



General Features

- 20V,4A
- $R_{DS(on)} = \text{Typ } 23\text{m}\Omega @ V_{GS} = 4.5\text{V}$
- $R_{DS(on)} = \text{Typ } 28\text{m}\Omega @ V_{GS} = 2.5\text{V}$
- SOT23

Application

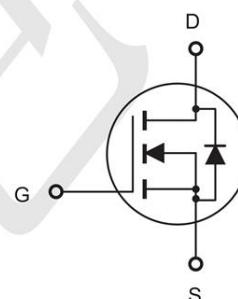
- Battery protection
- Load switch
- Power management

Package and Pin Configuration



MARKING =2300S Or 2300

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}	± 10	V
Continuous Drain Current @ 25°C (note 1)	I_D	4.0	A
Power Dissipation @ 25°C (note 1)	P_D	1.0	W
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$



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SI2300A

N-Channel Enhancement Mode Field Effect Transistor

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

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Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	20			V
Gate-Threshold Voltage ^(Note 2)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	0.7	0.9	V
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Drain-Source On-Resistance ^(Note 2)	R _{DS(on)}	V _{GS} =4.5V, I _D =4.5A		23	25	mΩ
		V _{GS} =2.5V, I _D =4.0A		28	38	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =4.5A	5.0			S
Dynamic Characteristics^(Note 3)						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz		482		pF
Output Capacitance	C _{oss}			85		
Reverse Transfer Capacitance	C _{rss}			52		
Switching Characteristics^(Note 3)						
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, R _L =2.8Ω, V _{GS} =4.5V, I _D =1A, R _{GEN} =6Ω		13		ns
Turn-On Rise Time	t _r			54		
Turn-Off Delay Time	t _{d(off)}			18		
Turn-Off Fall Time	t _f			11		
Total Gate Charge	Q _g	V _{DS} =10V, I _D =4.5A, V _{GS} =4.5V		4.2		nC
Gate-Source Charge	Q _{gs}			0.9		
Gate-Drain Charge	Q _{gd}			1.4		
Source-Drain Diode characteristics						
Drain-Source Diode Forward Current	I _S	V _{GS} =0V, I _S =1A			4.0	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =1A		0.8	1.2	V



Curve Characteristics

Fig. 1 - Output Characteristics

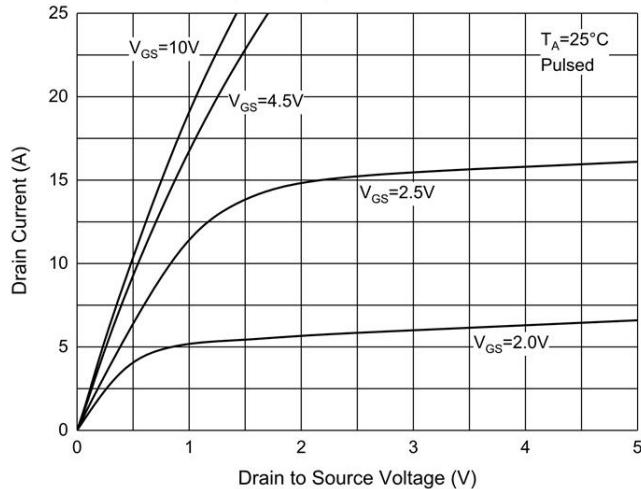


Fig. 2 - Transfer Characteristics

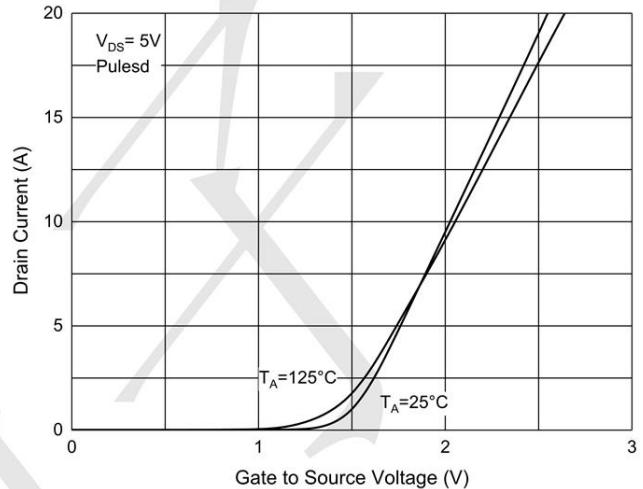


Fig. 3 - Capacitance Characteristics

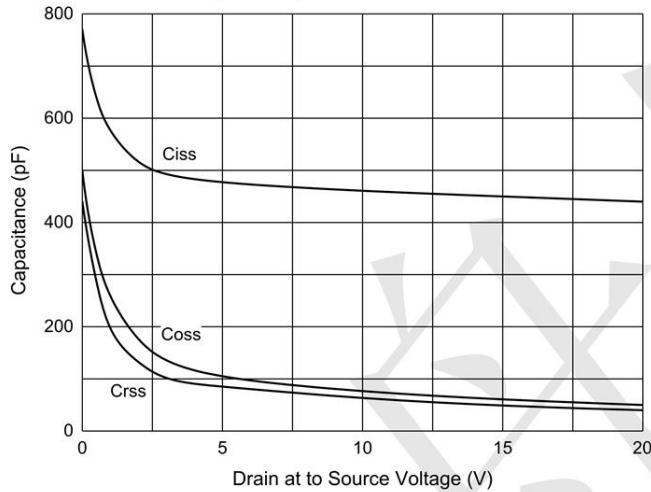


Fig. 4 - $R_{DS(ON)}$ —Temperature

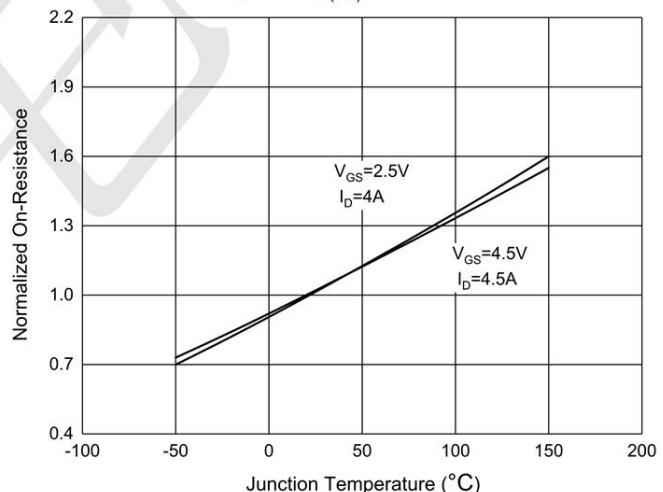


Fig. 5 - Threshold Voltage

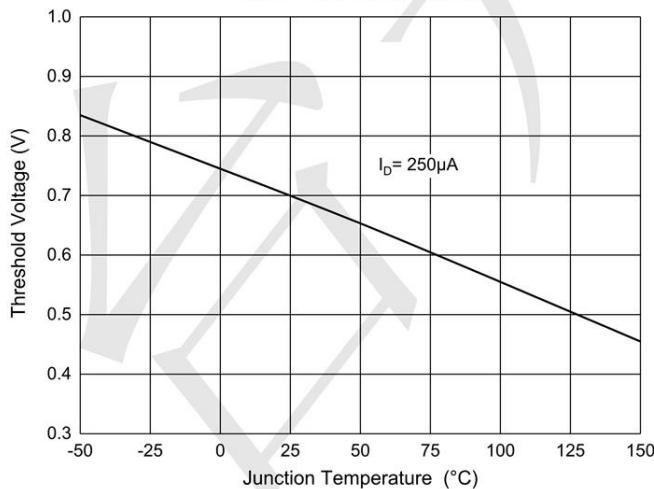
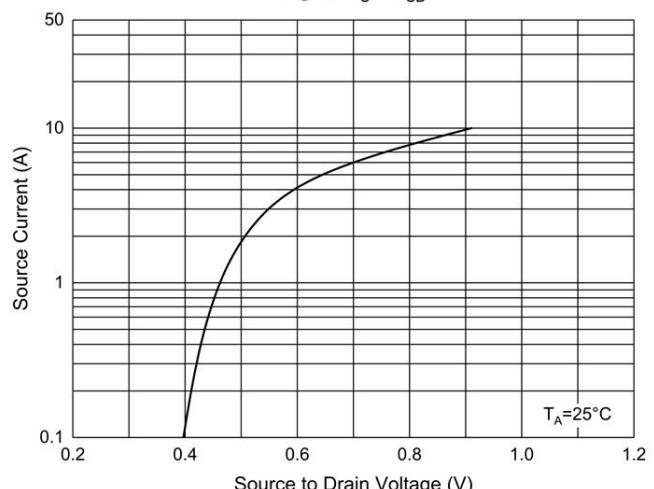


Fig. 6 - I_S — V_{SD}





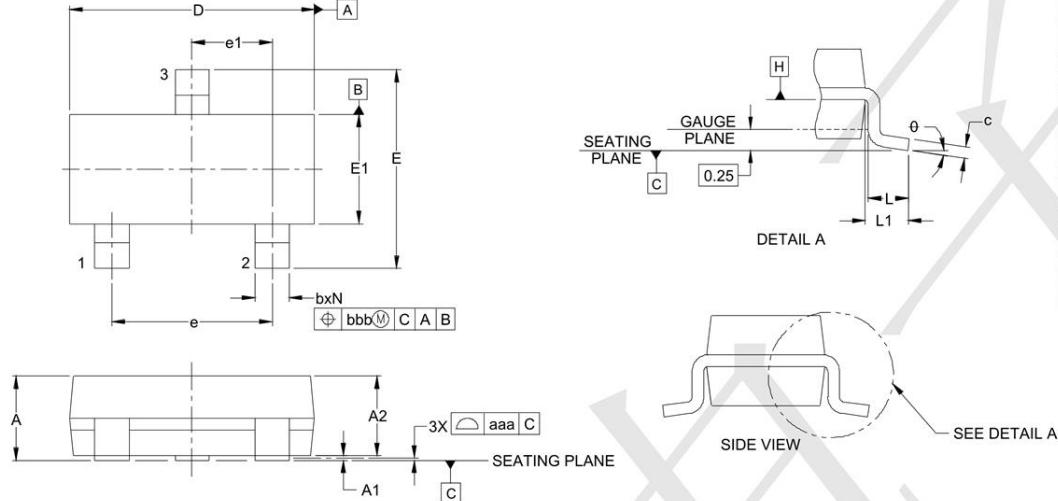
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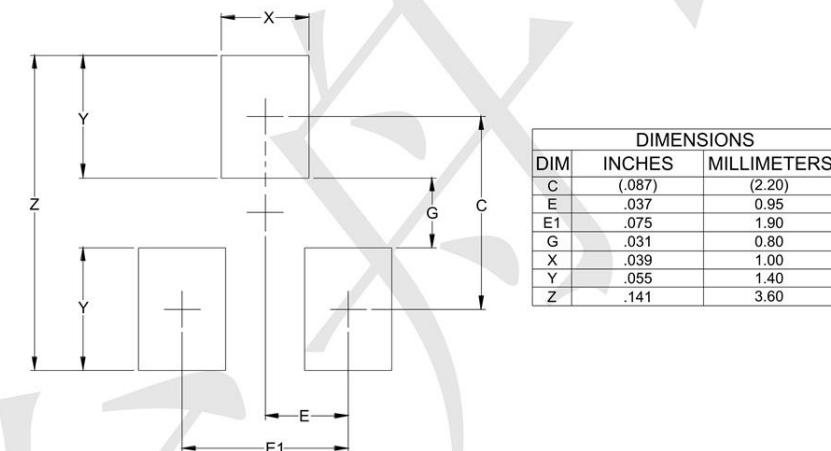
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Outline Drawing - SOT23



DIMENSIONS						
DIM	INCHES		MILLIMETERS			
	MIN	NOM	MAX	MIN	NOM	MAX
A	.035	-	.044	0.89	-	1.12
A1	.000	-	.004	0.01	-	0.10
A2	.035	.037	.040	0.88	0.95	1.02
b	.012	-	.020	0.38	-	0.51
c	.003	-	.007	0.08	-	0.18
D	.110	.114	.120	2.80	2.90	3.04
E	.082	.093	.104	2.10	2.37	2.64
E1	.047	.051	.055	1.20	1.30	1.40
e	.075			1.90	BSC	
e1	.037			0.98	BSC	
L	.015	.020	.024	0.40	0.50	0.60
L1	.022			(0.55)		
N	3			3		
-θ	0°	-	8°	0°	-	8°
aaa	.004			0.10		
bbb	.008			0.20		

Land Pattern - SOT23



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