

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

DESCRIPTION

The SMS3415 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.

FEATURES

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

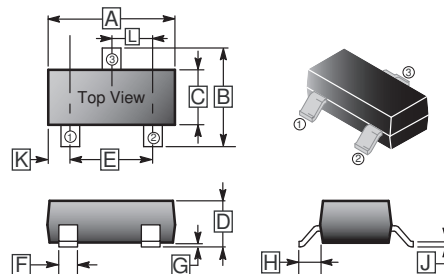
MARKING

R15

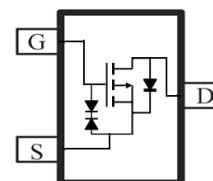
PACKAGE INFORMATION

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

SOT-23



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|-------|
| | Min. | Max. | | Min. | Max. |
| A | 2.80 | 3.04 | G | 0.09 | 0.18 |
| B | 2.10 | 2.55 | H | 0.45 | 0.60 |
| C | 1.20 | 1.40 | J | 0.08 | 0.177 |
| D | 0.89 | 1.15 | K | 0.6 REF. | |
| E | 1.78 | 2.04 | L | 0.89 | 1.02 |
| F | 0.30 | 0.50 | | | |



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Rating | Unit |
|--|----------------|--------------|------------------|
| Drain-Source Voltage | V_{DS} | -20 | V |
| Gate-Source Voltage | V_{GS} | ± 8 | V |
| Continuous Drain Current ¹ | I_D | -4 | A |
| Pulsed Drain Current ³ | I_{DM} | -12 | A |
| Maximum Power Dissipation ¹ | P_D | 1.4 | W |
| Maximum Power Dissipation ² | | 0.35 | |
| Operating Junction and Storage Temperature | T_J, T_{STG} | 150, -55~150 | $^\circ\text{C}$ |

THERMAL DATE

| Parameter | Symbol | Value | Unit |
|--|-----------------|-------|-----------------------------|
| Thermal Resistance from Junction to Ambient ¹ | $R_{\theta JA}$ | 90 | $^\circ\text{C} / \text{W}$ |
| Thermal Resistance from Junction to Ambient ² | | 357 | |

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|--|---------------------|------|------|------|------|---|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | -20 | - | - | V | V _{GS} =0, I _D = -250μA |
| Gate-Threshold Voltage | V _{GS(th)} | -0.3 | - | -1 | V | V _{DS} =V _{GS} , I _D = -250μA |
| Gate-Source Leakage Current | I _{GSS} | - | - | ±10 | μA | V _{GS} = ±8V, V _{DS} =0 |
| | | - | - | ±1 | | V _{GS} = ±4.5V, V _{DS} =0 |
| Drain-Source Leakage Current | I _{DSS} | - | - | -1 | μA | V _{DS} = -16V, V _{GS} =0 |
| Forward Transfer conductance ⁴ | g _{fs} | 8 | - | - | S | V _{DS} = -5V, I _D = -4A |
| Diode Forward Voltage ⁴ | V _{SD} | - | - | -1 | V | I _S = -1A, V _{GS} =0 |
| Static Drain-Source On-Resistance ⁴ | R _{DS(ON)} | - | - | 50 | mΩ | V _{DS} = -4.5V, I _D = -4A |
| | | - | - | 60 | | V _{GS} = -2.5V, I _D = -4A |
| | | - | - | 73 | | V _{GS} = -1.8V, I _D = -2A |
| Switching Characteristics | | | | | | |
| Total Gate Charge | Q _g | - | 17.2 | - | nC | I _D = -4A V _{DS} = -10V V _{GS} = -4.5V |
| Gate-Source Charge | Q _{gs} | - | 1.3 | - | | |
| Gate-Drain Charge | Q _{gd} | - | 4.5 | - | | |
| Turn-on Delay Time | T _{d(on)} | - | 9.5 | - | nS | V _{DS} = -10V V _{GS} = -4.5V R _{GEN} =3Ω R _L =2.5Ω |
| Rise Time | T _r | - | 17 | - | | |
| Turn-off Delay Time | T _{d(off)} | - | 94 | - | | |
| Fall Time | T _f | - | 35 | - | | |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C _{iss} | - | 1450 | - | pF | V _{GS} =0 V _{DS} = -10V f=1MHz |
| Output Capacitance | C _{oss} | - | 205 | - | | |
| Reverse Transfer Capacitance | C _{rss} | - | 160 | - | | |
| Gate Resistance | R _g | - | 6.5 | - | Ω | V _{GS} =V _{DS} =0, f=1MHz |

Notes:

- Surface mounted on a 1 inch² FR-4 board with 2OZ copper. t ≤ 10s
- Surface mounted on FR4 Board using the minimum recommended pad size
- The power dissipation is limited by 150°C junction temperature, P_w ≤ 300μs, Duty cycle ≤ 1%
- The data tested by pulsed , pulse width ≤ 300μs , duty cycle ≤ 2%

CHARACTERISTIC CURVES

