Elektronische Bauelemente

# SSG09P03-C

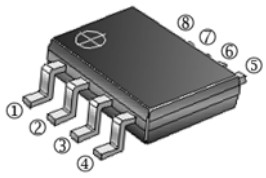
**-9A, -30V, $R_{DS(ON)}$ 20mΩ**
**P-Ch Enhancement Mode Power MOSFET**

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

## DESCRIPTION

These P-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 applications.

**SOP-8**




## FEATURES

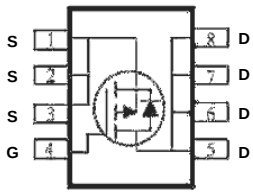
- Fast switching
- Green Device Available

## APPLICATIONS

- MB / VGA / Vcore
- LED Application
- Load Switch
- POL Applications

## PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---|---|---|
| SOP-8 | 3K | 13 inch |




## ORDER INFORMATION

| Part Number | Type |
|---|---|
| SSG09P03-C | Lead (Pb)-free and Halogen-free |

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

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | -30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $T_C$=25°C | $I_D$ | -9 | A |
| | $T_C$=100°C | | -5.1 | |
| Pulsed Drain Current [1] | | $I_{DM}$ | -32 | A |
| Power Dissipation | | $P_D$ | 2.1 | W |
| Thermal Resistance Junction-Ambient | | $R_{\theta JA}$ | 60 | ℃/W |
| Operating Junction & Storage Temperature Range | | $T_J$, $T_{STG}$ | -55~150 | ℃ |

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

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | | $BV_{DSS}$ | -30 | - | - | V | $V_{GS}$=0V, $I_D$= -250μA |
| Gate Threshold Voltage | | $V_{GS(th)}$ | -1 | - | -2.5 | V | $V_{DS}$=$V_{GS}$, $I_D$= -250μA |
| Gate-Source Leakage Current | | $I_{GSS}$ | - | - | ±100 | nA | $V_{DS}$=0V, $V_{GS}$= ±20V |
| Drain-Source Leakage Current | $T_J$=25°C | $I_{DSS}$ | - | - | -1 | μA | $V_{DS}$= -30V, $V_{GS}$=0V |
| | $T_J$=125°C | | - | - | -10 | | $V_{DS}$= -24V, $V_{GS}$=0V |
| Drain-Source On-Resistance | | $R_{DS(ON)}$ | - | - | 20 | mΩ | $V_{GS}$= -10V, $I_D$= -8A |
| | | | - | - | 32 | | $V_{GS}$= -4.5V, $I_D$= -5A |
| Forward Transconductance | | $g_{fs}$ | - | 6.8 | - | S | $V_{DS}$= -10V, $I_D$= -3A |
| Total Gate Charge [2 3] | | $Q_g$ | - | 11 | - | nC | $V_{DS}$= -15V<br>$V_{GS}$= -4.5V<br>$I_D$= -5A |
| Gate-Source Charge [2 3] | | $Q_{gs}$ | - | 3.4 | - | | |
| Gate-Drain Charge [2 3] | | $Q_{gd}$ | - | 4.2 | - | | |
| Turn-On Delay Time [2 3] | | $T_{d(on)}$ | - | 5.8 | - | nS | $V_{DD}$= -15V<br>$V_{GS}$= -10V<br>$I_D$= -1A<br>$R_G$=6Ω |
| Rise Time [2 3] | | $T_r$ | - | 18.8 | - | | |
| Turn-Off Delay Time [2 3] | | $T_{d(off)}$ | - | 46.9 | - | | |
| Fall Time [2 3] | | $T_f$ | - | 12.3 | - | | |
| Input Capacitance | | $C_{iss}$ | - | 1734 | - | pF | $V_{DS}$= -15V<br>$V_{GS}$=0V<br>f=1MHz |
| Output Capacitance | | $C_{oss}$ | - | 258 | - | | |
| Reverse Transfer Capacitance | | $C_{rss}$ | - | 224 | - | | |
| **Source-Drain Diode** | | | | | | | |
| Diode Forward Voltage | | $V_{SD}$ | - | - | -1 | V | $V_{GS}$=0V, $I_S$= -1A |
| Continuous Source Current | | $I_S$ | - | - | -8 | A | $V_G$=$V_D$=0V, Force Current |
| Pulsed Source Current | | $I_{SM}$ | - | - | -16 | | |

Notes:

1. Repetitive Rating：Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width≦300μs, duty cycle≦2%.
3. Essentially independent of operating temperature.

## CHARACTERISTICS CURVES

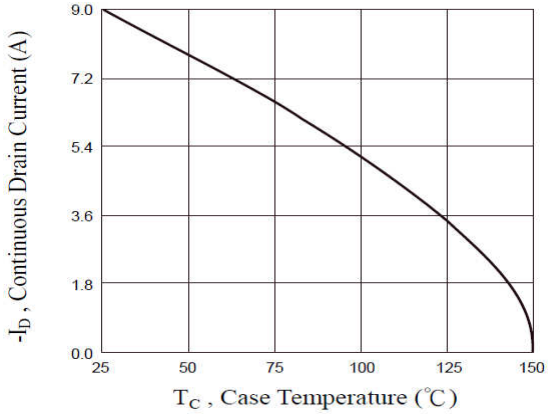



**Fig.1 Continuous Drain Current vs. $T_C$**

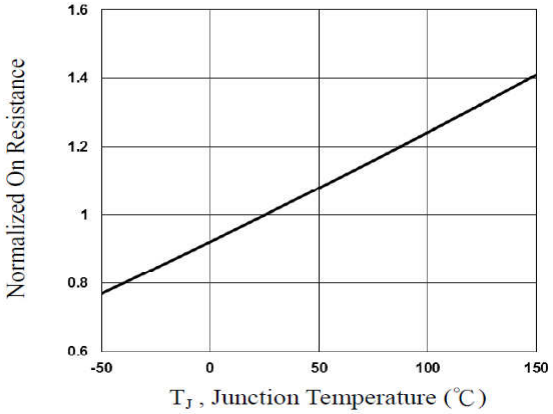



**Fig.2 Normalized RDSON vs. $T_J$**

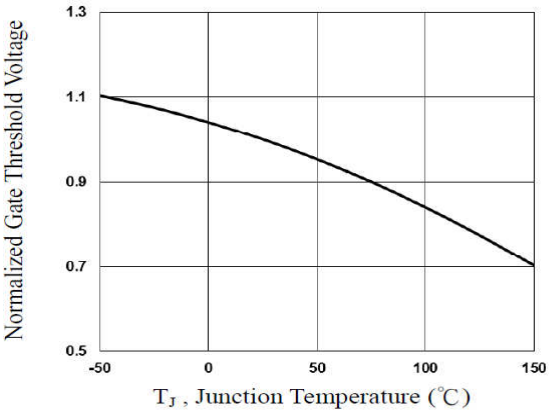



**Fig.3 Normalized $V_{th}$ vs. $T_J$**

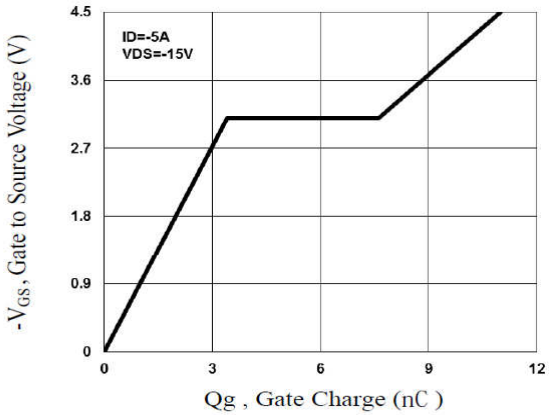



**Fig.4 Gate Charge Waveform**

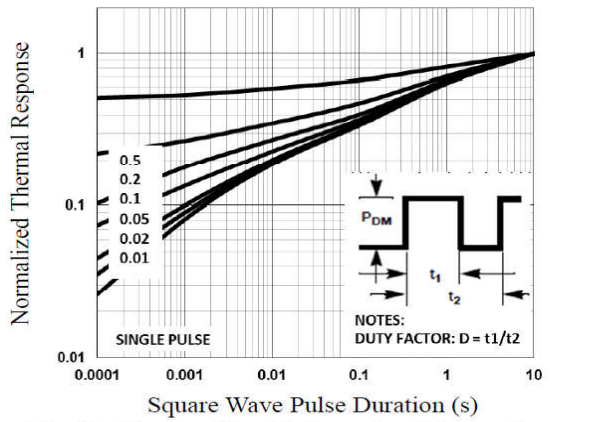



**Fig.5 Normalized Transient Impedance**

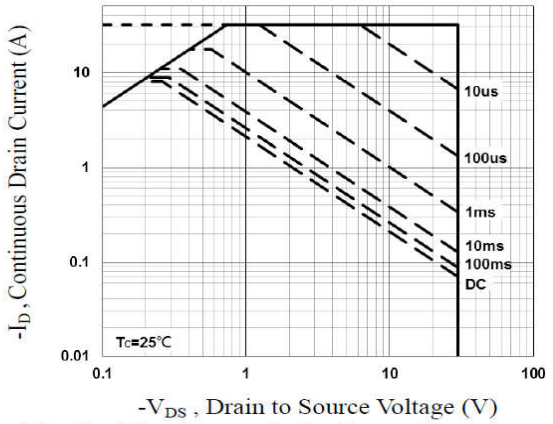



**Fig.6 Maximum Safe Operation Area**

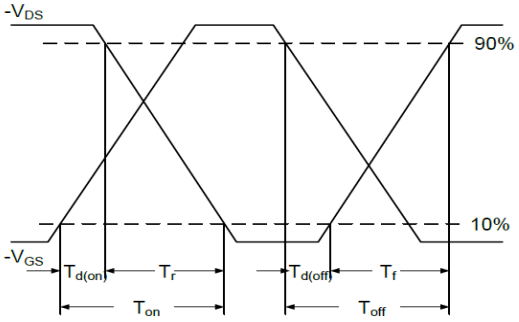



**Fig.7 Switching Time Waveform**

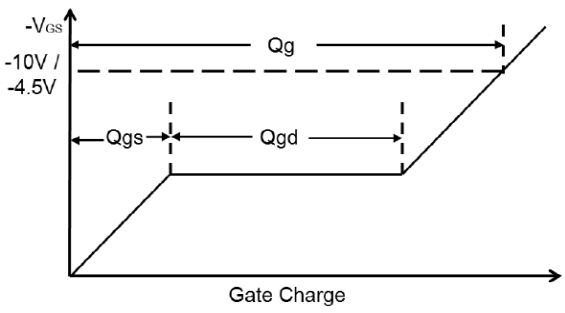
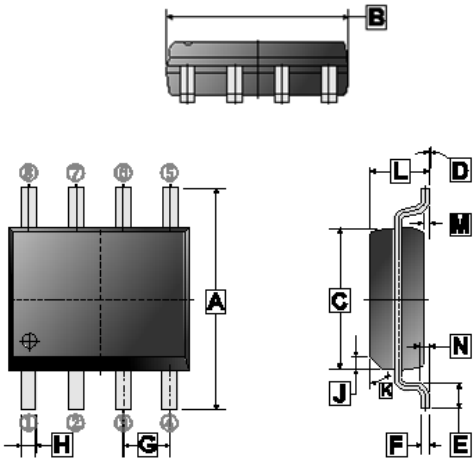



**Fig.8 Gate Charge Waveform**

## PACKAGE OUTLINE DIMENSIONS

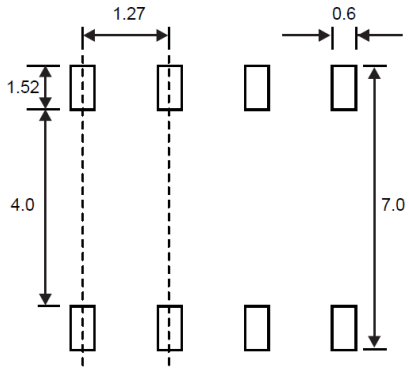
**SOP-8**




| REF. | Millimeter | |
|---|---|---|
| | Min. | Max. |
| A | 5.80 | 6.20 |
| B | 4.38 | 5.20 |
| C | 3.70 | 4.10 |
| D | 0° | 8° |
| E | 0.40 | 1.27 |
| F | 0.10 | 0.26 |
| G | 1.27 TYP. | |
| H | 0.30 | 0.51 |
| J | 0.375 REF. | |
| K | 45° REF. | |
| L | 1.30 | 1.80 |
| M | 0 | 0.25 |
| N | 0.25 REF. | |

## MOUNTING PAD LAYOUT

**SOP-8**




*Dimensions in millimeters