Elektronische Bauelemente

# SSPS7338N

**19A, 30V, $R_{DS(ON)}$ 6.9 mΩ**
**N-Ch Enhancement Mode Power MOSFET**

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

## DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation.

## FEATURES

- Low $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

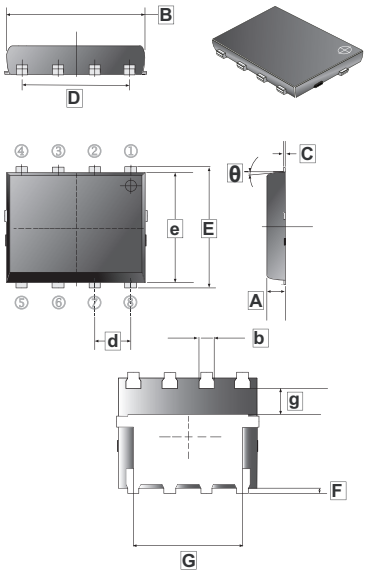
## APPLICATION

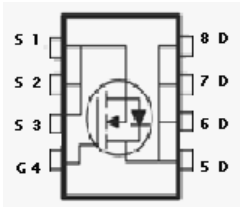
- Industrial D/C/DC conversion circuits
- White LED boost converters
- Automotive systems

## PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---|---|---|
| DFN3x3-8PP | 3K | 13 inch |

**DFN3x3-8PP**




| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 0.70 | 0.90 | θ | 0° | 12° |
| B | 3.00BSC | | b | 0.20 | 0.40 |
| C | 0.10 | 0.25 | d | 0.65BSC | |
| D | 1.80 | 2.3 | e | 3.00BSC | |
| E | 3.2BSC | | g | 0.70(TYP.) | |
| F | 0.01 | 0.02 | | | |
| G | 2.35BSC | | | | |

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

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current [1] | $T_A$=25°C | $I_D$ | 19 | A |
| | $T_A$=70°C | | 16 | A |
| Pulsed Drain Current [2] | | $I_{DM}$ | 80 | A |
| Continuous Source Current (Diode Conduction) [1] | | $I_S$ | 5.1 | A |
| Power Dissipation [1] | $T_A$=25°C | $P_D$ | 3.5 | W |
| | $T_A$=70°C | | 2 | W |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55~150 | °C |
| **Thermal Resistance Ratings** | | | | |
| Maximum Thermal Resistance from Junction to Ambient [1] | t≦10 sec | $R_{\theta JA}$ | 35 | °C / W |
| | Steady State | | 81 | °C / W |

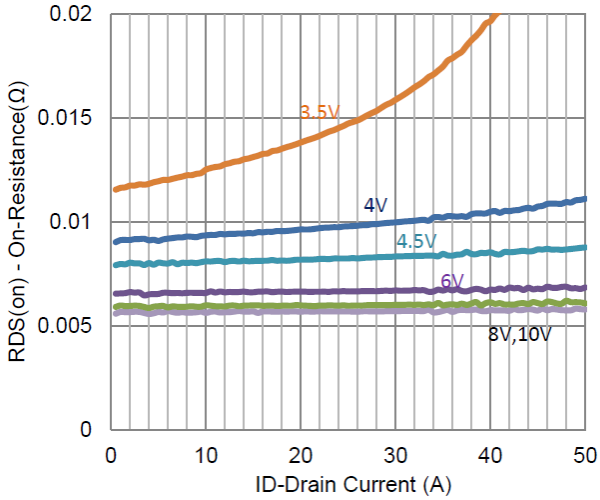
Notes:
1. The surface of the device is mounted on a 1" x 1" FR4 board.
2. The pulse width is limited by the maximum junction temperature.

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

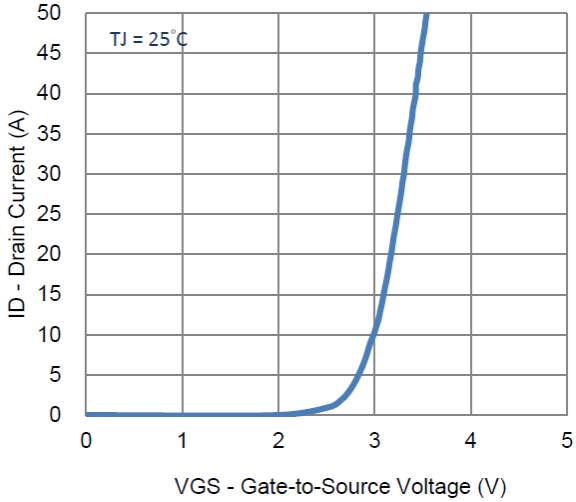
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|---|---|---|---|---|---|---|
| **Static** [1] | | | | | | |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | 1 | - | - | V | $V_{DS}$=$V_{GS}$, $I_D$=250μA |
| Gate-Body Leakage Current | $I_{GSS}$ | - | - | ±100 | nA | $V_{DS}$=0V, $V_{GS}$= ±20V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | - | - | 1 | μA | $V_{DS}$=24V, $V_{GS}$=0 |
| | | - | - | 25 | | $V_{DS}$=24V, $V_{GS}$=0, $T_J$=55°C |
| On-State Drain Current | $I_{D(on)}$ | 40 | - | - | A | $V_{DS}$=5V, $V_{GS}$=10V |
| Drain-Source On-Resistance | $R_{DS(ON)}$ | - | - | 6.9 | mΩ | $V_{GS}$=10V, $I_D$=17.6A |
| | | - | - | 9.8 | | $V_{GS}$=4.5V, $I_D$=12.4A |
| Forward Transconductance | $g_{fs}$ | - | 30 | - | S | $V_{DS}$=15V, $I_D$=17.6A |
| Diode Forward Voltage | $V_{SD}$ | - | 0.72 | - | V | $I_S$=2.6A, $V_{GS}$=0 |
| **Dynamic** [1] | | | | | | |
| Total Gate Charge | $Q_g$ | - | 20 | - | nC | $V_{DS}$=15V<br>$V_{GS}$=4.5V<br>$I_D$=17.6A |
| Gate-Source Charge | $Q_{gs}$ | - | 7.1 | - | | |
| Gate-Drain Charge | $Q_{gd}$ | - | 9.2 | - | | |
| Input Capacitance | $C_{iss}$ | - | 1835 | - | pF | $V_{DS}$=15V<br>$V_{GS}$=0<br>f=1MHz |
| Output Capacitance | $C_{oss}$ | - | 315 | - | | |
| Reverse Transfer Capacitance | $C_{rss}$ | - | 303 | - | | |
| Turn-On Delay Time | $T_{d(on)}$ | - | 4 | - | nS | $V_{DS}$=15V<br>$V_{GEN}$=10V<br>$I_D$=17.6A<br>$R_L$=0.9Ω<br>$R_{GEN}$=6Ω |
| Rise Time | $T_r$ | - | 66 | - | | |
| Turn-Off Delay Time | $T_{d(off)}$ | - | 53 | - | | |
| Fall Time | $T_f$ | - | 30 | - | | |

Notes:
1. Pulse test：PW≦300μs, duty cycle≦2%.

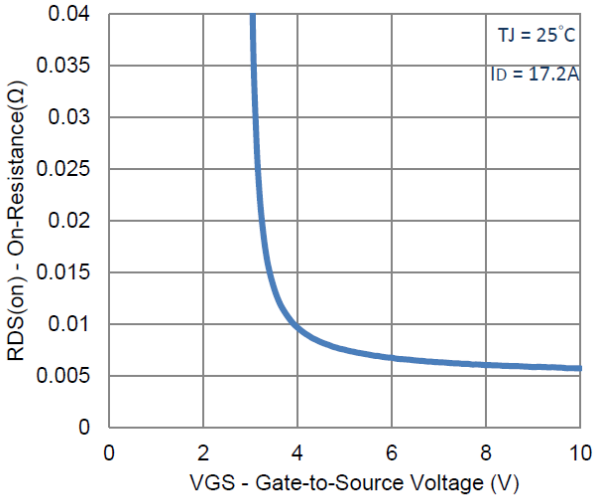
## CHARACTERISTIC CURVE



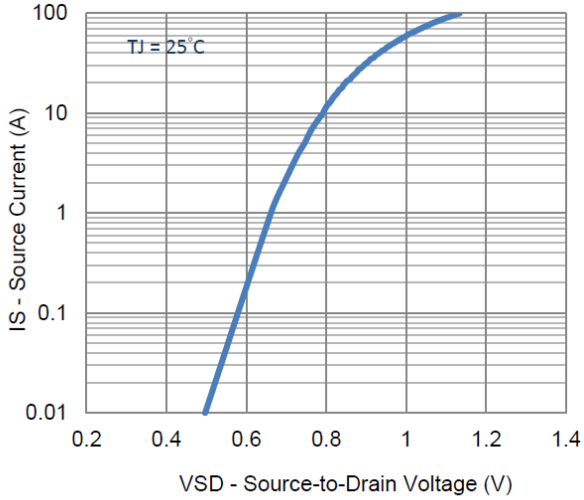

**1. On-Resistance vs. Drain Current**



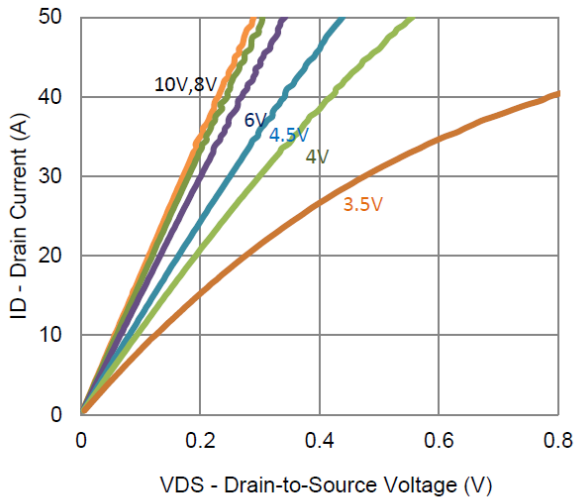

**2. Transfer Characteristics**



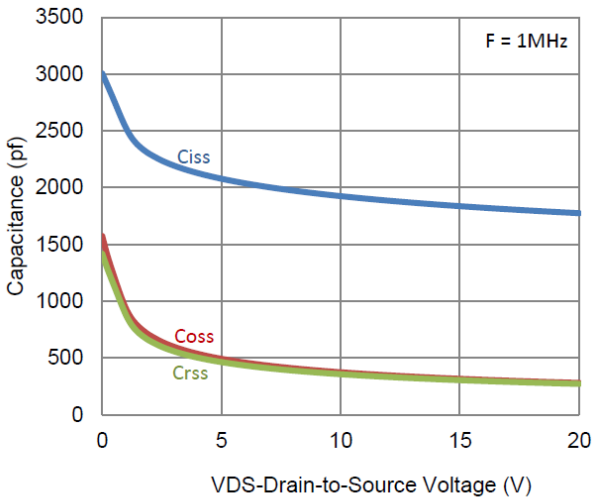

**3. On-Resistance vs. Gate-to-Source Voltage**




**4. Drain-to-Source Forward Voltage**

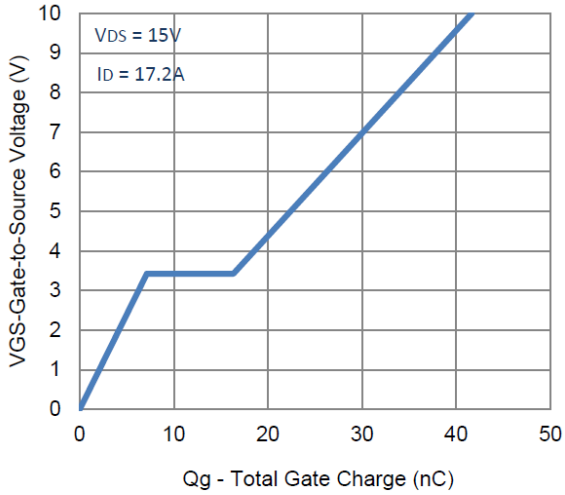



**5. Output Characteristics**

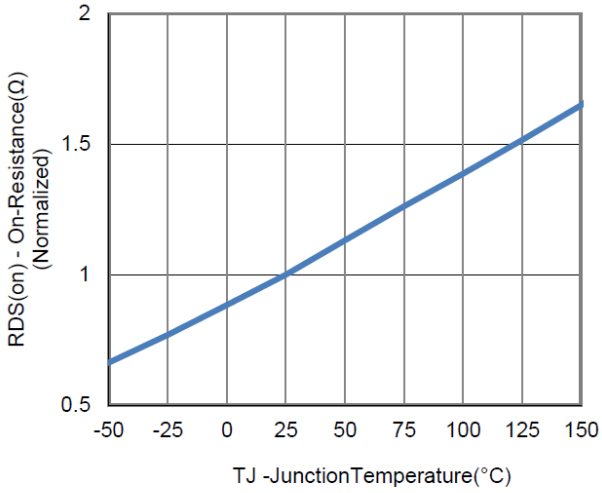



**6. Capacitance**

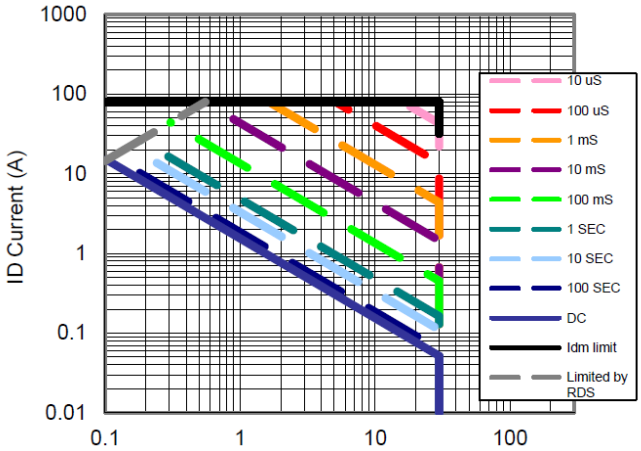
## CHARACTERISTIC CURVE



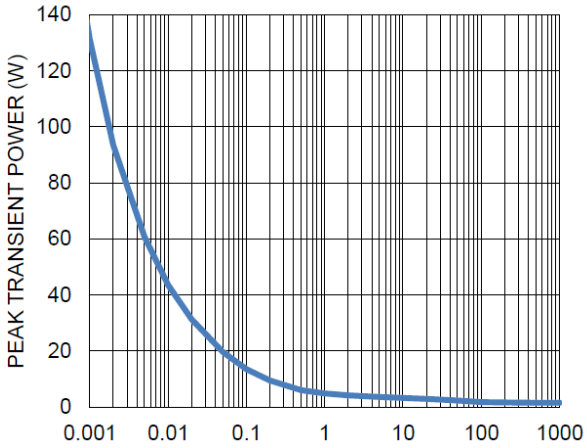

**7. Gate Charge**



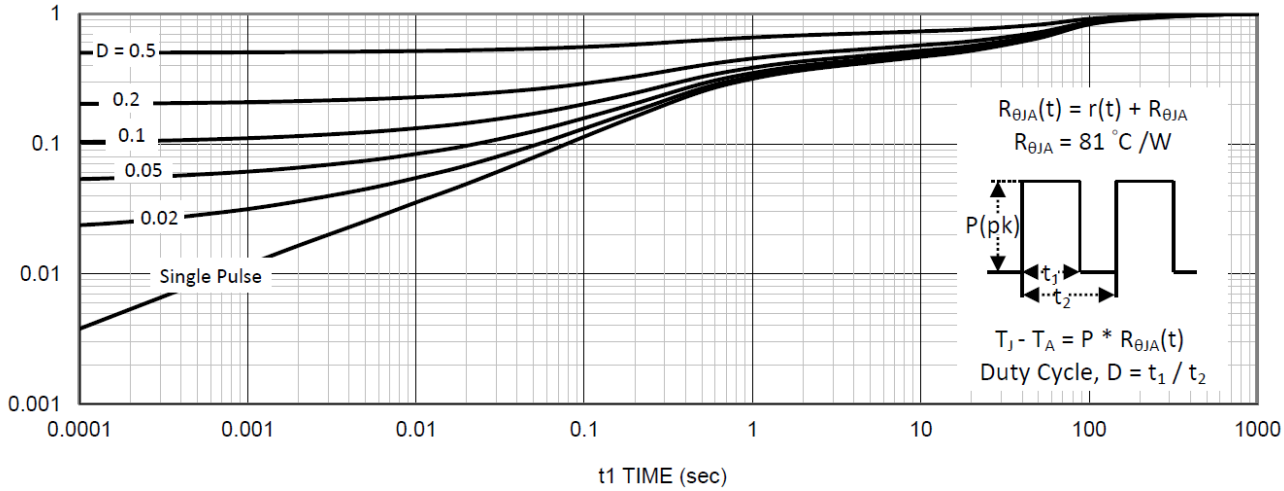

**8. Normalized On-Resistance Vs Junction Temperature**




**9. Safe Operating Area**




**10. Single Pulse Maximum Power Dissipation**




**11. Normalized Thermal Transient Junction to Ambient**