BSS123

N-Channel Enhancement Mode MOSFET

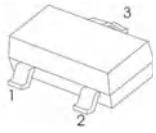
V_{DSS}	100 V
I_D	0.17 A
$R_{DS(ON)}$	10.0 Ω

FEATURES

* High density cell design for low $R_{DS(ON)}$
* Voltage controlled small signal switch
* Rugged and reliable
* High saturation current capability

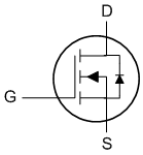
SAW

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
N-MOSFET			
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (note 1)	I_D	0.17	A
Pulsed Drain Current (tp=10us)	I_{DM}	0.68	A
Continous Source-Drain Diode Current	I_S	0.17	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~+150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10 s)	T_L	260	℃

T_a=25℃ 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	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V,V_{GS} = 0V			1	μA
		V_{DS} =20V,V_{GS} = 0V			10	nA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±50	nA
Gate threshold voltage (note 2)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1		2.8	V
Drain-source on-resistance(note 2)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =0.17A			10	Ω
		V_{GS} =10V, I_D =0.17A			6	Ω
Forward tranconductance(note 2)	g_{FS}	V_{DS} =10V, I_D =170mA	80			mS
Diode forward voltage	V_{SD}	I_S=340mA, V_{GS} = 0V			1.3	V
DYNAMIC CHARACTERISTICS (note 4)						
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		29	60	pF
Output Capacitance	C_{oss}			10	15	pF
Reverse Transfer Capacitance	C_{rss}			2	6	pF
SWITCHING CHARACTERISTICS (note 3,4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=30V, I_D=2.8A,R_{GEN}=50Ω			8	ns
Turn-on rise time	t_r				8	ns
Turn-off delay time	$t_{d(off)}$				13	ns
Turn-off fall time	t_f				16	ns
Total Gate Charge	Q_g	V_{DS}=10V,I_D=0.22A, V_{GS}=10V		1.4	2	nC
Gate-Source Charge	Q_{gs}			0.15	0.25	nC
Gate-Drain Charge	Q_{gd}			0.2	0.4	nC

Notes :

1.Surface mounted on FR4 board using the minimum recommended pad size.

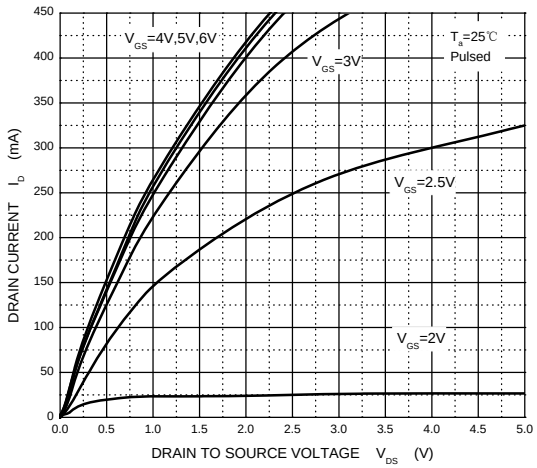
2. Pulse Test : Pulse width=300μs, duty cycle≤2%.

3. Switching characteristics are independent of operating junction temperature.

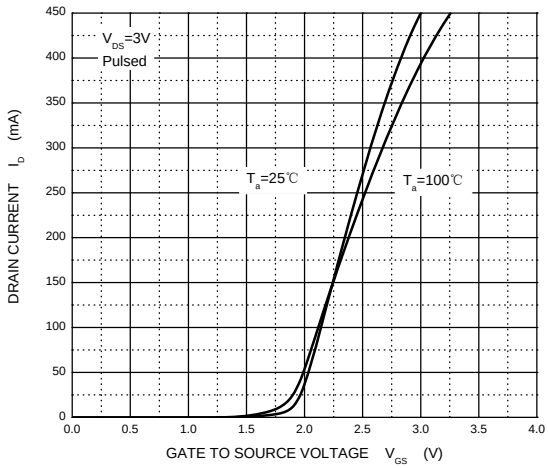
4. Graranted by design，not subject to producting.

RATING AND CHARACTERISTIC CURVES

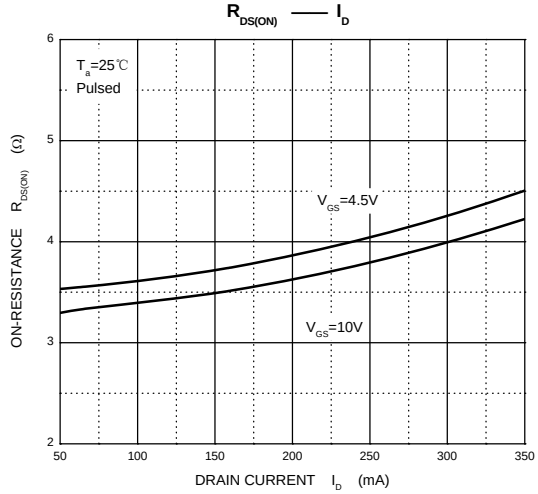
Output Characteristics



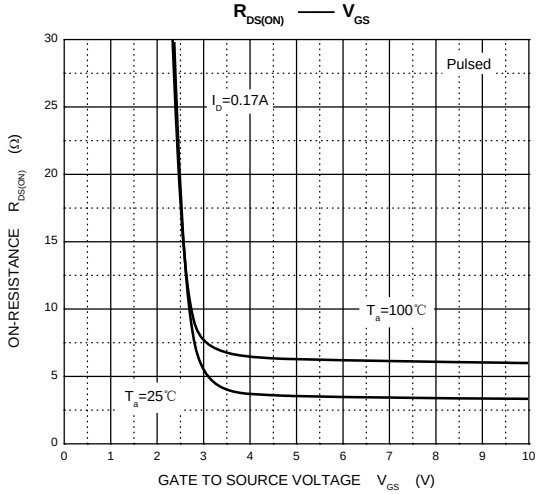
Transfer Characteristics



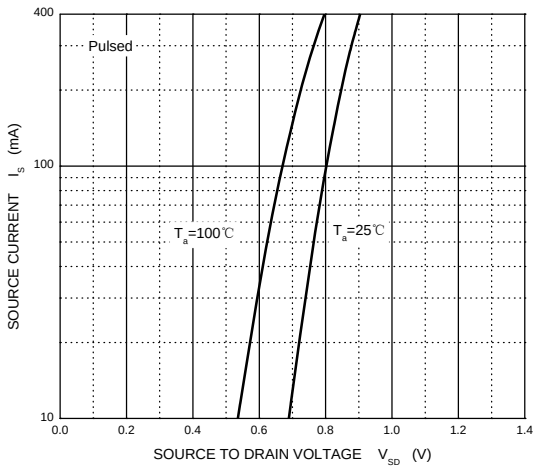
$R_{DS(ON)}$ —— I_D



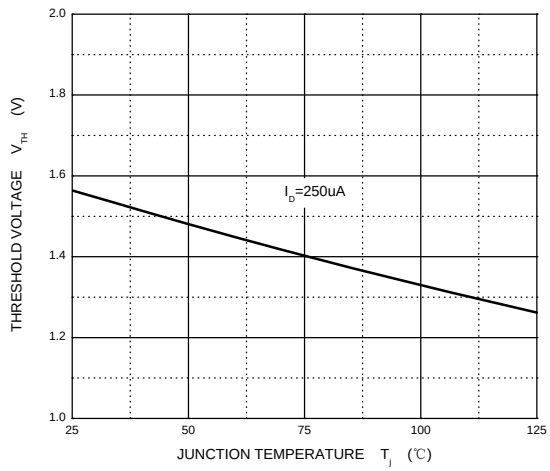
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



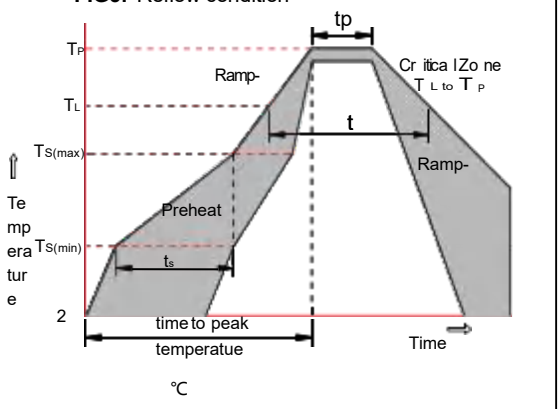
Threshold Voltage



Soldering parameters

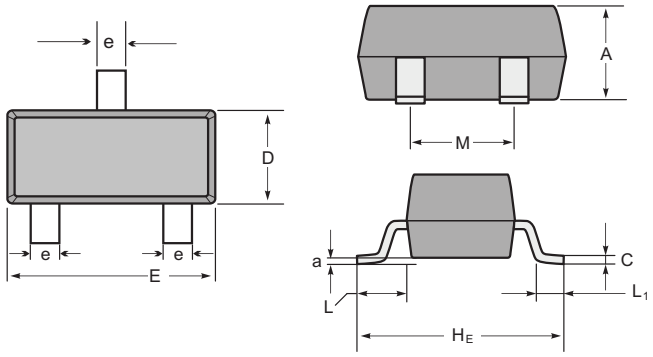
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

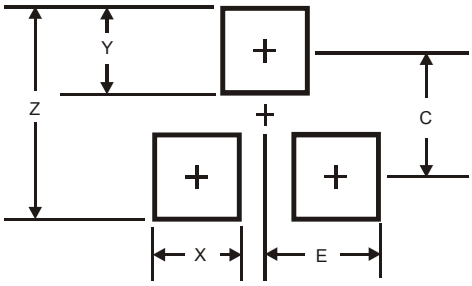
FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

SOT23





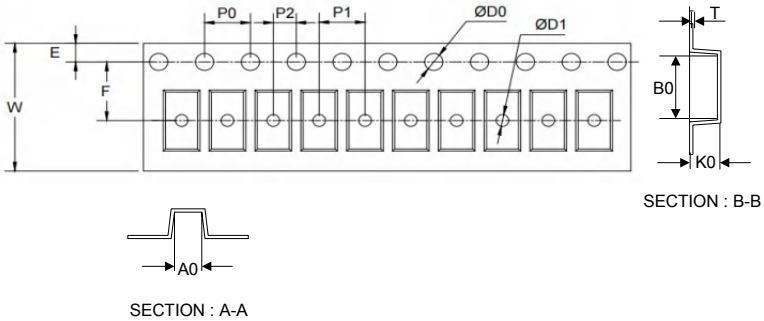
SOT-23 mechanical data

UNIT		A	C	D	E	H_E	e	M	L	L_1	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape & rell specification

Tape

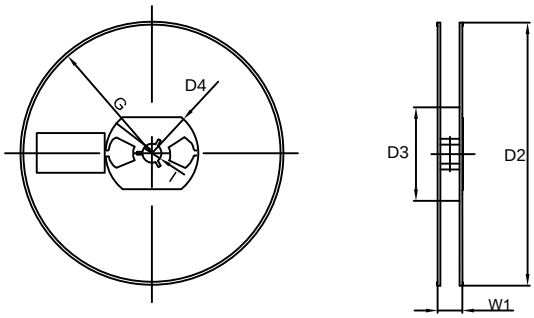


SECTION : B-B

SECTION : A-A

Symbol	Dimension (mm)
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	1.55±0.10
D1	1.05±0.10
E	1.55±0.10
F	3.60±0.10
W	8.00±0.10
A0	3.80±0.20
B0	3.25±0.20
K0	1.45±0.10
T	0.25±0.05

7” Reel



D2	178.0±3.0
D3	55Min.
D4	R24.0±3.0
G	R82.0±3.0
I	13.0±2.0
W1	11.0±3.0

Quantity: 3000PCS