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WP2302SM

Enhancement Mode N-Channel Power MOSFET

SOT323/NMOS/20V/±12V/0.6V/3A/42mΩ

Rev0.1



20V, 42mΩ, 3A, N-Channel MOSFET

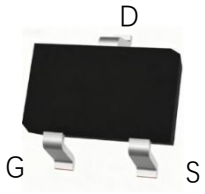
1.Features

- Advanced Trench Technology
- Surface mount package

V_{DS}	$R_{DS(on)}$ Typ.	I_D.
20V	42mΩ @ 4.5V	3A
	53mΩ @ 2.5V	

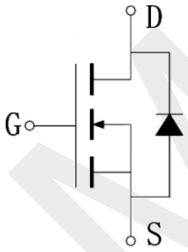
2.Applications

- Power Management
- Load Switching



SOT323

Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP2302SM	2302	SOT323	3,000	180,000

4.Absolute Max Ratings at Ta=25℃ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	±12	V
Drain Current (DC)	I_D	3	A
Drain Current (Pulse), PW≤300μs	I_{DP}	12	A
Total Dissipation	P_D	1.2	W
Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55 to +150	℃

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

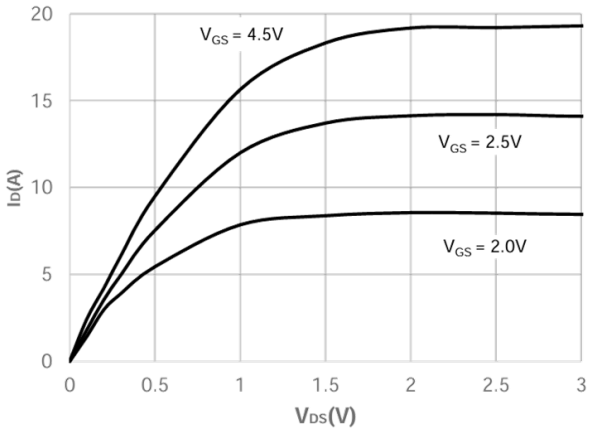
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5.Electrical Characteristics at Ta=25℃ (Note 2)

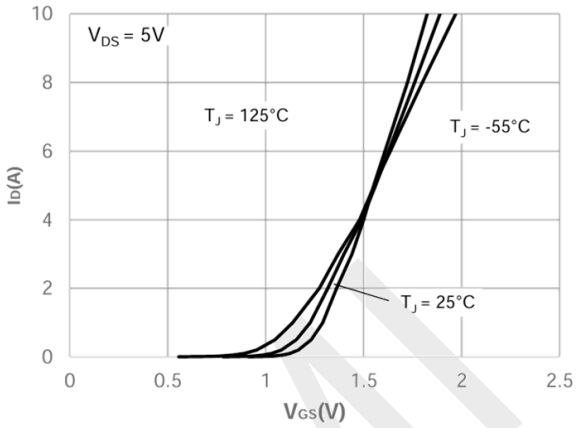
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	20	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V	-	-	1	uA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	0.3	0.6	1.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D =2A, V_{GS} =4.5V	-	42	55	mΩ
		I_D =1A, V_{GS} = 2.5V	-	53	73	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz	-	200	-	pF
Output Capacitance	C_{oss}		-	35	-	pF
Reverse Transfer Capacitance	C_{rss}		-	28	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} =10V, I_D =2A, R_G = 3Ω, V_{GS}=4.5V	-	3	-	ns
Rise Time	t_r		-	11	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	20	-	ns
Fall Time	t_f		-	8	-	ns
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} =0 to 4.5V, I_D = 2A	-	3	-	nC
	Q_{gs}		-	0.5	-	nC
	Q_{gd}		-	0.7	-	nC
Diode Forward Voltage	V_{FSD}	I_{SD} =2A, V_{GS} = 0	0.5	-	1.2	V

Note 2：Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

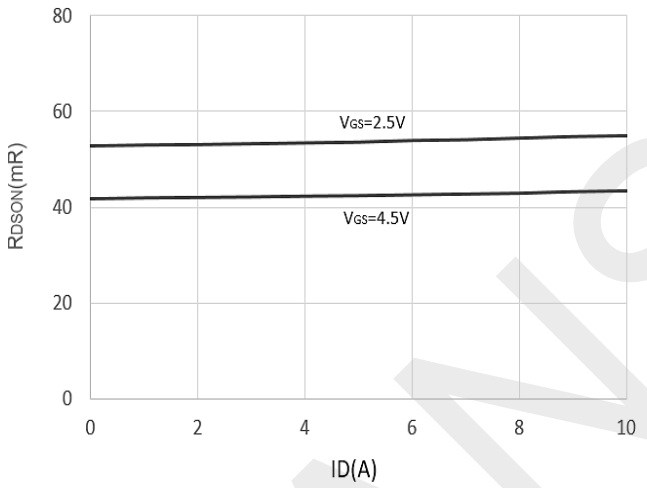
6.Typical Electrical and Thermal Characteristics



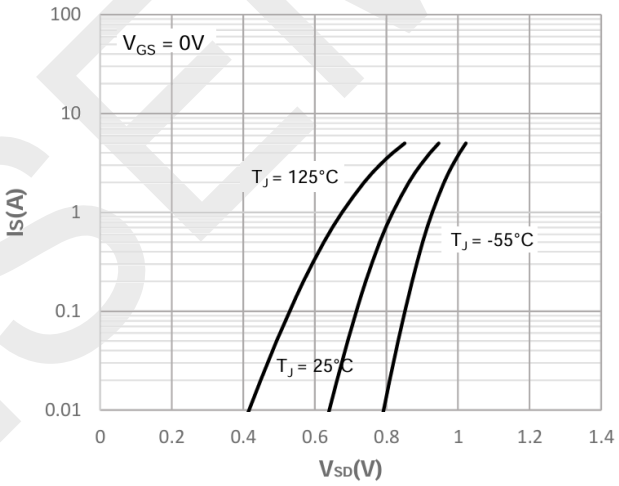
Output Characteristics



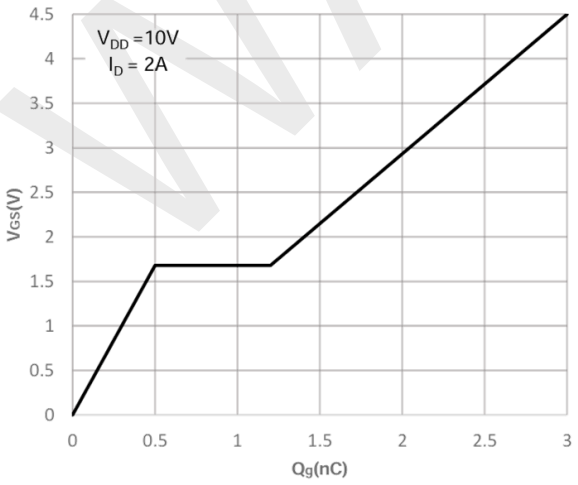
Typical Transfer Characteristics



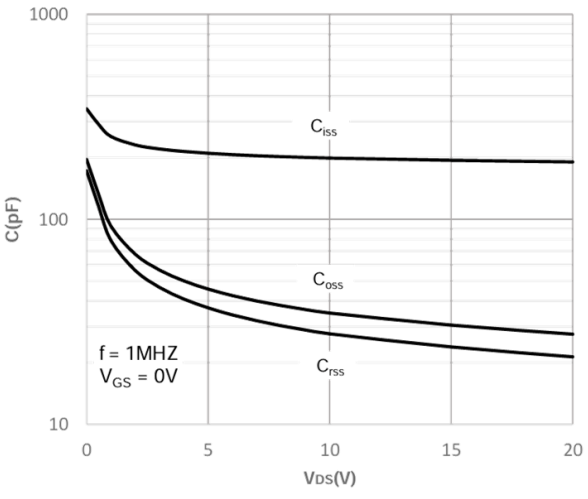
On-resistance vs. Drain Current



Body Diode Characteristics

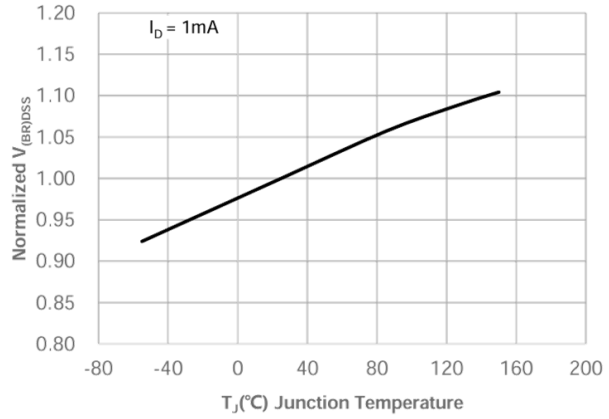


Gate Charge Characteristics



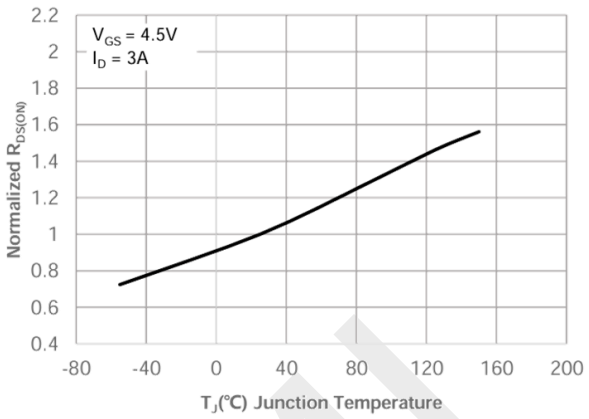
Capacitance Characteristics

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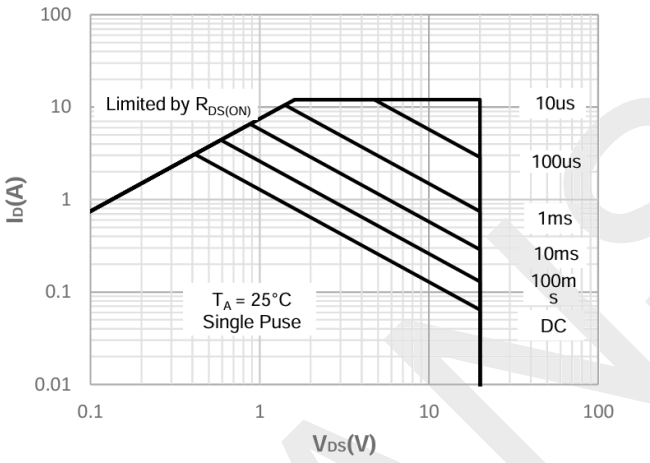
Normalized Breakdown Voltage vs.

Junction Temperature

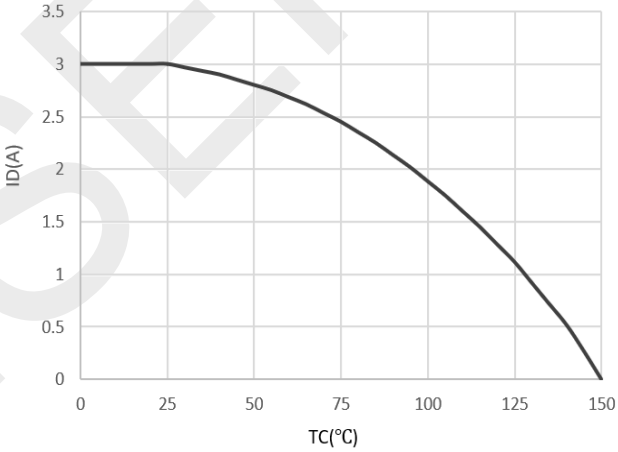


Normalized on Resistance vs.

Junction Temperature

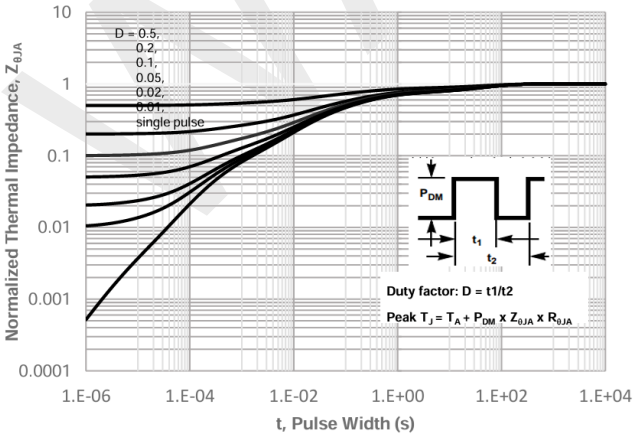


Maximum Safe Operating Area



Maximum Continuous Drain Current vs.

Case Temperature

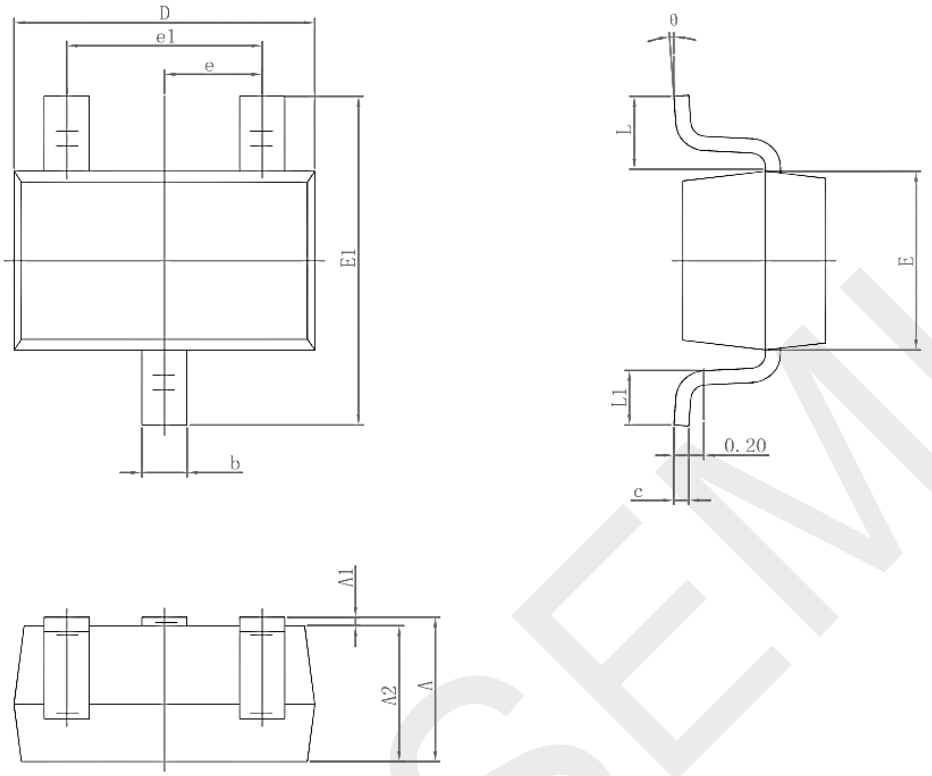


Normalized Maximum Transient

Thermal Impedance

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7.Package Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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