ATM2312NSA

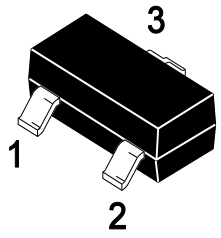
N-CHANNEL ENHANCEMENT MODE POWER MOSFET

Drain-Source Voltage: 20V *Continuous Drain Current: 5.0A*

FEATURES

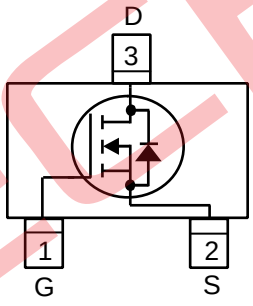
- **Small Package：SOT-23**
- **V_{DS}=20V, I_D=5A**
  $R_{DS(ON)}$≤ 31.8mΩ@V_{GS}=4.5V
  $R_{DS(ON)}$≤35.6mΩ@V_{GS}=2.5V
- **Advanced Trench Technology**

SOT-23



APPLICATIONS

- **Load Switching for portable Application**
- **DC/DC Converter**



Schematic diagram

ABSOLUTE MAXIMUM RATINGS

(T_A=25℃, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8.0	V
Continuous Drain Current	t = 5s	I_D	5	A
Pulsed Drain Current		I_{DM}	20	
Continuous Source-Drain Diode Current		I_S	1.04	
Maximum Power Dissipation	t = 5s	P_D	0.35	W
Junction-to-Ambient Thermal Resistance		$R_{\theta JA}$	357	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55 to 150	℃

ELECTRICAL CHARACTERISTICS

(T_A=25℃, unless otherwise noted)

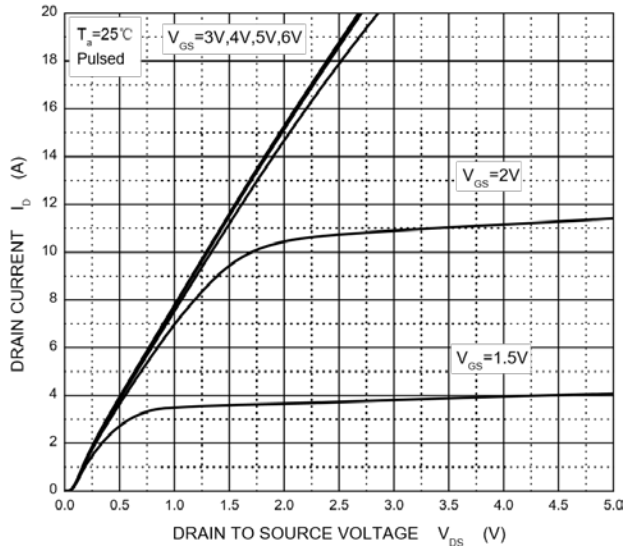
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.45	0.7	1.0	V
Gate Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±8V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =20V, V_{GS} = 0V	-	-	1	μA
Drain-Source On-Resistance[Note1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 5.0A	-	18	31.8	mΩ
		V_{GS} = 2.5V, I_D = 4.7A		23	35.6	
		V_{GS} = 1.8V, I_D = 4.3A	-	30	41.4	
Forward transconductance	g_{fs}	V_{DS} = 10V, I_D = 5.0A	-	6	-	S
Dynamic						
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz	-	865	-	pF
Output Capacitance	C_{oss}		-	105	-	
Reverse Transfer Capacitance	C_{rss}		-	55	-	
Gate Resistance	R_g	f=1MHz	0.5	-	4.8	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10V, R_L = 2.2Ω, R_G = 1Ω, V_{GEN} = 5V, I_D = 4A	-	-	10	ns
Turn-On Rise Time	t_r		-	-	20	
Turn-Off Delay Time	$t_{d(off)}$		-	-	32	
Turn-Off Fall Time	t_f		-	-	12	
Drain-source Body Diode						
Forward Diode Voltage	V_{SD}	V_{GS} = 0V, I_S = 4A	-	0.75	1.2	V

Notes:1. Pulse test: pulse width ≦ 300us, duty cycle≦ 2%.

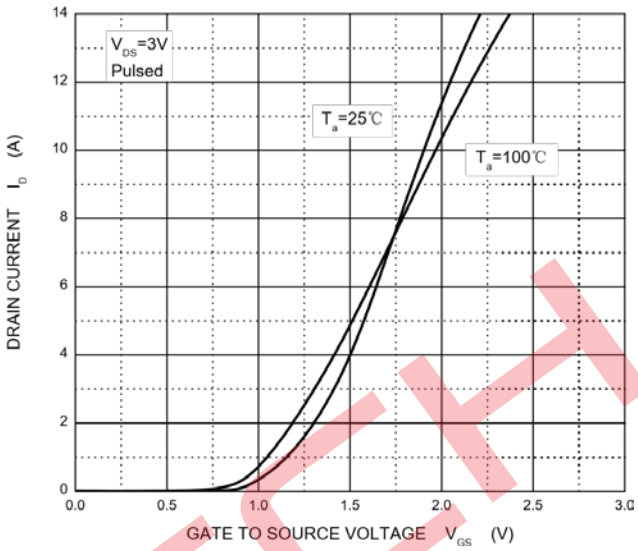
RATINGS AND CHARACTERISTIC CURVES

(T_A=25℃, unless otherwise noted)

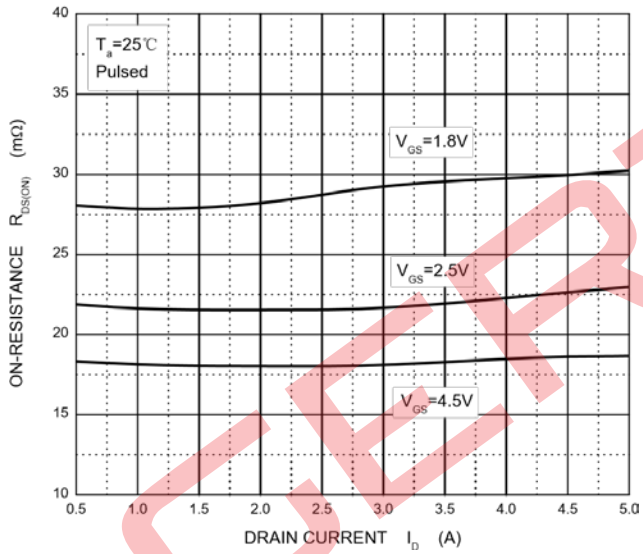
Output Characteristics



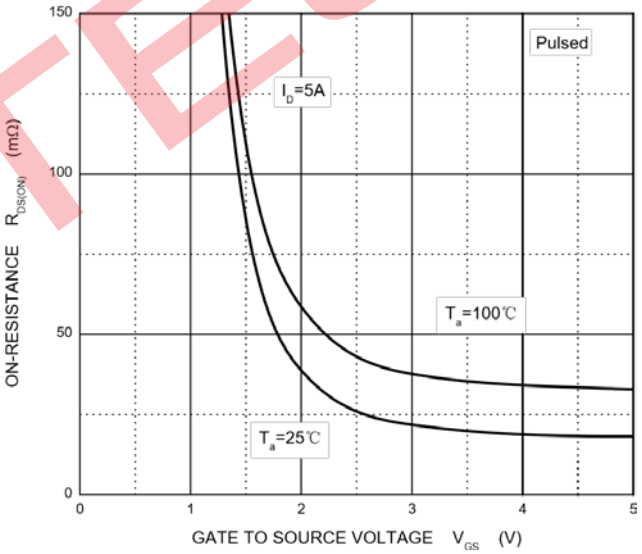
Transfer Characteristics



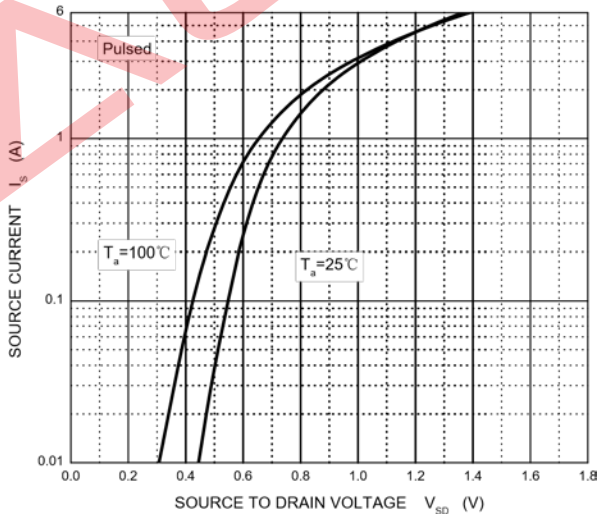
$R_{DS(ON)}$ — I_D



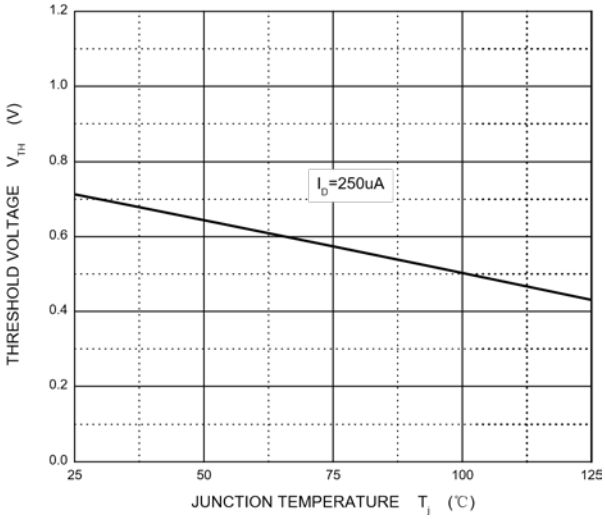
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

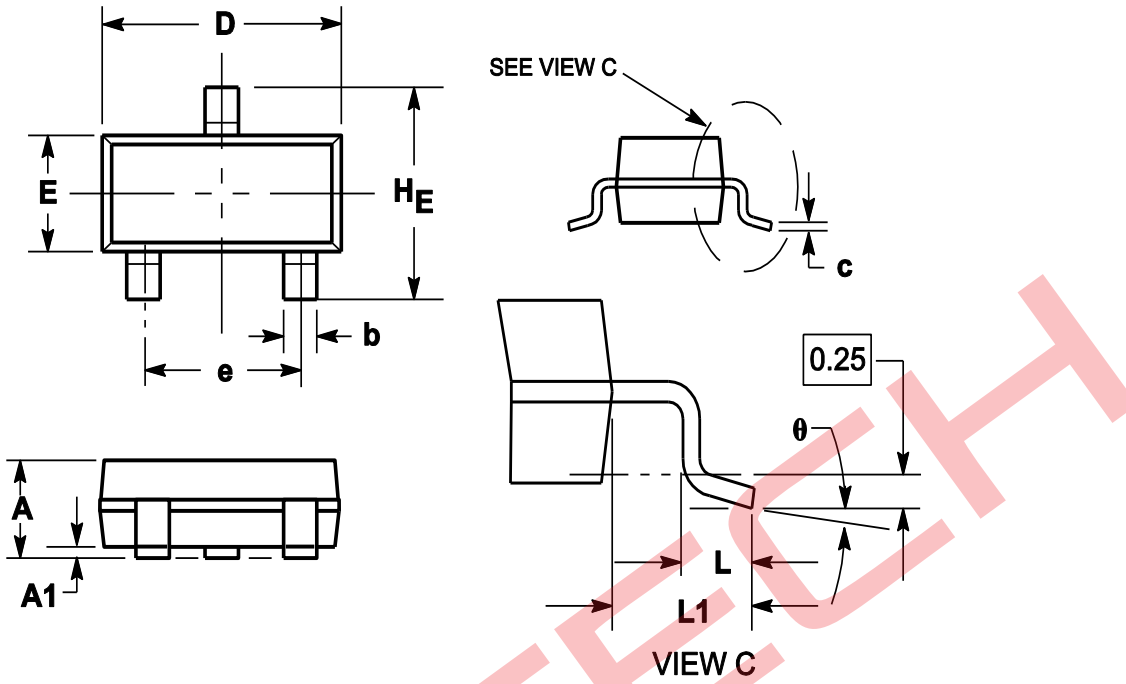


Threshold Voltage

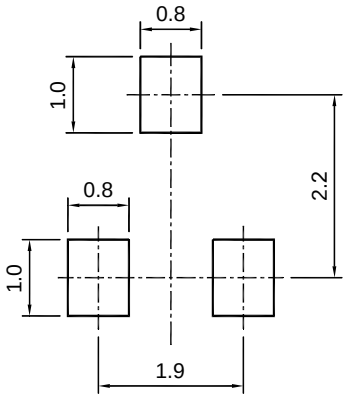


PACKAGE OUTLINE

SOT-23



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
H_E	2.250	2.400	2.550
e	1.800	1.900	2.000
L1	0.550REF		
L	0.300		0.500
θ	0^o		8^o



SOT-23

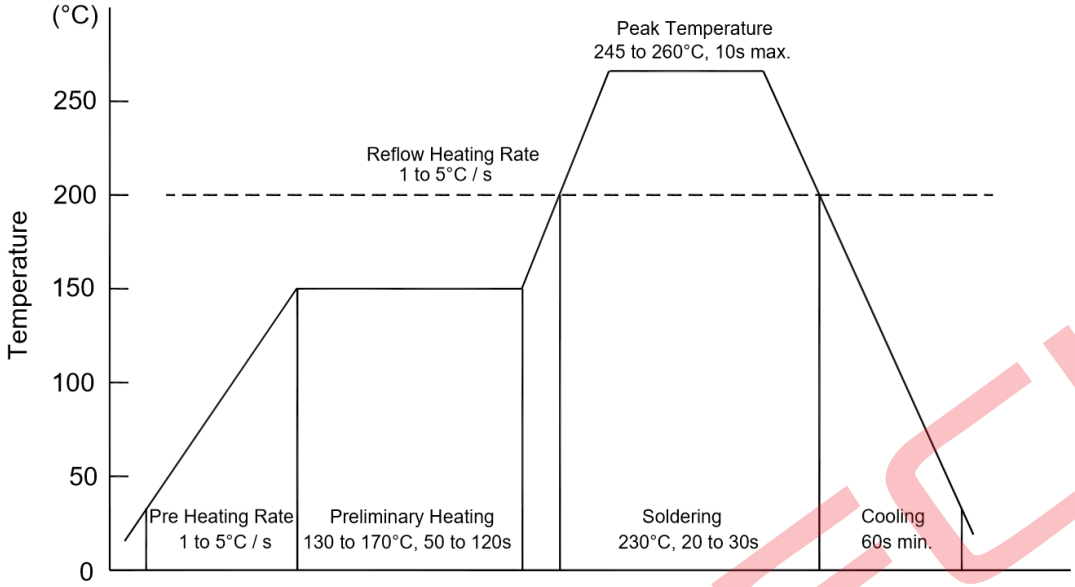
Recommended soldering pad

ORDERING INFORMATION

Device	Package	Shipping
ATM2312NSA	SOT-23	3000/Reel&Tape(7inch)

CONDITIONS OF SOLDERING AND STORAGE

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245℃. If peak temperature is below 245℃, 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℃
- Time: 3s max.
- Times: one time

◆ Storage conditions

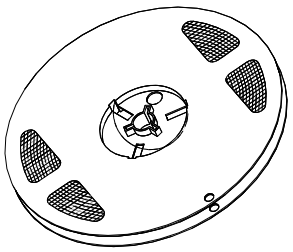
- **Temperature**
  5 to 40℃
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

PACKAGE SPECIFICATIONS

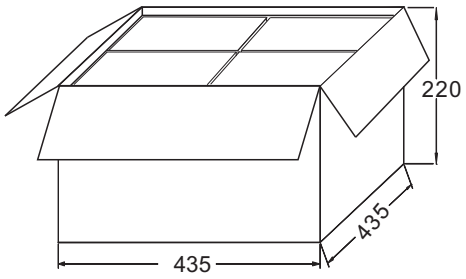
◆ The method of packaging

SOT-23 (TO-236)

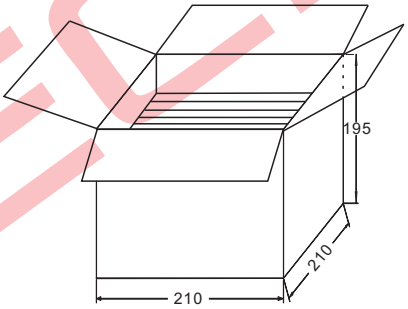
3,000 pcs per reel



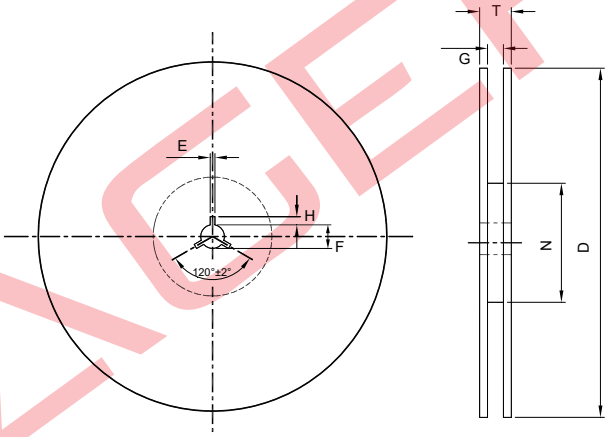
30,000 pcs per box
10 reels per box



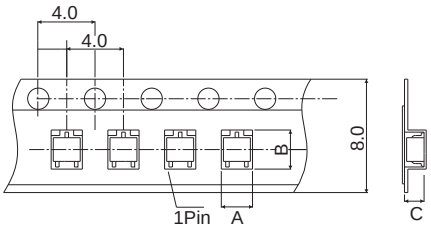
120,000 pcs per carton
4 boxes per carton



◆ 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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