

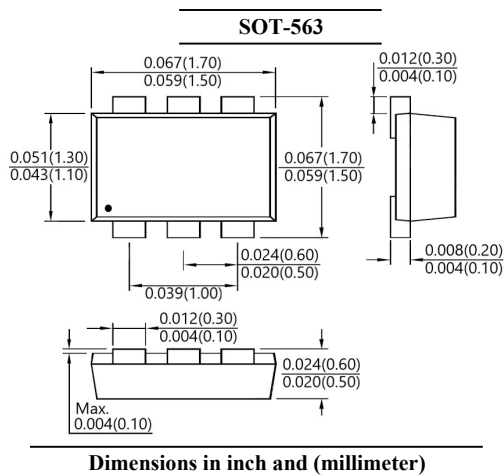
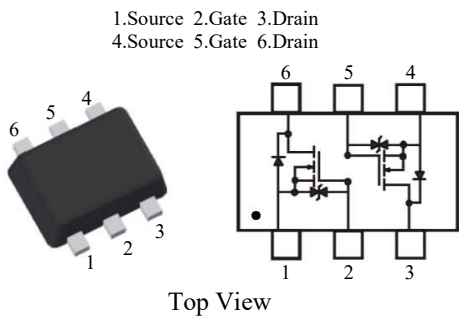


BSS138LVGSKDTH

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- Low on resistance $R_{DS(ON)}$
- Low gate threshold voltage
- Low input capacitance
- Suffix "H" indicates Halogen-free parts, ex. BSS138LVGSKDTH



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Continuous)	I_D	350	mA
Peak Drain Current	I_{DM}	1.2	A
Total Power Dissipation	P_{tot}	223	mW
Thermal Resistance from Junction to Ambient (Note 1)	$R_{\theta JA}$	560	$^\circ\text{C} / \text{W}$
Operating and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^\circ\text{C}$

Note :

1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



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Electrical Characteristics ($T_A=25\text{ }^\circ\text{C}$ unless otherwise specified)

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	$I_D=250\mu\text{A}$	BV_{DSS}	60	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=48\text{V}$	I_{DSS}	-	-	1	μA
Gate Source Leakage Current	$V_{GS}=\pm 20\text{V}$	I_{GSS}	-	-	± 10	μA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	$V_{GS(th)}$	0.5	-	1.0	V
Static Drain Source On-Resistance	$V_{GS}=10\text{V}, I_D=500\text{mA}$	$R_{DS(ON)}$	-	-	1.6	Ω
	$V_{GS}=4.5\text{V}, I_D=200\text{mA}$		-	-	2.5	
	$V_{GS}=2.5\text{V}, I_D=100\text{mA}$		-	-	4.5	
Dynamic						
Total Gate Charge	$V_{DS}=25\text{V}, I_D=1\text{A}, V_{GS}=10\text{V}$	Q_g	-	1.9	-	nC
Gate-Source Charge		Q_{gs}	-	0.5	-	
Gate-Drain Charge		Q_{gd}	-	0.2	-	
Input Capacitance	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$	C_{iss}	-	32.0	-	pF
Output Capacitance		C_{oss}	-	10.8	-	
Reverse Transfer Capacitance		C_{rss}	-	7.8	-	
Turn-On Delay Time	$V_{GS}=10\text{V}, V_{DD}=25\text{V}, R_G=6\Omega, I_D=500\text{mA}$	t_{on}	-	2.2	-	ns
Turn-On Rise Time		t_r	-	19.2	-	
Turn-Off Delay Time		t_{off}	-	6.2	-	
Turn-Off Fall Time		t_f	-	23.0	-	
Drain-Source Body Diode						
Diode Forward Voltage	$V_{GS}=0\text{V}, I_S=500\text{mA}$	V_{SD}	-	-	1.5	V



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RATINGS AND CHARACTERISTIC CURVES

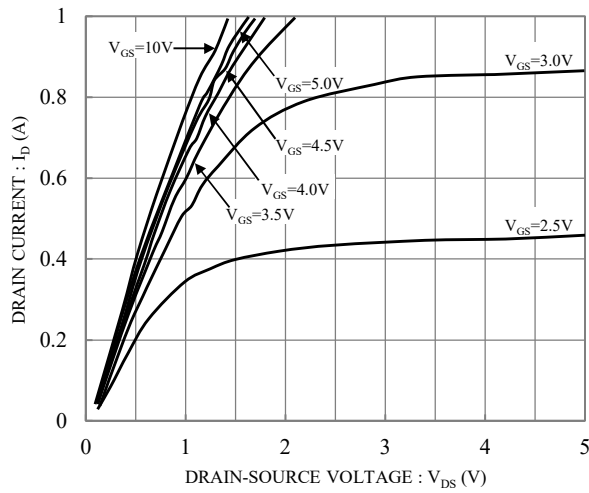


Fig.1 Typical output characteristics

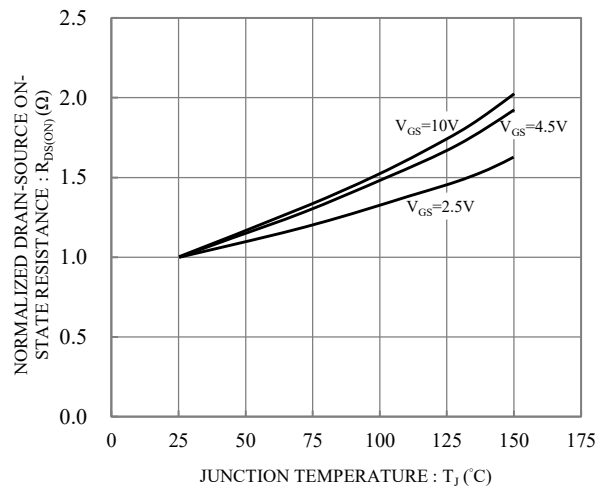


Fig.2 Drain-source on-state resistance vs. Junction temperature

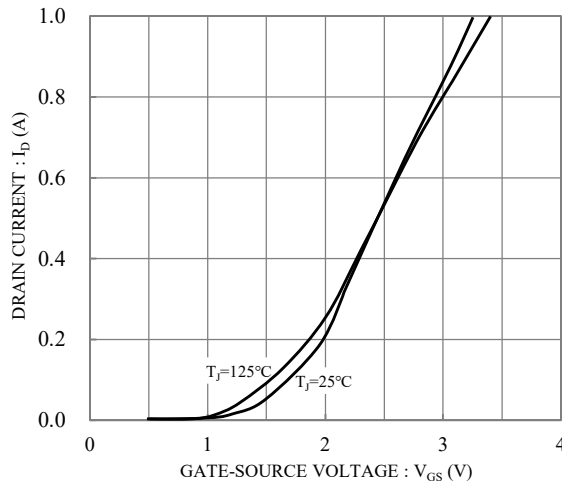


Fig.3 Drain current vs. Gate-source voltage

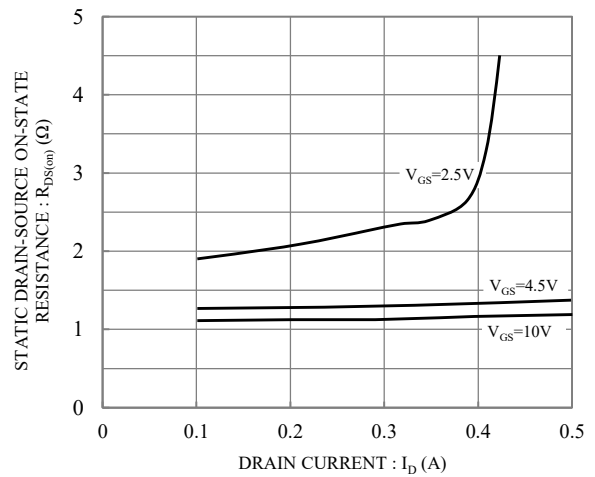


Fig.4 Static drain-source on-state resistance vs. Drain current

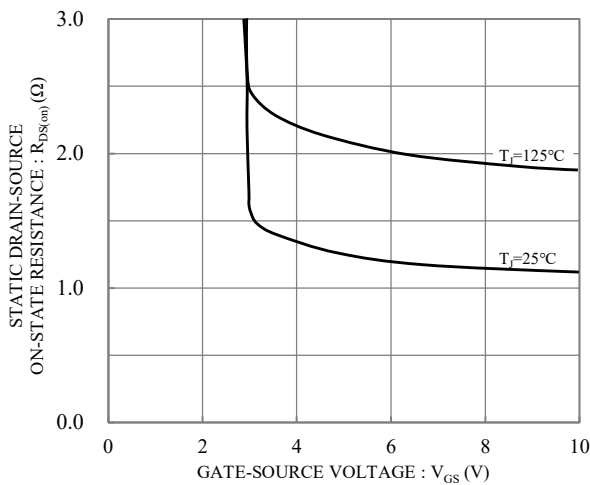


Fig.5 Static drain-source on-state resistance vs. Gate-source voltage

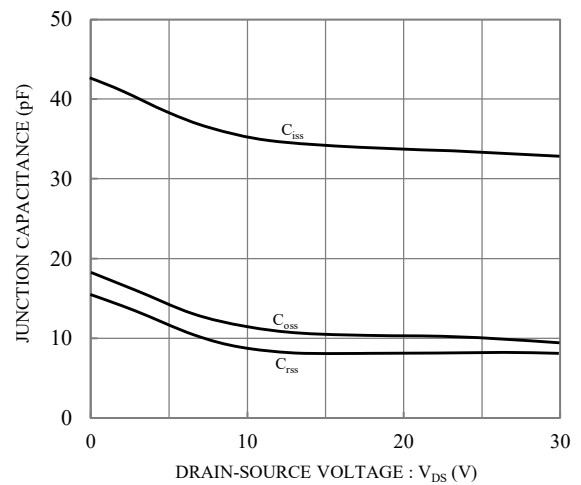


Fig.6 Typical Junction Capacitance



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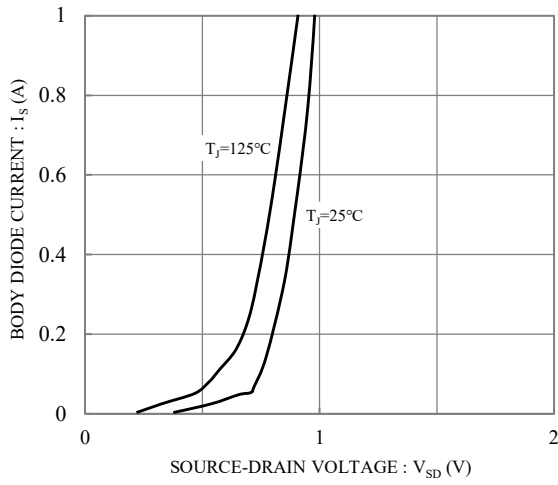


Fig.7 Body Diode Current vs Source-Drain Voltage

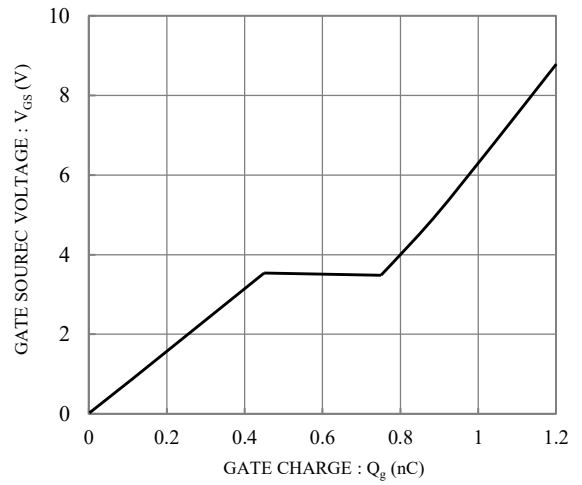


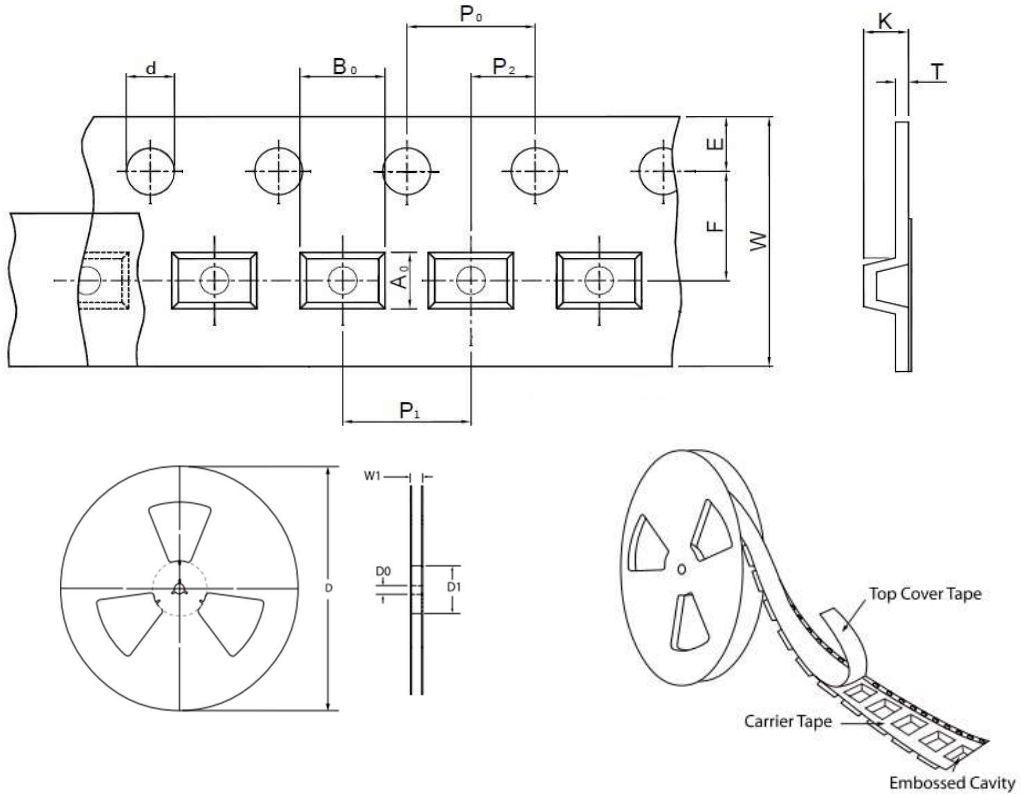
Fig.8 Gate Charge



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TAPE & REEL SPECIFICATION



Item	Symbol	SOT-563
Carrier width	A_0	1.80 ± 0.05
Carrier length	B_0	1.80 ± 0.05
Carrier depth	K	0.70 ± 0.05
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178.00 ± 2.00
Feed hole width	D_0	13.00 ± 0.50
Reel inner diameter	D_1	MIN. 50.00
Sprocket hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocket hole pitch	P_0	4.00 ± 0.10
Punch hole pitch	P_1	4.00 ± 0.10
Embossment center	P_2	2.00 ± 0.10
Overall tape thickness	T	0.60 ± 0.05
Tape width	W	8.00 ± 0.30
Reel width	W1	MAX. 14.50

ORDER INFORMATION

Part Number	Reel Size	Quantity
BSS138LVGSKDTH	7"	4,000

MARKING CODE

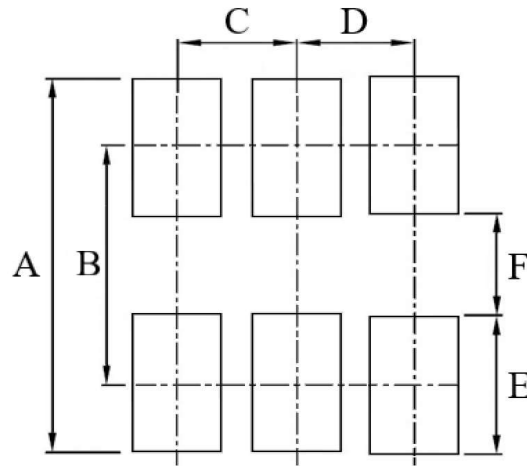
Part Number	Marking Code
BSS138LVGSKDTH	ME



BSS138LVGSKDTH

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SUGGESTED SOLDER PAD LAYOUT



Unit : mm

PACKAGE	A	B	C	D	E	F
SOT-563	2.30	1.45	0.50	0.50	0.85	0.60