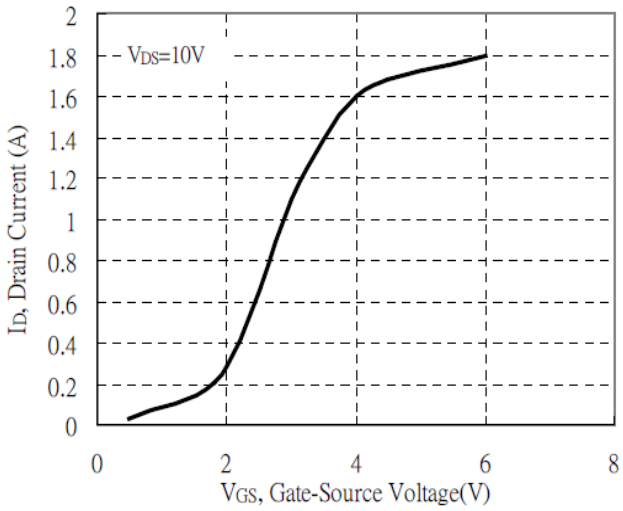
Notes:
1. Surface mounted on a 1 inch$^2$ FR-4 board with 2oz copper, t≤10sec.
2. Surface mounted on FR-4 board.
3. Pulse width limited by maximum junction temperature. Pw≤300μs, Duty cycle≤2%.
4. The data tested by pulsed, pulse width≤ 300us, duty cycle≤2%

## TYPICAL CHARACTERISTICS

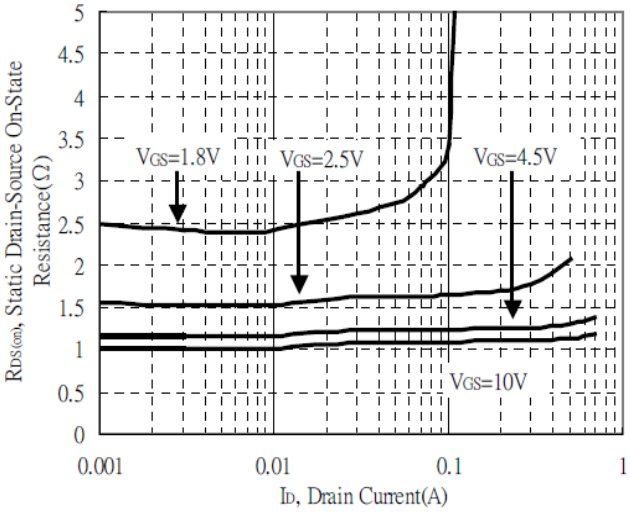
Typical Output Characteristics



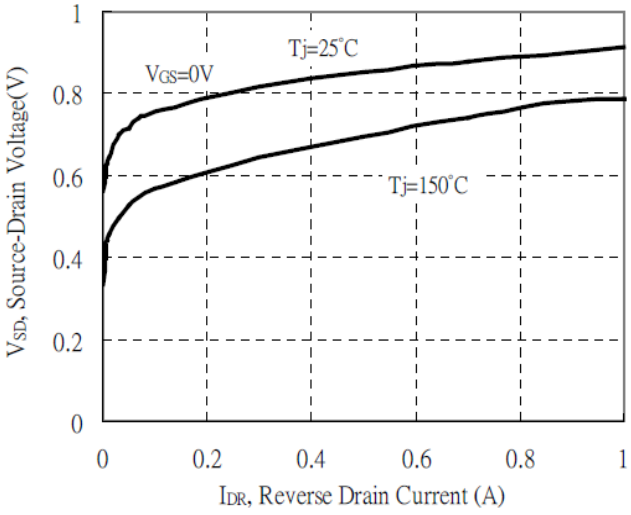

Typical Transfer Characteristics



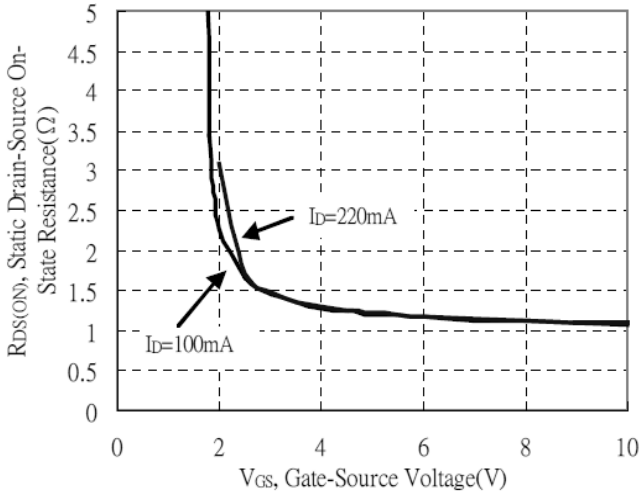

Static Drain-Source On-State resistance vs Drain Current



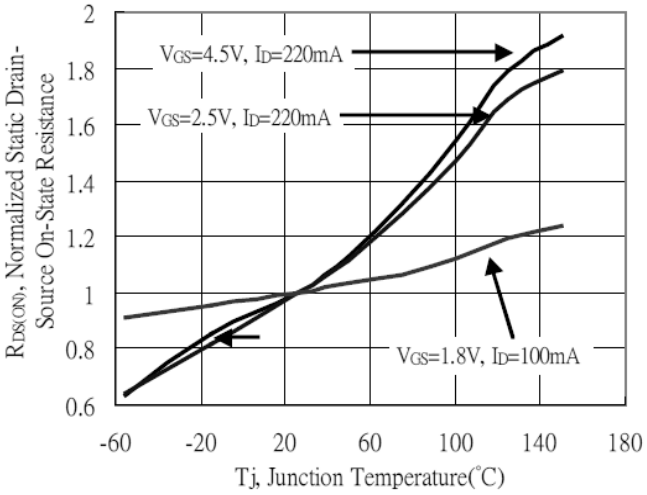

Reverse Drain Current vs Source-Drain Voltage




Static Drain-Source On-State Resistance vs Gate-Source Voltage

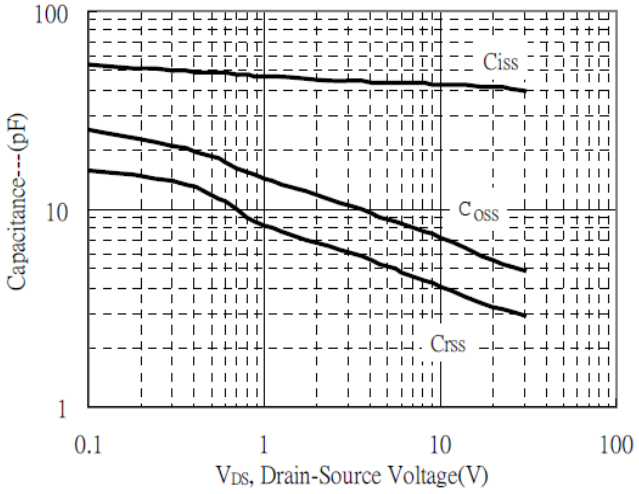



Drain-Source On-State Resistance vs Junction Tempearture

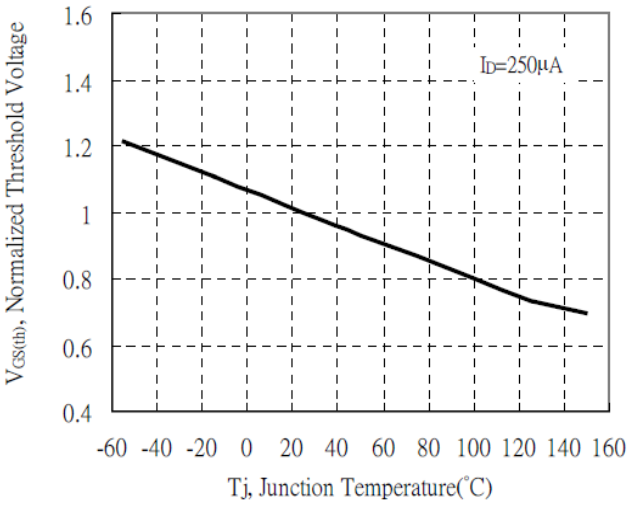


## TYPICAL CHARACTERISTICS

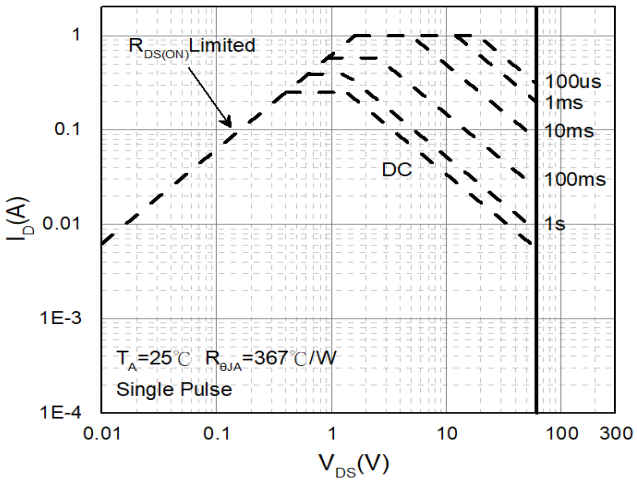
Capacitance vs Drain-to-Source Voltage



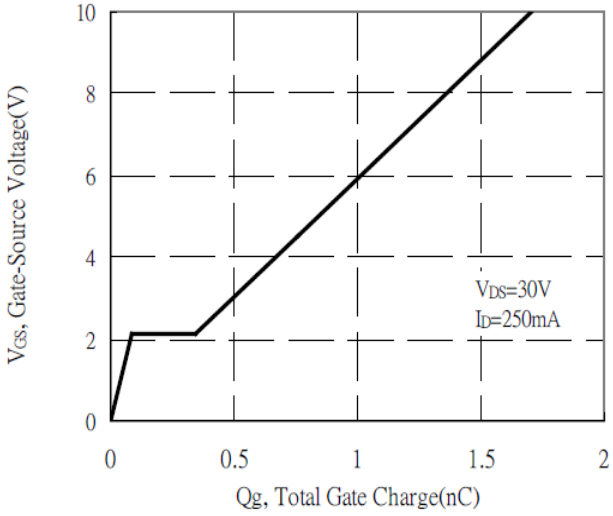

Threshold Voltage vs Junction Tempearture




Maximum Safe Operating Area




Gate Charge Characteristics




Transient Thermal Response Curves