



武汉芯源半导体有限公司

WUHAN XINYUAN SEMICONDUCTOR CO., LTD

CW2300 Datasheet

SOT-23 N-Channel Enhancement MOSFET

Rev 1.0



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1 Features

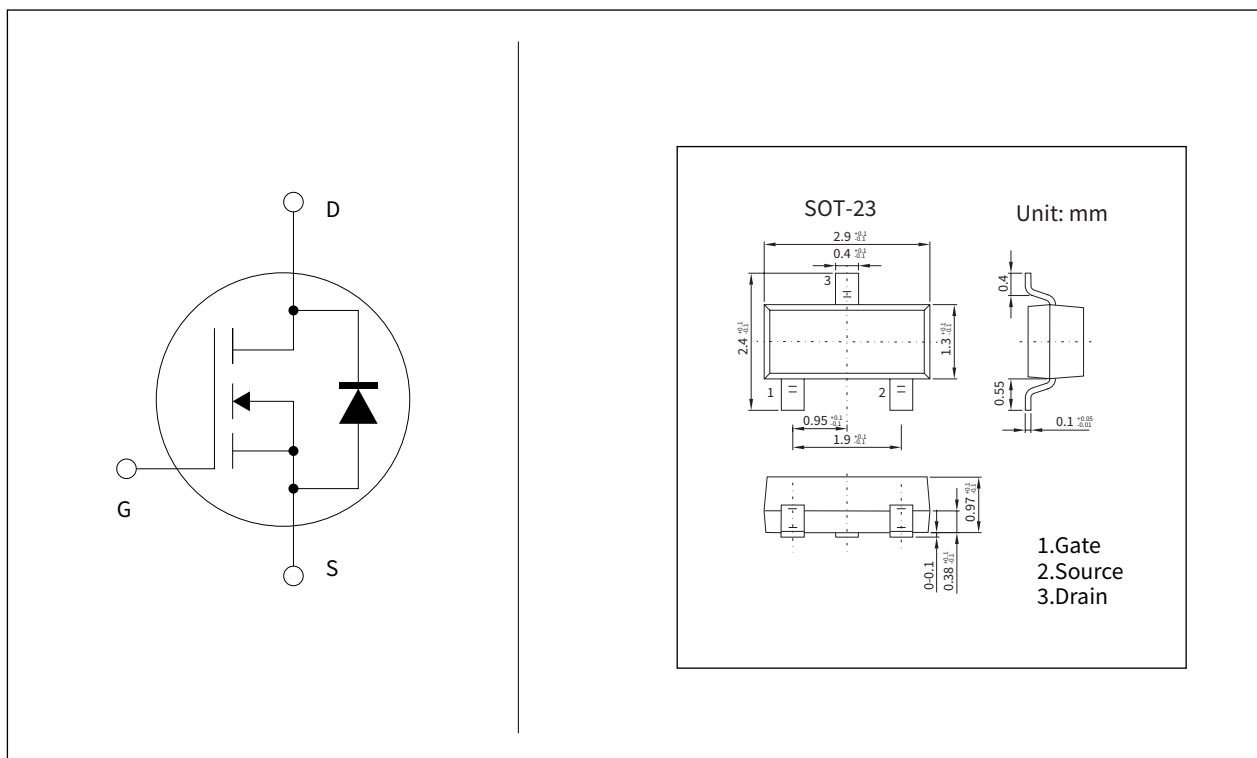
$V_{DS(V)} = 20V$

$I_D = 5.0A$

$R_{DS(ON)} = 25m\Omega @V_{GS} = 4.5V, I_D = 5.0A$

$R_{DS(ON)} = 35m\Omega @V_{GS} = 2.5V, I_D = 4.0A$

$R_{DS(ON)} = 55m\Omega @V_{GS} = 1.8V, I_D = 1.0A$



2 Absolute Maximum Ratings

T_a=25°C

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±10	V
Continuous Drain Current T _J = 125°C	I _D	5.0	A
Pulsed Drain Current	I _{DM}	15	A
Power Dissipation	P _D	1.25	W
Thermal Resistance.Junction- to-Ambient	R _{thJA}	100	°C /W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{stg}	-55 to 150	°C

3 Electrical Characteristics

T_a=25°C

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-Body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±10V			±100	nA
Gate Threshold Voltage ¹	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.4	0.7	1.0	V
Drain- Source on-state Resistance ¹	R _{DS(ON)}	V _{GS} =4.5V, I _D =5.0A		20	25	mΩ
		V _{GS} =2.5V, I _D =4.0A		27	35	
		V _{GS} =1.8V, I _D =1.0A		39	55	
Forward Transconductance ¹	g _{FS}	V _{DS} =5V, I _D =5A	5			S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1.0MHz		887		pF
Output Capacitance	C _{oss}			144		pF
Reverse Transfer Capacitance	C _{rss}			115		pF
Turn-On DelayTime	t _{d(on)}	V _{GS} =4.5V, V _{DD} =10V, I _D =1.0A, R _L =10Ω, R _{GEN} =6Ω		31.8		ns
Turn-On Rise Time	t _r			14.5		ns
Turn-Off DelayTime	t _{d(off)}			50.3		ns
Turn-Off Fall Time	t _f			31.9		ns
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =3.5A		16.8		nC
Gate-Source Charge	Q _{gs}			2.5		nC
Gate-Drain Charge	Q _{gd}			5.4		nC
Drain-Source Diode Forward Current ¹	I _s				2.5	A
Diode Forward Voltage	V _{SD}	I _s =1.25A, V _{GS} =0V		0.825	1.2	V

Caution 1: Pulse Test:Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

4 Typical Characteristics

Figure 4-1 On-Region Characteristics

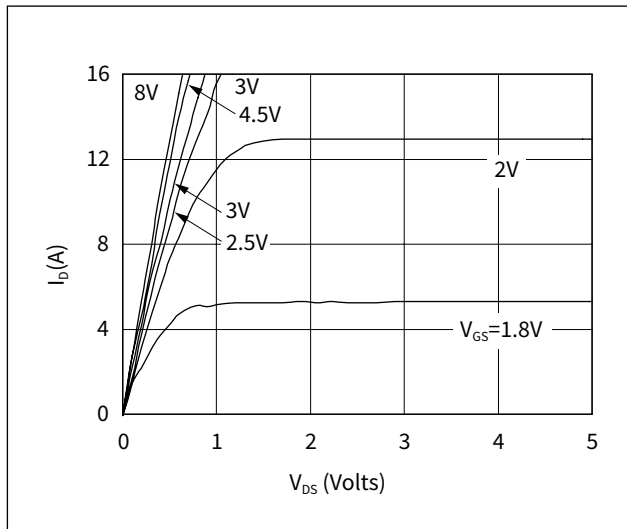


Figure 4-2 Transfer Characteristics

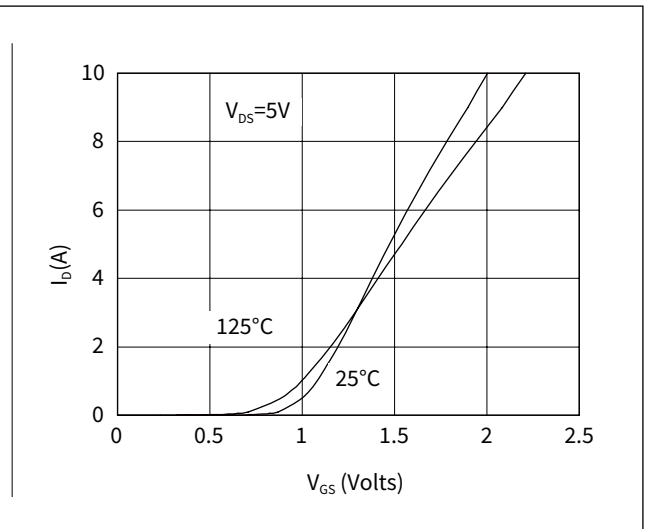


Figure 4-3 On-Resistance vs. Drain Current and Gate Voltage

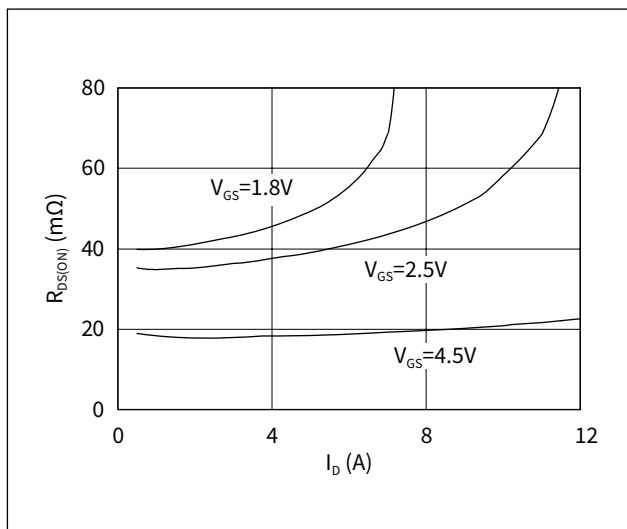


Figure 4-4 On-Resistance vs. Junction Temperature

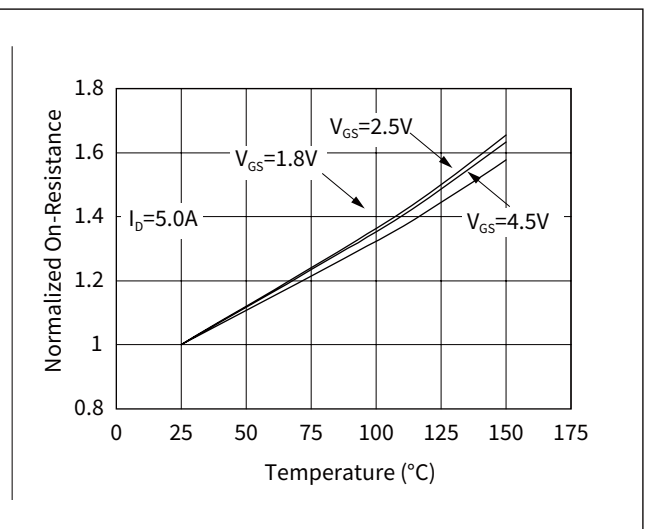


Figure 4-5 On-Resistance vs. Gate-Source Voltage

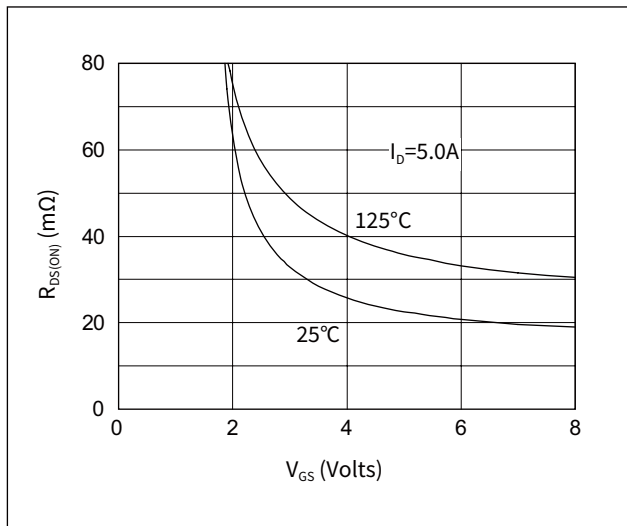
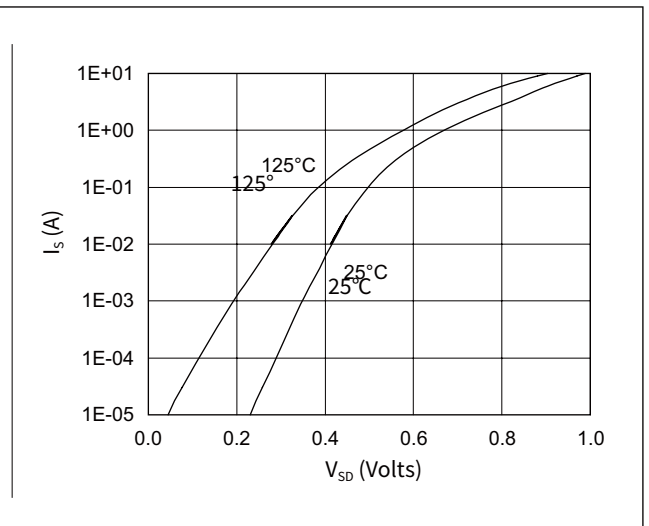


Figure 4-6 Body-Diode Characteristics



5 Revision history

Table 5-1 Document revision history

Date	Revision	Changes
12-01-2023	Rev 1.0	Initial release.