Elektronische Bauelemente

# SSPR66N06-C

**66A, 60V, $R_{DS(ON)}$ 6mΩ**

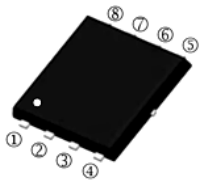
**N-Channel Enhancement Mode Power MOSFET**

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

## DESCRIPTION

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching application.

**SPR-8PP**




## FEATURES

- Improved dv/dt capability
- Fast switching
- Green Device Available

## APPLICATION

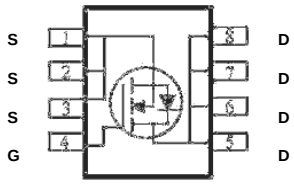
- Networking
- Load Switch
- LED applications

## MARKING

**NG6P0**

## PACKAGE INFORMATION

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




## ORDER INFORMATION

| Part Number | Type |
|---|---|
| SSPR66N06-C | Lead (Pb)-free and Halogen-free |

## ABSOLUTE MAXIMUM RATINGS ($T_C$=25℃ unless otherwise specified)

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 60 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $T_C$=25℃ | $I_D$ | 66 | A |
| Pulsed Drain Current [1] | | $I_{DM}$ | 90 | A |
| Power Dissipation | $T_C$=25℃ | $P_D$ | 31.25 | W |
| Operating Junction & Storage Temperature Range | | $T_J$, $T_{STG}$ | -55~150 | ℃ |
| **Thermal Resistance Ratings** | | | | |
| Thermal Resistance Junction-Ambient | | $R_{\theta JA}$ | 50 | ℃/W |
| Thermal Resistance Junction-Case | | $R_{\theta JC}$ | 4 | |

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | 60 | - | - | V | $V_{GS}$=0V, $I_D$=250μA |
| Gate-Threshold Voltage | $V_{GS(th)}$ | 1.0 | - | 3 | V | $V_{DS}$=$V_{GS}$, $I_D$=250μA |
| Gate-Source Leakage Current | $I_{GSS}$ | - | - | ±100 | nA | $V_{GS}$=±20V, $V_{DS}$=0V |
| Drain-Source Leakage Current | $I_{DSS}$ | - | - | 1 | μA | $V_{DS}$=48V, $V_{GS}$=0V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | - | - | 6 | mΩ | $V_{GS}$=10V, $I_D$=15A |
| | | - | - | 10 | | $V_{GS}$=4.5V, $I_D$=8A |
| Gate Resistance | $R_g$ | - | 2.1 | - | Ω | $V_{GS}$=0V, $V_{DS}$=0V, f=1MHz |
| Forward Transconductance | gfs | - | 31 | - | S | $V_{DS}$=5V, $I_D$=20A |
| Total Gate Charge | $Q_g$ | - | 37.4 | - | nC | $V_{DS}$=30V<br>$V_{GS}$=10V<br>$I_D$=20A |
| Gate-Source Charge | $Q_{gs}$ | - | 6.5 | - | | |
| Gate-Drain Change | $Q_{gd}$ | - | 10 | - | | |
| Turn-on Delay Time | $T_{d(on)}$ | - | 9.5 | - | nS | $V_{DS}$=30V<br>$V_{GS}$=10V<br>$I_D$=1A<br>$R_G$=3Ω |
| Rise Time | $T_r$ | - | 26 | - | | |
| Turn-off Delay Time | $T_{d(off)}$ | - | 29 | - | | |
| Fall Time | $T_f$ | - | 19.5 | - | | |
| Input Capacitance | $C_{iss}$ | - | 2083 | - | pF | $V_{DS}$=30V<br>$V_{GS}$=0V<br>f=1MHz |
| Output Capacitance | $C_{oss}$ | - | 793 | - | | |
| Reverse Transfer Capacitance | $C_{rss}$ | - | 16.5 | - | | |
| **Source-Drain Diode** | | | | | | |
| Reverse Recovery Time | $t_{rr}$ | - | 40 | - | A | $I_F$=20A , $V_R$=30V ,<br>dI/dt=100A/us |
| Reverse Recovery Charge | $Q_{rr}$ | - | 48.7 | - | | |
| Diode Forward Voltage | $V_{SD}$ | - | - | 1.1 | V | $I_S$=1A, $V_{GS}$=0V |

Notes:

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Guaranteed by design, not subject to production testing.

## TYPICAL CHARACTERISTICS

FIG. 1-$I_D$ vs $T_C$

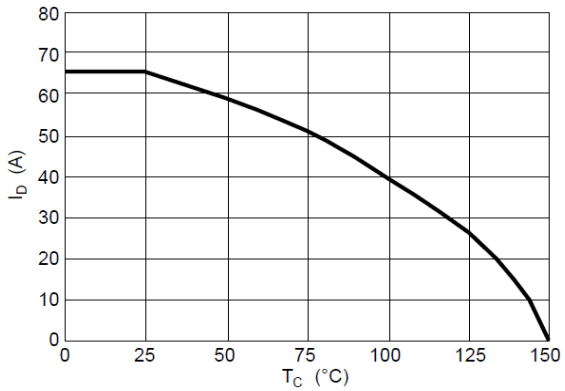



FIG. 2-Normalized $V_{GS(th)}$ vs $T_J$

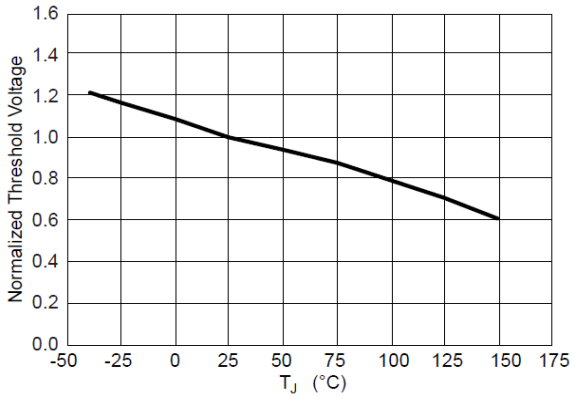



FIG. 3-Normalized $R_{DS(ON)}$ vs $T_J$

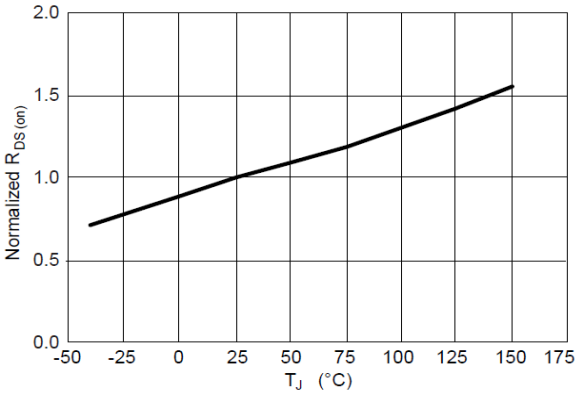



FIG. 4-Gate Charge Characteristics

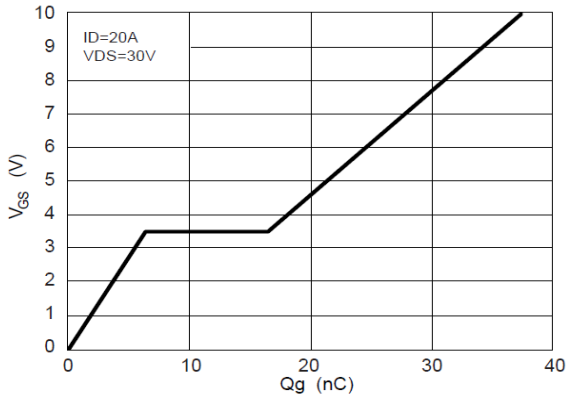



FIG. 5-$R_{DS(ON)}$ vs $I_D$

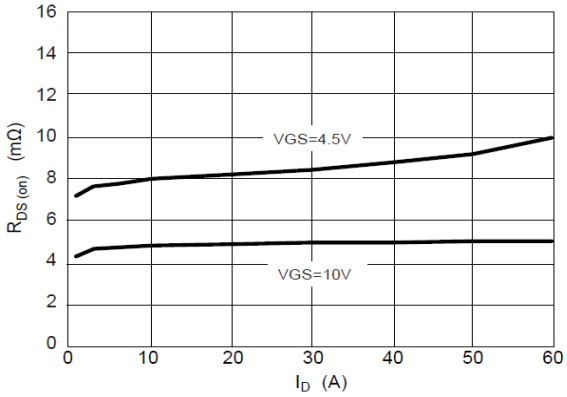



FIG. 6-Power Dissipation

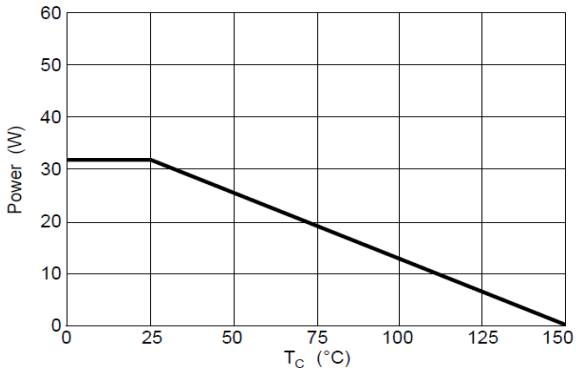



FIG. 7-Switching Time Waveform

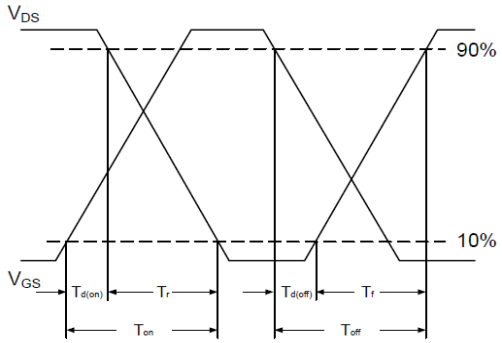
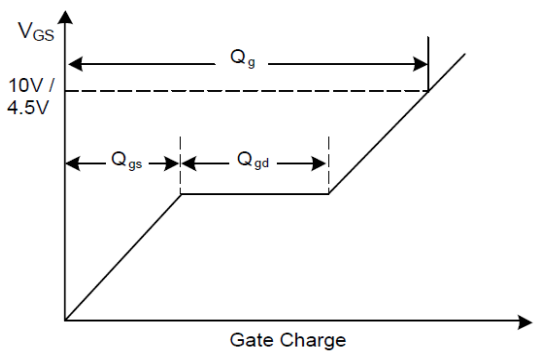
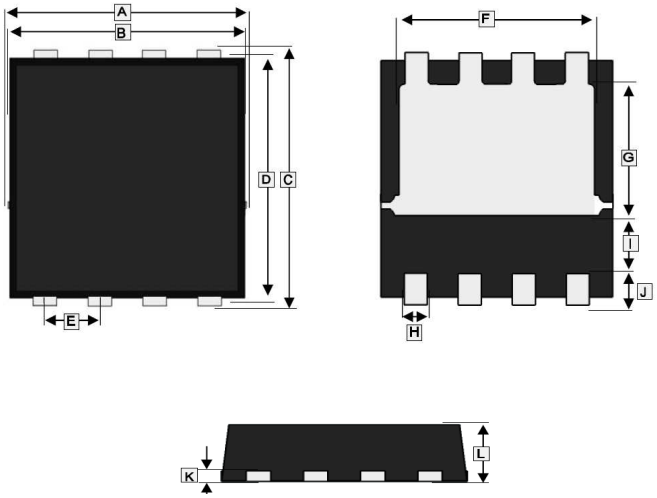



FIG. 8-Gate Charge Waveform



## PACKAGE OUTLINE DIMENSIONS

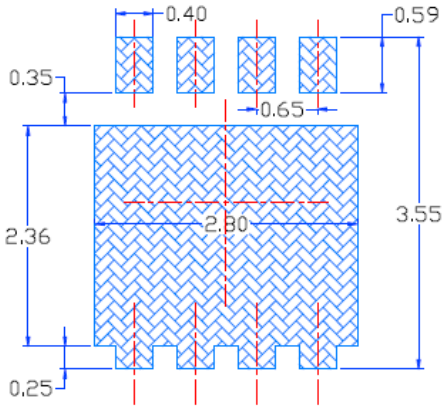
**SPR-8PP**




| REF. | Millimeter | |
|---|---|---|
| | Min. | Max. |
| A | 3.00 | 3.45 |
| B | 3.00 | 3.25 |
| C | 3.05 | 3.50 |
| D | 2.90 | 3.20 |
| E | 0.65 BSC. | |
| F | 2.29 | 2.65 |
| G | 1.35 | 1.98 |
| H | 0.20 | 0.40 |
| I | 0.57 | 0.87 |
| J | 0.30 | 0.60 |
| K | 0.10 | 0.25 |
| L | 0.60 | 0.90 |

## MOUNTING PAD LAYOUT

**SPR-8PP**




*Dimensions in millimeters