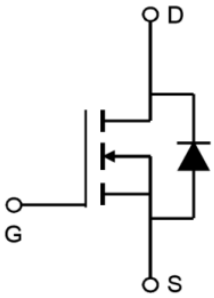
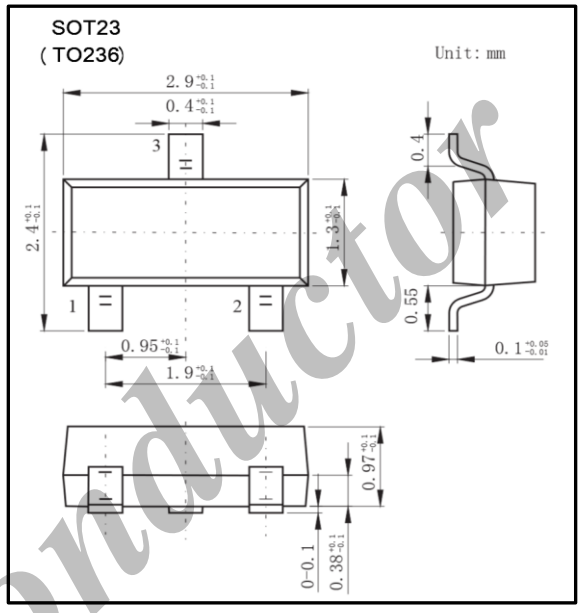
AP2300A
20V N-Channel Enhancement Mode MOSFET

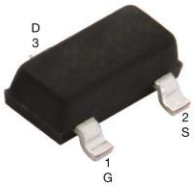
- **General Description**

AP2300A combines advanced MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is most suitable to load-switch or PWM applications.





Top View



- **Applications**

- DC/DC converter for portable devices
- Load switch

- **Product Summary**

V_{DS}	20V
I_D (at V_{GS} = 4.5V)	5A
$R_{DS(ON)}$ (at V_{GS} = 4.5V)	< 25mΩ
$R_{DS(ON)}$ (at V_{GS} = 2.5V)	< 35mΩ
$R_{DS(ON)}$ (at V_{GS} = 1.8V)	< 55mΩ

Pb-Free

RoHS COMPLIANT

- **Absolute Maximum Ratings Ta = 25℃**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	
Continuous Drain Current	I_D	5	A
Pulsed Drain Current *	I_{DM}	15	
Power Dissipation	P_D	1.25	W
Thermal Resistance. Junction-to-Ambient	$R_{\theta JA}$	100	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to 150	

* Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.

- **Electrical Characteristics Ta = 25°C**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±10V			±100	nA
Gate Threshold Voltage *	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.4	0.7	1.0	V
Drain-Source On-Resistance *	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=5.0A		20	25	mΩ
		V_{GS}=2.5V, I_D=4.0A		27	35	
		V_{GS}=1.8V, I_D=1.0A		39	55	
Forward Transconductance *	g_{FS}	V_{DS}=5V, I_D=5A	5			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz		887		pF
Output Capacitance	C_{oss}			144		
Reverse Transfer Capacitance	C_{rss}			115		
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=3.5A		16.8		nC
Gate Source Charge	Q_{gs}			2.5		
Gate Drain Charge	Q_{gd}			5.4		
Turn-On Delay Time	$t_{D(on)}$	V_{GS}=4.5V, V_{DS}=10V, I_D=1A, R_L=10Ω, R_{GEN}=6Ω		31.8		ns
Turn-On Rise Time	t_r			14.5		
Turn-Off Delay Time	$t_{D(off)}$			50.3		
Turn-Off Fall Time	t_f			31.9		
Maximum Body-Diode Continuous Current	I_S				1.25	A
Diode Forward Voltage	V_{SD}	I_S=1.25A, V_{GS}=0V		0.825	1.2	V

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

- **Ordering Information**

Ordering Part Number	Package	MOQ
AP2300A	SOT23 (TO236)	3,000 pcs / reel

- **Typical Characteristics**

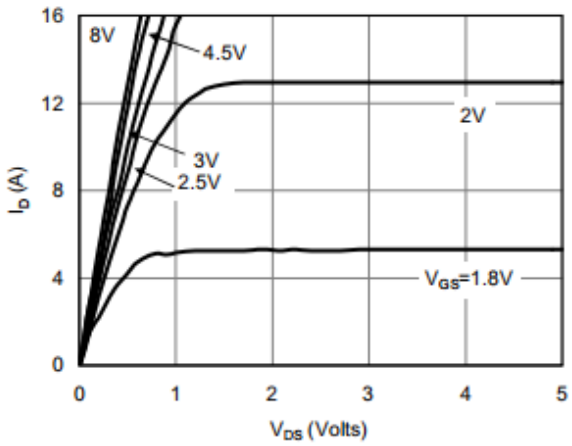


Fig 1: On-Region Characteristics

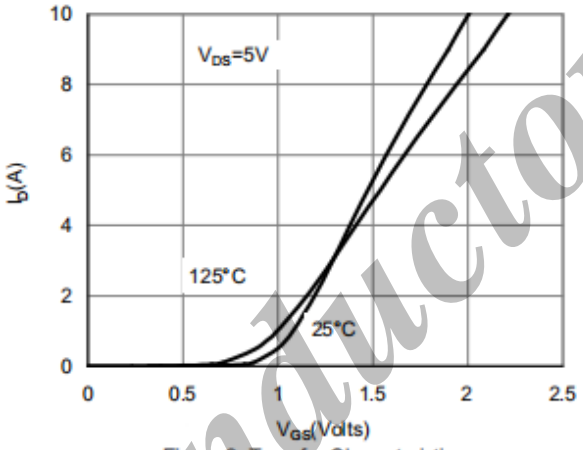


Figure 2: Transfer Characteristics

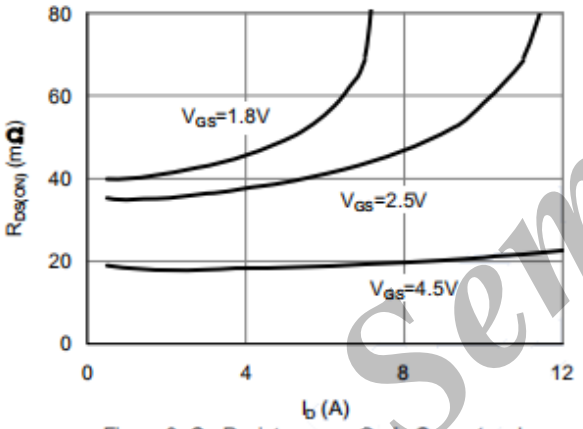


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

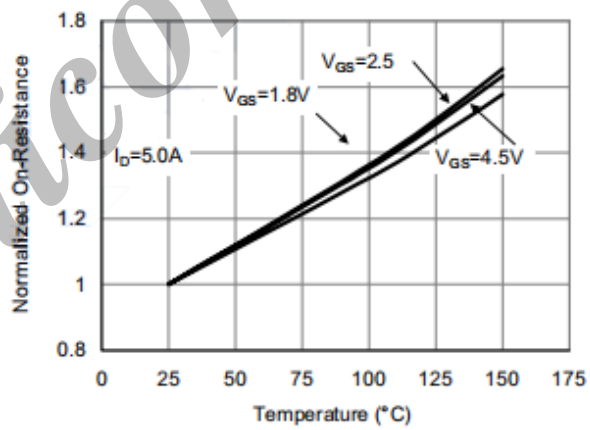


Figure 4: On-Resistance vs. Junction Temperature

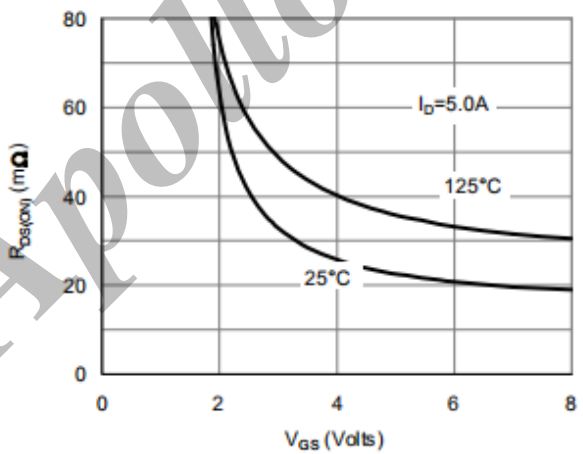


Figure 5: On-Resistance vs. Gate-Source Voltage

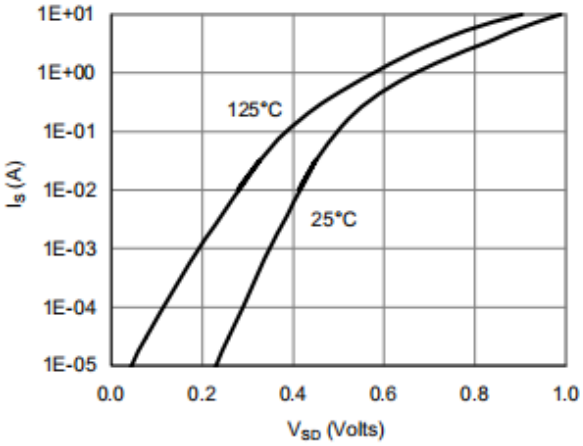


Figure 6: Body-Diode Characteristics

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