

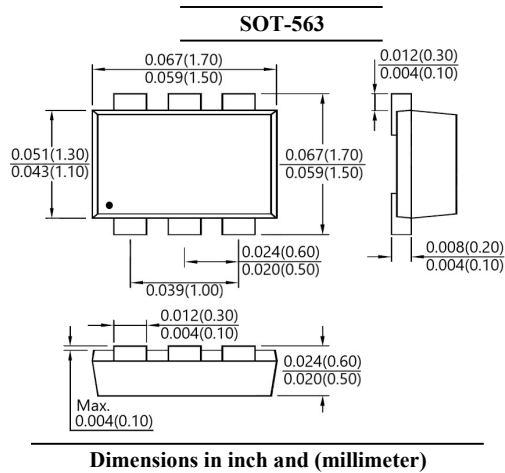
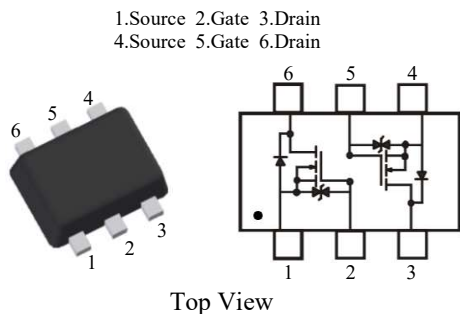


BSS138KDTH

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- Low on resistance $R_{DS(ON)}$
- Low gate threshold voltage
- Low input capacitance
- ESD protected up to 2kV
- Suffix "H" indicates Halogen-free parts, ex. BSS138KDTH



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	50	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. $R_{\theta JA}$ is the sum of the junction to case and case to ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. mounted on a 1 inch square pad of copper .

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

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Drain Source Breakdown Voltag	$I_D=250\mu\text{A}$	BV_{DSS}	50	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=50\text{V}$	I_{DSS}	-	-	1	μA
Gate Source Leakage Current	$V_{GS}=\pm 20\text{V}$	I_{GSS}	-	-	± 10	μA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	$V_{GS(th)}$	0.8	-	1.5	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	
Input Capacitance	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$	C_{iss}	-	25.0	-	pF
Output Capacitance		C_{oss}	-	9.5	-	
Reverse Transfer Capacitance		C_{rss}	-	2.1	-	
Turn-On Delay Time		t_{on}	-	2.2	-	
Turn-On Rise Time	$V_{GS}=10\text{V}, V_{DD}=25\text{V}, R_G=6\Omega,$ $I_D=500\text{mA}$	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



BSS138K DTH

N-Channel Enhancement Mode Field Effect Transistor

RATINGS AND CHARACTERISTIC CURVES

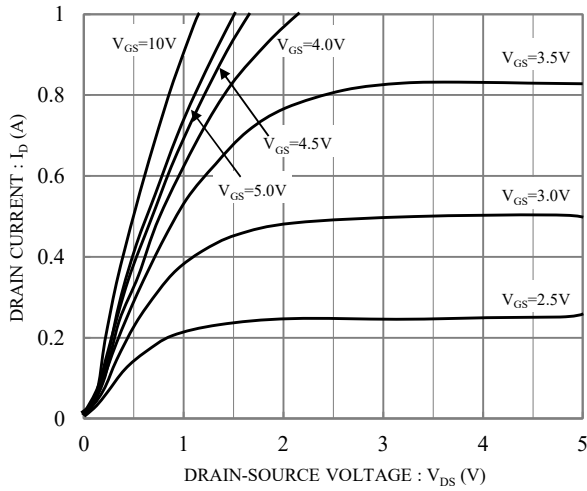


Fig.1 Typical output characteristics

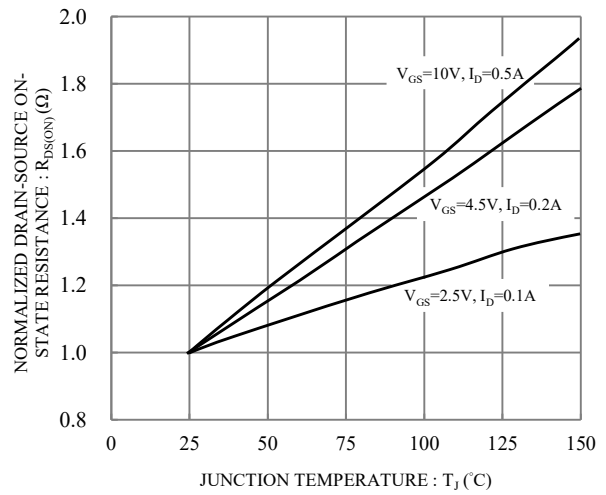


Fig.2 Drain-source on-state resistance vs. Junction temperature

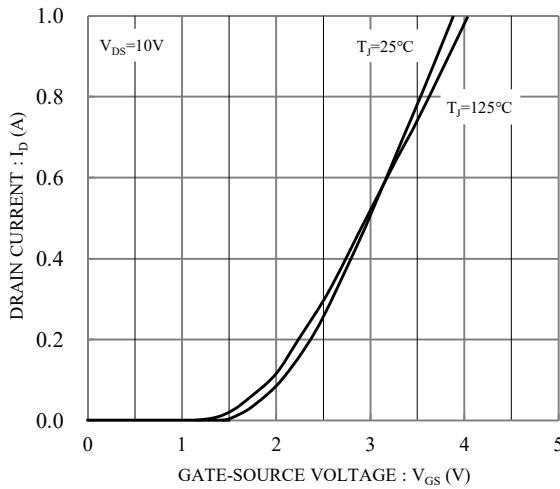


Fig.3 Drain current vs. Gate-source voltage

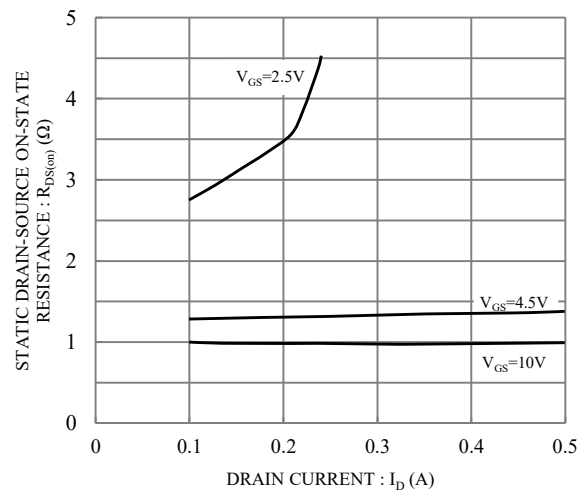


Fig.4 Static drain-source on-state resistance vs. Drain current

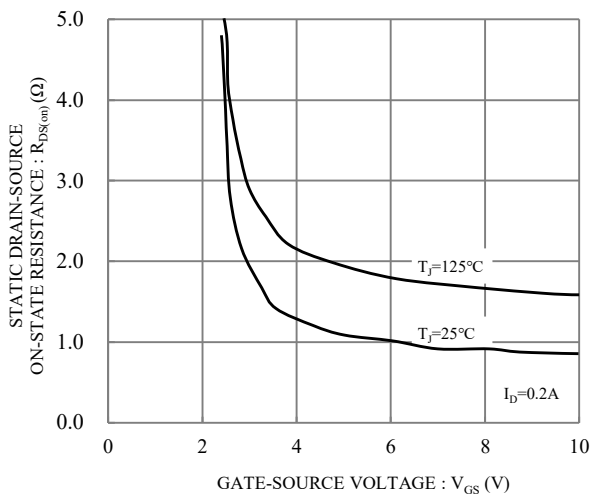


Fig.5 Static drain-source on-state resistance vs. Gate-source voltage

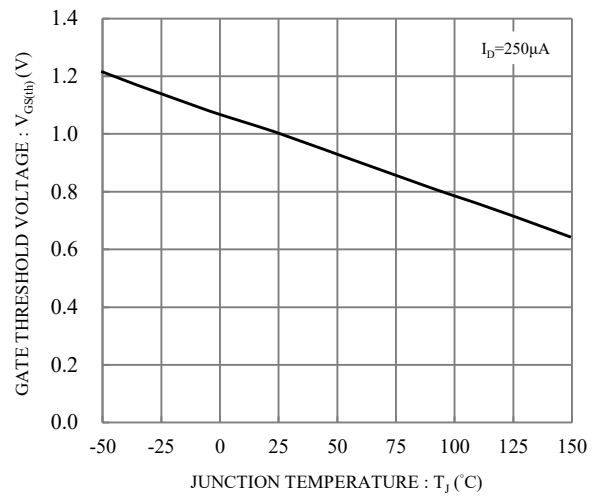


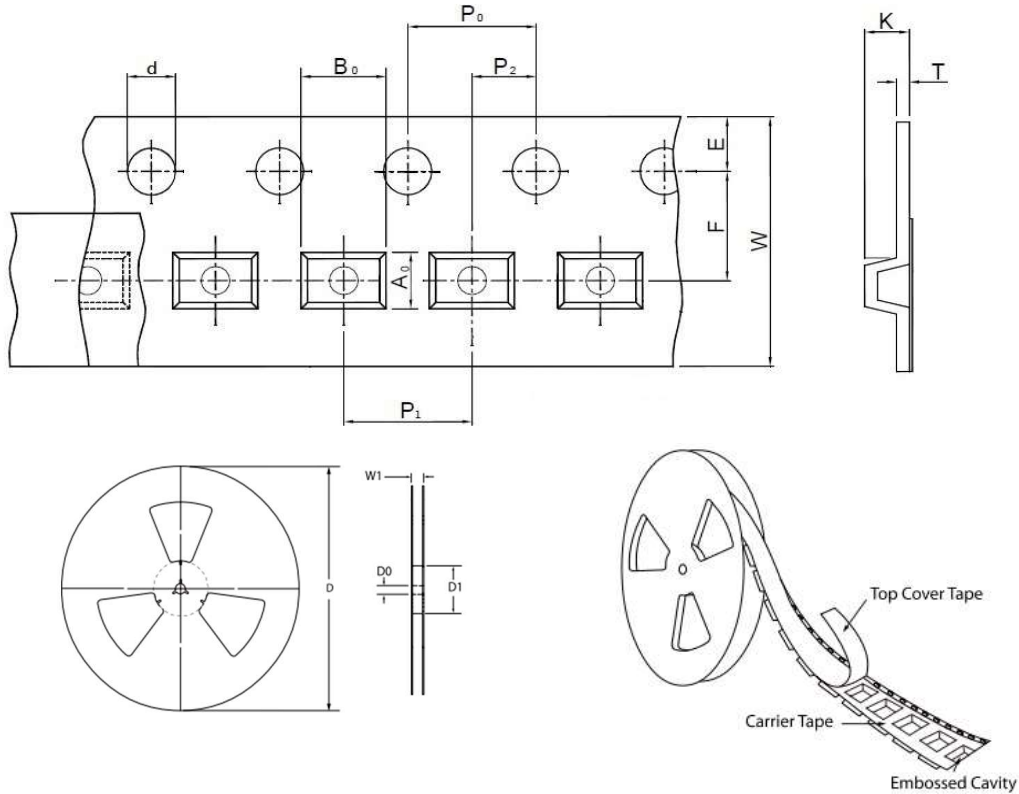
Fig.2 Gate threshold voltage vs. Junction temperature



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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
BSS138KDTH	7"	4,000

MARKING CODE

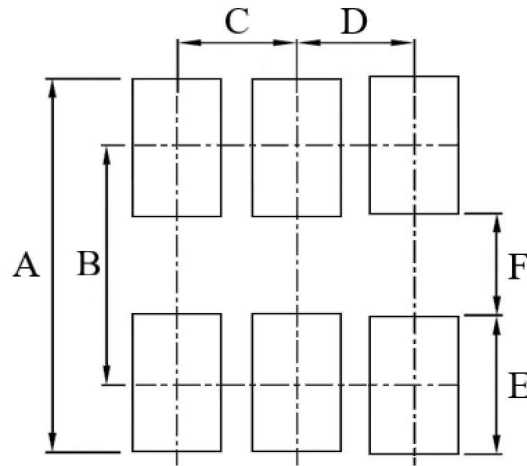
Part Number	Marking Code
BSS138KDTH	ME



BSS138KDTH

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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