



## DESCRIPTION

The AM2301A is available in SOT-23S package.

## FEATURES

- $V_{DS} = -20V$
- $R_{DS(ON)}, V_{GS@-4.5V}, I_{DS@-4.7A} = 70m\Omega$
- $R_{DS(ON)}, V_{GS@-2.5V}, I_{DS@-1.0A} = 110m\Omega$
- Available in SOT-23S Package

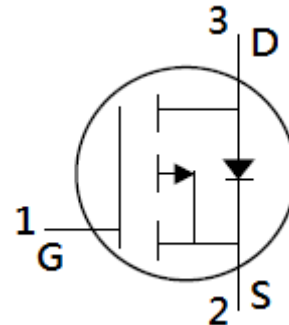
## ORDERING INFORMATION

Package Type	Part Number	
SOT-23S	E3S	AM2301AE3SR
		AM2301AE3SVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

## APPLICATION

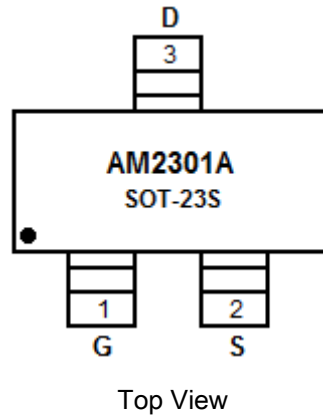
- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- ESD Rating of Class 0 (<100V) per Human Body Model

## PIN DESCRIPTION





## PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	G	Gate
2	S	Source
3	D	Drain

## ABSOLUTE MAXIMUM RATINGS

$T_A = 25$

$V_{DSS}$ , Drain-to-Source Voltage	-20V	
$V_{GS}$ , Gate-to-Source Voltage	$\pm 12V$	
$I_D$ , Continuous Drain Current	-4.7A	
$I_{DM}$ , Pulsed Drain Current <sup>NOTE1</sup>	-20A	
$P_D$ , Maximum Power Dissipation	$T_A = 25^\circ C$	1.1W
	$T_A = 70^\circ C$	0.70W
$T_J, T_{STG}$ , Operation and Storage Temperature Range	-55 ~ +150°C	
$R_{\theta JA}$ , Thermal Resistance-Junction to Ambient <sup>NOTE2</sup>	110°C/W	

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE1: Repetitive Rating: Pulse width limited by the Maximum junction temperature

NOTE2: 1-in<sup>2</sup> 2oz Cu PCB board



## ELECTRICAL CHARACTERISTICS

T<sub>A</sub>=25°C

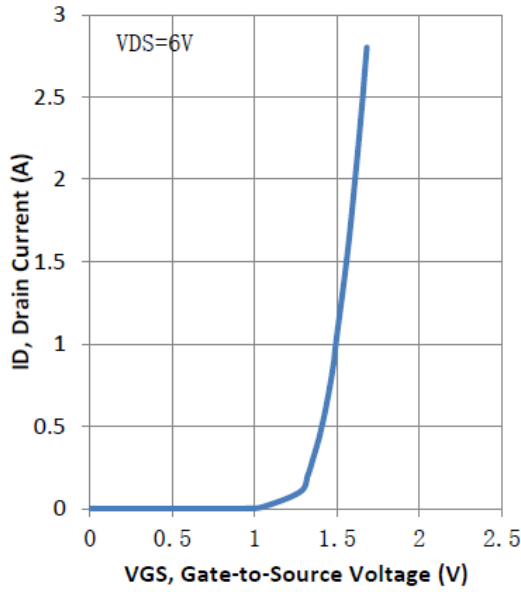
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>STATIC</b>						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-20	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> =-250uA	-0.6	-0.85	-1.4	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0	-	-	-1	uA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V	-	-	±100	nA
Drain-to-Source On Resistance <sup>NOTE3</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.7A	-	58	70	mΩ
		V <sub>GS</sub> =-2.7V, I <sub>D</sub> =-3.8A	-	63	90	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1A	-	75	110	
Forward Diode Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>SD</sub> =-1.7A	-	-	-1.2	V
<b>DYNAMIC</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -4.7V, I <sub>D</sub> = -4.5A	-	24	36	nC
Gate-to-Source Gate Charge	Q <sub>gs</sub>		-	18	-	
Gate-to-Drain Charge	Q <sub>gd</sub>		-	2.7	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V, R <sub>L</sub> = 10Ω, I <sub>D</sub> = -1A, V <sub>GEN</sub> = -4.5V, R <sub>G</sub> = 6Ω	-	22	35	ns
Rise Time	t <sub>r</sub>		-	35	55	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	45	70	
Fall Time	t <sub>f</sub>		-	25	40	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = -10 V, I <sub>D</sub> = -4.7A	-	8	-	S

NOTE3: Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.

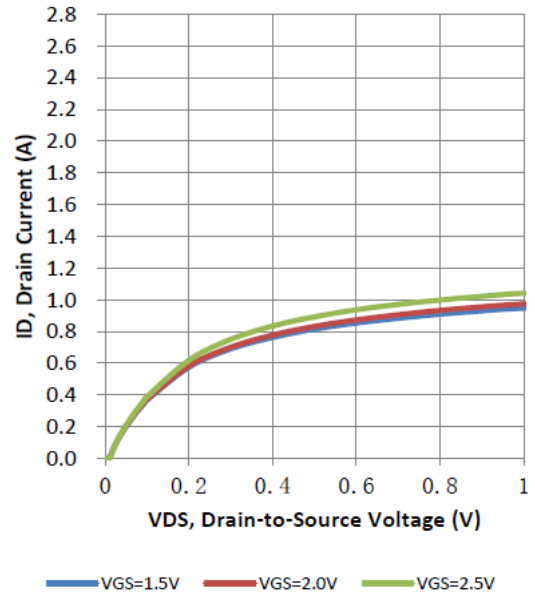


## TYPICAL CHARACTERISTICS

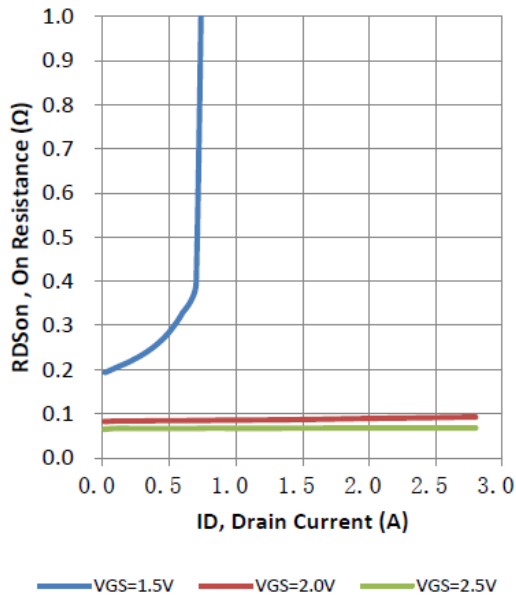
### 1. Transfer Characteristics



### 2. On-Region Characteristics



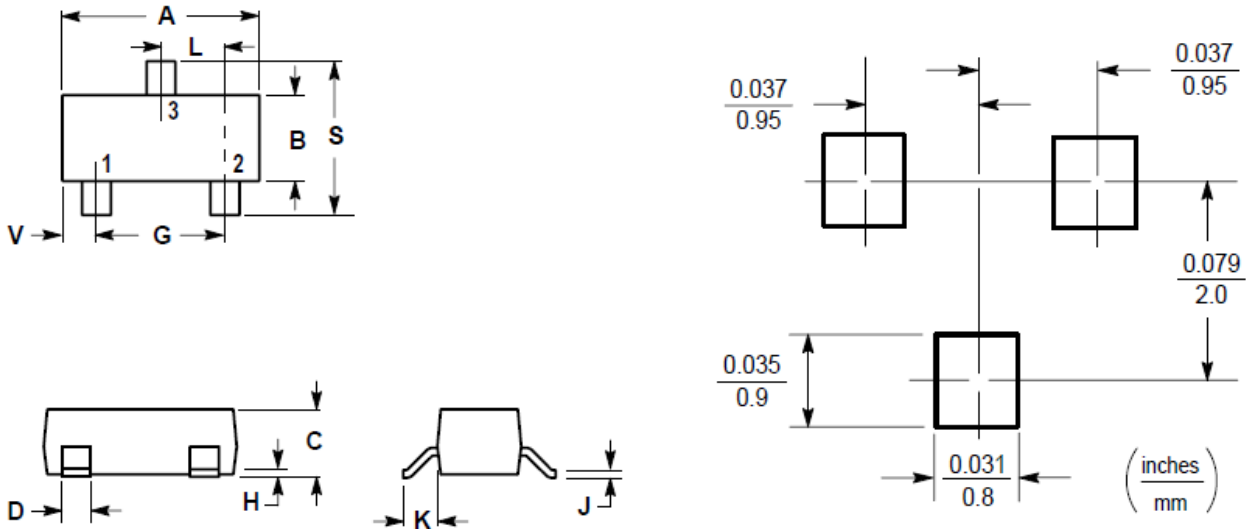
### 3. On-Resistance Versus Drain Current





**PACKAGE INFORMATION**

Dimension in SOT-23S Package (Unit: mm)



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.800	3.040	0.1102	0.1197
B	1.200	1.400	0.0472	0.0551
C	0.890	1.110	0.0350	0.0440
D	0.370	0.500	0.0150	0.0200
G	1.780	2.040	0.0701	0.0807
H	0.013	0.100	0.0005	0.0040
J	0.085	0.177	0.0034	0.0070
K	0.350	0.690	0.0140	0.0285
L	0.890	1.020	0.0350	0.0401
S	2.100	2.640	0.0830	0.1039
V	0.450	0.600	0.0177	0.0236



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