

**BSS214**

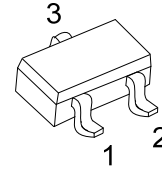
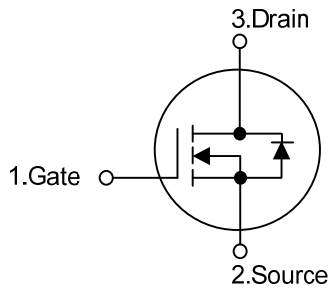
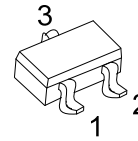
Preliminary

Power MOSFET**1.5A, 20V ENHANCEMENT
N-CHANNEL MOSFET****DESCRIPTION**

The UTC **BSS214** 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

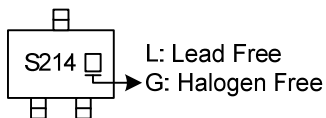
- * $R_{DS(ON)} \leq 140 \text{ m}\Omega$ @ $V_{GS} = 4.5\text{V}$, $I_D = 1.5\text{A}$
- $R_{DS(ON)} \leq 250 \text{ m}\Omega$ @ $V_{GS} = 2.5\text{V}$, $I_D = 0.7\text{A}$
- * Ultra High Switching Speed

SYMBOL**SOT-23-3**
(JEDEC TO-236)**SOT-323****ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS214L-AE2-R	BSS214G-AE2-R	SOT-23-3	G	S	D	Tape Reel
BSS214L-AL3-R	BSS214G-AL3-R	SOT-323	G	S	D	Tape Reel

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

BSS214G-AE2-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel (2) AE2: SOT-23-3, AL3: SOT-323 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	20	V
Gate-Source Voltage		V _{GSS}	±12	V
Drain Current	Continuous	I _D	1.5	A
	Pulsed	I _{DM}	3	A
Power Dissipation (T _A =25°C)	SOT-23-3	P _D	0.36	W
	SOT-323		0.15	
Junction Temperature		T _J	-55 ~ +150	°C
Storage Temperature Range		T _{STG}	-55 ~ +150	°C

Notes: 1. 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.

2. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23-3	θ _{JA}	350	°C/W
	SOT-323		833	°C/W

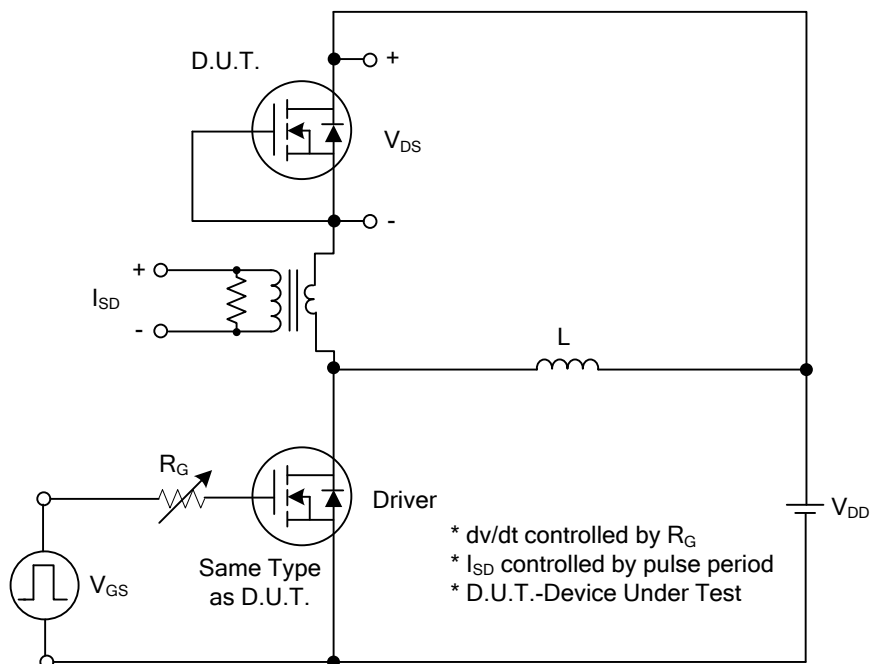
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0 V, I _D =250μA	20			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =12V, V _{DS} =0V			100	nA
	Reverse		V _{GS} =-12V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.2	V
Static Drain-Source On-State Resistance	SOT-23-3	R _{DS(ON)}	V _{GS} =4.5V, I _D =1.5A			140	mΩ
	SOT-323					170	mΩ
	SOT-23-3		V _{GS} =2.5V, I _D =0.7A			250	mΩ
	SOT-323					270	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =10V, f=1MHz		74.9		pF
Output Capacitance		C _{OSS}			32.4		pF
Reverse Transfer Capacitance		C _{RSS}			24.8		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =10V, V _{GS} =10V, I _D =1.5A (Note 1, 2)		9.46		nC
Gate-Source Charge		Q _{GS}			0.9		nC
Gate-Drain Charge		Q _{GD}			1.24		nC
Turn-On Delay Time (Note 1)		t _{D(ON)}	V _{DD} =10V, V _{GS} =10V, I _D =1.5A, R _G =25Ω (Note 1, 2)		1.7		ns
Turn-On Rise Time		t _R			14.7		ns
Turn-Off Delay Time		t _{D(OFF)}			12.4		ns
Turn-Off Fall Time		t _F			17.8		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Continuous Source Current		I _S				1.5	A
Pulsed Source Current		I _{SM}				3	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =1.5A, V _{GS} =0V			1.1	V

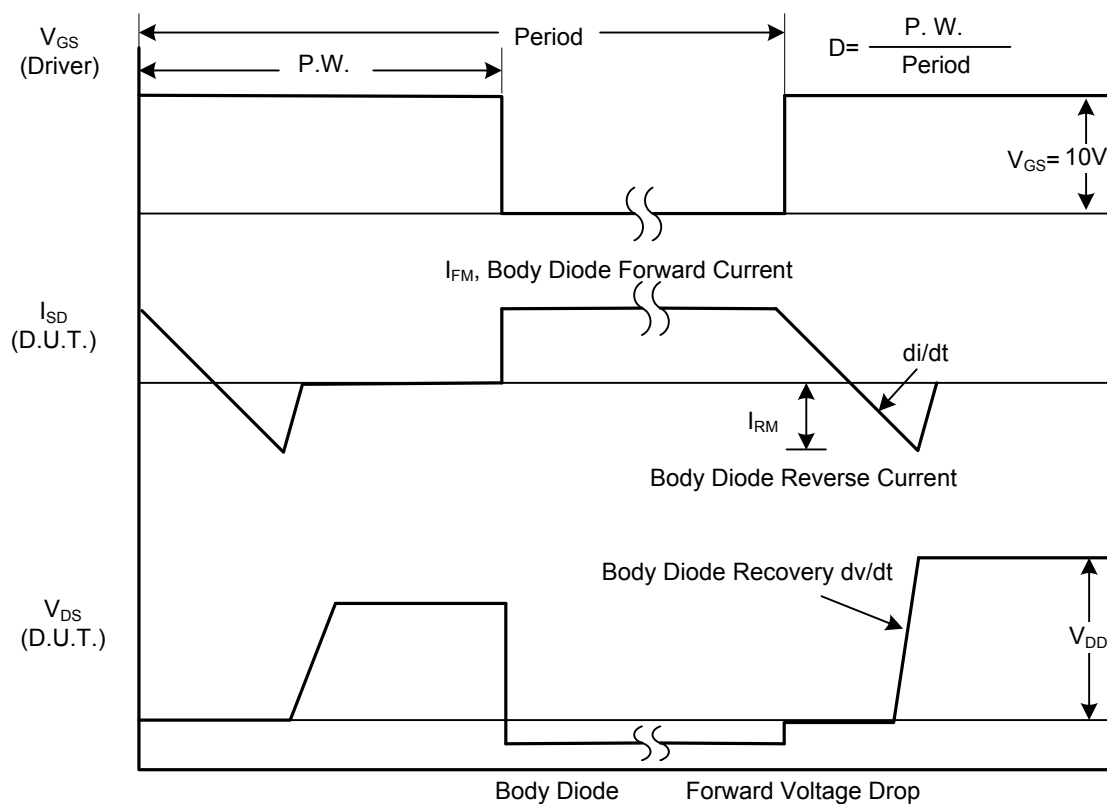
Notes: 1. The Power Dissipation of the package may result in a lower continuous drain current.

2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

■ TEST CIRCUITS AND WAVEFORMS

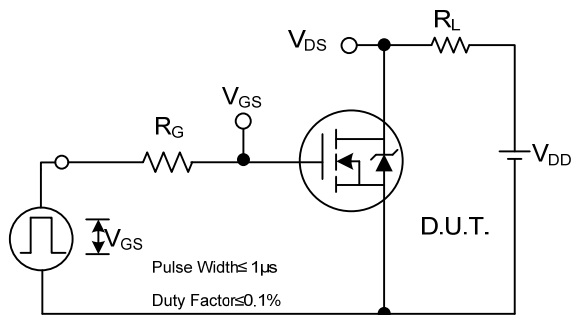


Peak Diode Recovery dv/dt Test Circuit

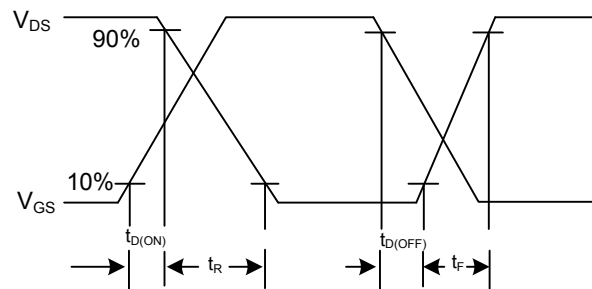


Peak Diode Recovery dv/dt Waveforms

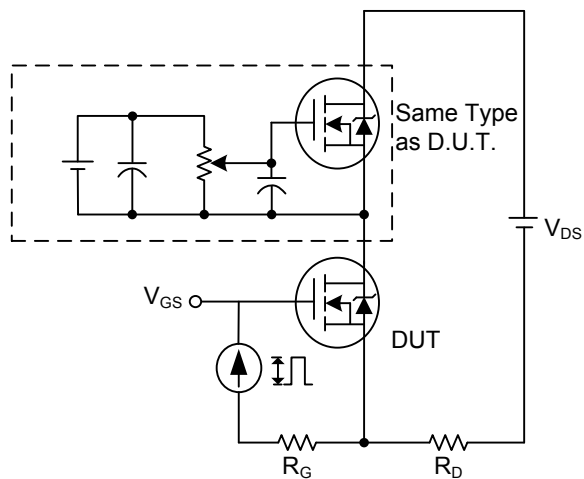
■ TEST CIRCUITS AND WAVEFORMS



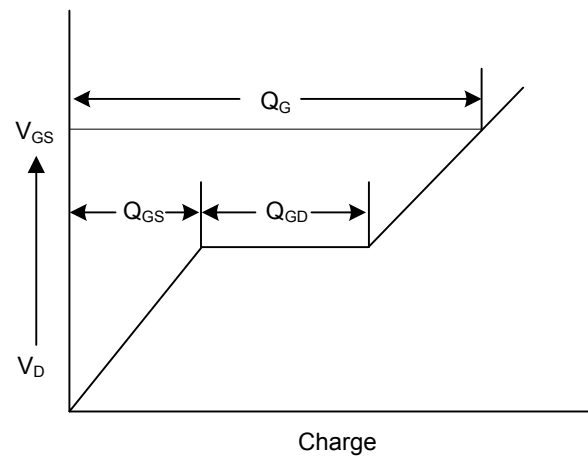
Switching Test Circuit



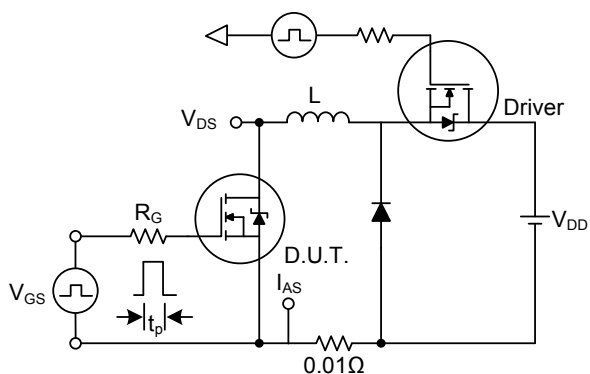
Switching Waveforms



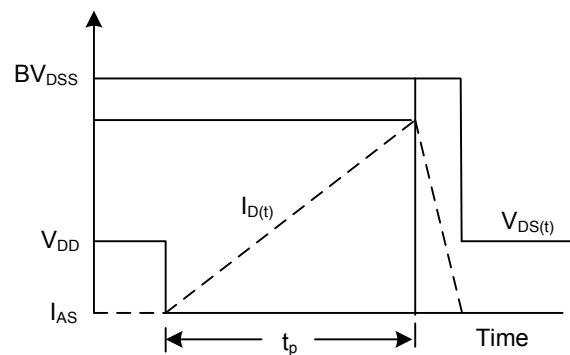
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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