

2302 N-Channel 20-V(D-S) MOSFET

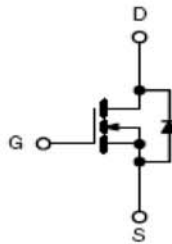
FEATURE

TrenchFET Power MOSFET

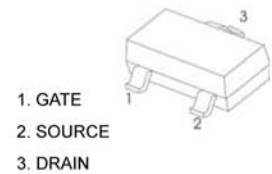
APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

MARKING: S2



SOT-23



Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|-----------------------------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 8 | |
| Continuous Drain Current | I_D | 2.1 | A |
| Continuous Source-Drain Current(Diode Conduction) | I_S | 0.6 | |
| Power Dissipation | P_D | 0.35 | W |
| Thermal Resistance from Junction to Ambient ($t \leq 5s$) | $R_{\theta JA}$ | 357 | $^{\circ}\text{C}/\text{W}$ |
| Operating Junction | T_J | 150 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | |

Electrical characteristics (T_a=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|----------------------|---|------|-------|-------|-------|
| Static | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 10μA | 20 | | | V |
| Gate-threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 50μA | 0.65 | 0.95 | 1.2 | |
| Gate-body leakage | I _{GSS} | V _{DS} = 0V, V _{GS} = ±8V | | | ±100 | nA |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = 20V, V _{GS} = 0V | | | 1 | μA |
| Drain-source on-resistance ^a | r _{DS(on)} | V _{GS} = 4.5V, I _D = 3.6A | | 0.045 | 0.060 | Ω |
| | | V _{GS} = 2.5V, I _D = 3.1A | | 0.070 | 0.115 | |
| Forward transconductance ^a | g _{fs} | V _{DS} = 5V, I _D = 3.6A | | 8 | | S |
| Diode forward voltage | V _{SD} | I _S = 0.94A, V _{GS} = 0V | | 0.76 | 1.2 | V |
| Dynamic | | | | | | |
| Total gate charge | Q _g | V _{DS} = 10V, V _{GS} = 4.5V, I _D = 3.6A | | 4.0 | 10 | nC |
| Gate-source charge | Q _{gs} | | | 0.65 | | |
| Gate-drain charge | Q _{gd} | | | 1.5 | | |
| Input capacitance ^b | C _{iss} | V _{DS} = 10V, V _{GS} = 0V, f = 1MHz | | 300 | | pF |
| Output capacitance ^b | C _{oss} | | | 120 | | |
| Reverse transfer capacitance ^b | C _{rss} | | | 80 | | |
| Switching^b | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{DD} = 10V, R _L = 5.5Ω, I _D ≈ 3.6A, V _{GEN} = 4.5V, R _g = 6Ω | | 7 | 15 | ns |
| Rise time | t _r | | | 55 | 80 | |
| Turn-off delay time | t _{d(off)} | | | 16 | 60 | |
| Fall time | t _f | | | 10 | 25 | |

Notes :

- a. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
b. These parameters have no way to verify.