

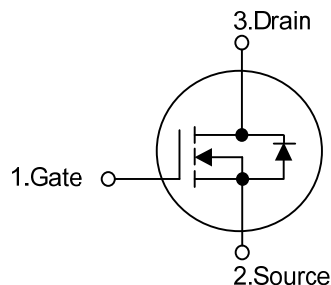
**BSS138-Q****Power MOSFET****N-CHANNEL LOGIC LEVEL
ENHANCEMENT MODE****DESCRIPTION**

This device employs advanced MOSFET technology and features low gate charge while maintaining low on-resistance.

Optimized for switching applications, this device improves the overall efficiency of DC/DC converters and allows operation to higher switching frequencies.

FEATURES

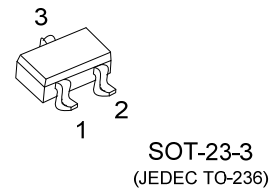
- * $R_{DS(ON)} \leq 3.5 \Omega$ @ $V_{GS}=10V$, $I_D=0.22A$
 $R_{DS(ON)} \leq 6.0 \Omega$ @ $V_{GS}=4.5V$, $I_D=0.22A$
- * Low Capacitance
- * Low Gate Charge
- * Fast Switching Capability
- * Avalanche Energy Specified

SYMBOL**ORDERING INFORMATION**

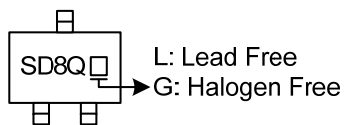
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS138L-AE2-R	BSS138G-AE2-R	SOT-23-3	G	S	D	Tape Reel

Note: Pin Assignment: G: Gate S: Source D: Drain

BSS138G-AE2-R		(1)Packing Type	(1) R: Tape Reel
		(2)Package Type	(2) AE2: SOT-23-3
		(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free



■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	DC Pulse I_D	0.22	A
		0.88	A
Peak Diode Recovery dv/dt	dv/dt	3	V/ns
Power Dissipation($T_A=25^\circ\text{C}$)	P_D	0.36	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	350	$^\circ\text{C/W}$

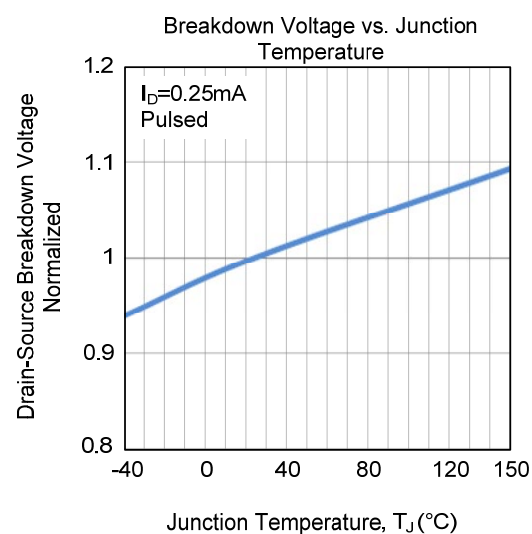
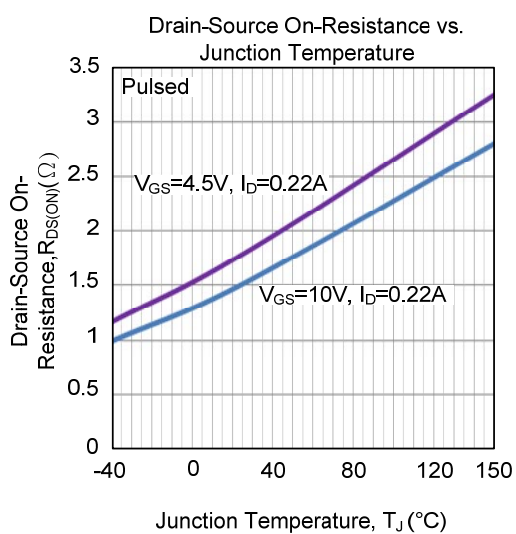
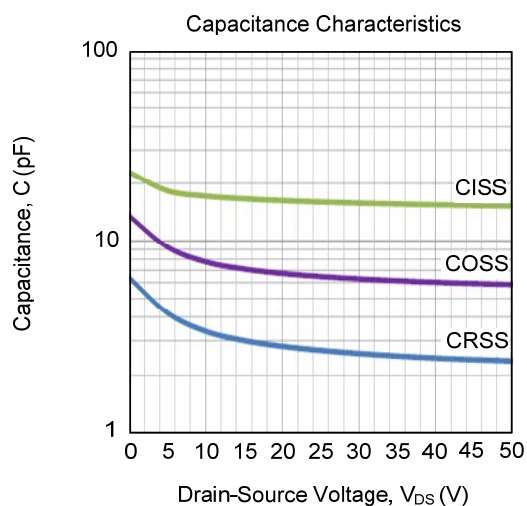
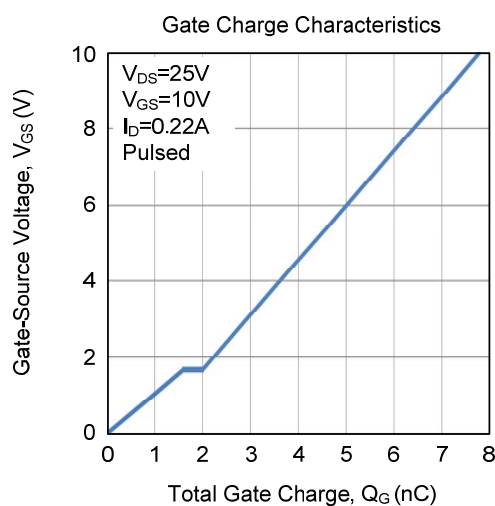
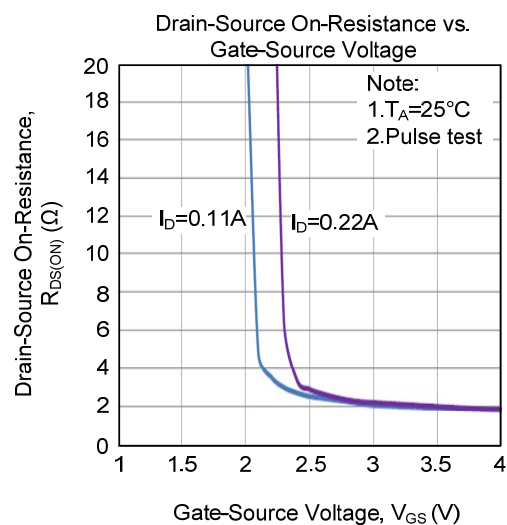
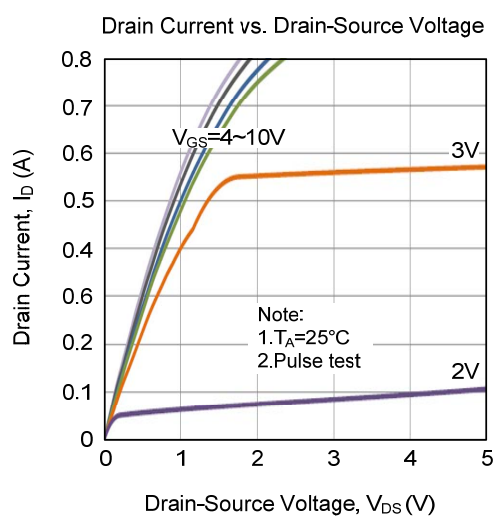
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise specified)

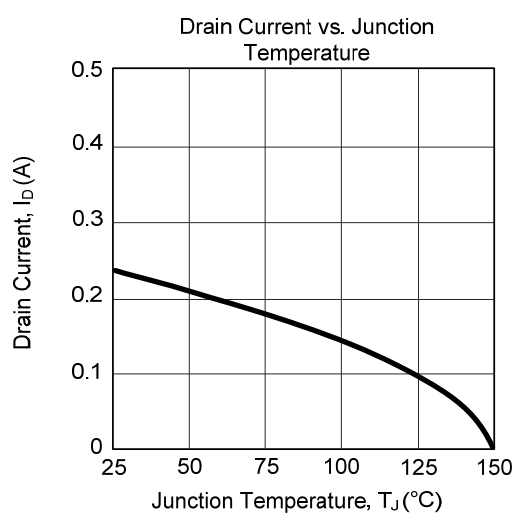
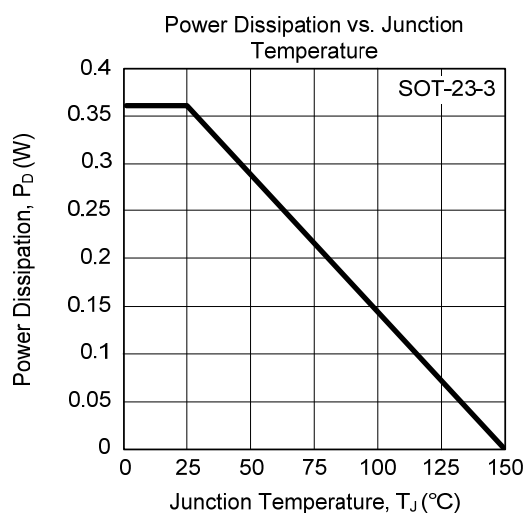
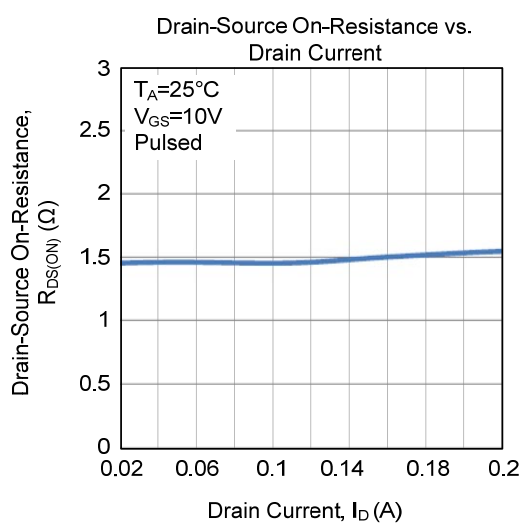
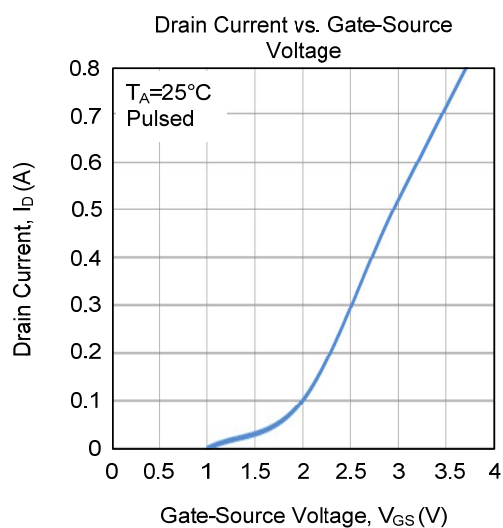
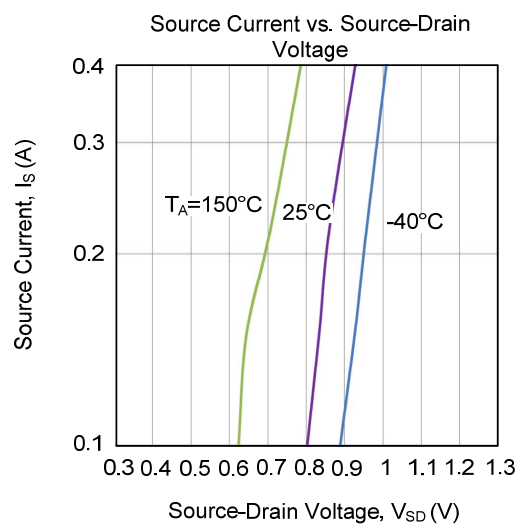
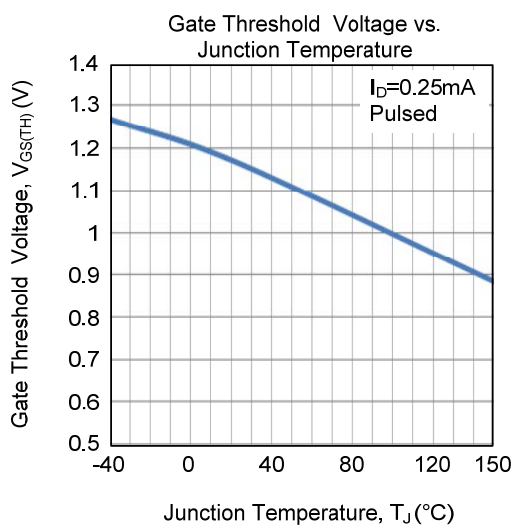
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	50			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =50V, V _{GS} =0V			0.5	μA
		V _{DS} =30V, V _{GS} =0V			0.1	
Gate-Body Leakage, Forward	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS (Note)						
Gate-Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =1m A	0.5		2.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10 V, I _D =0.22A			3.5	Ω
		V _{GS} =4.5 V, I _D =0.22A			6.0	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1MHz		17		pF
Output Capacitance	C _{OSS}			9		pF
Reverse Transfer Capacitance	C _{RSS}			4		pF
SWITCHING PARAMETERS (Note)						
Total Gate Charge	Q _G	V _{DS} =25V, V _{GS} =10V, I _D =0.22A		7.8		nC
Gate Source Charge	Q _{GS}			1.6		nC
Gate Drain Charge	Q _{GD}			0.4		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =30V, I _D =0.29A, V _{GS} =10V, R _G =6Ω,		1.6		ns
Turn-ON Rise Time	t _R			16		ns
Turn-OFF Delay Time	t _{D(OFF)}			5		ns
Turn-OFF Fall-Time	t _F			14		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Max. Diode Forward Current	I _S				0.22	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S =0.44A (Note)		0.9	1.4	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =0.22A,		36		ns
Reverse Recovery Charge	Q _{rr}	dI/dt=100A/μs		5.5		nC

Note: Pulse test, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

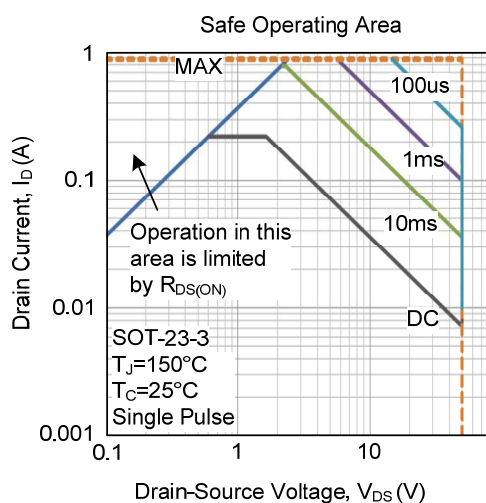
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.