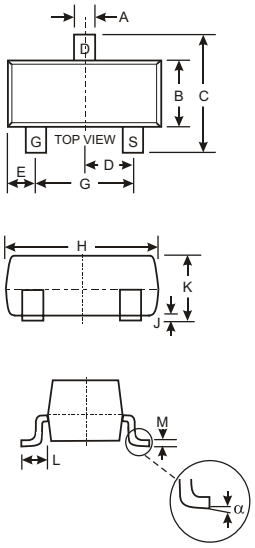
HAICHUANG SEMI

HC2302

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.



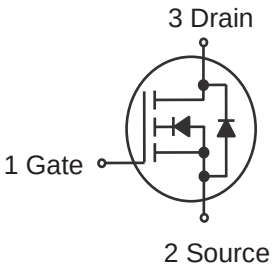
SOT-23		
Dim	**Min**	**Max**
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

APPLICATIONS

- Power Management in Notebook.
- Portable equipment.
- Battery powered system.
- Load switch.
- Marking Code:2302.

Maximum Ratings @ T_A = 25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current	I_D	2.4	A
Peak Drain Current [1]	I_{DM}	10	A
Power Dissipation $T_A = 25℃$ $T_A = 75℃$	P_{tot}	0.9 0.57	W
Thermal Resistance from Junction to Ambient (PCB mounted) [2]	$R_{\theta JA}$	140	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	- 55 to + 150	℃



[1] Repetitive Rating: Pulse width limited by the Maximum junction temperation.

[2] 1 in^2 2oz Cu PCB board.

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 =10μA	20			V
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =50μA	0.65	0.95	1.2	
Gate-body 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-resistance[a]	$r_{DS(on)}$	V_{GS} =4.5V, I_D =3.6A		0.035	0.060	Ω
		V_{GS} =2.5V, I_D =3.1A		0.045	0.115	
Forward transconductance[a]	g_{fs}	V_{DS} =5V, I_D =3.6A		8		S
Diode forward voltage	V_{SD}	I_S=0.94A,V_{GS}=0V		0.76	1.2	V
Dynamic						
Total gate charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D =3.6A		4.0		nC
Gate-source charge	Q_{gs}			0.65		
Gate-drain charge	Q_{gd}			1.5		
Input capacitance [b]	C_{iss}	V_{DS} =10V,V_{GS} =0V,f=1MHz		300		pF
Output capacitance [b]	C_{oss}			120		
Reverse transfer capacitance[b]	C_{rss}			80		
Switching[b]						
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V, R_L=5.5Ω, I_D ≈3.6A, V_{GEN}=4.5V,Rg=6Ω		7	15	ns
Rise time	t_r			55	8	
Turn-off delay time	$t_{d(off)}$			16	6	
Fall time	t_f			10	2	

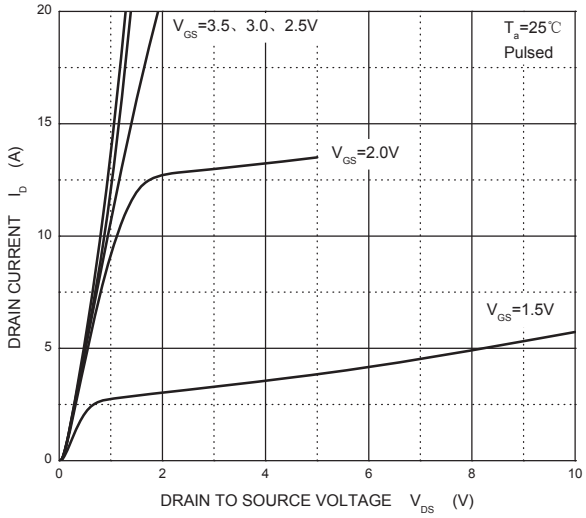
Notes :

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

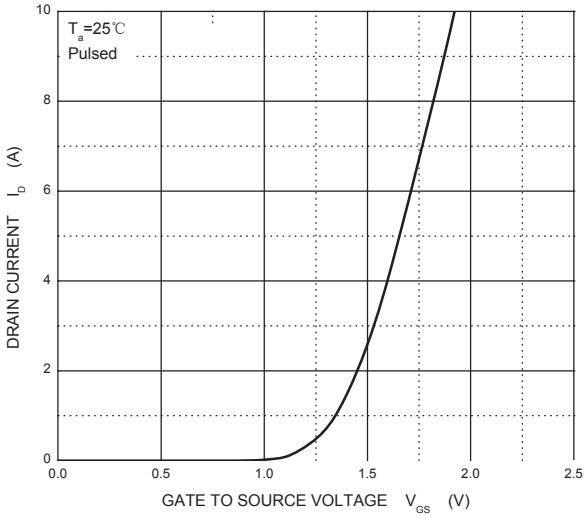
b. These parameters have no way to verify.

TYPICAL TRANSIENT CHARACTERISTICS

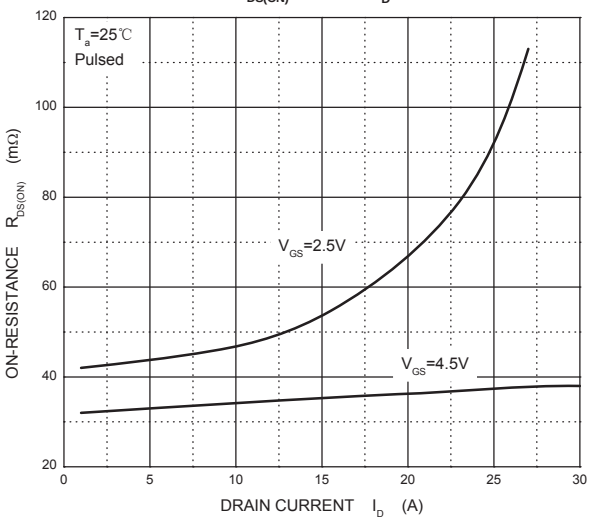
Output Characteristics



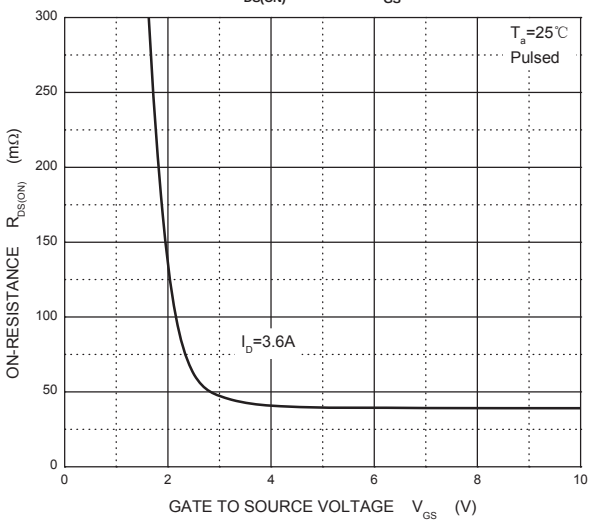
Transfer Characteristics



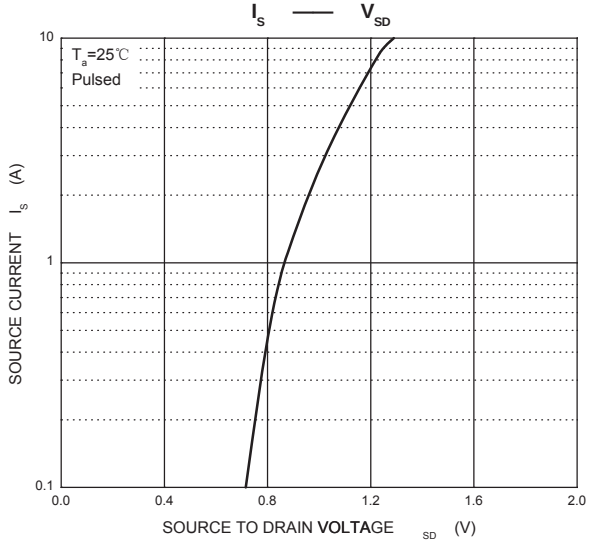
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



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