AT4P8SP020ESA

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	40mΩ@-4.5V	-4.8A
	55mΩ@-2.5V	

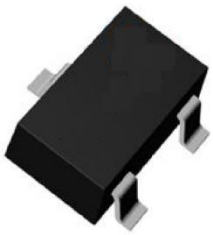
Feature

- Low gate charge
- ESD Protected
- Surface mount package

Application

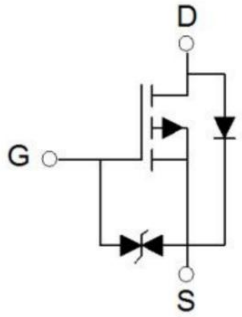
- Load Switch
- Battery Protection
- Power Management

Package

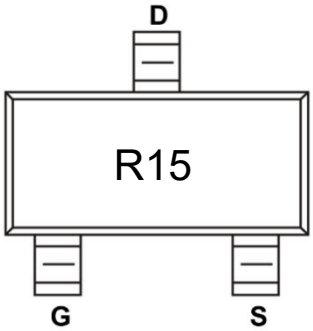


SOT-23

Circuit diagram



Marking



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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}	±10	V
Continuous Drain Current[1] (T_C=25℃)	I_D	-4.8	A
Pulsed Drain Current	I_{DM}	-30	A
Power Dissipation[1] (T_C=25℃)	P_D	1.05	W
Thermal Resistance from Junction to Ambient[1]	$R_{\theta JA}$	110	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 ºC, 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} =-20V,V_{GS} =0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±10V, V_{DS} =0V			±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.4	-0.65	-1.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-4A		28	40	mΩ
		V_{GS} =-2.5V, I_D =-3.5A		38	55	
Dynamic characteristics[2]						
Input Capacitance	C_{iss}	V_{DS} =-10V,V_{GS} =0V,f =1MHz		630		pF
Output Capacitance	C_{oss}			140		
Reverse Transfer Capacitance	C_{rss}			120		
Total Gate Charge	Q_g	V_{DS} =-10V,V_{GS} =-4.5V, I_D =-4A		13		nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			3.0		
Turn-on delay time	$t_{d(on)}$	V_{DS}=-10V,V_{GS}=-4.5V, R_G=1Ω,I_D =-4A		12		nS
Turn-on rise time	t_r			6		
Turn-off delay time	$t_{d(off)}$			45		
Turn-off fall time	t_f			41		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				-4.8	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=-1A			-1.0	V
Reverse recover time	T_{rr}	I_S=-4.8A,di/dt=500A/us, T_J =25℃		26		nS
Reverse recovery charge	Q_{rr}			51		nC

Notes:

1) Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

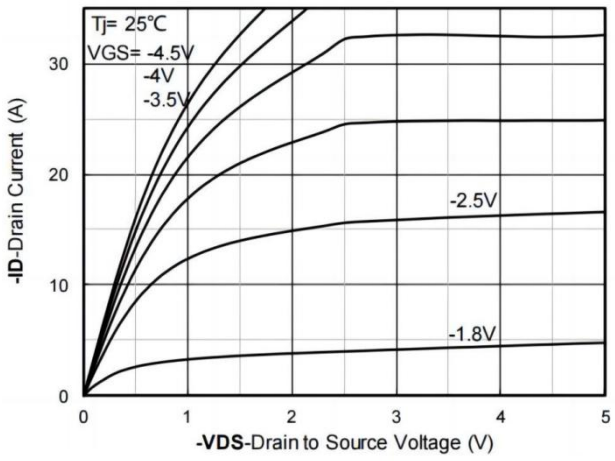


Figure 1. Output Characteristics

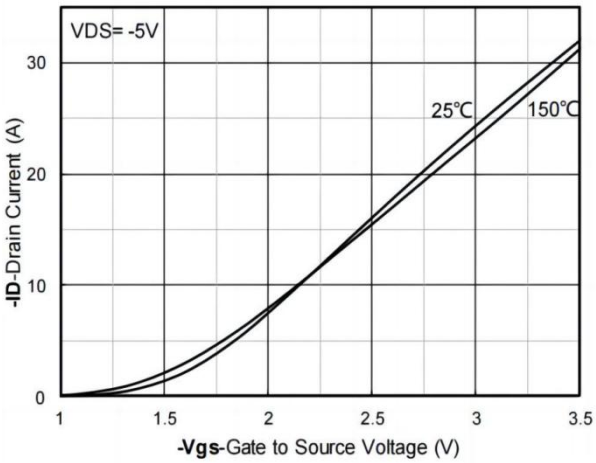


Figure 2. Transfer Characteristics

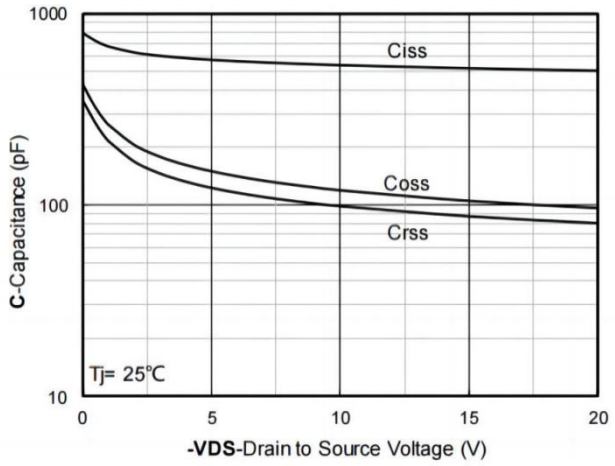


Figure 3. Capacitance Characteristics

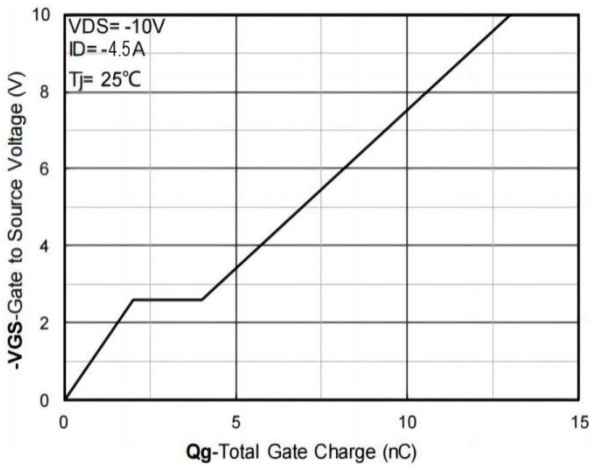


Figure 4. Gate Charge

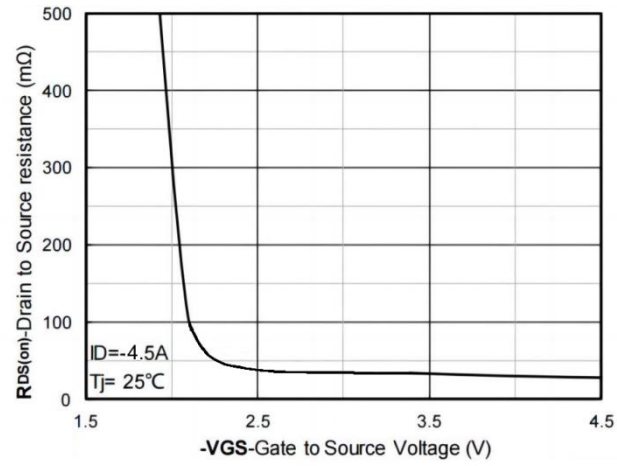


Figure 5. On-Resistance vs Gate to Source Voltage

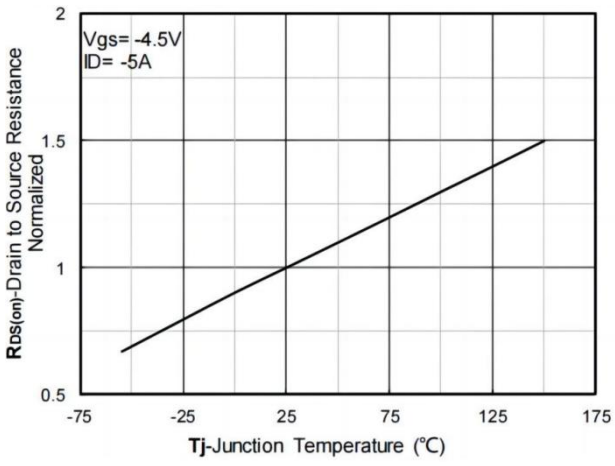


Figure 6. Normalized On-Resistance

Typical Characteristics

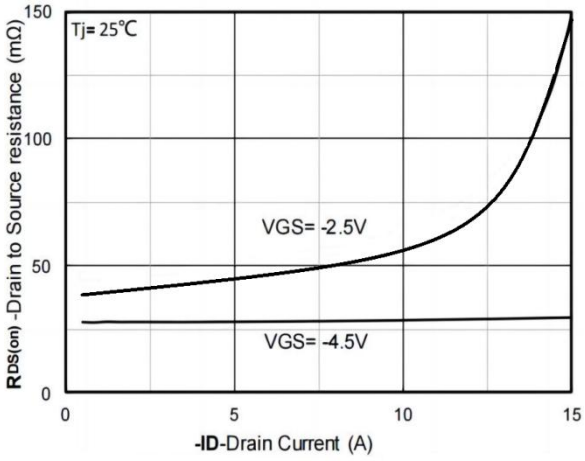


Figure 7. RDS(on) VS Drain Current

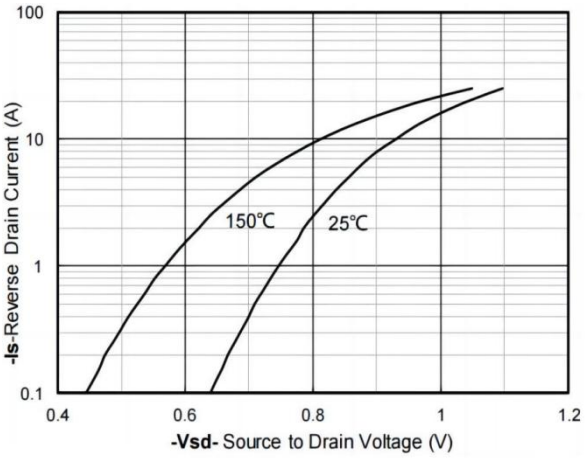


Figure 8. Forward characteristics of reverse diode

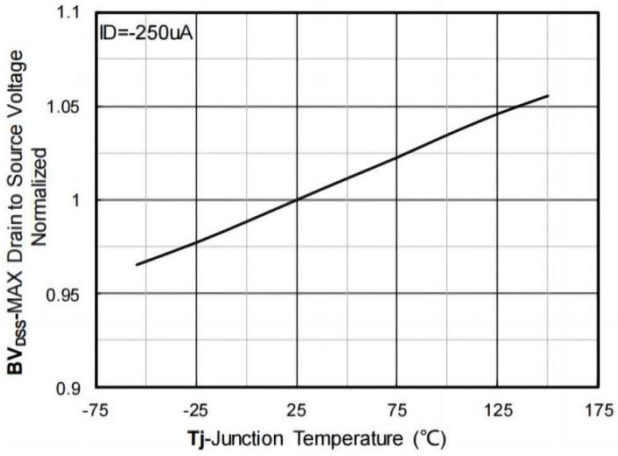


Figure 9. Normalized breakdown voltage

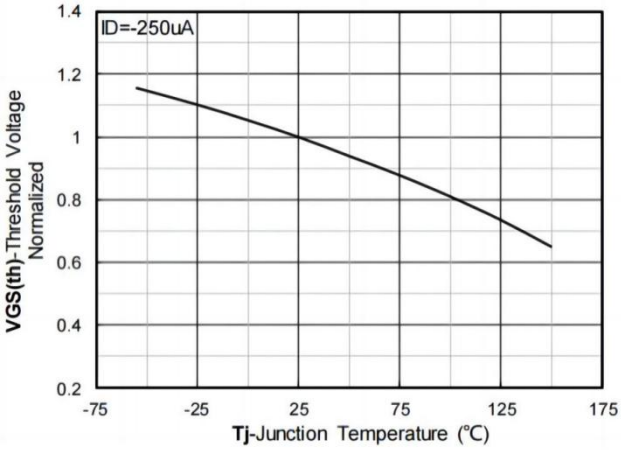


Figure 10. Normalized Threshold voltage

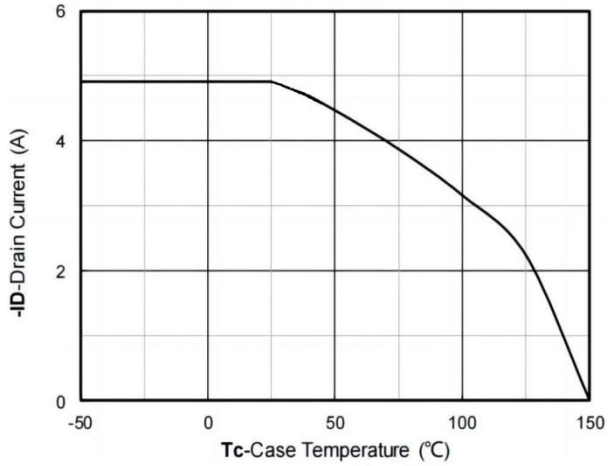


Figure 11. Current dissipation

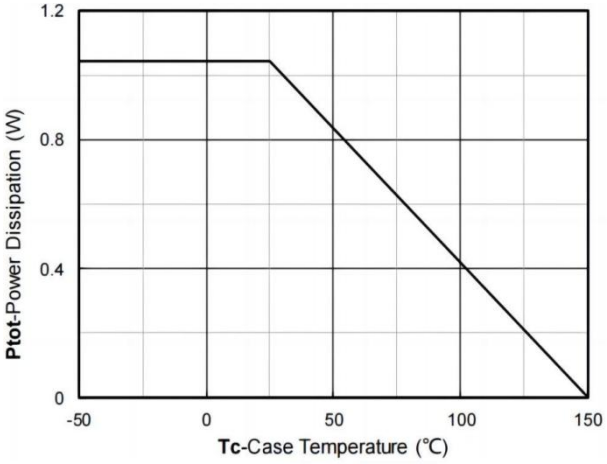
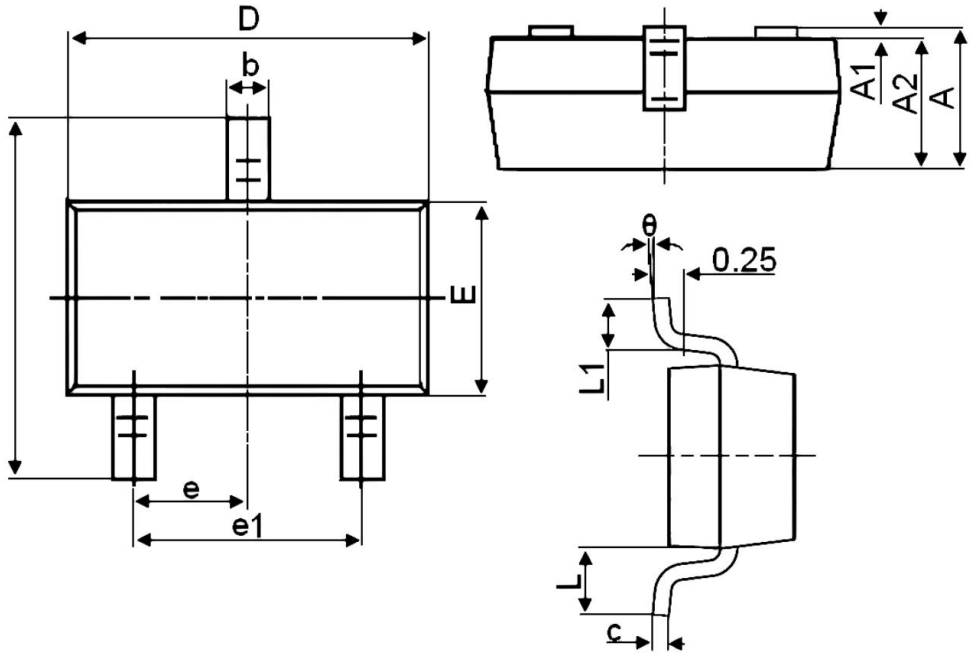


Figure 12. Power dissipation

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 REF.		0.037 REF.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0^0	8^0	0^0	8^0