AT1P2SP020MSB

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	140mΩ@-4.5V	-1.2A
	180mΩ@-2.5V	

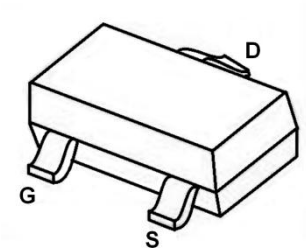
Feature

- High power and current handing capability
- Surface mount package

Application

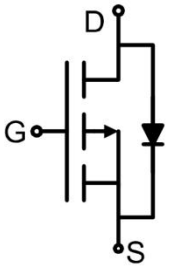
- Battery Switch
- DC/DC Converter

Package

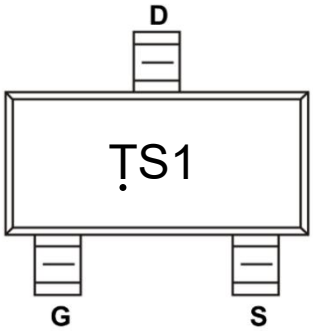


SOT-323

Circuit diagram



Marking



Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-1.2	A
Pulsed Drain Current	I_{DM}	-2.8	A
Power Dissipation	P_D	0.29	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	431	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

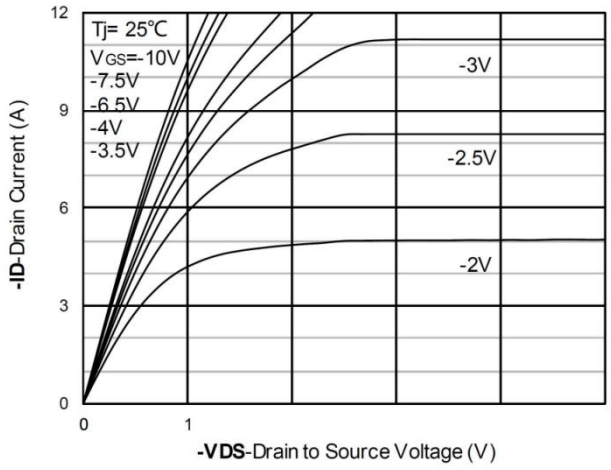
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =-250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-16V, V_{GS} =0V			-1	μA
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	-0.5	-0.7	-1	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-0.5A		110	140	mΩ
		V_{GS} =-2.5V, I_D =-0.5A		140	180	
Dynamic characteristics[1)]						
Input Capacitance	C_{iss}	V_{DS} =-10V, V_{GS} =0V, f =1MHz		485		pF
Output Capacitance	C_{oss}			58		
Reverse Transfer Capacitance	C_{rss}			49		
Total Gate Charge	Q_g	V_{DS} =-10V, V_{GS} =-2.5V I_D =-1.2A		6.5		nC
Gate-Source Charge	Q_{gs}			0.28		
Gate-Drain Charge	Q_{gd}			0.6		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-10V, V_{GS} =-4.5V I_D=-1.2A, R_G =6Ω		7		nS
Turn-on rise time	t_r			6		
Turn-off delay time	$t_{d(off)}$			42		
Turn-off fall time	t_f			6.5		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-1.2	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-1A, T_J =25℃			-1.2	V

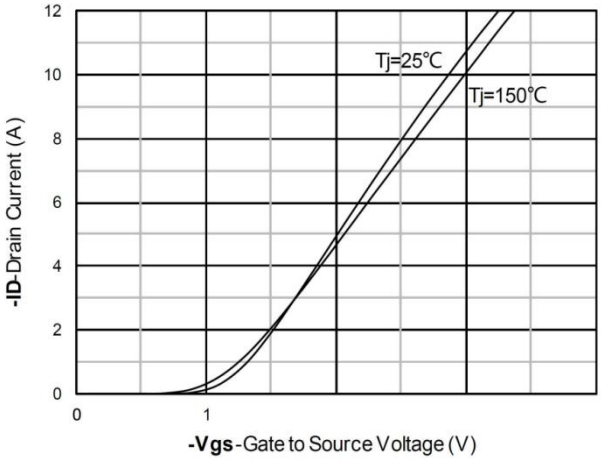
Notes:

1) Guaranteed by design, not subject to production.

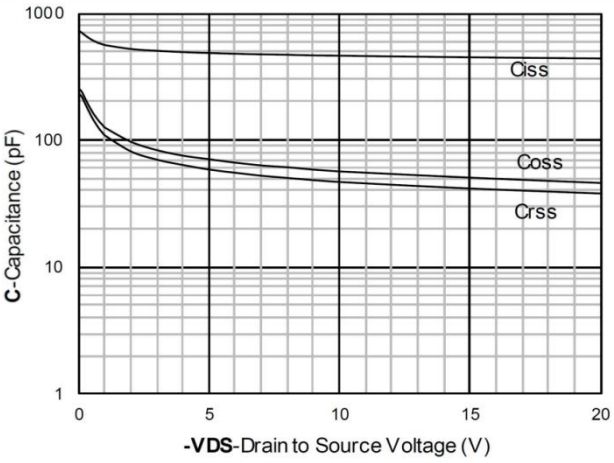
Typical Characteristics



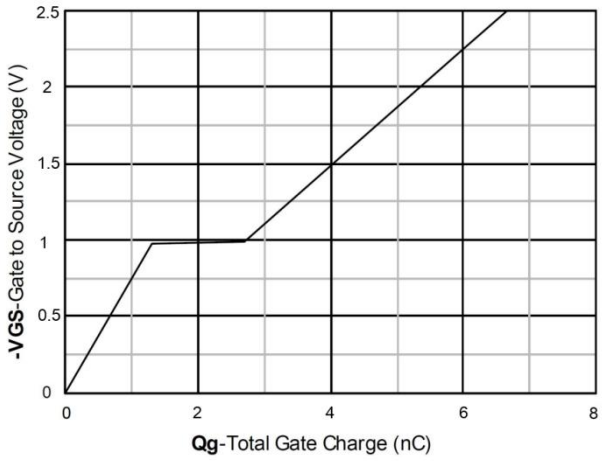
Output Characteristics



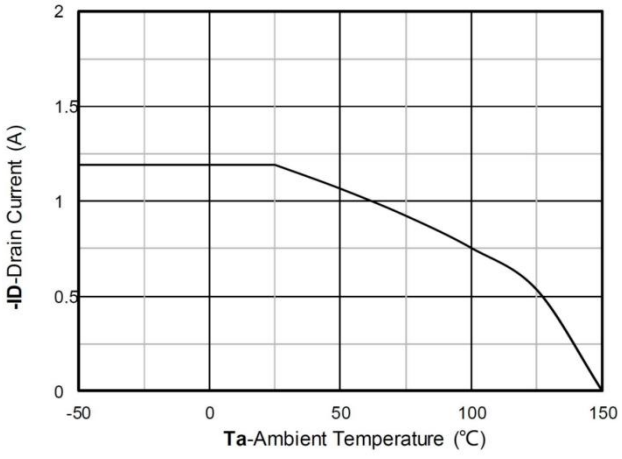
Transfer Characteristics



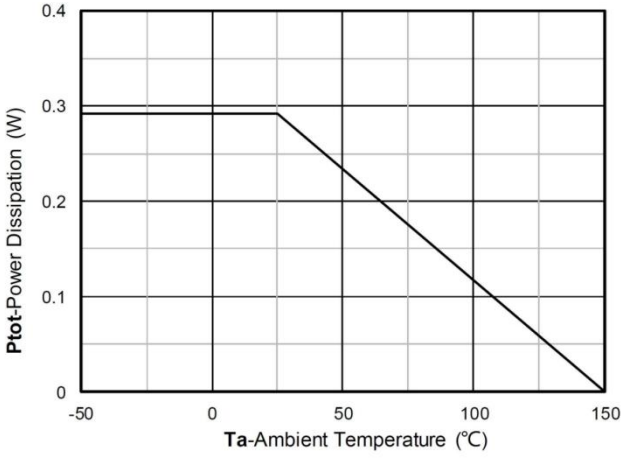
Capacitance Characteristics



Gate Charge

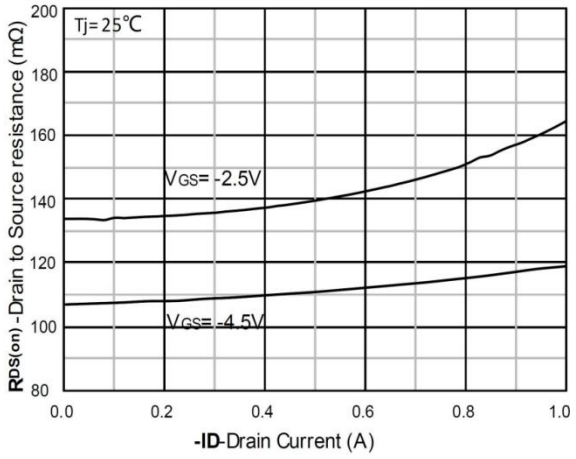


Current dissipation

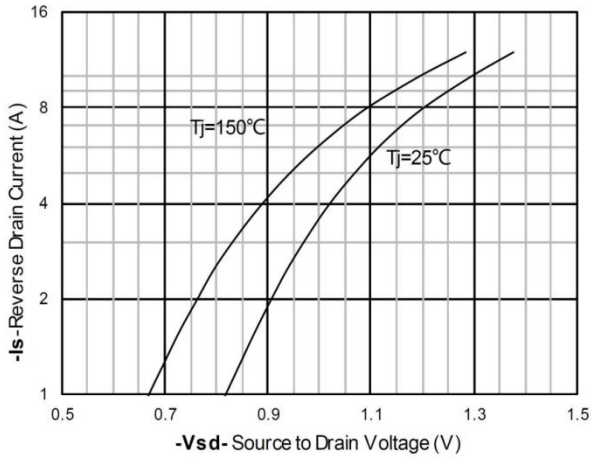


Power dissipation

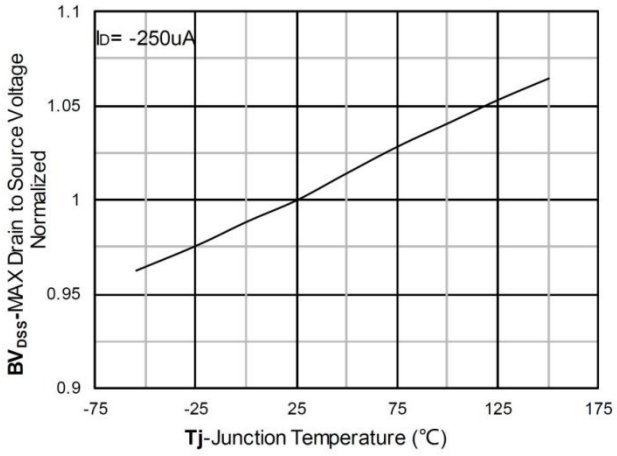
Typical Characteristics



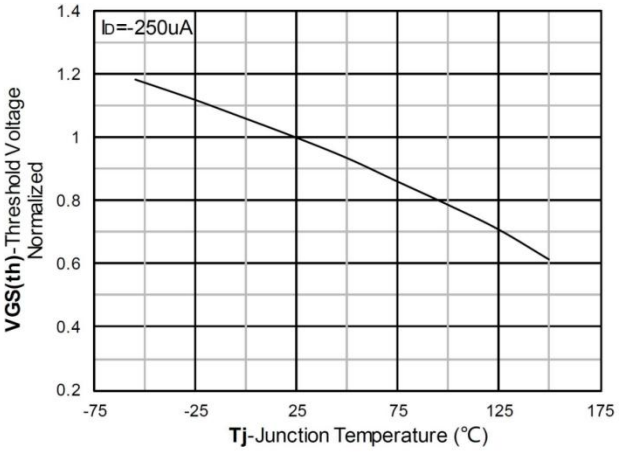
RDS(on) VS Drain Current



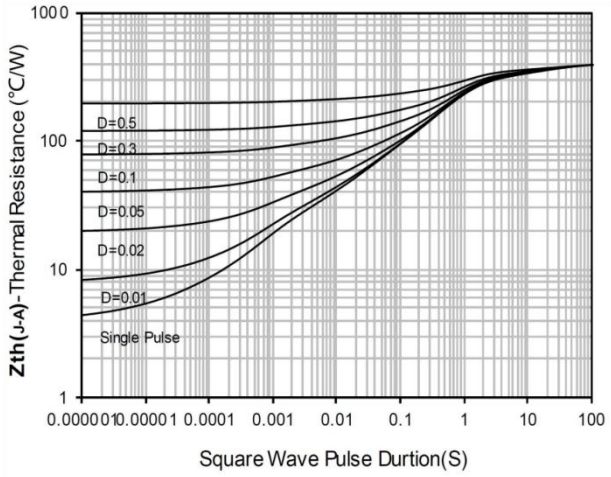
Forward characteristics of reverse diode



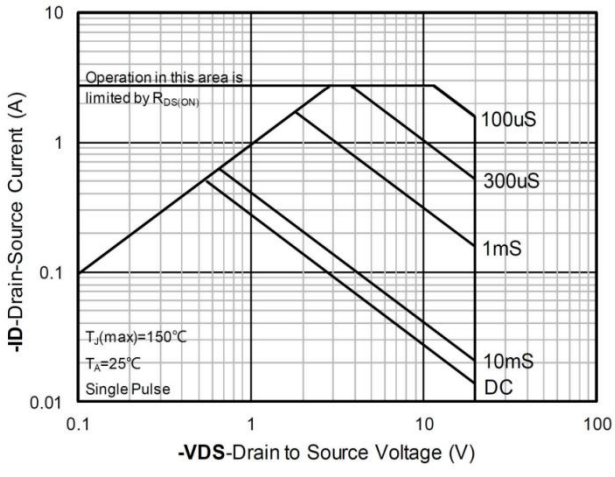
Normalized breakdown voltage



Normalized Threshold voltage

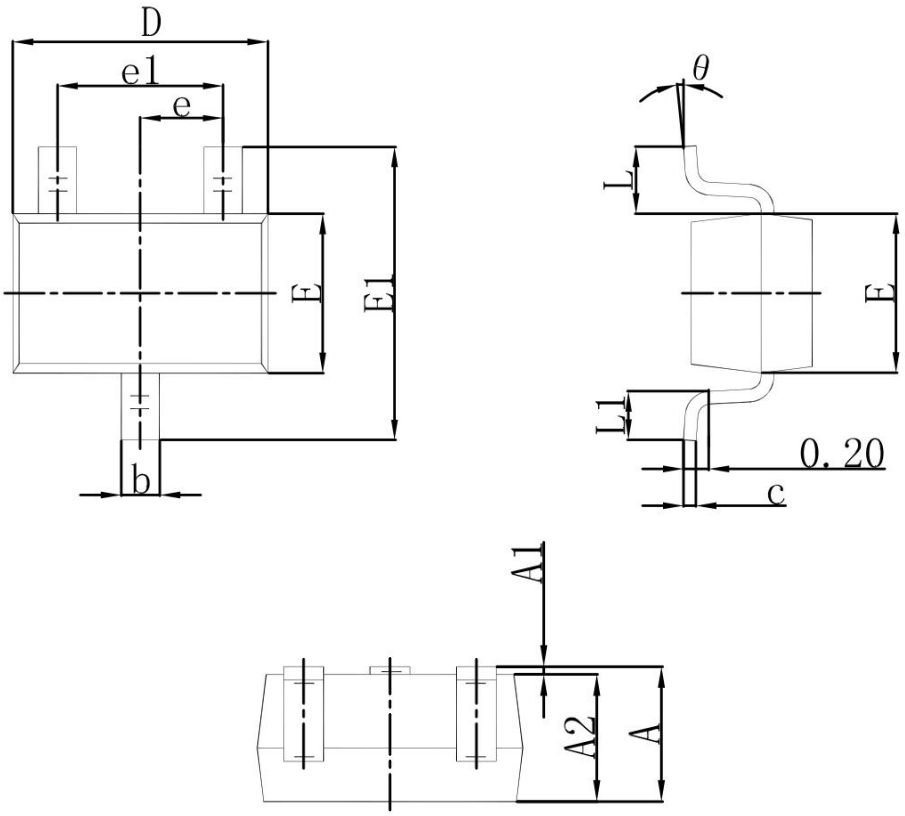


Maximum Transient Thermal Impedance



Safe Operation Area

SOT-323 Package Information



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	2.000	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	0.250	0.460	0.010	0.018
θ	0°	8°	0°	8°