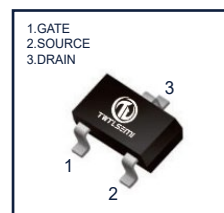


Description

The BSS138 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(on)}$, with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit.

General Features

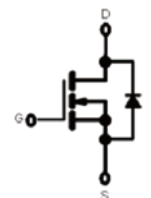
- High density cell design for extremely low $R_{DS(on)}$
- Rugged and Reliable



SOT23

Applications

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays



Equivalent Circuit

Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
BSS138	SOT23	BSS138 产品名称 product name	J1	3000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	50	V
V_{GS}	Continuous Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	0.34	A
I_{DM}	Pulsed Drain Current ($t_p=10\mu s$)	0.88	A
P_D	Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^{\circ}\text{C/W}$
T_J, T_{STG}	Operation Junction and Storage Temperature Range	$-55\sim+150$	$^{\circ}\text{C}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
V _{DS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250μA	50	---	---	V
I _{GSS}	Gate -Source leakage current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =50V,V _{GS} = 0V	---	---	0.5	μA
		V _{DS} =30V,V _{GS} = 0V	---	---	100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate-threshold voltage (note 1)	V _{DS} =V _{GS} , I _D =1mA	0.80	1.2	1.50	V
R _{DS(on)}	Drain-Source On-Resistance(note 1)	V _{GS} = 10V, I _D =0.34A	0.88	2	3.50	Ω
		V _{GS} = 4.5V, I _D =0.34A	---	1.50	6	
g _{FS}	Forward transconductance (note 1)	V _{DS} =10V, I _D =0.34A	0.12	---	---	S
Dynamic characteristics (note 2)						
C _{iss}	Input Capacitance	V _{DS} =25V,V _{GS} =0V,f=1MHz	---	27	---	pF
C _{oss}	Output Capacitance		---	13	---	
C _{rss}	Reverse Transfer Capacitance		---	6	---	
SWITCHING CHARACTERISTICS						
T _{d(on)}	Turn-on delay time (note 1,2)	V _{DD} =30V, V _{DS} =10V, I _D =0.29A,R _{GEN} =6Ω	---	---	5	ns
T _r	Rise time (note 1,2)		---	---	18	
T _{d(off)}	Turn-off delay time (note 1,2)		---	---	36	
T _f	Fall time (note 1,2)		---	---	14	
Drain-source body diode characteristics						
V _{SD}	Body diode forward voltage (note 1)	I _S =0.44A, V _{GS} = 0V	---	---	1.4	V

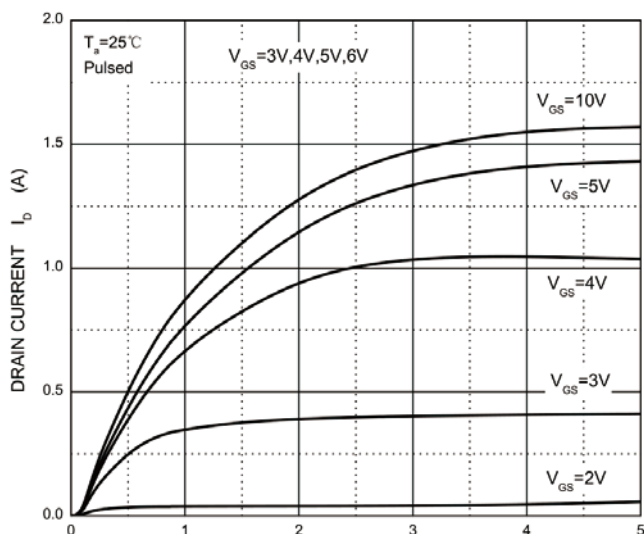
Notes:

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

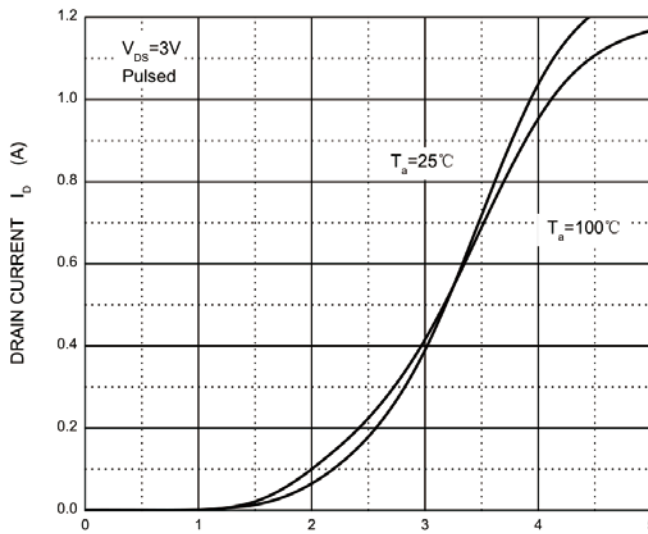
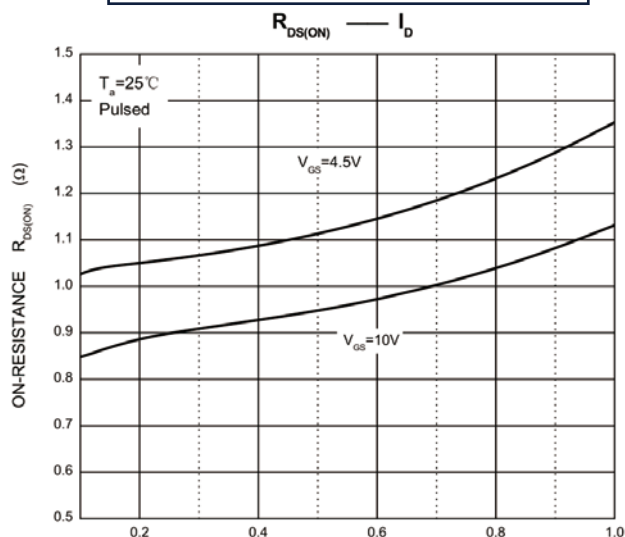
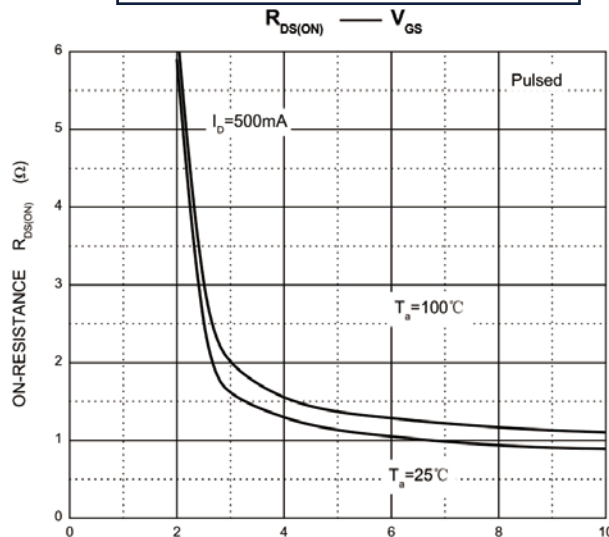
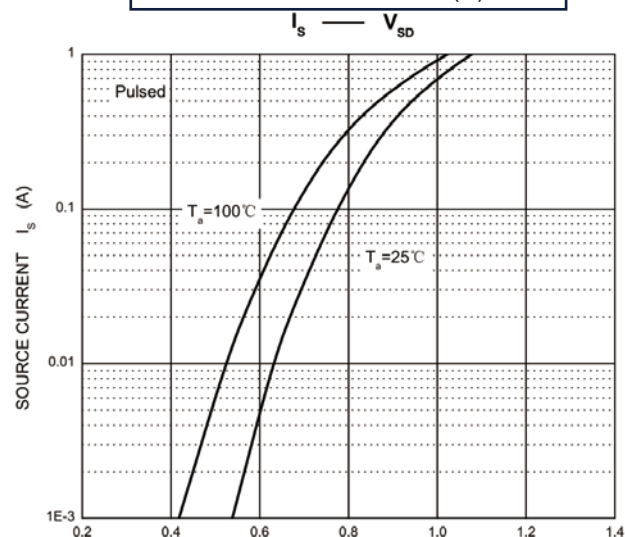
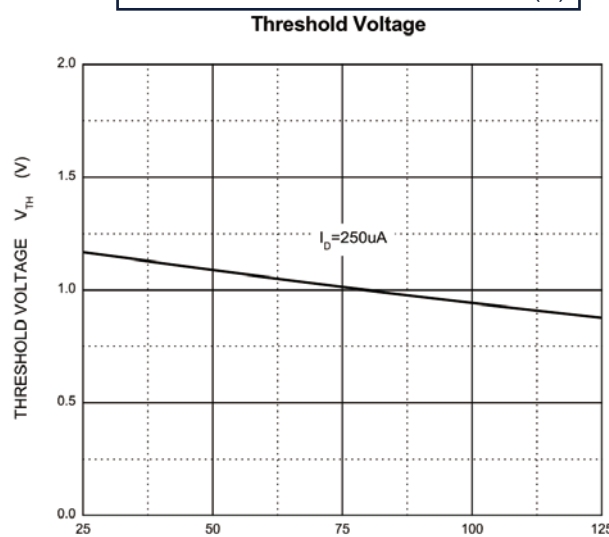


Typical Characteristics

Output Characteristics

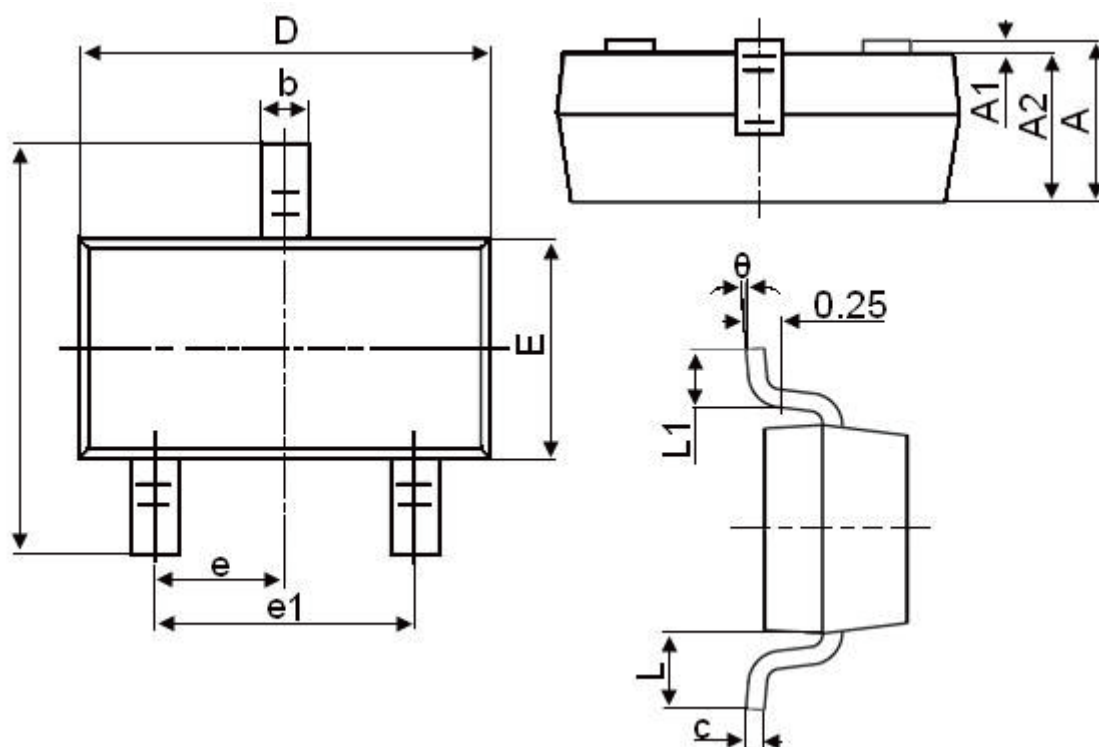
DRAIN TO SOURCE VOLTAGE V_{DS} (V)

Transfer Characteristics

GATE TO SOURCE VOLTAGE V_{GS} (V)DRAIN CURRENT I_D (A)GATE TO SOURCE VOLTAGE V_{GS} (V)SOURCE TO DRAIN VOLTAGE V_{SD} (V)JUNCTION TEMPERATURE T_J ($^\circ\text{C}$)



SOT23 Package Outline Dimensions



Symbol	Dimensions in Millimeters	
	mm	
	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°