



武汉芯源半导体有限公司
WUHAN XINYUAN SEMICONDUCTOR CO., LTD

CW3400 Datasheet

SOT-23 N-Channel Enhancement Mode Field Effect Transistor

Rev 1.0



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1 Features

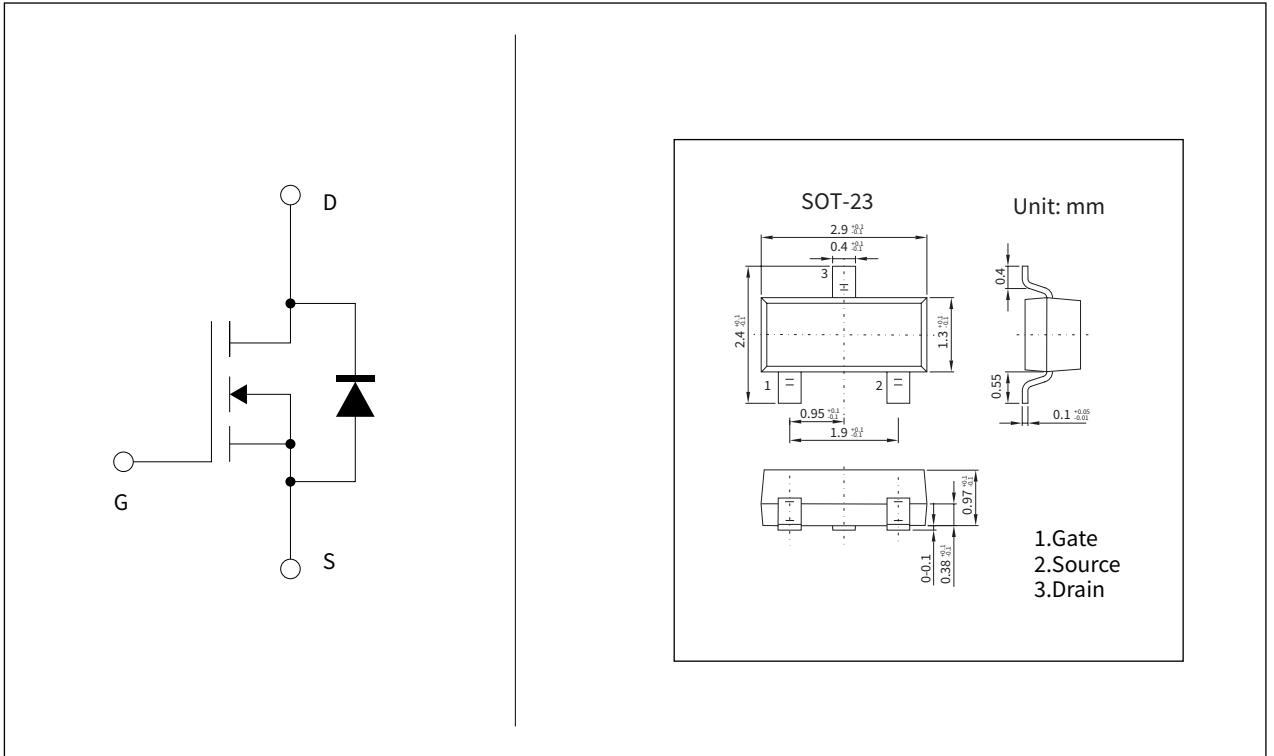
$V_{DS(V)} = 30V$

$I_D = 5.8A (V_{GS} = 10V)$

$R_{DS(ON)} < 28m\Omega (V_{GS} = 10V)$

$R_{DS(ON)} < 33m\Omega (V_{GS} = 4.5V)$

$R_{DS(ON)} < 52m\Omega (V_{GS} = 2.5V)$



2 Absolute Maximum Ratings

T_a=25°C

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current T _a = 25°C	I _D	5.8	A
Continuous Drain Current T _a = 70°C	I _D	4.9	A
Pulsed Drain Current ¹	I _{DM}	30	A
Power Dissipation T _a = 25°C	P _D	1.4	W
Power Dissipation T _a = 70°C	P _D	1	W
Thermal Resistance.Junction- to-Ambient	R _{thJA}	125	°C /W
Thermal Resistance.Junction- to-Case	R _{thc}	60	°C /W
Junction and Storage Temperature Range	T _J 、 T _{stg}	-55 to 150	°C

Caution 1: Repetitive rating, pulse width limited by junction temperature.



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	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V, T _J =55°C			5	
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.7	1.1	1.4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5.8A		22.8	28	mΩ
		V _{GS} =10V, I _D =5.8A T _J =125°C		32	39	
		V _{GS} =4.5V, I _D =5A		27.3	33	
		V _{GS} =2.5V, I _D =4A		43.3	52	
On state drain current	I _{D(ON)}	V _{DS} =4.5V, V _{DS} =5V	30			A
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =5A	10	15		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz		823	1050	pF
Output Capacitance	C _{oss}			99		pF
Reverse Transfer Capacitance	C _{rss}			77		pF
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.4	3.6	Ω
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =15V, I _D =5.8A		9.7	12	nC
Gate Source Charge	Q _{gs}			1.6		nC
Gate Drain Charge	Q _{gd}			3.1		nC
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =2.7Ω, R _{GEN} =3Ω		3.3	5	ns
Turn-On Rise Time	t _r			4.8	7	ns
Turn-Off DelayTime	t _{d(off)}			26.3	40	ns
Turn-Off Fall Time	t _f			4.1	6	ns
Body Diode Reverse Recovery Time	T _{rr}	I _F =5A, di/dt=100A/μs		16	20	ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =5A, di/dt=100A/μs		8.9	12	nC
Maximum Body-Diode Continuous Current	I _s				2.5	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.71	1	V

4 Typical Characteristics

Figure 4-1 On-Region Characteristics

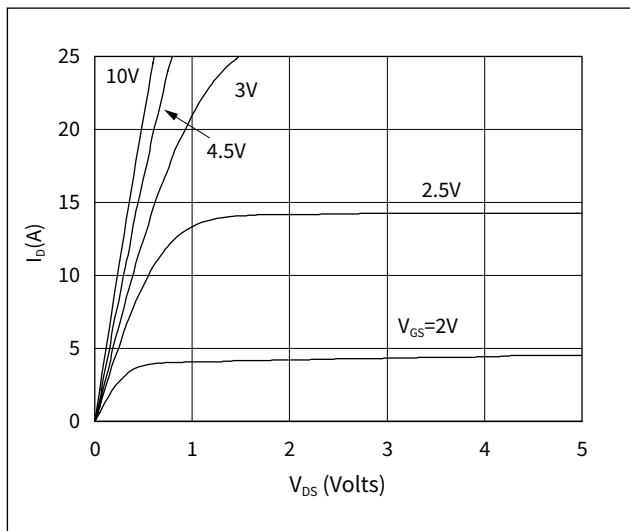


Figure 4-2 Transfer Characteristics

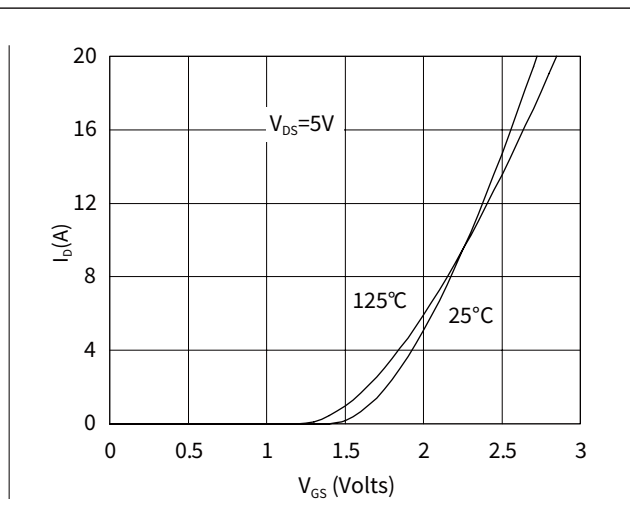


Figure 4-3 On-Resistance vs. Drain Current and Gate Voltage

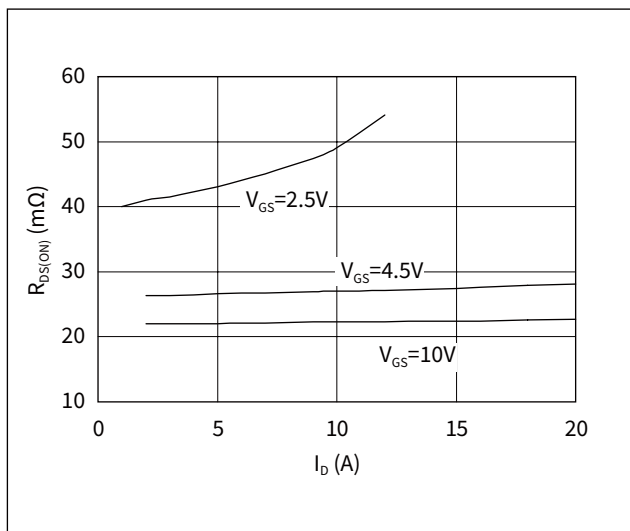


Figure 4-4 On-Resistance vs. Junction Temperature

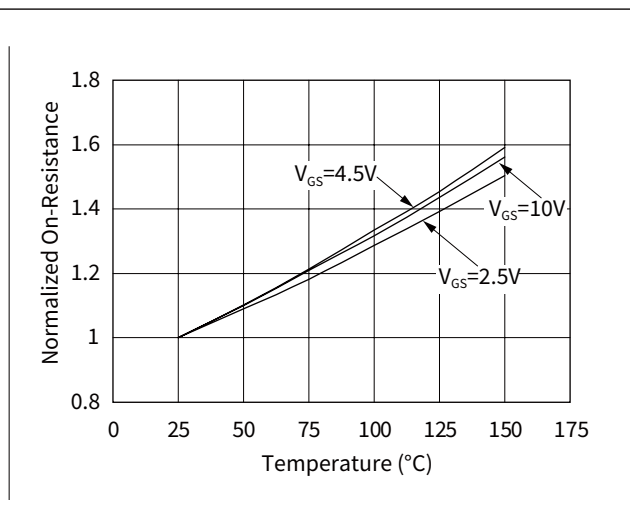


Figure 4-5 On-Resistance vs. Gate-Source Voltage

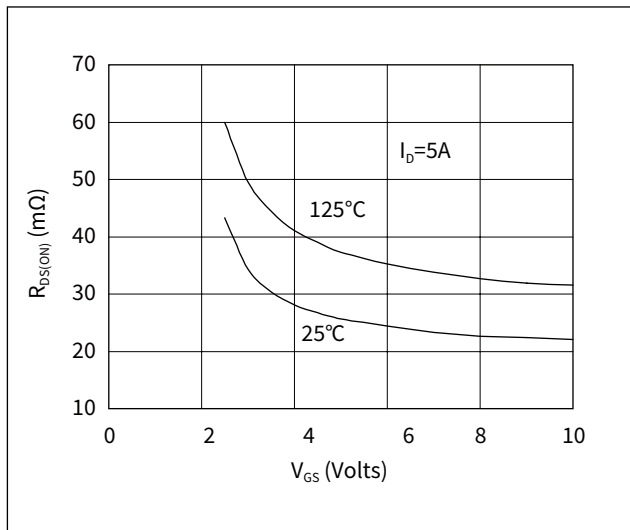


Figure 4-6 Body-Diode Characteristics

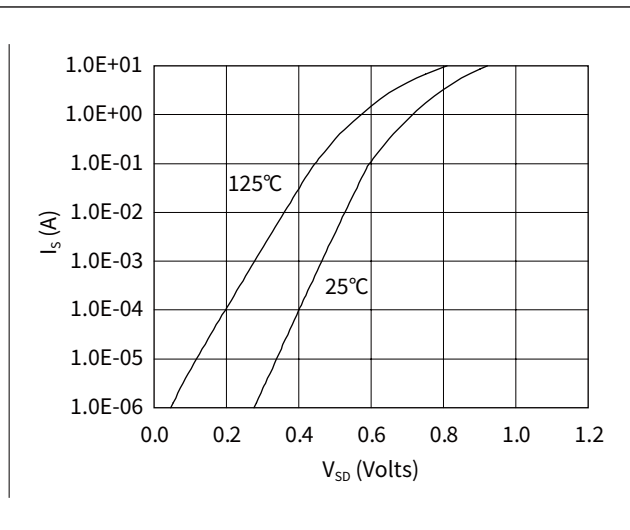


Figure 4-7 Gate-Charge Characteristics

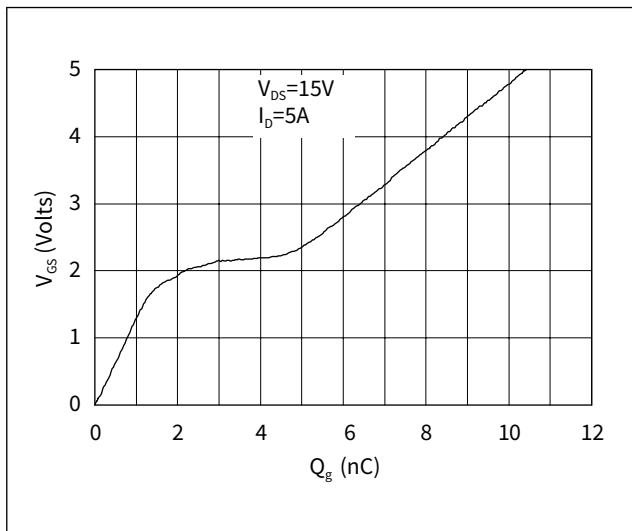


Figure 4-8 Capacitance Characteristics

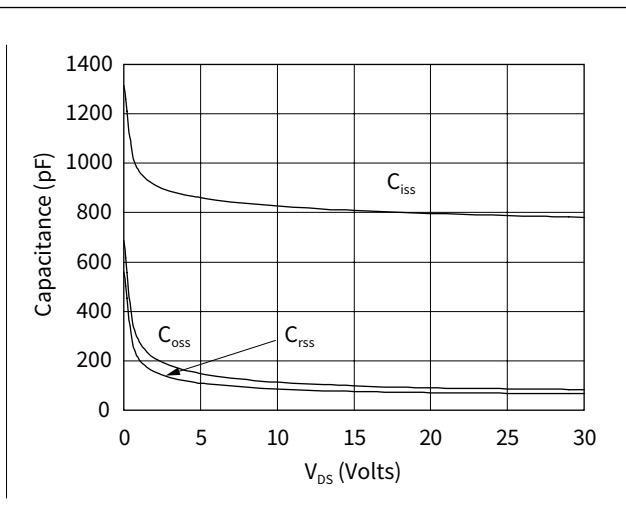


Figure 4-9 Maximum Forward Biased Safe Operating Area (Note E)

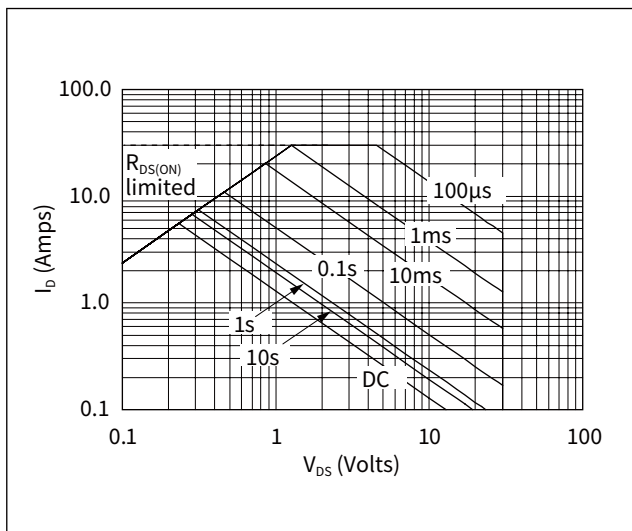


Figure 4-10 Single Pulse Power Rating Junction-to-Ambient (Note E)

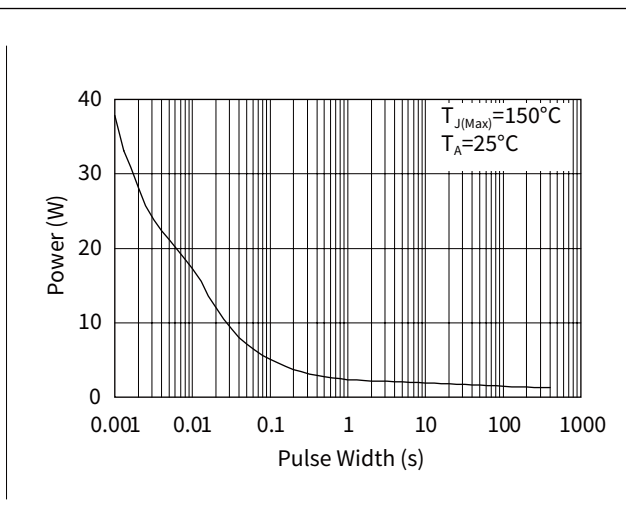
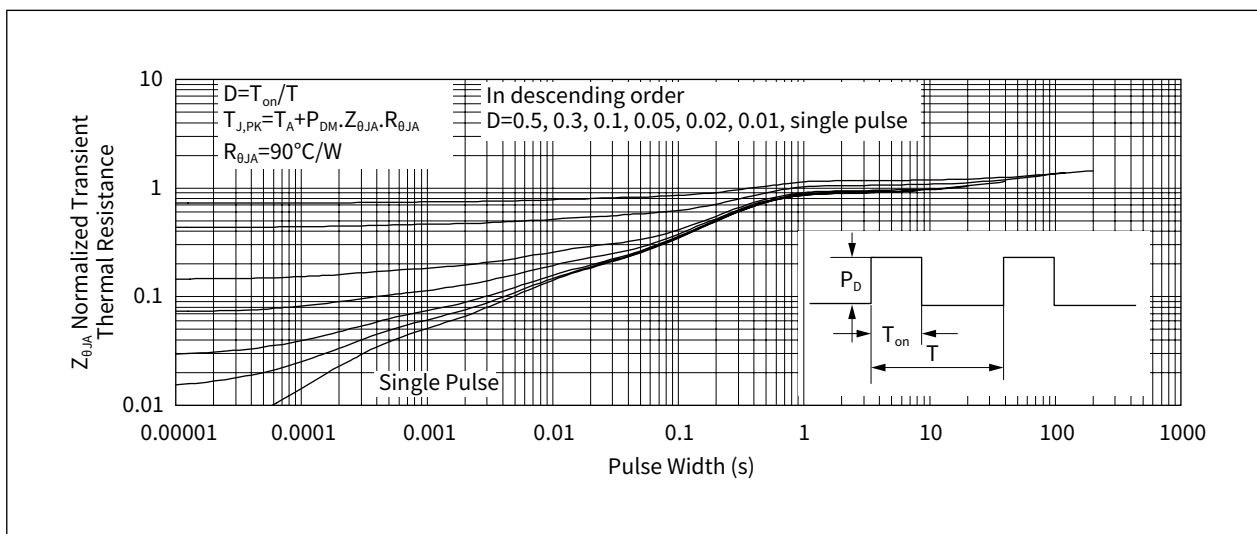


Figure 4-11 Normalized Maximum Transient Thermal Impedance



5 Revision history

Table 5-1 Document revision history

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