



N-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	50V
I_D	340mA
$R_{DS(ON)}$ (at $V_{GS}=10V$)	2.5ohm
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	3.0ohm

General Description

Trench Power MV MOSFET technology
Voltage controlled small signal switch
Low input Capacitance
Fast Switching Speed
Low Input / Output Leakage

Applications

Battery operated systems
Solid-state relays
Direct logic-level interface TTL/CMOS

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	50	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	$T_A=25$ @ Steady State	340
		$T_A=70$ @ Steady State	272
Pulsed Drain Current ^A	I_{DM}	1.5	A
Total Power Dissipation @ $T_A=25$	P_D	150	mW
Thermal Resistance Junction-to-Ambient @ Steady State ^B	R_{JA}	833	/ W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 +150	

Ordering Information

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
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BSS138W

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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 =250	50			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =50V, V _{GS} =0V			1	
Gate-Body Leakage Current	I _{GSS1}	V _{GS} = ± 20V, V _{DS} =0V			± 100	nA
	I _{GSS2}	V _{GS} = ± 10V, V _{DS} =0V			± 50	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250	0.8	1.2	1.6	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =300mA		1.1	2.5	
		V _{GS} = 4.5V, I _D =200mA		1.2	3.0	
Diode Forward Voltage	V _{SD}	I _S =300mA, V _{GS} =0V			1.2	V
Maximum Body-Diode Continuous Current	I _S				340	mA
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHZ		28.5		pF
Output Capacitance	C _{oss}			2.7		
Reverse Transfer Capacitance	C _{rss}			1.78		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =25V, I _D =0.3A		1.7		nC
Gate-Source Charge	Q _{gs}			0.4		
Gate-Drain Charge	Q _{gd}			0.24		
Reverse Recovery Charge	Q _{rr}	I _F =0.3A, di/dt=-100A/us		2.65		ns
Reverse Recovery Time	t _{rr}			12.2		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =25V, I _D =300mA, R _{GEN} =6		2.6		ns
Turn-on Rise Time	t _r			18.8		
Turn-off Delay Time	t _{D(off)}			9.7		
Turn-off fall Time	t _f			47		

A. Pulse Test: Pulse Width 300us, Duty cycle 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



Typical Performance Characteristics

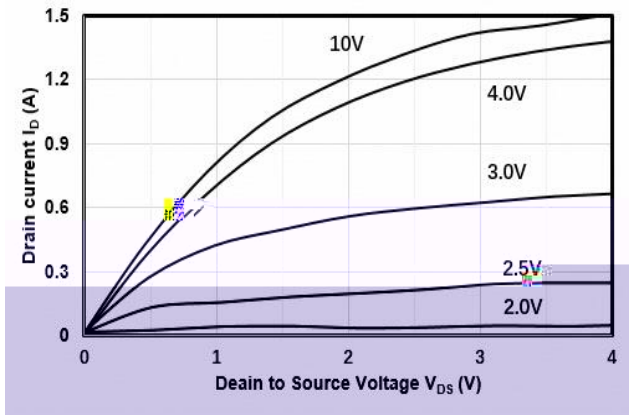


Figure1. Output Characteristics

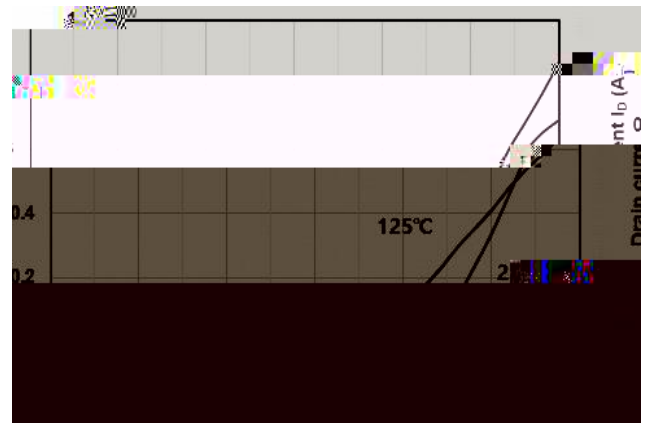


Figure2. Transfer Characteristics

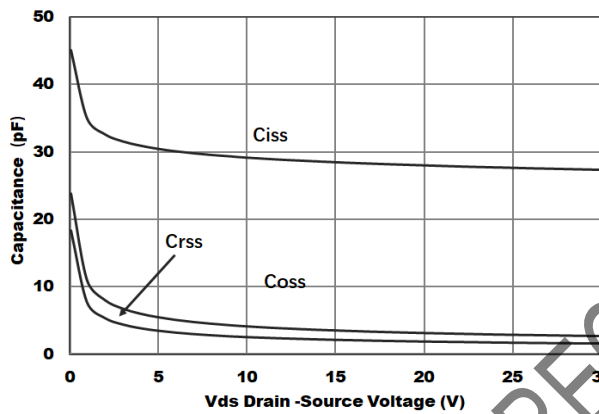


Figure3. Capacitance Characteristics

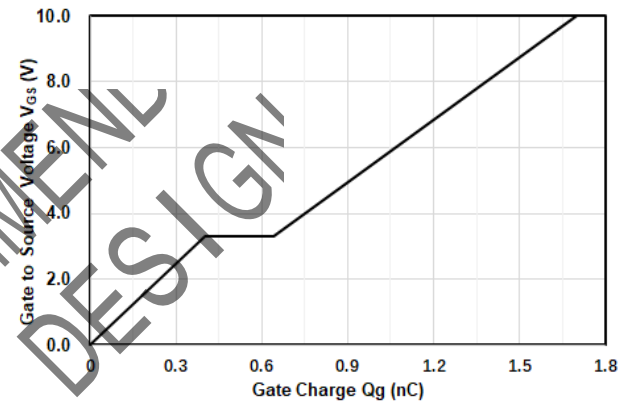


Figure4. Gate Charge

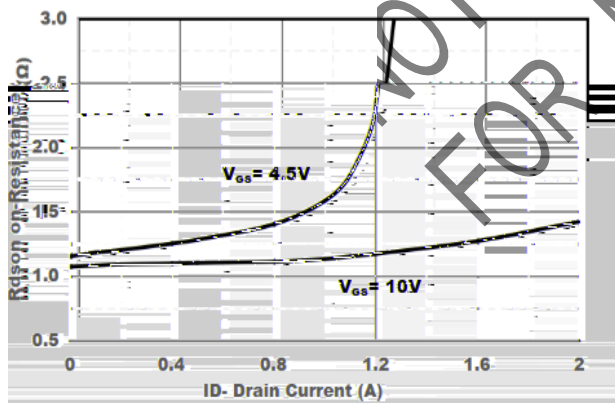


Figure5. Drain-Source on Resistance

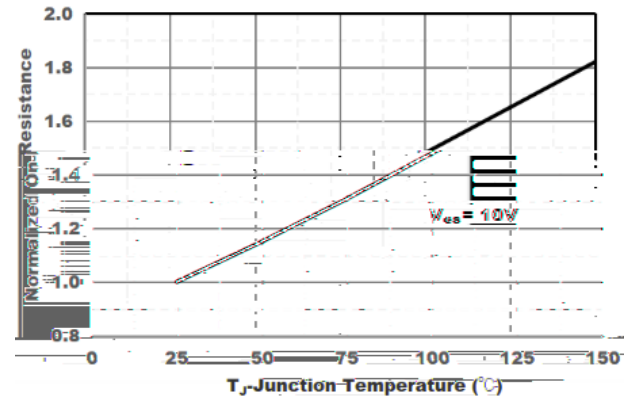


Figure6. Drain-Source on Resistance

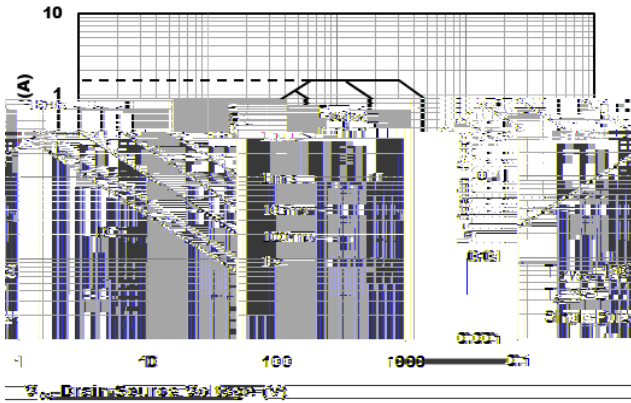


Figure7. Safe Operation Area

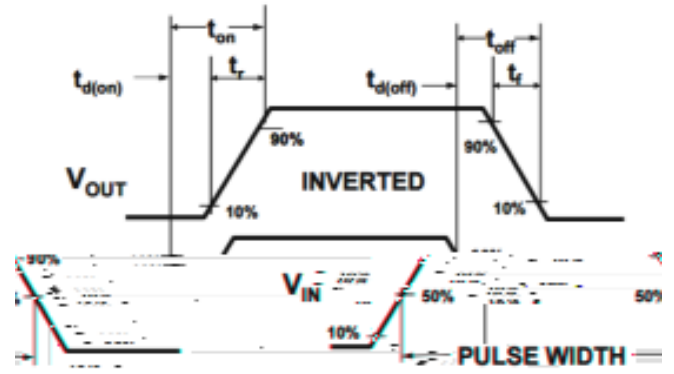
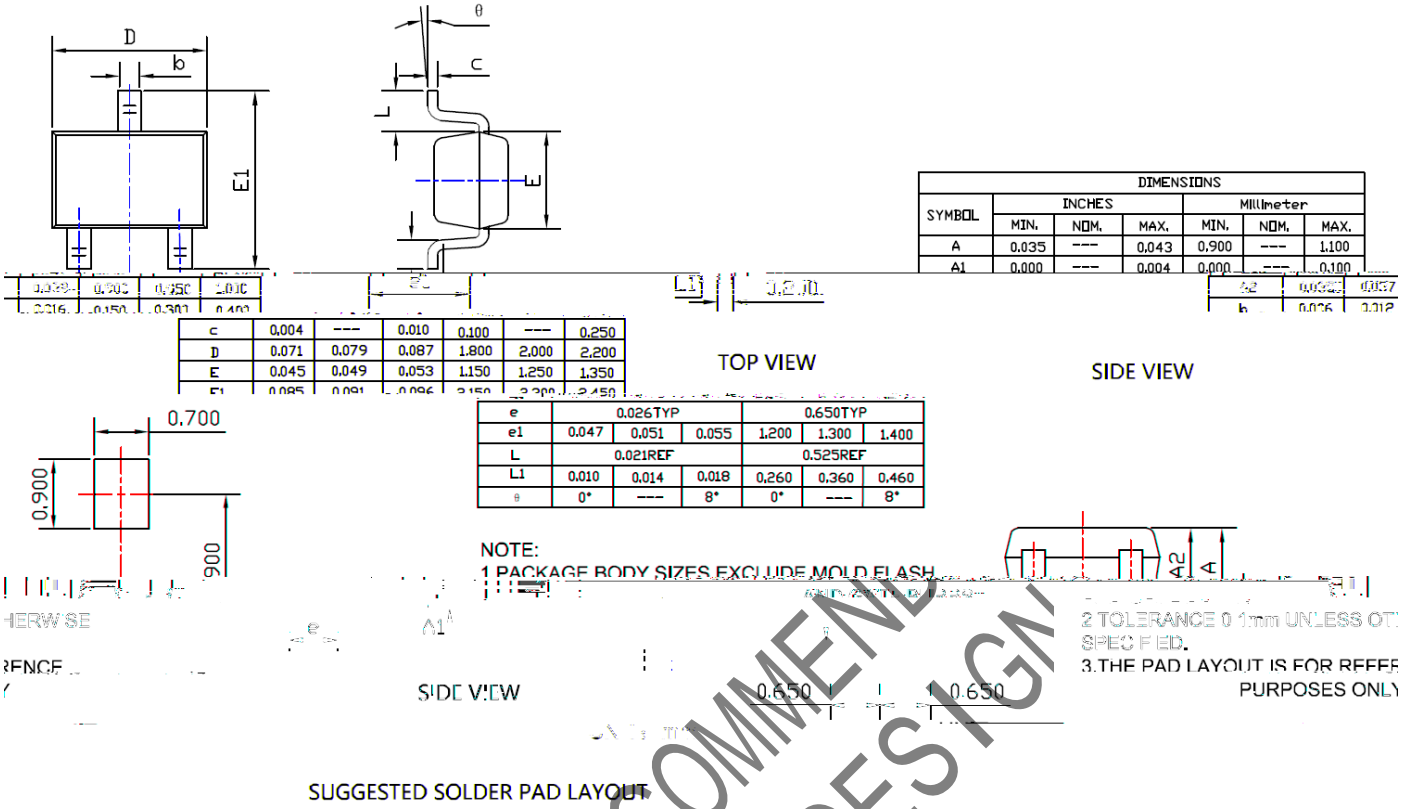


Figure8. Switching wave

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SOT-323 Package Information





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The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

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