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

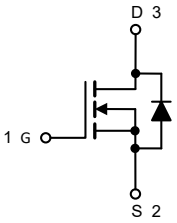
Features

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

SOT-23

Applications

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



Absolute Maximum Ratings (T_A=25°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}=10V	T_C=25°C	I_D	3.3	A
Drain Current, Pulsed *(Note 1)*		I_{DM}	11.4	A
Power Dissipation	T_C=25°C	P_D	1.1	W
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Single pulse; $t_p \leq 1us$.

Thermal Characteristics			
Parameter	**Symbol**	**Max**	**Unit**
Thermal Resistance Junction to Ambient *(Note 2)*	R_{thJA}	140	°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}=20V, 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℃ unless otherwise noted)

Fig.1 - Typical Output Characteristics

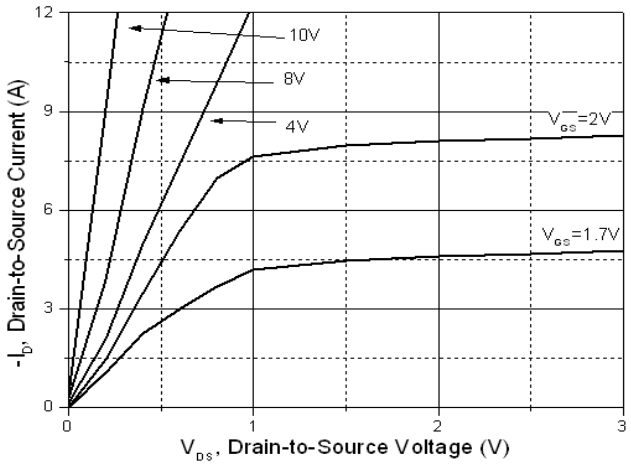


Fig.2 - $V_{GS(th)}$ vs. Junction Temperature

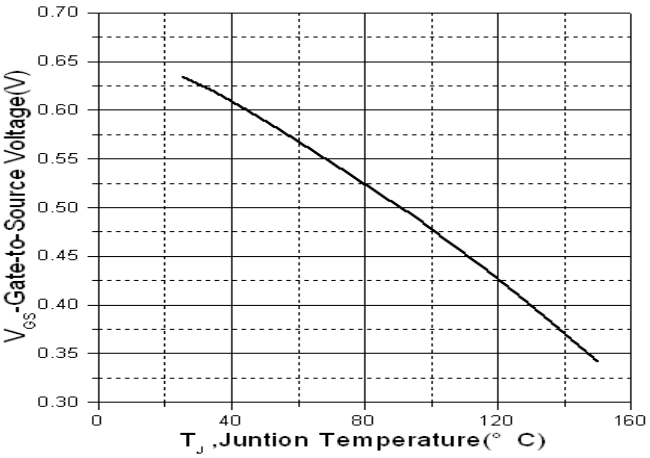


Fig.3 - Drain-to-Source Breakdown Voltage vs. Junction Temperature

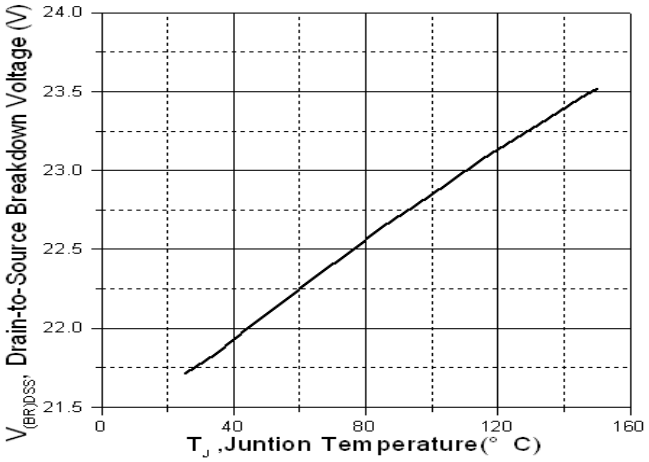


Fig.4 - Normalized On-Resistance vs. Junction Temperature

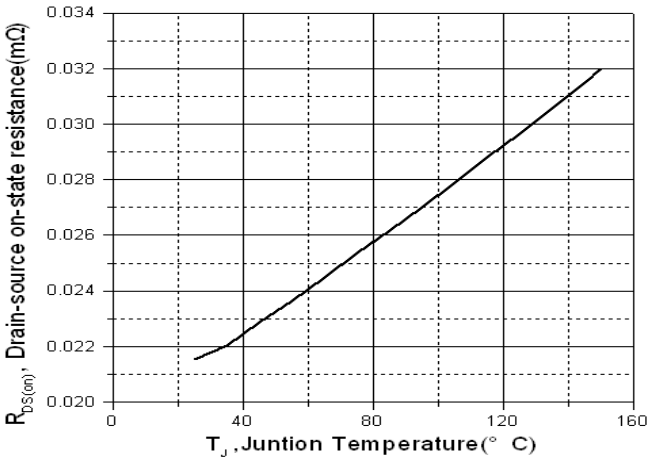


Fig.5 - Drain Current vs. Case Temperature

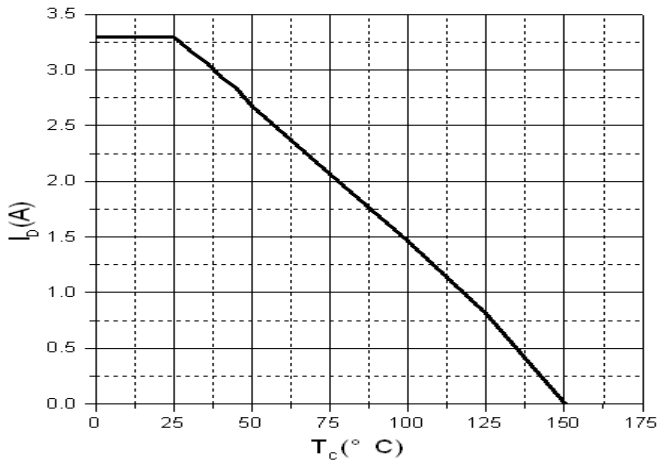
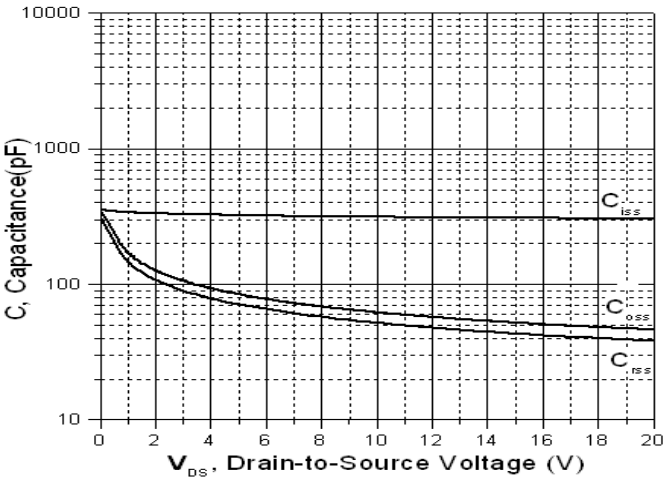


Fig.6 - Capacitance



Package Outline Dimensions (Unit: millimeters)

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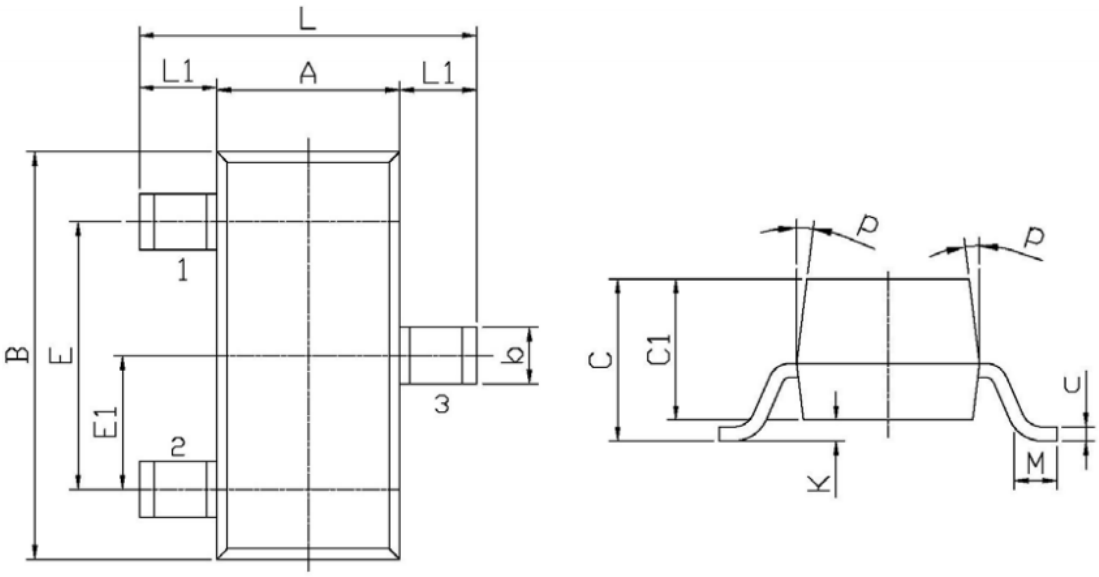
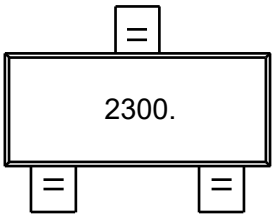


Symbol	Dimensions in Millimeter		Symbol	Dimensions in Millimeter	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30 Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20 Min	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

Marking Outline



Part Name: ASSF2300UP

1. P/N Mark: 2300.

Revision History

Version	Date	Major Changes
Rev.A	2025.08.04	Official Release

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