WANSEMI
万代半导体

WP2301

Enhancement Mode P-Channel Power MOSFET

SOT23/PMOS/-20V/±12V/-0.7V/-2.5A/90mΩ

Rev1.6

-20V, 90mΩ, -2.5A, P-Channel MOSFET

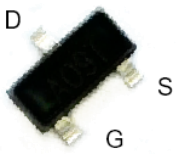
1.Features

- Advanced Trench Technology
- Surface mount package

V_{DS}	$R_{DS(on)}$ Typ.	I_D.
-20V	90mΩ @ 4.5V	-2.5A
	120mΩ @ 2.5V	

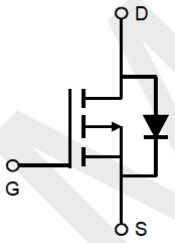
2.Applications

- Power Management
- Load Switching



SOT23

Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP2301	A1šHB	SOT23	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	-2.5	A
Drain Current (Pulse), PW≤300μs	I_{DP}	-10	A
Total Dissipation	P_D	0.8	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.

5.Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	156	℃/W

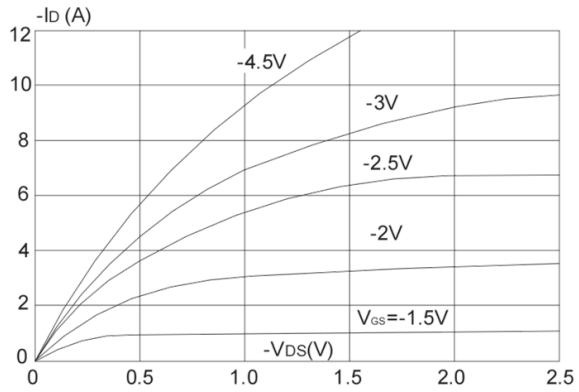
Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at Ta=25℃ (Note 3)

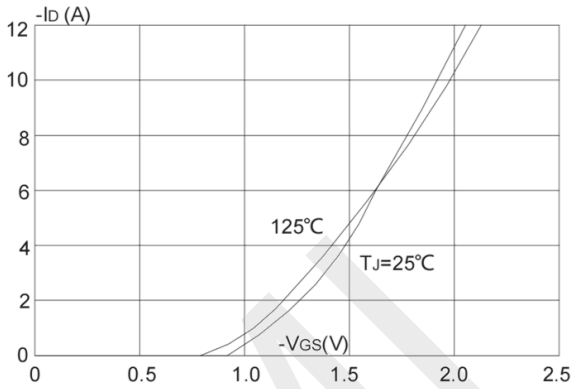
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = -250μA, V_{GS} = 0V	-20	-22		V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.5	-0.7	-1.2	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D =-2.5A, V_{GS} =-4.5V		90	115	mΩ
		I_D =-1A, V_{GS} = -2.5V		120	160	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, Frequency=1.0MHz		185		pF
Output Capacitance	C_{oss}			35		pF
Reverse Transfer Capacitance	C_{rss}			25		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} =-10V, R_L=-5A, R_G = 3.3Ω, V_{GS} = -4.5V		10		ns
Rise Time	t_r			30		ns
Turn-OFF Delay Time	$t_{d(off)}$			63		ns
Fall Time	t_f			50		ns
Total Gate Charge	Q_g	V_{DS} = -10V, V_{GS} = -4.5V, I_D = -2.3A		2.2		nC
	Q_{gs}			0.5		nC
	Q_{gd}			0.5		nC
Diode Forward Voltage	V_{FSD}	I_S = -2.5A, V_{GS} = 0		-0.55	-1.2	V

Note 3: 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.

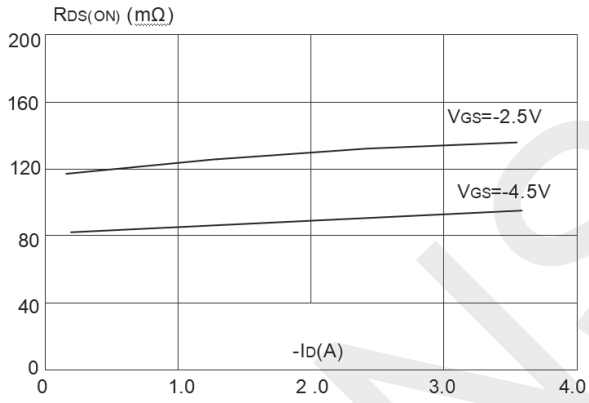
7.Typical Electrical and Thermal Characteristics



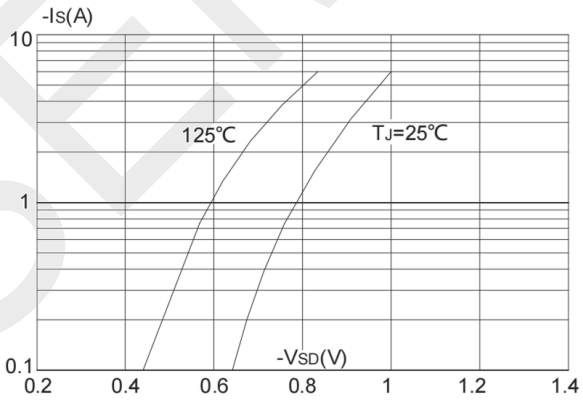
Output Characteristics



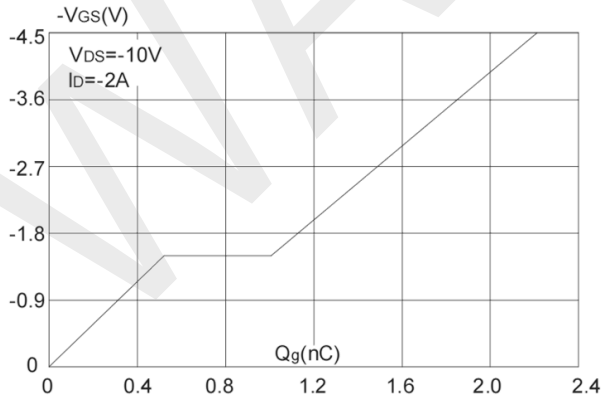
Typical Transfer Characteristics



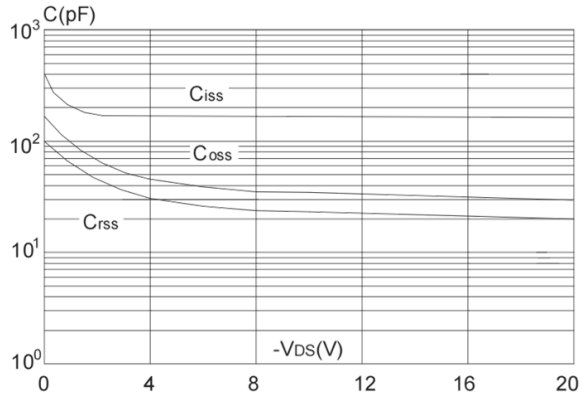
On-resistance vs . Drain Current



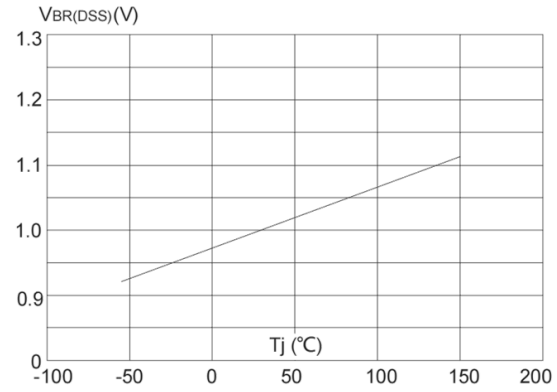
Body Diode Characteristics



Gate Charge Characteristics

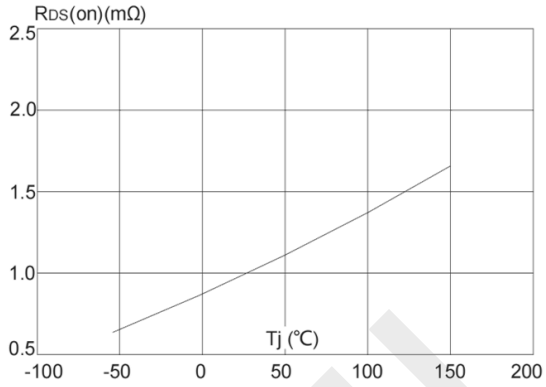


Capacitance Characteristics



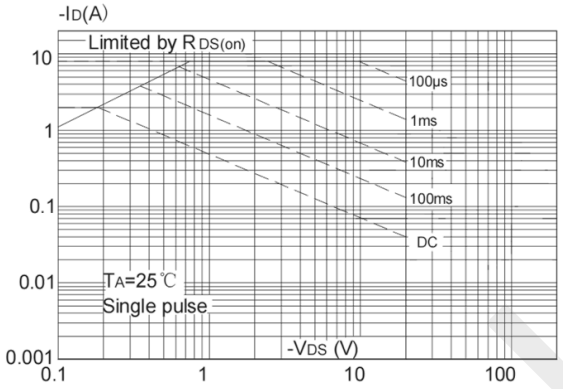
Normalized Breakdown Voltage vs.

Junction Temperature

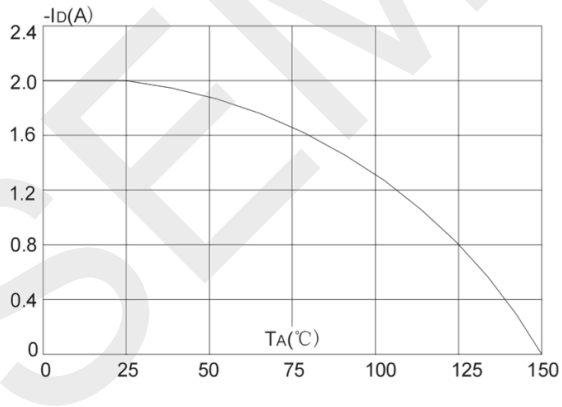


Normalized on Resistance vs.

Junction Temperature

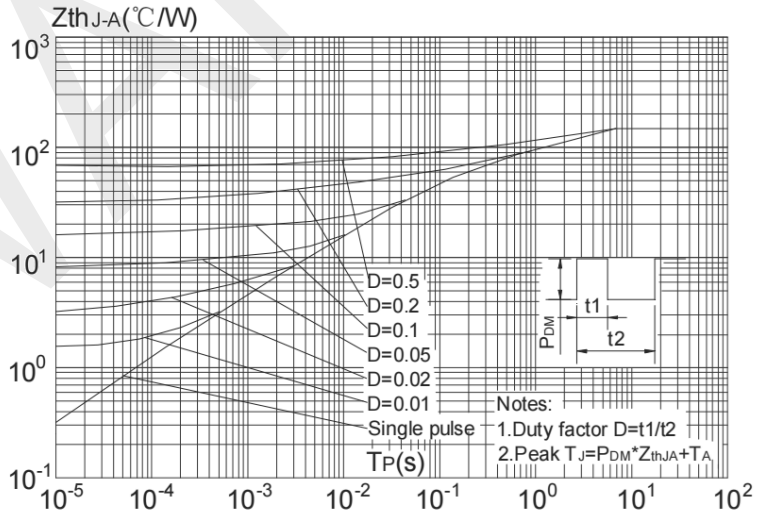


Maximum Safe Operating Area



Maximum Continuous Drain Current vs.

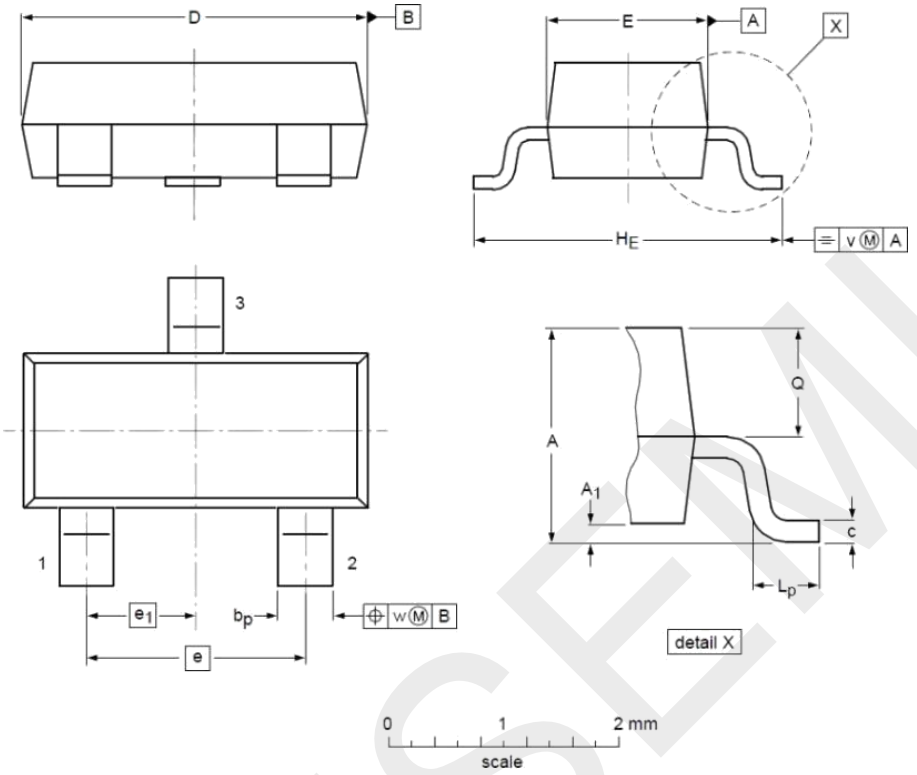
Case Temperature



Maximum Effective Transient

Thermal Impedance, Junction-to-Case

8.Package Dimensions



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	**A_1**	0.01	0.05	0.10
b_p	0.30	0.42	0.50	**c**	0.08	0.13	0.15
D	2.80	2.92	3.00	**E**	1.20	1.33	1.40
e	--	1.90	--	**e_1**	--	0.95	--
H_E	2.25	2.40	2.55	**L_p**	0.30	0.42	0.50
Q	0.45	0.49	0.55	**v**	--	0.20	--
w	--	0.10	--				

9.Important Notice

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