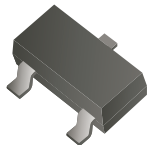


BSS138-HF

N-Channel
RoHS Device
Halogen Free



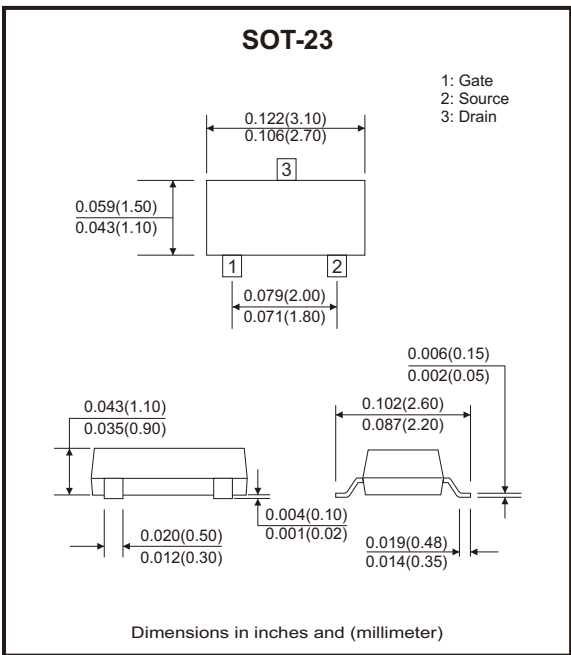
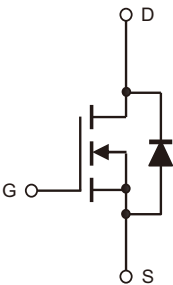
Features

- Low on-resistance.
- Low gate threshold voltage.
- Low input capacitance.
- Fast switching speed.
- Low input/output leakage.

Mechanical data

- Case: SOT-23, molded plastic.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-source voltage	V_{DS}	50	V
Drain-gate voltage $R_{GS} \leq 20K\Omega$	V_{DGR}	50	V
Gate-source voltage	V_{GSS}	± 20	V
Drain current-continuous	I_D	200	mA
Power dissipation	P_D	300	mW
Thermal resistance, junction to ambient	$R_{\theta JA}$	417	$^{\circ}C/W$
Junction and storage temperature	T_J, T_{STG}	-55 to +150	$^{\circ}C$

Electrical Characteristics (at Ta=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Gate leakage current	$V_{GS} = \pm 20V, V_{DS} = 0V$	I_{GSS}			± 1	μA
Drain-source breakdown voltage	$V_{GS} = 0V, I_D = 250\mu A$	$V_{(BR)DSS}$	50	75		V
Gate threshold voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(th)}$	0.5	1.2	1.6	V
Zero gate voltage drain current	$V_{DS} = 50V, V_{GS} = 0V$	I_{DSS}			0.5	μA
Drain-source on-state resistance	$I_D = 0.22A, V_{GS} = 10V$	$R_{DS(on)}$		1.4	3.5	Ω
Forward transfer admittance	$V_{DS} = 25V, I_D = 0.2A, f = 1MHz$	g_{FS}	100			mS
Input capacitance	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	C_{iss}			50	pF
Output capacitance		C_{oss}			25	
Reverse transfer capacitance		C_{rss}			8	
Turn-on delay time	$V_{DD} = 30V, I_D = 0.2A, R_{GEN} = 50\Omega$	$t_{D(on)}$			20	ns
Turn-off delay time		$t_{D(off)}$			20	

Rating and Characteristic Curves (BSS138-HF)

Fig.1 - Drain-Source Current vs.
Drain-Source Voltage

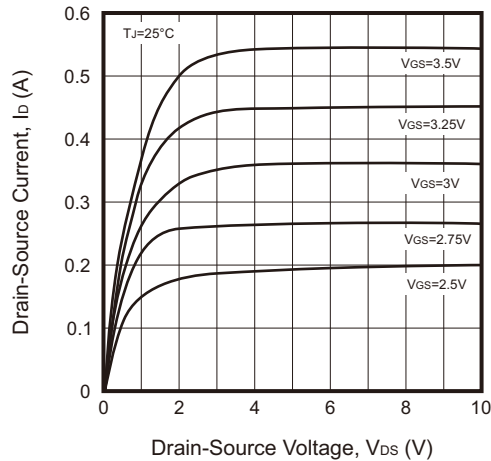


Fig.2 - Transfer Characteristics

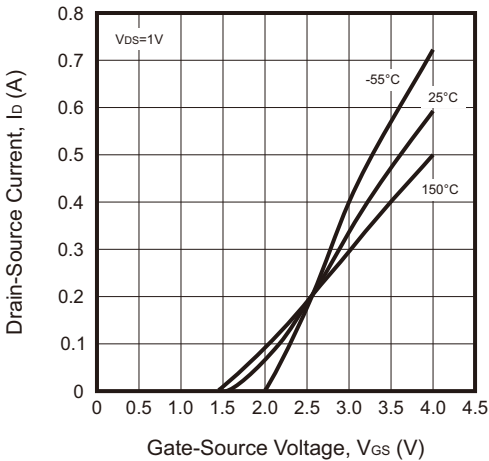


Fig.3 - Body Diode Current vs.
Body Diode Voltage

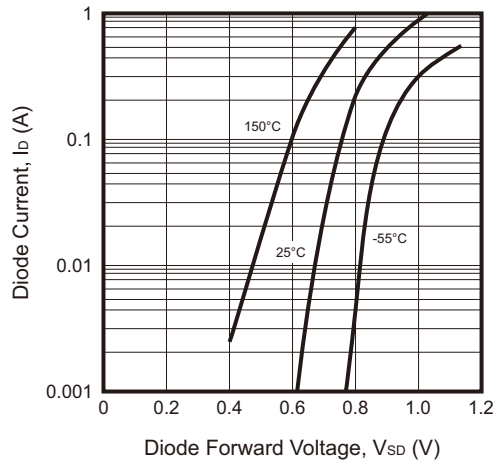
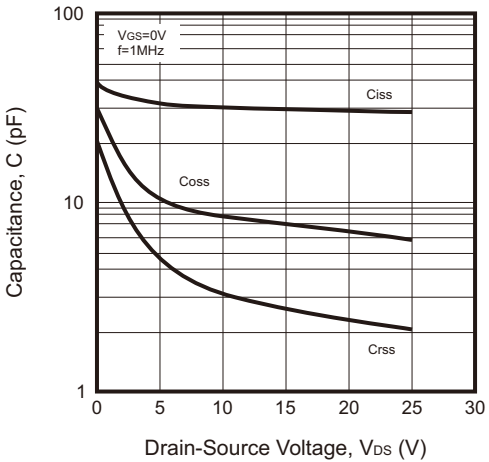
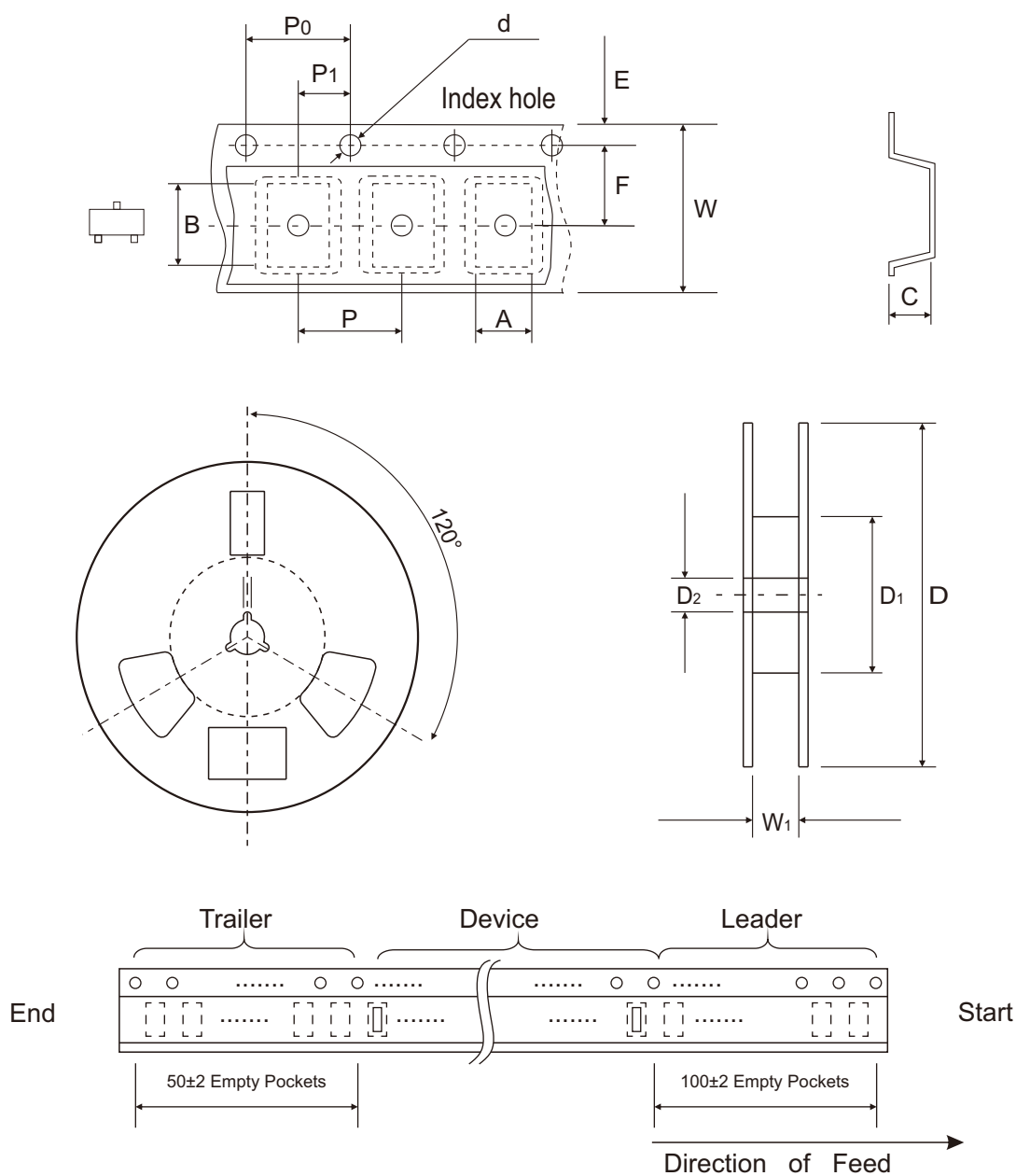


Fig.4 - Capacitance vs.
Drain-Source Voltage



Reel Taping Specification



SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178.00 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

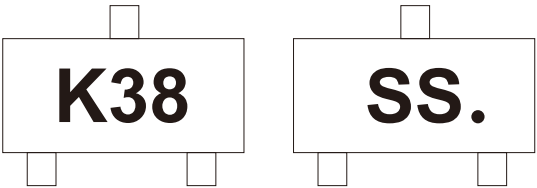
SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	$8.00 + 0.30 - 0.10$	9.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	$0.315 + 0.012 - 0.004$	0.374 ± 0.039

Company reserves the right to improve product design , functions and reliability without notice.

REV:A

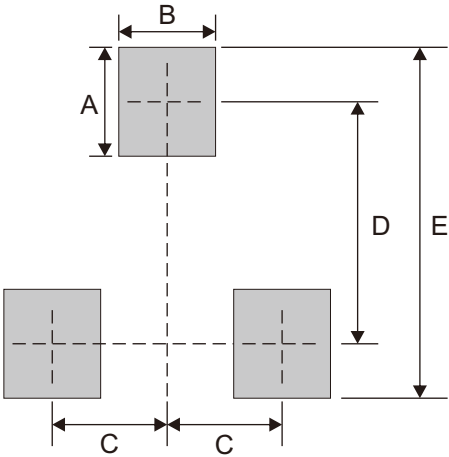
Marking Code

Part Number	Marking Code	
	K38	SS.
BSS138-HF	K38	SS.



Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079
E	2.90	0.114



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7