

### P-Channel 20-V(D-S) MOSFET

| V(BR)DSS | RDS(on)MAX  | ID  |
|----------|-------------|-----|
| -20 V    | 92mΩ@-10V   | -2A |
|          | 118mΩ@-4.5V |     |
|          | 166mΩ@-2.5V |     |

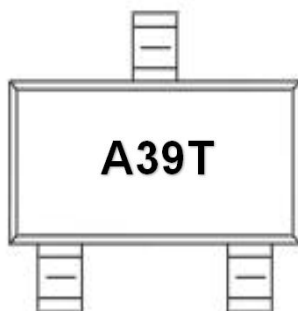
#### FEATURE

- ※ TrenchFET Power MOSFET
- ※ ESD Rating : 2000V HBM

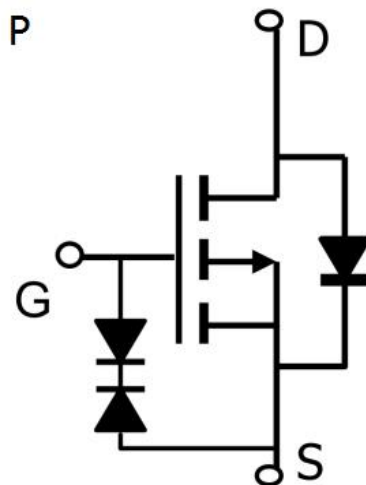
#### APPLICATION

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

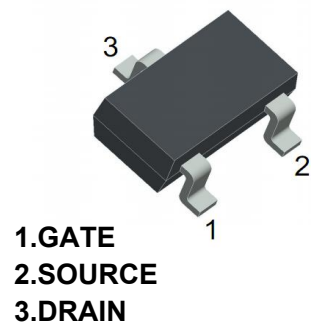
#### MARKING



#### Equivalent Circuit



#### SOT-23



#### Maximum ratings ( Ta=25℃ unless otherwise noted)

| Parameter                                          | Symbol | Value    | Unit |
|----------------------------------------------------|--------|----------|------|
| Drain-Source Voltage                               | VDS    | -20      | V    |
| Gate-Source Voltage                                | VGS    | ±12      |      |
| Continuous Drain Current                           | ID     | -2       | A    |
| Pulsed Diode Current                               | IDM    | -8       |      |
| Power Dissipation                                  | PD     | 1.4      | W    |
| Thermal Resistance from Junction to Ambient (t≤5s) | RθJA   | 125      | ℃/W  |
| Operating Junction                                 | TJ     | 150      | ℃    |
| Storage Temperature                                | TSTG   | -55~+150 |      |

## MOSFET ELECTRICAL CHARACTERISTICS

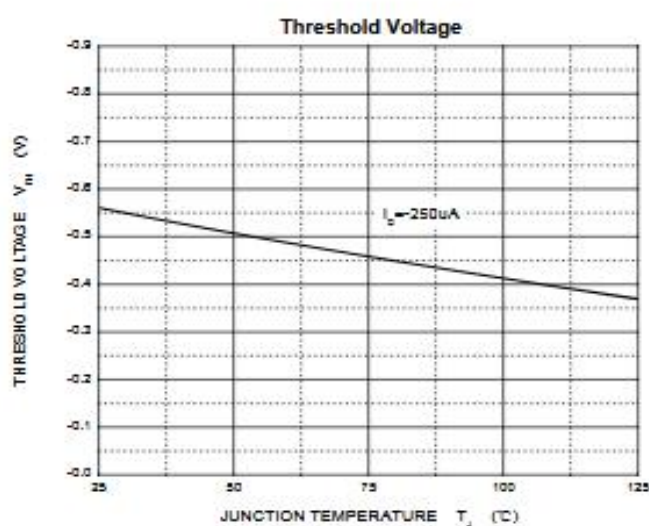
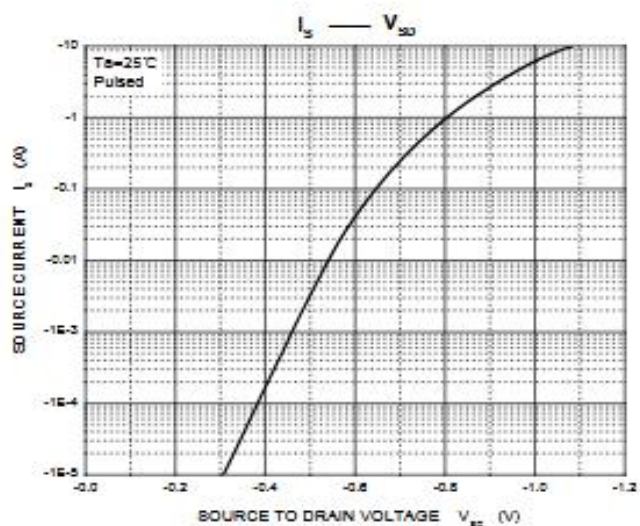
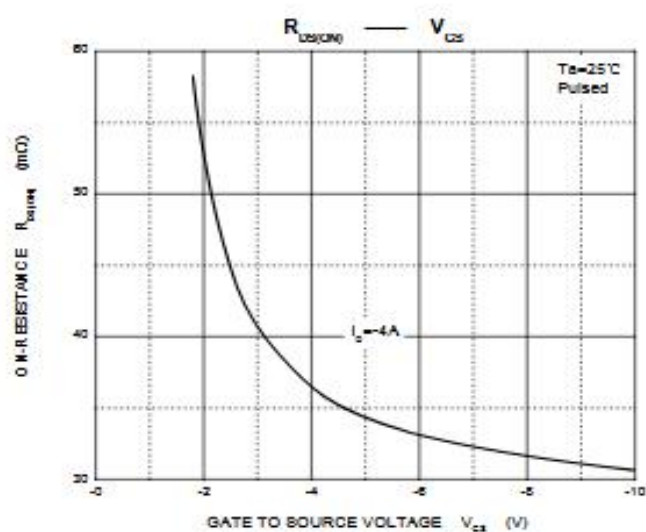
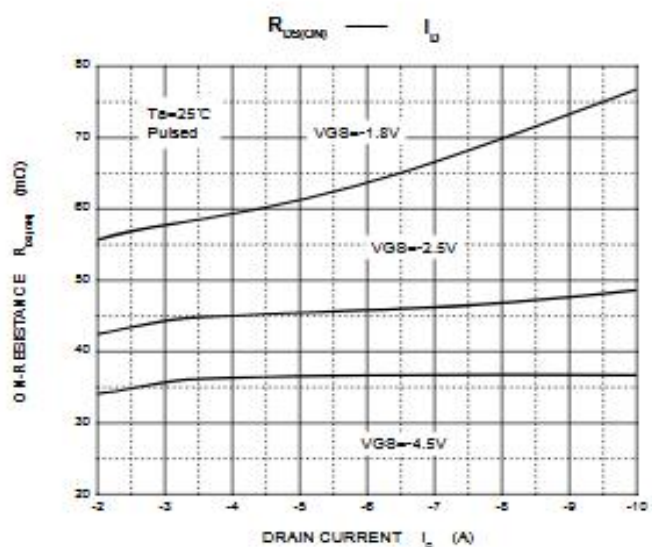
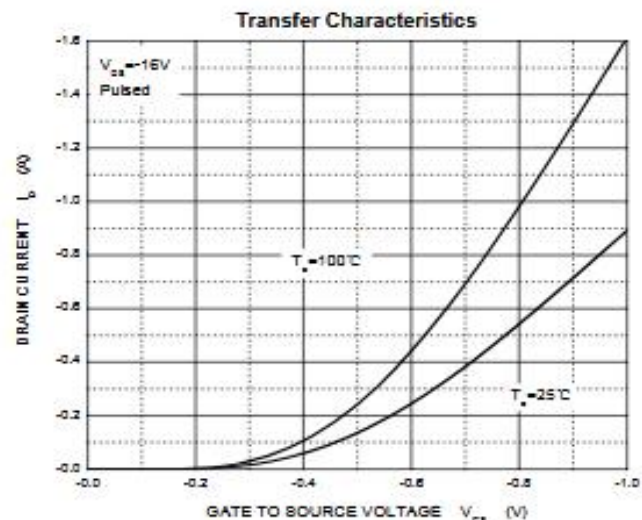
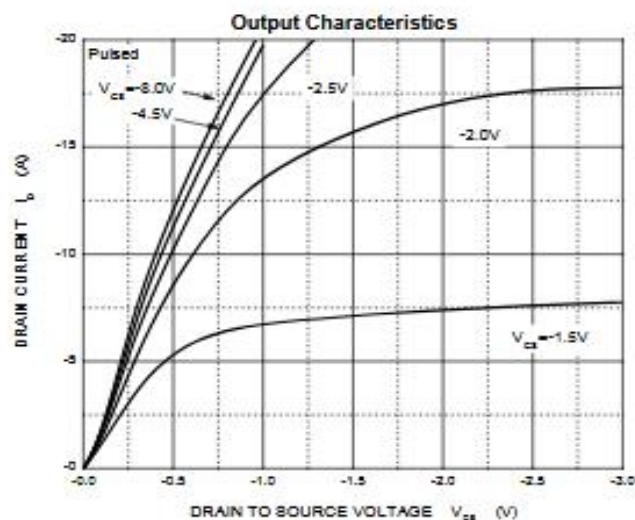
### Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

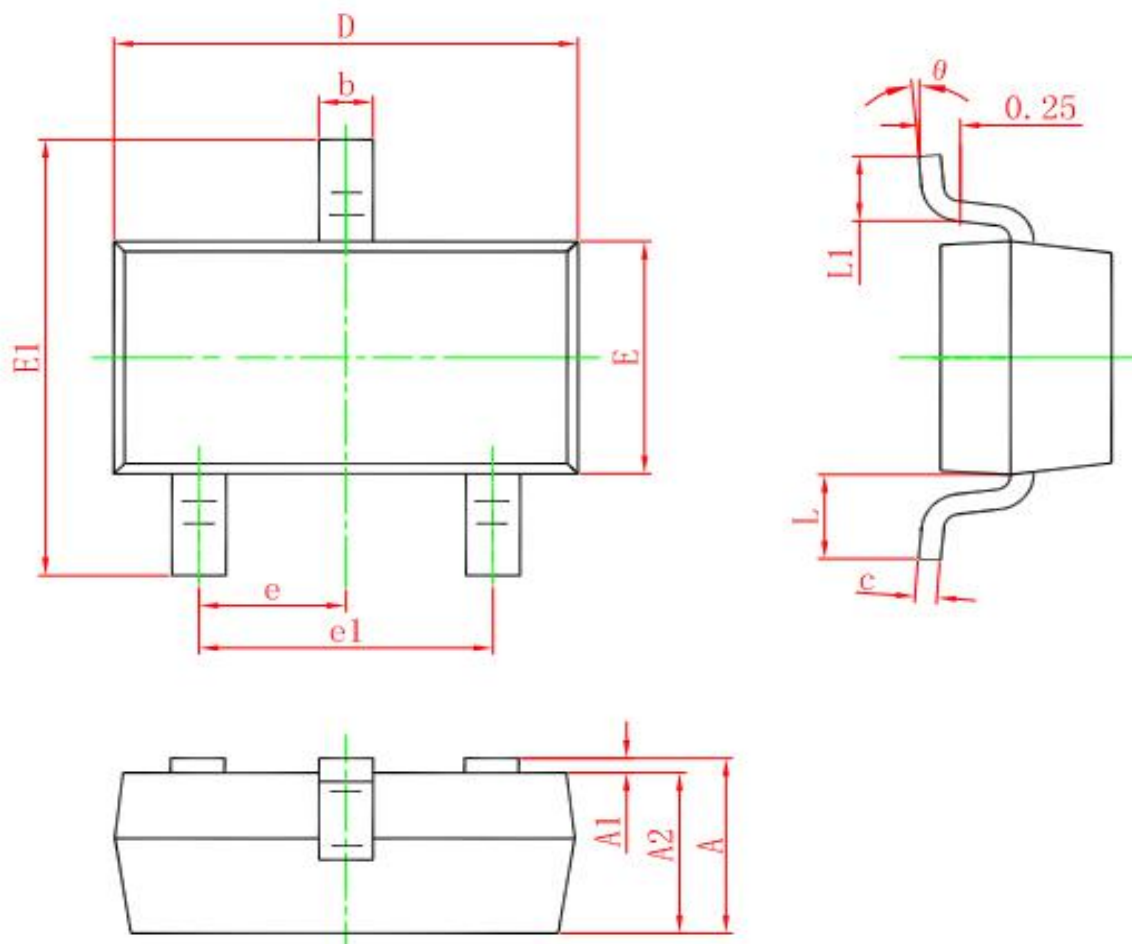
| Parameter                          | Symbol   | Test Condition                                     | Min  | Typ  | Max  | Unit |
|------------------------------------|----------|----------------------------------------------------|------|------|------|------|
| <b>Static</b>                      |          |                                                    |      |      |      |      |
| Drain-source breakdown voltage     | V(BR)DSS | VGS = 0V, ID = -250μA                              | -20  |      |      | V    |
| Gate-source threshold voltage      | VGS(th)  | VDS = VGS, ID = -250μA                             | -0.6 |      | -1.4 | V    |
| Gate-source leakage                | IGSS     | VDS = 0V, VGS = ±12V                               |      |      | ±10  | μA   |
| Zero gate voltage drain current    | IDSS     | VDS = -16V, VGS = 0V                               |      |      | -1   | μA   |
| Drain-source on-state resistancea  | RDS(on)  | VGS = -10V, ID = -2A                               |      |      | 92   | mΩ   |
|                                    |          | VGS = -4.5V, ID = -2A                              |      |      | 118  | mΩ   |
|                                    |          | VGS = -2.5V, ID = -1A                              |      |      | 166  | mΩ   |
| Forward transconductancea          | gfs      | VDS = -4.5V, ID = -2A                              |      | 6.8  |      | S    |
| Diode forward voltage              | VSD      | IS=1A, VGS=0V                                      |      | -0.8 | -1.3 | V    |
| <b>Dynamic</b>                     |          |                                                    |      |      |      |      |
| Input capacitance                  | Ciss     | VDS = -10V, VGS = 0V,<br>f=1MHz                    |      | 512  |      | pF   |
| Output capacitance                 | Coss     |                                                    |      | 77   |      | pF   |
| Reverse transfer capacitanceb      | Crss     |                                                    |      | 62   |      | pF   |
| Total gate charge                  | Qg       | VDS = -10V, VGS = -4.5V,<br>ID = -2A               |      | 2.5  |      | nC   |
| Gate-source charge                 | Qgs      |                                                    |      | 0.8  |      | nC   |
| Gate-drain charge                  | Qgd      |                                                    |      | 2    |      | nC   |
| Gate resistance                    | Rg       | f=1MHz                                             |      | 6.5  |      | Ω    |
| <b>Switchingb</b>                  |          |                                                    |      |      |      |      |
| Turn-on delay time                 | td(on)   | VDS= -10V<br>RL=5Ω, ID ≈ -1A,<br>VGEN=- 10V, Rg=3Ω |      | 5    |      | ns   |
| Rise time                          | tr       |                                                    |      | 6.7  |      | ns   |
| Turn-off delay time                | td(off)  |                                                    |      | 28   |      | ns   |
| Fall time                          | tf       |                                                    |      | 13.5 |      | ns   |
| Body Diode Reverse Recovery Time   | Trr      | IF= -2A, dI/dt=100A/μs                             |      | 9.8  | 12   | ns   |
| Body Diode Reverse Recovery Charge | Qrr      | IF= -2A, dI/dt=100A/μs                             |      | 2.7  |      | nC   |

#### 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.

## Typical Characteristics:



**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°    |