

# ATM2301PSA

## P-Channel Enhancement Mode Field Effect Transistor

Drain-Source Voltage: -20V

Drain Current: -2.5A

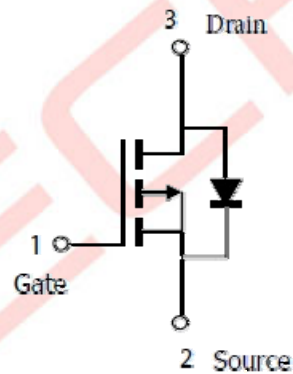
### Features

- Trench FET Power MOSFET
- Excellent  $R_{DS(on)}$  and Low Gate Charge
- $R_{DS(ON)} < 110m\Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 130m\Omega$  ( $V_{GS} = -2.5V$ )

SOT-23



1 Gate 2 Source 3 Drain



### Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

### Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	-2.5	A
Pulsed Drain Current	$I_{DM}$	-10	A
Power Dissipation	$P_D$	0.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}C$

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## Electrical characteristics (T<sub>A</sub>=25 °C, unless otherwise noted)

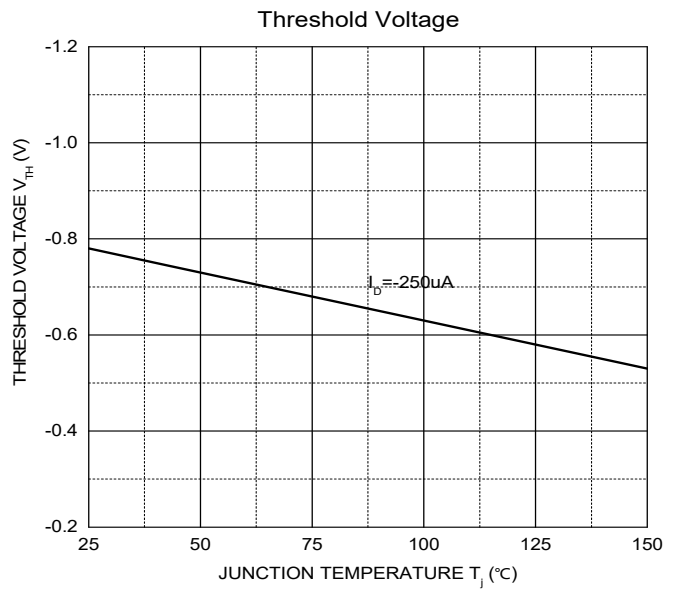
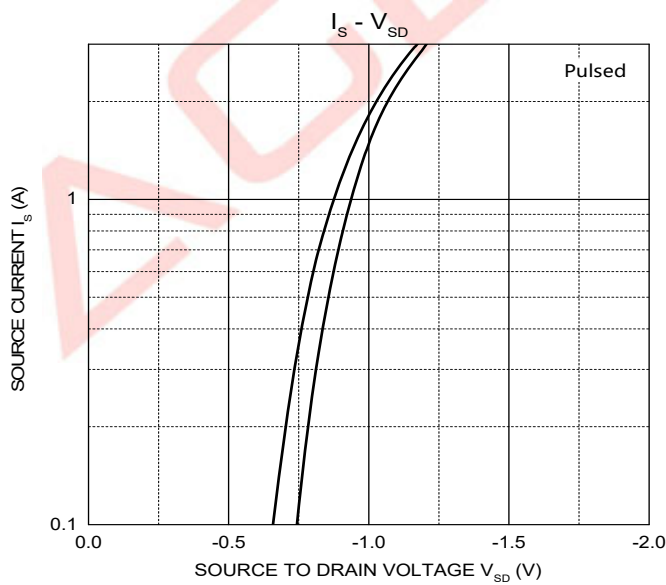
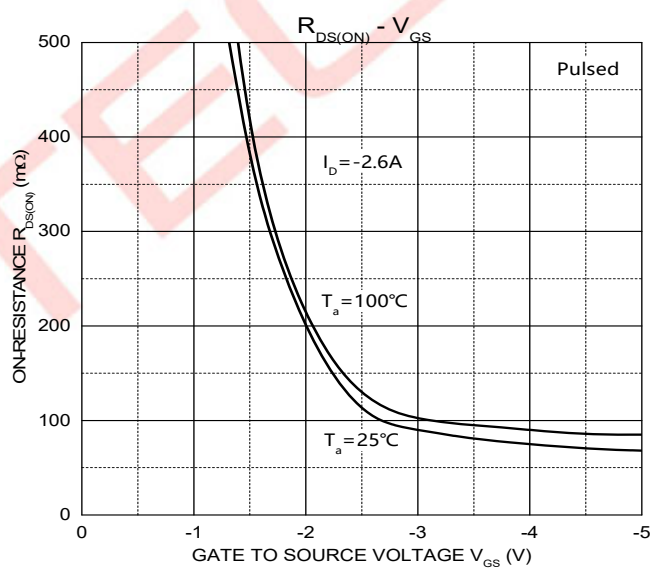
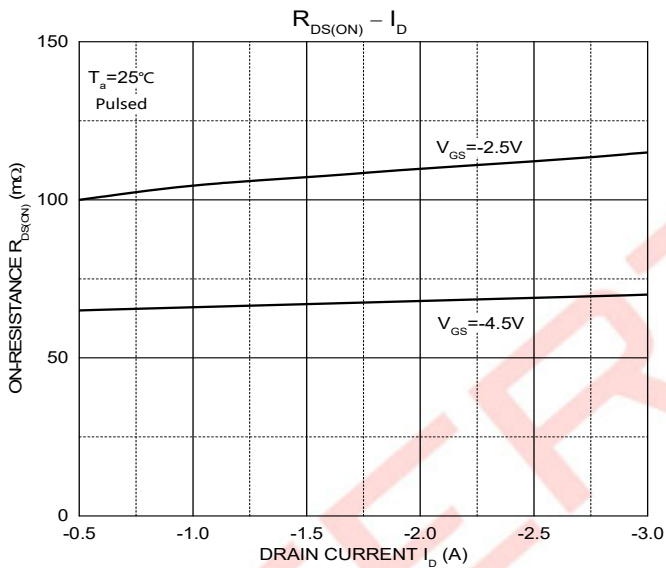
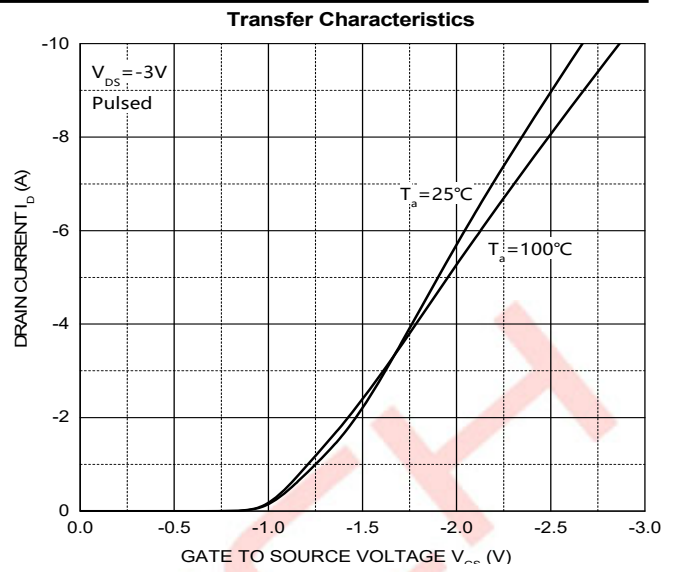
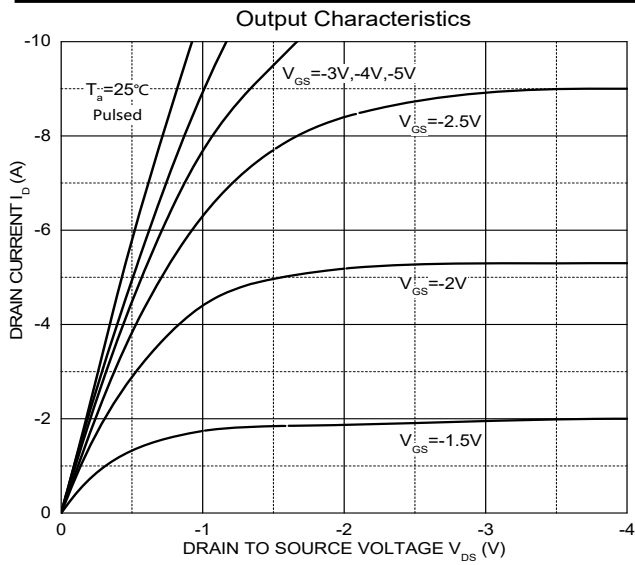
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.4	-0.75	-0.9	V
Drain-source on-resistance <sup>1)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4A		90	110	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2A		110	130	
Forward transconductance <sup>1)</sup>	g <sub>FS</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -2A	5			S
<b>Dynamic characteristics<sup>2)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz		405		pF
Output Capacitance	C <sub>oss</sub>			75		
Reverse Transfer Capacitance	C <sub>rss</sub>			55		
Gate resistance	R <sub>g</sub>	f = 1MHz		6		Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3A		3.3	12	nC
Gate-Source Charge	Q <sub>gs</sub>			0.7		
Gate-Drain Charge	Q <sub>gd</sub>			1.3		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V, V <sub>GEN</sub> = -4.5V, I <sub>D</sub> = -1A R <sub>L</sub> = 10Ω, R <sub>GEN</sub> = 1Ω		11		ns
Turn-on rise time	t <sub>r</sub>			35		
Turn-off delay time	t <sub>d(off)</sub>			30		
Turn-off fall time	t <sub>f</sub>			10		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.25A		-0.8	-1.3	V

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

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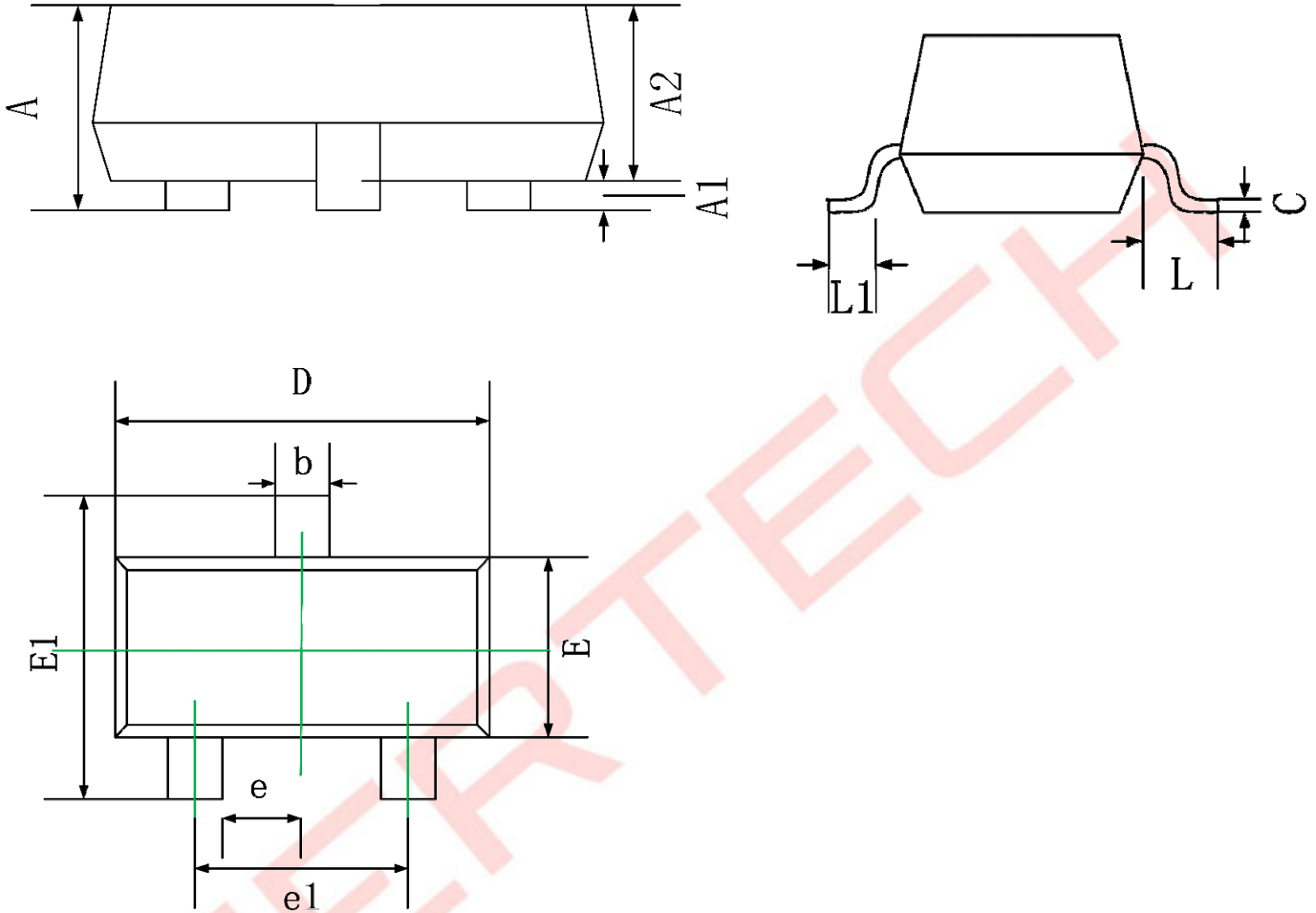
## Typical Characteristics Curves



# ATM2301PSA

## Package Outline

### SOT-23

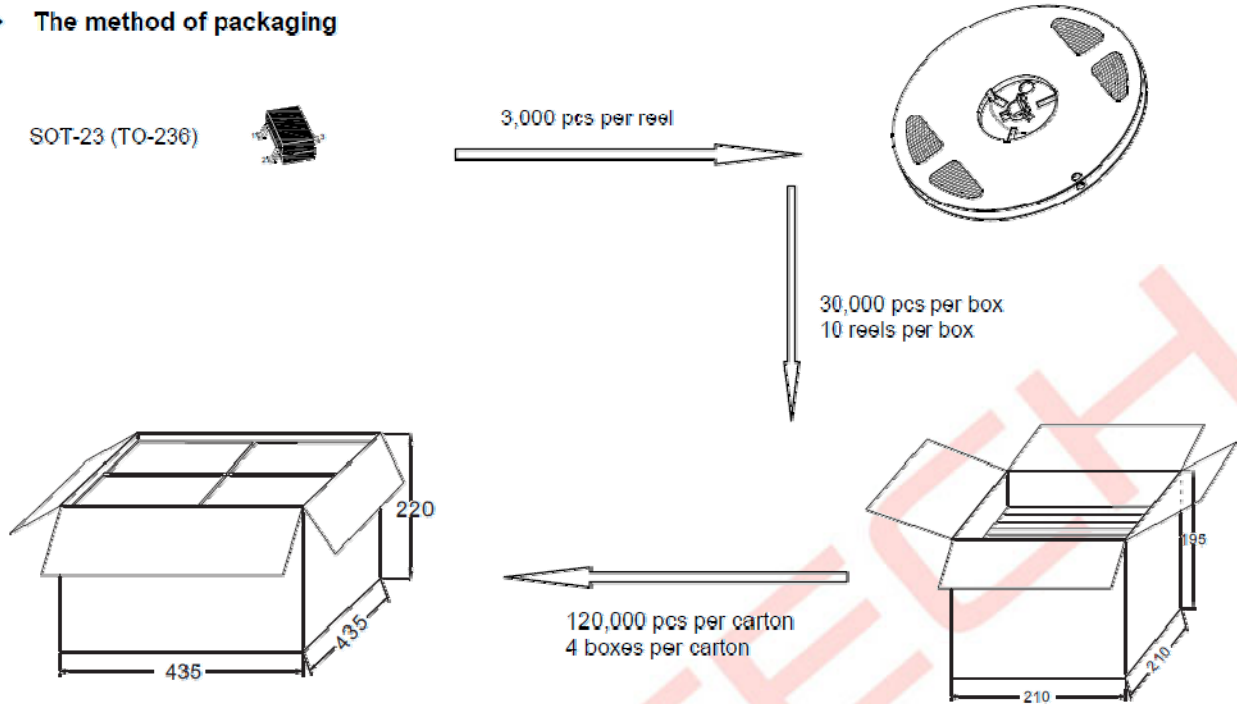


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50

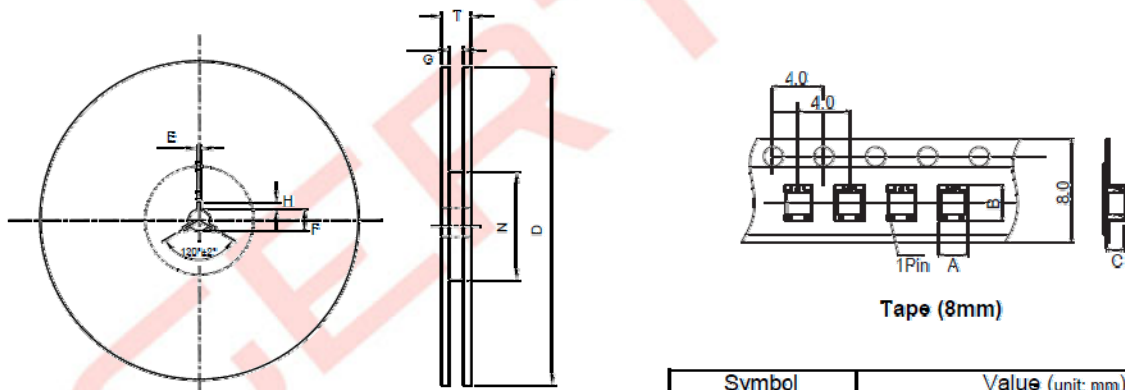
# ATM2301PSA

## Package Specifications

### ◆ The method of packaging



### ◆ Embossed tape and reel data



Reel (7")

Tape (8mm)

Symbol	Value (unit: mm)
A	3.15 ± 0.1
B	2.7 ± 0.1
C	1.25 ± 0.1
E	2 ± 0.5
F	13 ± 0.5
D	178 ± 2.0
G	8.4 ± 1.5
H	4 ± 0.5
N	60
T	< 14.9

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