

20V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	70mΩ@4.5V	1.8A
	90mΩ@2.5V	

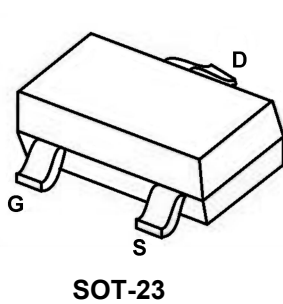
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

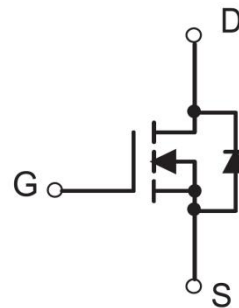
Application

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

Package



Circuit diagram



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	1.8	A
Plused Drain Current	I_{DM}	7	A
	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

Note1: Exceed these limits to damage to the device.

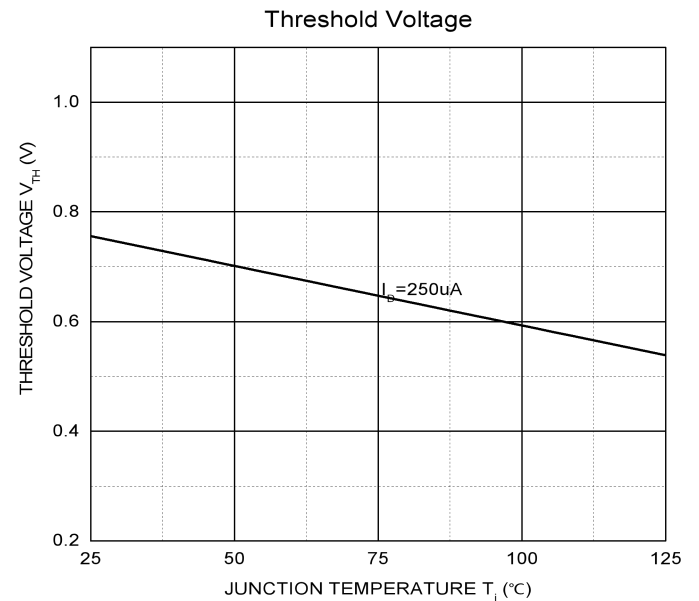
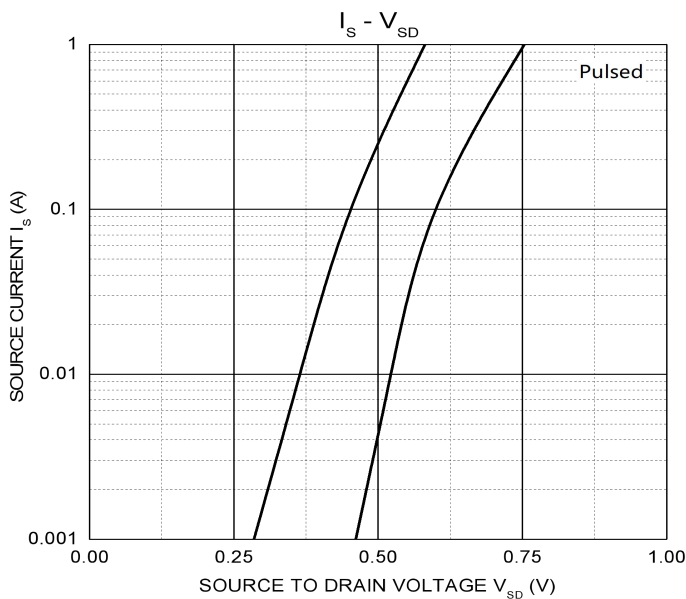
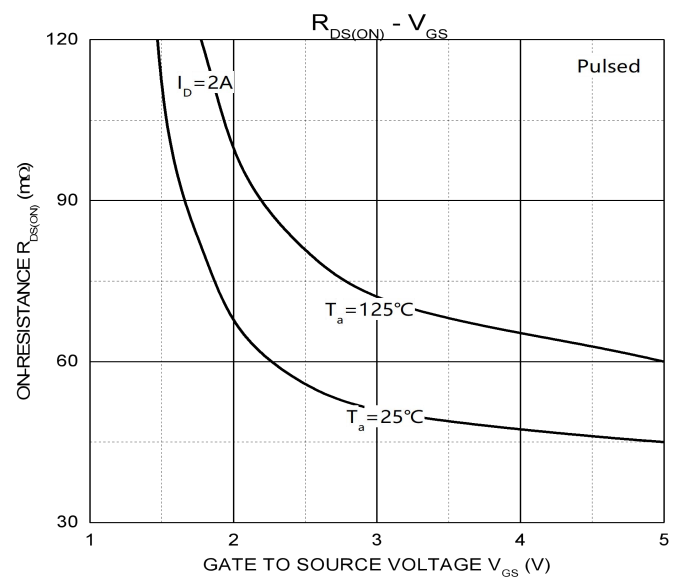
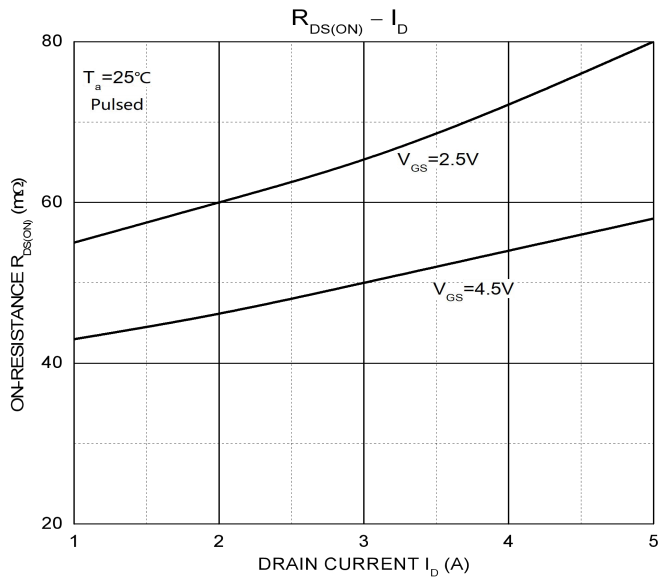
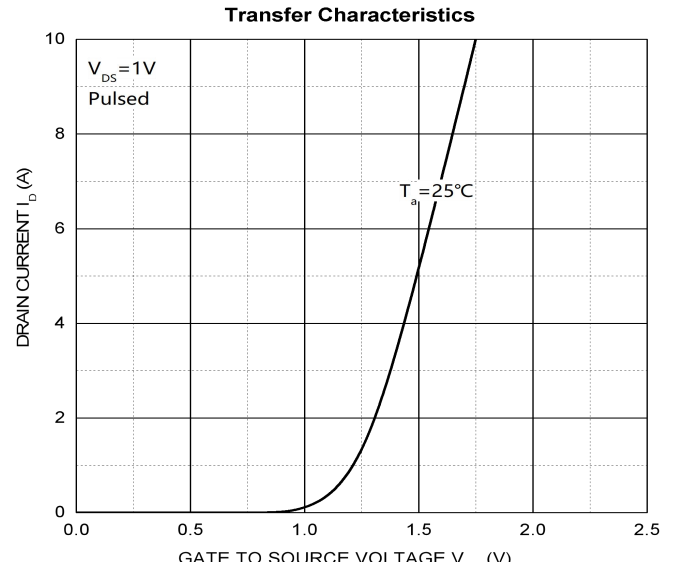
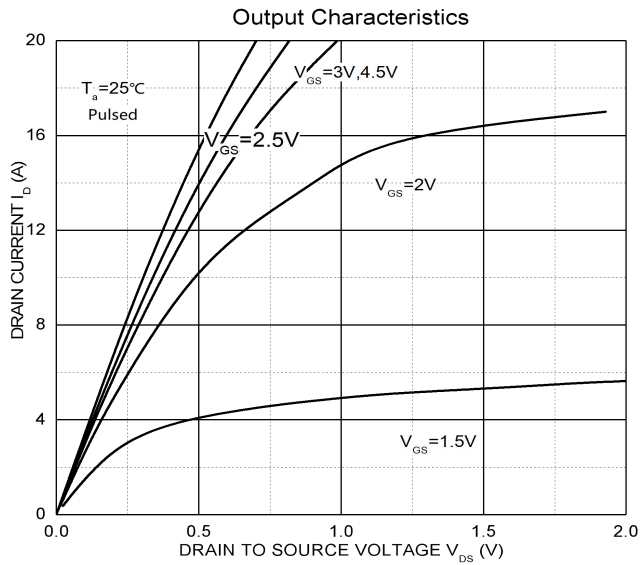
Note2: Exposure to absolute maximum rating conditions may affect device reliability.

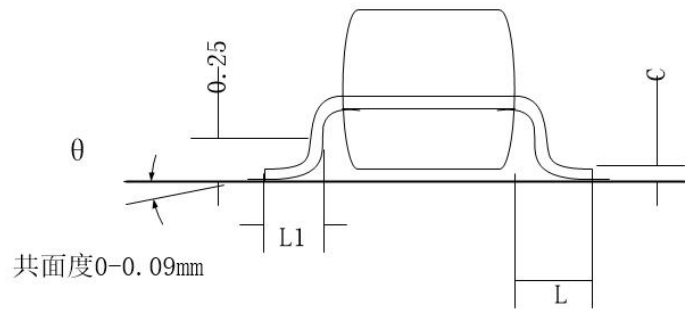
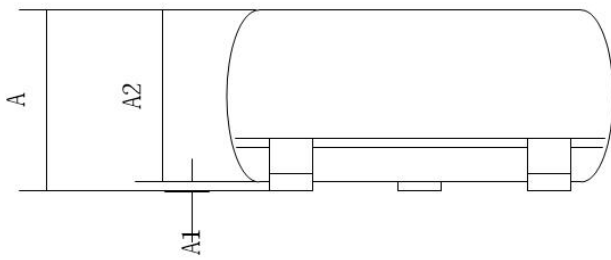
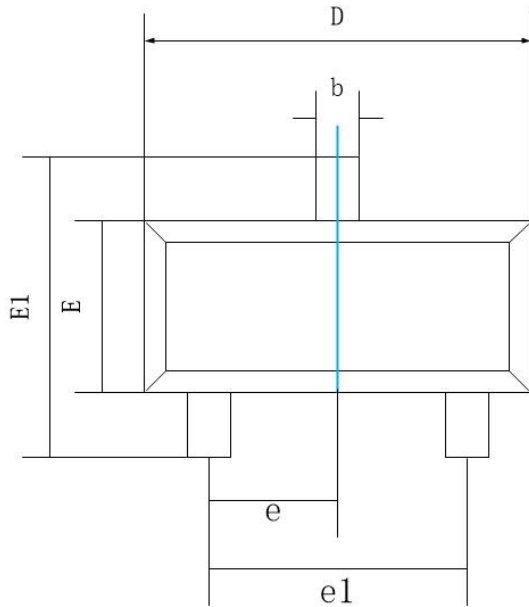
Electrical characteristics (TA=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
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	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$			±0.1	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.4	0.65	1	V
Drain-source on-resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 1.8A$		50	70	mΩ
		$V_{GS} = 2.5V, I_D = 1.5A$		65	90	
Dynamic characteristics						
Input Capacitance ²⁾	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		220		pF
Output Capacitance ²⁾	C_{oss}			40		pF
Reverse Transfer Capacitance ²⁾	C_{rss}			20		pF
Total gate charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 2A$		2.7		nC
Gate-source charge	Q_{gs}			0.4		nC
Gate-drain charge	Q_{gd}			0.5		nC
Switching Characteristics²⁾						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 10V, R_L = 3.3\Omega, V_{GEN} = 4.5V, R_g = 6\Omega$		2.3		ns
Turn-on rise time	t_r			3.1		ns
Turn-off delay time	$t_{d(off)}$			20		ns
Turn-off fall time	t_f			2.5		ns
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1.5A$			1.2	V

Notes:

- 1) Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.
- 2) These parameters have no way to verify.

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
θ	0°	8°