

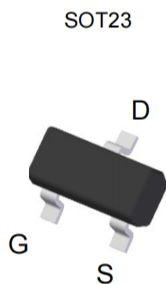
### Product Summary

- $V_{DS} = 20V$  ,  $I_D = 5.5A$   
 $R_{DS(ON)} < 25m\Omega$  @  $V_{GS} = 4.5V$

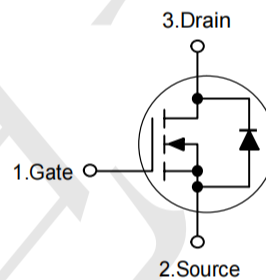
### Application

- Load Switch for Portable Devices
- DC/DC Converter

### Package and Pin Configuration



### Circuit diagram



### Marking: A0D

### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                             | Symbol    | Value       | Unit |
|---------------------------------------|-----------|-------------|------|
| Drain-Source Voltage                  | $V_{DS}$  | 20          | V    |
| Gate-Source Voltage                   | $V_{GS}$  | ±8          | V    |
| Drain Current-Continuous              | $I_D$     | 5.5         | A    |
| Drain Current-Pulsed <sup>Note1</sup> | $I_{DM}$  | 18          | A    |
| Maximum Power Dissipation             | $P_D$     | 1           | W    |
| Junction Temperature                  | $T_J$     | 150         | °C   |
| Storage Temperature Range             | $T_{STG}$ | -55 to +150 | °C   |

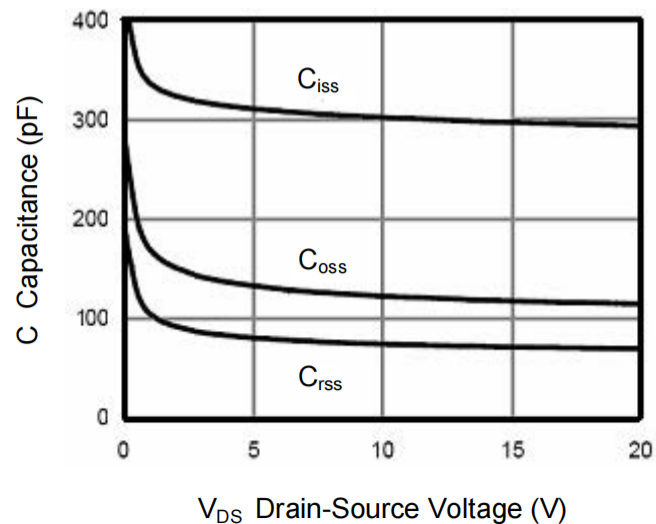
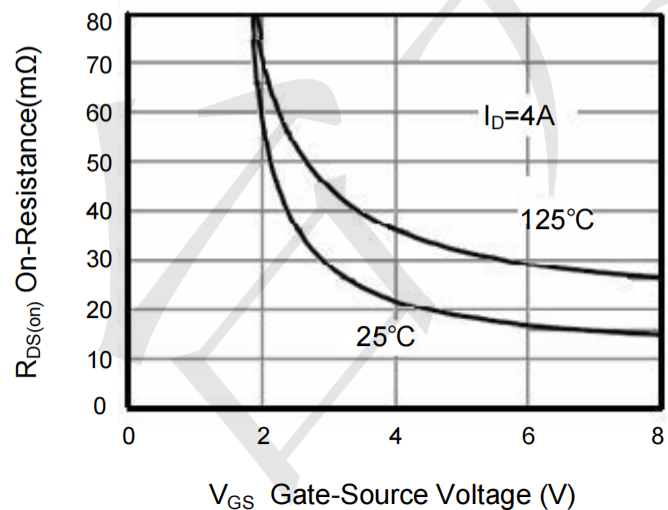
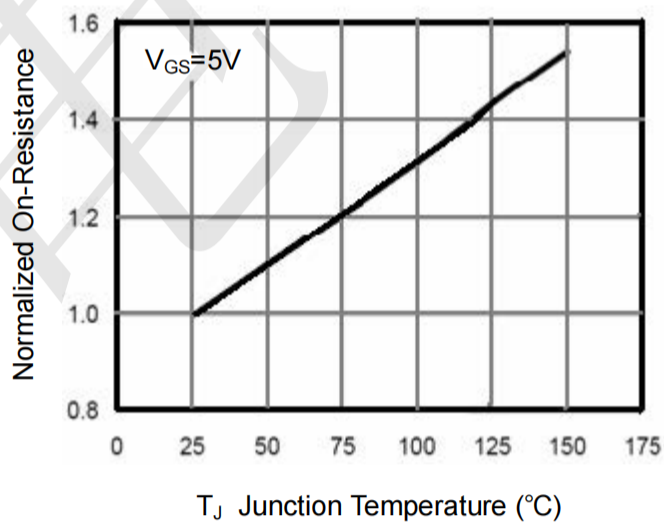
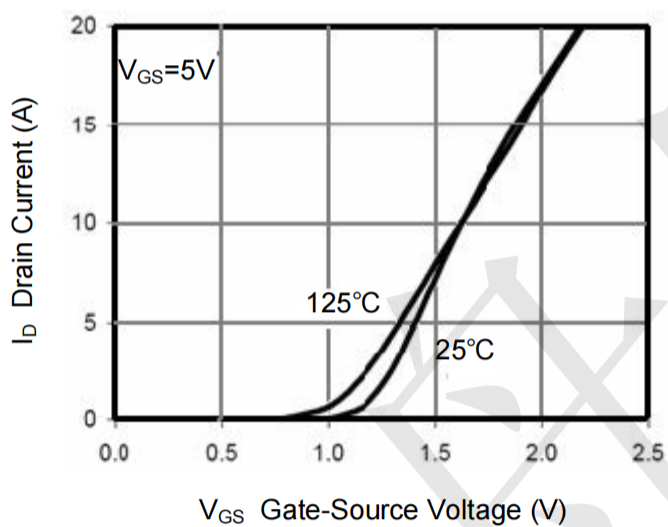
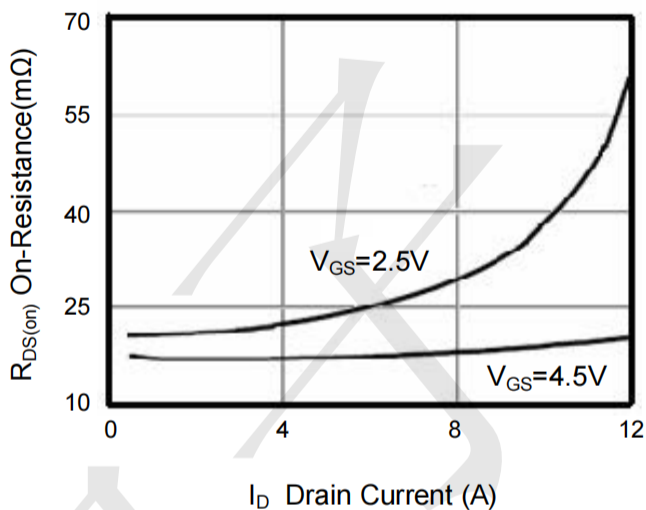
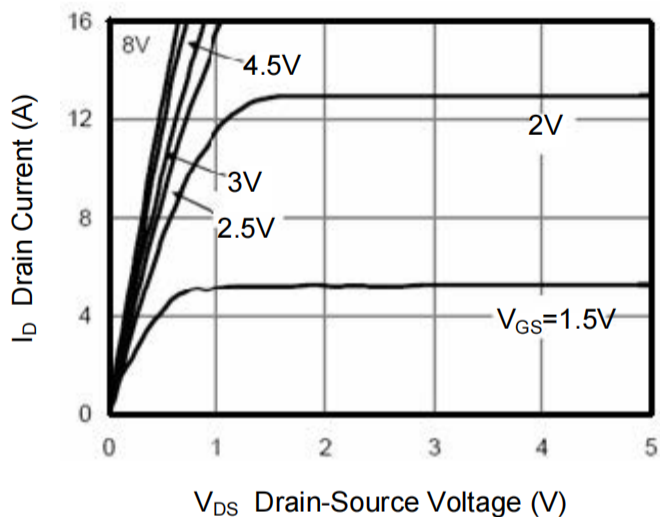
### Thermal Characteristics

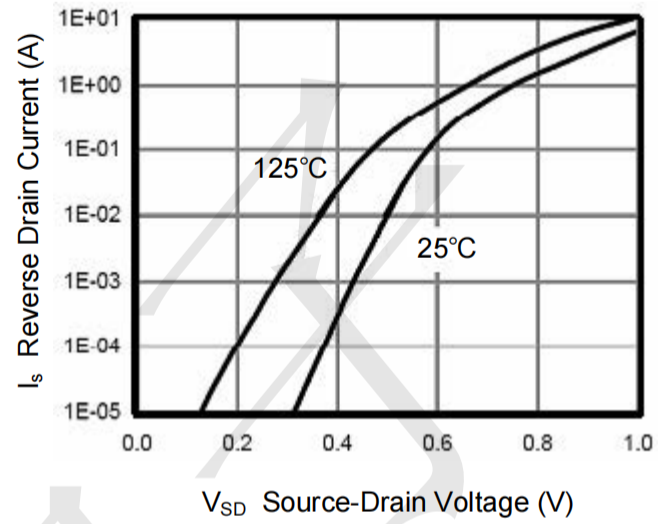
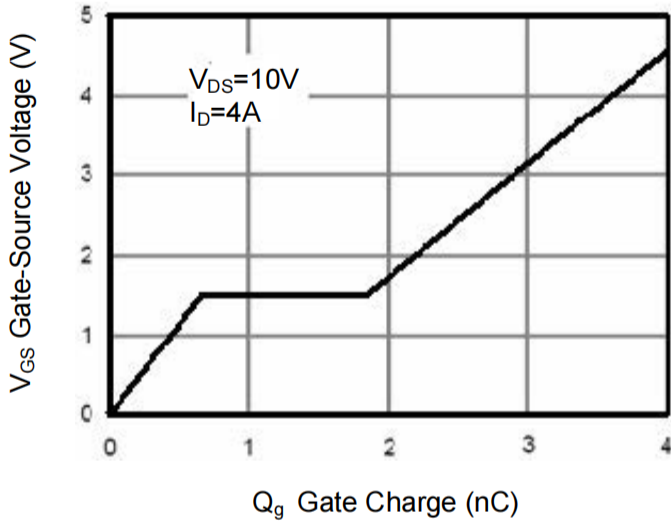
|  |                 |     |      |
|--|-----------------|-----|------|
| Thermal Resistance, Junction-to-Ambient <sup>Note2</sup> | $R_{\theta JA}$ | 125 | °C/W |
|--|-----------------|-----|------|

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

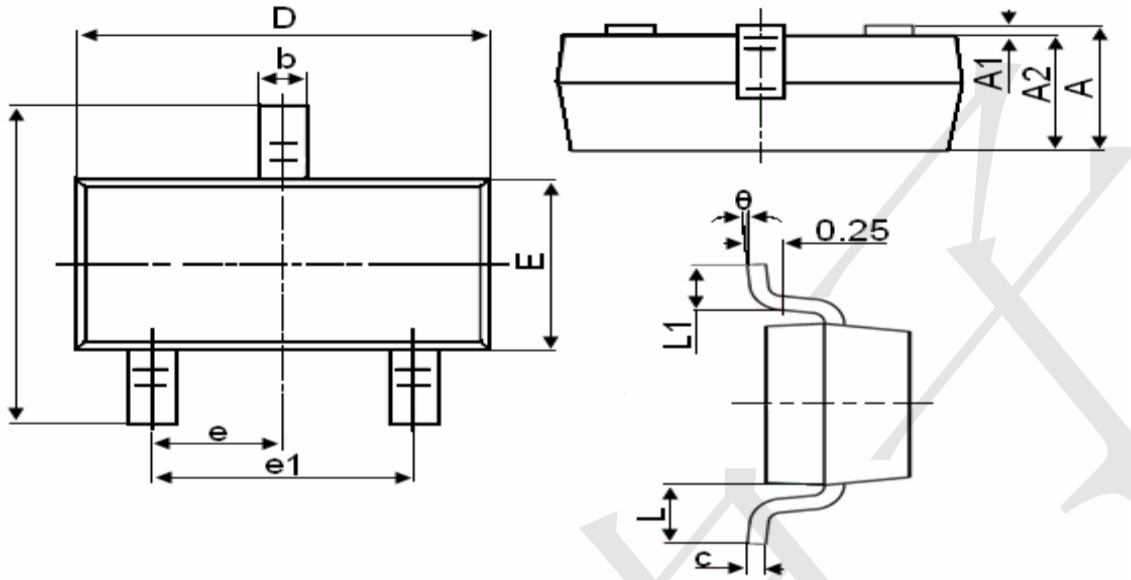
| Parameter                                   | Symbol        | Test Condition   | Min. | Typ. | Max.      | Unit      |
|---|---------------|--|------|------|-----------|-----------|
| <b>Static Characteristics</b>               |               |  |      |      |           |           |
| Drain-Source Breakdown Voltage              | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$                              | 20   | --   | --        | V         |
| Zero Gate Voltage Drain Current             | $I_{DSS}$     | $V_{DS}=20V, V_{GS}=0V$                                | --   | --   | 1         | $\mu A$   |
| Gate-Body Leakage Current                   | $I_{GSS}$     | $V_{GS}=\pm 8V, V_{DS}=0V$                             | --   | --   | $\pm 100$ | nA        |
| Gate Threshold Voltage <sup>Note3</sup>     | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=250\mu A$                          | 0.45 | --   | 1         | V         |
| Drain-Source On-Resistance <sup>Note3</sup> | $R_{DS(on)}$  | $V_{GS}=4.5V, I_D=4A$                                  |      |      | 25        | $m\Omega$ |
|   |               | $V_{GS}=2.5V, I_D=3A$                                  |      |      | 35        | $m\Omega$ |
| Forward Transconductance <sup>Note3</sup>   | $g_{FS}$      | $V_{DS}=5V, I_D=3A$                                    | --   | 8    | --        | S         |
| <b>Dynamic Characteristics</b>              |               |  |      |      |           |           |
| Input Capacitance                           | $C_{iss}$     | $V_{DS}=10V, V_{GS}=0V, f=1MHz$                        | --   | 300  | --        | pF        |
| Output Capacitance                          | $C_{oss}$     |  | --   | 120  | --        | pF        |
| Reverse Transfer Capacitance                | $C_{rss}$     |  | --   | 80   | --        | pF        |
| <b>Switching Characteristics</b>            |               |  |      |      |           |           |
| Turn-on Delay Time                          | $t_{d(on)}$   | $V_{DD}=10V, V_{GS}=4.5V$<br>$I_D=3A, R_{GEN}=6\Omega$ | --   | 10   | --        | nS        |
| Turn-on Rise Time                           | $t_r$         |  | --   | 50   | --        | nS        |
| Turn-off Delay Time                         | $t_{d(off)}$  |  | --   | 17   | --        | nS        |
| Turn-off Fall Time                          | $t_f$         |  | --   | 10   | --        | nS        |
| Total Gate Charge                           | $Q_g$         | $V_{DS}=10V, V_{GS}=4.5V$<br>$I_D=4A$                  | --   | 4.0  | --        | nC        |
| Gate-Source Charge                          | $Q_{gs}$      |  | --   | 0.65 | --        | nC        |
| Gate-Drain Charge                           | $Q_{gd}$      |  | --   | 1.2  | --        | nC        |
| <b>Source-Drain Diode Characteristics</b>   |               |  |      |      |           |           |
| Diode Forward Voltage <sup>Note3</sup>      | $V_{SD}$      | $V_{GS}=0V, I_S=5.5A$                                  | --   | --   | 1.2       | V         |
| Diode Forward Current <sup>Note2</sup>      | $I_S$         |  | --   | --   | 5.5       | A         |

**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**





**Package Outline Dimensions (SOT-23)**



| Symbol | Dimensions in Millimeters |       |
|--------|---------------------------|-------|
|        | MIN.                      | MAX.  |
| A      | 0.900                     | 1.150 |
| A1     | 0.000                     | 0.100 |
| A2     | 0.900                     | 1.050 |
| b      | 0.300                     | 0.500 |
| c      | 0.080                     | 0.150 |
| D      | 2.800                     | 3.000 |
| E      | 1.200                     | 1.400 |
| E1     | 2.250                     | 2.550 |
| e      | 0.950TYP                  |       |
| e1     | 1.800                     | 2.000 |
| L      | 0.550REF                  |       |
| L1     | 0.300                     | 0.500 |
| θ      | 0°                        | 8°    |