

ATM2306NSA

N-Channel Enhancement Mode Field Effect Transistor

Drain-Source Voltage: 30V

Drain Current: 3.16A

DESCRIPTION

The ATM2306NSA uses advanced trench technology to provide excellent $R_{DS(on)}$ with low gate charge. This device is suitable for use as a load switch or DC/DC converter .

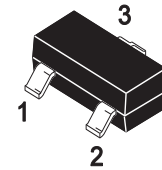
FEATURES

$V_{DS(V)}=30V$

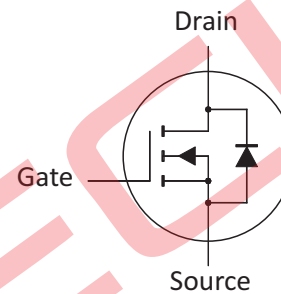
$I_D=3.16A$

$R_{DS(on)}<47m\Omega@10V$

$R_{DS(on)}<65m\Omega@4.5V$



1Gate 2Source 3Drain
SOT-23 Plastic Package



MAXIMUM RATINGS

at $T_A=25^{\circ}C$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J=150^{\circ}C$) ^(1,2)	I_D	3.16	A
Pulsed Drain Current	I_{DM}	20	
Continuous Source Current(Diode Conduction) ^(1,2)	I_S	0.62	
Maximum Power Dissipation ^(1,2)	P_D	0.75	W
Thermal Resistance from Junction to Ambient ($t \leq 5s$)	$R_{\theta JA}$	100	$^{\circ}C/W$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^{\circ}C$

Notes :

1. Surface Mounted on 1"×1" FR4 board, $t \leq 5s$.
2. Pulse width limited by maximum junction temperature.

ATM2306NSA

ELECTRICAL CHARACTERISTICS

Ta =25 °C unless otherwise specified

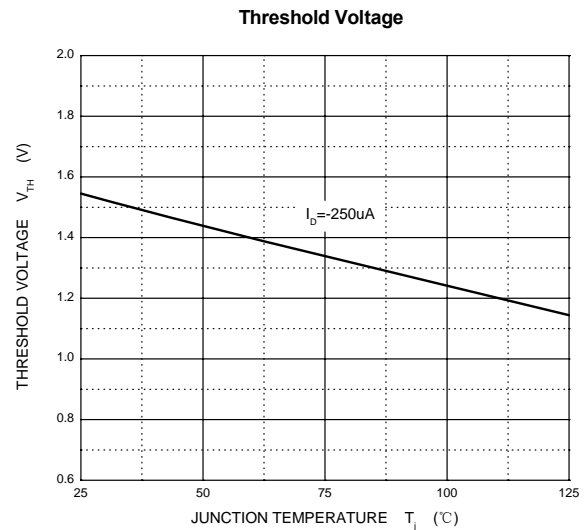
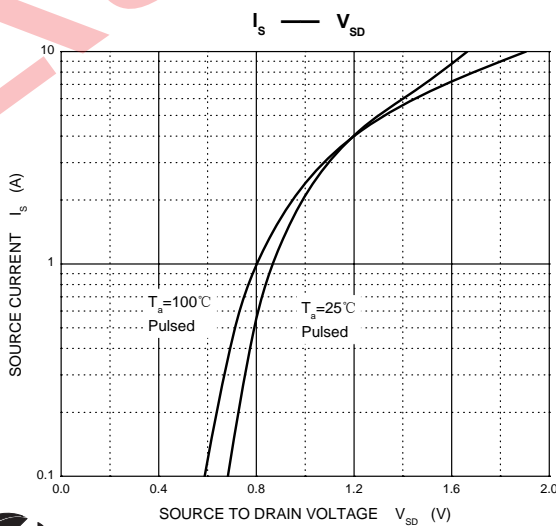
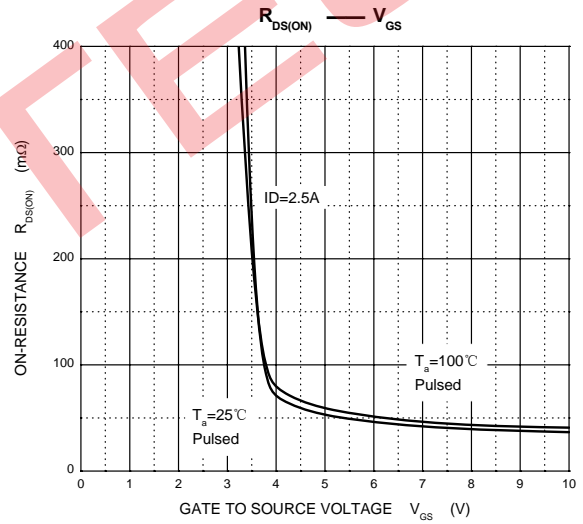
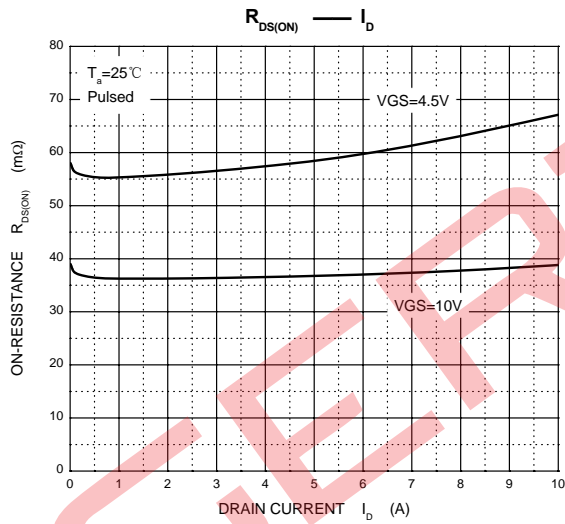
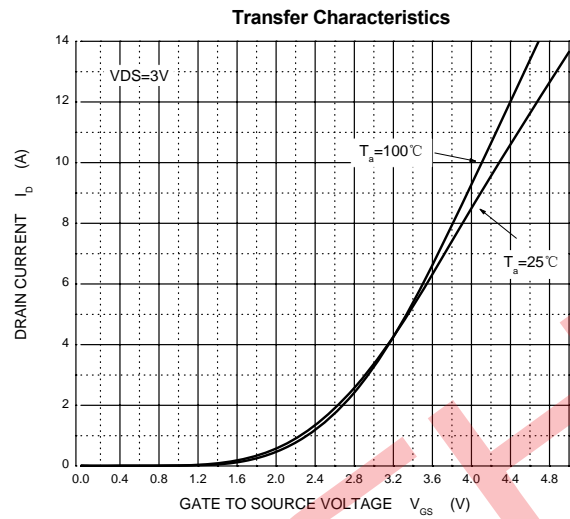
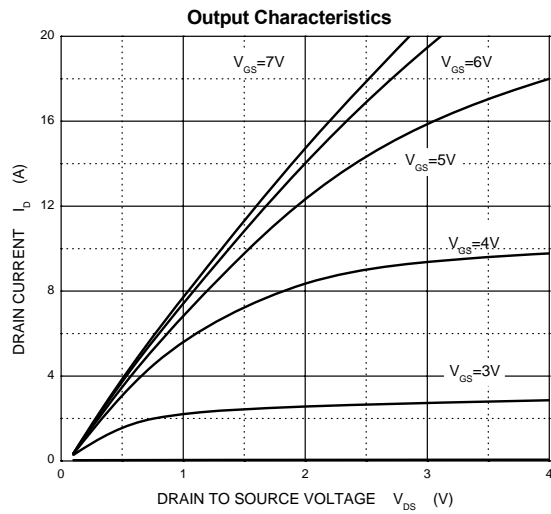
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	V	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			0.5	μA	
Drain-Source On-Resistance ⁽¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3.5A$		0.038	0.047	Ω	
		$V_{GS} = 4.5V, I_D = 2.8A$		0.052	0.065		
Forward Transconductance ⁽¹⁾	g_{fs}	$V_{DS} = 4.5V, I_D = 2.5A$		7.0		S	
Diode Forward Voltage	V_{SD}	$I_S = 1.25A, V_{GS} = 0V$		0.8	1.2	V	
Dynamic							
Gate Charge	Q_g	$V_{DS} = 15V, V_{GS} = 5V, I_D = 2.5A$		3.0	4.5	nC	
Total Gate Charge	Q_{gt}			6	9		
Gate-Source Charge	Q_{gs}	$V_{DS} = 15V, V_{GS} = 10V, I_D = 2.5A$		1.6			
Gate-Drain Charge	Q_{gd}			0.6			
Gate Resistance	R_g	$f = 1.0MHz$	2.5	5	7.5	Ω	
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		305		pF	
Output Capacitance	C_{oss}				65		
Reverse Transfer Capacitance	C_{rss}				29		
Switching							
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15V, R_L = 15\Omega, I_D \approx 1A,$ $V_{GEN} = 10V, R_g = 6\Omega$		7	11	ns	
Rise Time	t_r				12		18
Turn-Off Delay Time	$t_{d(off)}$				14		25
Fall Time	t_f				6		10

Notes :

1.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.



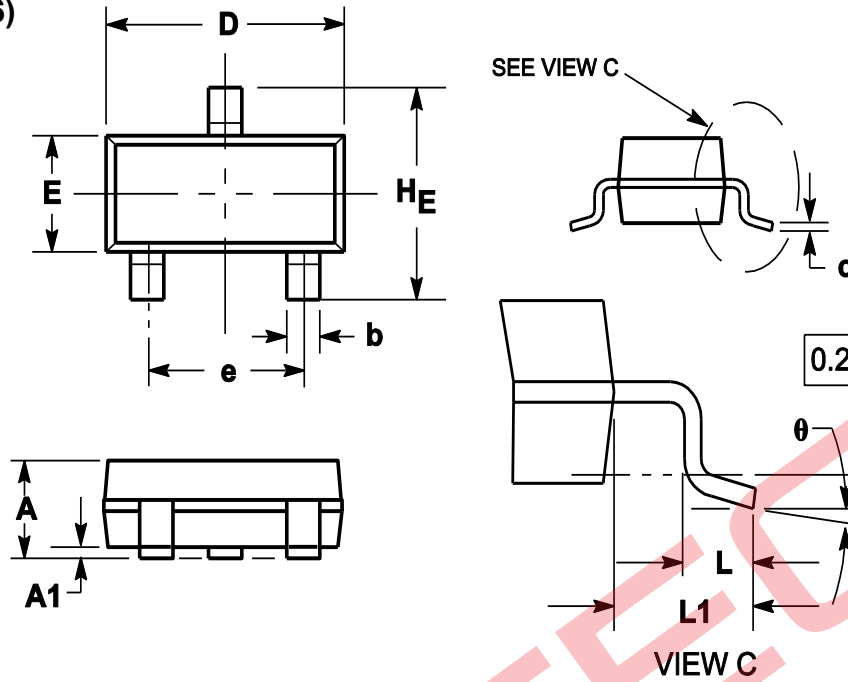
TYPICAL CHARACTERISTICS CURVES



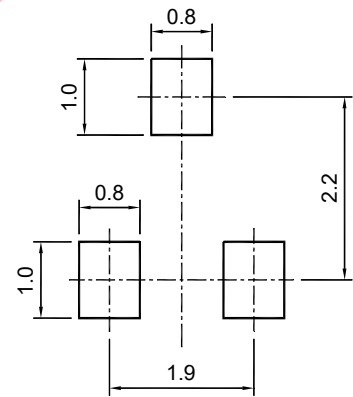
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PACKAGE OUTLINE

SOT-23 (TO-236)



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.900	1.025	1.150
A1	0.000	0.050	0.100
b	0.300	0.400	0.500
c	0.080	0.115	0.150
D	2.800	2.900	3.000
E	1.200	1.300	1.400
HE	2.250	2.400	2.550
e	1.800	1.900	2.000
L1	0.550REF		
L	0.300		0.500
θ	0°		8°



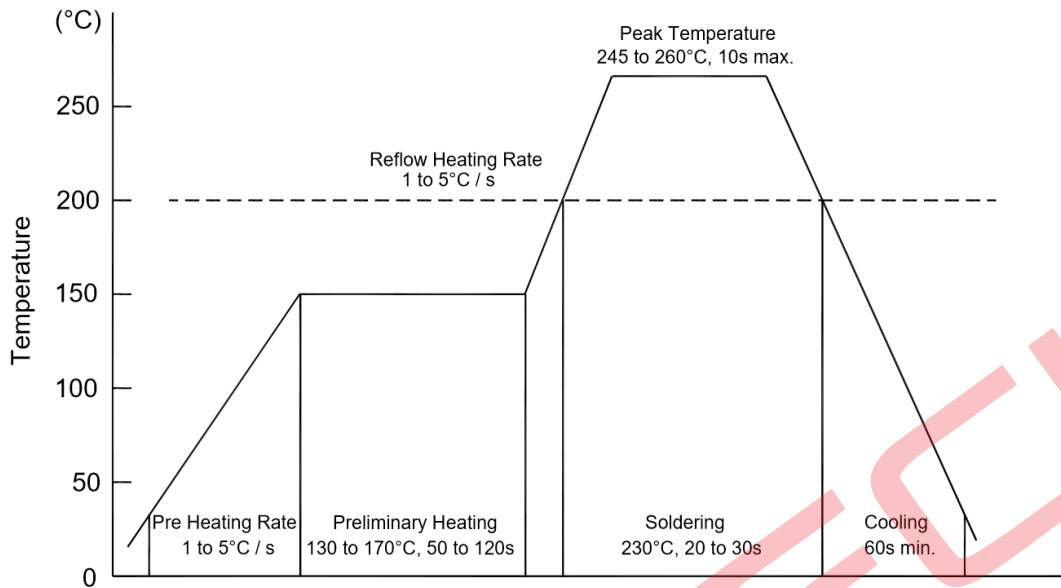
SOT-23 (TO-236)

Recommended soldering pad

ORDERING INFORMATION

Device	Package	Shipping
ATM2306NSA	SOT-23	3000/Reel&Tape(7inch)

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245 °C. If peak temperature is below 245 °C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

◆ Conditions of hand soldering

- Temperature: 370 °C
- Time: 3s max.
- Times: one time

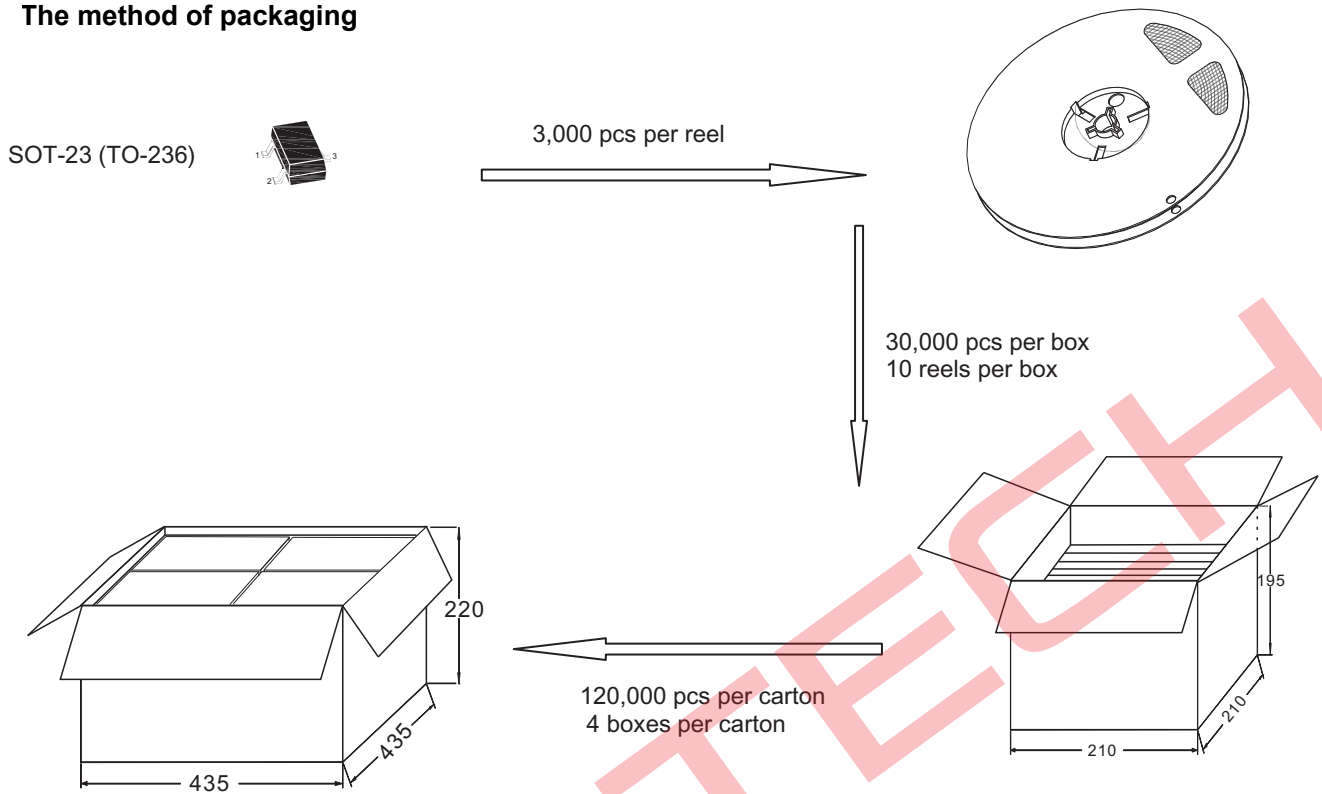
◆ Storage conditions

- **Temperature**
5 to 40 °C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

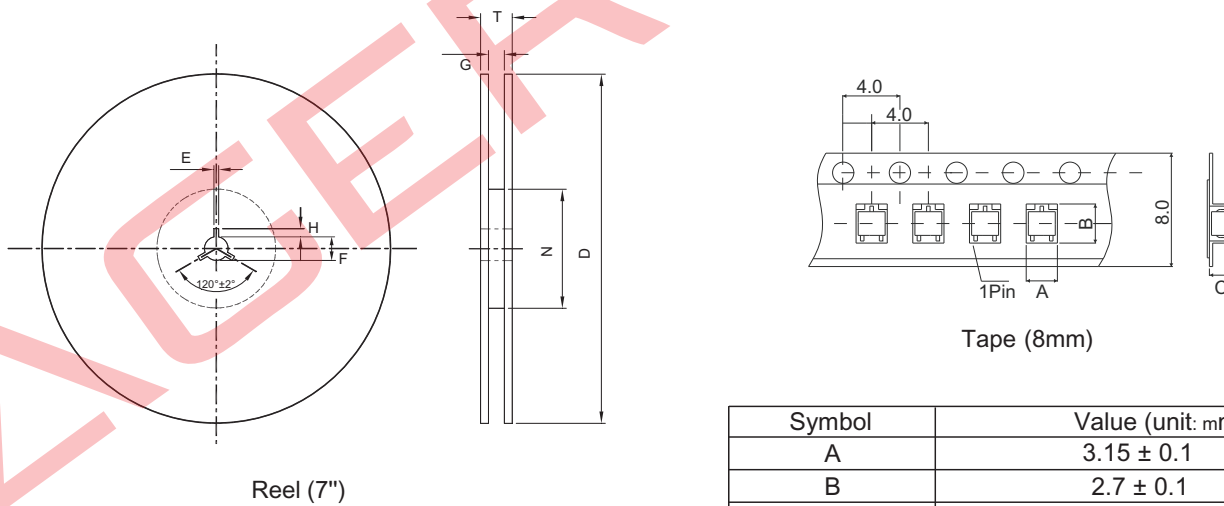
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PACKAGE SPECIFICATIONS

◆ 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

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