

## 20V P-Channel Enhancement Mode MOSFET

**VDS= 20V**

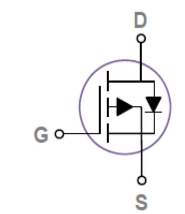
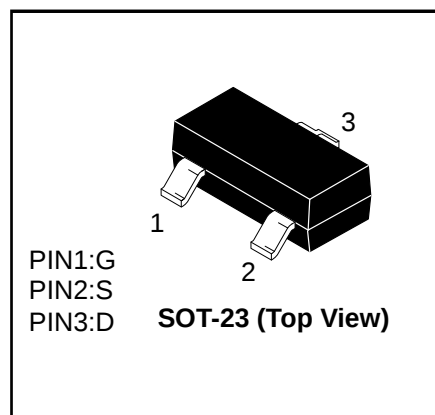
**RDS(ON), Vgs@ 10.0V, Ids@3.5A <30.0mΩ**

**RDS(ON), Vgs@ 4.5V, Ids@ 2.8A < 40mΩ**

### Features

Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance



Maximum Ratings and Thermal Characteristics (TA = 25oC unless otherwise noted)

| Parameter                                 | Symbol                                | Rating    | Unit |
|-------------------------------------------|---------------------------------------|-----------|------|
| Drain-Source Voltage                      | V <sub>DSS</sub>                      | -20       | V    |
| Gate-Source Voltage                       | V <sub>GSS</sub>                      | ±12       | V    |
| Drain Current – Continuous <sup>(1)</sup> | I <sub>D</sub>                        | -4.3      | A    |
| Drain Current – Continuous                | I <sub>D</sub> (T <sub>A</sub> =70°C) | -2.8      | A    |
| Pulsed Drain Current                      | I <sub>DM</sub>                       | -16       | A    |
| Continuous Source Current                 | I <sub>S</sub>                        | 1.25      | A    |
| Power Dissipation                         | P <sub>D</sub>                        | 1.25      | W    |
| Power Dissipation                         | P <sub>D</sub> (T <sub>A</sub> =70°C) | 0.80      | W    |
| Storage Temperature Range                 | T <sub>stg</sub>                      | -55 ~ 150 | °C   |

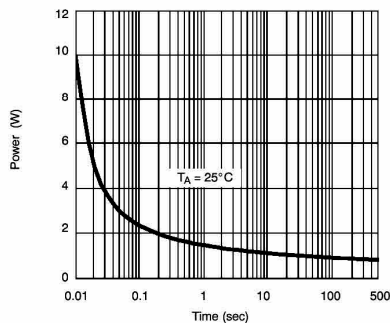
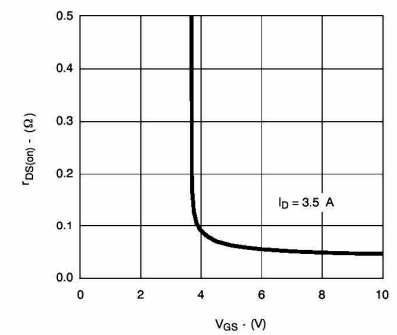
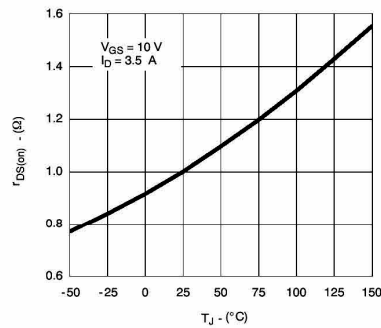
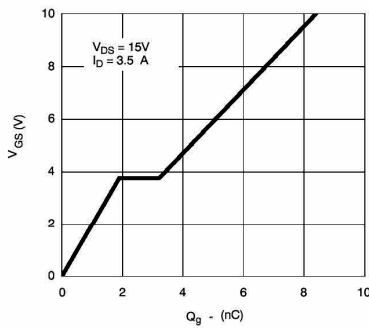
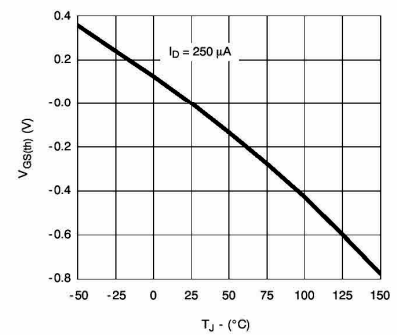
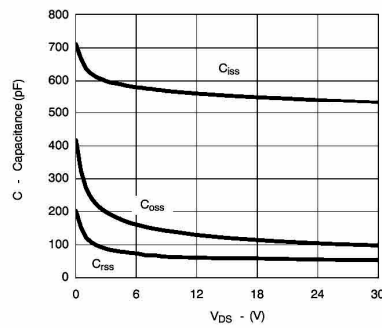
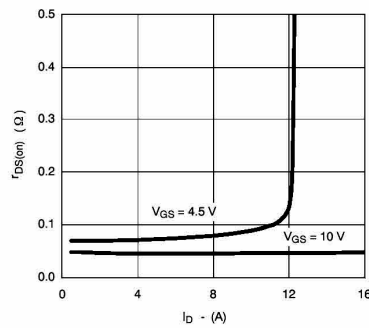
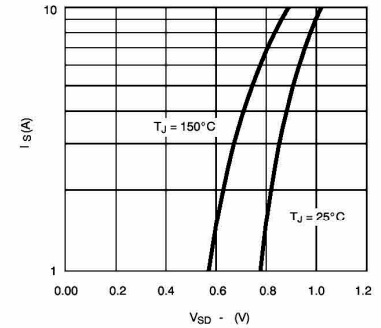
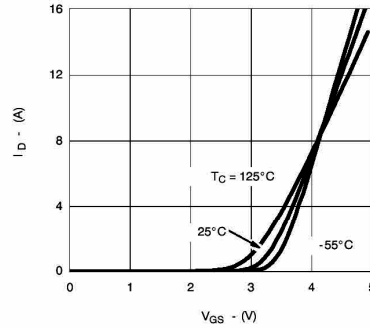
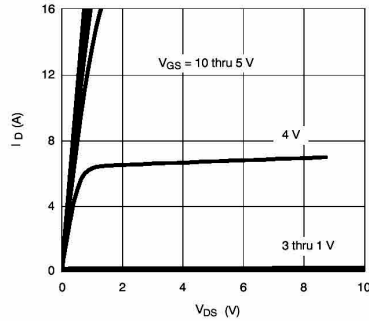
Notes:

1. Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for drain 6 cm<sup>2</sup>.

**Electrical Characteristics(Ta=25°C)**

| Parameter                          | Symbol        | Test Conditions                                                                   | Min  | Typ  | Max  | Unit |
|------------------------------------|---------------|-----------------------------------------------------------------------------------|------|------|------|------|
| Drain–Source Breakdown Voltage     | $V_{(BR)DSS}$ | $V_{GS}=0V$ $I_D=250\mu A$                                                        | -20  |      |      | V    |
| Gate Threshold Voltage             | $V_{GS(th)}$  | $V_{DS}=V_{GS}$ $I_D=250\mu A$                                                    | -0.4 |      | -1.0 | V    |
| Static Drain–Source On–Resistance  | $R_{DS(on)}$  | $V_{GS}=10V$ $I_D=3.5A$                                                           |      |      | 30   | mΩ   |
|                                    |               | $V_{GS}=4.5V$ $I_D=2.8A$                                                          |      |      | 40   | mΩ   |
| Zero Gate Voltage Drain Current    | $I_{DSS}$     | $V_{DS}=20V$ $V_{GS}=0V$                                                          |      |      | 1    | μA   |
|                                    |               | $V_{DS}=30V$ $V_{GS}=0V$<br>$T_j=55^\circ C$                                      |      |      | 30   | μA   |
| Gate–Body Leakage.                 | $I_{GSS}$     | $V_{GS}=\pm 12V$ $V_{DS}=0V$                                                      |      |      | ±0.1 | μA   |
| State Drain Current                | $I_D$         | $V_{DS}\geq 4.5V$ $V_{GS}=10V$                                                    | -6   |      |      | A    |
|                                    |               | $V_{DS}\geq 4.5V$ $V_{GS}=4.5V$                                                   | -3   |      |      | A    |
| Drain–Source Diode Forward Voltage | $V_{SD}$      | $I_S=1.25A$ $V_{GS}=0V$                                                           |      | -0.8 | -1.2 | V    |
| Forward Transconductance           | $g_{FS}$      | $V_{DS}=4.5V$ $I_D=3.5A$                                                          |      | 6.5  |      | S    |
| Gate Resistance                    | $R_g$         |                                                                                   | 0.5  |      | 2.4  | Ω    |
| Input Capacitance                  | $C_{iss}$     | $V_{DS}=15V$ $V_{GS}=0V$<br>$f=1.0MHz$                                            |      | 415  |      | pF   |
| Output Capacitance                 | $C_{oss}$     |                                                                                   |      | 223  |      |      |
| Reverse Transfer Capacitance       | $C_{rss}$     |                                                                                   |      | 84   |      |      |
| Turn–On Delay Time                 | $t_{d(on)}$   | $V_{DD}=15V$ $R_L=15\Omega$<br>$I_D\approx 1.0A$ $V_{GEN}=10V$<br>$R_G=6.0\Omega$ |      | 13   | 25   | ns   |
| Turn–On Rise Time                  | $t_r$         |                                                                                   |      | 36   | 60   |      |
| Turn–Off Delay Time                | $t_{d(off)}$  |                                                                                   |      | 42   | 70   |      |
| Turn–Off Fall Time                 | $t_f$         |                                                                                   |      | 34   | 60   |      |

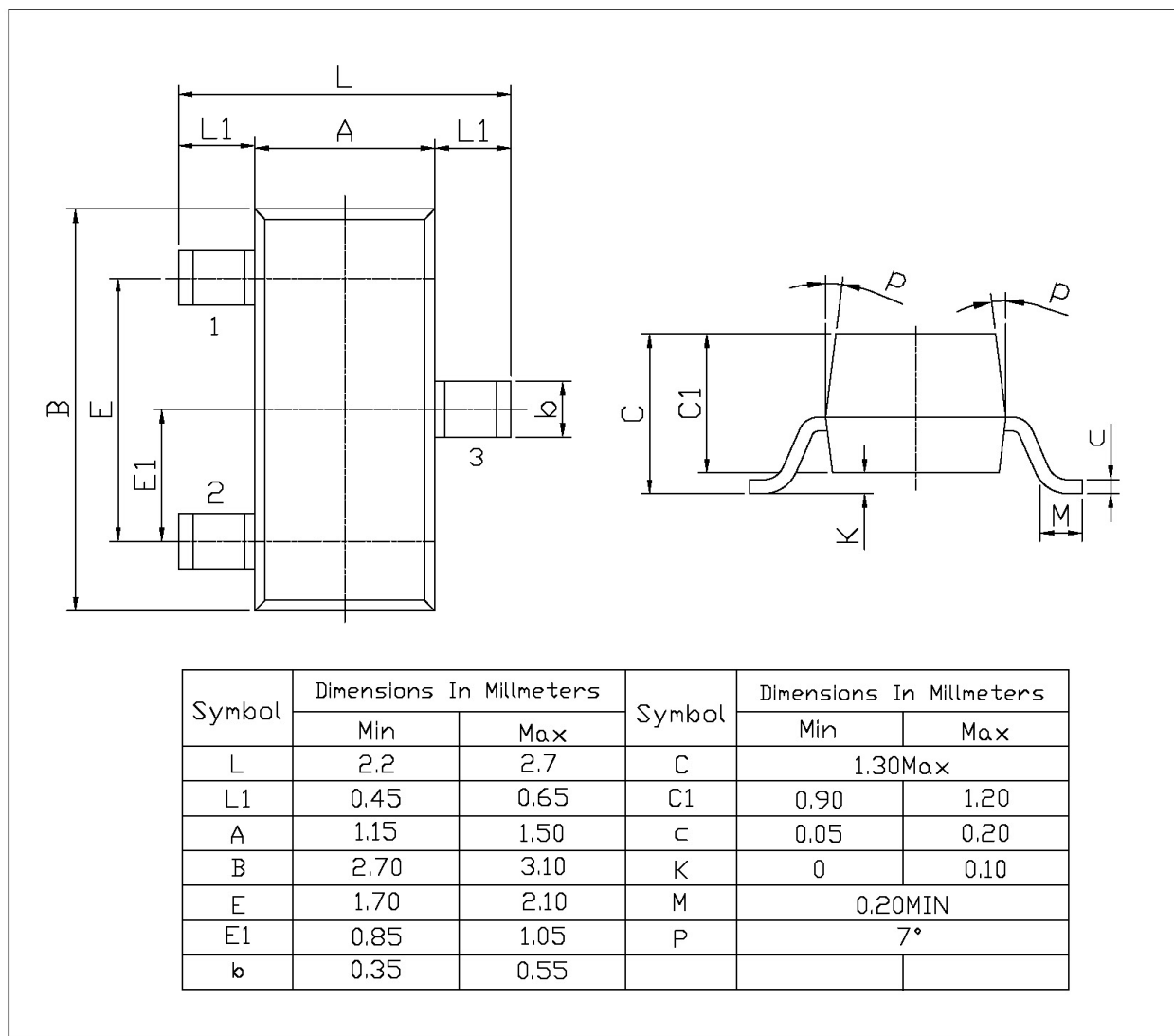
## Electrical Characteristic Curve



## Dimension outline Unit:mm

SOT-23

单位; mm



## SOT-23 Suggested Pad Layout

