



BSS138AJKQ

N-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	50V
I_D	0.22A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	1.6
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	2.5
$R_{DS(ON)}$ (at $V_{GS}=2.5V$)	3.8
Gate-Source ESD Rating Up to 1.5KV (HBM)	

General Description

Excellent package for heat dissipation
 High density cell design for low $R_{DS(ON)}$
 Moisture Sensitivity Level 1
 Epoxy Meets UL 94 V-0 Flammability Rating
 Halogen Free
 Part no. with suffix "Q" means AEC-Q101 qualified

Applications

Power Management Functions
 Load switch
 DC-DC convertor

Absolute Maximum Ratings ($T_J=25$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	50	V
Gate-source Voltage	V_{GS}	± 2	V



BSS138AJKQ

Electrical Characteristics (T_J=25 unless otherwise noted)

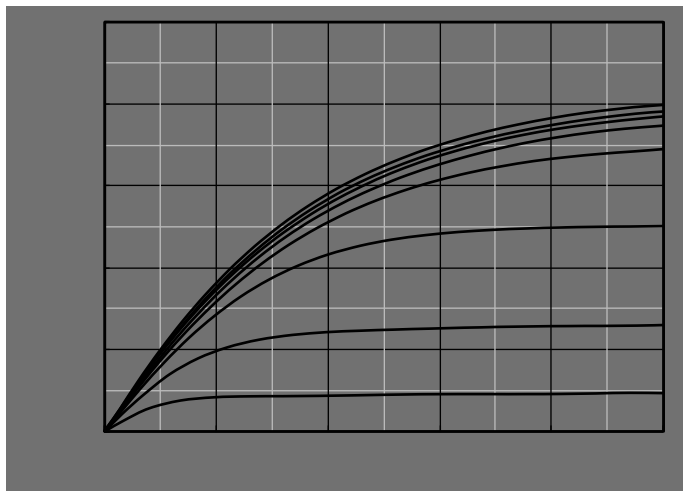
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	50	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =50V, V _{GS} =0V	-	-	1	μA
		V _{DS} =50V, V _{GS} =0V, T _J =150	-	-	100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	-	-	±5	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.7	1	1.45	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.5A	-	1.2	1.6	
		V _{GS} =4.5V, I _D =0.1A	-	1.24	2.5	
		V _{GS} =2.5V, I _D =0.1A	-	1.8	3.8	
Diode Forward Voltage	V _{SD}	I _S =0.22A, V _{GS} =0V	-	-	1.2	V
Gate resistance	R _G	f=1MHz	-	75	-	
Maximum Body-Diode Continuous Current	I _S		-	-	0.22	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	29	-	pF
Output Capacitance	C _{oss}		-	4.3	-	
Reverse Transfer Capacitance	C _{riss}		-	3	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =25V, I _D =0.5A	-	1.2	-	nC
Gate-Source Charge	Q _{gs}		-	0.15	-	
Gate-Drain Charge	Q _{gd}		-	0.31	-	
Reverse Recovery Charge	Q _{rr}	I _F =0.5A, di/dt=100A/us	-	2.1	-	nC
Reverse Recovery Time	t _{rr}		-	9.2	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =25V, I _D =0.5A R _{GEN} =25	-	3	-	ns
Turn-on Rise Time	t _r		-	2.7	-	
Turn-off Delay Time	t _{D(off)}		-	11	-	
Turn-off fall Time	t _f		-	8.1	-	

Note:

- The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
- The value of R_{JA} is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with TA =25 . The maximum allowed junction temperature of 150 . The value in any given application depends on the user's specific board design.



Typical Electrical and Thermal Characteristics Diagrams





BSS138AJKQ

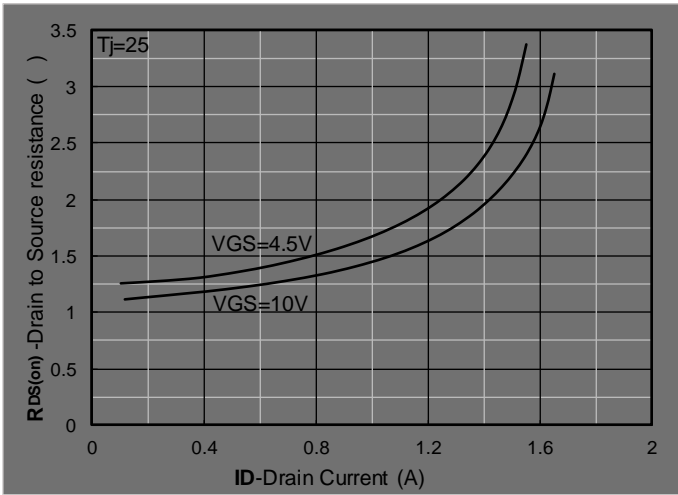


Figure 7. $R_{DS(on)}$ VS Drain Current

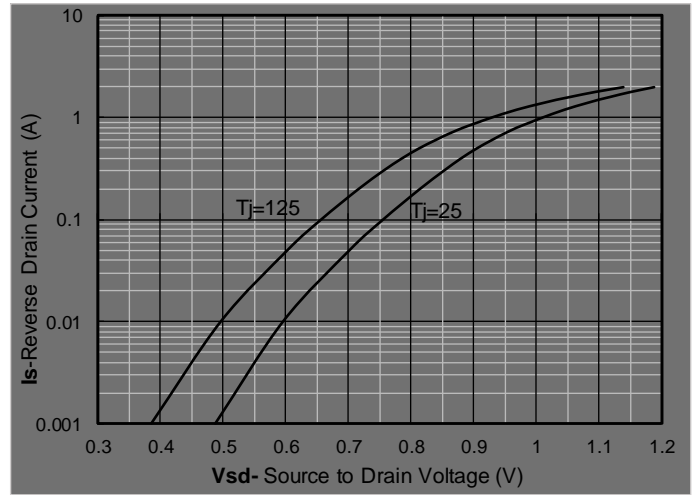
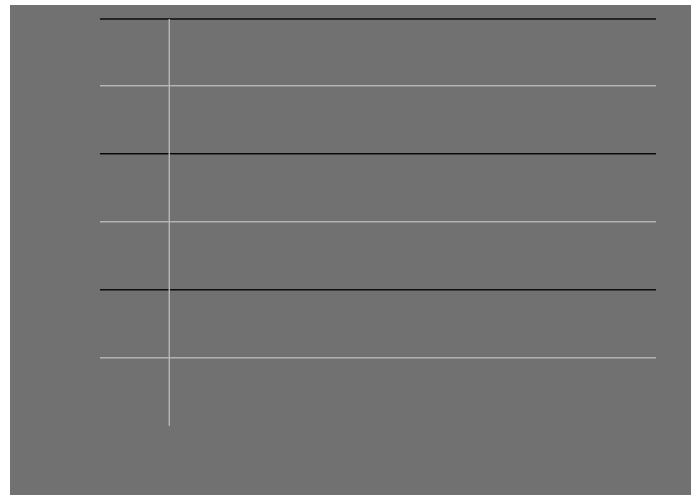
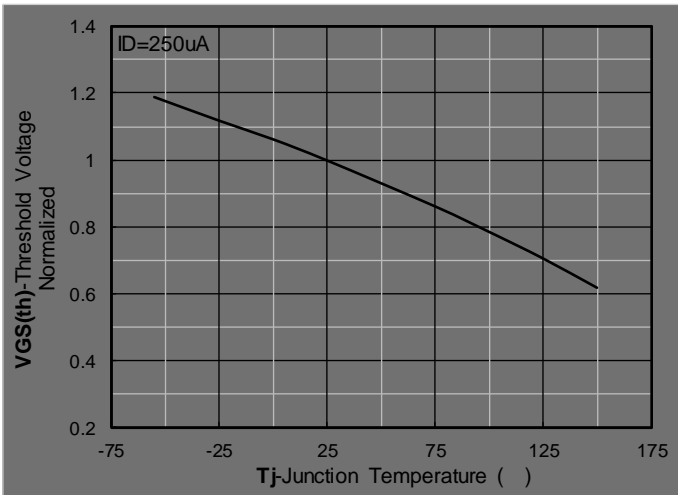


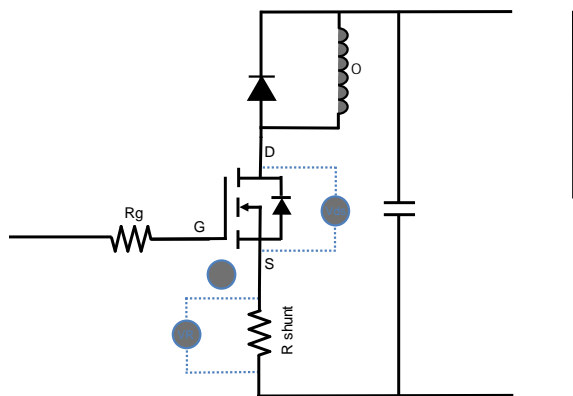
Figure 8. Forward characteristics of reverse diode



% 6 6 \$ - . 4



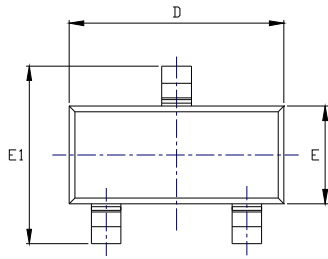
BSS138AJKQ



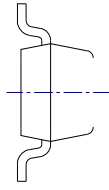


BSS138AJKQ

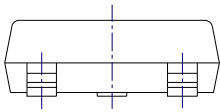
SOT-23 Package information



TOP VIEW



SIDE VIEW



UNIT mm

SUGGESTED SOLDER PAD LAYOUT



BSS138AJKQ

Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with automotive electronics are not designed for use in medical, life-saving, lifesustaining, or military, Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <http://www.21yangjie.com> , or consult your nearest Yangjie's sales office for further assistance.