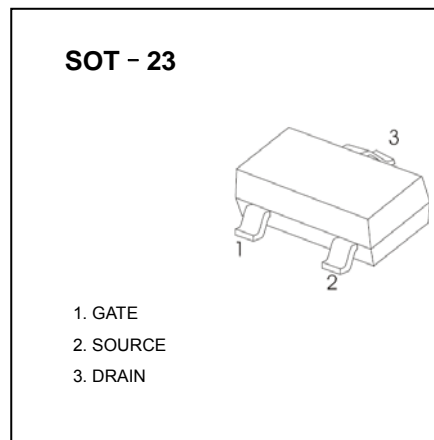


UMW SI2301A P-Channel 20-V(D-S) MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -20V | 70 mΩ@-4.5V | -2.8A |
| | 100 mΩ@-2.5V | |



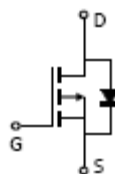
FEATURE

- TrenchFET Power MOSFET

APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

Equivalent Circuit



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

| Parameter | Symbol | Value | Unit |
|--|-----------|-----------|------|
| Drain-Source Voltage | V_{DS} | -20 | V |
| Gate-Source Voltage | V_{GS} | ±12 | |
| Continuous Drain Current | I_D | -2.8 | A |
| Pulsed Drain Current | I_{DM} | -12 | |
| Continuous Source-Drain Diode Current | I_S | -0.72 | |
| Maximum Power Dissipation | P_D | 0.4 | W |
| Thermal Resistance from Junction to Ambient(t ≤5s) | $R_{θJA}$ | 125 | °C/W |
| Junction Temperature | T_J | 150 | °C |
| Storage Temperature | T_{stg} | -55 ~+150 | |

T_a=25 °C unless otherwise specified

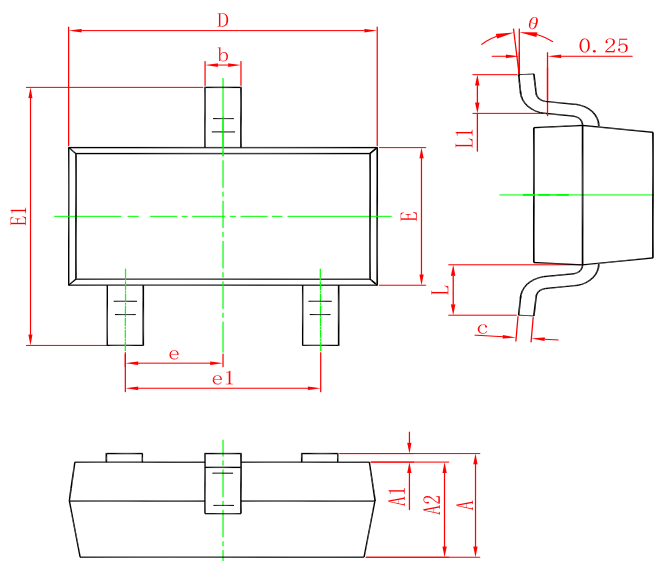
| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|--|----------------------|---|------|------|------|-------|
| Static | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = -250μA | -20 | | | V |
| Gate-source threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250μA | -0.4 | | -1 | |
| Gate-source 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-state resistance ^a | R _{DS(on)} | V _{GS} = -4.5V, I _D = -2.8A | | 55 | 70 | mΩ |
| | | V _{GS} = -2.5V, I _D = -2.0A | | 70 | 100 | |
| Forward transconductance ^a | g _{fs} | V _{DS} = -5V, I _D = -2.8A | | 6.5 | | S |
| Dynamic^b | | | | | | |
| Input capacitance | C _{iss} | V _{DS} = -10V, V _{GS} = 0V, f = 1MHz | | 405 | | pF |
| Output capacitance | C _{oss} | | | 75 | | |
| Reverse transfer capacitance | C _{rss} | | | 55 | | |
| Total gate charge | Q _g | V _{DS} = -10V, V _{GS} = -4.5V, I _D = -3A | | 5.5 | 10 | nC |
| | | | | 3.3 | 6 | |
| Gate-source charge | Q _{gs} | V _{DS} = -10V, V _{GS} = -2.5V, I _D = -3A | | 0.7 | | |
| Gate-drain charge | Q _{gd} | | | 1.3 | | |
| Gate resistance | R _g | f = 1MHz | | 6.0 | | Ω |
| Turn-on delay time | t _{d(on)} | V _{DD} = -10V, R _L = 10Ω, I _D = -1A, V _{GEN} = -4.5V, R _g = 1Ω | | 11 | 20 | ns |
| Rise time | t _r | | | 35 | 60 | |
| Turn-off delay time | t _{d(off)} | | | 30 | 50 | |
| Fall time | t _f | | | 10 | 20 | |
| Drain-source body diode characteristics | | | | | | |
| Continuous source-drain diode current | I _S | T _C = 25°C | | | -1.3 | A |
| Pulse diode forward current ^a | I _{SM} | | | | -10 | |
| Body diode voltage | V _{SD} | I _S = -0.7A | | -0.8 | -1.2 | V |

Notes :

a. Pulse Test : Pulse Width < 300μs, Duty Cycle ≤ 2%.

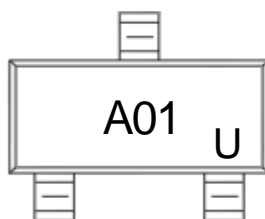
b. Guaranteed by design, not subject to production testing.

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° |

Marking



Ordering information

| Order code | Package | Baseqty | Deliverymode |
|-------------|---------|---------|---------------|
| UMW SI2301A | SOT-23 | 3000 | Tape and reel |