

**4A, 20V, N-Channel MOSFET****Features** $R_{DS(ON)} < 30m\Omega$ @ $V_{GS}=4.5V$ $R_{DS(ON)} < 45m\Omega$ @ $V_{GS}=2.5V$

Industry-standard pinout SOT-23 Package

Compatible with Existing Surface Mount Techniques

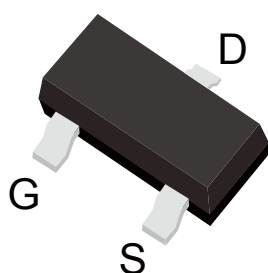
RoHS Compliant, Halogen-Free

Application

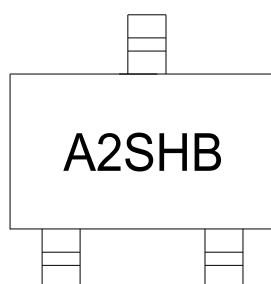
Load Switch

PWM Application

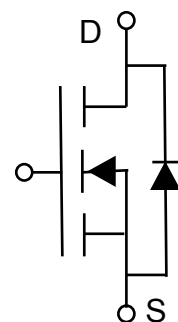
Power management

100% UIS TESTED !**100% ΔV_{ds} TESTED !**

SOT-23 top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device model	Marking	Packing	Device Package	Reel (PCS)	BOX (PCS)	Per Carton (PCS)
H2302A	A2SHB	Tape and Reel	SOT-23	3000	30000	450000

ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Drain-Source Voltage	V_{DSS}		20	V
Gate-Source Voltage	V_{GSS}		± 12	
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	4	A
		$T_C=70^\circ\text{C}$	3.2	
Pulsed Drain Current ^{Note1}	I_{DM}	$T_C=25^\circ\text{C}$	16	
Single Pulsed Avalanche Energy ^{Note2}	E_{AS}		2.25	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	0.75	W
		$T_C=70^\circ\text{C}$	0.50	
Junction-to-Ambient	$R_{\theta JA}$	Notes4	170 100	$^\circ\text{C/W}$
Operating and Storage Temperature	T_J, T_{stg}		-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** ($T_J=25^{\circ}\text{C}$ unless otherwise specified)**Off Characteristic**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V$, $I_D=250\mu A$	20	--	--	V
Zero gate voltage drian current	I_{DSS}	$V_{DS}=20V$, $V_{GS}=0V$	--	--	1.0	μA
Gate-source leakage current	I_{GSS}	$V_{DS}=0V$, $V_{GS}=\pm 12V$	--	--	± 100	nA

On Characteristics

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Drain-Source on-Resistance Note3	$R_{DS(on)}$	$V_{GS}=4.5V$, $I_D=2.5A$	--	23	30	m Ω
		$V_{GS}=2.5V$, $I_D=1.5A$	--	32	45	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	0.5	0.7	1	V

Dynamic Characteristics

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
lutput capacitance	C_{iss}	$V_{GS}=0V$ $V_{DS}=10V$ $f=1MHz$	--	300	--	pF
Output capacitance	C_{oss}		--	51	--	
Reverse transfer capacitance	C_{rss}		--	30	--	
Gate to source charge	Q_{gs}	$V_{DS}=10V$ $I_D=2A$ $V_{GS}=4.5V$	--	1.9	--	nC
Gate to drain charge	Q_{gd}		--	0.45	--	
Gate charge total	Q_g		--	0.75	--	

**Switching Characteristics**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=10V$ $V_{GS}=4.5V$ $I_D=2A$ $R_{GEN}=3\Omega$	--	9.8	--	nS
Rise time	t_r		--	4.9	--	
Turn-off delay time	$t_{d(off)}$		--	20.5	--	
Fall time	t_f		--	7	--	

Drain-Source Diode Characteristics and Maximum Ratings

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Maximum Continuous Drain to Source Diode Forward Current	I_S	$T_C=25^\circ C$	--	--	4	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	$T_C=25^\circ C$	--	--	16	
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=4A$	--	--	1.2	V

Notes:

- 1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2、PulseTest: Pulse Width $\leq 00\mu s$, Duty Cycle $\leq 2\%$
- 3、Repetitive rating; pulse width limited by max. junction temperature.
- 4、Surface mounted on 1 in square Cu board.



SOT-23 Package Mechanical Data

REF.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.30	2.50	0.091	0.098
B	2.80	3.00	0.110	0.118
C	1.90 REF		0.075 REF	
D	0.35	0.45	0.014	0.018
E	1.20	1.40	0.047	0.055
F	0.90	1.10	0.035	0.043
G	0.10	0.15	0.004	0.006
H	0.20		0.008	
I	0	0.10	0	0.004



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