



SOT-23 Plastic-Encapsulate MOSFETS

MK2312

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

| V(BR)DSS | RDS(on)MAX | ID |
|----------|------------|----|
| 20 V | 30mΩ@4.5V | 5A |
| | 36mΩ@2.5V | |
| | 46mΩ@1.8V | |

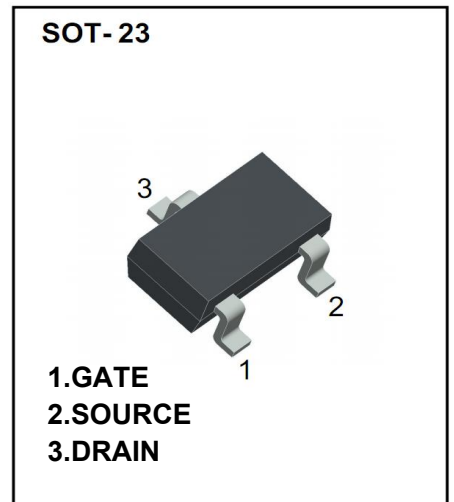
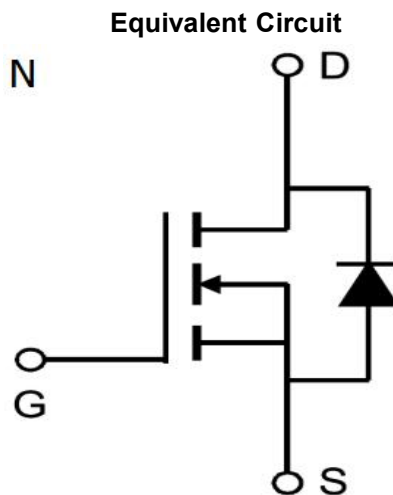
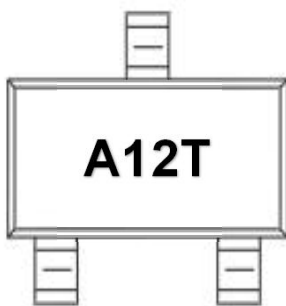
FEATURE

※ TrenchFET Power MOSFET

APPLICATION

- ※ Load Switch for Portable Devices
- ※ DC/DC Converter

MARKING



Maximum ratings (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|--------|----------|------|
| Drain-Source Voltage | VDS | 20 | V |
| Gate-Source Voltage | VGS | ±8 | |
| Continuous Drain Current | ID | 5 | A |
| Pulsed Diode Current | IDM | 20 | |
| Continuous Source-Drain Current(Diode Conduction) | IS | 1.04 | |
| Power Dissipation | PD | 0.75 | W |
| Thermal Resistance from Junction to Ambient (t≤5s) | RθJA | 357 | °C/W |
| Operating Junction | TJ | 150 | °C |
| Storage Temperature | TSTG | -55~+150 | °C |



MOSFET ELECTRICAL CHARACTERISTICS

Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

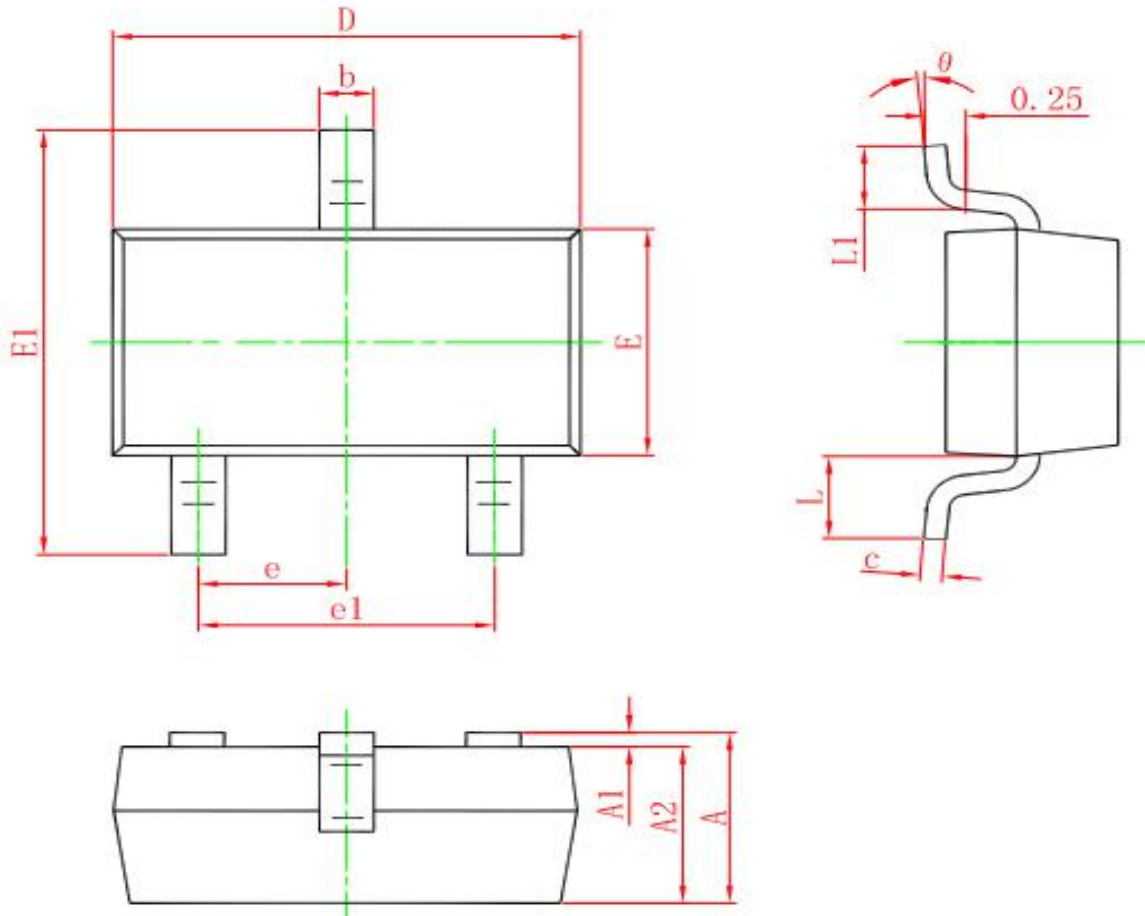
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|--|----------|--|-----|-----|------|------|
| Static | | | | | | |
| Drain-source breakdown voltage | V(BR)DSS | VGS = 0V, ID = 250μA | 20 | | | V |
| Gate-source threshold voltage | VGS(th) | VDS =VGS, ID = 250μA | 0.4 | | 1 | V |
| Gate-source leakage | IGSS | VDS =0V, VGS = ±8V | | | ±100 | nA |
| Zero gate voltage drain current | IDSS | VDS = 20V, VGS =0V | | | 1 | μA |
| Drain-source on-state resistancea | RDS(on) | VGS = 4.5V, ID = 1A | | 18 | 30 | mΩ |
| | | VGS = 2.5V, ID = 1A | | 23 | 36 | mΩ |
| | | VGS = 1.8V, ID = 1A | | 28 | 46 | mΩ |
| Forward transconductancea | gfs | VDS = 4.5V, ID = 5A | | 6 | | S |
| Diode forward voltage | VSD | IS=1A,VGS=0V | | 0.7 | 1.5 | V |
| Dynamic | | | | | | |
| Input capacitance | Ciss | VDS = 10V,VGS =0V, f=1MHz | | 865 | | pF |
| Output capacitance | Coss | | | 105 | | pF |
| Reverse transfer capacitanceb | Crss | | | 55 | | pF |
| Total gate charge | Qg | VDS = 10V,VGS = 4.5V, ID = 5A | | 6 | 4.5 | nC |
| Gate-source charge | Qgs | | | 1 | | nC |
| Gate-drain charge | Qgd | | | 1.3 | | nC |
| Gate resistance | Rg | f=1MHz | | 3 | | Ω |
| Switchingb | | | | | | |
| Turn-on delay time | td(on) | VDD= 10V RL=10Ω, ID ≈ 1A, VGEN= 4.5V,Rg=6Ω | | 7 | 15 | ns |
| Rise time | tr | | | 15 | 20 | ns |
| Turn-off delay time | td(off) | | | 15 | 32 | ns |
| Fall time | tf | | | 10 | 20 | ns |
| Drain-source body diode characteristics | | | | | | |
| Continuous Source-Drain Diode Current | IS | Tc=25°C | | | 1.2 | A |
| Pulsed Diode forward Curren | ISM | | | | 20 | A |

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.



SOT-23 PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP. | | 0.037 TYP. | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF. | | 0.022 REF. | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

