



BSS139Z

Power MOSFET

0.2A, 50V N-CHANNEL POWER MOSFET

DESCRIPTION

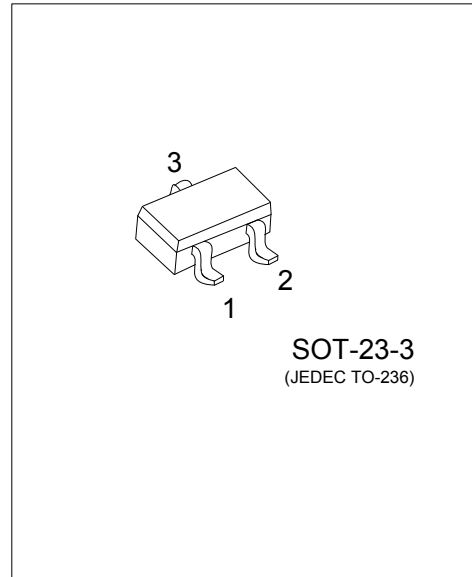
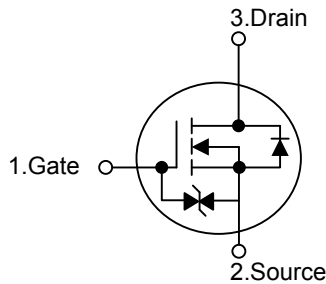
The UTC **BSS139Z** is an N-Channel power MOSFET, it uses UTC's advanced technology to provide customers with high switching speed and low threshold voltage.

The UTC **BSS139Z** is suitable for battery-powered products, power management in portable and DC to DC converters, etc.

FEATURES

- * $R_{DS(ON)} \leq 5.6\Omega$ @ $V_{GS}=5V, I_D=200mA$
- * High switching speed
- * Low threshold voltage (Min.=0.5V, Max.=1.5V)

SYMBOL



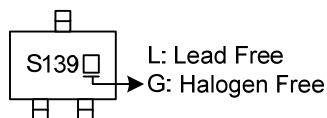
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS139ZL-AE2-R	BSS139ZG-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

<p>BSS139ZG-AE2-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3</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 noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	50	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	200	mA
	Pulsed $t_p \leq 10\mu\text{s}$	I_{DM}	800	mA
Power Dissipation		P_D	225	mW
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	θ_{JA}	556	$^\circ\text{C}/\text{W}$

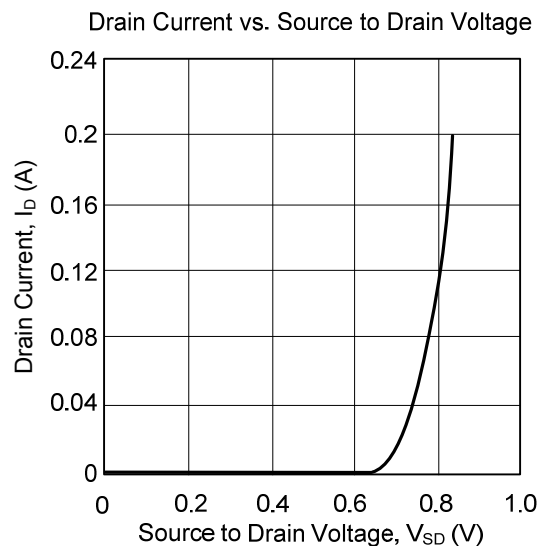
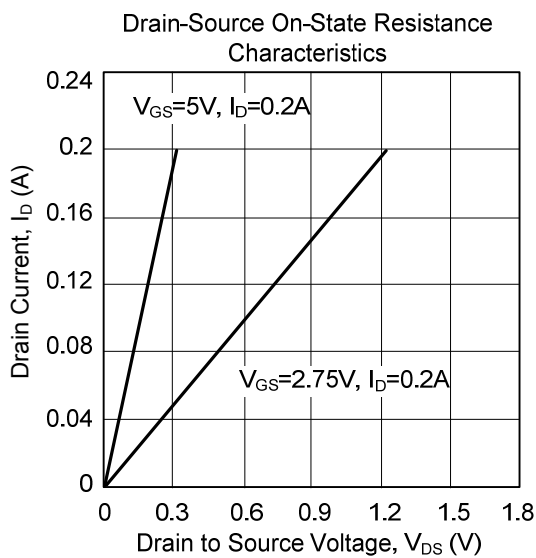
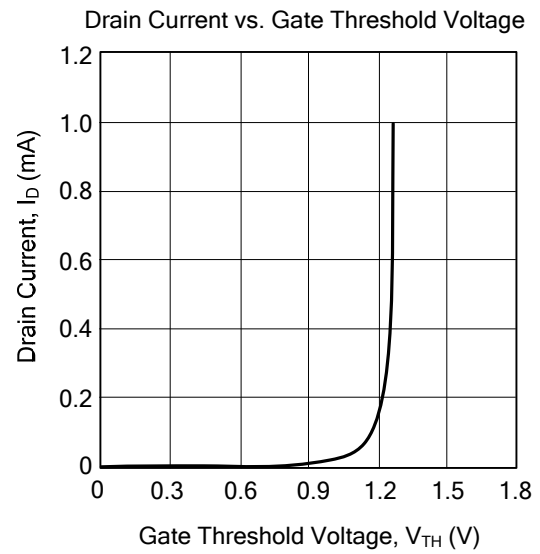
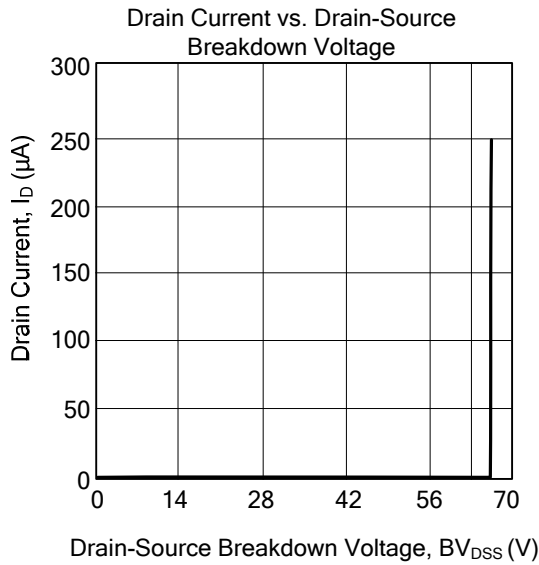
■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS								
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	50			V	
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=25\text{V}, V_{GS}=0\text{V}$			0.1	μA	
			$V_{DS}=50\text{V}, V_{GS}=0\text{V}$			0.5	μA	
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+20\text{V}, V_{DS}=0\text{V}$			+10	μA	
	Reverse		$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$			-10	μA	
ON CHARACTERISTICS (Note 1)								
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=1.0\text{mA}$	0.5		1.5	V	
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=2.75\text{V}, I_D=200\text{mA}$		5.6	10	Ω	
			$V_{GS}=5.0\text{V}, I_D=200\text{mA}$			3.5	Ω	
DYNAMIC PARAMETERS								
Input Capacitance		C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=25\text{V},$ $f=1.0\text{MHz}$		40	50	pF	
Output Capacitance		C_{OSS}				12	25	pF
Reverse Transfer Capacitance		C_{RSS}			3.5	5.0	pF	
SWITCHING PARAMETERS (Note 2)								
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=30\text{V}, I_D=0.2\text{A}$			20	ns	
Turn-OFF Delay Time		$t_{D(OFF)}$				20	ns	

Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Switching characteristics are independent of operating junction temperature.

TYPICAL CHARACTERISTICS



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