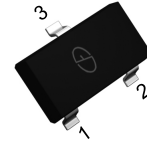


## P-Channel -20V (D-S) Power MOSFET

### Features

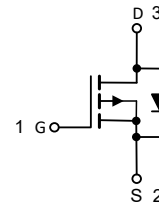
- 100% Avalanche Tested
- RoHS Compliant, Halogen Free, Pb-Free
- Fast switching and reverse body recovery
- AEC-Q101 Qualified
- MSL 1



SOT-23

### Applications

- Relay driver
- Switching circuits
- High-side load switch
- High-speed line driver



### Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	V <sub>DS</sub>	-20	V
Gate Source Voltage	V <sub>GS</sub>	±12	V
Drain Current, Continuous V <sub>GS</sub> =-10V	I <sub>D</sub>	-2.6	A
Drain Current, Pulsed (Note 1)	I <sub>DM</sub>	-10	A
Power Dissipation	P <sub>D</sub>	1.25	W
Operating Junction/ Storage Temperature Range	T <sub>J</sub> / T <sub>STG</sub>	-55 to +150	°C

Note 1: Single pulse; t<sub>p</sub> ≤ 1us.

### Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case (Note 2)	R <sub>thJC</sub>	100	°C/W

Note 2: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a 25°C still air environment.

Electrical Characteristics (T <sub>A</sub> =25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	20	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V	--	--	-1	uA
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =-250uA	-0.4	--	-1	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	--	--	±100	nA
Drain-Source On-state Resistance (Note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A	--	62	75	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1.8A	--	77	95	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-6V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.3A	--	5.8	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	0.8	--	
Gate-Drain Charge	Q <sub>gd</sub>		--	1.6	--	
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DD</sub> =-20V, R <sub>G</sub> =3Ω, R <sub>L</sub> =10Ω	--	7	--	ns
Turn-on Rise Time	t <sub>r</sub>		--	14	--	
Turn-off Delay Time	t <sub>d(off)</sub>		--	20	--	
Turn-off Fall Time	t <sub>f</sub>		--	7	--	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-20V, f=1MHz	--	400	--	pF
Output Capacitance	C <sub>oss</sub>		--	55	--	
Reverse Transfer Capacitance	C <sub>rss</sub>		--	45	--	

Reverse Diode Characteristics (T <sub>A</sub> =25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I <sub>SD</sub>	T <sub>C</sub> =25°C	--	--	-2.6	A
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	I <sub>F</sub> =-1A, V <sub>GS</sub> =0V	--	-0.8	-1.2	V

Note 3: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

## Typical Characteristics Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 - Typical Output Characteristics

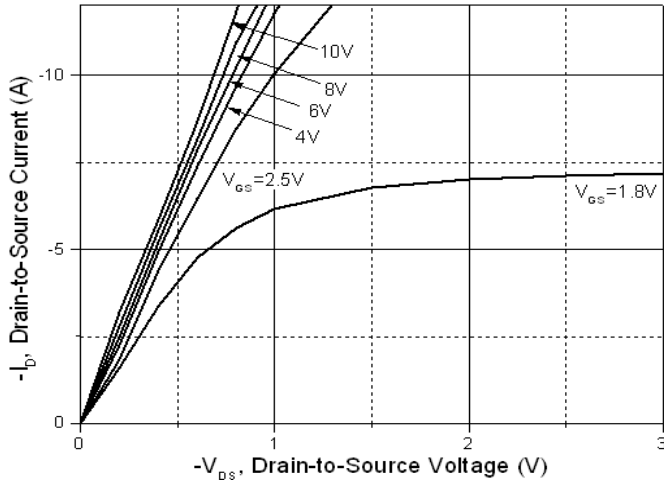


Fig.2 -  $V_{GS(th)}$  vs. Junction Temperature

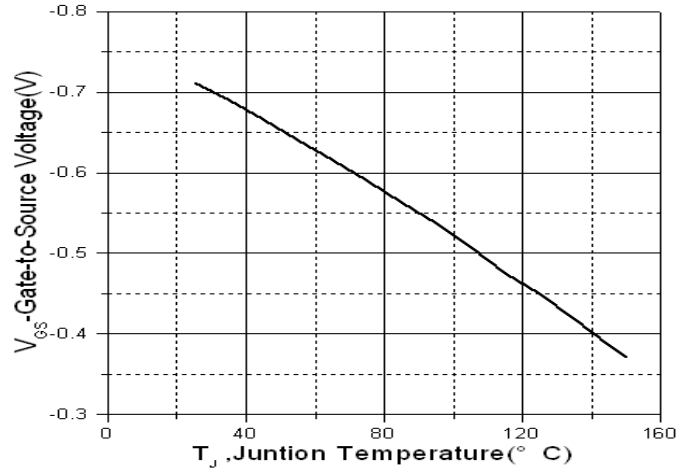


Fig.3 - Drain-to-Source Breakdown Voltage vs. Junction Temperature

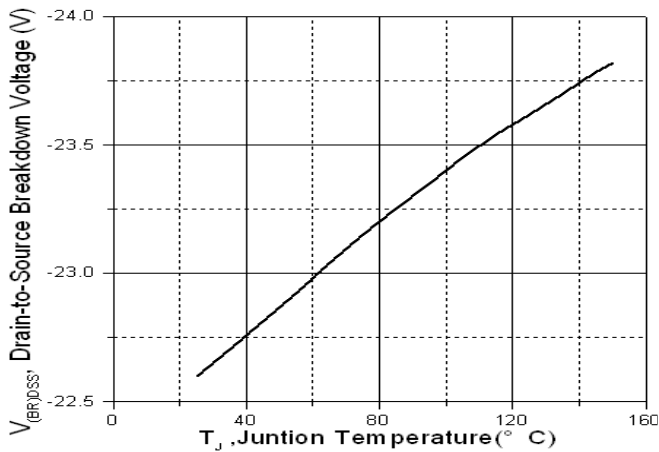


Fig.4 -  $R_{DS(on)}$  vs. Junction Temperature

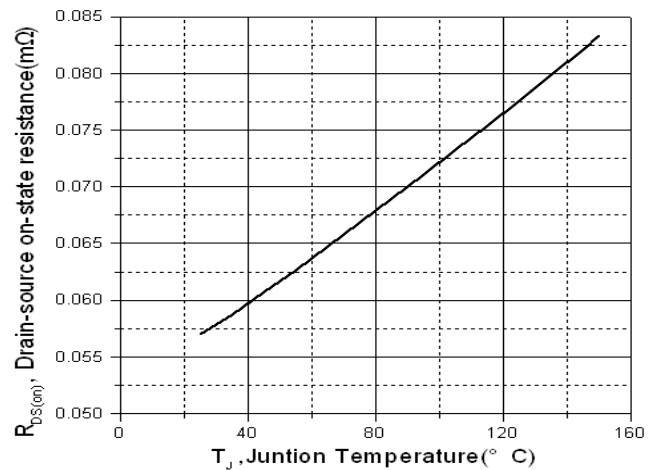


Fig.5 - Drain Current vs. Case Temperature

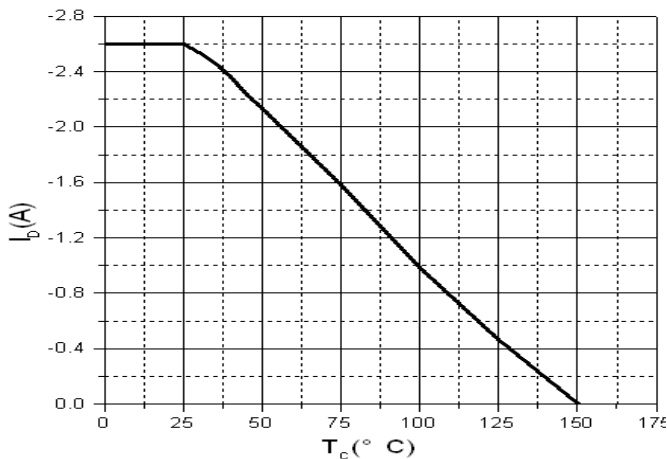
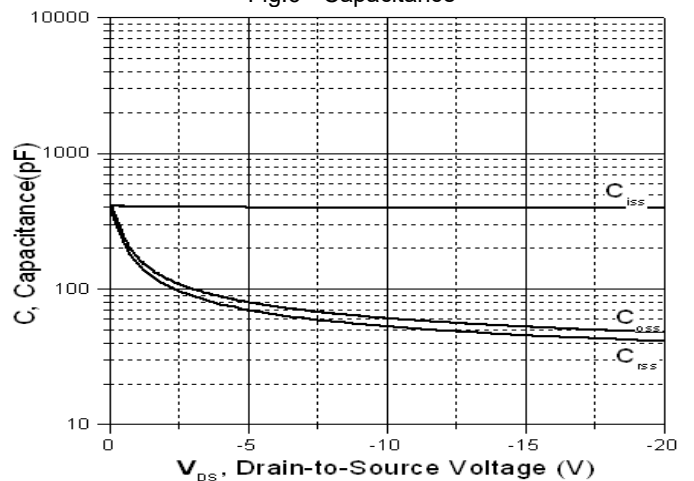
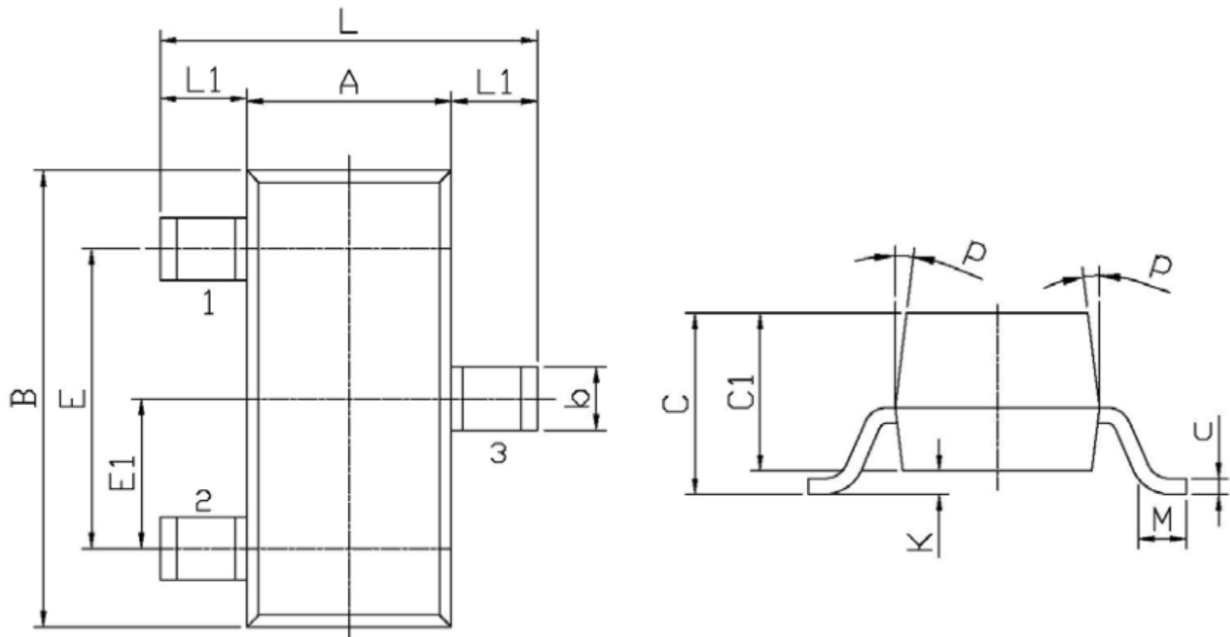


Fig.6 - Capacitance



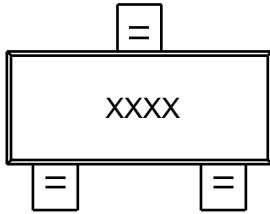
## Package Outline Dimensions (Unit: millimeters)

### SOT-23



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

## Marking Outline



Part Name: AGMP2301UP

1. P/N Mark: 2301

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