

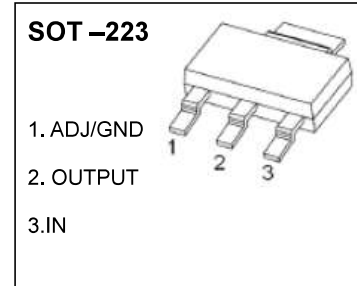


DONGGUAN NANJING ELECTRONICS LTD.,

SOT-23 Plastic-Encapsulate MOSFETS

N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	105mΩ@10V	4A
	125mΩ@4.5V	



DESCRIPTION

The NJ2310DS uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 2.5V. This device is suitable for use as a battery protection or in other switching application.

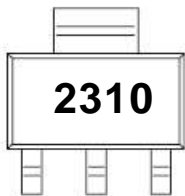
FEATURE

- High power and current handling capability
- Lead free product is acquired
- Surface mount package

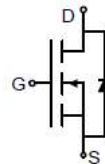
APPLICATION

- Battery Switch
- DC/DC Converter

MARKING



Equivalent Circuit



Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current (note 1)	I_{DM}	12	A
Power Dissipation	P_D	0.50	W
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

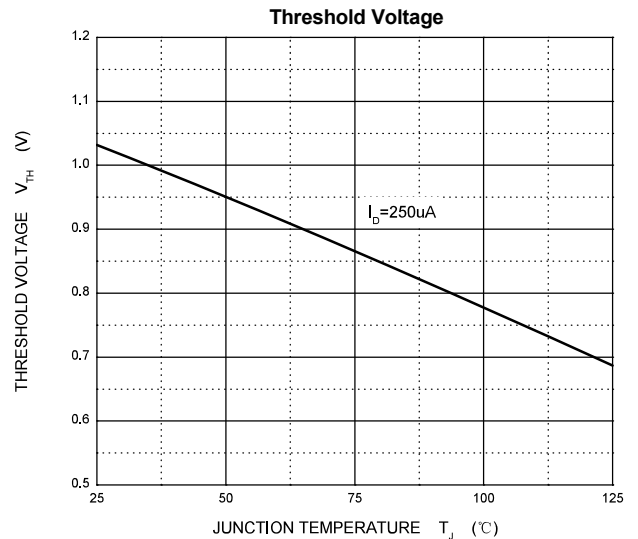
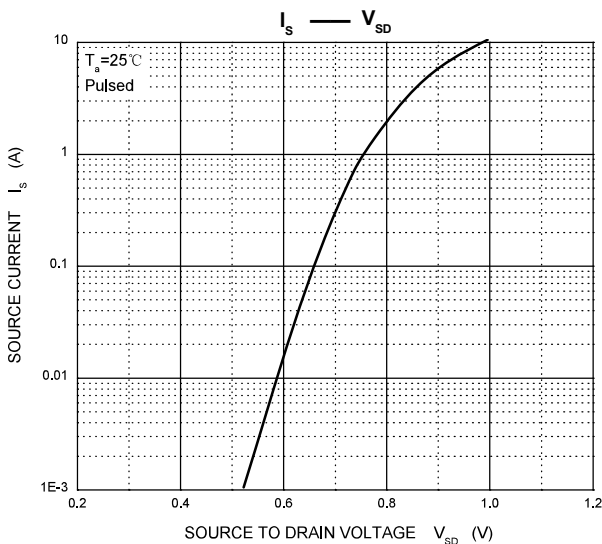
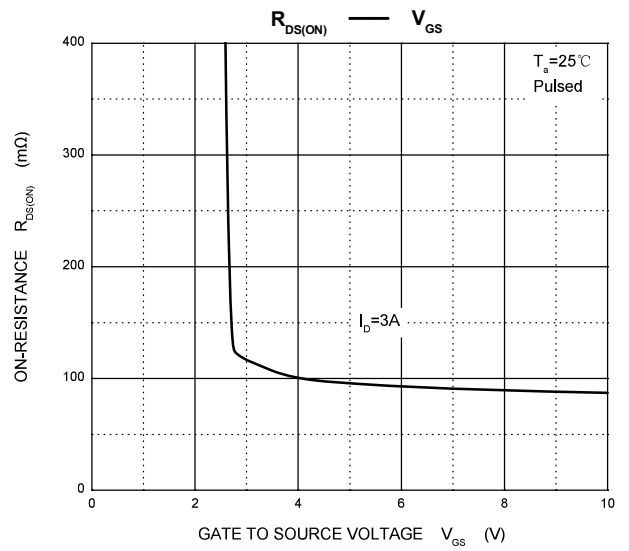
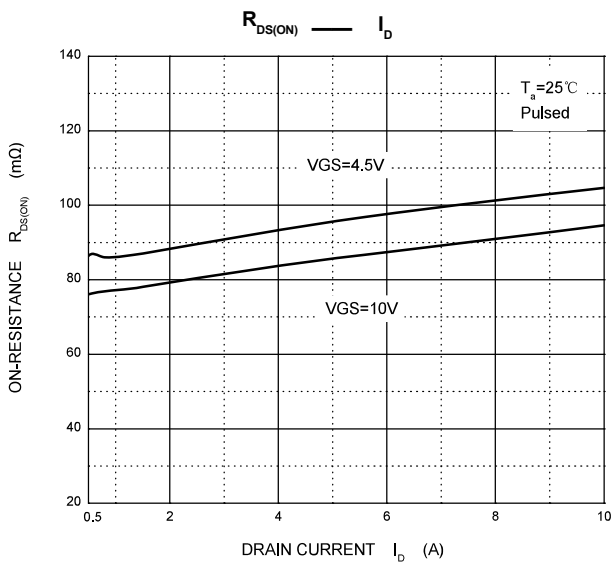
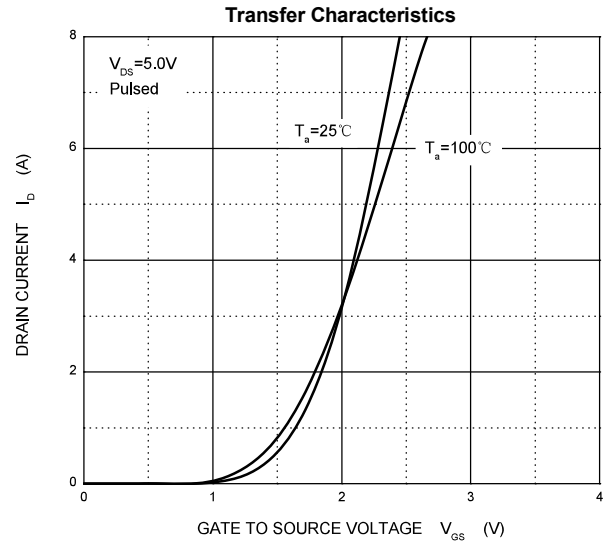
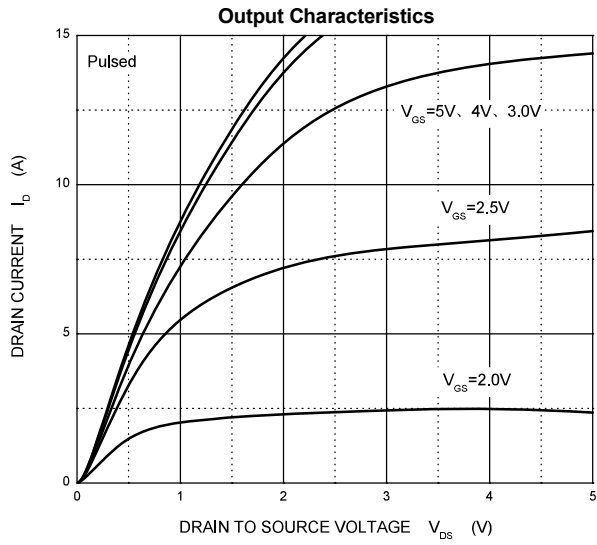
$T_a=25\text{ }^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5		2	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 4A$			105	m Ω
		$V_{GS} = 4.5V, I_D = 4A$			125	m Ω
Forward tranconductance (note 3)	g_{FS}	$V_{DS} = 15V, I_D = 2A$	1.4			S
Diode forward voltage (note 3)	V_{SD}	$I_S = 3A, V_{GS} = 0V$			1.2	V
DYNAMIC CHARACTERISTICS (note 4)						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		247		pF
Output Capacitance	C_{oss}			34		pF
Reverse Transfer Capacitance	C_{rss}			19.5		pF
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 30V,$ $I_D = 1.5A, R_{GEN} = 1\Omega$		6		ns
Turn-on rise time	t_r			15		ns
Turn-off delay time	$t_{d(off)}$			15		ns
Turn-off fall time	t_f			10		ns
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 4.5V, I_D = 4A$		6		nC
Gate-Source Charge	Q_{gs}			1		nC
Gate-Drain Charge	Q_{gd}			1.3		nC

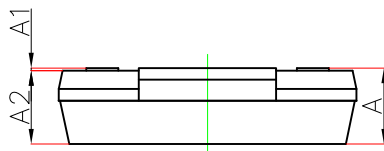
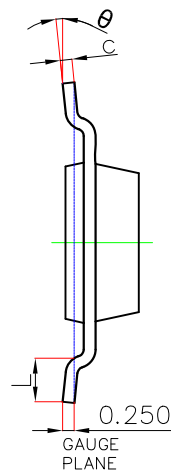
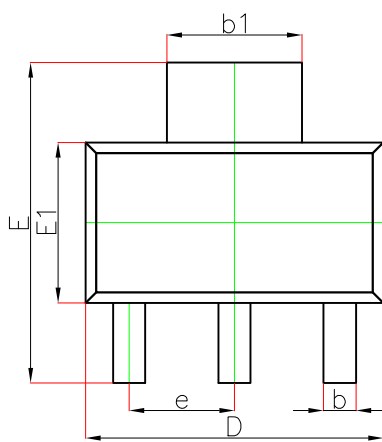
Notes :

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , $t_s \leq 10s$.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to producing.

Typical Characteristics



SOT-223 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b_1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E_1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°