Elektronische Bauelemente

# SMS3400Y-C

**5.6A , 30V , $R_{DS(ON)}$ 27mΩ**

**N-Channel Enhancement Mode Power MOSFET**

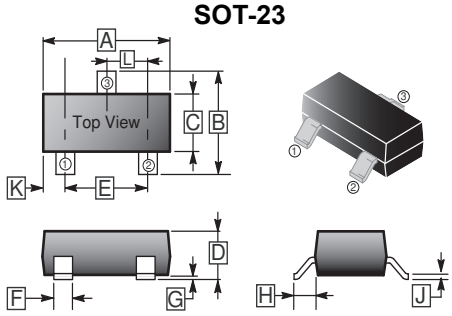
RoHS Compliant Product

A suffix of "-C" specifies halogen & lead-free

## DESCRIPTION

The SMS3400Y-C provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOT-23 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

**SOT-23**



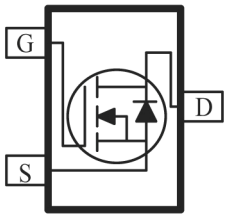

| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 2.70 | 3.10 | G | 0 | 0.18 |
| B | 2.10 | 3.00 | H | 0.55 REF. | |
| C | 1.20 | 1.80 | J | 0.08 | 0.26 |
| D | 0.89 | 1.3 | K | 0.6 REF. | |
| E | 1.70 | 2.3 | L | 0.95 BSC. | |
| F | 0.30 | 0.50 | | | |

## FEATURES

- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

## MARKING

**3400.**




## PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---|---|---|
| SOT-23 | 3K | 7 inch |

## ORDER INFORMATION

| Part Number | Type |
|---|---|
| SMS3400Y-C | Lead (Pb)-free and Halogen-free |

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

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±12 | V |
| Continuous Drain Current @Steady State | $T_A$=25°C | $I_D$ | 5.6 | A |
| | $T_A$=70°C | | 4.5 | |
| Pulsed Drain Current [1] | | $I_{DM}$ | 23 | A |
| Maximum Power Dissipation | $T_A$=25°C | $P_D$ | 1.2 | W |
| Thermal Resistance Junction-Ambient [2] @Steady State | | $R_{\theta JA}$ | 104 | °C / W |
| Operating Junction & Storage Temperature | | $T_J$, $T_{STG}$ | 150, -55~150 | °C |

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | 30 | - | - | V | $V_{GS}$=0V, $I_D$=250μA |
| Gate-Threshold Voltage | $V_{GS(th)}$ | 0.65 | - | 1.5 | V | $V_{DS}$=$V_{GS}$, $I_D$=250μA |
| Gate-Source Leakage Current | $I_{GSS}$ | - | - | ±100 | nA | $V_{GS}$= ±12V, $V_{DS}$=0V |
| Drain-Source Leakage Current | $I_{DSS}$ | - | - | 1 | μA | $V_{DS}$=24V, $V_{GS}$=0V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | - | 21 | 27 | mΩ | $V_{GS}$=10V, $I_D$=5.6A |
| | | - | 25 | 33 | | $V_{GS}$=4.5V, $I_D$=5A |
| | | - | 33 | 51 | | $V_{GS}$=2.5V, $I_D$=3A |
| Total Gate Charge | $Q_g$ | - | 4.8 | - | nC | $V_{GS}$=4.5V<br>$V_{DS}$=15V<br>$I_D$=5.6A |
| Gate Source Charge | $Q_{gs}$ | - | 1.2 | - | | |
| Gate Drain Charge | $Q_{gd}$ | - | 1.7 | - | | |
| Turn-on Delay Time | $T_{d(on)}$ | - | 12 | - | nS | $V_{GS}$=4.5V<br>$V_{DD}$=15V<br>$R_{GEN}$=2.8Ω<br>$I_D$=1A |
| Rise Time | $T_r$ | - | 52 | - | | |
| Turn-off Delay Time | $T_{d(off)}$ | - | 17 | - | | |
| Fall Time | $T_f$ | - | 10 | - | | |
| Input Capacitance | $C_{iss}$ | - | 535 | - | pF | $V_{GS}$=0V<br>$V_{DS}$=15V<br>f =1MHz |
| Output Capacitance | $C_{oss}$ | - | 130 | - | | |
| Reverse Transfer Capacitance | $C_{rss}$ | - | 36 | - | | |
| **Source-Drain Diode** | | | | | | |
| Forward Voltage | $V_{SD}$ | - | - | 1.2 | V | $V_{GS}$=0V, $I_S$=5.6A |

Notes:
1. Pulse Width≤300μs, Duty Cycle ≤ 2%.
2. Surface Mounted on FR4 Board, When Mounted on 1 inch$^2$ FR4 Board.

## CHARACTERISTIC CURVES

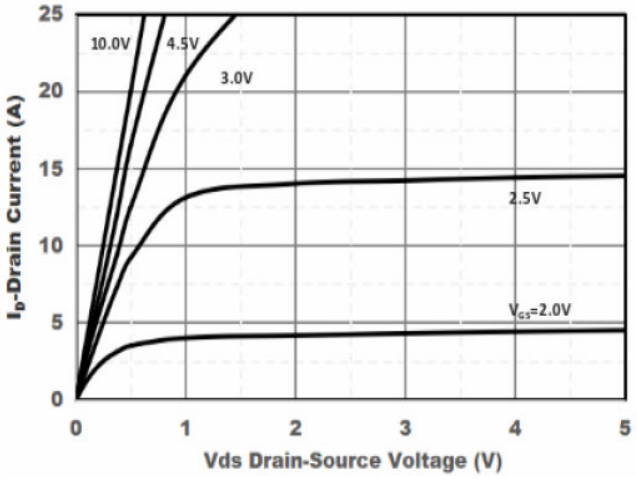



Figure1. Output Characteristics

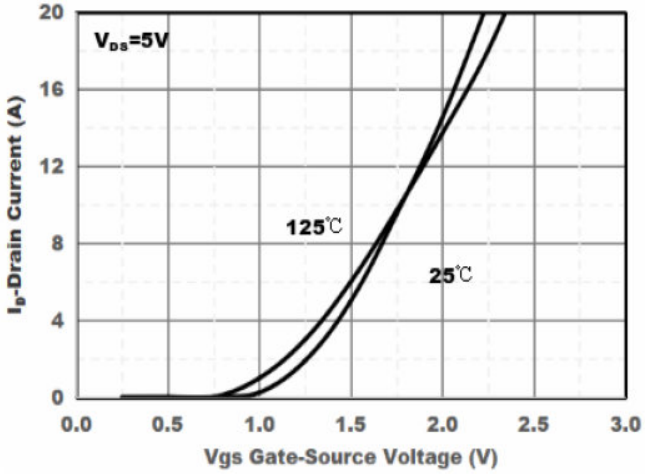



Figure2. Transfer Characteristics

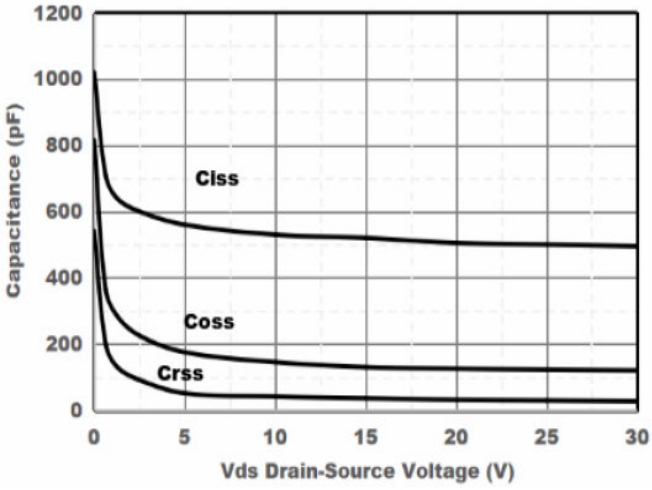



Figure3. Capacitance Characteristics

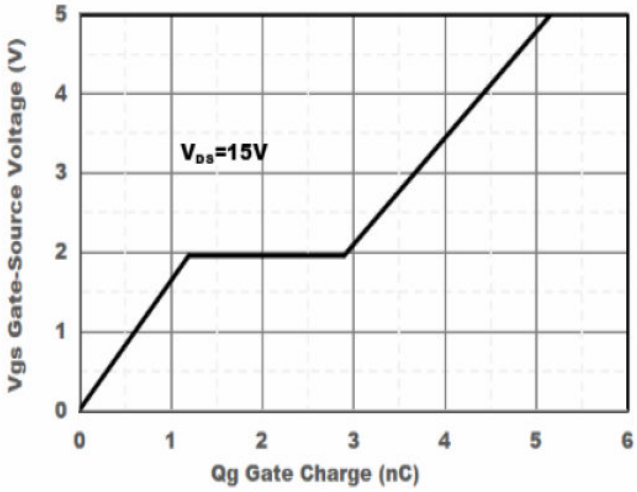



Figure4. Gate Charge

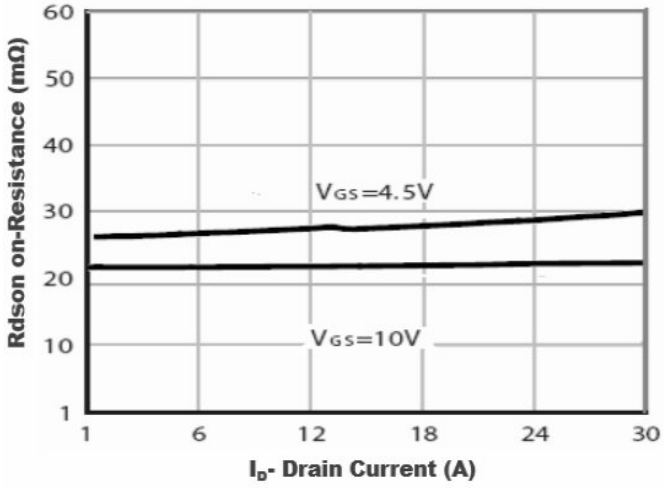



Figure5. Drain-Source on Resistance

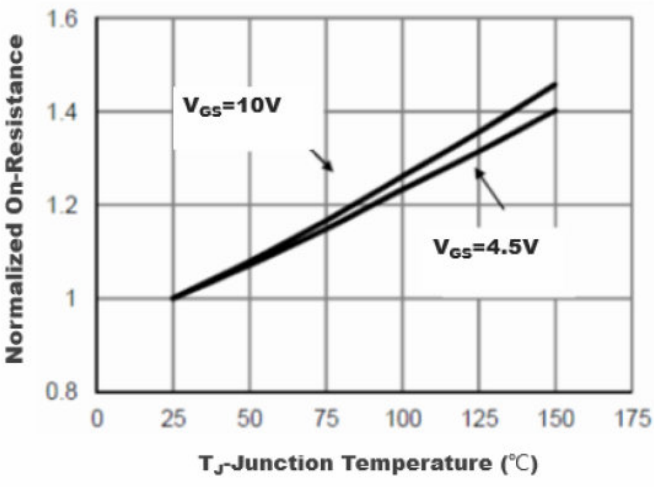



Figure6. Drain-Source on Resistance

## CHARACTERISTIC CURVES

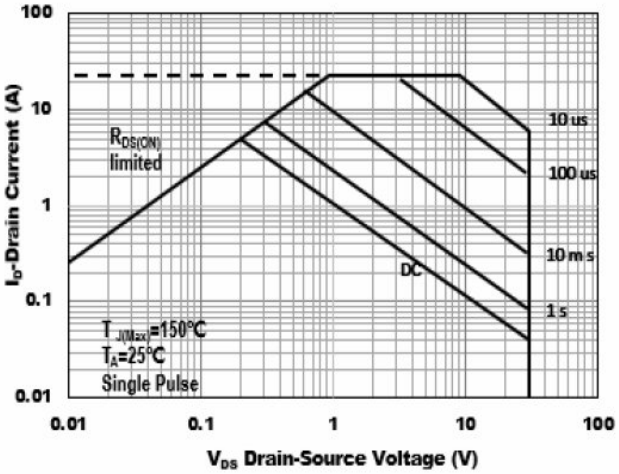



Figure7. Safe Operation Area

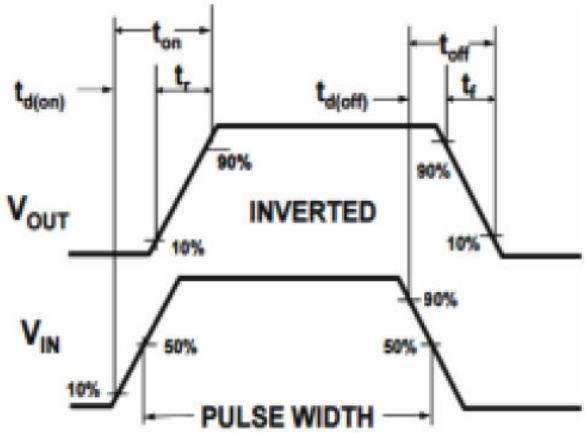



Figure8. Switching wave