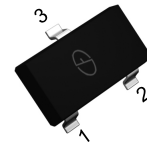


N-Channel 20V (D-S) Power MOSFET

Features

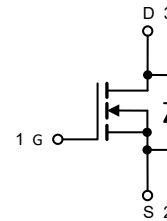
- 100% Avalanche Tested
- RoHS Compliant, Halogen Free, Pb-Free
- Fast switching and reverse body recovery
- AEC-Q101 Qualified
- MSL 1



SOT-23

Applications

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



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	V_{DS}	20	V
Gate Source Voltage	V_{GS}	± 12	V
Drain Current, Continuous $V_{GS}=10\text{V}$	I_D	3.3	A
$T_C=25^\circ\text{C}$			
Drain Current, Pulsed <i>(Note 1)</i>	I_{DM}	11.4	A
Power Dissipation	P_D	1.1	W
$T_C=25^\circ\text{C}$			
Operating Junction/ Storage Temperature Range	T_J / T_{STG}	-55 to +150	$^\circ\text{C}$

Note 1: Single pulse; $t_p \leq 1\mu\text{s}$.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Ambient <i>(Note 2)</i>	R_{thJA}	140	$^\circ\text{C/W}$

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 _A =25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	20	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	--	--	1	uA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =250uA	0.4	--	1	V
Gate Leakage Current	I _{GSS}	V _{GS} =±12V	--	--	±100	nA
Drain-Source On-state Resistance (Note 3)	R _{DS(on)}	V _{GS} =4.5V, I _D =2A	--	22	30	mΩ
		V _{GS} =2.5V, I _D =1A	--	27	40	
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =4.5V, I _D =3.6A	--	4	--	nC
Gate-Source Charge	Q _{gs}		--	0.65	--	
Gate-Drain Charge	Q _{gd}		--	1.5	--	
Turn-on Delay Time	t _{d(on)}	V _{GS} =4.5V, V _{DD} =20V, R _G =3Ω, R _L =10Ω	--	7	--	ns
Turn-on Rise Time	t _r		--	10.4	--	
Turn-off Delay Time	t _{d(off)}		--	12.9	--	
Turn-off Fall Time	t _f		--	3.2	--	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, f=1MHz	--	304	--	pF
Output Capacitance	C _{oss}		--	46	--	
Reverse Transfer Capacitance	C _{rss}		--	38	--	

Reverse Diode Characteristics (T _A =25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I _{SD}	T _C =25°C	--	--	3.3	A
Diode Forward Voltage (Note 3)	V _{SD}	I _F =1A, V _{GS} =0V	--	0.7	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

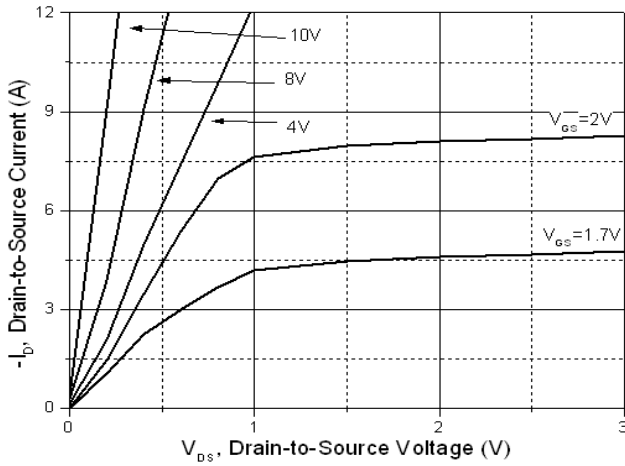


Fig.2 - $V_{GS(th)}$ vs. Junction Temperature

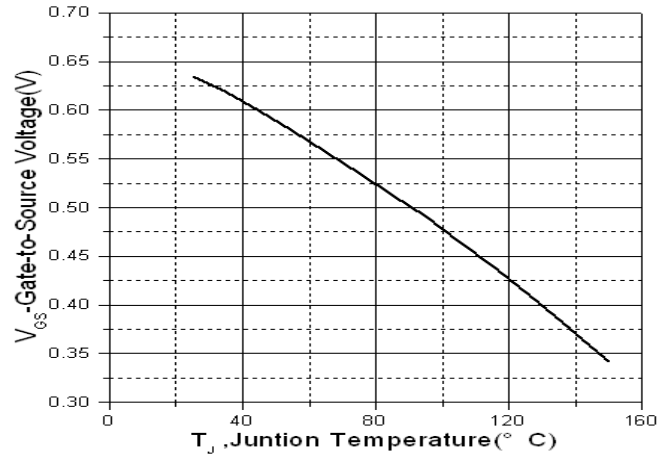


Fig.3 - Drain-to-Source Breakdown Voltage vs. Junction Temperature

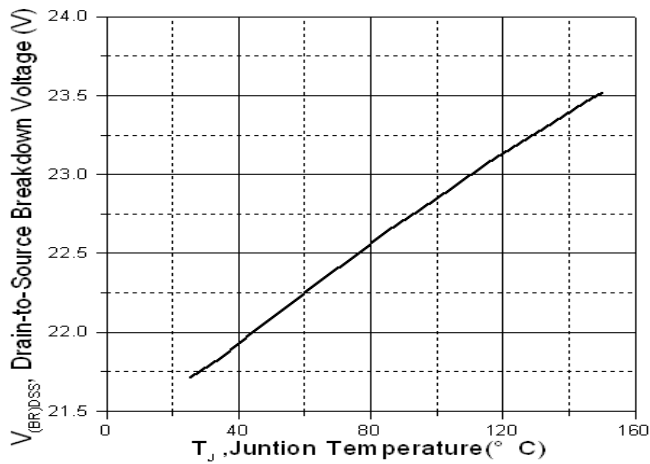


Fig.4 - $R_{DS(on)}$ vs. Junction Temperature

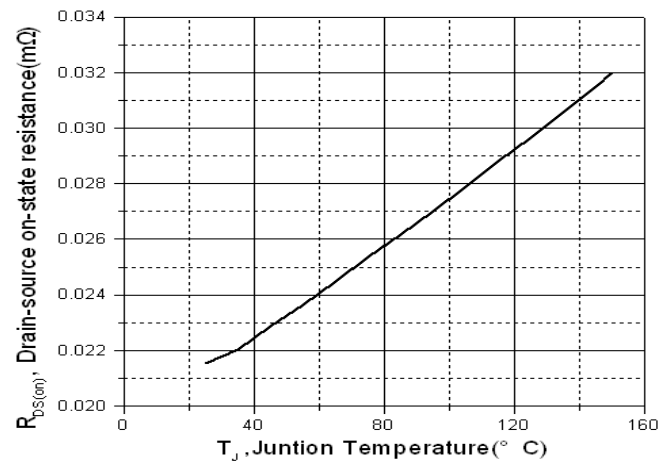


Fig.5 - Drain Current vs. Case Temperature

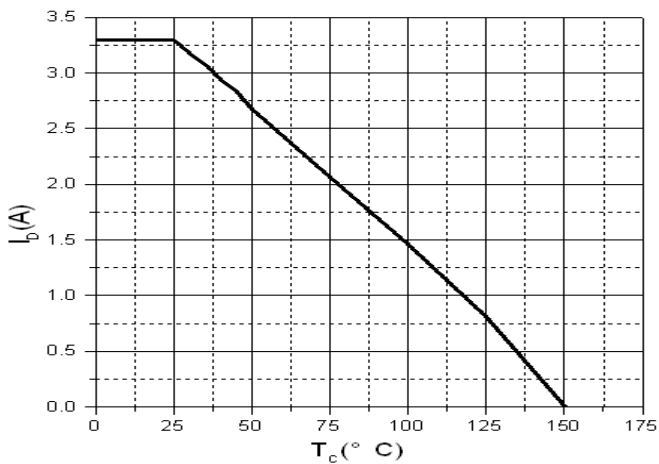
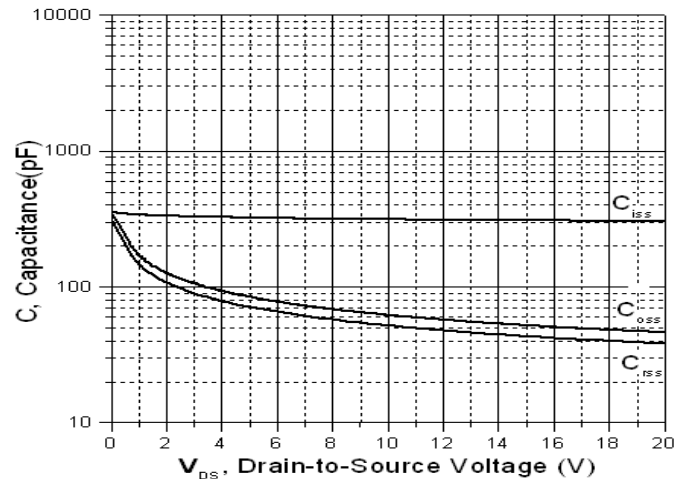
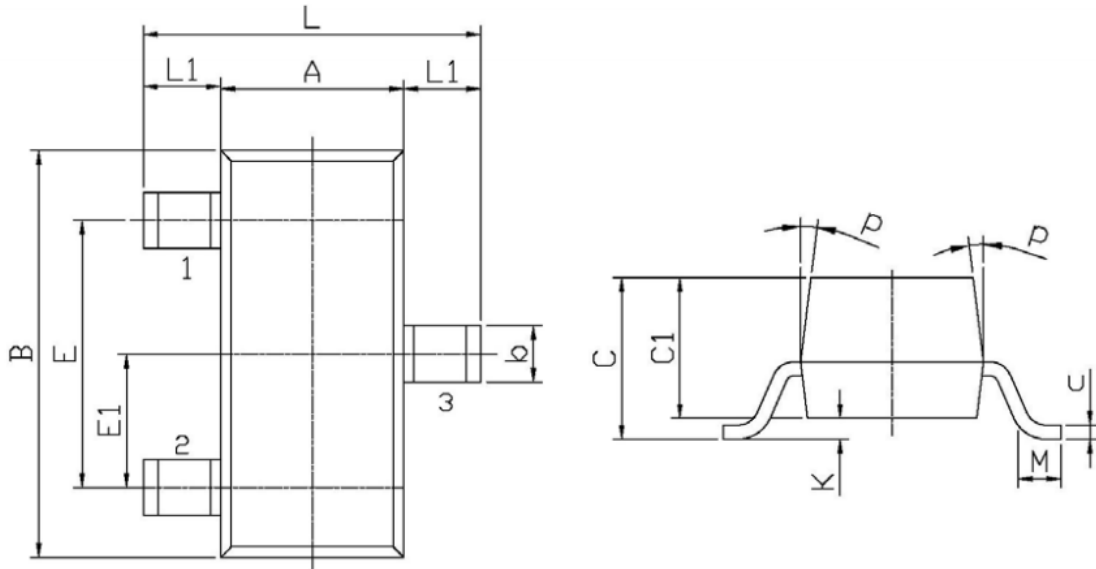


Fig.6 - Capacitance



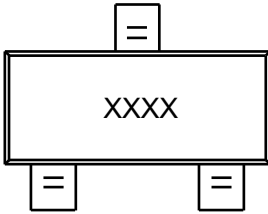
Package Outline Dimensions (Unit: millimeters)

SOT-23



Symbol	Dimensions in Millimeter		Symbol	Dimensions in Millimeter	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30 Max	
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	0.20 Min	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

Marking Outline



Part Name: AGMN2300UP

1. P/N Mark: 2300

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