



## DESCRIPTION

The AM2301 is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density. advanced trench technology to provide excellent  $R_{DS(ON)}$ . low gate charge and operation gate as 2.5V.

This device is suitable for use as a load switch or other general applications.

The AM2301 is available in SOT-23S Package

## ORDERING INFORMATION

Package Type	Part Number	
SOT-23S SPQ: 3,000pcs/Reel	E3S	AM2301E3SR
		AM2301E3SVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

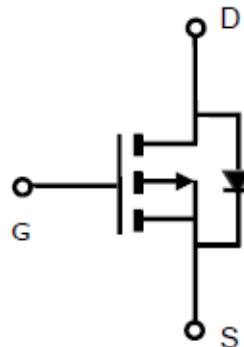
## FEATURES

- -20V/-3.0A,  $R_{DS(ON)} = 80m\Omega$ (typ.)@ $V_{GS} = -4.5V$
- -20V/-2.0A,  $R_{DS(ON)} = 105m\Omega$ (typ.)@ $V_{GS} = -2.5V$
- Super high density cell design for extremely low Gate Charge
- Exceptional on-resistance and Maximum DC current capability
- Available in SOT-23S Package

## APPLICATIONS

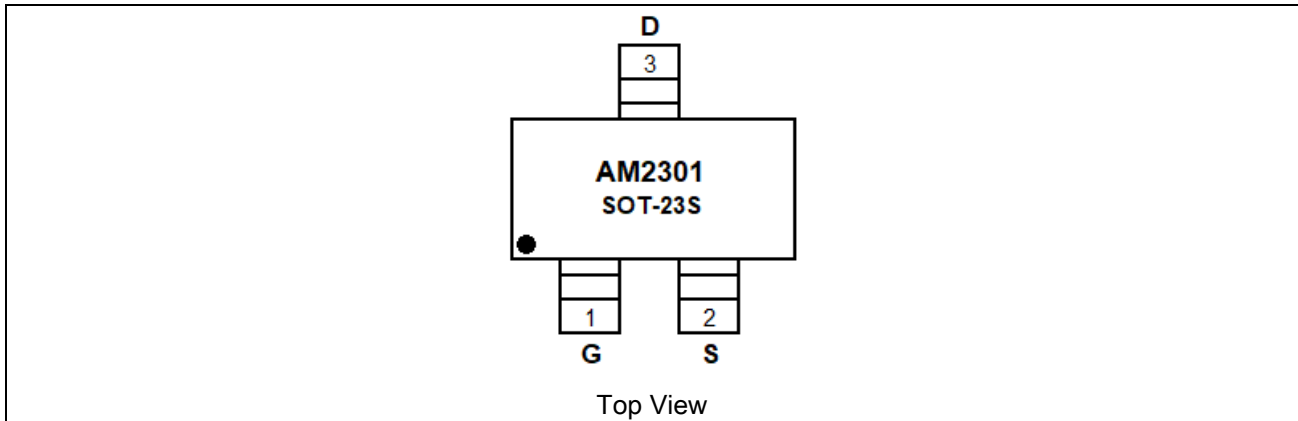
- Power Management in Note book
- Portable Equipment
- Networking DC-DC Power System
- Load Switch

## PIN DESCRIPTION





## PIN DESCRIPTION



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



## ABSOLUTE MAXIMUM RATINGS

T<sub>A</sub> = 25°C, unless otherwise noted

V <sub>DSS</sub> , Drain-Source Voltage		-20V
V <sub>GSS</sub> , Gate-Source Voltage		±12V
I <sub>D</sub> , Continuous Drain Current , V <sub>GS</sub> = -4.5V	T <sub>A</sub> =25°C <sup>NOTE1</sup>	3.2A
	T <sub>A</sub> =70°C <sup>NOTE1</sup>	2.5A
I <sub>DM</sub> , Pulsed Drain Current <sup>NOTE2</sup>		-10A
P <sub>D</sub> , Power Dissipation	T <sub>A</sub> =25°C	1.0W
	T <sub>A</sub> =70°C	0.7W
T <sub>J</sub> , Operation Junction Temperature		-55°C~150°C
T <sub>STG</sub> , Storage Temperature Range		-55°C~150°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## THERMAL INFORMATION

Parameter		Symbol	Limit	Unit
Thermal Resistance-Junction to Ambient <sup>NOTE1</sup>	Steady-State	R <sub>θJA</sub>	125	°C/W
Thermal Resistance Junction to Lead <sup>NOTE1</sup>	Steady-State	R <sub>θJC</sub>	85	°C/W



## ELECTRICAL CHARACTERISTICS

T<sub>A</sub> = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-20	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.5	-	-1.2	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V	-	-	±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V T <sub>J</sub> =25°C	-	-	-1	μA
		V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C	-	-	-5	
Drain-source On-Resistance <sup>NOTE2</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.0A	-	80	98	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.0A	-	105	130	
Forward Transconductance	G <sub>fs</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3.0A	-	7.5	-	S
<b>Source-Drain Diode</b>						
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.0A, V <sub>GS</sub> =0V	-	-0.7	-1.2	V
Continuous Source Current <sup>NOTE1,3</sup>	I <sub>S</sub>		-	-	-6	A
<b>Dynamic Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-12V, V <sub>GS</sub> =-4.5V I <sub>D</sub> =-3.0A	-	9.4	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	1.2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	3.5	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V f=1MHz	-	521	-	pF
Output Capacitance	C <sub>oss</sub>		-	81	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	56	-	
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-12V, I <sub>D</sub> =-1A V <sub>GEN</sub> =-4.5V, R <sub>G</sub> =3.3Ω	-	7.2	-	ns
	t <sub>r</sub>		-	16	-	
Turn-Off Time	t <sub>d(off)</sub>		-	21	-	
	t <sub>f</sub>		-	9	-	

NOTE1: The value of R<sub>θJA</sub> is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C.

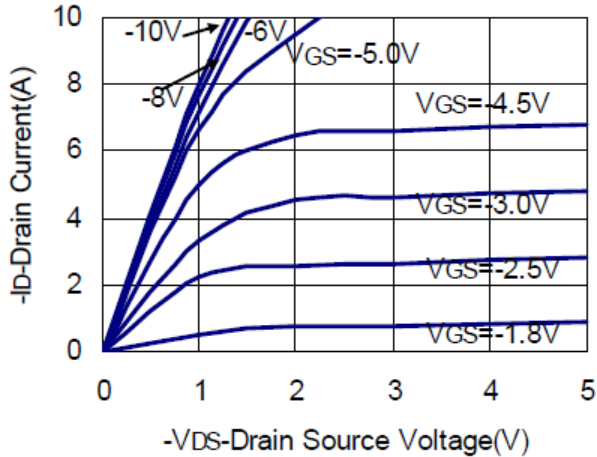
NOTE2: The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

NOTE3: The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub>, in real applications, should be limited by total power dissipation.

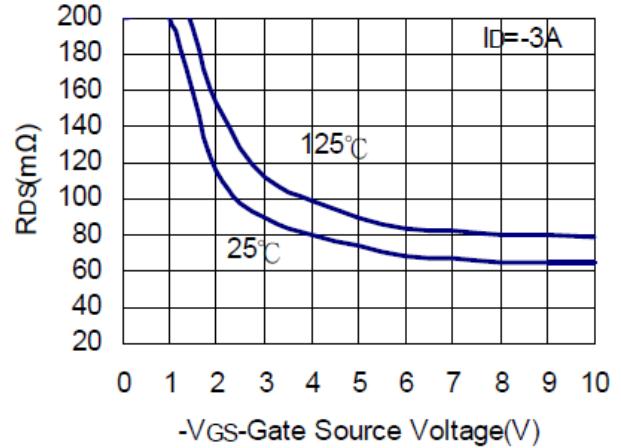


## TYPICAL CHARACTERISTICS

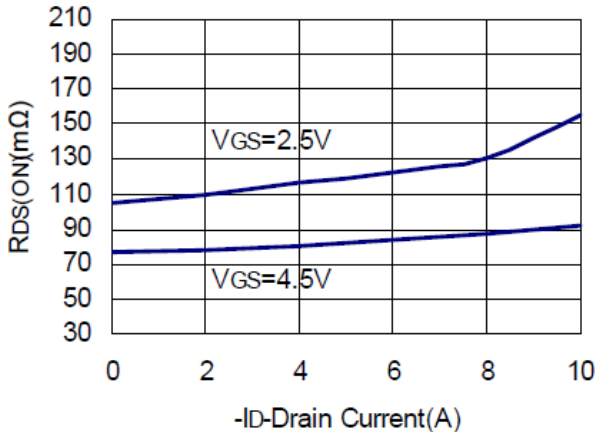
1. Output Characteristics



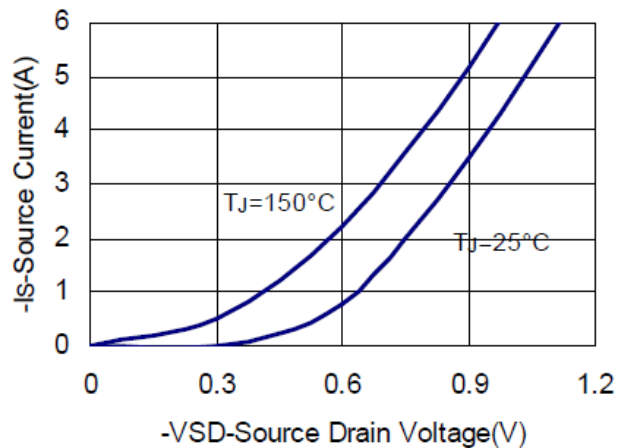
2. Drain-Source On Resistance



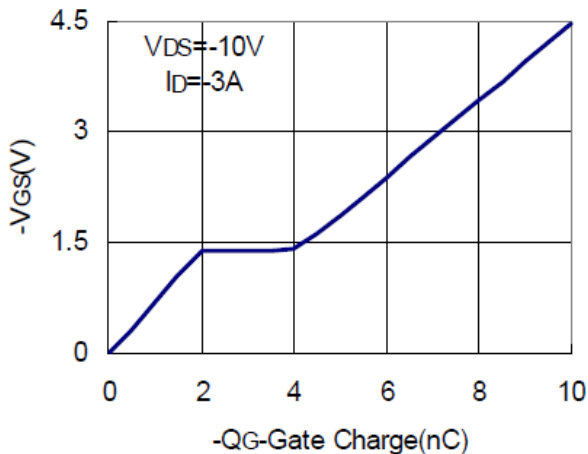
3. Drain Source On Resistance



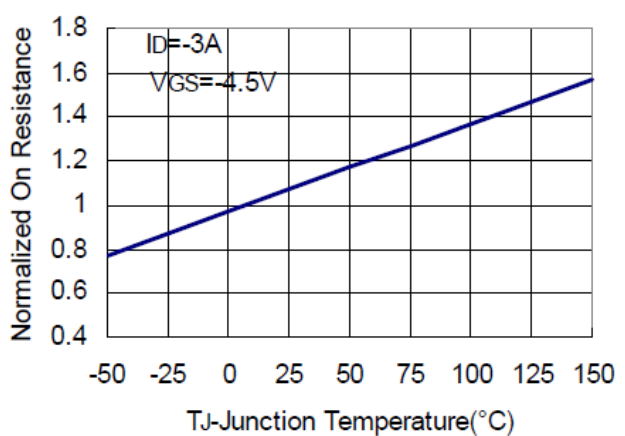
4. Drain Source On Resistance



5. Gate Charge

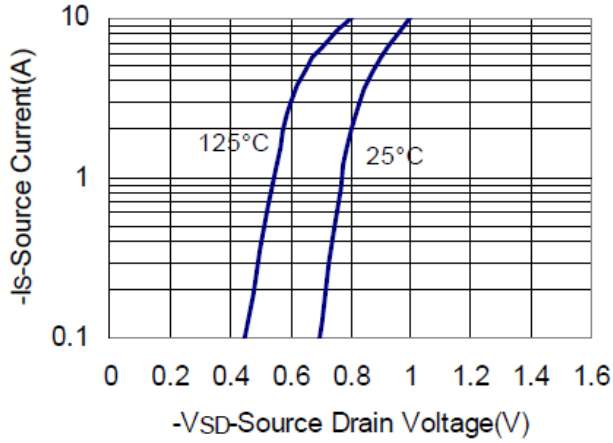


6. Drain Source On Resistance

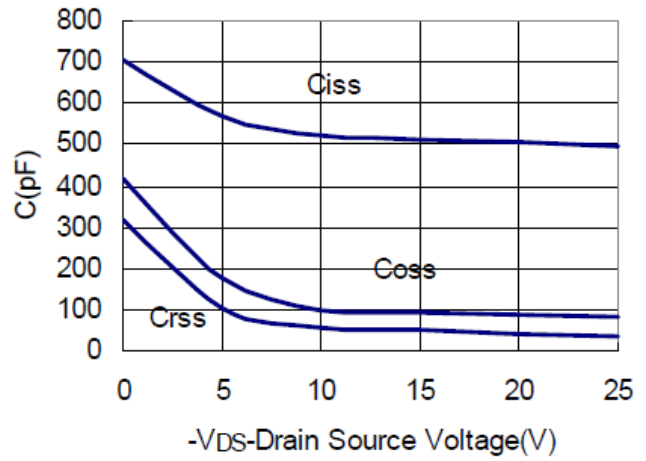




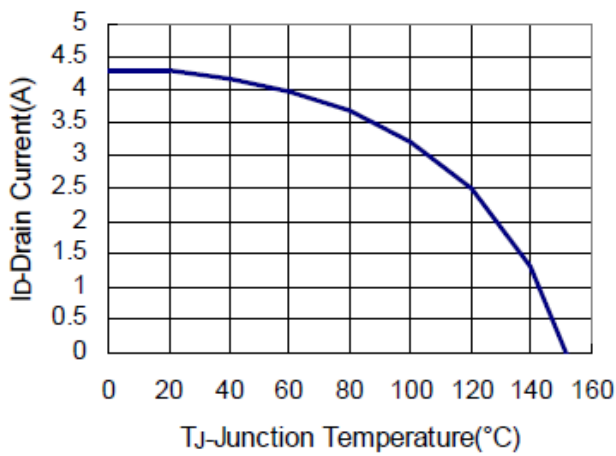
7. Source Drain Diode Forward



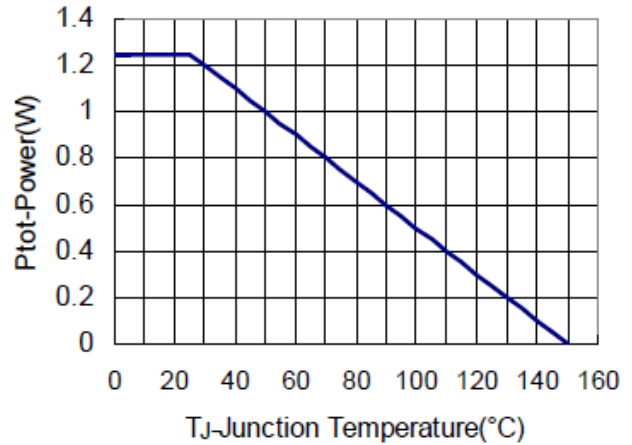
8. Capacitance



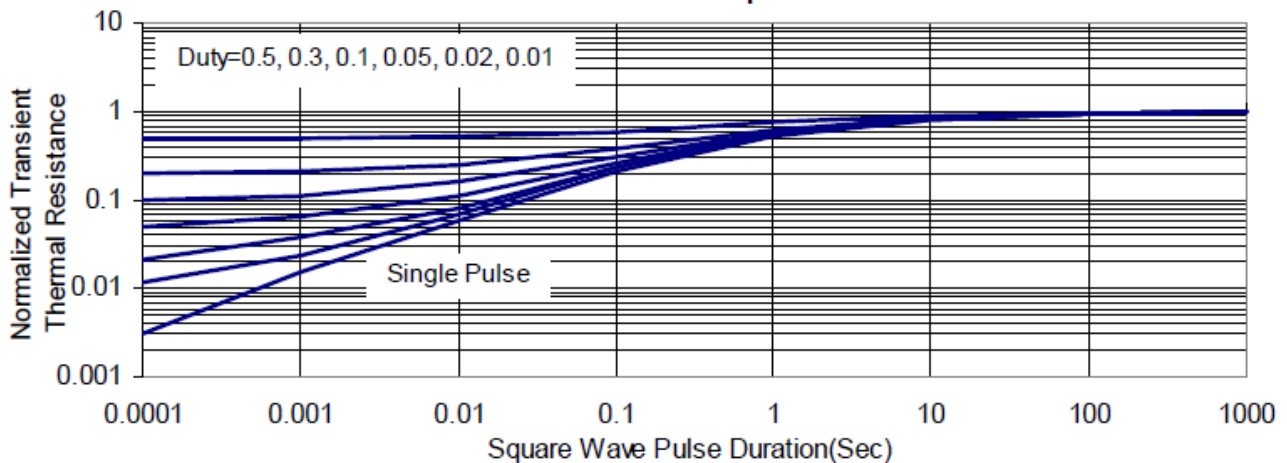
9. Drain Current



10. Power Dissipation



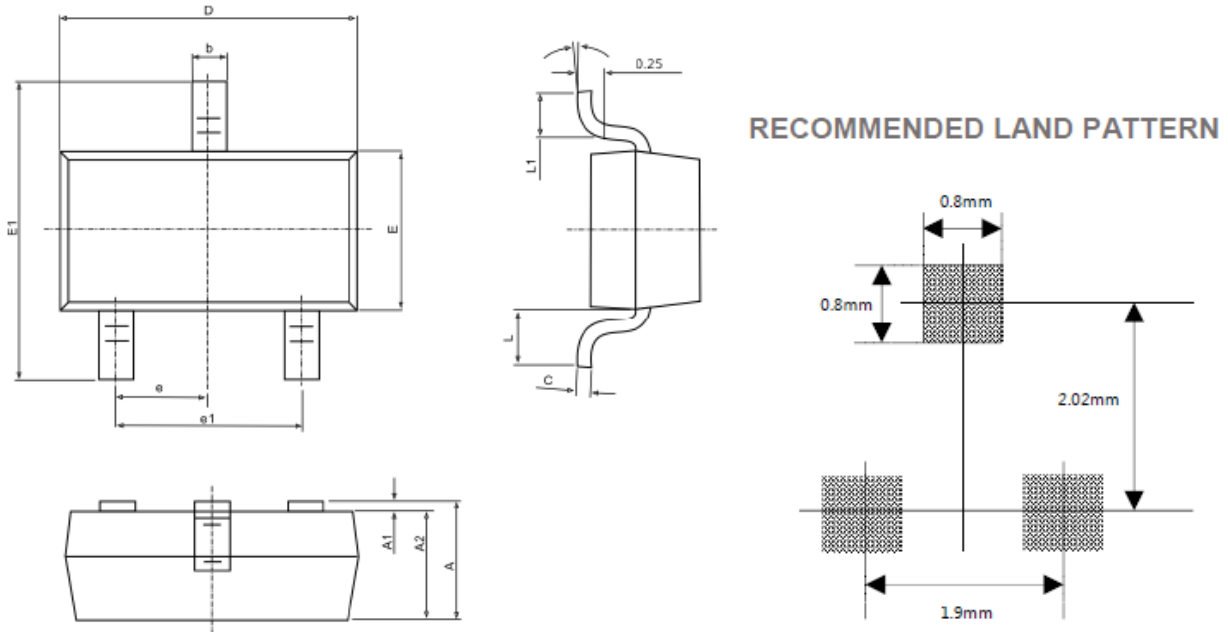
11. Thermal Transient Impedance





**PACKAGE INFORMATION**

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



Symbol	Millimeters		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°



## IMPORTANT NOTICE

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