MSKSEMI 美森科
SEMICONDUCTOR

ESD TVS TSS MOV GDT PLED

BSS138BKW

Product specification

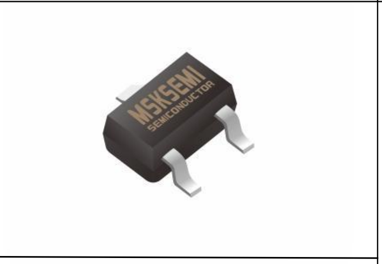
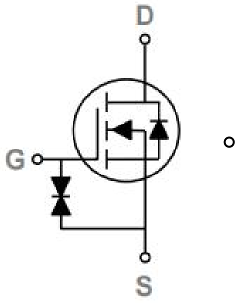
General Features

- 55V,300mA, RDS(ON) =1.2Ω@VGS = 10V
- Improved dv/dt capability
- Fast switching
- Green Device Available

Application

- Notebook
- Load Switch
- Battery Protection
- Hand-held Instruments

Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
 SOT-323		138W

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	55	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_A=25℃)	300	mA
	Drain Current – Continuous (T_A=70℃)	240	mA
I_{DM}	Drain Current – Pulsed[1]	1.2	A
P_D	Power Dissipation (T_A=25℃)	313	mW
	Power Dissipation – Derate above 25℃	2.5	mW/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	450	℃/W

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

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	55	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.05	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=48V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=55V , V_{GS}=0V , T_J=85℃	---	---	400	A
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±20V , V_{DS}=0V	---	---	±6	uA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=0.3A	---	1.2	1.5	Ω
		V_{GS}=4.5V , I_D=0.2A	---	1.5	2.3	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.8	1.1	1.6	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3	---	mV/℃

On Characteristics

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$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3	---	mV/℃

Dynamic and switching Characteristics

C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , F=1MHz	---	23	---	pF
C_{oss}	Output Capacitance		---	16	---	
C_{rss}	Reverse Transfer Capacitance		---	10	---	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	300	mA
I_{SM}	Pulsed Source Current		---	---	600	mA
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=0.3A , T_J=25℃	---	---	1.4	V

Note :

1 . Repetitive Rating : Pulsed width limited by maximum junction temperature.

2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2% .

3. Essentially independent of operating temperature.

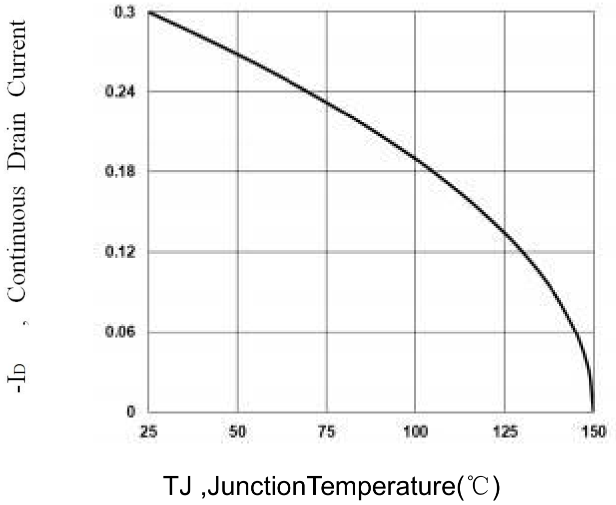


Fig. 1 **Continuous Drain Current vs. TC**

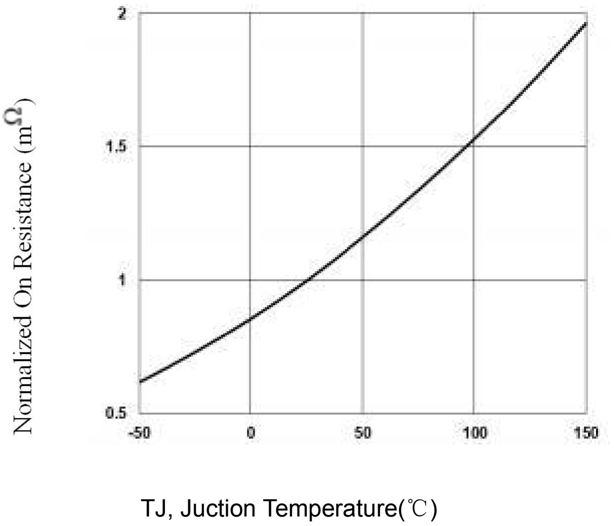


Fig. 2 Normalized RDSON vs. TJ

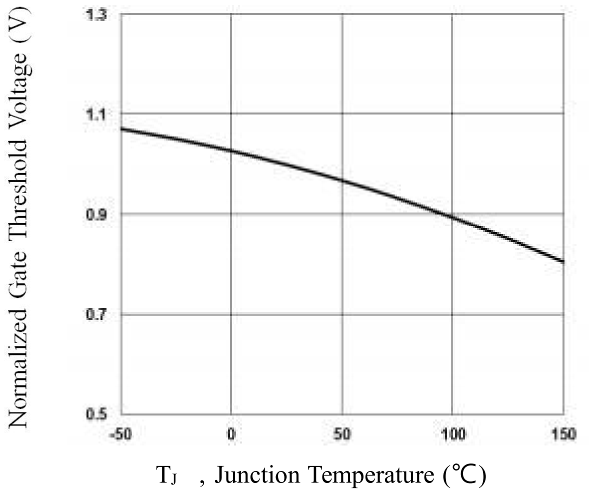


Fig. 3 Normalized V_{th} vs. T_J

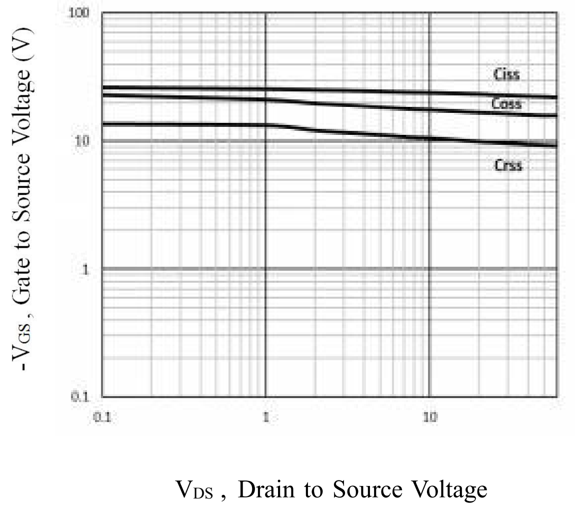


Fig. 4 **Capacitance Characteristics**

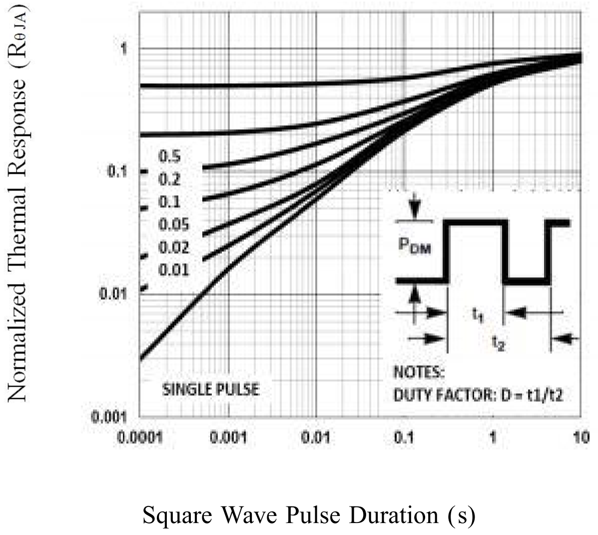


Fig. 5 Normalized Transient Response

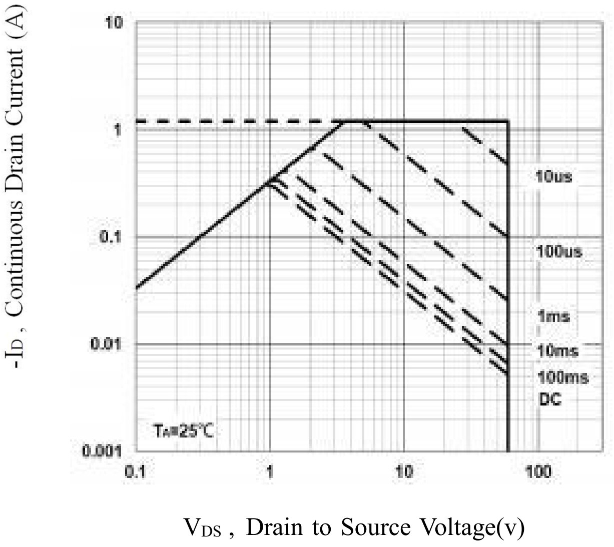
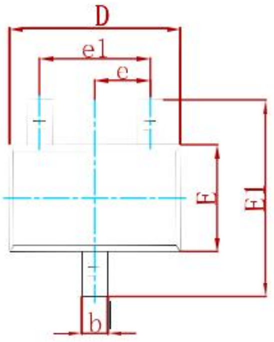
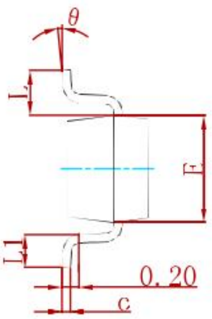
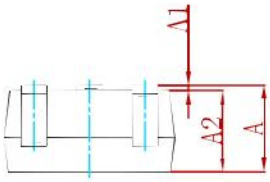


Fig. 6 **Maximum Safe Operation Area**

PACKAGE MECHANICAL DATA

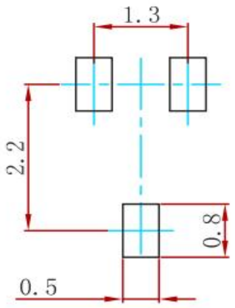






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 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

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
BSS138PW	SOT-323	3000

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