

ATM2301PSA

P-Channel Enhancement Mode Field Effect Transistor

Drain-Source Voltage: -20V

Drain Current: -2.5A

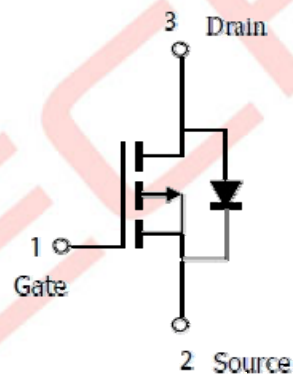
Features

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

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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}	± 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_A=25 °C, unless otherwise noted)

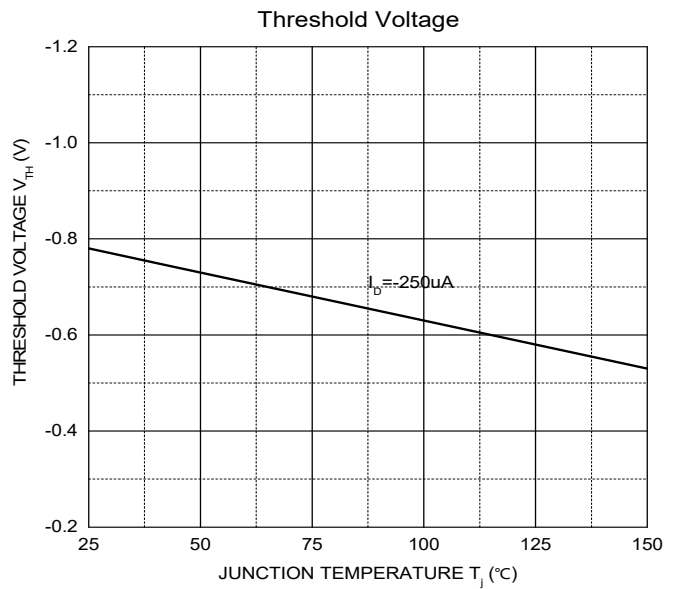
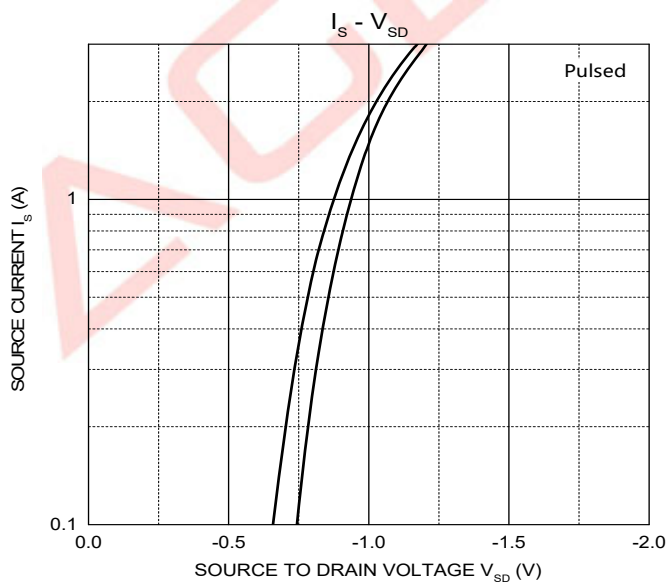
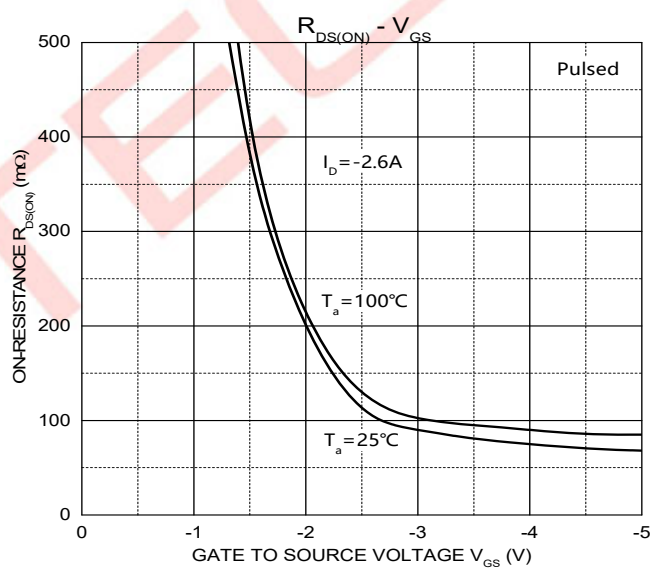
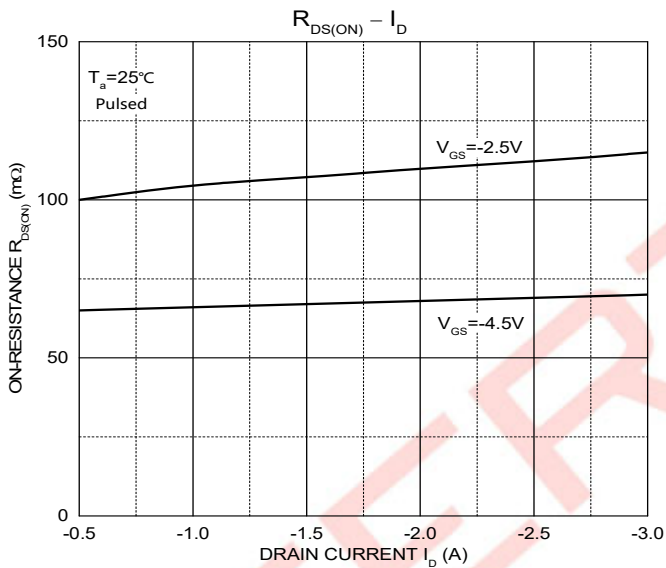
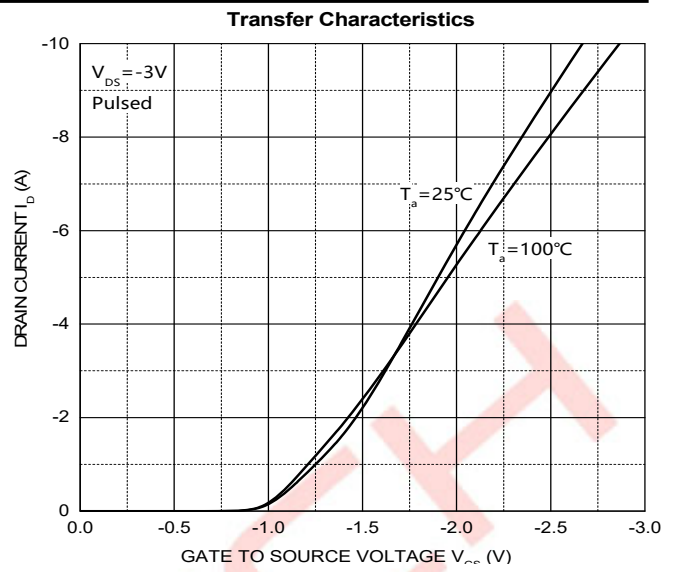
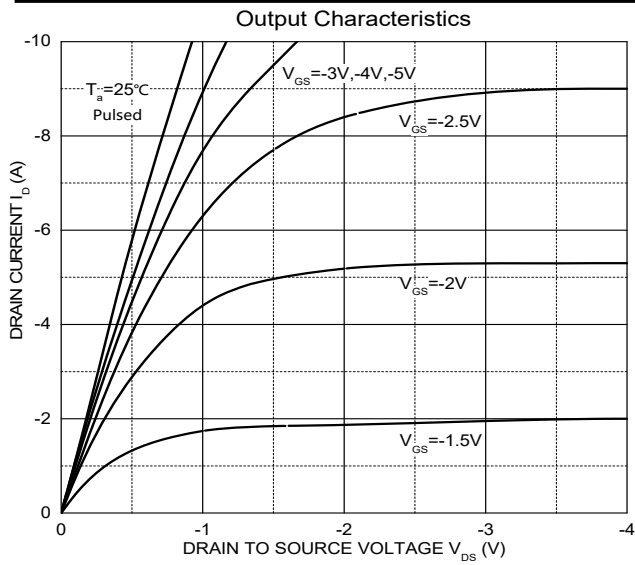
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.75	-0.9	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} = -4.5V, I _D = -4A		90	110	mΩ
		V _{GS} = -2.5V, I _D = -2A		110	130	
Forward transconductance ¹⁾	g _{FS}	V _{DS} = -5V, I _D = -2A	5			S
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		405		pF
Output Capacitance	C _{oss}			75		
Reverse Transfer Capacitance	C _{rss}			55		
Gate resistance	R _g	f = 1MHz		6		Ω
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -2.5V, I _D = -3A		3.3	12	nC
Gate-Source Charge	Q _{gs}			0.7		
Gate-Drain Charge	Q _{gd}			1.3		
Turn-on delay time	t _{d(on)}	V _{DD} = -10V, V _{GEN} = -4.5V, I _D = -1A R _L = 10Ω, R _{GEN} = 1Ω		11		ns
Turn-on rise time	t _r			35		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = -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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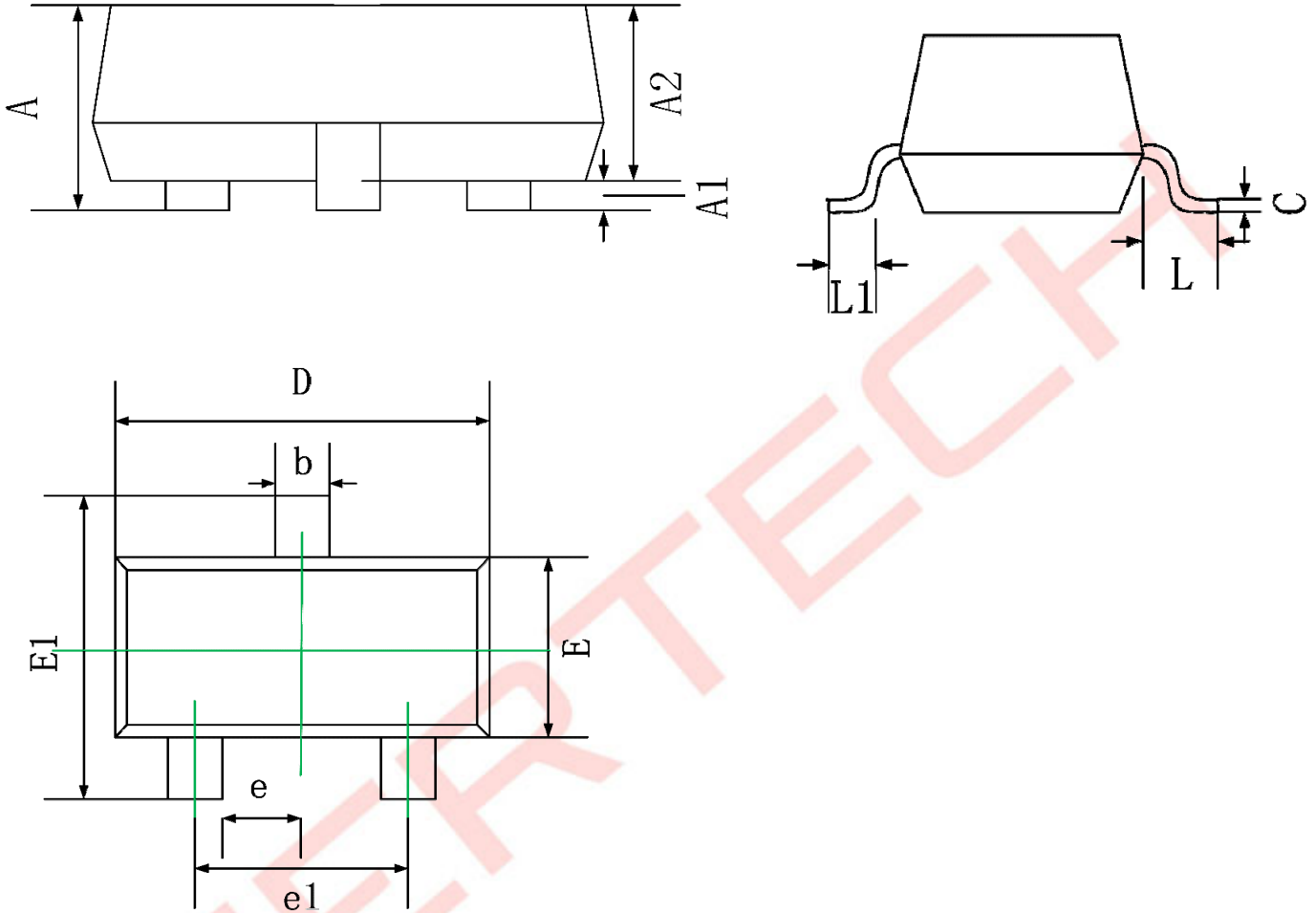
Typical Characteristics Curves



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Package Outline

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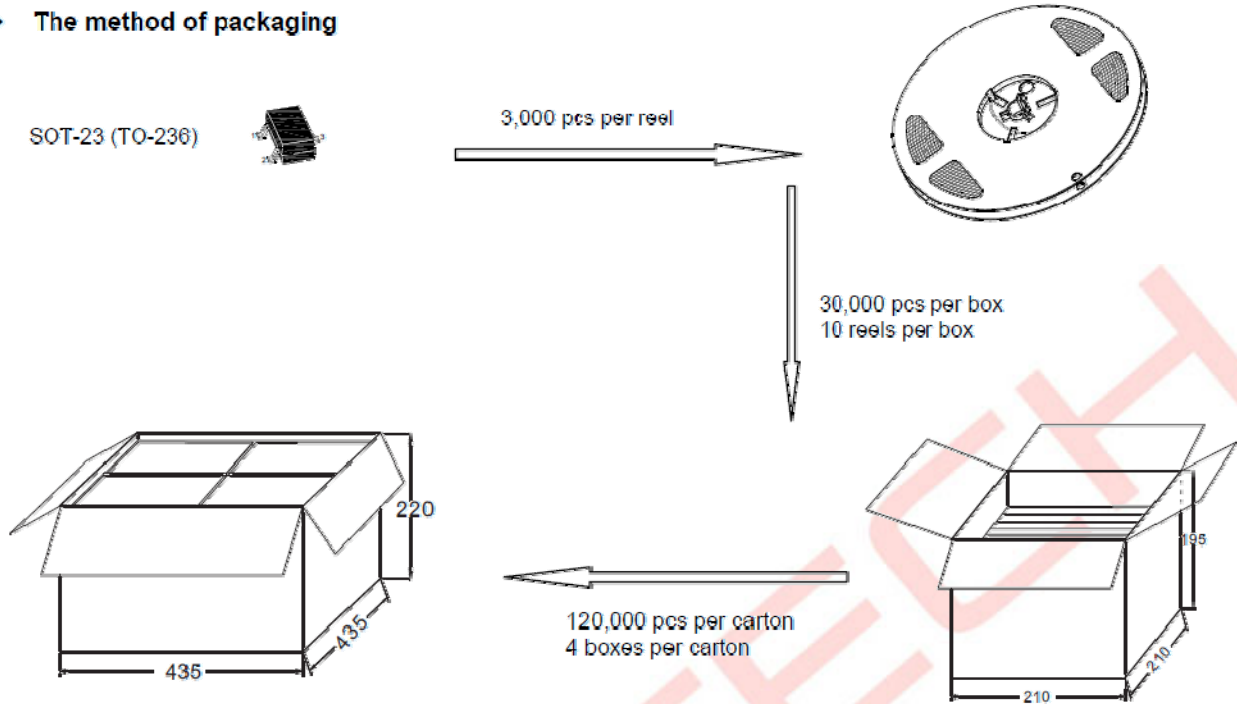


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50

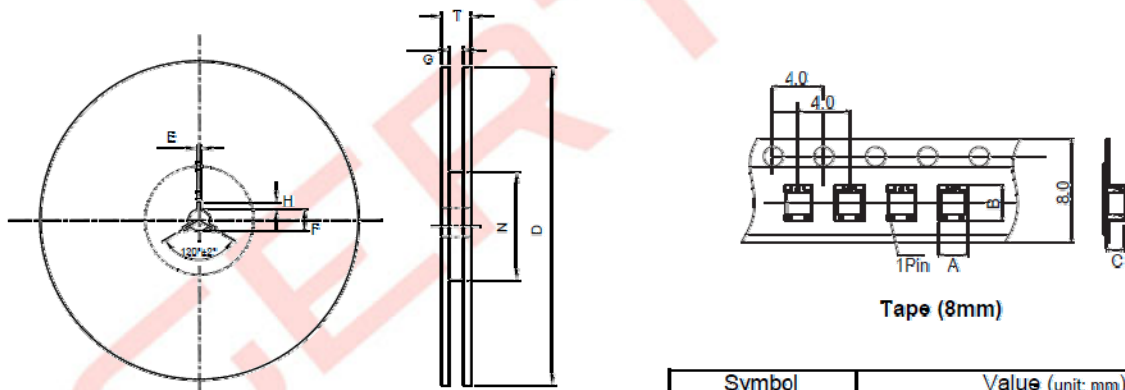
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Package Specifications

◆ The method of packaging



◆ Embossed tape and reel data



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