

SOT-23 Plastic-Encapsulate MOSFETS

Description:

The KN2310S 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.

Features:

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

Application:

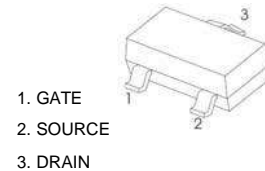
- Battery Switch
- DC/DC Converter

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60 V	105mΩ@10 V	3A
	125mΩ@4.5V	

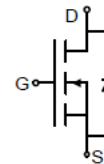
Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	3	A
Pulsed Drain Current (note 1)	I_{DM}	10	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

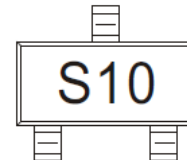
SOT-23



Equivalent Circuit



MARKING



MOSFET ELECTRICAL CHARACTERISTICS

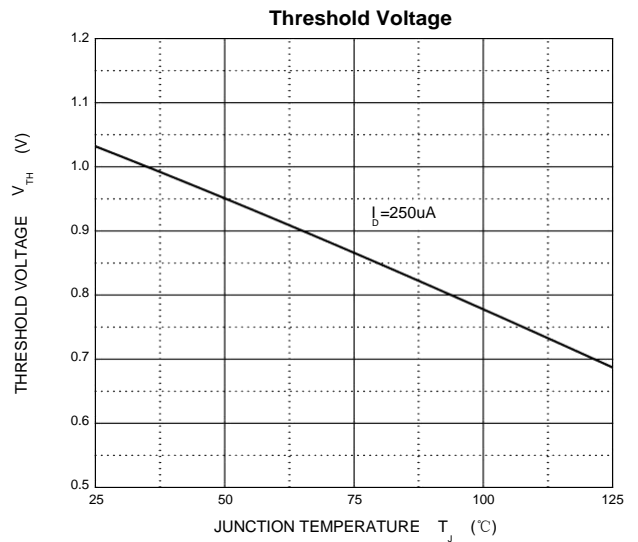
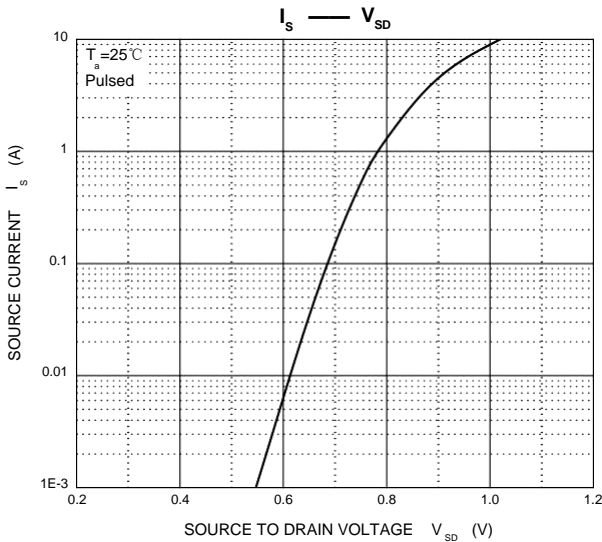
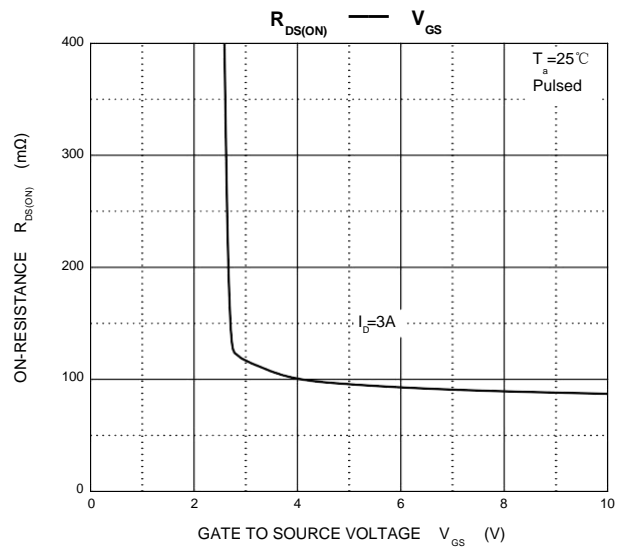
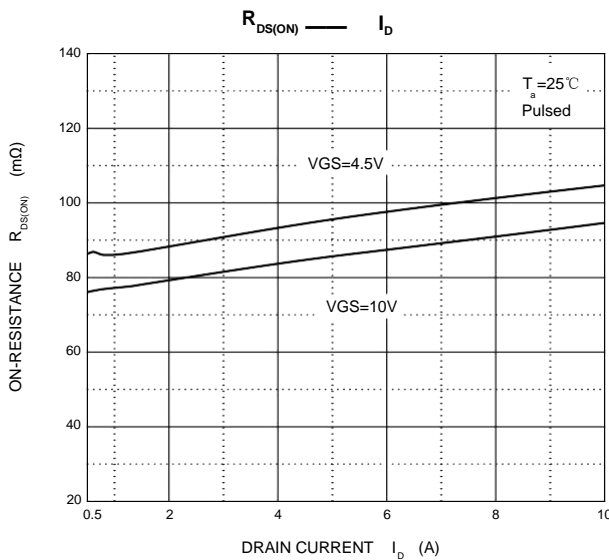
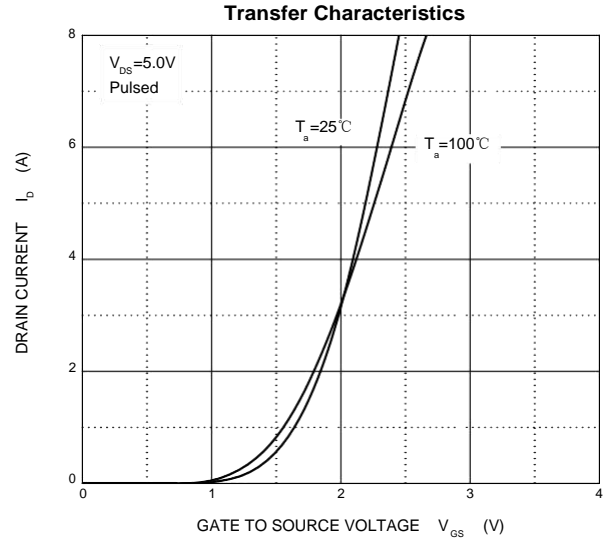
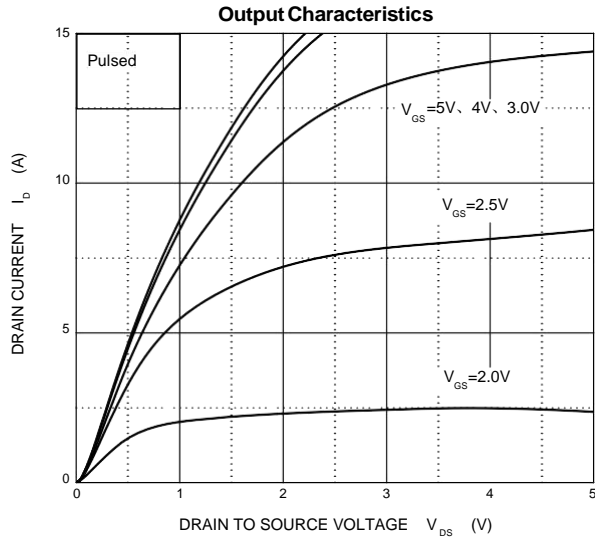
T_a=25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	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} = ±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage (note 3)	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.5		2	V
Drain-source on-resistance (note 3)	R _{DS(on)}	V _{GS} = 10V, I _D = 3A		82	105	mΩ
		V _{GS} = 4.5V, I _D = 3A		91	125	mΩ
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} = 1Ω		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 = 3A		6		nC
Gate-Source Charge	Q _{gs}			1		nC
Gate-Drain Charge	Q _{gd}			1.3		nC

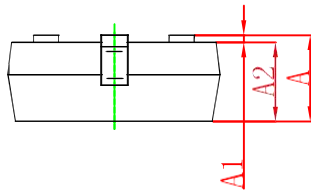
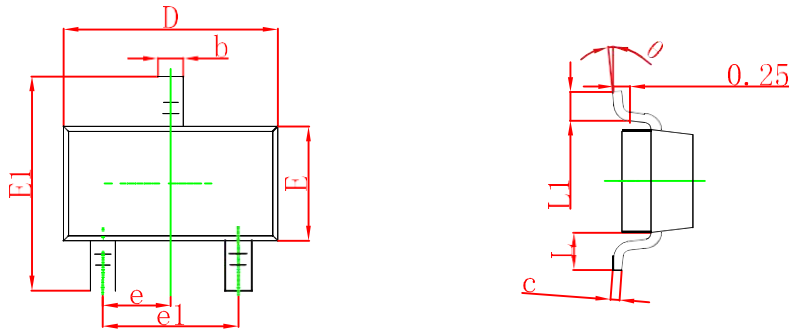
Notes :

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

Typical Characteristics

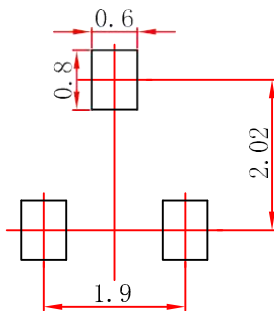


SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

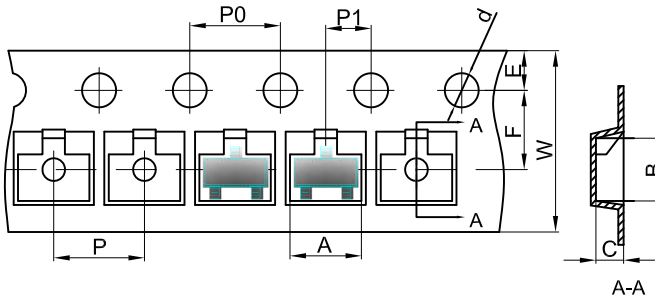
SOT-23 Suggested Pad Layout



Note:
 1. Controlling dimension: In millimeters.
 2. General tolerance: ±0.05mm.
 3. The pad layout is for reference purposes only.

SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

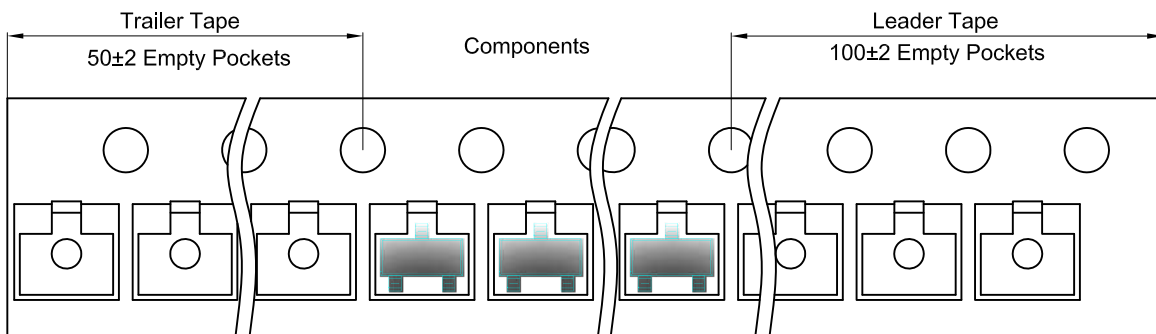


Packaging Description:

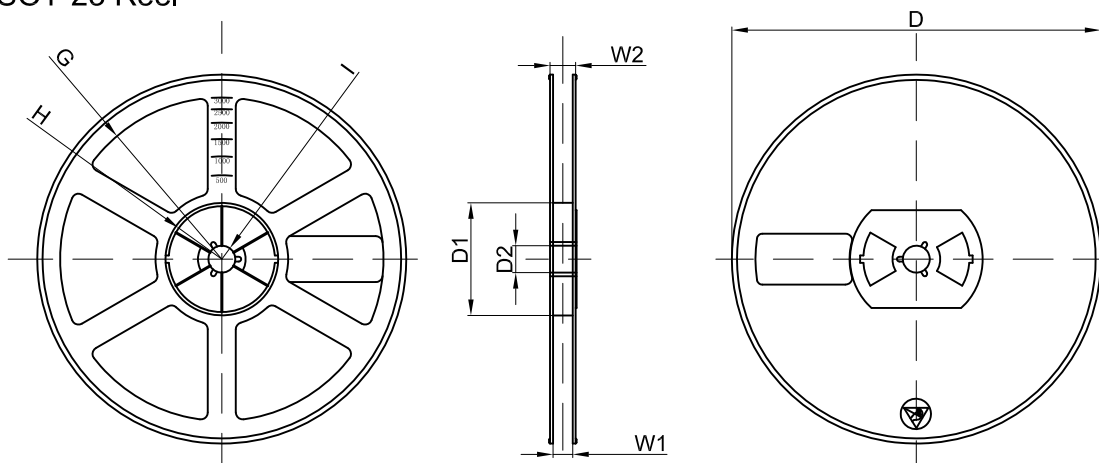
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter									
Reel Option	D	D1	D2	G	H	I	W1	W2	
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30	
REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)			
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220				