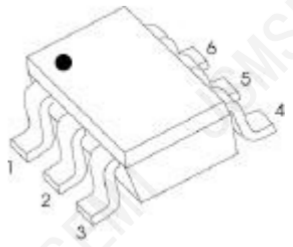
Description

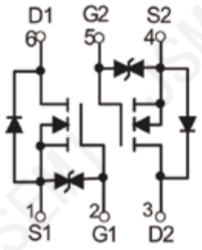
The BSS138PS is a dual N-channel enhanced MOS field-effect transistor. Uses advanced trenchtech-nology and design to provide excellent Ros(ow, with low gate charge. Device is suitable for use inDC-DC conversion, power switch and charging circuit.



SOT-363

General Features

High density cell design for extremely low RDS(on)
Rugged and Relaible



Equivalent Circuit

Applications

Direct Logic-Level Interface: TTL/CMOS
Battery Operated Systems
Solid-State Relays

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

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source voltage	50	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Drain Current-Continuous	0.3	A
P_D	Power Dissipation	150	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	833	℃/W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55~+150	℃

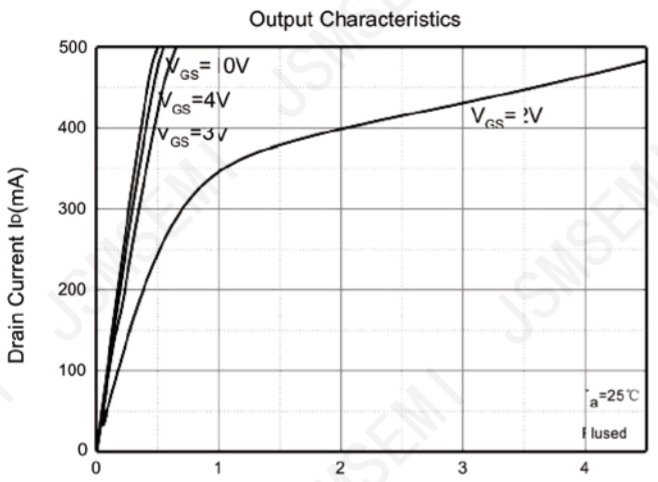
Electrical Characteristics (TA=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
STATIC CHARACTERISTICS						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	50	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=50V,V_{GS}= 0V	---	---	0.5	μA
I_{GSS}	Gate -Source leakage current	V_{GS}=±20V, V_{DS}=0V	---	---	0.5	μA
$V_{GS(th)}$	GateThreshold Voltage[1]	V_{DS}=V_{GS}, I_D=1mA	0.8	1.2	1.5	V
$R_{DS(on)}$	Drain-Source On-Resistance[1]	V_{GS}=10V, I_D=220mA	---	1.9	3.5	Ω
		V_{GS}=4.5V, I_D=220mA	---	2	6.0	
gfs	Forward Transconductance[1]	V_{DS}=10V, I_D=220mA	---	0.15	---	mS
DYNAMIC CHARACTERISTICS[2]						
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V,f=1MHz	---	26.5	---	pF
C_{oss}	Output Capacitance		---	12.9	---	
C_{rss}	Reverse Transfer Capacitance		---	5.9	---	
SWITCHING CHARACTERISTICS[1,2]						
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V,I_D=290mA, V_{GS}=10V,R_G=6Ω	---	---	5	ns
T_r	Rise Time		---	---	18	
$T_{d(off)}$	Turn-Off Delay Time		---	---	36	
T_f	Fall Time		---	---	14	
SOURCE–DRAIN DIODE CHARACTERISTICS[1]						
V_{DS}	Diode Forward voltage	I_S=440mA, V_{GS}= 0V	---	---	1.4	V

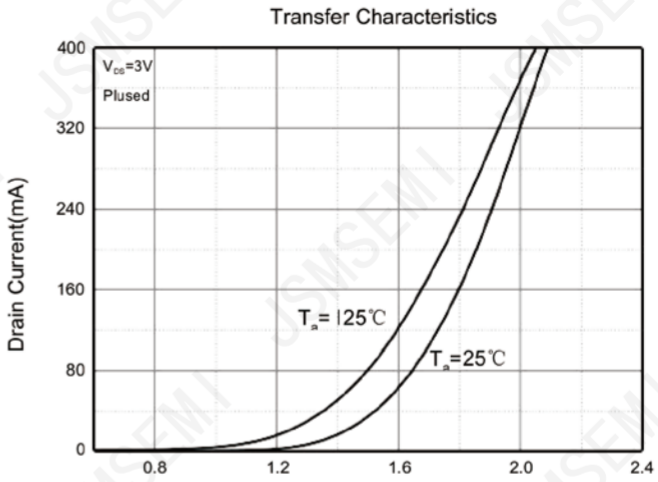
Notes:

1. Pulse Test ; Pulse Width ≤300μs, Duty Cycle ≤2%.
2. These parameters have no way to verify.

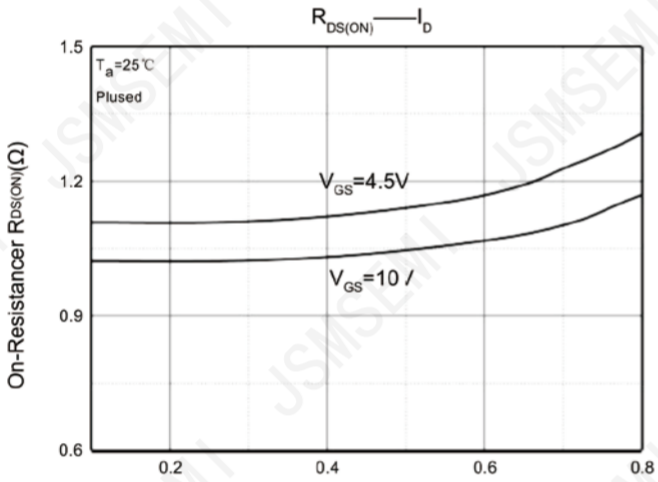
Typical Characteristics



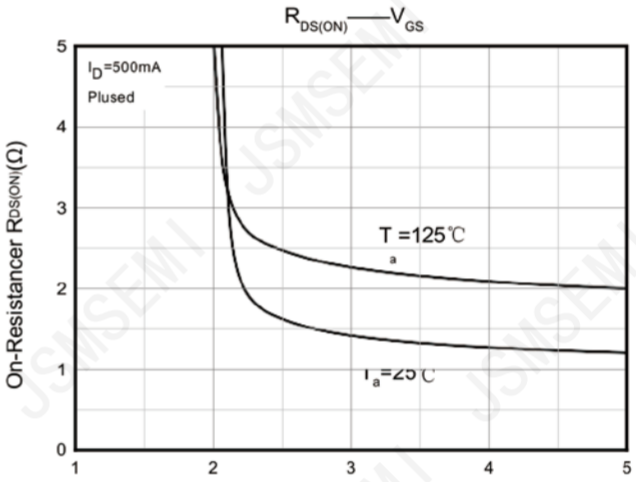
DRAIN TO SOURCE VOLTAGE VDS(V)



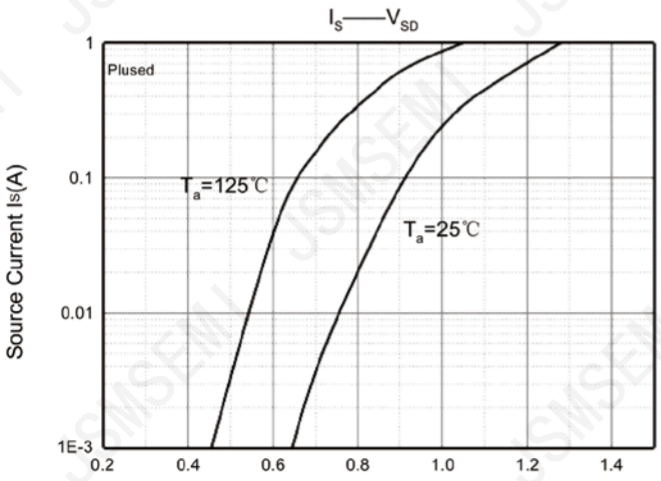
GATE TO SOURCE VOLTAGE VGS(V)



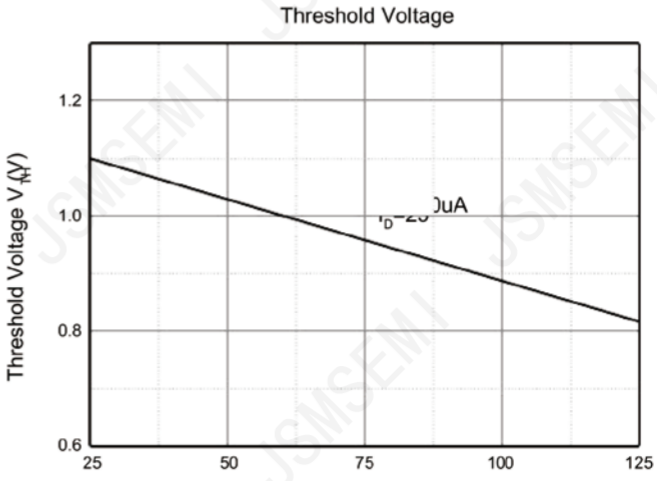
DRAIN CURRENT ID(A)



GATE TO SOURCE VOLTAGE VGS(V)

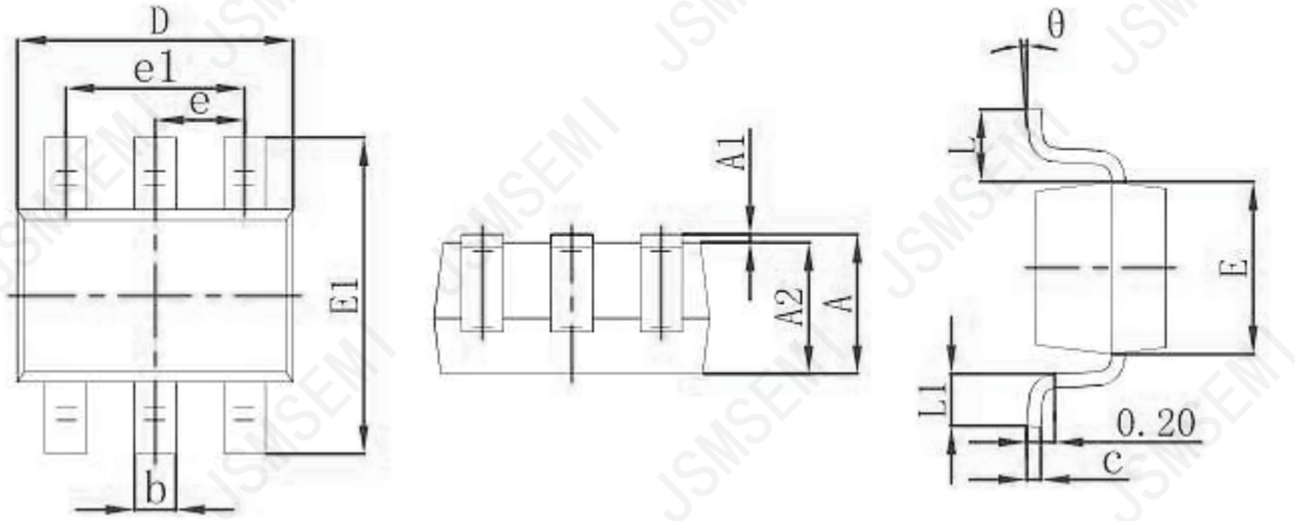


SOURCE TO DRAIN VOLTAGE VSD(V)



JUNCTION TEMPERATURE Tj(℃)

SOT-363 Package Outline Dimensions



Symbol	Dimensions in Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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