



## BSS127

Power MOSFET

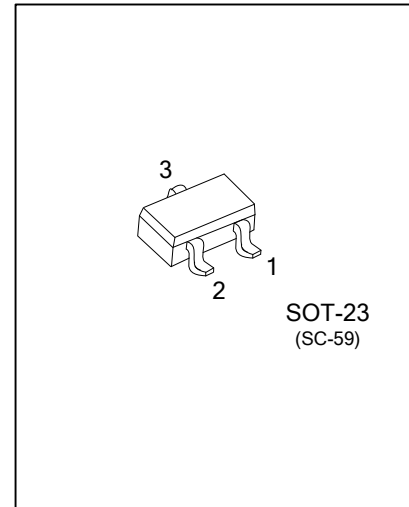
### 0.021A, 600V SMALL-SIGNAL-TRANSISTOR

#### DESCRIPTION

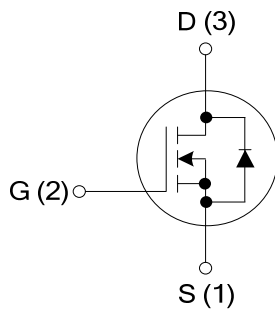
The UTC **BSS127** is an enhancement N-channel mode Power FET, it uses UTC's advanced technology to provide customers ultra high switching speed and ultra low gate charge.

#### FEATURES

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



#### SYMBOL



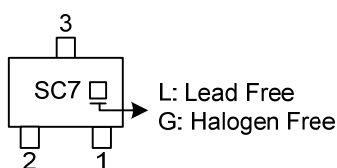
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS127L-AE3-R	BSS127G-AE3-R	SOT-23	S	G	D	Tape Reel

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

<p>BSS127L-AE3-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Lead Free</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Real</li> <li>(2) AE3: SOT-23</li> <li>(3) L: Lead Free, G: Halogen Free</li> </ul>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V <sub>DSS</sub>	600	V	
Gate-Source Voltage	V <sub>GSS</sub>	±20	V	
Drain Current	Continuous	T <sub>A</sub> =25°C	0.021	A
		T <sub>A</sub> =70°C	0.017	A
	Pulsed (T <sub>A</sub> =25°C)	I <sub>DM</sub>	0.09	A
Peak Diode Recovery dv/dt	dv/dt	6	kV/μs	
Power Dissipation (T <sub>A</sub> =25°C)	P <sub>D</sub>	0.5	W	
Junction Temperature	T <sub>J</sub>	-55~+150	°C	
Storage Temperature Range	T <sub>STG</sub>	-55~+150	°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.

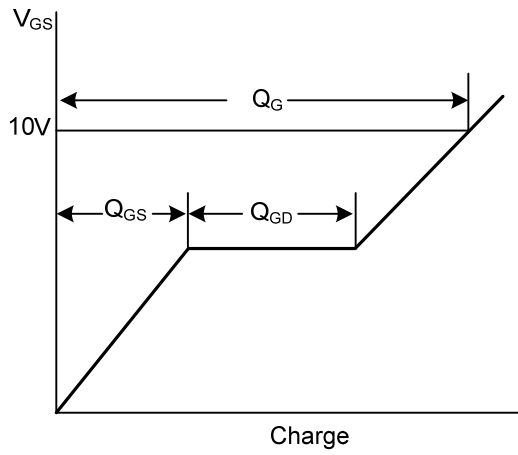
■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ <sub>JA</sub>	250	°C/W

■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C, unless otherwise specified)

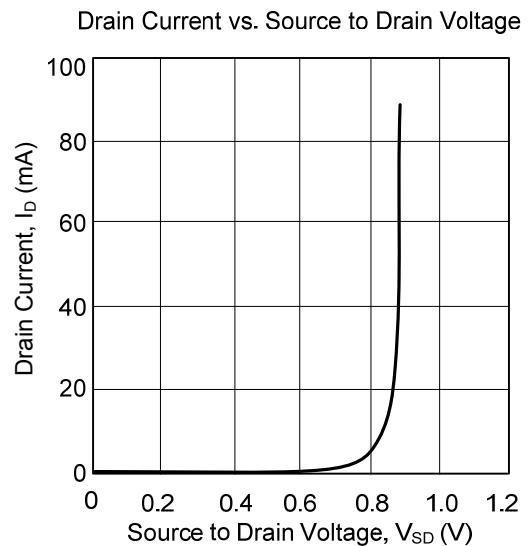
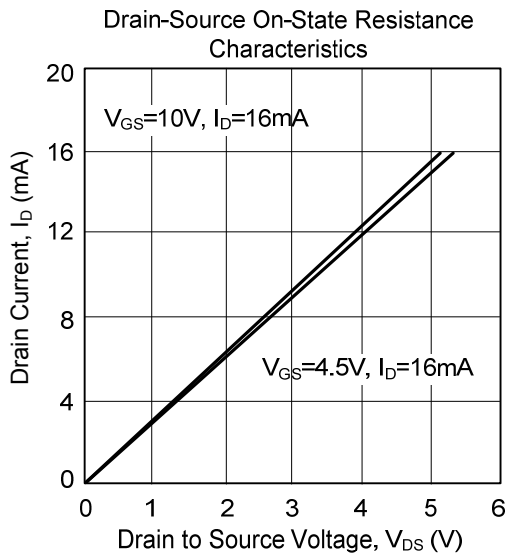
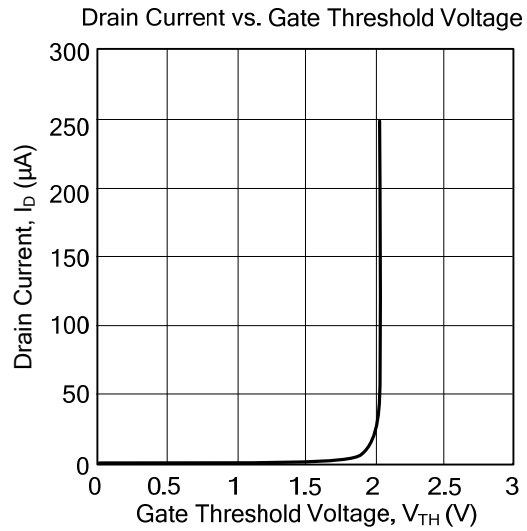
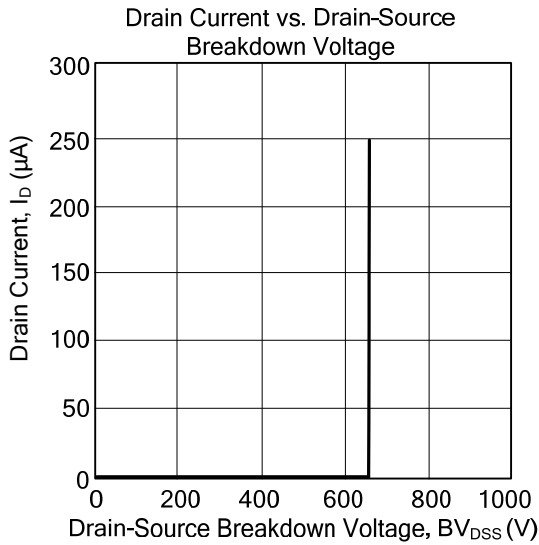
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	600			V
Gate-Source Leakage Current	I <sub>GSS</sub>	Forward V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V		+10	+100	nA
		Reverse V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V		-10	-100	nA
Drain-Source Leakage Current	I <sub>D(OFF)</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =600V, T <sub>J</sub> =25°C			0.1	μA
		V <sub>GS</sub> =0V, V <sub>DS</sub> =600V, T <sub>J</sub> =150°C			10	μA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =8μA	1.4	2.0	2.6	V
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.016A		330	600	Ω
		V <sub>GS</sub> =10V, I <sub>D</sub> =0.016A		310	500	Ω
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub>  >2 I <sub>D</sub>  R <sub>DS(ON)MAX</sub> , I <sub>D</sub> =0.01A	0.007	0.015		S
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1.0MHz		21	28	pF
Output Capacitance	C <sub>OSS</sub>			2.4	3	pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			1.0	1.5	pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> =0~10V, V <sub>DS</sub> =300V, I <sub>D</sub> =0.01A		0.07	0.10	nC
Gate to Source Charge	Q <sub>GS</sub>			0.31	0.5	nC
Gate to Drain Charge	Q <sub>GD</sub>			0.65	1.0	nC
Gate Plateau Voltage	V <sub>plateau</sub>			3.56		V
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =300V, V <sub>GS</sub> =10V, I <sub>D</sub> =0.01A, R <sub>G</sub> =6Ω		6.1	19.0	ns
Rise Time	t <sub>R</sub>			9.7	14.5	ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			14	21	ns
Fall-Time	t <sub>F</sub>			115	170	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	I <sub>S</sub>	T <sub>A</sub> =25°C			0.016	A
Maximum Body-Diode Pulsed Current	I <sub>SM</sub>	T <sub>A</sub> =25°C			0.09	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>F</sub> =0.016A, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C		0.82	1.2	V
Body Diode Reverse Recovery Time	t <sub>RR</sub>	V <sub>R</sub> =300V, I <sub>F</sub> =0.016A,		160	240	ns
Body Diode Reverse Recovery Charge	Q <sub>RR</sub>	dI <sub>F</sub> /dt=100A/μs		13.2	19.8	μC

■ TEST CIRCUITS AND WAVEFORMS



Gate Charge Waveforms

### TYPICAL CHARACTERISTICS



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