SOT-23 Plastic-Encapsulate MOSFETS
P-Channel 20-V(D-S) MOSFET
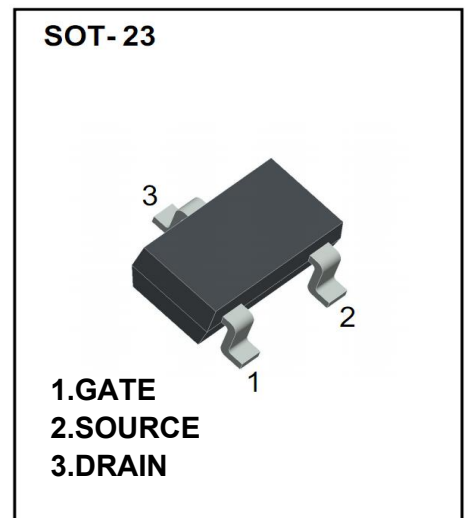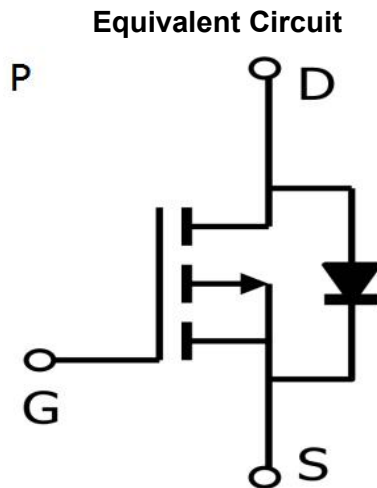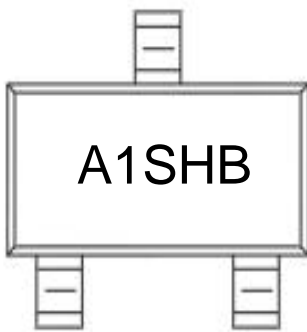
FEATURE

TrenchFET Power MOSFET

APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

MARKING

A1SHB

Equivalent Circuit

SOT-23

1.GATE
2.SOURCE
3.DRAIN

Maximum ratings (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current	I_D	-2.8	A
Pulsed Drain Current	I_{DM}	-10	
Continuous Source-Drain Diode Current	I_S	-0.72	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient(t ≤5s)	$R_{\theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{stg}	-55 ~+150	

**Electrical characteristics (T$_a$=25℃ unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	V$_{(BR)DSS}$	V$_{GS}$ = 0V, I$_D$ =-250μA	-20			V
Gate-source threshold voltage	V$_{GS(th)}$	V$_{DS}$ =V$_{GS}$, I$_D$ =-250μA	-0.4		-1	
Gate-source leakage	I$_{GSS}$	V$_{DS}$ =0V, V$_{GS}$ =±8V			±100	nA
Zero gate voltage drain current	I$_{DSS}$	V$_{DS}$ =-20V, V$_{GS}$ =0V			-1	μA
Drain-source on-state resistance [a]	R$_{DS(on)}$	V$_{GS}$ =-4.5V, I$_D$ =-2.8A		0.090	0.112	Ω
		V$_{GS}$ =-2.5V, I$_D$ =-2.0A		0.110	0.142	
Forward transconductance [a]	g$_{fs}$	V$_{DS}$ =-5V, I$_D$ =-2.8A		6.5		S
Dynamic[b]						
Input capacitance	C$_{iss}$	V$_{DS}$ =-10V,V$_{GS}$ =0V,f =1MHz		405		pF
Output capacitance	C$_{oss}$			75		
Reverse transfer capacitance	C$_{rss}$			55		
Total gate charge	Q$_g$	V$_{DS}$ =-10V,V$_{GS}$ =-4.5V,I$_D$ =-3A		5.5	10	nC
		V$_{DS}$ =-10V,V$_{GS}$ =-2.5V,I$_D$ =-3A		3.3	6	
Gate-source charge	Q$_{gs}$			0.7		
Gate-drain charge	Q$_{gd}$			1.3		
Gate resistance	R$_g$	f =1MHz		6.0		Ω
Turn-on delay time	t$_{d(on)}$	V$_{DD}$=-10V, R$_L$=10Ω, I$_D$ =-1A, V$_{GEN}$=-4.5V,Rg=1Ω		11	20	ns
Rise time	t$_r$			35	60	
Turn-off delay time	t$_{d(off)}$			30	50	
Fall time	t$_f$			10	20	
Drain-source body diode characteristics						
Continuous source-drain diode current	I$_S$	T$_C$=25℃			-1.3	A
Pulse diode forward current [a]	I$_{SM}$				-10	
Body diode voltage	V$_{SD}$	I$_S$=-0.7A		-0.8	-1.2	V

Notes :

a.Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

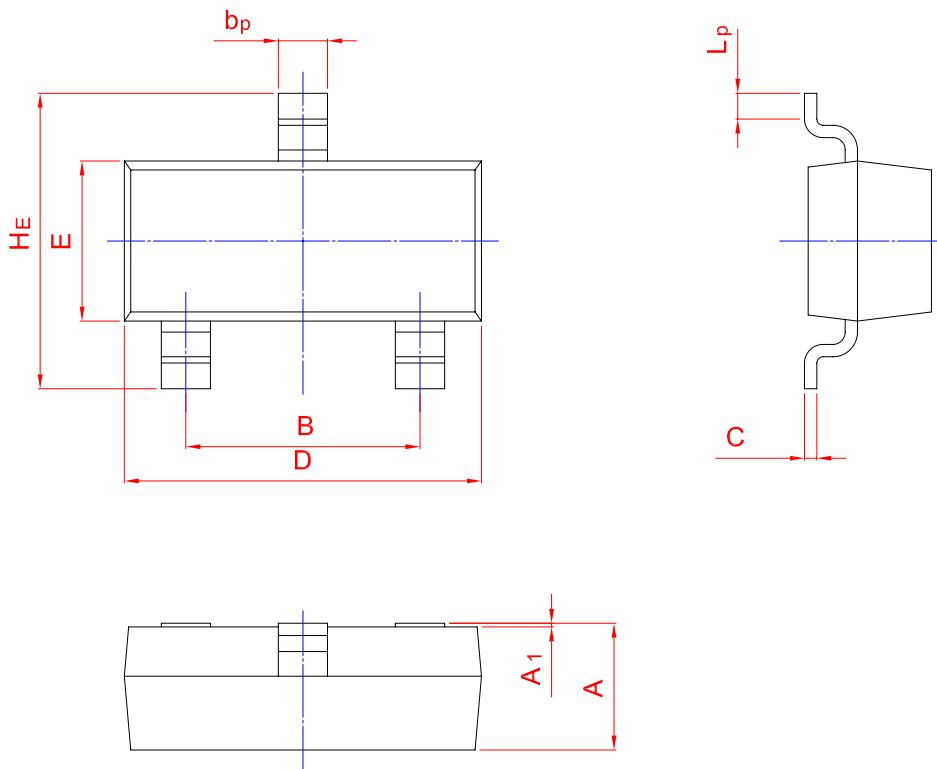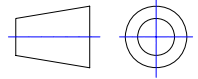b.Guaranteed by design, not subject to production testing.

Typical Characteristics

Output Characteristics

Transfer Characteristics

R$_{DS(ON)}$ —— I$_D$

R$_{DS(ON)}$ —— V$_{GS}$

I$_S$ —— V$_{SD}$
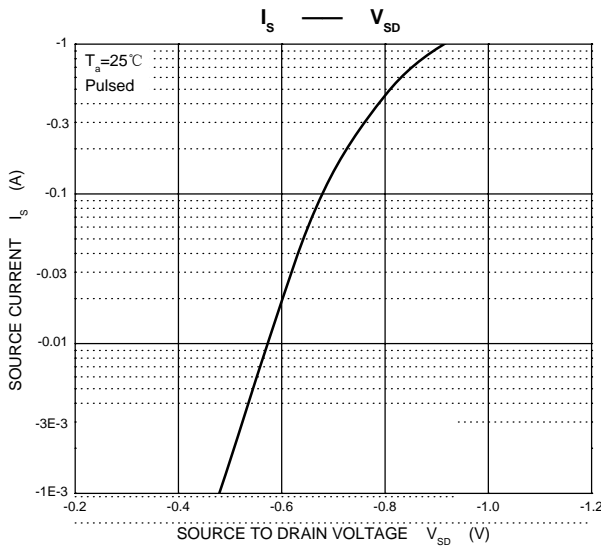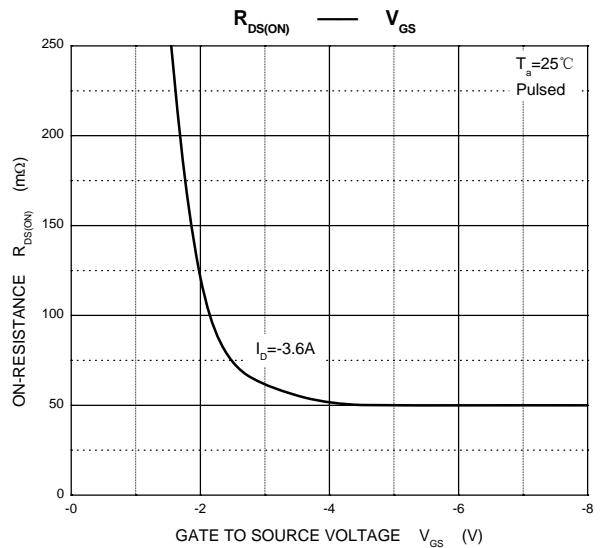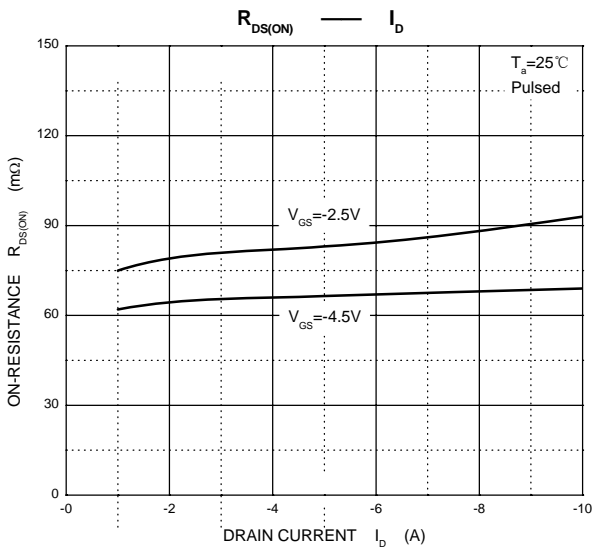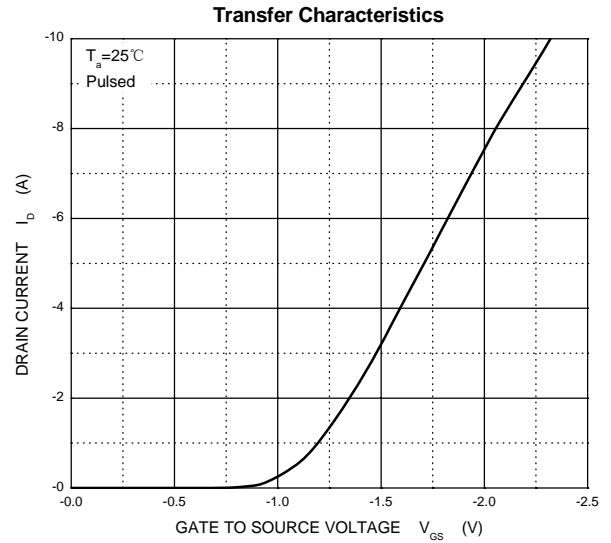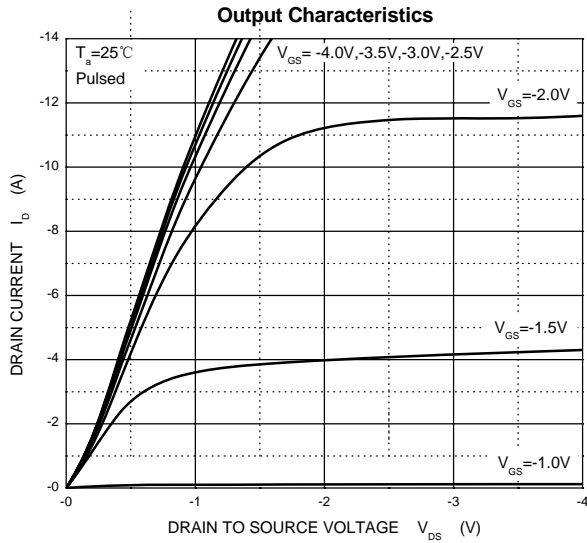
PACKAGE OUTLINE

Plastic surface mounted package; 3 leads   **SOT-23**

UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20

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