AT2301W

20V P-Channel MOSFET

Features

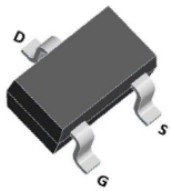
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

Product Summary

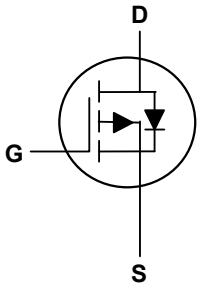
V_{DS}	-20	V
I_D	-2.3	A
$R_{DS(ON)}$(at V_{GS}=-4.5V)	110	mΩ
$R_{DS(ON)}$(at V_{GS}=-2.5V)	140	mΩ

Applications

- High Frequency Point-of-Load,Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



SOT-323



Absolute Maximum Ratings(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-2.3	A
Pulsed Drain Current[2]	I_{DM}	-10	A
Total Power Dissipation	P_D	0.2	W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient[1]	$R_{\theta JA}$	---	625	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=-250uA	-20	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V , I_D=-2.8A	---	100	110	mΩ
		V_{GS}=-2.5V , I_D=-2A	---	120	140	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =-250uA	-0.4	-0.7	-1	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±12V , V_{DS}=0V	---	---	±100	nA
Forward Transconductance	gfs	V_{DS}=-5V , I_D=-2.8A	---	4	---	S
Total Gate Charge	Q_g	V_{DS}=-10V , V_{GS}=-2.5V, I_D=-3A	---	3.3	---	nC
Gate-Source Charge	Q_{gs}		---	0.7	---	
Gate-Drain Charge	Q_{gd}		---	1.3	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=-10V ,I_D=-1A, V_{GS}=-4.5V, R_G=10Ω	---	11	---	ns
Rise Time	T_r		---	35	---	
Turn-Off Delay Time	$T_{d(off)}$		---	30	---	
Fall Time	T_f		---	10	---	
Input Capacitance	C_{iss}	V_{DS}=-10V , V_{GS}=0V , f=1MHz	---	405	---	pF
Output Capacitance	C_{oss}		---	75	---	
Reverse Transfer Capacitance	C_{rss}		---	55	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[2]	I_S	V_G=V_D=0V , Force Current	---	---	-1.3	A
Diode Forward Voltage[1]	V_{SD}	V_{GS}=0V ,I_S=-1.3A , T_J=25℃	---	---	-1.2	V

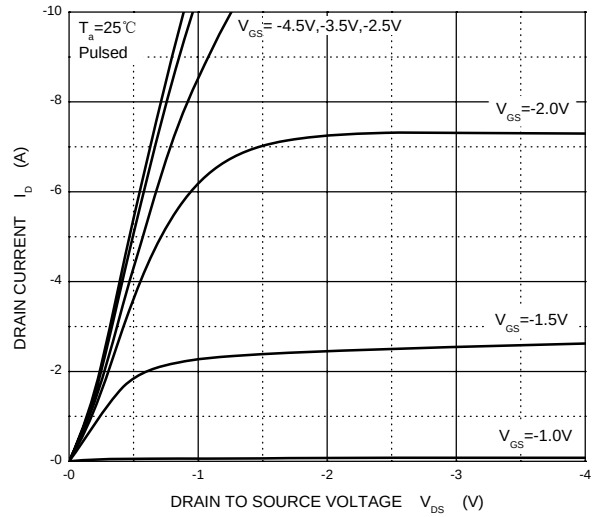
Note:

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

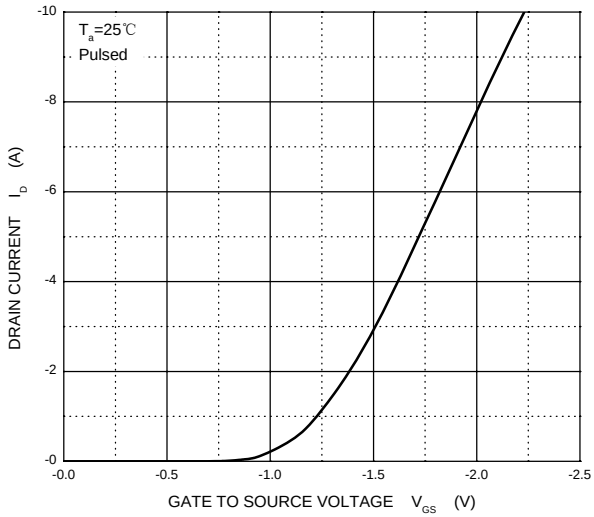
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

Typical Characteristics

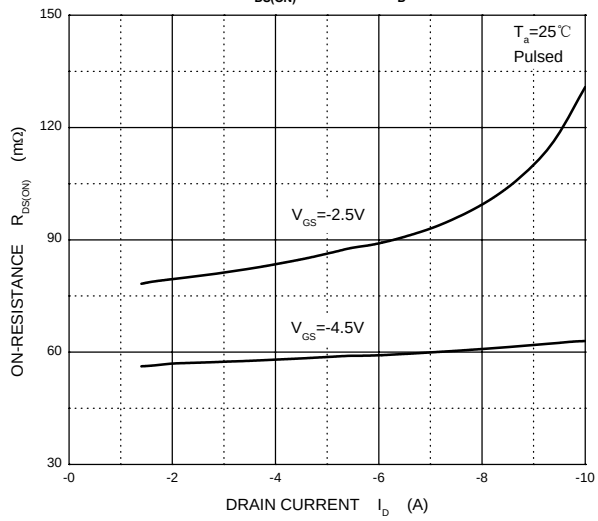
Output Characteristics



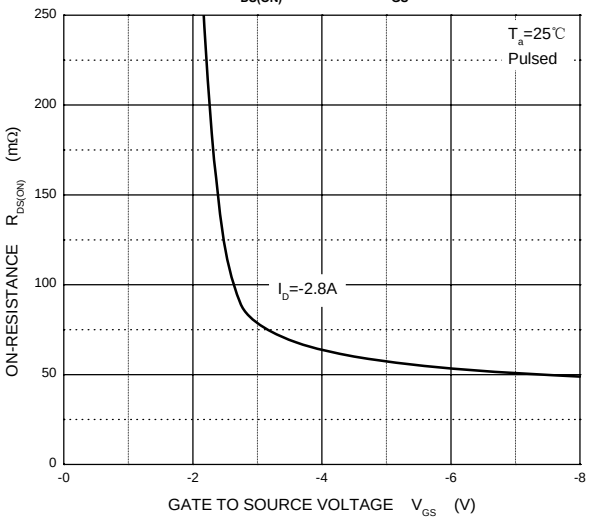
Transfer Characteristics



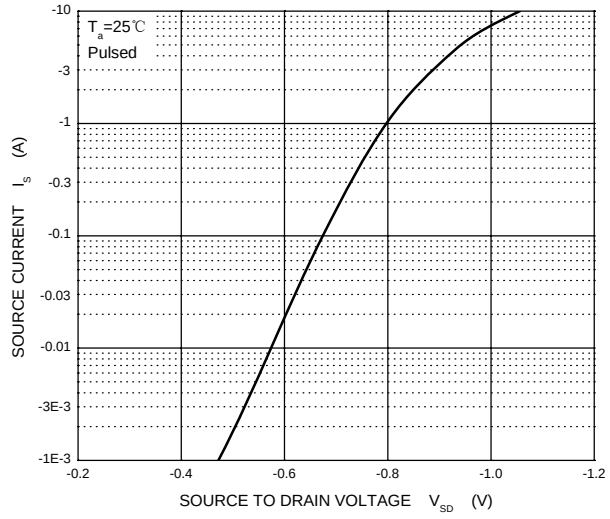
$R_{DS(ON)}$ — I_D



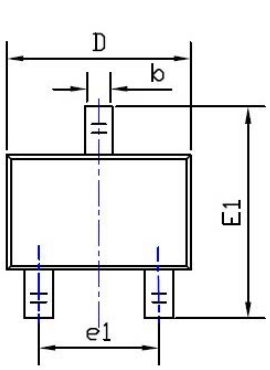
$R_{DS(ON)}$ — V_{GS}



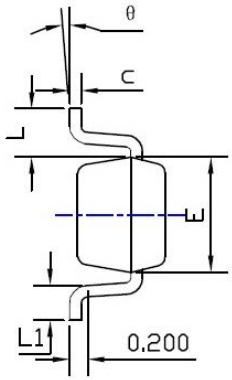
I_S — V_{SD}



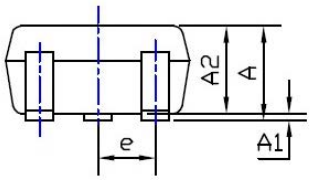
SOT323 Package Outline Dimensions



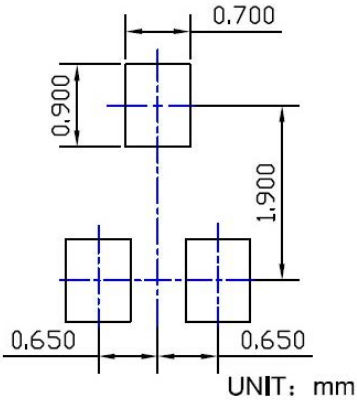
TOP VIEW



SIDE VIEW



SIDE VIEW



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.00	1.10	E_1	2.15	2.30	2.45
A_1	--	--	0.10	e	--	0.65	--
A_2	0.90	0.95	1.00	e_1	1.20	1.30	1.40
b	0.15	0.30	0.40	L	--	0.525	--
c	0.10	0.17	0.25	L_1	0.26	0.36	0.46
D	1.80	2.00	2.20	θ	0°		8°
E	1.15	1.25	1.35				