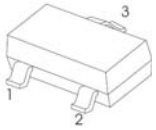
SI2304A

SOT-23 Plastic-Encapsulate MOSFETS

N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
30V	60mΩ@10V	3.3A
	75mΩ@4.5V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

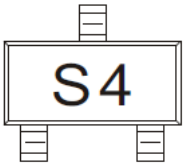
FEATURE

✧TrenchFET Power MOSFET

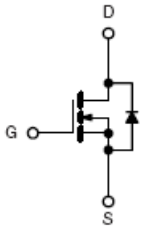
APPLICATION

✧ Load Switch for Portable Devices
✧ DC/DC Converter

MARKING



Equivalent Circuit



Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	3.3	A
Pulsed Drain Current	I_{DM}	15	
Continuous Source-Drain Diode Current	I_S	0.9	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	357	℃/W
Storage Temperature	T_J	150	℃
Junction Temperature	T_{STG}	-55 ~+150	

T_a=25℃ unless otherwise specified

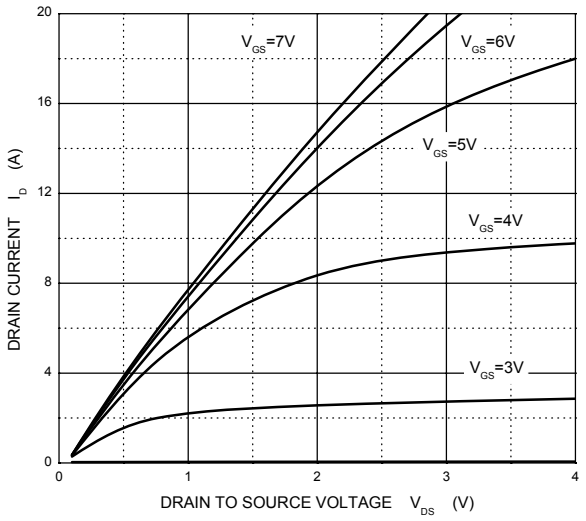
Parameter	Symbol	Test condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.55	2.2	
Gate-body leakage	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} =0V			1	μA
Drain-source on-state resistance[a]	$R_{DS(on)}$	V_{GS} =10V, I_D =3.2A		0.037	0.060	Ω
		V_{GS} =4.5V, I_D =2.8A		0.057	0.075	
Forward transconductance[a]	g_{fs}	V_{DS} =4.5V, I_D =2.5A	2.5			S
Dynamic[b]						
Total gate charge	Q_g	V_{DS} =15V,V_{GS} =10V,I_D =3.4A		4.5	6.7	nC
		V_{DS} =15V,V_{GS} =4.5V,I_D =3.4A		2.1	3.2	
Gate-source charge	Q_{gs}			0.85		
Gate-drain charge	Q_{gd}			0.65		
Gate resistance	R_g	f =1.0MHz	0.8	4.4	8.8	Ω
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz		235		pF
Output capacitance	C_{oss}			45		
Reverse transfer capacitance	C_{rss}			17		
Turn-on delay Time	$t_{d(on)}$	V_{DD}=15V, R_L=5.6Ω, I_D ≈2.7A, V_{GEN}=4.5V,Rg=1Ω		12	20	ns
Rise time	t_r			50	75	
Turn-off delay time	$t_{d(off)}$			12	20	
Fall time	t_f			22	35	
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, R_L=5.6Ω, I_D ≈2.7A, V_{GEN}=10V,Rg=1Ω		5	10	
Rise time	t_r			12	20	
Turn-off delay time	$t_{d(off)}$			10	15	
Fall time	t_f			5	10	
Drain-source body diode characteristics						
Continuous source-drain diode current	I_S	T_C=25℃			1.4	A
Pulse diode forward current	I_{SM}				15	A
Body diode voltage	V_{SD}	I_S=-2.7A,V_{GS}=0V		0.8	1.2	V

Notes :

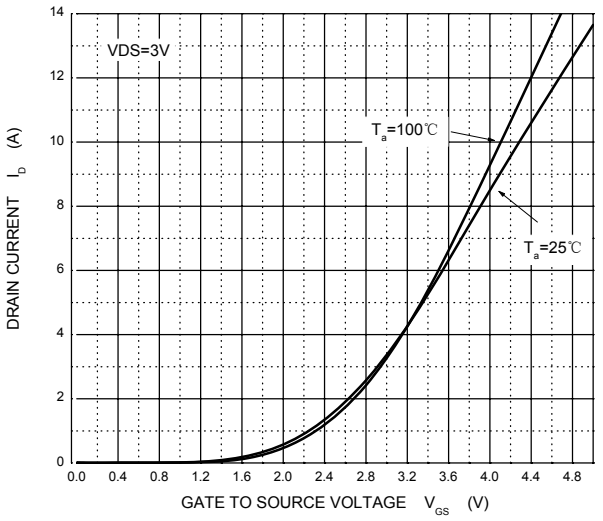
a. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

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

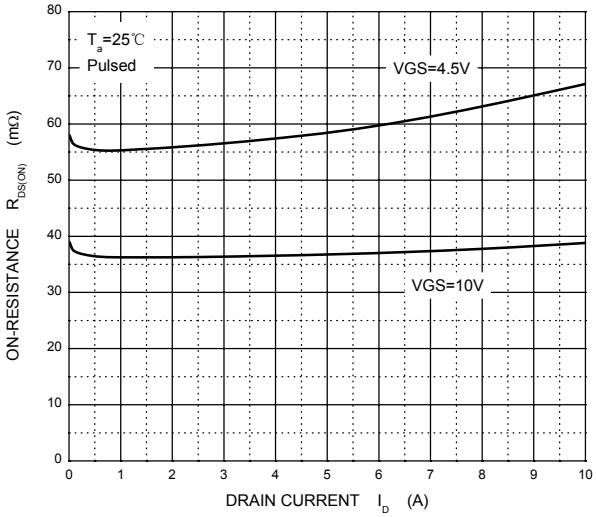
Output Characteristics



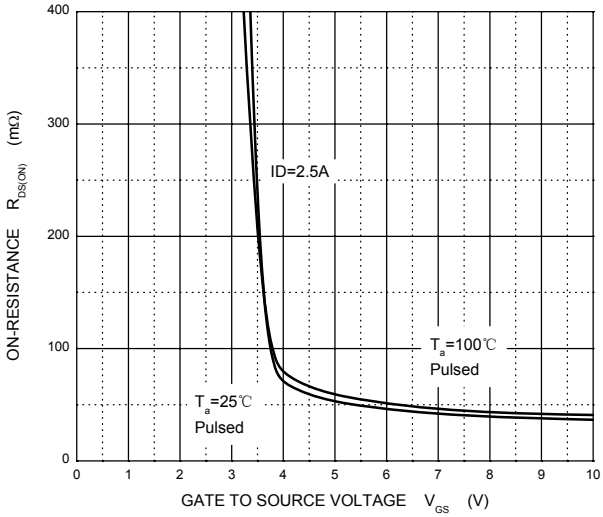
Transfer Characteristics



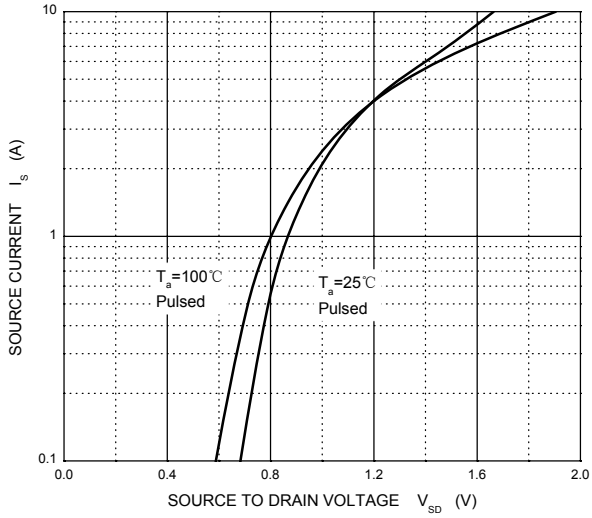
$R_{DS(ON)}$ —— I_D



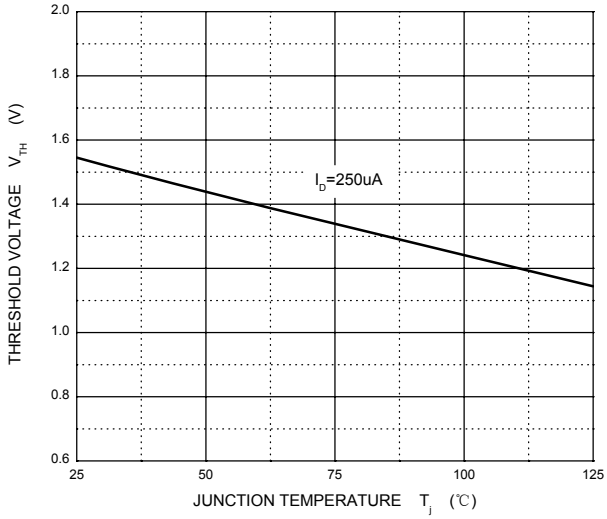
$R_{DS(ON)}$ —— V_{GS}

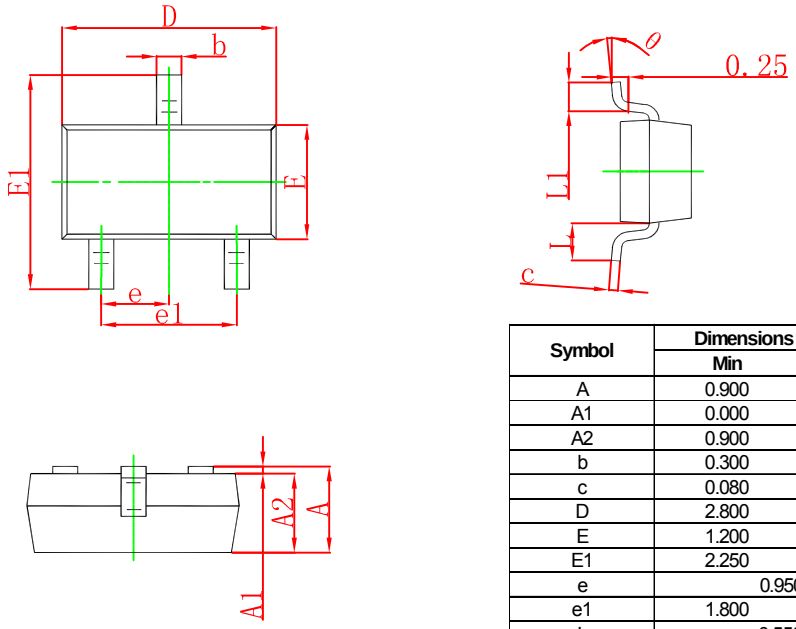


I_S —— V_{SD}



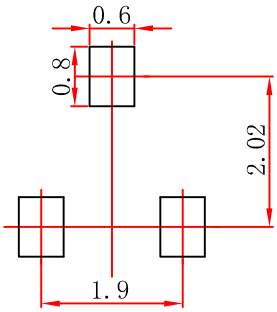
Threshold Voltage





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Package Outline Dimensions



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.