

ATM2300NSA

N-Channel Enhancement Mode Field Effect Transistor

Drain-Source Voltage: 20V

Drain Current: 4A

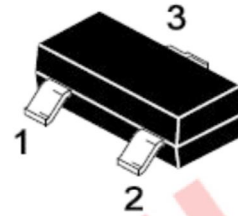
Features

- ◆ Trench FET Power MOSFET
- ◆ Excellent $R_{DS(on)}$ and Low Gate Charge
- ◆ $R_{DS(on)} < 32m\Omega$ ($V_{GS} = 4.5V$)
- ◆ $R_{DS(on)} < 40m\Omega$ ($V_{GS} = 2.5V$)

Application

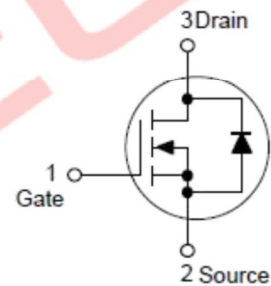
- ◆ DC/DC Converter
- ◆ Load Switch for Portable Devices

SOT-23



1. Gate 2. Source 3. Drain
Marking: M02

Schematic diagram



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	4	A
Plused Drain Current ^{Note1}	I_{DM}	10	A
Power Dissipation	P_D	0.9	W
Thermal Resistance from Junction to Ambient ^{Note2}	$R_{\theta JA}$	139	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

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Electrical characteristics (T_A=25 °C, unless otherwise noted)

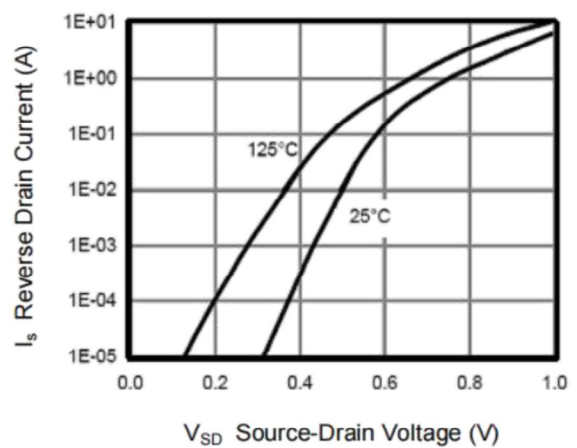
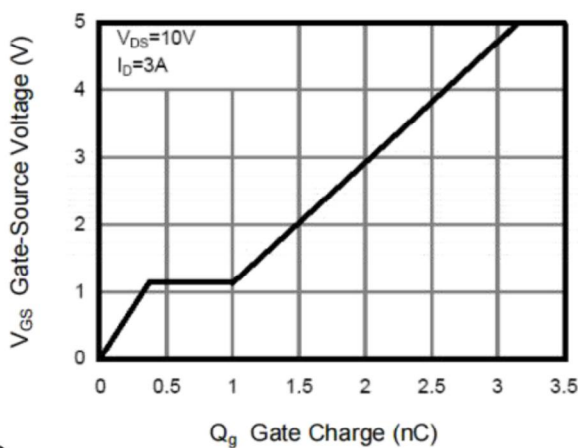
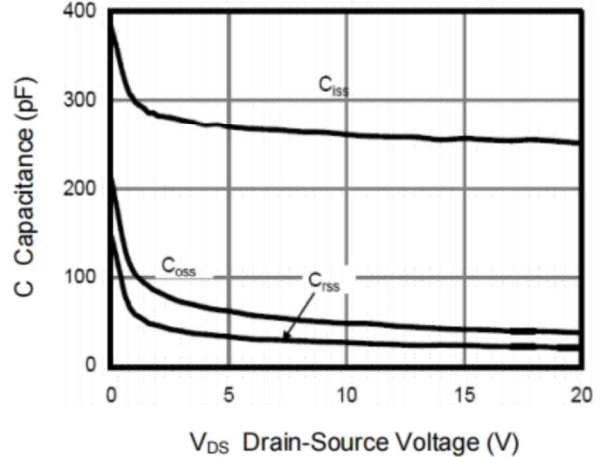
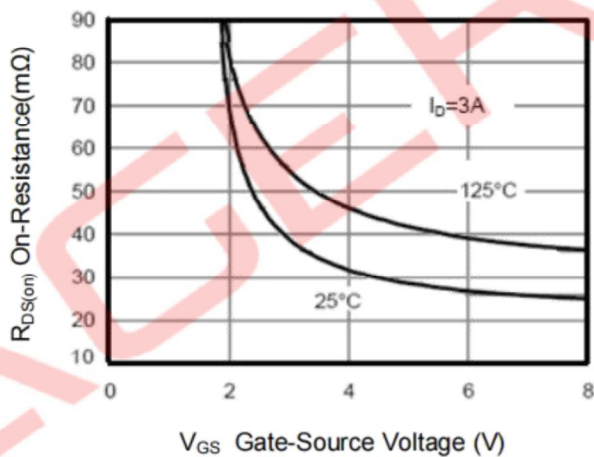
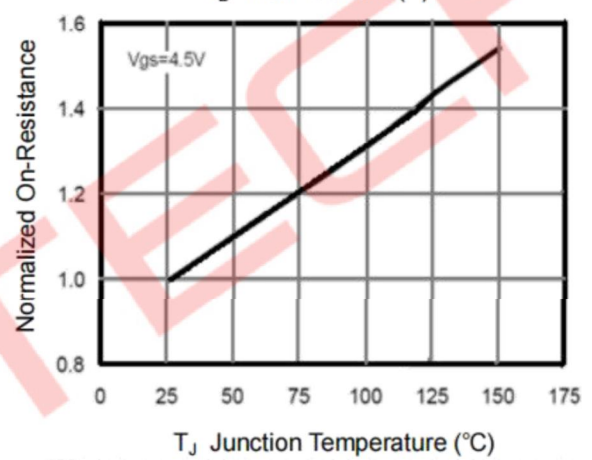
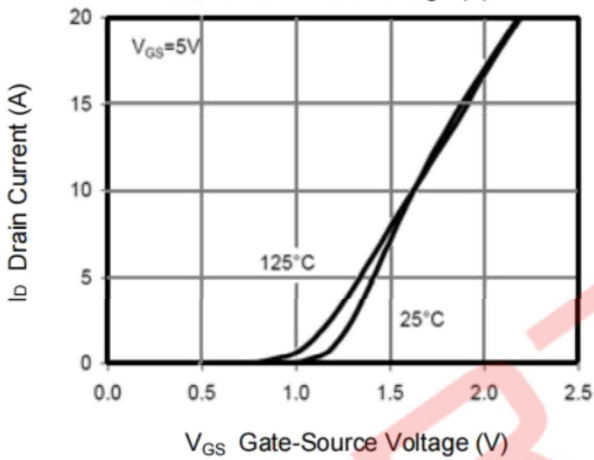
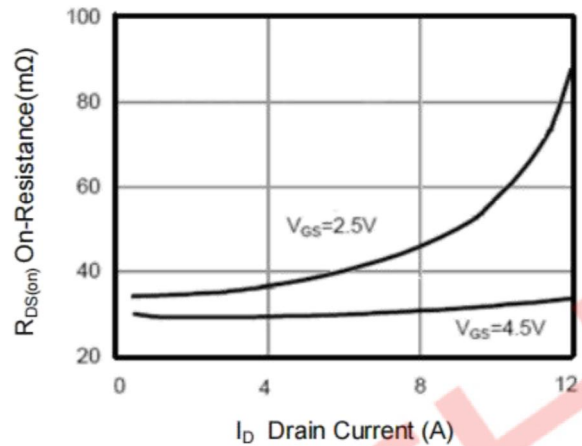
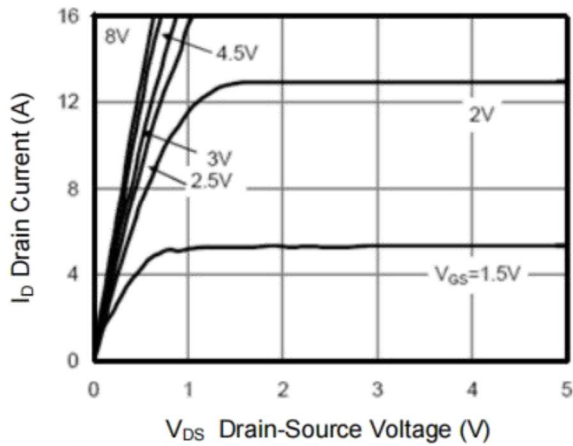
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±12V, V _{DS} = 0V			±100	nA
Gate threshold voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.7	1	V
Drain-source on-resistance ^{Note3}	R _{DS(on)}	V _{GS} =4.5V, I _D =3A			32	mΩ
		V _{GS} =2.5V, I _D =2A			40	
		V _{GS} =1.8V, I _D =2A			70	
Forward tranconductance ^{Note3}	g _{FS}	V _{DS} =5V, I _D =3A		8		S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz		260		pF
Output Capacitance	C _{oss}			48		pF
Reverse Transfer Capacitance	C _{rss}			27		pF
Total gate charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =3A		2.9		nC
Gate-source charge	Q _{gs}			0.4		nC
Gate-drain charge	Q _{gd}			0.6		nC
Switching Characteristics²⁾						
Turn-on delay time	t _{d(on)}	V _{GS} =4.5V, V _{DD} =10V, R _L =3.3Ω, R _{GEN} =6Ω		2.5		ns
Turn-on rise time	t _r			3.2		ns
Turn-off delay time	t _{d(off)}			21		ns
Turn-off fall time	t _f			3		ns
Source-Drain Diode characteristics						
Diode Forward Voltage ^{Note3}	V _{SD}	I _S =4A, V _{GS} = 0V			1.2	V
Diode Forward Current ^{Note2}	I _S				4	A

Notes:

- 1) Repetitive rating: Pulse width limited by junction temperature.
- 2) Surface mounted on FR4 board, t ≤ 10s.
- 3) Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.

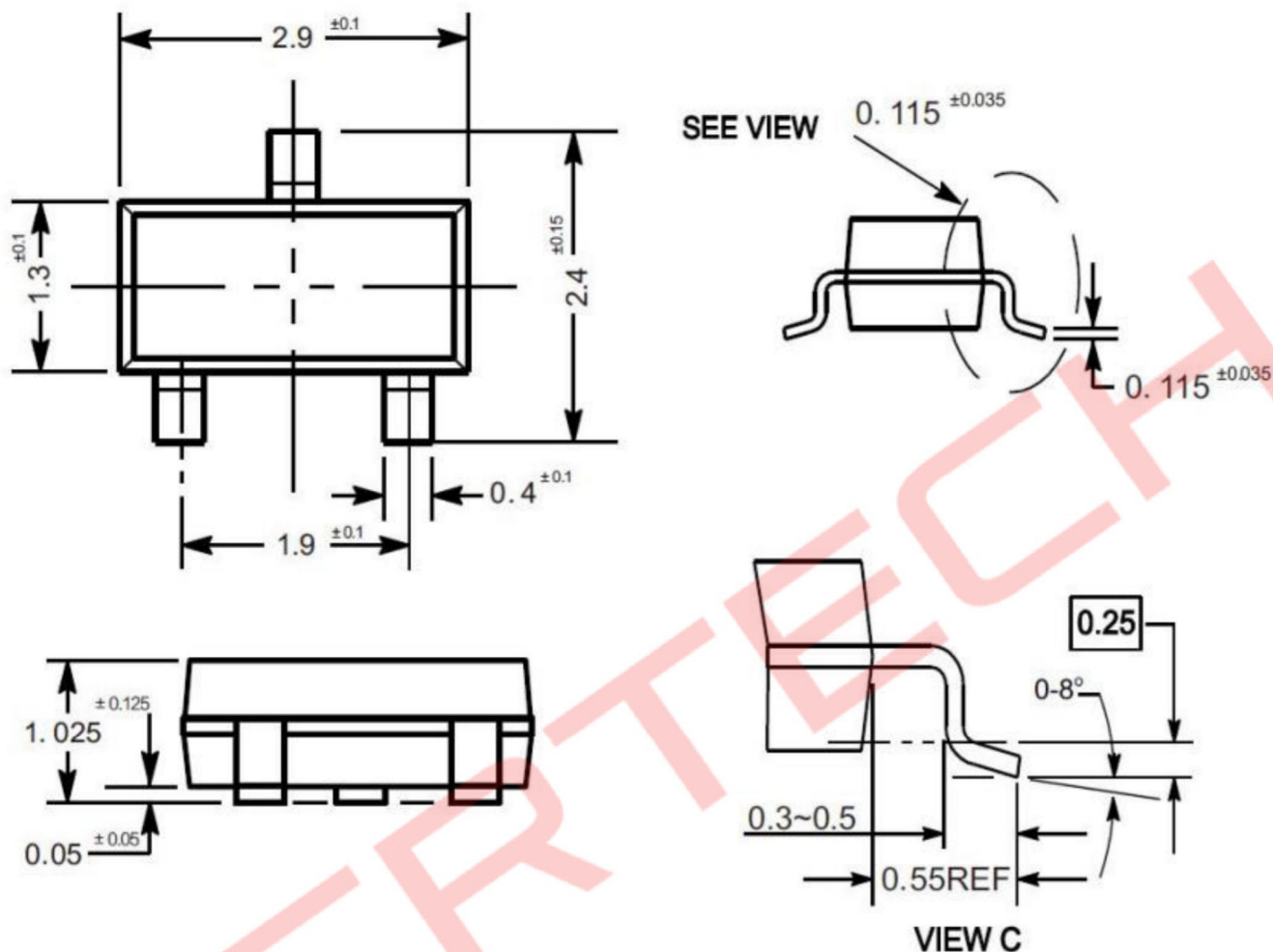
ATM2300NSA

Typical Characteristics Curves



ATM2300NSA

Package Outline



Ordering Information

Device	Package	Shipping
ATM2300NSA	SOT-23	3000PCS/ Reel(7 inches)