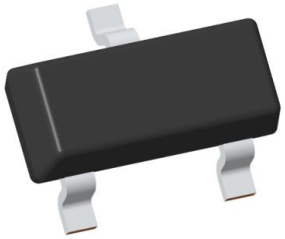
BSS123

100V N-Channel Enhancement

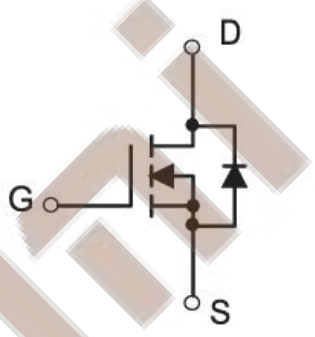
General Description

V_R	$R_{DSON\ MAX}$	I_D Max.
100V	6Ω@10V	0.17A
	10Ω@4.5V	



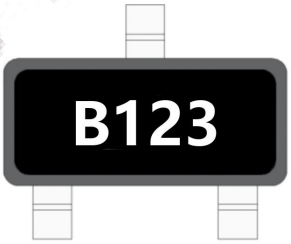
Features

- Surface Mount Package
- High Density Cell Design for Extremely Low RDS(ON)
- Voltage Controlled Small Signal Switch
- Rugged and Reliable



Mechanical Data

- SOT-23 Small Outline Plastic Package.
- Epoxy UL: 94V-0.
- Mounting Position: Any.



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
BSS123	SOT-23	B123	3000

Absolute Maximum Ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbols	Value	Units
Drain-Source Voltage	VDS	100	V
Gate-Source Voltage	VGS	±20	V
Continuous Drain Current (note1)	ID	0.17	A
Pulsed Drain Current (tp=10us)	IDM	0.68	A
Continous Source-Drain Diode Current	IS	0.17	A
Power Dissipation	PD	350	mW
Junction Temperature Range	Tj	-55-+150	℃
Storage Temperature Range	Tstg	-55-+150	℃
Thermal Resistance From Junction to Ambient (note1)	RθJA	357	℃/W

Electrical Characteristics (Ta=25℃,unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V(BR)DSS	VGS=0V, ID=250uA	100			V
Gate-Threshold voltage (note2)	VGS (th)	VDS=VGS, ID=250uA	1	1.6	2	V
Gate-body Leakage	IGSS	VDS=0V, VGS=±20V			±50	nA
Zero Gate Voltage Drain current	IDSS	VDS=100V, VGS=0V			1	uA
		VDS=20V, VGS=0V			10	nA
Drain-Source On-Resistance (note2)	RDS(ON)	VGS=10V, ID=0.17A		3.8	10	Ω
		VGS=4.5V, IC=0.17A		3.5	6	
Diode forward voltage	VSD	IS=0.34A, VGS=0V			1.3	V
Forward tranconductance (note 2)	gfs	VDS=10V, ID=170mA	80			ms
Dynamic(note4)						
Input capacitance	Ciss	VDS=25V, VGS=0V, f=1MHz		29	60	pF
Output capacitance	Coss			10	15	
Reverse Transfer capacitance	Crss			2	6	
Switching(note3,4)						
Turn-on Time	td(on)	VDD=30V, RGEN=50Ω, VGS=10V, ID=0.28A,			8	ns
Rise time	tr				8	
Turn-off Time	td(off)				13	
Fall time	tf				16	
Total Gage Charge	Qg	VDS=10V, VGS=10V, ID=0.22A,		1.4	2	nC
Gate-Source Charge	Qgs			0.15	0.25	
Gate-Drain Charge	Qgd			0.2	0.4	

Notes:

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

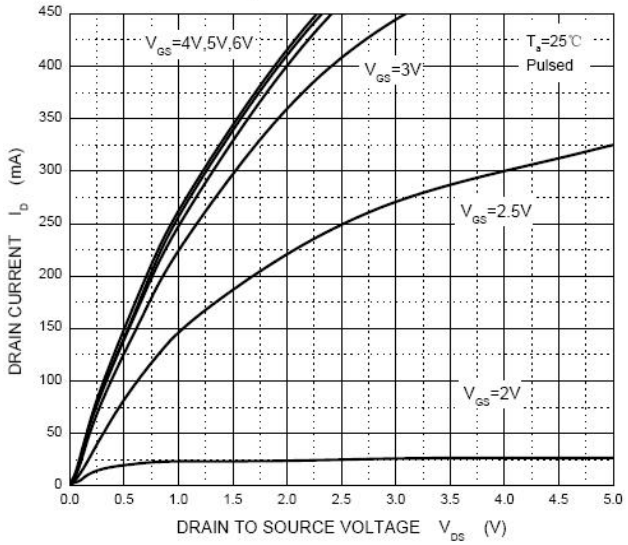
2). Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%.

3). Switching characteristics are independent of operating junction temperature.

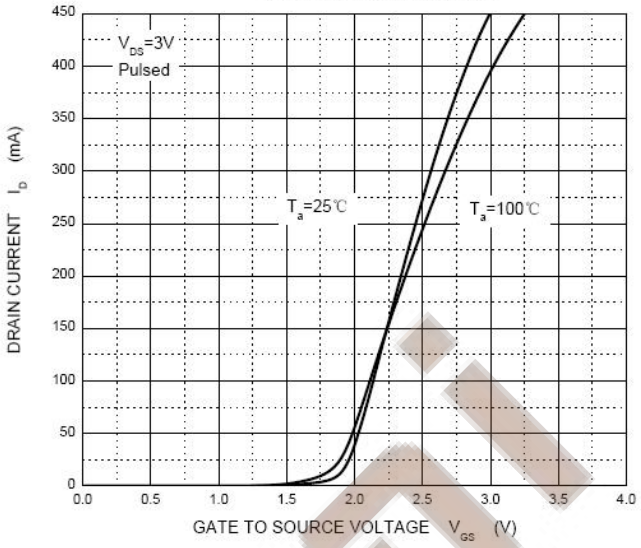
4). Graranted by design, not subject to producting..

Typical Characteristics

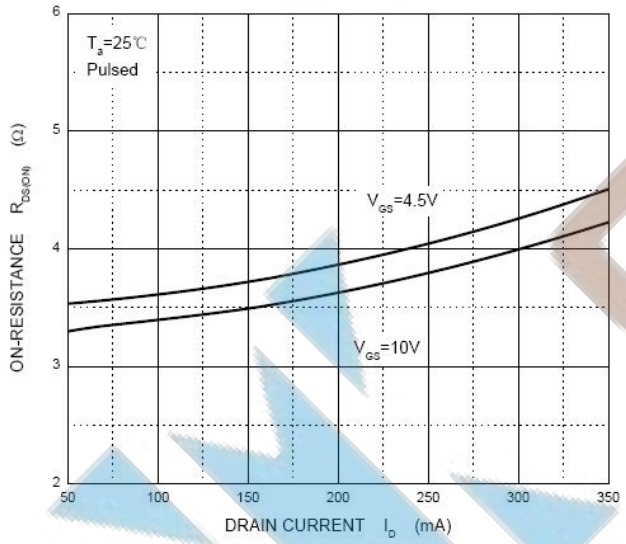
Output Characteristics



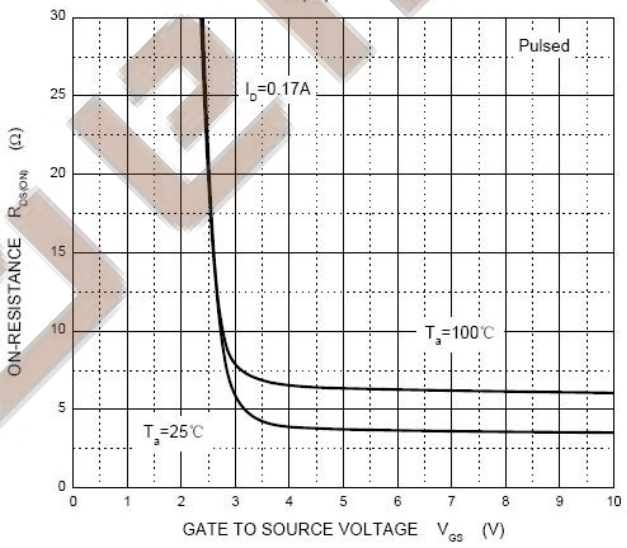
Transfer Characteristics



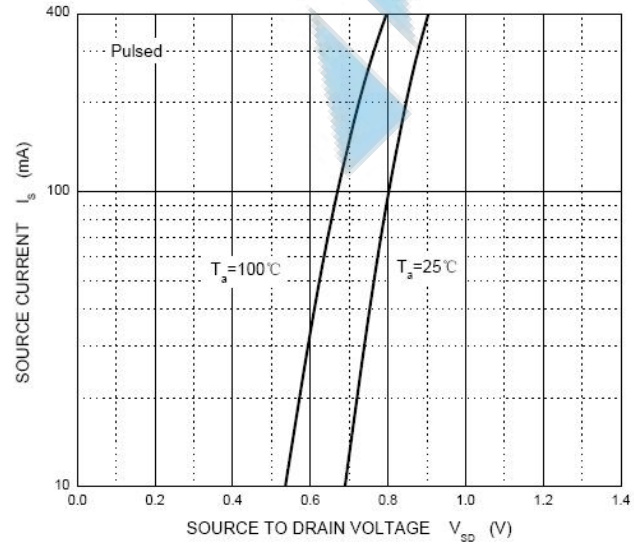
$R_{DS(ON)}$ — I_D



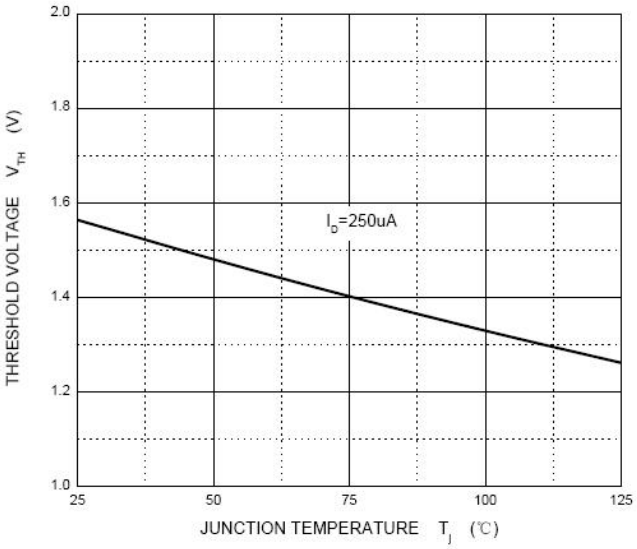
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

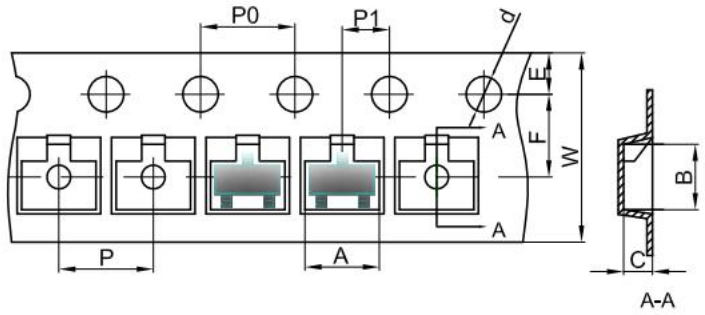


Threshold Voltage

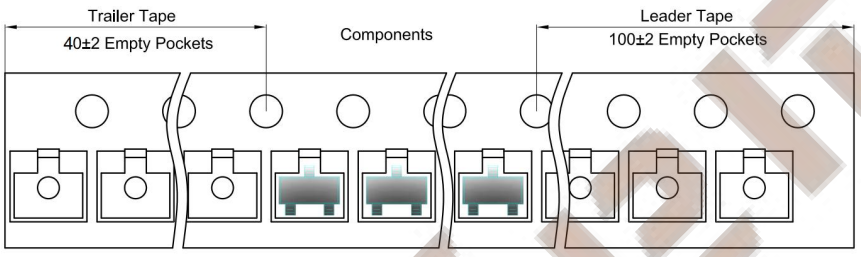


Package Information

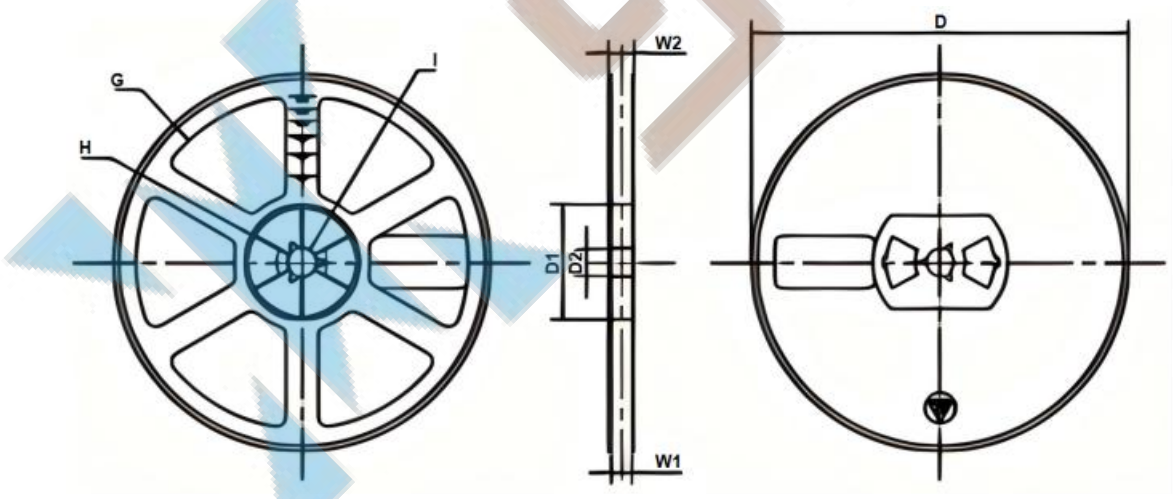
Carrier Dimension(mm)



Dimensions are in millimeter											
Pkg Type	A	B	C	d	E	F	P0	P	P1	10*P0	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	40.00	8.00
(Tolerance)	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.2	±0.1



Reel Dimension(mm)



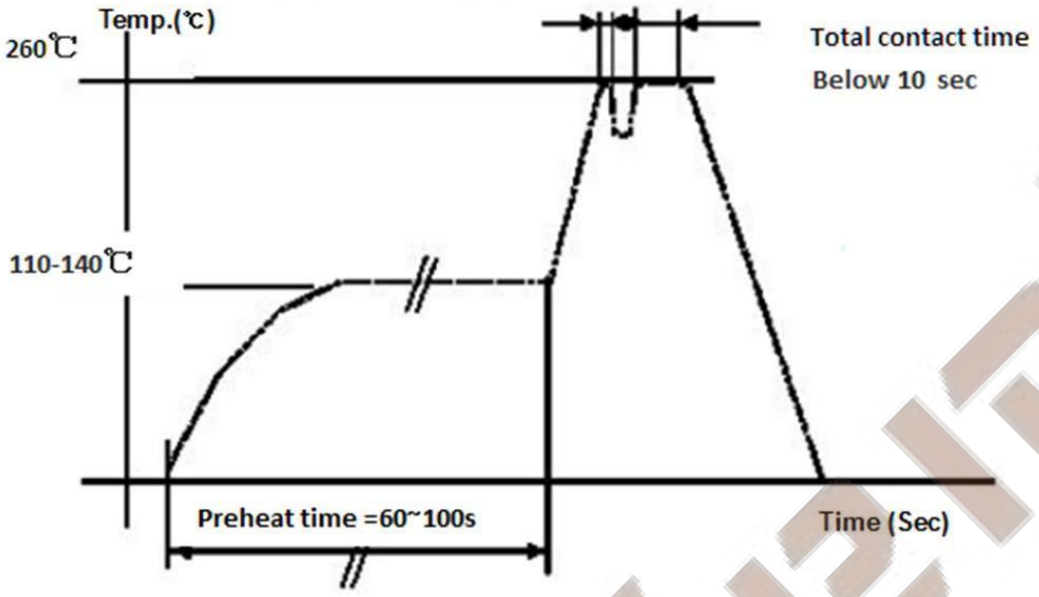
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Φ178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30
Tolerance	±2	±1	±1	±1	±1	±1	±1	±1

Package Specifications

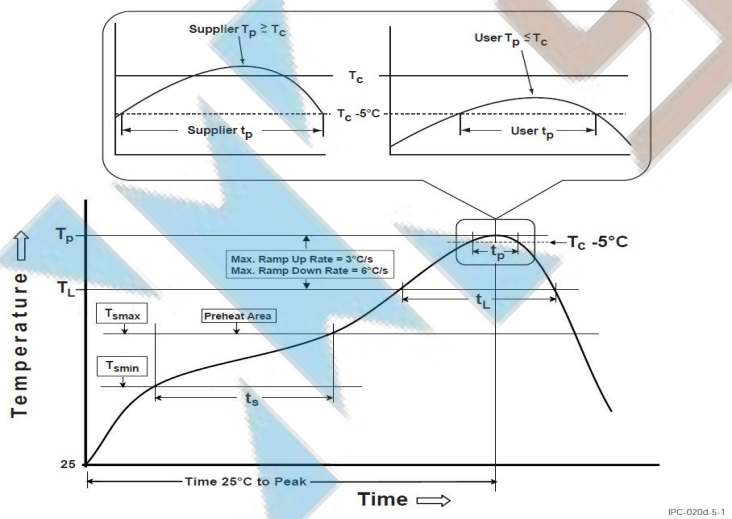
Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (Kpcs)	Box Size (mm)	QTY/Box (Kpcs)	Carton Size (mm)	Q'TY/Carton (Kpcs)
SOT23	7'	178	3	210*208*203	45	440*400*230	180

Recommended Soldering Profile for Rectifier Diodes (Pb Free)

a) Wave Soldering Profile



b) Reflow Soldering Profile (Pb Free Application), refer to IPC/JEDEC J-STD-020

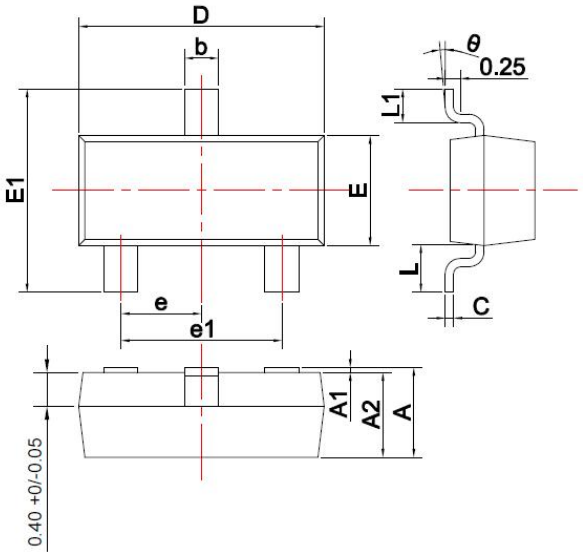


Preheat/Soak Temperature Min (Tsmin) Temperature Max (Tsmax) Time (ts) from (Tsmin to Tsmax)	50 °C 200 °C 60-120 seconds
Melting Point of Solder (Sn Ag Cu)	217℃
Ramp-up Rate to 217℃(Melting Point of Solder)	3℃/sec
Time at Temp.>217℃ (Melting Point of Solder)	60~150 Sec
Peak Temperature	255±5℃
Time within 5℃below Peak Temp.	20~40 Sec
Cooling Rate	6℃/sec (max)
Time from 25℃ to Peak Temp.	8min (max)

c) Manual Soldering

When using an electric soldering iron for manual soldering, it is recommended that the temperature does not exceed 300°C and the soldering time is less than 10 seconds.

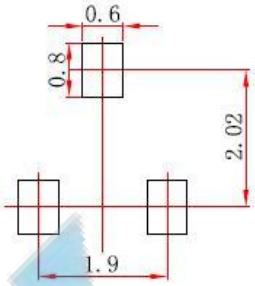
Package Mechanical Data



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

Suggested Pad Layout



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

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