Elektronische Bauelemente

# SMG2392N

**0.6A, 150V, $R_{DS(ON)}$ 2.6Ω**
**N-Channel Enhancement Mode MOSFET**

RoHS Compliant Product
A suffix of "-C" specifies halogen and 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

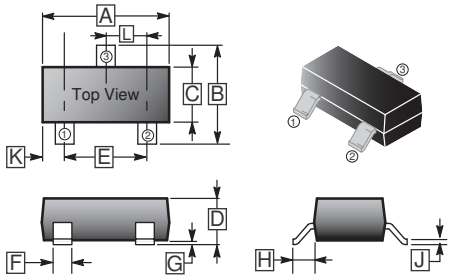
## FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper lead frame SC-59 saves board space.
- Fast switching speed.
- High performance trench technology.

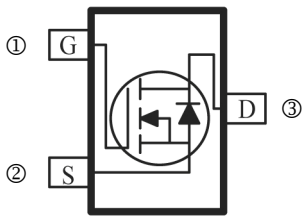
## Application

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

## SC-59




| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 2.70 | 3.10 | G | 0.10 REF. | |
| B | 2.25 | 3.00 | H | 0.40 REF. | |
| C | 1.30 | 1.70 | J | 0.10 | 0.20 |
| D | 1.00 | 1.40 | K | 0.45 | 0.55 |
| E | 1.70 | 2.30 | L | 0.85 | 1.15 |
| F | 0.35 | 0.50 | | | |




## PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---|---|---|
| SC-59 | 3K | 7' inch |

## ABSOLUTE MAXIMUM RATINGS ($T_A$=25℃ unless otherwise noted)

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 150 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current [1] | $T_A$=25°C | $I_D$ | 0.6 | A |
| | $T_A$=70°C | | 0.4 | |
| Pulsed Drain Current [2] | | $I_{DM}$ | 10 | A |
| Continuous Source Current (Diode Conduction) [1] | | $I_S$ | 1.7 | A |
| Power Dissipation [1] | $T_A$=25°C | $P_D$ | 1.3 | W |
| | $T_A$=70°C | | 0.8 | W |
| Operating Junction and Storage Temperature Range | | Tj, Tstg | -55 ~ 150 | °C |
| **Thermal Resistance Ratings** | | | | |
| Maximum Junction to Ambient [1] | t ≦10sec | $R_{\theta JA}$ | 100 | °C / W |
| | Steady State | | 166 | |

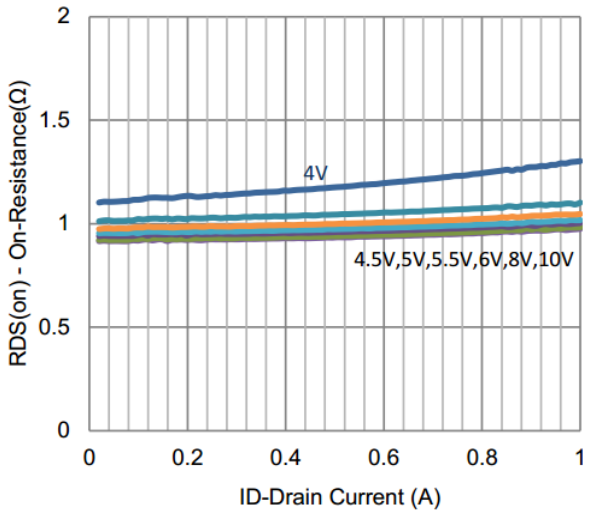
Notes:
1 Surface Mounted on 1" x 1" FR4 Board.
2 Pulse width limited by maximum junction temperature.

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

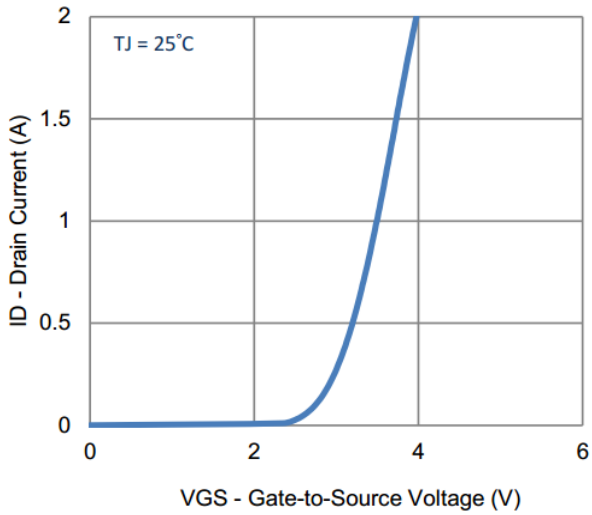
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Gate-Threshold Voltage | $V_{GS(th)}$ | 1 | - | - | V | $V_{DS}$=$V_{GS}$, $I_D$=250μA |
| Gate-Body Leakage | $I_{GSS}$ | - | - | ±100 | nA | $V_{DS}$=0, $V_{GS}$=±20V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | - | - | 1 | μA | $V_{DS}$=120V, $V_{GS}$=0 |
| | | - | - | 25 | | $V_{DS}$=120V, $V_{GS}$= 0, $T_J$= 55°C |
| On-State Drain Current [1] | $I_{D(on)}$ | 1 | - | - | A | $V_{DS}$=5V, $V_{GS}$=10V |
| Drain-Source On-Resistance [1] | $R_{DS(ON)}$ | - | - | 2.6 | Ω | $V_{GS}$=10V, $I_D$=0.48A |
| | | - | - | 2.8 | | $V_{GS}$=5.5V, $I_D$=0.4A |
| Forward Transconductance [1] | $g_{fs}$ | - | 15 | - | S | $V_{DS}$=15V, $I_D$=0.48A |
| Diode Forward Voltage | $V_{SD}$ | - | 0.81 | - | V | $I_S$=0.9A, $V_{GS}$=0 |
| **Dynamic [2]** | | | | | | |
| Total Gate Charge | $Q_g$ | - | 4 | - | nC | $V_{DS}$=75V, $V_{GS}$=5.5V, $I_D$=0.48A |
| Gate-Source Charge | $Q_{gs}$ | - | 1.1 | - | | |
| Gate-Drain Charge | $Q_{gd}$ | - | 2.2 | - | | |
| Input Capacitance | $C_{iss}$ | - | 169 | - | pF | $V_{DS}$=15V, $V_{GS}$=0, f=1MHz |
| Output Capacitance | $C_{oss}$ | - | 15 | - | | |
| Reverse Transfer Capacitance | $C_{rss}$ | - | 12 | - | | |
| Turn-on Delay Time | $T_{d(on)}$ | - | 4 | - | nS | $V_{DD}$=75V, $V_{GEN}$=10V, $R_L$=156.3Ω, $R_{GEN}$=6Ω, $I_D$=0.48A |
| Rise Time | $T_r$ | - | 5 | - | | |
| Turn-off Delay Time | $T_{d(off)}$ | - | 16 | - | | |
| Fall Time | $T_f$ | - | 8 | - | | |

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

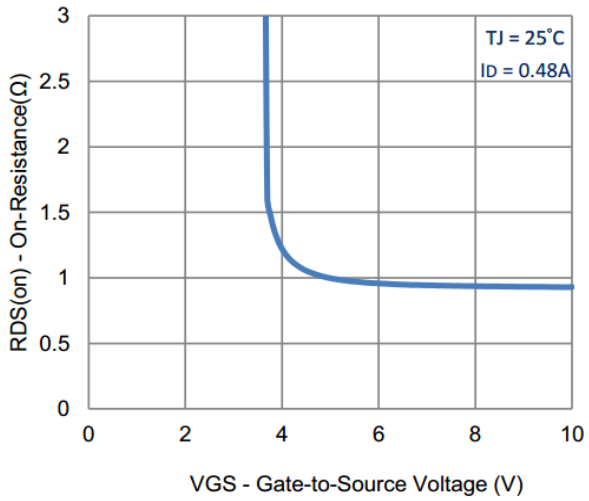
## CHARACTERISTIC CURVE



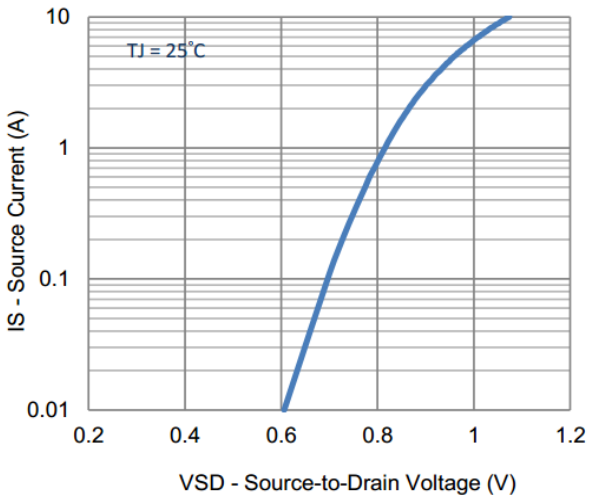

**1. On-Resistance vs. Drain Current**



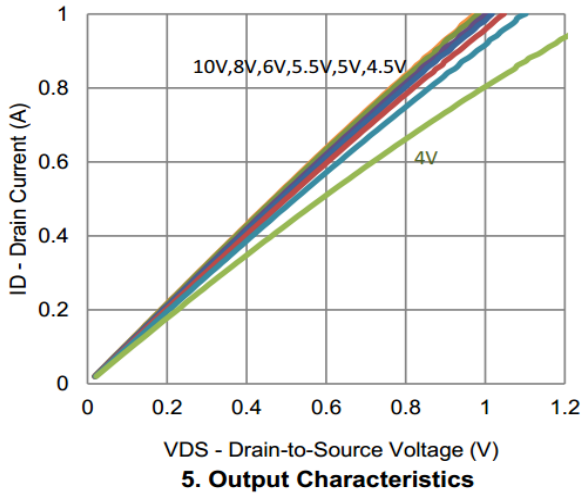

**2. Transfer Characteristics**



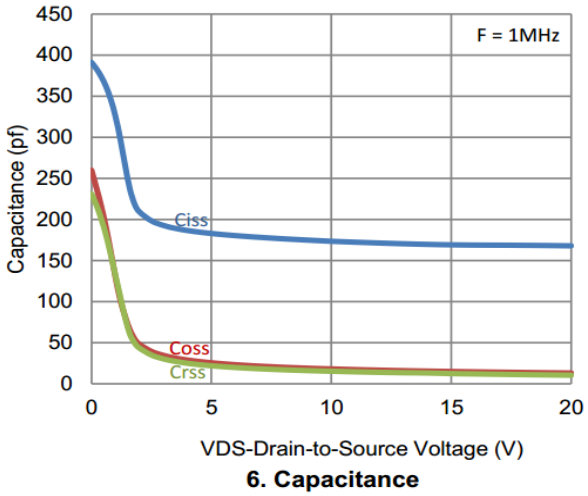

**3. On-Resistance vs. Gate-to-Source Voltage**




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

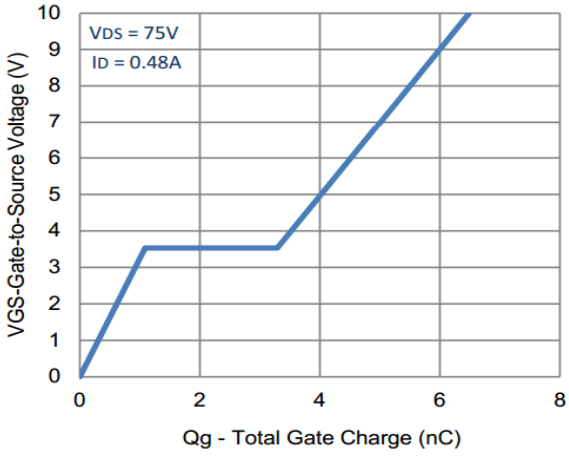



**5. Output Characteristics**

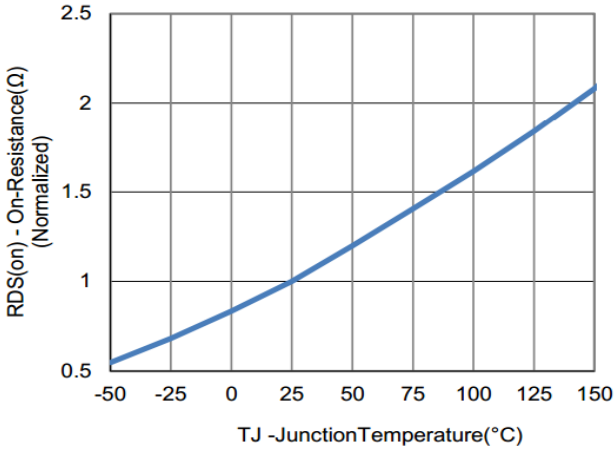



**6. Capacitance**

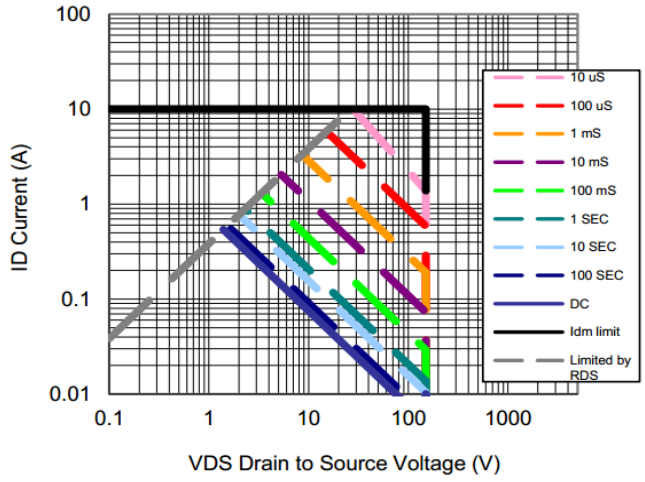
## CHARACTERISTIC CURVE



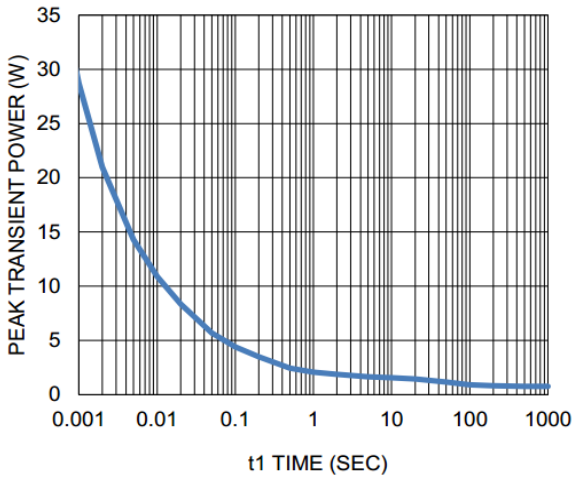

**7. Gate Charge**



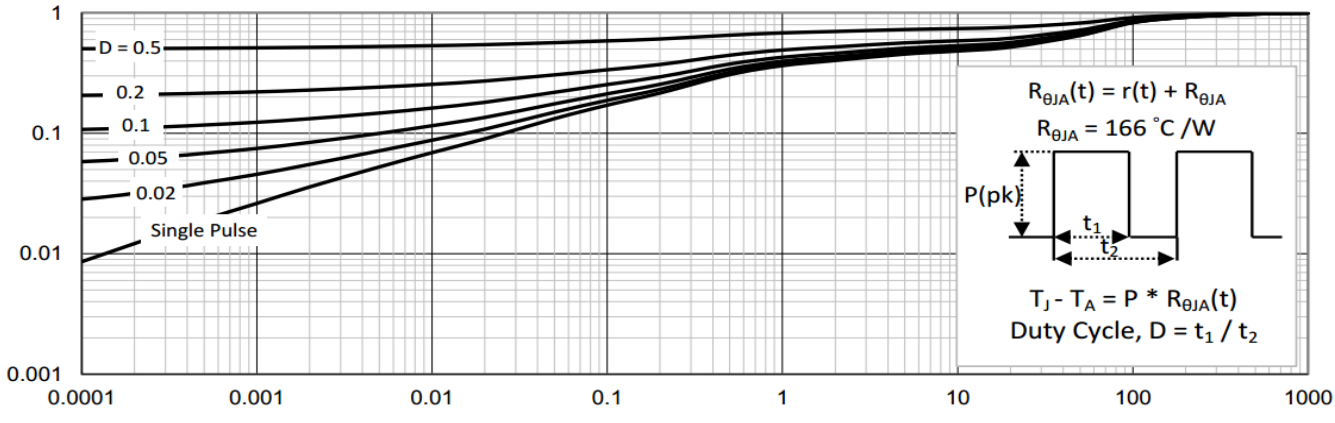

**8. Normalized On-Resistance Vs Junction Temperature**




**9. Safe Operating Area**




**10. Single Pulse Maximum Power Dissipation**




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