

AP2312

N-Channel Power MOSFET

描述 / Descriptions

SOT23 塑封封装 N 道 MOS 场效应管。N- CHANNEL MOSFET in a SOT23 Plastic Package.

特征 / Features

$V_{DS} = 20V$

$I_D = 5.0A (V_{GS} = 4.5V)$

$R_{DS(ON)} < 23m\Omega (V_{GS} = 4.5V)$

$R_{DS(ON)} < 28m\Omega (V_{GS} = 2.5V)$

$R_{DS(ON)} < 38m\Omega (V_{GS} = 1.8V)$

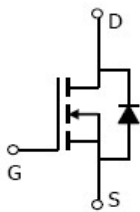


用途 / Applications

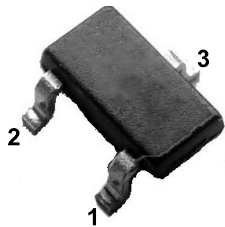
适用于作负载开关或脉宽调制应用。

This device is suitable for use as a load switch or in PWM applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN 1 : S

PIN 2 : G

PIN 3 : D

Maximum ratings ($T_a=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8.0	
Continuous Drain Current	I_D (t=5s)	5	A
Pulsed Drain Current	I_{DM}	20	
Continuous Source-Drain Diode Current	I_S	1.04	
Maximum Power Dissipation	P_D (t=5s)	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-50 ~+150	

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Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-source leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1.0	μA
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45	0.7	1.0	V
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5.0A$		0.018	0.0230	Ω
		$V_{GS} = 2.5V, I_D = 4.7A$		0.023	0.0280	
		$V_{GS} = 1.8V, I_D = 4.3A$		0.030	0.0380	
Forward transconductance ^a	g_{fs}	$V_{DS} = 10V, I_D = 5.0A$		6		S
Dynamic^b						
Input capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		865		pF
Output capacitance	C_{oss}			105		
Reverse transfer capacitance	C_{rss}			55		
Gate resistance	R_g	$f = 1MHz$	0.5		4.8	Ω
Turn-on delay Time	$t_{d(on)}$	$V_{GEN} = 5V, V_{DD} = 10V,$ $I_D = 4A, R_G = 1\Omega, R_L = 2.2\Omega$			10	ns
Rise time	t_r				20	
Turn-off Delay time	$t_{d(off)}$				32	
Fall time	t_f				12	
Drain-source body diode characteristics						
Forward diode voltage	V_{SD}	$V_{GS} = 0V, I_S = 4A$		0.75	1.2	V

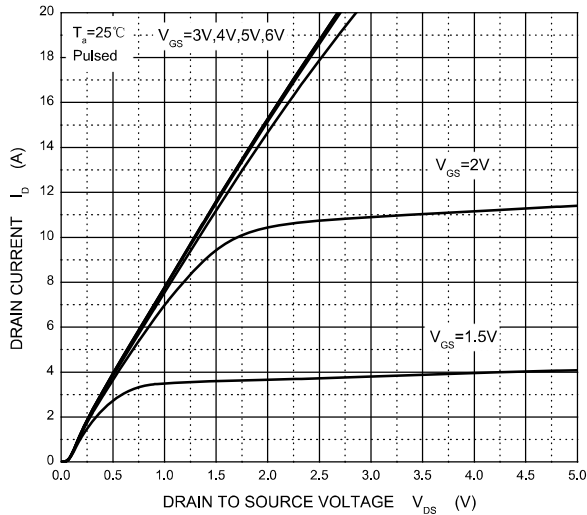
Notes :

- Pulse Test : pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- These parameters have no way to verify.

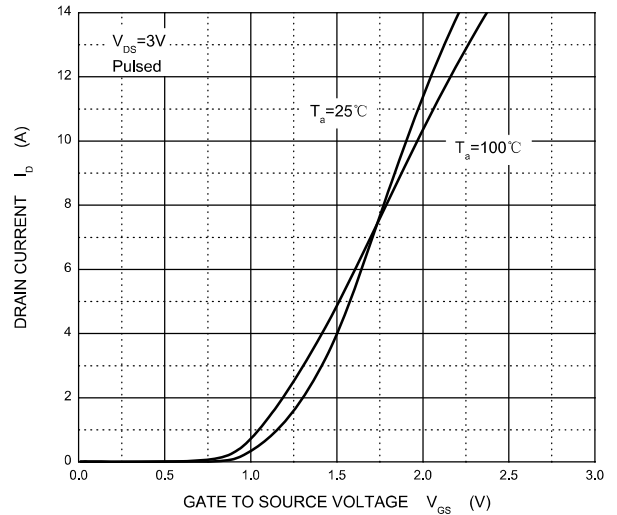
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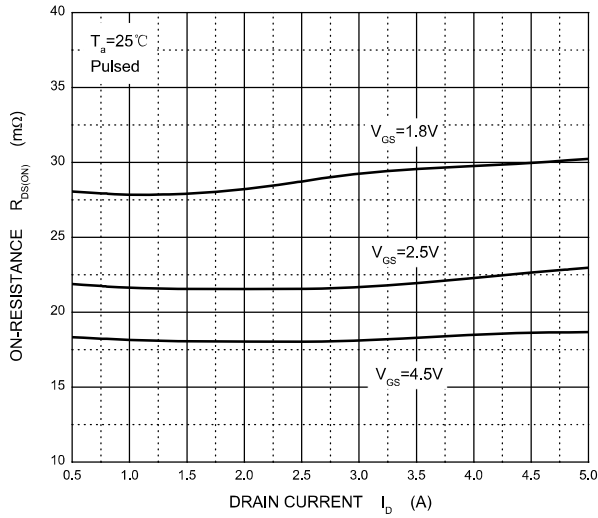
Output Characteristics



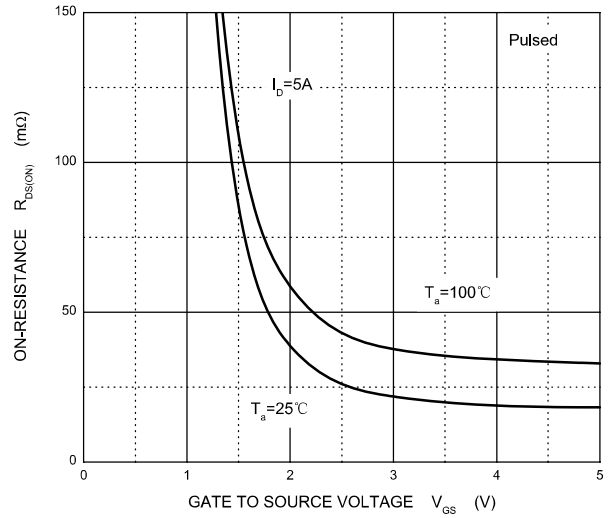
Transfer Characteristics



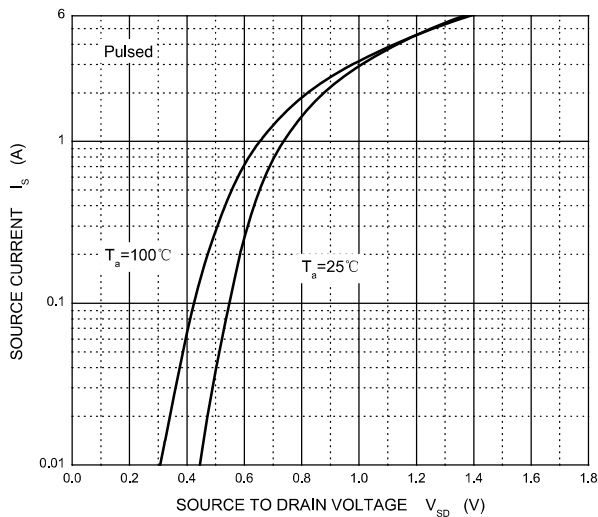
$R_{DS(ON)}$ — I_D



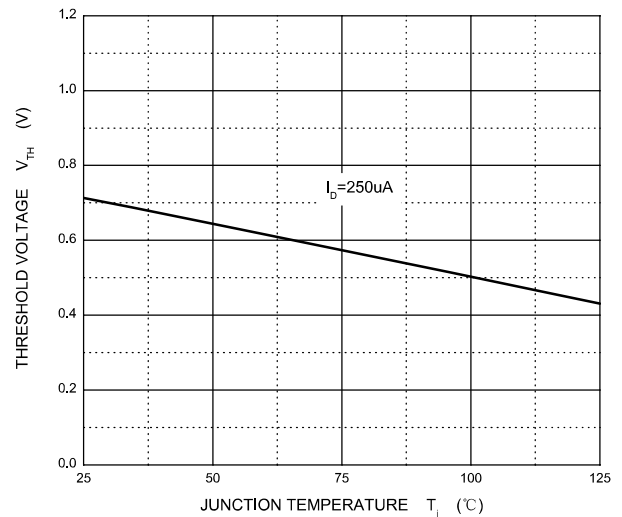
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



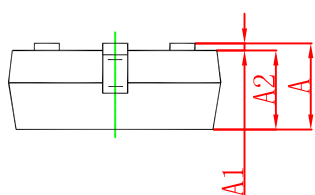
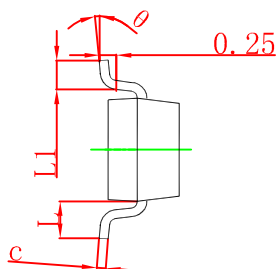
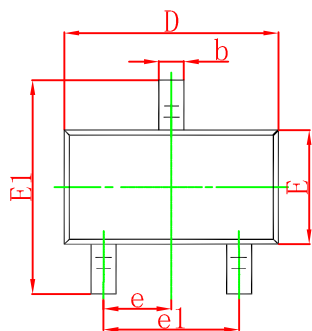
Threshold Voltage



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SOT-23 Package Outline Dimensions



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	0.080	0.150	0.003	0.006
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 TYP		0.037 TYP	
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°	8°	0°	8°