Elektronische Bauelemente

# SSG4990N

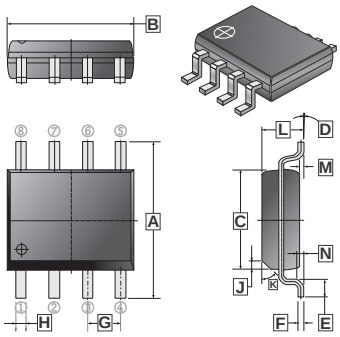
**10 A, 100 V, $R_{DS(ON)}$ 81 mΩ**
**Dual-N Channel Mode Power MOSFET**

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. Typical applications are DC-DC converters and power management In portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

**SOP-8**



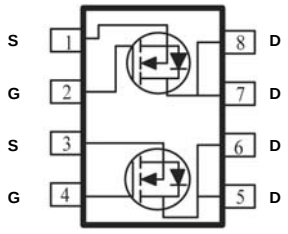

| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 5.80 | 6.20 | H | 0.35 | 0.49 |
| B | 4.80 | 5.00 | J | 0.375 REF. | |
| C | 3.80 | 4.00 | K | 45° | |
| D | 0° | 8° | L | 1.35 | 1.75 |
| E | 0.40 | 0.90 | M | 0.10 | 0.25 |
| F | 0.19 | 0.25 | N | 0.25 REF. | |
| G | 1.27 TYP. | | | | |

## FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SOP-8 saves board space.
- Fast switching speed.
- High performance trench technology.

## PACKAGE INFORMATION

| Package | MPQ | LeaderSize |
|---|---|---|
| SOP-8 | 2.5K | 13' inch |




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

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current [1] | $T_A$ = 25°C | $I_D$ @ | 10 | A |
| | $T_A$ = 70°C | | 8.2 | A |
| Pulsed Drain Current [2] | | $I_{DM}$ | 50 | A |
| Continuous Source Current (Diode Conduction) [1] | | $I_S$ | 2.3 | A |
| Total Power Dissipation [1] | $T_A$ = 25°C | $P_D$ @ | 2.1 | W |
| | $T_A$ = 70°C | | 1.3 | W |
| Operating Junction & Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 ~ 150 | °C |
| **Thermal Resistance Ratings** | | | | |
| Thermal Resistance Junction-Case (Max.) [1] | t≦5 sec | $R_{\theta JC}$ | 40 | °C / W |
| Thermal Resistance Junction-ambient (Max.) [1] | t≦5 sec | $R_{\theta JA}$ | 60 | °C / W |

Notes:

1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Teat Conditions |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | 100 | - | - | V | $V_{GS}$= 0V, $I_D$= 250μA |
| Gate 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 | $V_{DS}$= 80V, $V_{GS}$= 0V |
| | | - | - | 25 | μA | $V_{DS}$= 80V, $V_{GS}$= 0V, $T_J$= 55°C |
| On-State Drain Current [1] | $I_{D(on)}$ | 20 | - | - | A | $V_{DS}$= 5V, $V_{GS}$= 10V |
| Drain-Source On-Resistance [1] | $R_{DS(ON)}$ | - | - | 81 | mΩ | $V_{GS}$= 10V, $I_D$= 4.2A |
| | | - | - | 92 | | $V_{GS}$= 4.5V, $I_D$= 4A |
| Forward Transconductance [1] | $g_{fs}$ | - | 40 | - | S | $V_{DS}$= 15V, $I_D$= 4.2A |
| Diode Forward Voltage | $V_{SD}$ | - | 0.7 | - | V | $I_S$= 2.3A, $V_{GS}$= 0V |
| **Dynamic [2]** | | | | | | |
| Total Gate Charge | $Q_g$ | - | 20 | - | nC | $I_D$= 4.2A<br>$V_{DS}$= 15V<br>$V_{GS}$= 5V |
| Gate-Source Charge | $Q_{gs}$ | - | 7.0 | - | | |
| Gate-Drain Charge | $Q_{gd}$ | - | 7.0 | - | | |
| **Switching** | | | | | | |
| Turn-On Delay Time | $T_{d(on)}$ | - | 20 | - | nS | $V_{DD}$= 25V<br>$I_D$= 1A<br>$V_{GEN}$= 10V<br>$R_L$= 25Ω |
| Rise Time | $T_r$ | - | 9 | - | | |
| Turn-Off Delay Time | $T_{d(off)}$ | - | 70 | - | | |
| Fall Time | $T_f$ | - | 20 | - | | |

Notes:

1. Pulse test：PW ≦ 300μs duty cycle ≦ 2%.
2. Guaranteed by design, not subject to production testing.