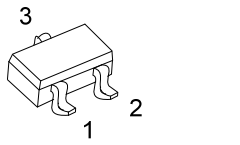
BSS127Z

Power MOSFET

0.021A, 600V ENHANCEMENT N-CHANNEL MOSFET



SOT-23
(EIAJ SC-59)

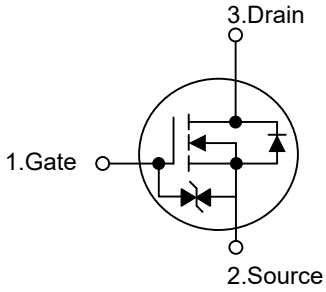
■ DESCRIPTION

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

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

■ SYMBOL



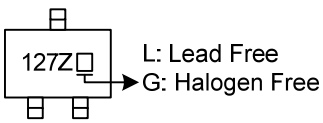
■ ORDERING INFORMATION

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

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

BSS127ZG-AE3-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Real (2) 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	V/μs
Power Dissipation (T_A=25°C)			P_D	0.3	W
Case Temperature			T_C	110	°C
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
Junction to Case	θ_{JC}	208	°C/W

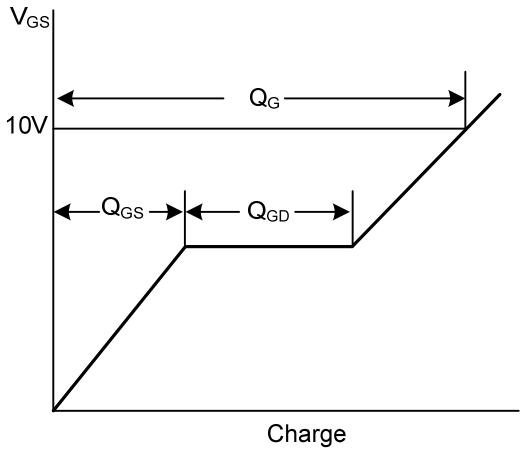
Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

■ 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	μA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-10	μA
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		2.6	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=0.016A		300	500	Ω
			V_{GS}=4.5V, I_D=0.016A		350	600	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		7		pF
Output Capacitance		C_{OSS}			6.2		pF
Reverse Transfer Capacitance		C_{RSS}			2.5		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=10V, V_{DS}=480V, I_D=0.02A		7		nC
Gate to Source Charge		Q_{GS}			1.8		nC
Gate to Drain Charge		Q_{GD}			0.5		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=300V, V_{GS}=10V, I_D=0.02A, R_G=6Ω		9		ns
Rise Time		t_R			45		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			10		ns
Fall-Time		t_F			180		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			1.2	V
Body Diode Reverse Recovery Time		t_{rr}	V_R=30V, I_F=0.016A, dI$_F$/dt=100A/μs		150		ns
Body Diode Reverse Recovery Charge		Q_{rr}			240		nC

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%.

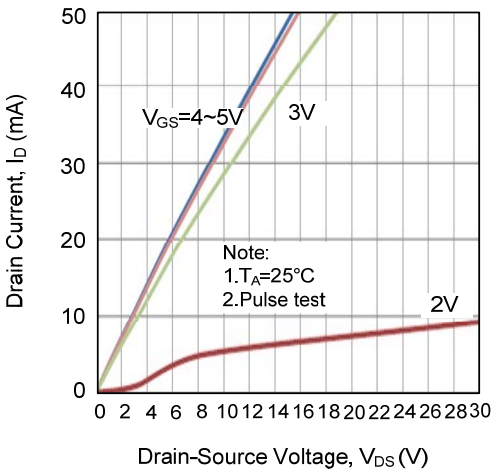
■ TEST CIRCUITS AND WAVEFORMS



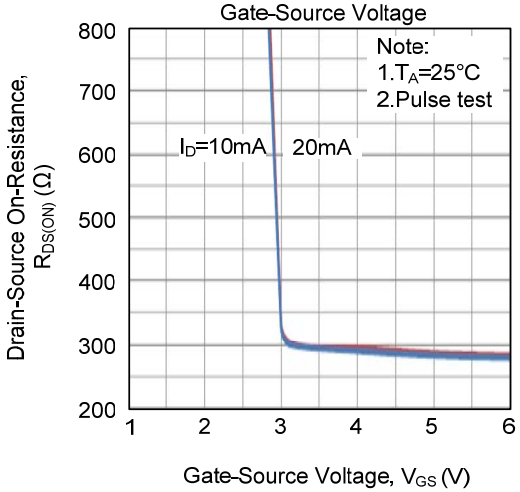
Gate Charge Waveforms

■ TYPICAL CHARACTERISTICS

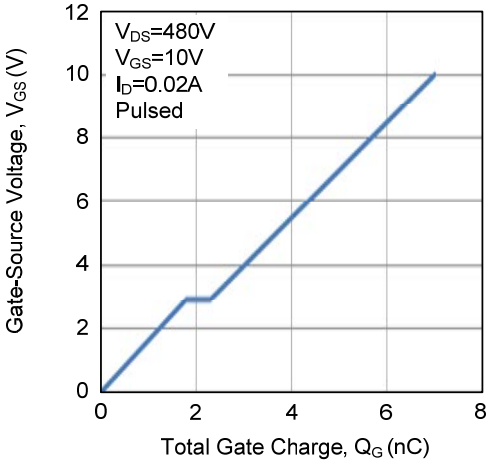
Drain Current vs. Drain-Source Voltage



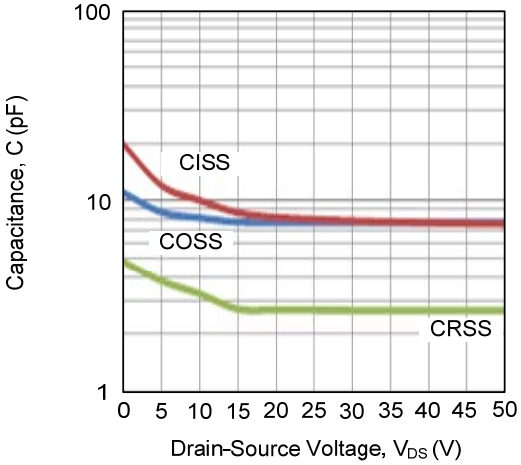
Drain-Source On-Resistance vs. Gate-Source Voltage



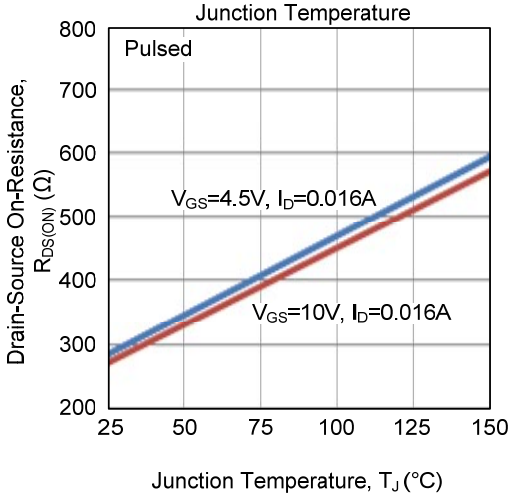
Gate Charge Characteristics



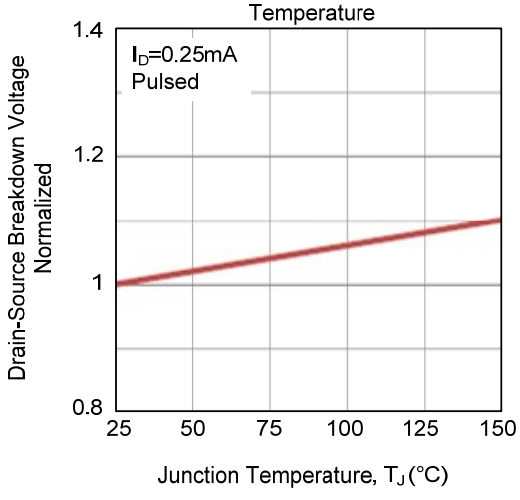
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

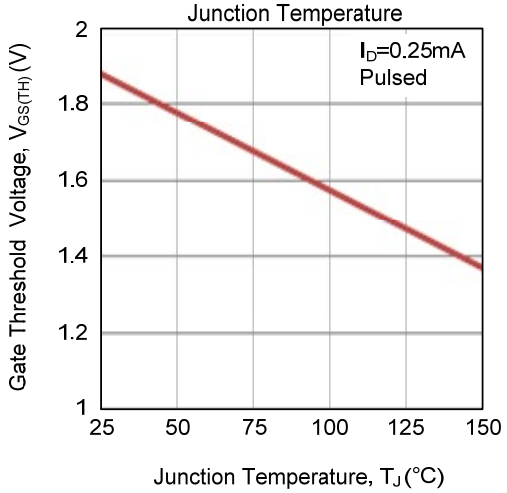


Breakdown Voltage vs. Junction Temperature

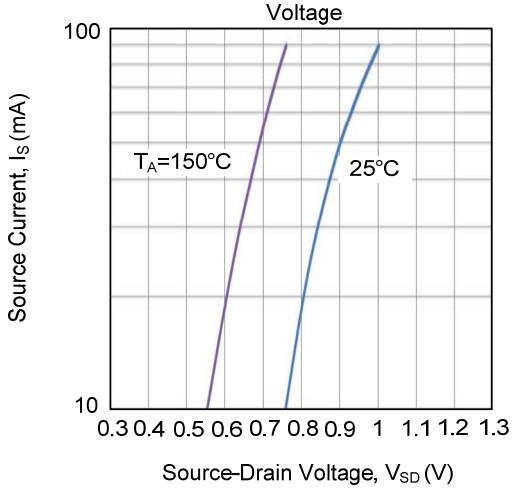


■ TYPICAL CHARACTERISTICS (Cont.)

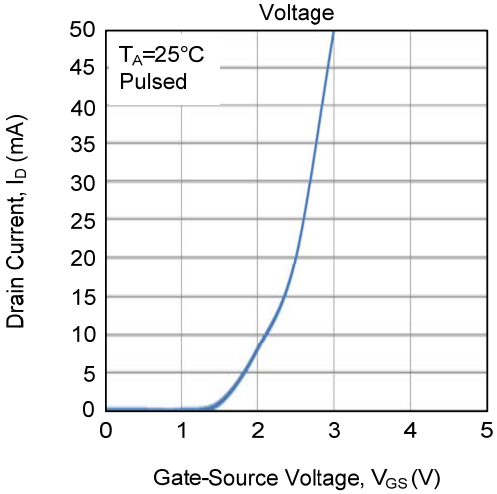
Gate Threshold Voltage vs. Junction Temperature



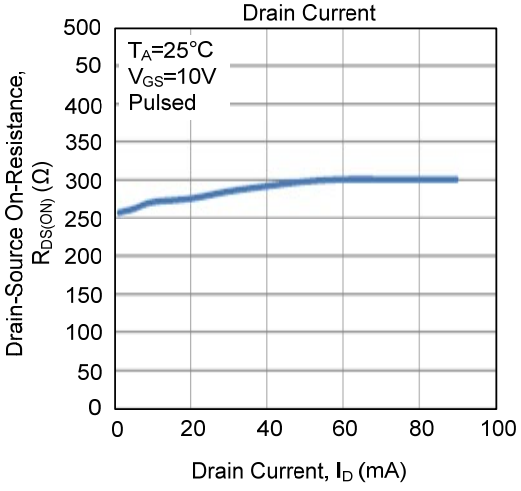
Source Current vs. Source-Drain Voltage



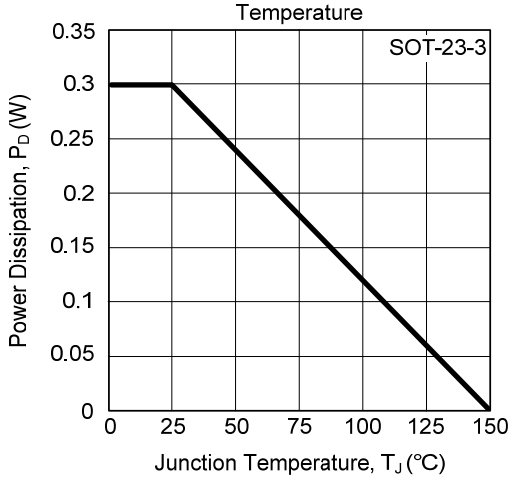
Drain Current vs. Gate-Source Voltage



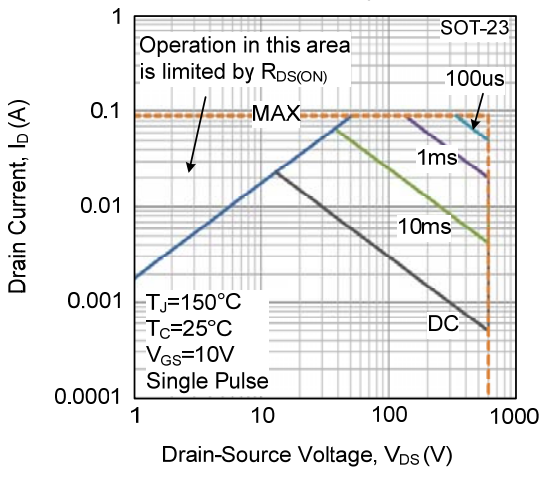
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Safe Operating Area



■ TYPICAL CHARACTERISTICS (Cont.)