



# BSS127Z

**Power MOSFET**

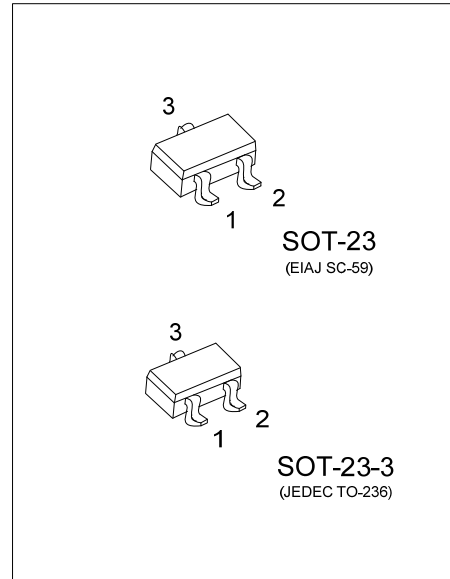
## 0.021A, 600V ENHANCEMENT N-CHANNEL MOSFET

### DESCRIPTION

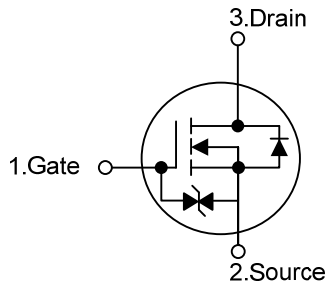
The UTC **BSS127Z** is an enhancement N-channel mode Power FET, it uses UTC's advanced technology to provide customers ultra high switching speed and ultra low gate charge.

### FEATURES

- \*  $R_{DS(ON)} \leq 600\Omega @ V_{GS}=4.5V, I_D=0.016A$
- $R_{DS(ON)} \leq 500\Omega @ V_{GS}=10V, I_D=0.016A$
- \* Ultra Low Gate Charge (Typical 140nC)
- \* Ultra High Switching Speed



### SYMBOL



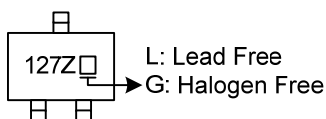
### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS127ZL-AE2-R	BSS127ZG-AE2-R	SOT-23-3	G	S	D	Tape Reel
BSS127ZL-AE3-R	BSS127ZG-AE3-R	SOT-23	G	S	D	Tape Reel

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

<p>BSS127ZG-AE2-R</p>	<p>(1) R: Tape Real</p> <p>(2) AE2: SOT-23-3, AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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### MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	600	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$T_A=25^\circ\text{C}$	0.021	A
		$T_A=70^\circ\text{C}$	0.017	A
	Pulsed ( $T_A=25^\circ\text{C}$ )	$I_{DM}$	0.09	A
Peak Diode Recovery dv/dt		dv/dt	6	kV/ $\mu\text{s}$
Power Dissipation ( $T_A=25^\circ\text{C}$ )		$P_D$	0.3	W
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

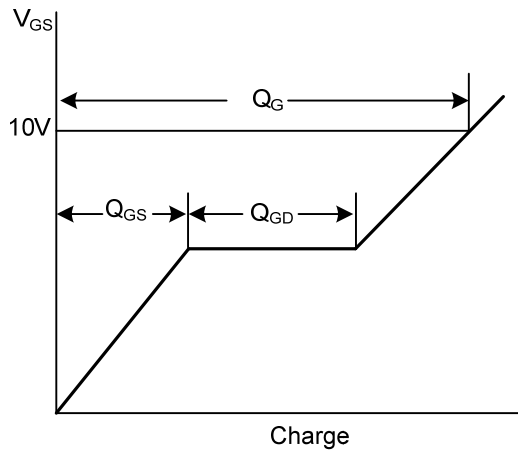
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	325	$^\circ\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	600			V
Gate-Source Leakage Current	$I_{GSS}$	Forward			+10	$\mu\text{A}$
		Reverse			-10	$\mu\text{A}$
Drain-Source Leakage Current	$I_{D(OFF)}$	$V_{GS}=0\text{V}$ , $V_{DS}=600\text{V}$ , $T_J=25^\circ\text{C}$			0.1	$\mu\text{A}$
		$V_{GS}=0\text{V}$ , $V_{DS}=600\text{V}$ , $T_J=150^\circ\text{C}$			10	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=8\mu\text{A}$	1.4		2.6	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5\text{V}$ , $I_D=0.016\text{A}$		280	600	$\Omega$
		$V_{GS}=10\text{V}$ , $I_D=0.016\text{A}$		260	500	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		7		pF
Output Capacitance	$C_{OSS}$			6.2		pF
Reverse Transfer Capacitance	$C_{RSS}$			1.8		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=0\sim 10\text{V}$ , $V_{DS}=480\text{V}$ , $I_D=0.01\text{A}$		1		nC
Gate to Source Charge	$Q_{GS}$			0.6		nC
Gate to Drain Charge	$Q_{GD}$			0.15		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=300\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=0.01\text{A}$ , $R_G=6\Omega$		6.1		ns
Rise Time	$t_R$			9.7		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			14		ns
Fall-Time	$t_F$			115		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	$T_A=25^\circ\text{C}$			0.016	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$	$T_A=25^\circ\text{C}$			0.09	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_F=0.016\text{A}$ , $V_{GS}=0\text{V}$ , $T_J=25^\circ\text{C}$			1.2	V
Body Diode Reverse Recovery Time	$t_{rr}$	$V_R=30\text{V}$ , $I_F=0.016\text{A}$		220		ns
Body Diode Reverse Recovery Charge	$Q_{rr}$	$dI_F/dt=100\text{A}/\mu\text{s}$		0.14		$\mu\text{C}$

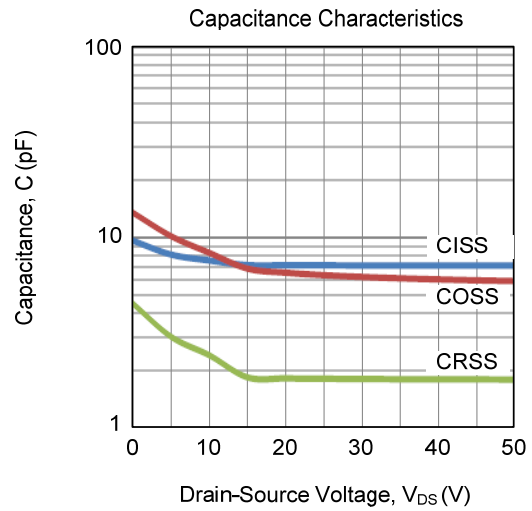
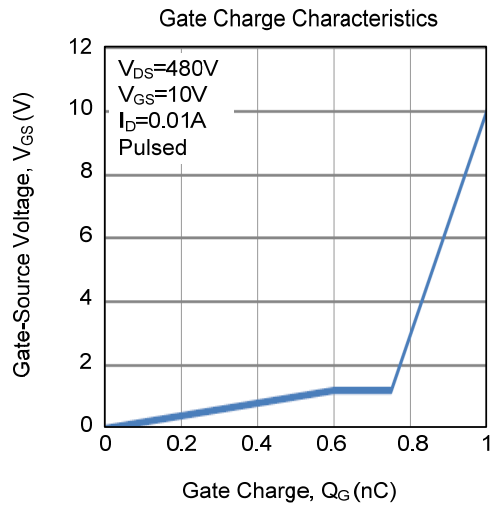
Notes: 1. The Power Dissipation of the package may result in a lower continuous drain current.  
2. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

### ■ TEST CIRCUITS AND WAVEFORMS



Gate Charge Waveforms

### TYPICAL CHARACTERISTICS



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