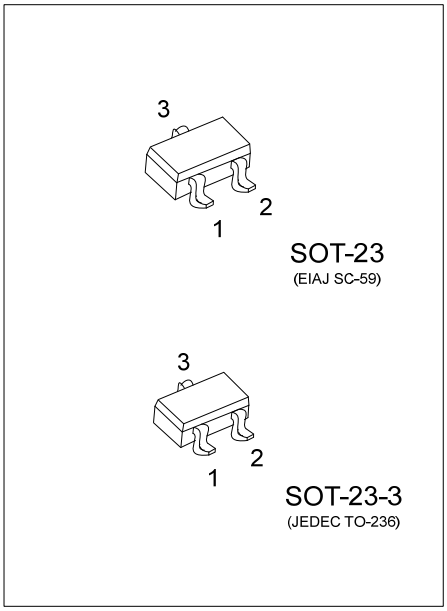
BSS127

Power MOSFET

0.021A, 600V ENHANCEMENT N-CHANNEL MOSFET



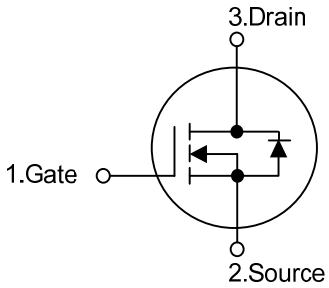
■ DESCRIPTION

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

* $R_{DS(ON)} \leq 600\ \Omega$ @ 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



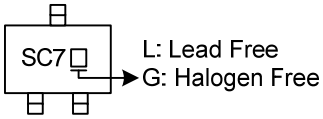
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS127L-AE2-R	BSS127G-AE2-R	SOT-23-3	G	S	D	Tape Reel
BSS127L-AE3-R	BSS127G-AE3-R	SOT-23	G	S	D	Tape Reel

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

BSS127G-AE2-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Real (2) AE2: SOT-23-3, AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	600	V
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current	Continuous	T_A=25°C	I_D	0.021	A
		T_A=70°C		0.017	A
	Pulsed (T_A=25°C)		I_{DM}	0.09	A
Peak Diode Recovery dv/dt			dv/dt	6	kV/μs
Power Dissipation (T_A=25°C)			P_D	0.3	W
Junction Temperature			T_J	-55 ~ +150	°C
Storage Temperature Range			T_{STG}	-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 DATA

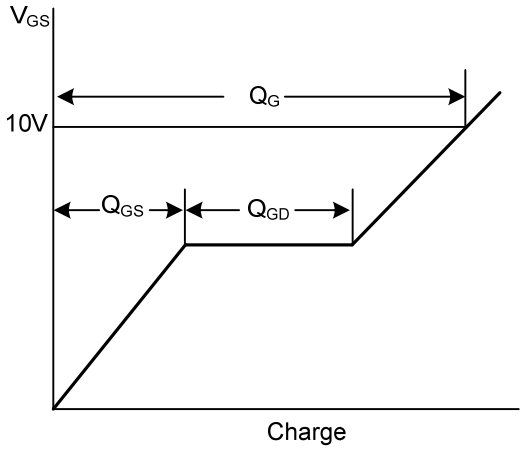
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	325	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	600			V
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V		+10	+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V		-10	-100	nA
Drain-Source Leakage Current		$I_{D(OFF)}$	V_{GS}=0V, V_{DS}=600V, T_J=25°C			0.1	μA
			V_{GS}=0V, V_{DS}=600V, T_J=150°C			10	μA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=8μA	1.4	2.0	2.6	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.016A		330	600	Ω
			V_{GS}=10V, I_D=0.016A		310	500	Ω
Forward Transconductance		g_{FS}	$\|V_{DS}\|>2\|I_D\|R_{DS(ON)MAX}$, I_D=0.01A	0.007	0.015		S
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		10		pF
Output Capacitance		C_{OSS}			7		pF
Reverse Transfer Capacitance		C_{RSS}			2.8		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=0~10V, V_{DS}=300V, I_D=0.01A		0.65	1.0	nC
Gate to Source Charge		Q_{GS}			0.07	0.10	nC
Gate to Drain Charge		Q_{GD}			0.31	0.5	nC
Gate Plateau Voltage		$V_{plateau}$			3.56		V
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=300V, V_{GS}=10V, I_D=0.01A, R_G=6Ω		6.1	19.0	ns
Rise Time		t_R			9.7	14.5	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			14	21	ns
Fall-Time		t_F			115	170	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I_S	T_A=25°C			0.016	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}	T_A=25°C			0.09	A
Drain-Source Diode Forward Voltage		V_{SD}	I_F=0.016A, V_{GS}=0V, T_J=25°C		0.82	1.2	V
Body Diode Reverse Recovery Time		t_{rr}	V_R=300V, I_F=0.016A, dI_F/dt=100A/μs		160	240	ns
Body Diode Reverse Recovery Charge		Q_{rr}			13.2	19.8	μC

Notes: 1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

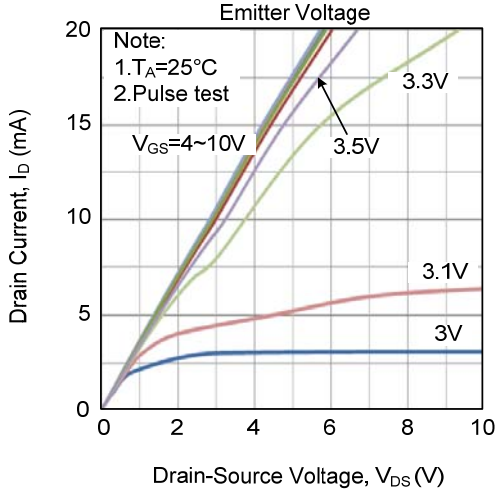
■ TEST CIRCUITS AND WAVEFORMS



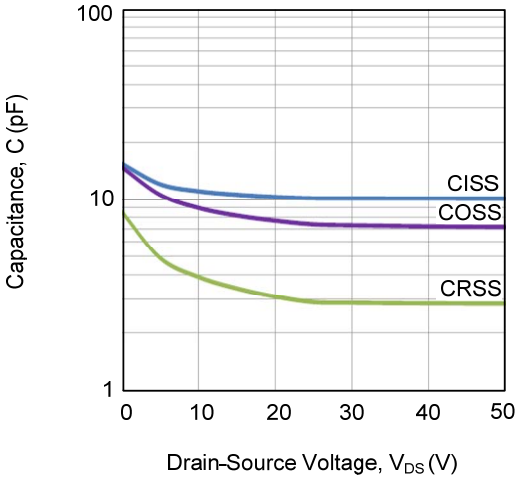
Gate Charge Waveforms

■ TYPICAL CHARACTERISTICS

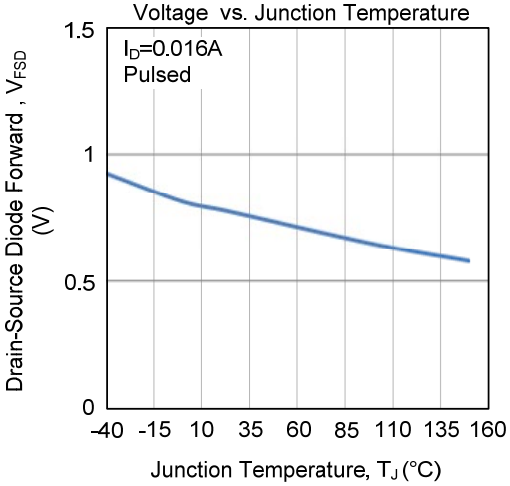
Collector Current vs. Collector-Emitter Voltage



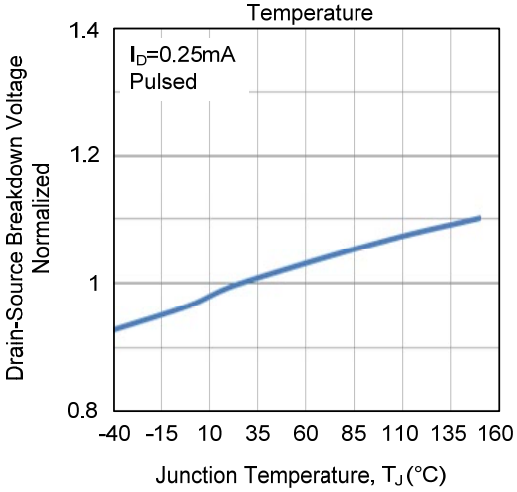
Capacitance Characteristics



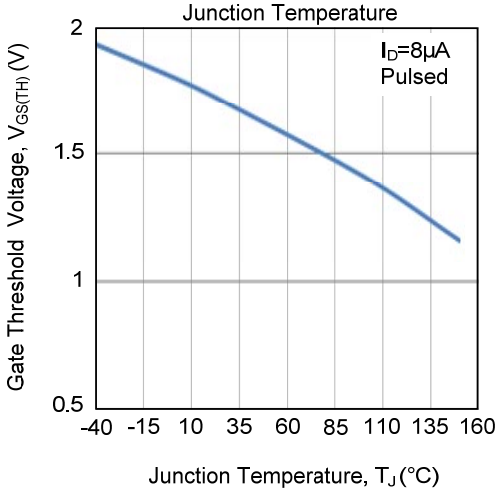
Drain-Source Diode Forward Voltage vs. Junction Temperature



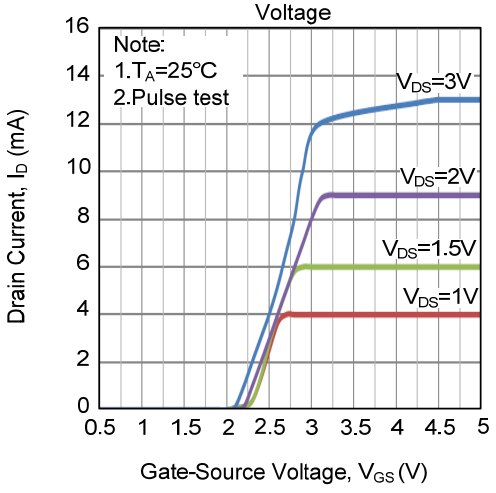
Breakdown Voltage vs. Junction Temperature



Gate Threshold Voltage vs. Junction Temperature



Drain Current vs. Gate-Source Voltage



■ TYPICAL CHARACTERISTICS (Cont.)