

## 20V P-Channel MOSFET

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)HMD}$	$I_D$
-20V	38mΩ@-4.5V	-4A
	48mΩ@-2.5V	

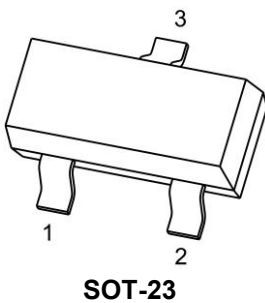
### Feature

- TrenchFET Power MOSFET
- Excellent  $R_{DS(on)}$  and Low Gate Charge
- ESD Protected: 2kV

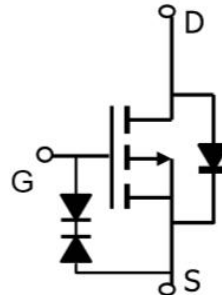
### Application

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

### Package:



### Circuit diagram



**Absolute maximum ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

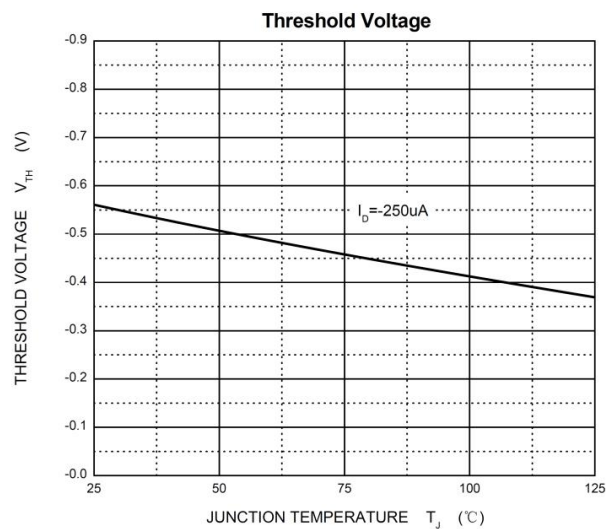
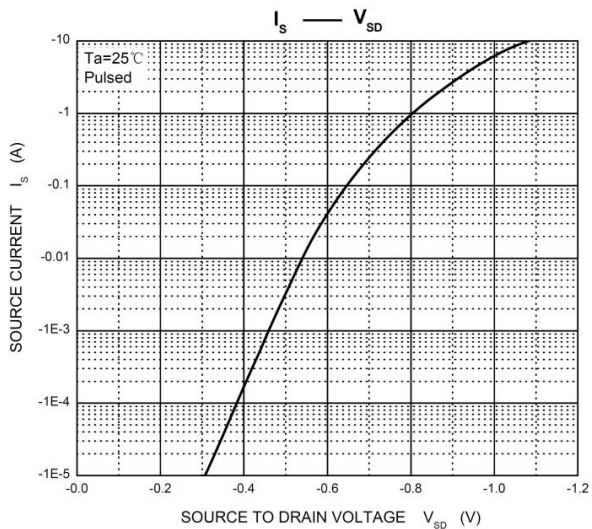
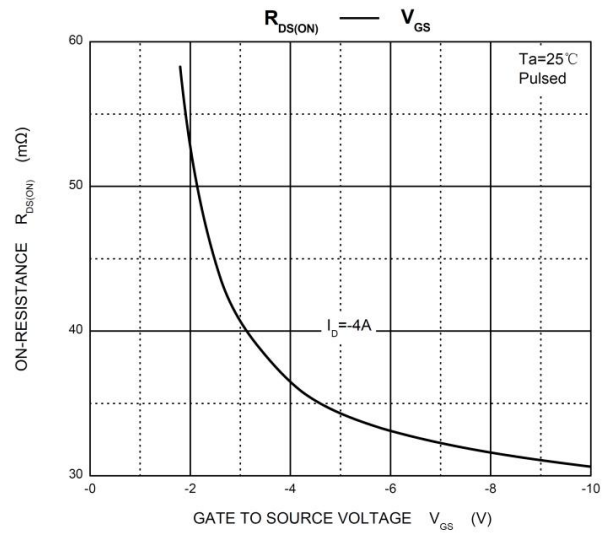
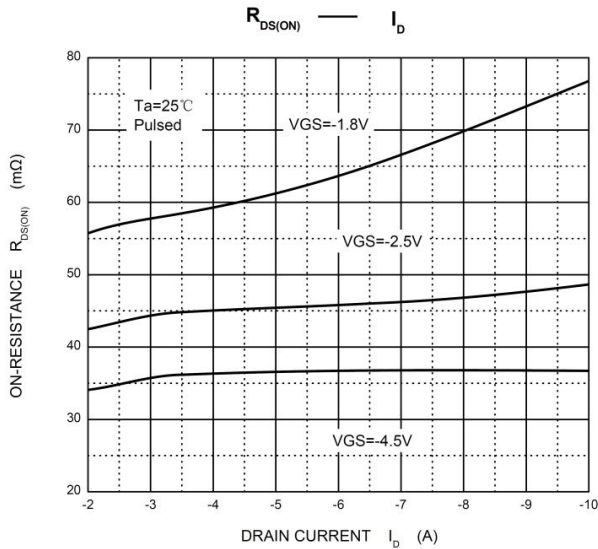
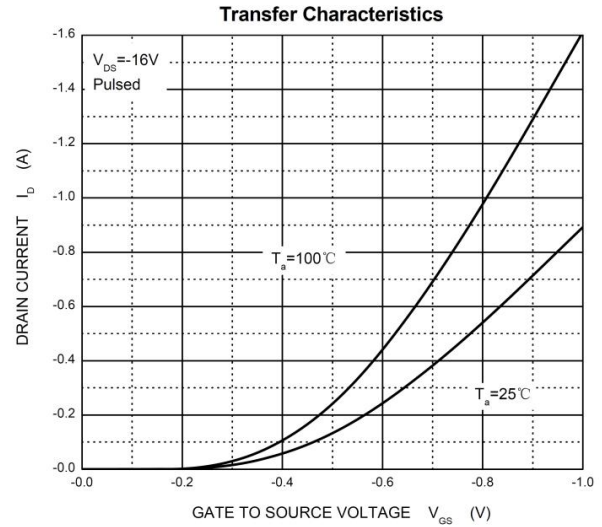
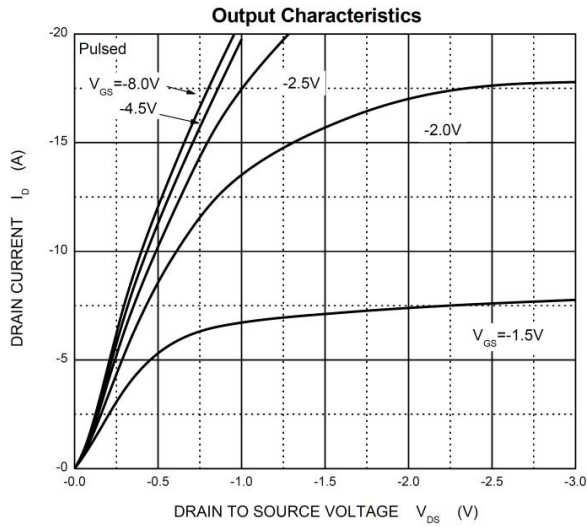
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	-4	A
Maximum Pulsed Drain to Source Diode Forward Current	$I_{DM}$	-20	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}\text{C}$

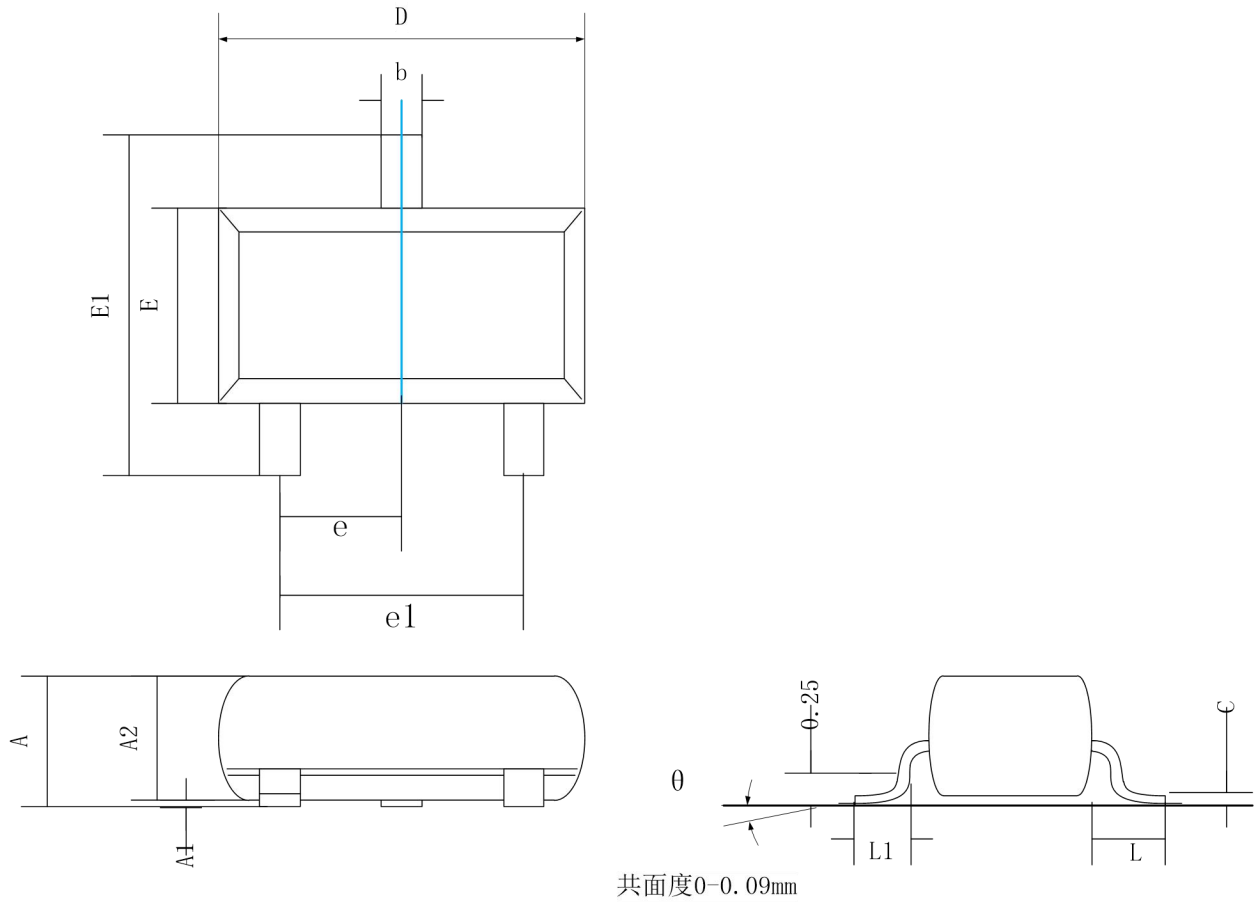
**Electrical characteristics ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	-20			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$			-1	$\mu\text{A}$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 8\text{V}, V_{DS} = 0\text{V}$			$\pm 10$	$\mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-0.4	-0.65	-1	V
Drain-source on-resistance <sup>1)</sup>	$R_{DS(on)}$	$V_{GS} = -4.5\text{V}, I_D = -4\text{A}$		38	42	m $\Omega$
		$V_{GS} = -2.5\text{V}, I_D = -3\text{A}$		48	60	
<b>Dynamic characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		950		pF
Output Capacitance	$C_{oss}$			165		
Reverse Transfer Capacitance	$C_{rss}$			120		
<b>Switching Characteristics</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, R_L = 2.5\Omega, R_{GEN} = 3\Omega$		12		ns
Turn-on rise time	$t_r$			10		
Turn-off delay time	$t_{d(off)}$			19		
Turn-off fall time	$t_f$			25		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage <sup>2)</sup>	$V_{SD}$	$V_{GS} = 0\text{V}, I_S = -4\text{A}$			-1.2	V

**Note:**

- 1) Repetitive Rating : Pulse width limited by maximum junction temperature.
- 2) Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

**Typical Characteristics**


**SOT-23 Package Information**


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50
$\theta$	0°	8°

V 1.0