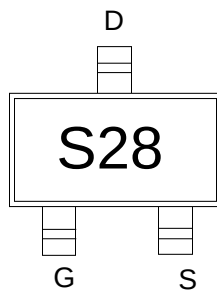


## Features

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low  $R_{DS(ON)}$

## Application

- DC-DC Converters
- Power management functions

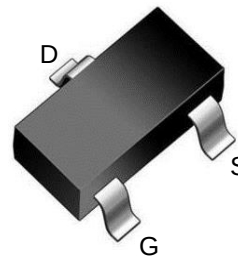


S28: Device code

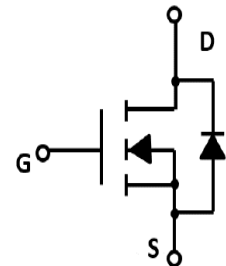
Marking and pin assignment

## 100V/2A N-Channel MOSFET Product Summary

| $V_{DS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|----------|------------------|-----------|
| 100V     | 280mΩ@10V        | 3A        |
|          | 310mΩ@4.5V       |           |



SOT-23 top view



Schematic diagram



Pb-Free



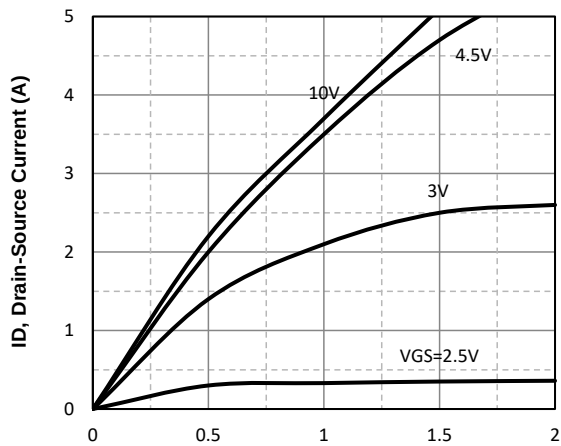
Halogen-Free

| Absolute Maximum Ratings (TA=25 °C unless otherwise noted) |                                                                        |         |            |      |
|------------------------------------------------------------|------------------------------------------------------------------------|---------|------------|------|
| Symbol                                                     | Parameter                                                              |         | Rating     | Unit |
| Common Ratings (TC=25°C Unless Otherwise Noted)            |                                                                        |         |            |      |
| V <sub>DS</sub>                                            | Drain-Source Breakdown Voltage                                         |         | 100        | V    |
| V <sub>GS</sub>                                            | Gate-Source Voltage                                                    |         | ±20        | V    |
| T <sub>J</sub>                                             | Maximum Junction Temperature                                           |         | 150        | °C   |
| T <sub>STG</sub>                                           | Storage Temperature Range                                              |         | -50 to 155 | °C   |
| I <sub>S</sub>                                             | Diode Continuous Forward Current                                       | Tc=25°C | 3          | A    |
| Mounted on Large Heat Sink                                 |                                                                        |         |            |      |
| I <sub>DM</sub>                                            | Pulse Drain Current Tested                                             | Tc=25°C | 9          | A    |
| I <sub>D</sub>                                             | Continuous Drain Current@GS=10V                                        | Tc=25°C | 2          | A    |
| P <sub>D</sub>                                             | Maximum Power Dissipation                                              | Tc=25°C | 1.3        | W    |
| R <sub>θJA</sub>                                           | Thermal Resistance Junction-Ambient((#1 in2 Pad of 2-oz Copper), Max.) |         | 96         | °C/W |

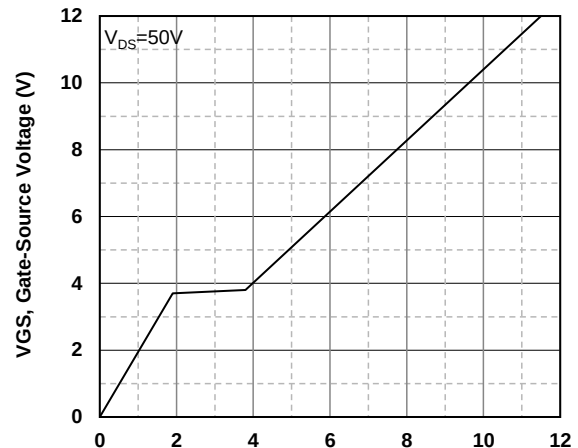
| Electrical Characteristics (TJ=25°C unless otherwise noted)              |                                  |                                  |     |      |      |      |
|--------------------------------------------------------------------------|----------------------------------|----------------------------------|-----|------|------|------|
| Symbol                                                                   | Parameter                        | Condition                        | Min | Typ  | Max  | Unit |
| Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)  |                                  |                                  |     |      |      |      |
| BV <sub>(BR)DSS</sub>                                                    | Drain-Source Breakdown Voltage   | VGS=0V, ID=250μA                 | 100 | --   | --   | V    |
| IDSS                                                                     | Zero Gate Voltage Drain Current  | VDS=100V, VGS=0V                 | --  | --   | 1.0  | uA   |
| IGSS                                                                     | Gate-Body Leakage Current        | VGS=±20V, VDS=0V                 | --  | --   | ±100 | nA   |
| VGS(th)                                                                  | Gate Threshold Voltage           | VDS=VGS, ID=250μA                | 1.0 | 1.8  | 2.5  | V    |
| RDS(on)                                                                  | Drain-Source On-State Resistance | VGS=10V, ID=3A                   | --  | 250  | 280  | mΩ   |
|                                                                          |                                  | VGS=4.5V, ID=1A                  | --  | 280  | 310  | mΩ   |
| Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) |                                  |                                  |     |      |      |      |
| CISS                                                                     | Input Capacitance                | VDS=10V, VGS=0V, f=1MHz          | --  | 387  | --   | pF   |
| COSS                                                                     | Output Capacitance               |                                  | --  | 30   | --   | pF   |
| CRSS                                                                     | Reverse Transfer Capacitance     |                                  | --  | 28   | --   | pF   |
| Switching Characteristics                                                |                                  |                                  |     |      |      |      |
| Qg                                                                       | Total Gate Charge                | VDS=50V, ID=3A, VGS=10V          | --  | 9.5  | --   | nC   |
| Qgs                                                                      | Gate Source Charge               |                                  | --  | 1.8  | --   | nC   |
| Qgd                                                                      | Gate Drain Charge                |                                  | --  | 2    | --   | nC   |
| td(on)                                                                   | Turn-on Delay Time               | VDS=50V, ID=1.3A, VGS=10V, RG=1Ω | --  | 4    | --   | nS   |
| tr                                                                       | Turn-on Rise Time                |                                  | --  | 17.5 | --   | nS   |
| td(off)                                                                  | Turn-Off Delay Time              |                                  | --  | 13   | --   | nS   |
| tf                                                                       | Turn-Off Fall Time               |                                  | --  | 28   | --   | nS   |
| Source- Drain Diode Characteristics                                      |                                  |                                  |     |      |      |      |
| VSD                                                                      | Forward on voltage               | Tj=25°C, Is=3A,                  | --  | --   | 1.2  | V    |



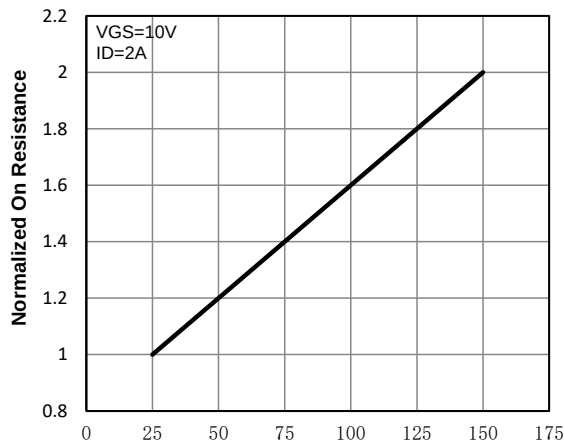
## Typical Operating Characteristics



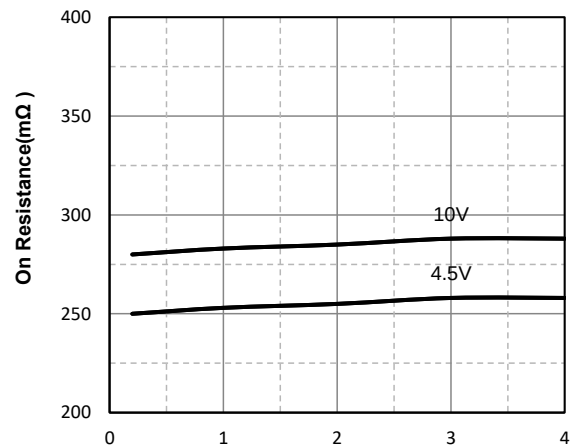
VDS, Drain-Source Voltage (V)  
Fig1. Typical Output Characteristics



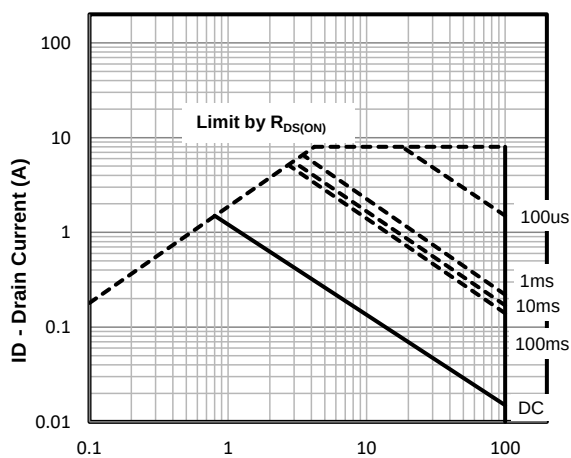
Qg -Total Gate Charge (nC)  
Fig2. Typical Gate Charge Vs. Gate-Source Voltage



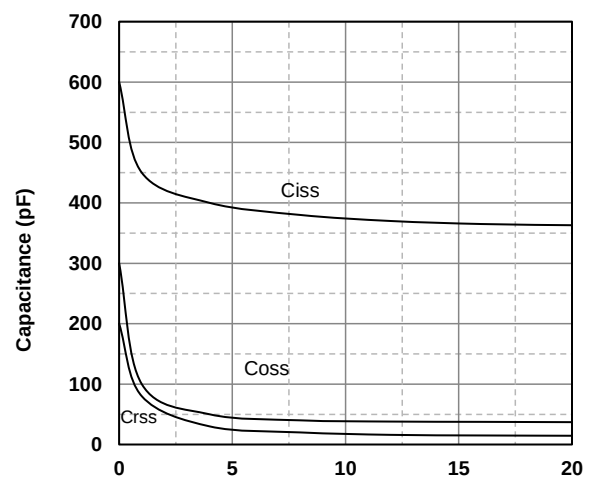
Tj - Junction Temperature (°C)  
Fig3. Normalized On-Resistance Vs. Temperature



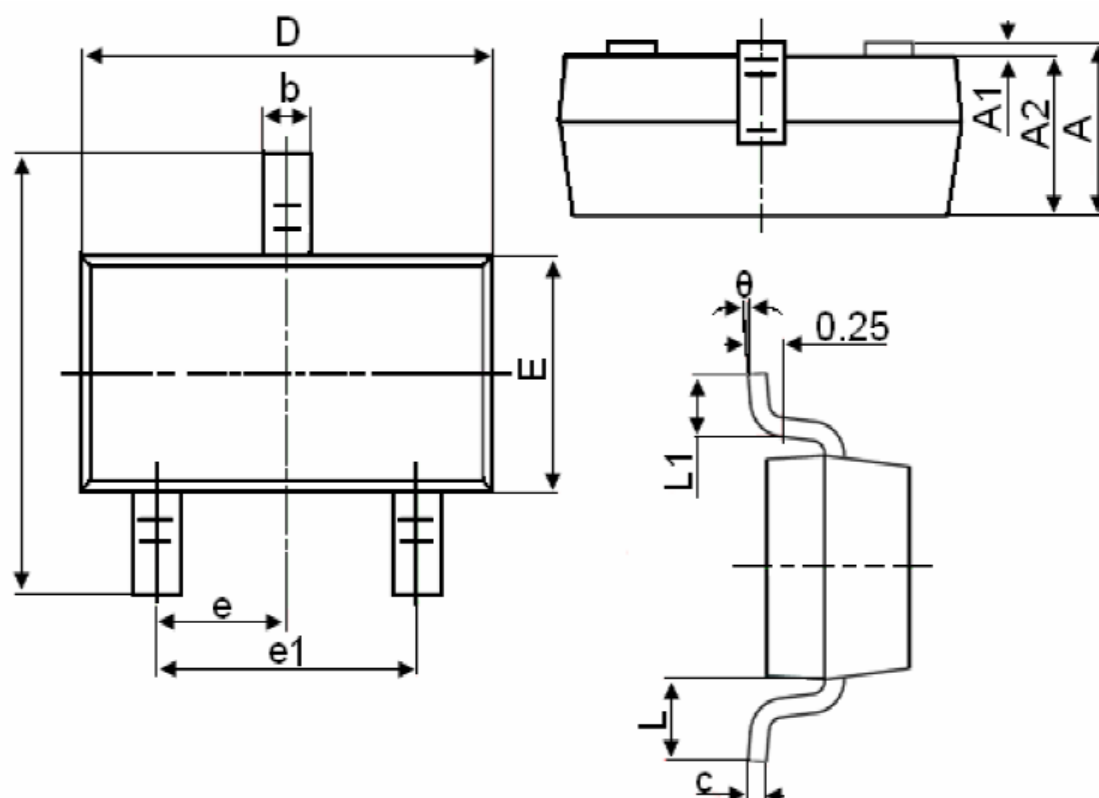
ID, Drain-Source Current (A)  
Fig4. On-Resistance Vs. Drain-Source Current



VDS, Drain-Source Voltage (V)  
Fig5. Maximum Safe Operating Area



VDS, Drain-Source Voltage (V)  
Fig6. Typical Capacitance Vs. Drain-Source Voltage

**SOT-23 Package information**


| Symbol   | Dimensions in Millimeters(mm) |       | 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        | 0.950TYP                      |       | 0.037TYP             |       |
| e1       | 1.800                         | 2.000 | 0.071                | 0.079 |
| L        | 0.550REF                      |       | 0.022REF             |       |
| L1       | 0.300                         | 0.500 | 0.012                | 0.020 |
| $\theta$ | 0°                            | 8°    | 0°                   | 8°    |