DESCRIPTION

Typical applications are DC–DC converters, power management in portable and battery–powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

The BSS139W is available in SC-70 package

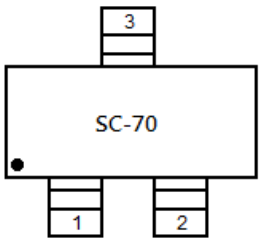
FEATURES

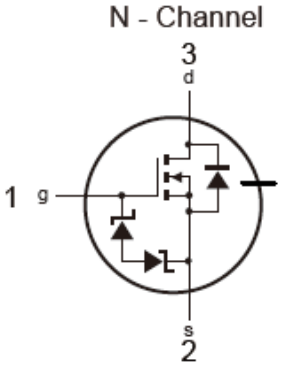
- Low Threshold Voltage ($V_{GS(th)}$: 0.5V...1.5V) makes it ideal for low voltage applications
- ESD Protected:1500V
- Available in SC-70 package

ORDERING INFORMATION

Package Type	Part Number
SC-70	BSS139W
Note	SPQ: 3,000pcs/Reel
AiT provides all RoHS Compliant Products	

PIN DESCRIPTION





ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted

V_{DSS}, Drain–to–Source Voltage	50Vdc
V_{GS}, Gate–to–Source Voltage – Continuous	±20Vdc
Drain Current	
I_D, -Continuous @ T_A = 25°C	200mA
I_{DM}, -Pulsed Drain Current (tp ≤10μs)	800mA
P_D, Total Power Dissipation @ T_A = 25°C	150mW
T_J, T_{STG}, Operating and Storage Temperature Range	-55°C ~150°C
$R_{\theta JA}$, Thermal Resistance – Junction–to–Ambient	833°C /W
T_L, Maximum Lead Temperature for Soldering Purposes, for 10 seconds	260°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain–to–Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0Vdc, I_D=250μAdc	50	-	-	Vdc
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=25Vdc, V_{GS}=0Vdc V_{DS}=50Vdc, V_{GS}=0Vdc	- -	- -	0.1 0.5	μAdc
Gate–Source Leakage Current	I_{GSS}	V_{GS}=±20Vdc, V_{DS}=0Vdc	-	-	±10	μAdc
ON CHARACTERISTICS NOTE1						
Gate–Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=1.0mAdc	0.5	-	1.5	Vdc
Static Drain–to–Source On–Resistance	$R_{DS(on)}$	V_{GS}=2.75Vdc, I_D<200mAdc, T_A=–40°C to +85°C V_{GS}=5.0Vdc, I_D=200mAdc	- -	5.6 -	10 3.5	Ohms
Forward Transconductance	g_{fs}	V_{DS}=25Vdc, I_D=200mAdc, f=1.0kHz	100	-	-	mmhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{DS}=25Vdc, V_{GS}=0, f=1MHz	-	22.8	-	pF
Output Capacitance	C_{oss}	V_{DS}=25Vdc, V_{GS}=0, f=1MHz	-	3.5	-	
Transfer Capacitance	C_{rss}	V_{DS}=25Vdc, V_{GS}=0, f=1MHz	-	2.9	-	
SWITCHING CHARACTERISTICS NOTE2						
Turn–On Delay Time	$t_{d(on)}$	V_{DS} = 30Vdc , I_{DS} = 0.5Adc	-	3.8	-	ns
Turn–Off Delay Time	$t_{d(off)}$		-	19	-	ns

NOTE1: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

NOTE2: Switching characteristics are independent of operating junction temperature.

TYPICAL CHARACTERISTICS

Figure 1. Output Characteristics

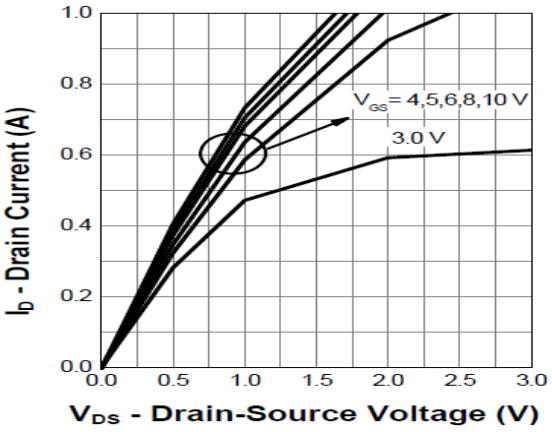


Figure 2. Drain-Source On Resistance

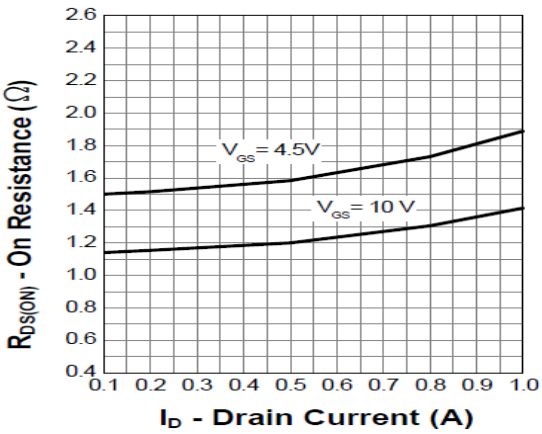


Figure 3. Transfer Characteristics

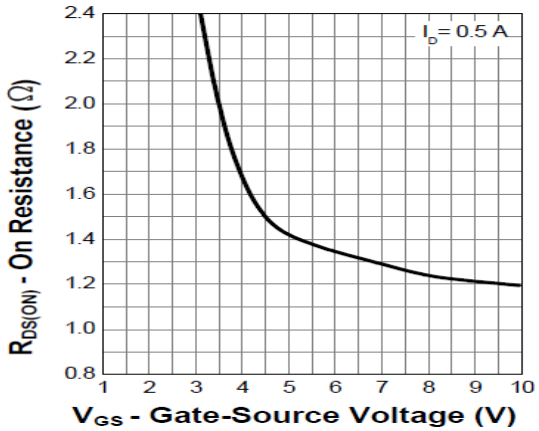


Figure 4. Gate Threshold Voltage

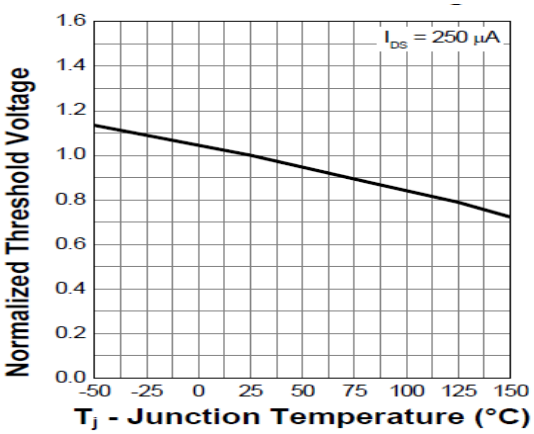


Figure 5. Drain-Source On Resistance

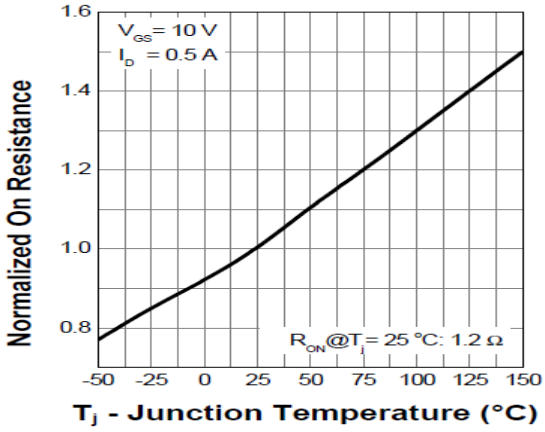


Figure 6. Source-Drain Diode Forward

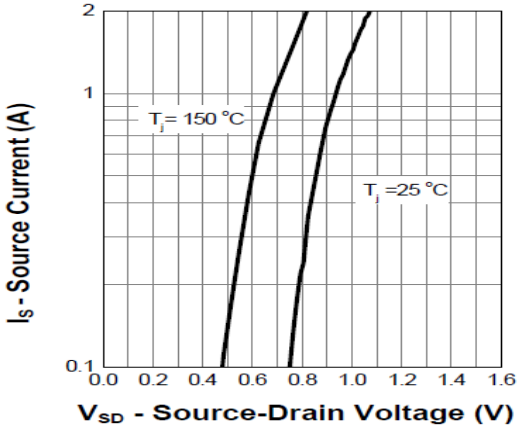


Figure 7. Capacitance

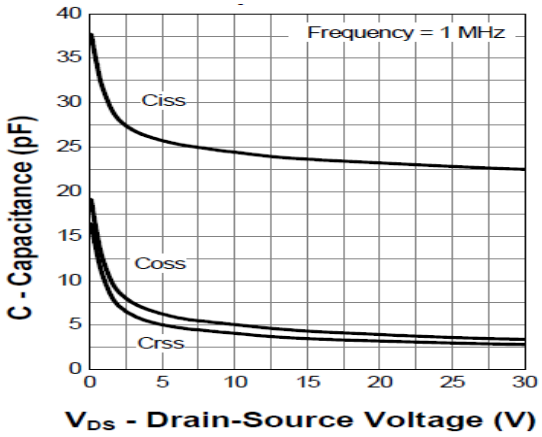


Figure 8. Gate Charge

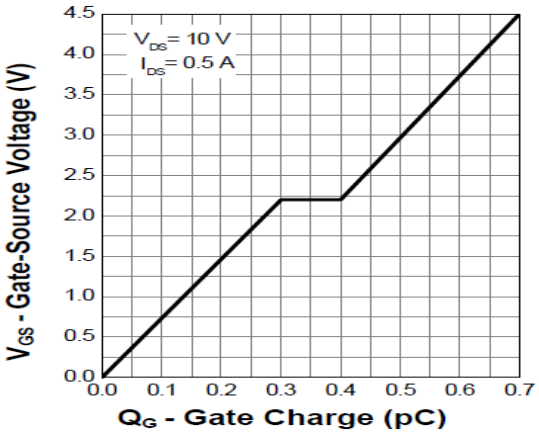


Figure 9. Drain-Source On Resistance

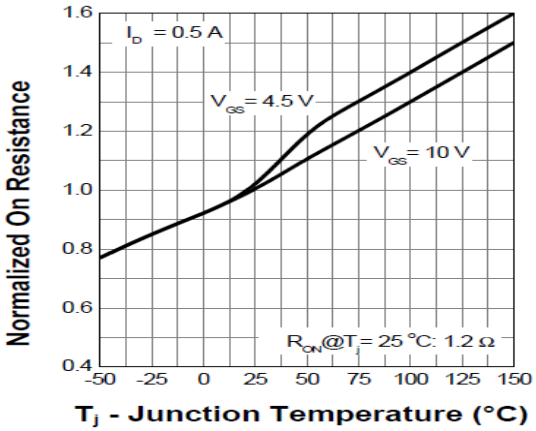


Figure 10. Drain-Source On Resistance

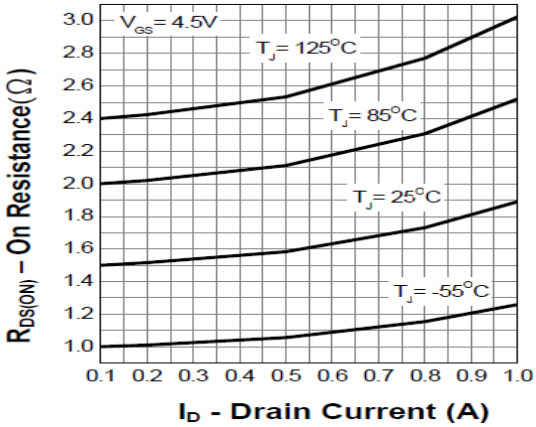


Figure 11. Drain-Source On Resistance

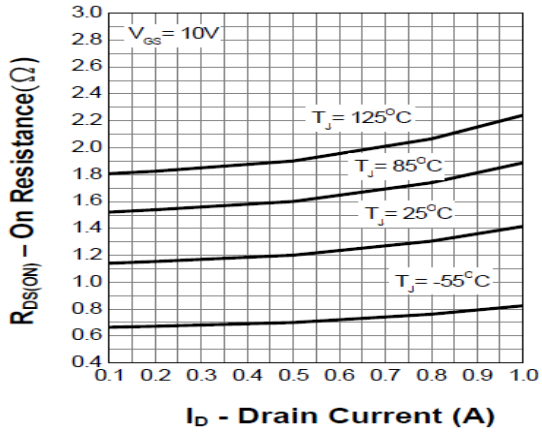
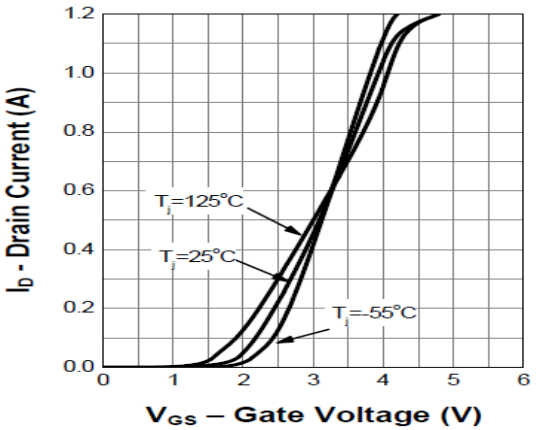
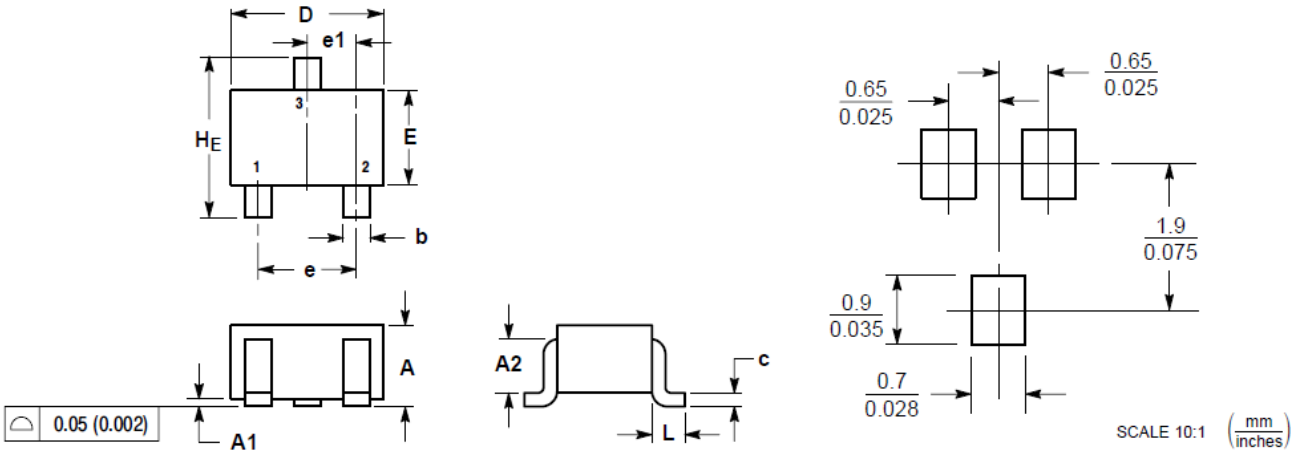


Figure 12. Transfer Characteristics



PACKAGE INFORMATION

Dimension in SC-70 Package (Unit: mm)



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.08	1.00	0.032	0.040
A1	0.00	0.10	0.000	0.004
A2	0.70 REF		0.028 REF	
b	0.30	0.40	0.012	0.016
c	0.10	0.25	0.004	0.010
D	1.80	2.20	0.071	0.087
E	1.15	1.35	0.045	0.053
e	1.20	1.40	0.047	0.055
e1	0.650 BSC		0.026 BSC	
L	0.425 REF		0.017 REF	
H_E	2.00	2.40	0.079	0.095

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