Elektronische Bauelemente

# SSG4435

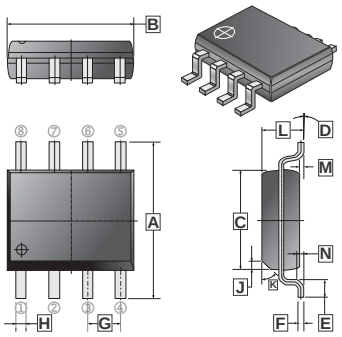
**-8A, -30V, $R_{DS(ON)}$ 20mΩ**
**P-Channel Enhancement Mode Power MOSFET**

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

## DESCRIPTION

The SSG4435 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

**SOP-8**

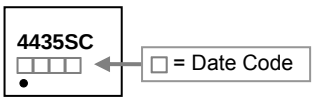



| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 5.80 | 6.20 | H | 0.35 | 0.49 |
| B | 4.80 | 5.00 | J | 0.375 REF. | |
| C | 3.80 | 4.00 | K | 45° | |
| D | 0° | 8° | L | 1.35 | 1.75 |
| E | 0.40 | 0.90 | M | 0.10 | 0.25 |
| F | 0.19 | 0.25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

## FEATURES

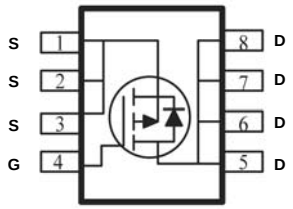
- Low on-resistance
- Simple Drive Requirement
- Fast switching

## MARKING




## PACKAGE INFORMATION

| Package | MPQ | LeaderSize |
|---|---|---|
| SOP-8 | 3K | 13' inch |




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

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | -30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current [3] | $T_A$ = 25°C | $I_D$ | -8 | A |
| | $T_A$ = 70°C | | -6 | |
| Pulsed Drain Current [1.2] | | $I_{DM}$ | -50 | A |
| Power Dissipation | | $P_D$ | 2.5 | W |
| Maximum Junction to Ambient [3] | | $R_{\theta JA}$ | 50 | °C / W |
| Linear Derating Factor | | | 0.02 | W / °C |
| Operating Junction & Storage Temperature Range | | $T_J$, $T_{STG}$ | -55~150 | °C |

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

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Test condition |
|---|---|---|---|---|---|---|---|
| **Static** | | | | | | | |
| Drain-Source Breakdown Voltage | | $BV_{DSS}$ | -30 | - | - | V | $V_{GS}$=0, $I_D$=-250μA |
| Breakdown Voltage Temp. Coefficient | | $\triangle BV_{DS}/\triangle T_j$ | - | -0.037 | - | V / °C | Reference to 25°C, $I_D$= -1mA |
| Gate-Threshold Voltage | | $V_{GS(th)}$ | -1 | - | -3 | V | $V_{DS}$=$V_{GS}$, $I_D$= -250μA |
| Forward Transfer Conductance | | $G_{fs}$ | - | 20 | - | S | $V_{DS}$= -10V, $I_D$= -8A |
| Gate-Body Leakage | | $I_{GSS}$ | - | - | ±100 | nA | $V_{GS}$=±20V |
| Zero Gate Voltage Drain Current | $T_A$ = 25°C | $I_{DSS}$ | - | - | -1 | μA | $V_{DS}$= -30V, $V_{GS}$=0 |
| | $T_A$ = 70°C | | - | - | -5 | μA | $V_{DS}$= -24V, $V_{GS}$=0 |
| Drain-Source On-Resistance [2] | | $R_{DS(ON)}$ | - | - | 20 | mΩ | $V_{GS}$= -10V, $I_D$= -8A |
| | | | - | - | 35 | | $V_{GS}$= -4.5V, $I_D$= -5A |
| Total Gate Charge [2] | | $Q_g$ | - | 12.4 | - | nC | $I_D$= -12A<br>$V_{DS}$= -20V<br>$V_{GS}$= -4.5V |
| Gate-Source Charge | | $Q_{gs}$ | - | 3.4 | - | | |
| Gate-Drain ("Miller") Charge | | $Q_{gd}$ | - | 5.1 | - | | |
| Turn-On Delay Time [2] | | $T_{d(on)}$ | - | 24.2 | - | nS | $V_{DS}$= -15V<br>$I_D$= -1A<br>$V_{GS}$= -10V<br>$R_G$=3.3Ω |
| Rise Time | | $T_r$ | - | 23.8 | - | | |
| Turn-Off Delay Time | | $T_{d(off)}$ | - | 58.2 | - | | |
| Fall Time | | $T_f$ | - | 9 | - | | |
| Input Capacitance | | $C_{iss}$ | - | 1345 | - | pF | $V_{GS}$=0<br>$V_{DS}$= -15V<br>f=1.0MHz |
| Output Capacitance | | $C_{oss}$ | - | 194 | - | | |
| Reverse Transfer Capacitance | | $C_{rss}$ | - | 158 | - | | |
| **Source-Drain Diode** | | | | | | | |
| Forward On Voltage [2] | | $V_{DS}$ | - | -0.75 | -1.2 | V | $I_S$= -2.1A, $V_{GS}$=0, $T_j$=25°C |
| Continuous Source Current (Body Diode) | | $I_s$ | - | - | -2.1 | A | $V_D$=$V_G$=0V, $V_S$= -1.2V |
| Pulsed Source Current (Body Diode) [1] | | $I_{SM}$ | - | - | -50 | A | |

Notes:
1 Pulse width limited by Max. junction temperature.
2 Pulse width≦300us, duty cycle≦2%.
3 Surface mounted on 1 $in^2$ copper pad of FR4 board; 125°C/W when mounted on min. copper pad.

## CHARACTERISTICS CURVE

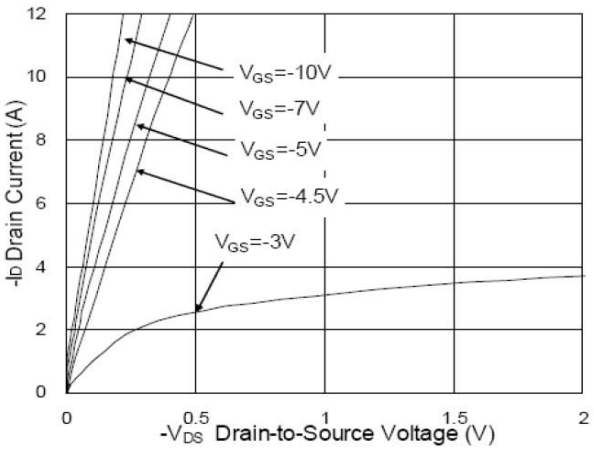



Fig 1. Typical Output Characteristics

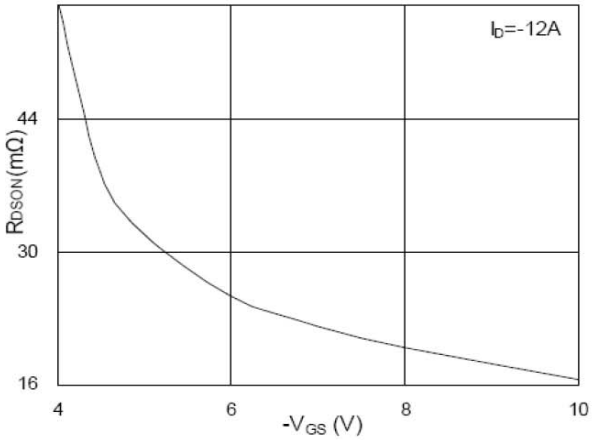



Fig 2. On-Resistance v.s. Gate Voltage

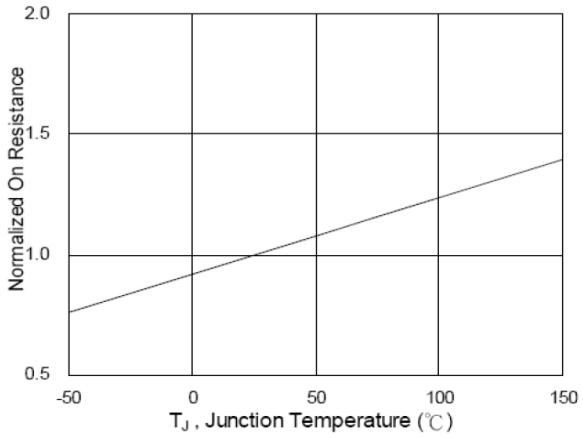



Fig 3. Normalized On-Resistance v.s. Junction Temperature

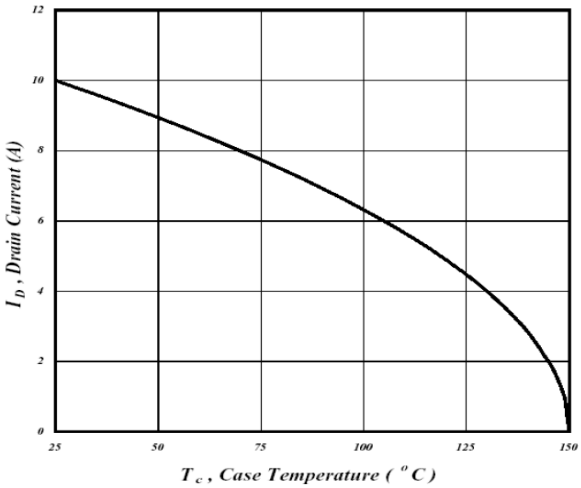



Fig 4. Maximum Drain Current v.s. Case Temperature

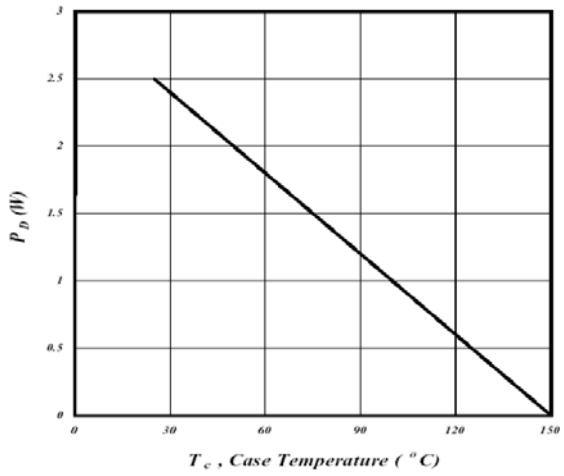



Fig 5. Type Power Dissipation

## CHARACTERISTICS CURVE

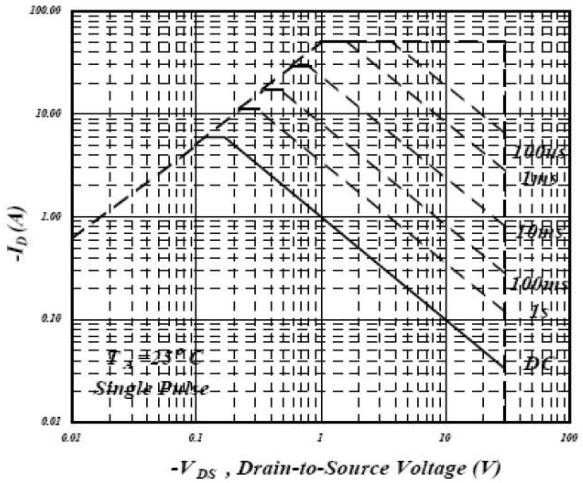



Fig 6. Maximum Safe Operating Area

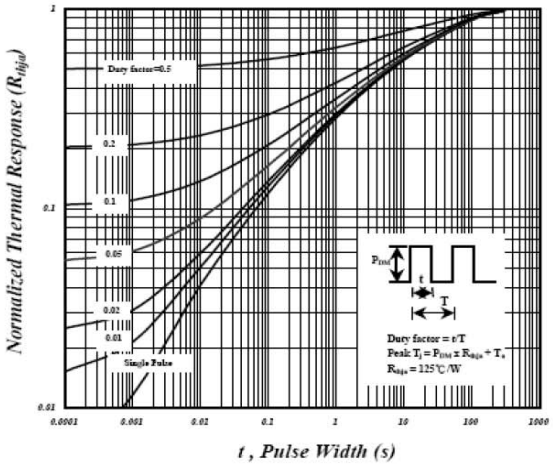



Fig 7. Effective Transient Thermal Impedance

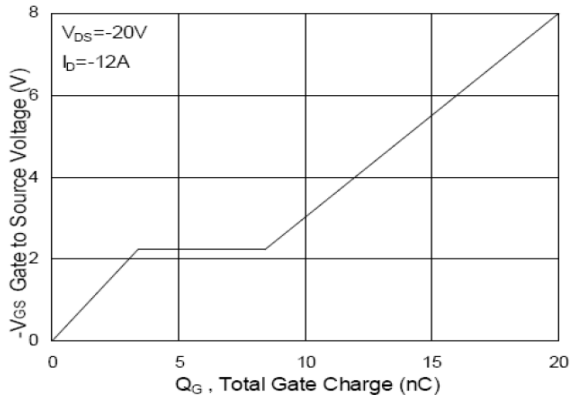



Fig 8. Gate Charge Characteristics

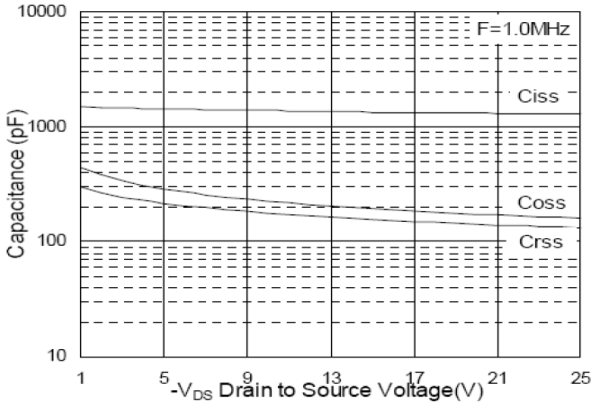



Fig 9. Typical Capacitance Characteristics

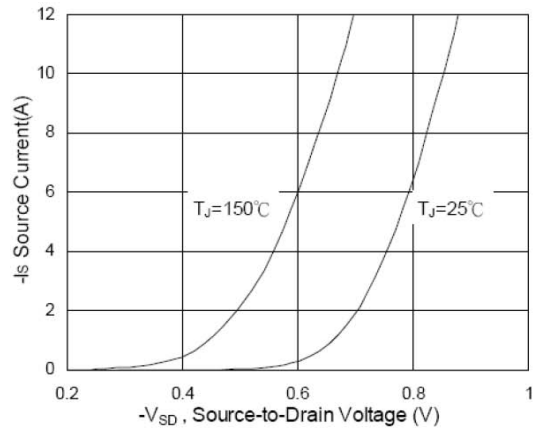



Fig 10. Forward Characteristics of Reverse Diode

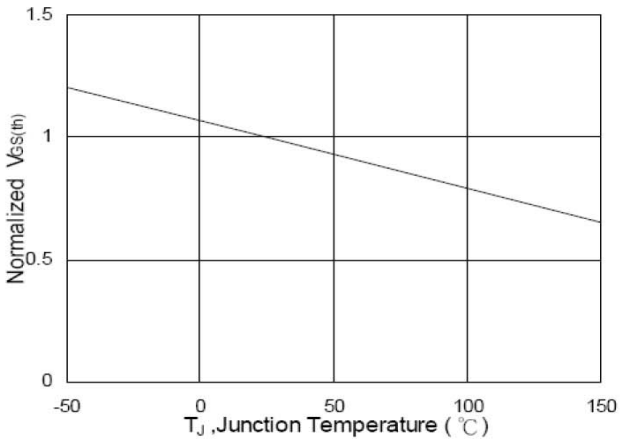



Fig 11. Gate Threshold Voltage v.s. Junction Temperature