AT2307

20V P-Channel MOSFET

Features

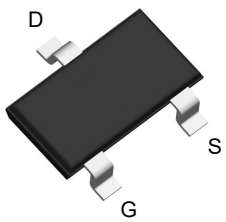
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

Product Summary

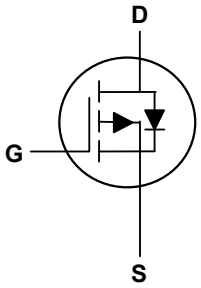
V_{DS}	-20	V
I_D	-6	A
$R_{DS(ON)}$(at V_{GS}=-4.5V)	25	mΩ
$R_{DS(ON)}$(at V_{GS}=-2.5V)	30	mΩ

Applications

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



SOT23-3L Top View



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	-6	A
Pulsed Drain Current	I_{DM}	-24	A
Total Power Dissipation	P_D	1.2	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]	$R_{\theta JA}$	---	100	℃/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=-6A	---	20	25	mΩ
		V_{GS}=-2.5V , I_D=-5A	---	25	30	mΩ
		V_{GS}=-1.8V , I_D=-3A	---	38	45	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =-250uA	-0.5	-0.7	-1.0	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=-6A	---	5	---	S
Total Gate Charge	Q_g	V_{DS}=-10V , V_{GS}=-4.5V, I_D=-6A	---	17	---	nC
Gate-Source Charge	Q_{gs}		---	4.1	---	
Gate-Drain Charge	Q_{gd}		---	4.3	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=-10V ,I_D=-2.8A, V_{GS}=-4.5V, R_G=6Ω, R_L=10Ω	---	25	---	ns
Rise Time	T_r		---	30	---	
Turn-Off Delay Time	$T_{d(off)}$		---	70	---	
Fall Time	T_f		---	50	---	
Input Capacitance	C_{iss}	V_{DS}=-10V , V_{GS}=0V , f=1MHz	---	2100	---	pF
Output Capacitance	C_{oss}		---	498	---	
Reverse Transfer Capacitance	C_{rss}		---	300	---	

Drain-Source Diode Characteristics

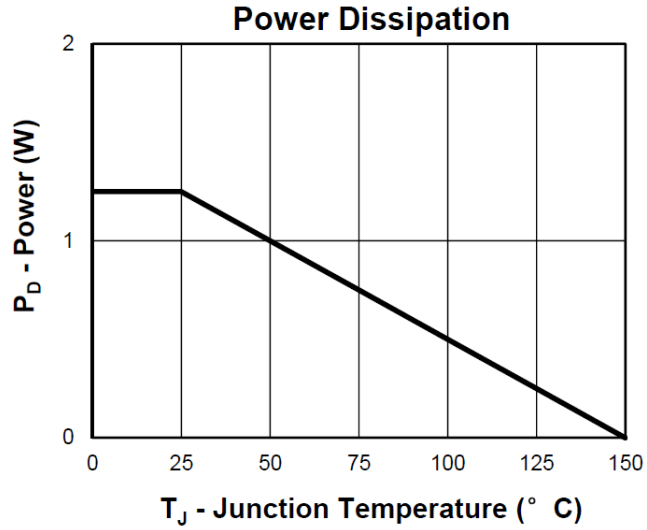
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[2]	I_S		---	---	-6	A
Diode Forward Voltage[1]	V_{SD}	V_{GS}=0V ,I_S=-1.25A , T_J=25℃	---	-0.81	-1.2	V

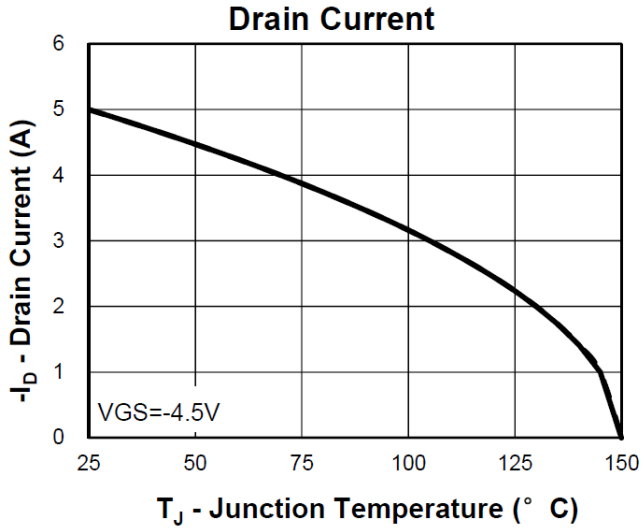
Note:

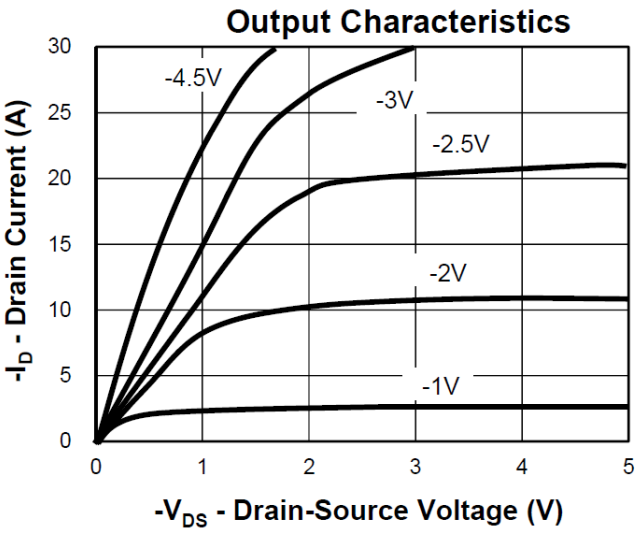
1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

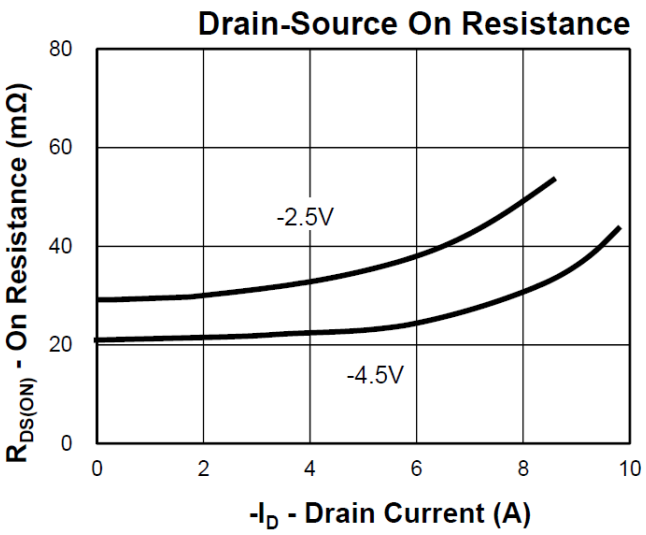
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

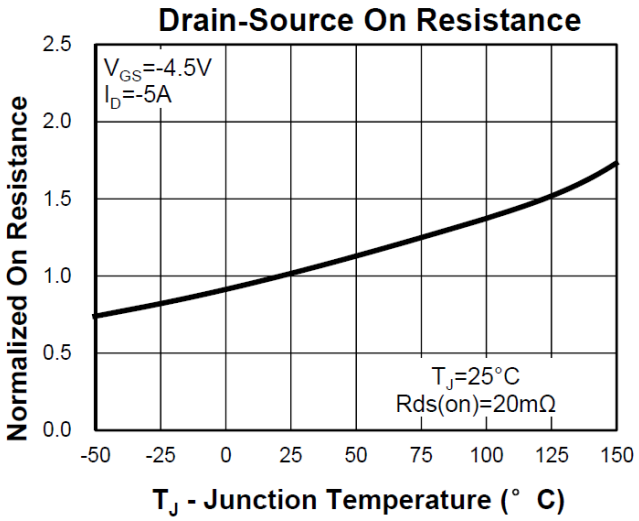
Typical Characteristics

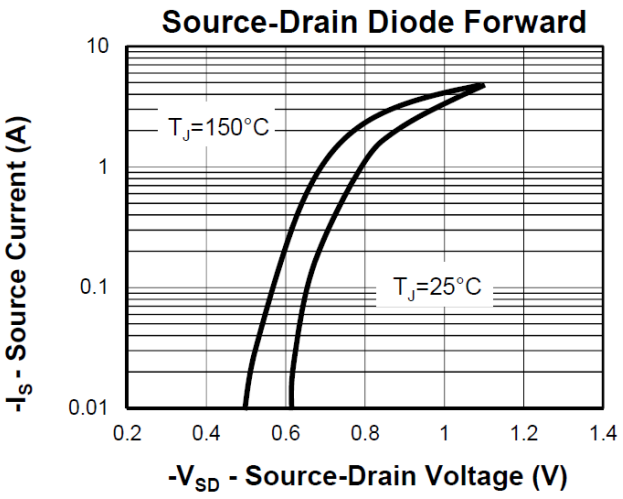




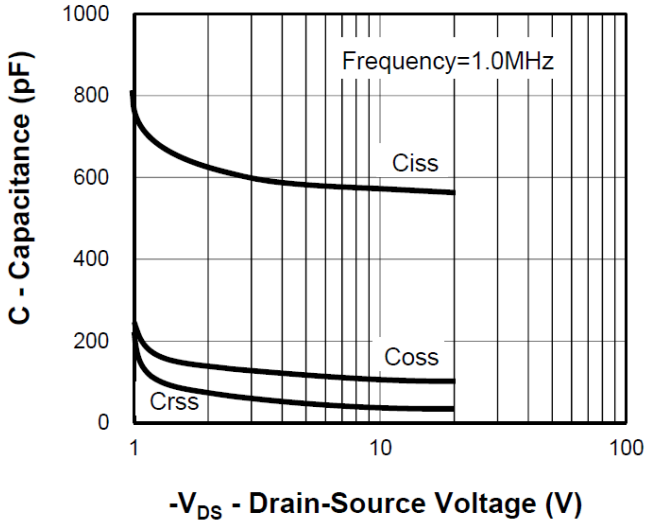




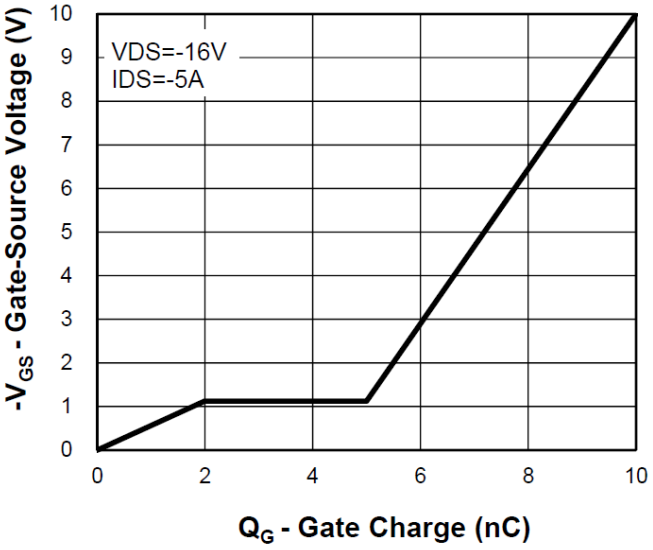




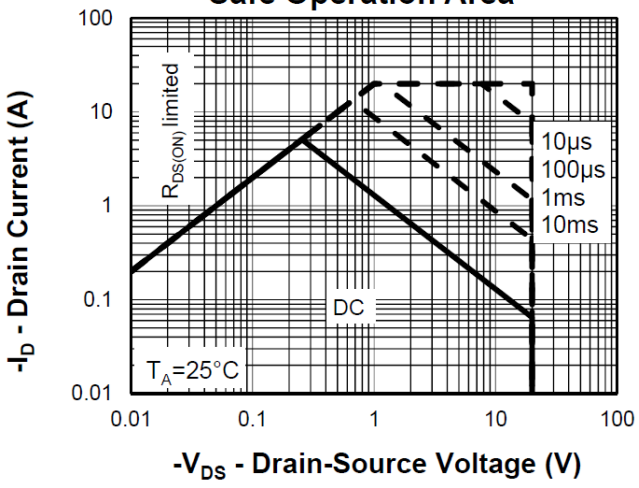
Capacitance



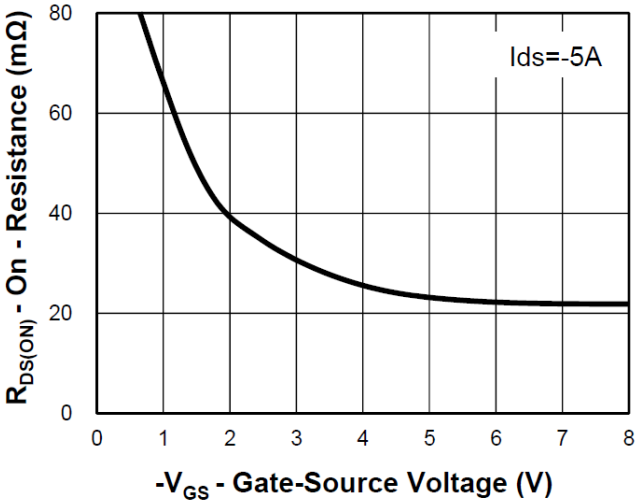
Gate Charge



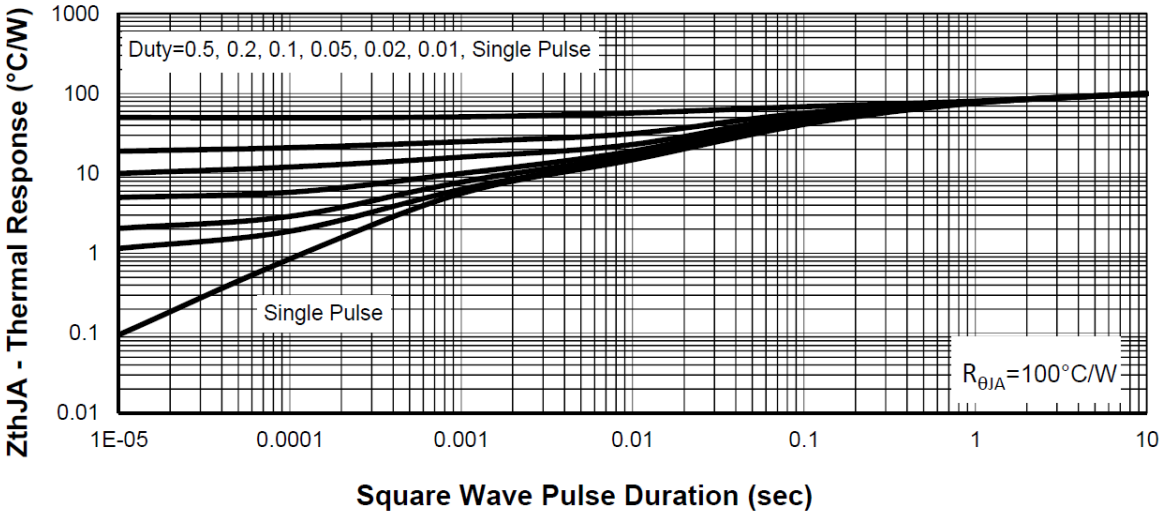
Safe Operation Area



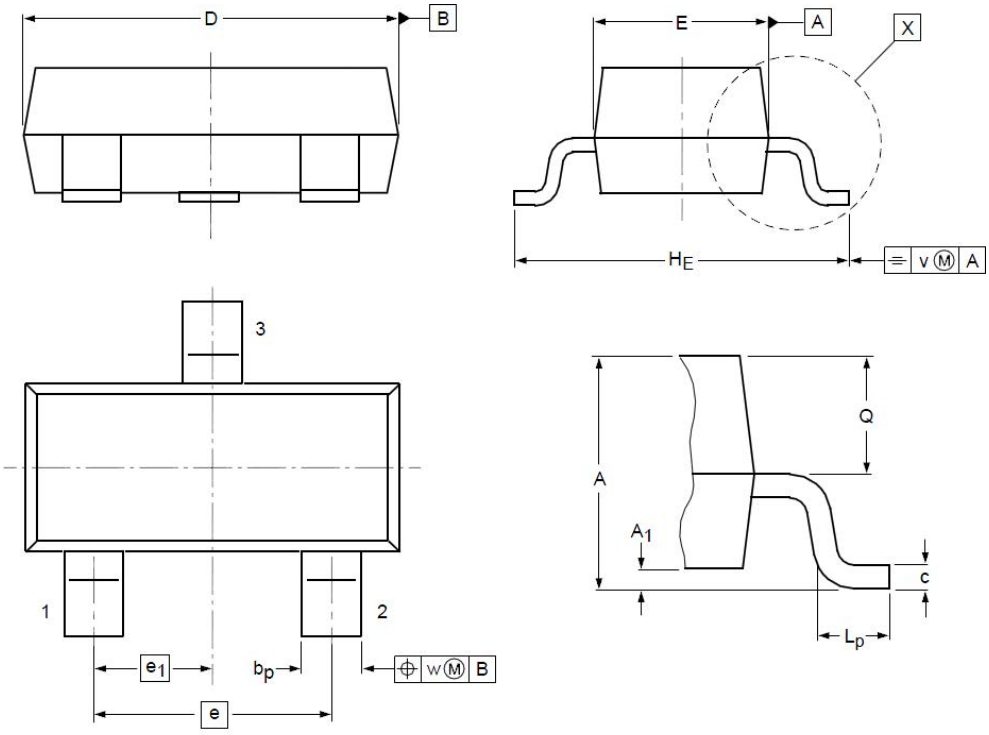
Drain Current



Thermal Transient Impedance



SOT23-3L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.07	1.25	**e_1**	--	0.95	--
A_1	0.01	0.05	0.10	**H_E**	2.50	2.80	3.00
b_p	0.30	0.40	0.50	**L_P**	0.30	0.45	0.60
c	0.10	0.15	0.20	**Q**	0.23	0.28	0.33
D	2.70	2.90	3.10	**V**	--	0.20	--
E	1.40	1.55	1.75	**W**	--	0.20	--
e	--	1.90	--				