



FEATURE

- TrenchFET Power MOSFET

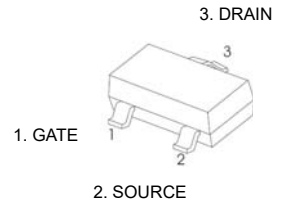
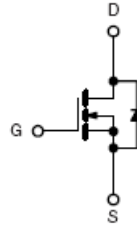
APPLICATION

- DC/DC Converters
- Load Switching for Portable Applications

MARKING

- MARKING: S12

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20 V	31.8mΩ@4.5V	5A
	35.6mΩ@2.5V	
	41.4mΩ@1.8V	



SOT-23

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}	± 8.0	
Continuous Drain Current	I_D	5	A
Pulsed Drain Current	I_{DM}	20	
Continuous Source-Drain Diode Current	I_S	1.04	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-50 ~ +150	$^{\circ}\text{C}$



Ta=25 °C unless otherwise specified

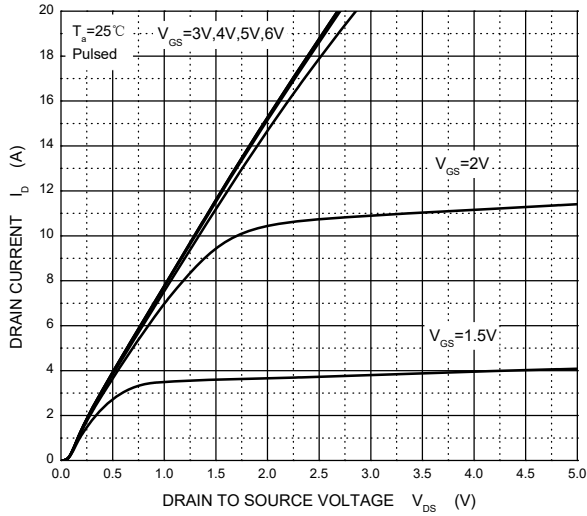
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR) DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-source leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1.0	μA
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45	0.7	1.0	V
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5.0A$		0.018	0.0318	Ω
		$V_{GS} = 2.5V, I_D = 4.7A$		0.023	0.0356	
		$V_{GS} = 1.8V, I_D = 4.3A$		0.030	0.0414	
Forward transconductance ^a	g_{fs}	$V_{DS} = 10V, I_D = 5.0A$		6		S
Dynamic^b						
Input capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		865		μF
Output capacitance	C_{oss}			105		
Reverse transfer capacitance	C_{rss}			55		
Gate resistance	R_g	$f = 1MHz$	0.5		4.8	Ω
Turn-on delay Time	$t_{d(on)}$	$V_{GEN} = 5V, V_{DD} = 10V,$ $I_D = 4A, R_G = 1\Omega, R_L = 2.2\Omega$			10	ns
Rise time	t_r				20	
Turn-off Delay time	$t_{d(off)}$				32	
Fall time	t_f				12	
Drain-source body diode characteristics						
Forward diode voltage	V_{SD}	$V_{GS} = 0V, I_S = 4A$		0.75	1.2	V

Notes :

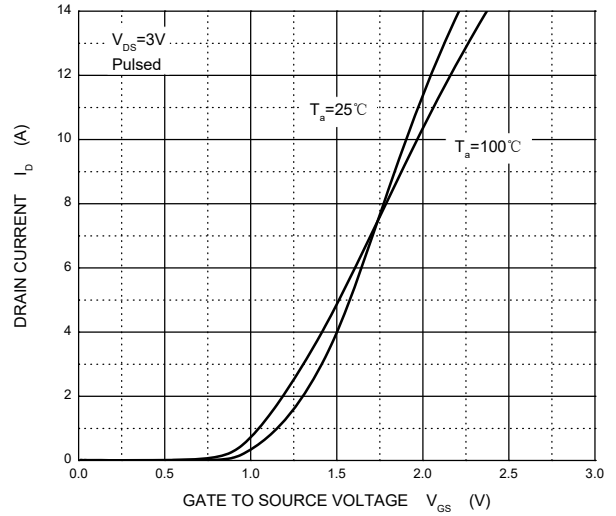
- a. Pulse Test : pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- b. These parameters have no way to verify.



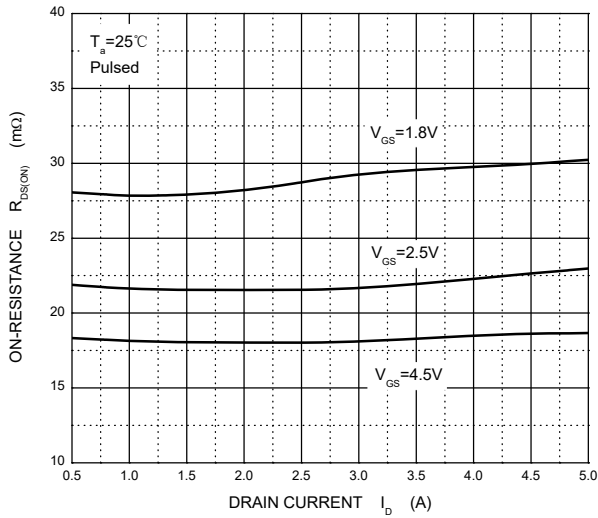
Output Characteristics



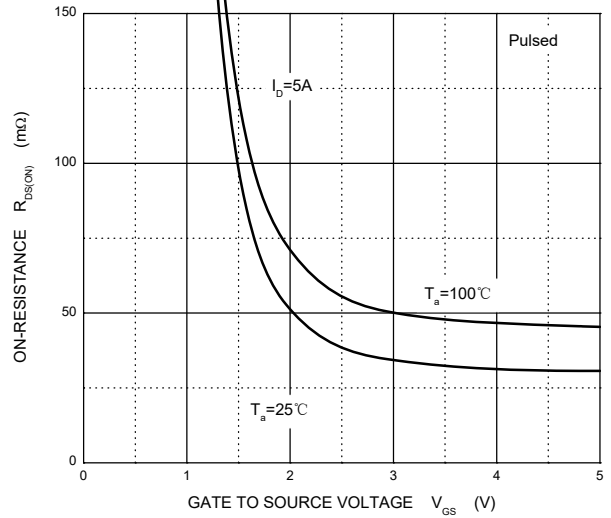
Transfer Characteristics



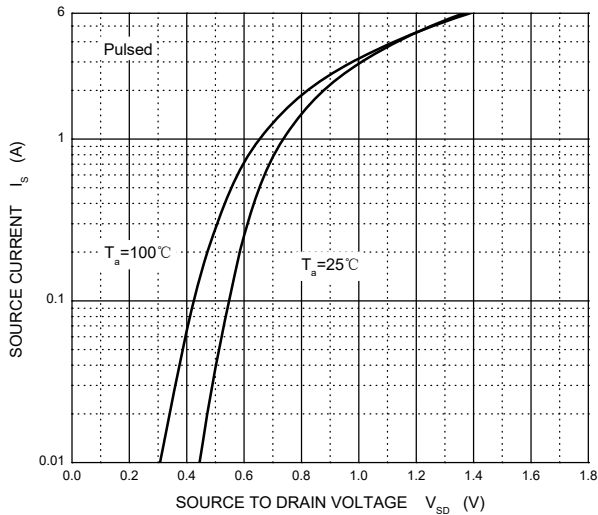
$R_{DS(ON)}$ — I_D



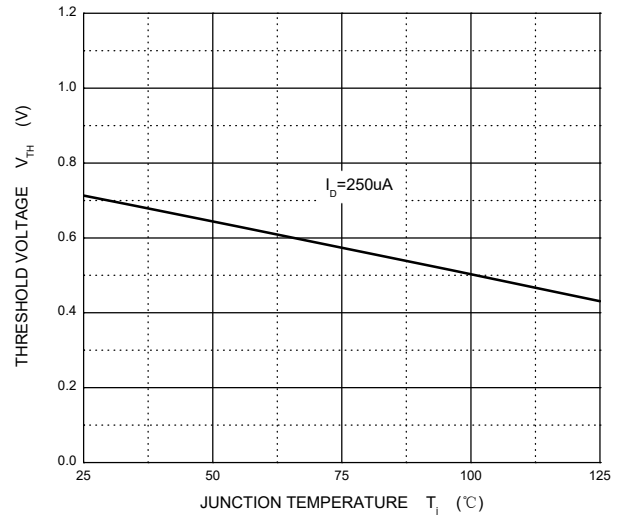
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



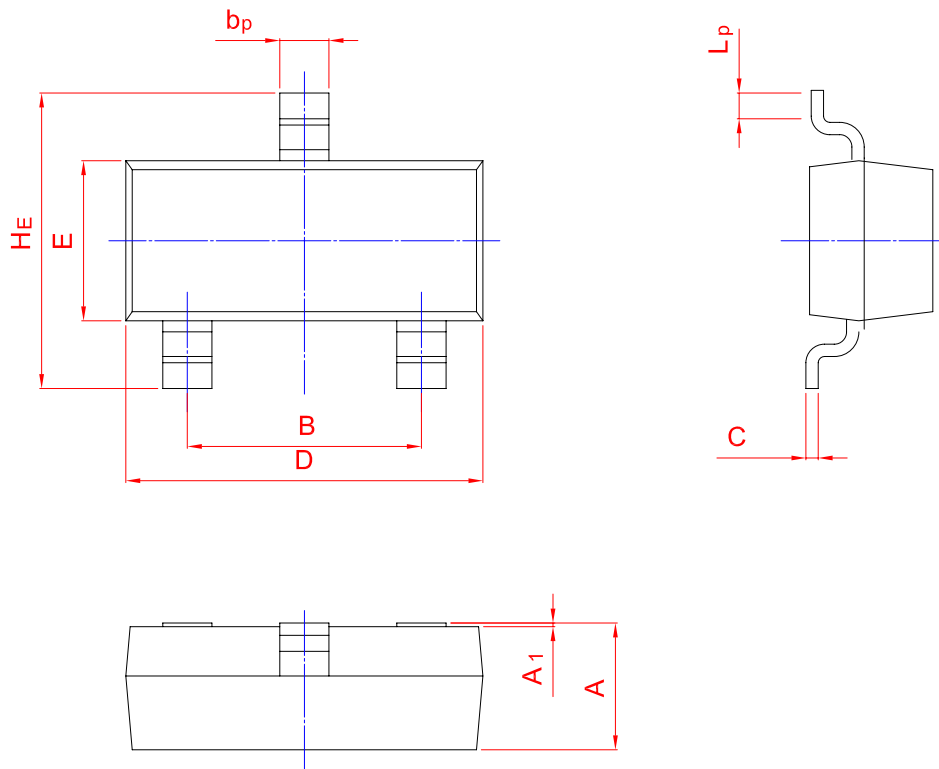
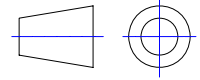
Threshold Voltage



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



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