



## BSS123Z

Power MOSFET

### 170mA, 100V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

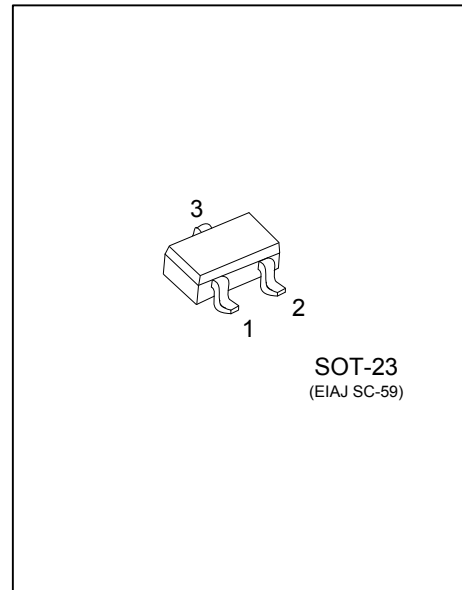
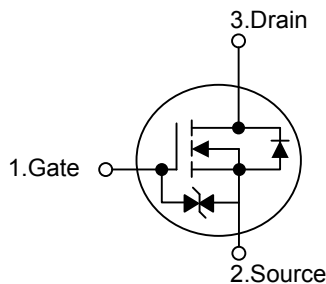
#### DESCRIPTION

The UTC **BSS123Z** uses advanced technology to provide excellent  $R_{DS(on)}$ , low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

#### FEATURES

- \*  $R_{DS(on)} \leq 6.0\Omega @ V_{GS}=10V, I_D=100mA$
- \* ESD Protected
- \* Fast Switching Capability
- \* Avalanche Energy Specified
- \* Improved dv/dt Capability, High Ruggedness

#### SYMBOL



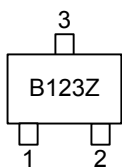
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS123ZL-AE3-R	BSS123ZG-AE3-R	SOT-23	G	S	D	Tape Reel

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

BSS123ZG-AE3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE3: SOT-23
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

#### MARKING



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	100	V
Gate-Source Voltage	Continuous	$V_{GSS}$	$\pm 20$	V
	Non-Repetitive	$V_{GSM}$	$\pm 40$	Vpk
Drain Current	Continuous (Note 1)	$I_D$	0.17	A
	Pulsed (Note 2)	$I_{DM}$	0.68	A
Power Dissipation	$T_A=25^\circ\text{C}$ (Note 3)	$P_D$	225	mW
	Derate above $25^\circ\text{C}$		1.8	mW/ $^\circ\text{C}$
Junction Temperature		$T_J$	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-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 CHARACTERISTICS

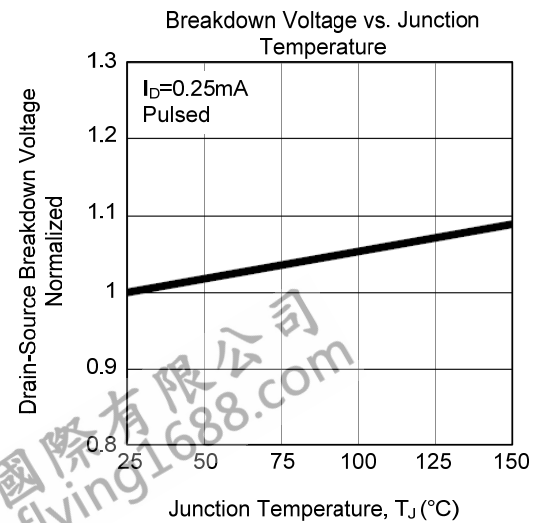
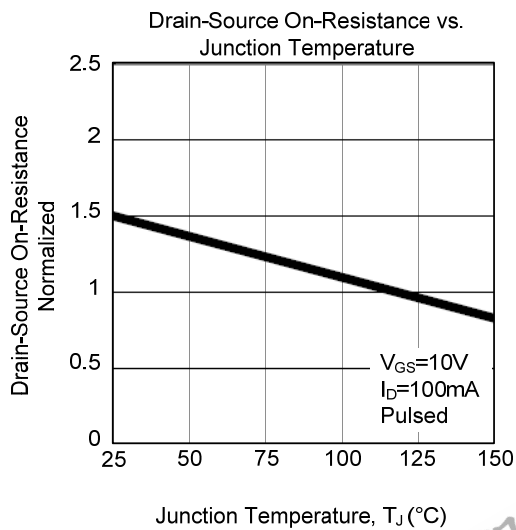
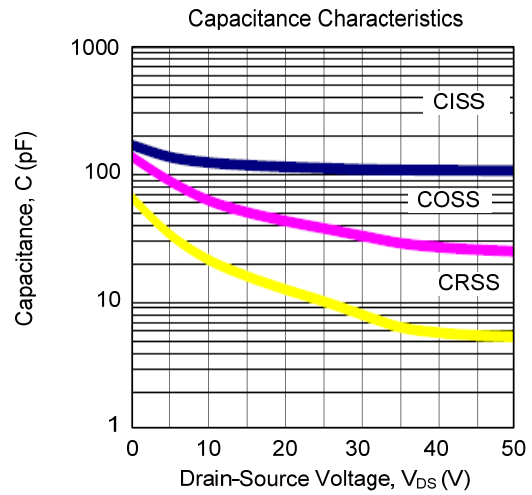
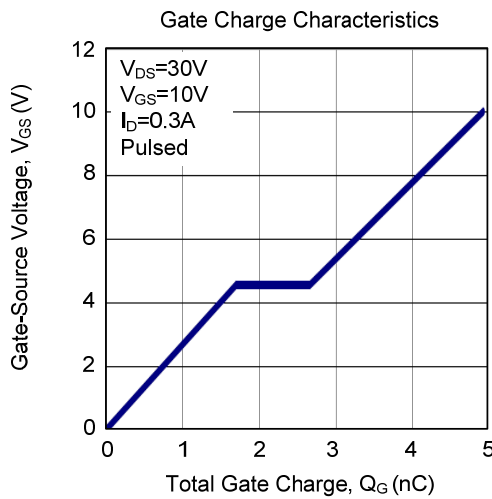
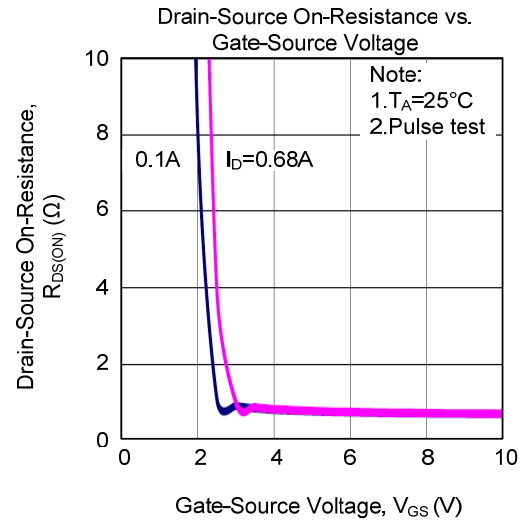
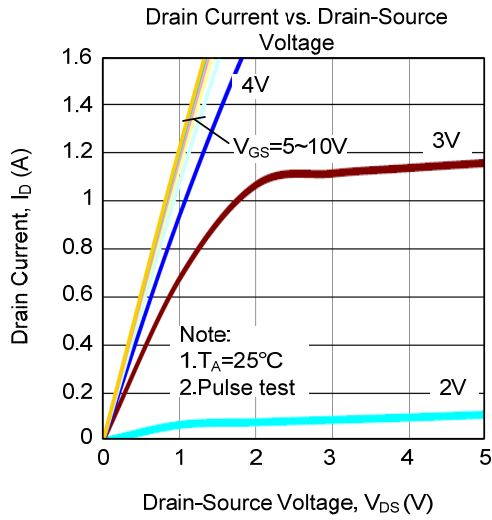
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	556	$^\circ\text{C/W}$

### ■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

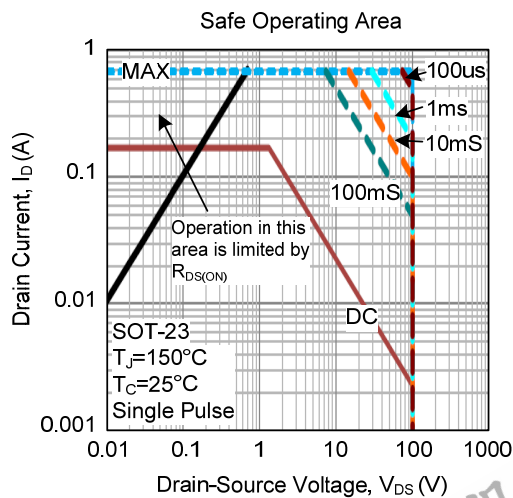
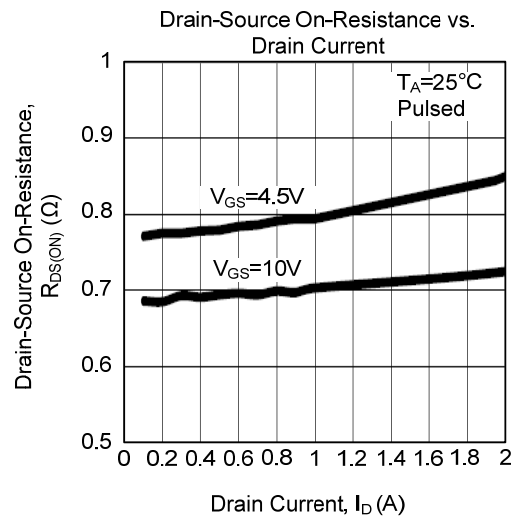
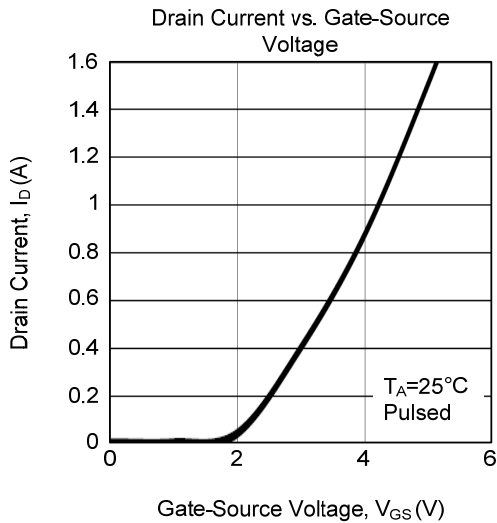
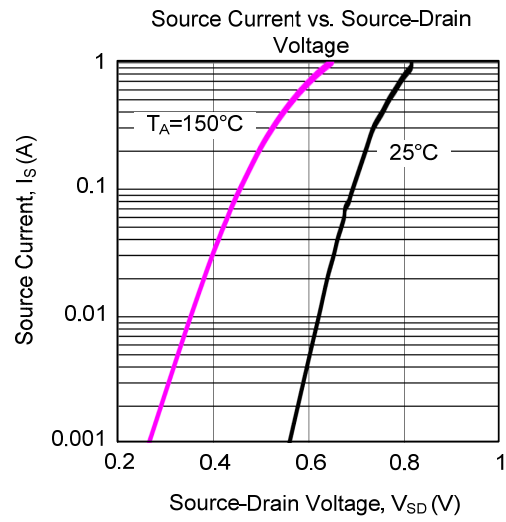
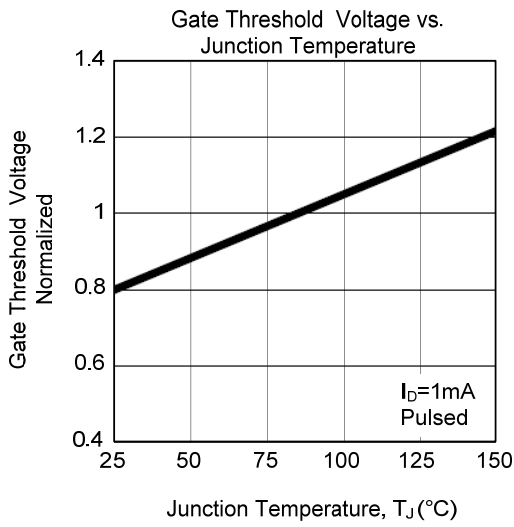
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	100			V	
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=25^\circ\text{C}$			15	$\mu\text{A}$	
		$V_{DS}=100\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=125^\circ\text{C}$			60	$\mu\text{A}$	
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$	
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=1\text{mA}$	0.6		2.0	V	
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=100\text{mA}$			6.0	$\Omega$	
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		110		pF	
Output Capacitance	$C_{OSS}$				38		pF
Reverse Transfer Capacitance	$C_{RSS}$				10		pF
<b>SWITCHING CHARACTERISTICS</b>							
Total Gate Charge (Note 1)	$Q_G$	$V_{DS}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=0.3\text{A}$ , $I_G=1\text{mA}$ (Note 1, 2)		5		nC	
Gate to Source Charge	$Q_{GS}$				1.7		nC
Gate to Drain Charge	$Q_{GD}$				1		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{CC}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_C=0.3\text{A}$ , $R_{GS}=50\Omega$		5		ns	
Turn-On Rise Time	$t_R$				10		ns
Turn-OFF Delay Time	$t_{D(OFF)}$				45		ns
Turn-Off Fall Time	$t_F$				20		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				0.17	A	
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				0.68	A	
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_D=0.34\text{A}$ , $V_{GS}=0\text{V}$			1.3	V	

Notes: 1. The Power Dissipation of the package may result in a lower continuous drain current.  
 2. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .  
 3. FR-5=1.0 $\times$ 0.75 $\times$ 0.062 in.

## TYPICAL CHARACTERISTICS



### ■ TYPICAL CHARACTERISTICS (Cont.)



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