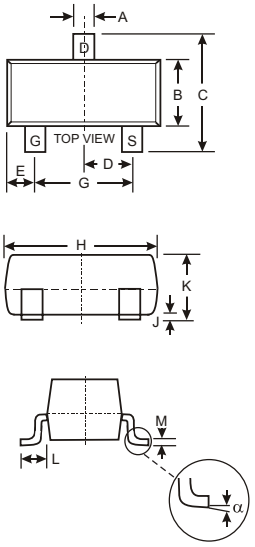
HAICHUANG SEMI

HC2304A

N-CHANNEL ENHANCEMENT MODE MOSFET

Features

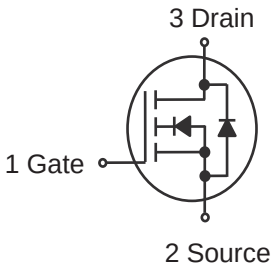
- Super high density cell design for extremely low $R_{DS(ON)}$.
- Exceptional on-resistance and maximum DC current capability.
- We declare that the material of product compliance with RoHS requirements.



SOT-23		
Dim	**Min**	**Max**
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

APPLICATIONS

- TrenchFET Power MOSFET.
- Load Switch for Portable Devices.
- DC/DC Converter.
- Marking Code:S4 OR 2304.



Maximum Ratings @ T_A = 25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	3.6	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	

Electrical Characteristics @ T_A = 25°C 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	1.6	2.3	
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 =3.6A		0.027	0.033	Ω
		V_{GS} =4.5V, I_D =3.0A		0.042	0.051	
Forward transconductance[a]	g_{fs}	V_{DS} =4.5V, I_D =3.0A	2.5			S
Dynamic[b]						
Total gate charge	Q_g	V_{DS} =15V,V_{GS} =10V,I_D =3.6A		4.5	6	nC
		V_{DS} =15V,V_{GS} =4.5V,I_D =3.6A		2.1	3	
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	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 ≈3.0A, V_{GEN}=4.5V,Rg=1Ω		12	2	ns
Rise time	t_r			50	7	
Turn-off delay time	$t_{d(off)}$			12	2	
Fall time	t_f			22	3	
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, R_L=5.6Ω, I_D ≈3.0A, V_{GEN}=10V,Rg=1Ω		5	10	
Rise time	t_r			12	2	
Turn-off delay time	$t_{d(off)}$			10	1	
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

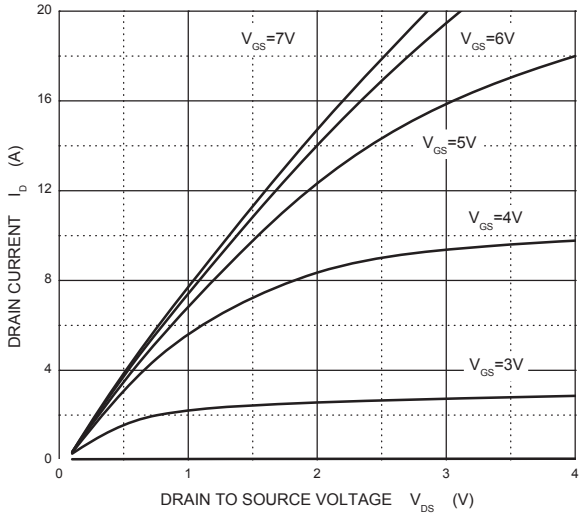
Notes :

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

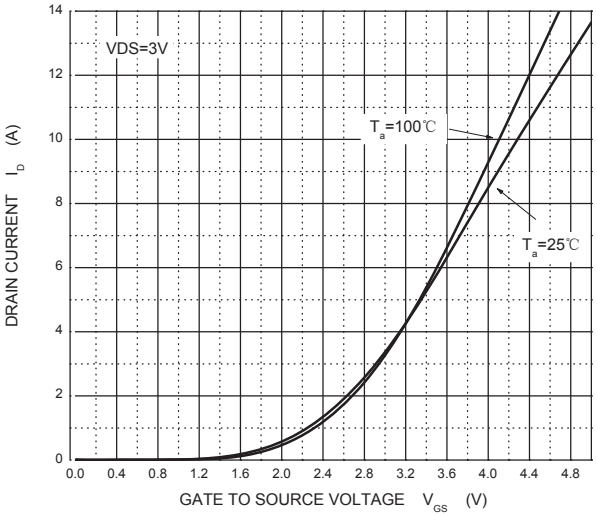
b. Guaranteed by design, not subject to production testing.

TYPICAL TRANSIENT CHARACTERISTICS

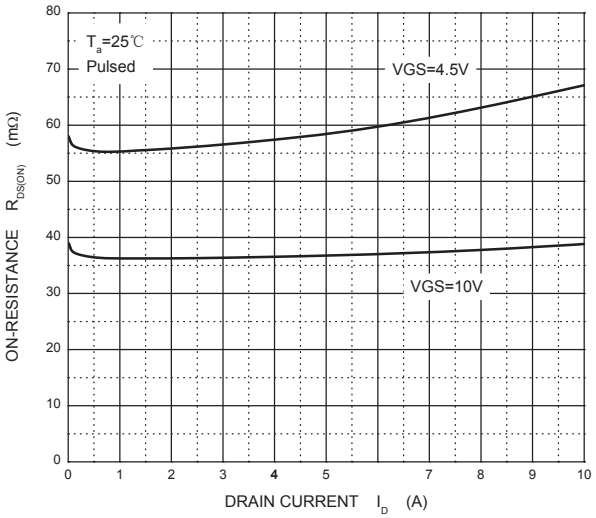
Output Characteristics



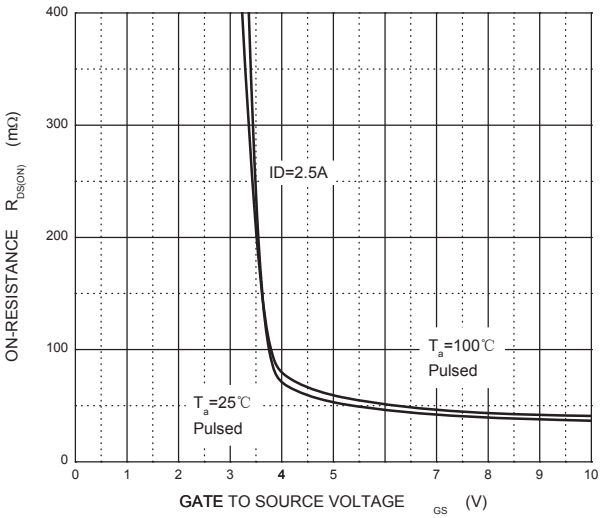
Transfer Characteristics



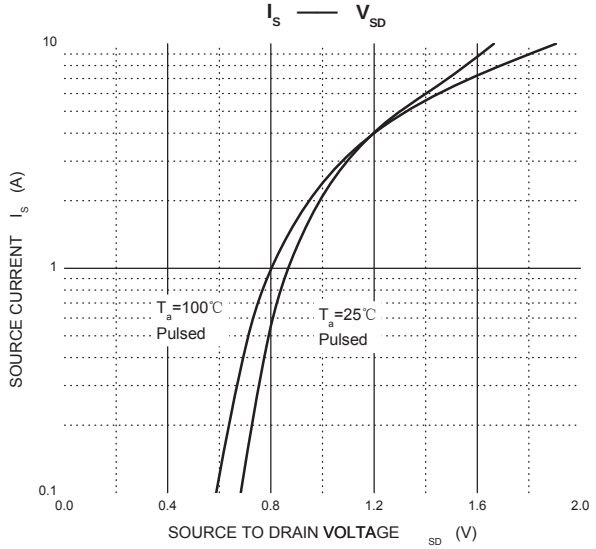
$R_{DS(ON)}$ —— I_D



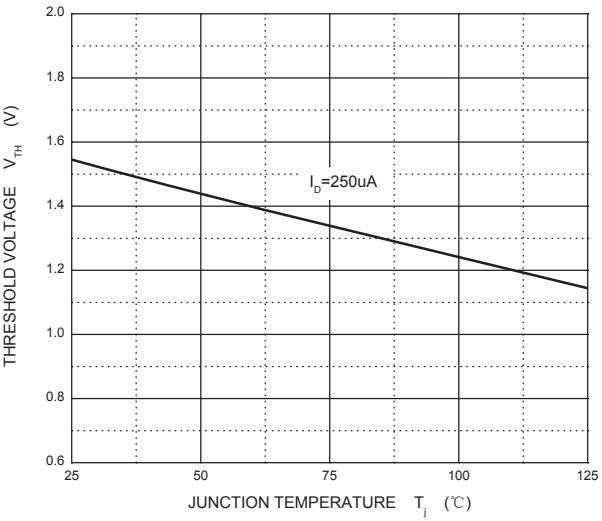
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



Threshold Voltage



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