

## -100V/-2A P-Channel MOSFET

### Features

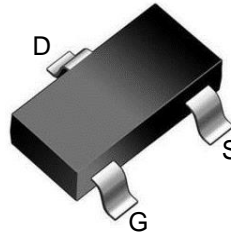
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available
- Advanced high cell density Trench technology

### Application

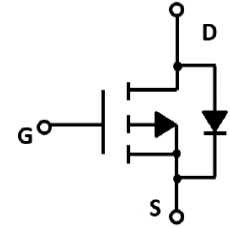
- Video monitor
- Power management

### Product Summary

| $V_{DS}$ | $R_{DS(ON)}$ MAX    | $I_D$ MAX |
|----------|---------------------|-----------|
| -100V    | 650m $\Omega$ @10V  | -2A       |
|          | 700m $\Omega$ @4.5V |           |



SOT-23 top view

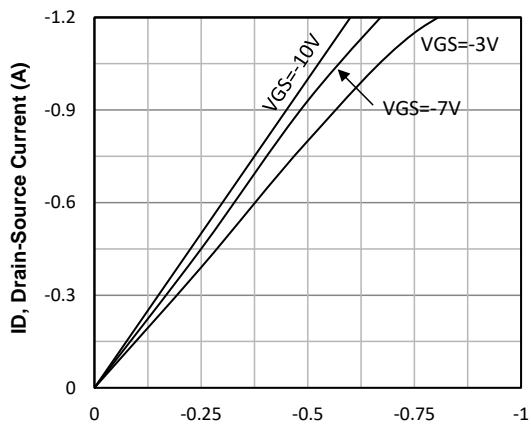


Schematic diagram

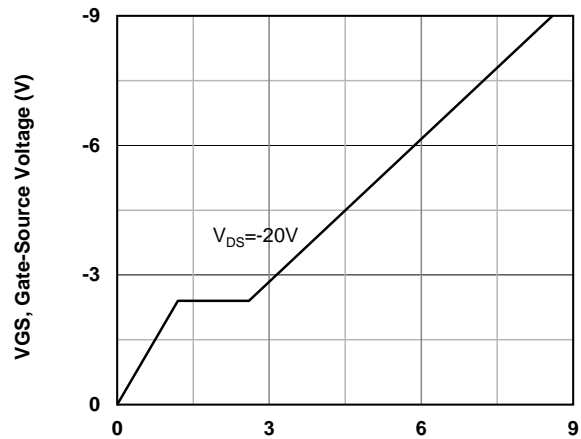
| Absolute Maximum Ratings (TA=25°C unless otherwise noted) |  |                              |      |
|---|--|------------------------------|------|
| Symbol  | Parameter                              | Rating                       | Unit |
| <b>Common Ratings (TC=25°C Unless Otherwise Noted)</b>    |  |                              |      |
| $V_{DS}$  | Drain-Source Breakdown Voltage         | -100                         | V    |
| $V_{GS}$  | Gate-Source Voltage                    | $\pm 20$                     | V    |
| $T_J$   | Maximum Junction Temperature           | 150                          | °C   |
| $T_{STG}$   | Storage Temperature Range              | -55 to 150                   | °C   |
| $I_S$   | Diode Continuous Forward Current       | $T_C=25^\circ\text{C}$<br>-2 | A    |
| <b>Mounted on Large Heat Sink</b>                         |  |                              |      |
| $I_{DM}$  | Pulse Drain Current Tested             | $T_C=25^\circ\text{C}$<br>-5 | A    |
| $I_D$   | Continuous Drain Current@GS=10V        | $T_C=25^\circ\text{C}$<br>-2 | A    |
| $P_D$   | Maximum Power Dissipation              | $T_C=25^\circ\text{C}$<br>1  | W    |
| $R_{\theta JA}$   | Thermal Resistance Junction-to-Ambient | 125                          | °C/W |

| <b>Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)</b>              |                                  |  |            |            |            |             |
|--|----------------------------------|--|------------|------------|------------|-------------|
| <b>Symbol</b>  | <b>Parameter</b>                 | <b>Condition</b>                           | <b>Min</b> | <b>Typ</b> | <b>Max</b> | <b>Unit</b> |
| <b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>  |                                  |  |            |            |            |             |
| BV <sub>(BR)DSS</sub>  | Drain-Source Breakdown Voltage   | VGS=0V, ID=-250μA                          | -100       | --         | --         | V           |
| I <sub>DSS</sub>   | Zero Gate Voltage Drain Current  | VDS=-100V, VGS=0V                          | --         | --         | -1         | μA          |
| I <sub>GSS</sub>   | Gate-Body Leakage Current        | VGS=±20V, VDS=0V                           | --         | --         | ±100       | nA          |
| V <sub>GS(th)</sub>  | Gate Threshold Voltage           | VDS=VGS, ID=-250μA                         | -1         | -2         | -2.5       | V           |
| R <sub>DS(on)</sub>  | Drain-Source On-State Resistance | VGS=-10V, ID=-1A                           | --         | 560        | 650        | mΩ          |
|  |                                  | VGS=-4.5V, ID=-0.5A                        | --         | 630        | 700        |             |
| <b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b> |                                  |  |            |            |            |             |
| C <sub>ISS</sub>   | Input Capacitance                | VDS=-15V, VGS=0V, f=1MHz                   | --         | 553        | --         | pF          |
| C <sub>OSS</sub>   | Output Capacitance               |  | --         | 29         | --         | pF          |
| C <sub>RSS</sub>   | Reverse Transfer Capacitance     |  | --         | 20         | --         | pF          |
| <b>Switching Characteristics</b>   |                                  |  |            |            |            |             |
| Q <sub>g</sub>   | Total Gate Charge                | VDS=-15V, ID=-0.5A,<br>VGS=-4.5V           | --         | 4.5        | --         | nC          |
| Q <sub>gs</sub>  | Gate Source Charge               |  | --         | 1.15       | --         | nC          |
| Q <sub>gd</sub>  | Gate Drain Charge                |  | --         | 1.5        | --         | nC          |
| t <sub>d(on)</sub>   | Turn-on Delay Time               | VDD=-50V, ID=-0.5A,<br>VGS=-10V, RG=3.3Ω   | --         | 13.6       | --         | nS          |
| t <sub>r</sub>   | Turn-on Rise Time                |  | --         | 6.8        | --         | nS          |
| t <sub>d(off)</sub>  | Turn-Off Delay Time              |  | --         | 34         | --         | nS          |
| t <sub>f</sub>   | Turn-Off Fall Time               |  | --         | 3          | --         | nS          |
| <b>Source- Drain Diode Characteristics</b>   |                                  |  |            |            |            |             |
| V <sub>SD</sub>  | Forward on voltage               | T <sub>j</sub> =25°C, I <sub>s</sub> =-2A, | --         | --         | -1.2       | V           |

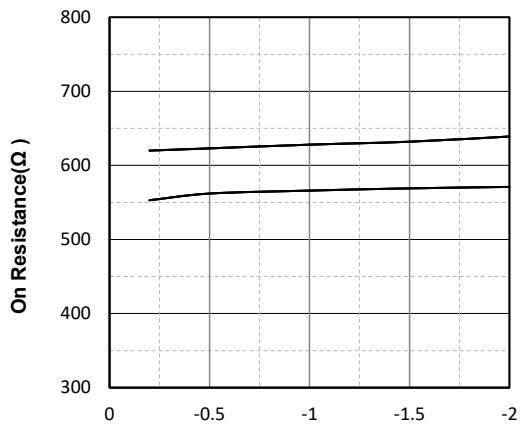
## Typical Operating Characteristics



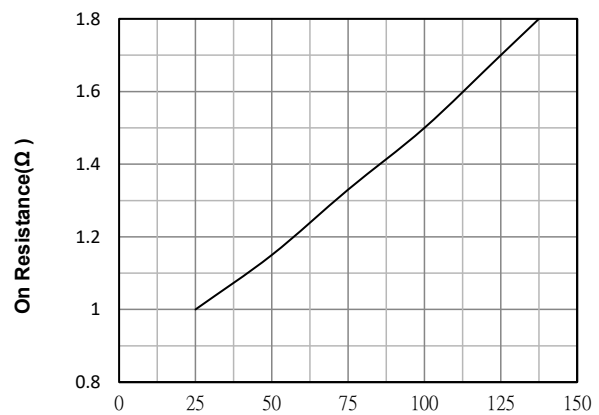
**V<sub>DS</sub>, Drain -Source Voltage (V)**  
**Fig1. Typical Output Characteristics**



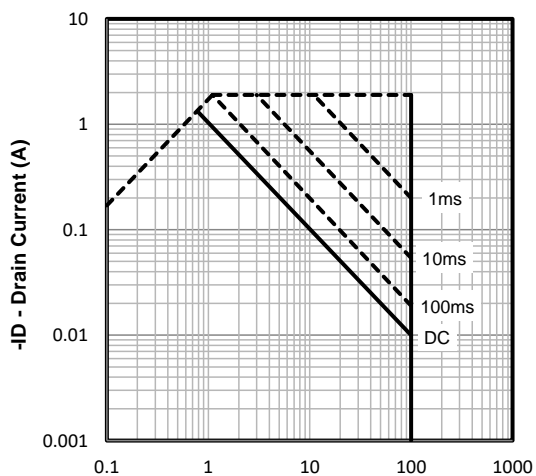
**Q<sub>g</sub> -Total Gate Charge (nC)**  
**Fig2. Typical Gate Charge Vs. Gate-Source Voltage**



**I<sub>D</sub>, Drain-Source Current (mA)**  
**Fig3. Drain-Source on Resistance**



**T<sub>j</sub> - Junction Temperature (°C)**  
**Fig4. Normalized On-Resistance Vs. Temperature**

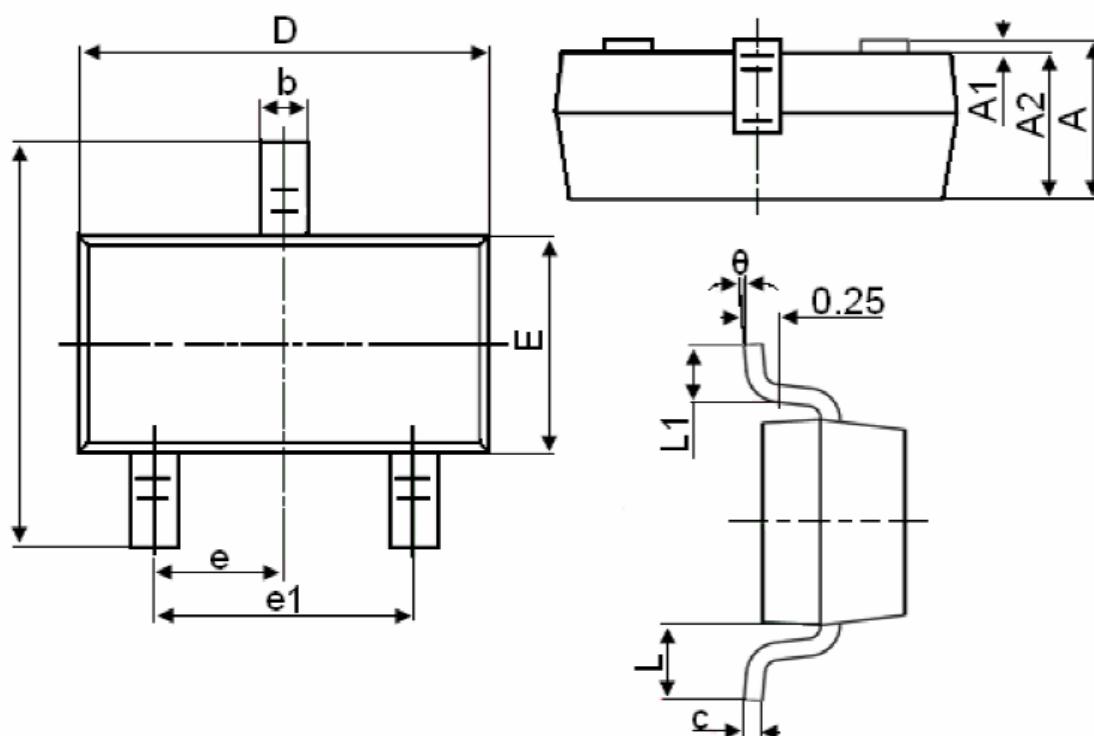


**-V<sub>DS</sub>, Drain -Source Voltage (V)**  
**Fig7. Maximum Safe Operating Area**



**-V<sub>DS</sub>, 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     |
| $\theta$ | $0^\circ$                     | $8^\circ$ | $0^\circ$            | $8^\circ$ |

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