

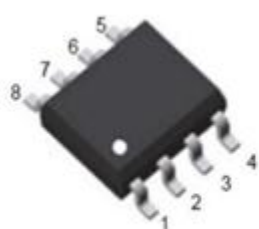
100V 14A N-Channel Enhancement Mode Power MOSFET

FEATURES

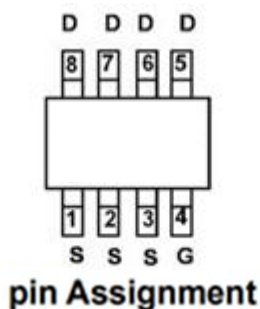
- $R_{DS(ON)} \leq 10.5m\Omega$ @ $V_{GS}=10V$, $I_D=14A$
- Advanced SGT process
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

APPLICATION

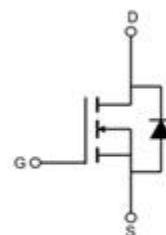
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification



SOP-8 top view



pin Assignment



Schematic Diagram

ASSEMBLY MESSAGE

Product Name	Marking	Package	Packaging
BXS105N10B	BX105N10B	SOP-8	Reel

ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Rating	Unit
			SOP-8	
Drain-Source Voltage		V_{DSS}	100	V
Drain Current	Continuous ($T_C = 25^\circ C$)	I_D	14	A
	Continuous ($T_C = 100^\circ C$)		10.8	A
Drain Current	Pulsed (Note1)	I_{DM}	56	A
Gate-Source Voltage		V_{GSS}	± 20	V
Power Dissipation	$T_C = 25^\circ C$	P_D	3.5	W
Maximum Junction Temperature		T_J	150	$^\circ C$
Storage Temperature Range		T_{STG}	-55 to 150	$^\circ C$

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

THERMAL CHARACTERISTICS

Parameter	Symbol	Max.	Unit
		SOP-8	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	36	°C / W

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V, ID=250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	VDS=100V, VGS=0V			1	uA
Gate-Body Leakage Current, Forward	I _{GSS}	VGS=20V			100	nA
Gate-Body Leakage Current, Reverse		VGS=-20V			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	VDS=VGS, ID=250μA	1.2	1.8	2.6	V
Drain-Source On-State Resistance	R _{DS(ON)}	VGS=10V, ID=14A		8.8	10.5	mΩ
		VGS=4.5V, ID=14A		11	14.5	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	VDS=50V, VGS=0V, f=1.0MHz		3640		pF
Output Capacitance	C _{OSS}			310		pF
Reverse Transfer Capacitance	C _{RSS}			21		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	t _{D(ON)}	VDD=50V, ID=14A, VGS = 10V, RG=1.8Ω		16		ns
Turn-ON Rise Time	t _R			10		ns
Turn-OFF Delay Time	t _{D(OFF)}			34		ns
Turn-OFF Fall-Time	t _F			8.5		ns
Total Gate Charge(Note2)	Q _G	VDS =50V, VGS =10V, ID =14A		71		nC
Gate Source Charge	Q _{GS}			15		nC
Gate Drain Charge	Q _{GD}			17		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	IS=14A, VGS=0V			1.4	V
Diode Continuous Forward Current	I _S				14	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}				56	A

Note: 2. Essentially independent of operating temperature

TYPICAL CHARACTERISTICS

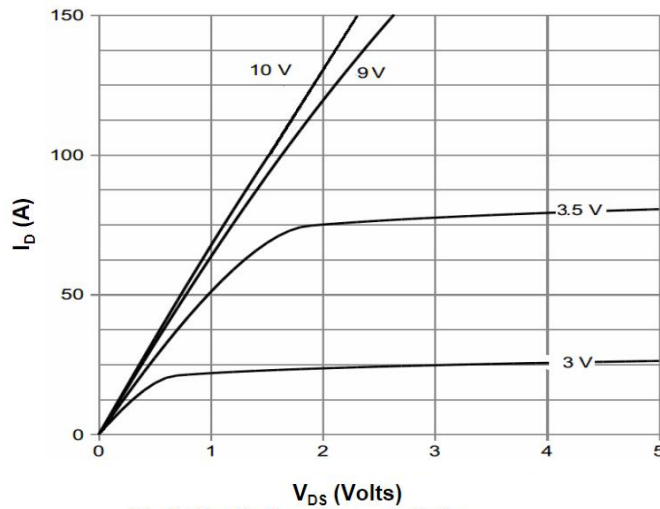


Fig 1: On-Region Characteristics

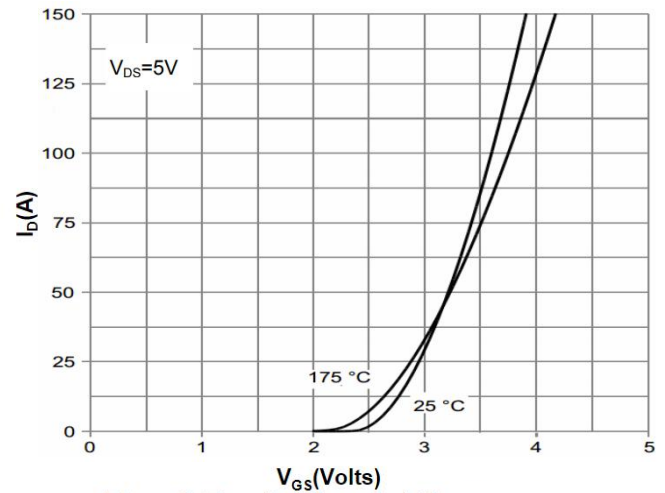


Figure 2: Transfer Characteristics

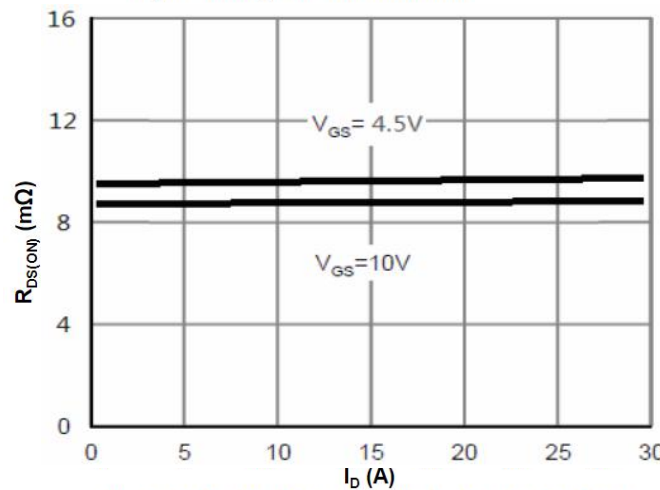


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

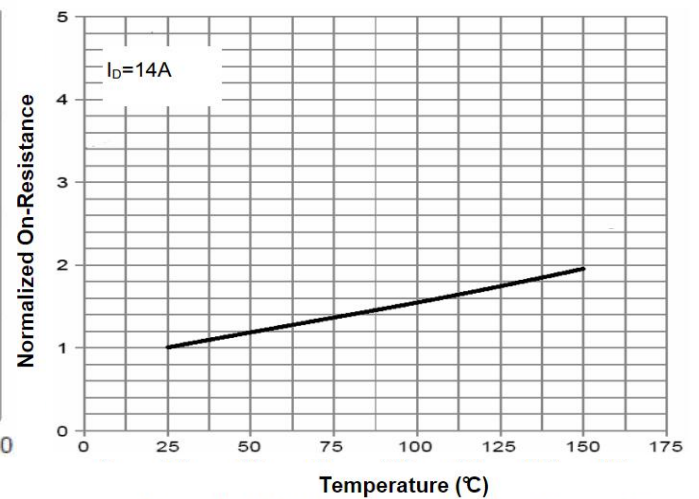


Figure 4: On-Resistance vs. Junction Temperature

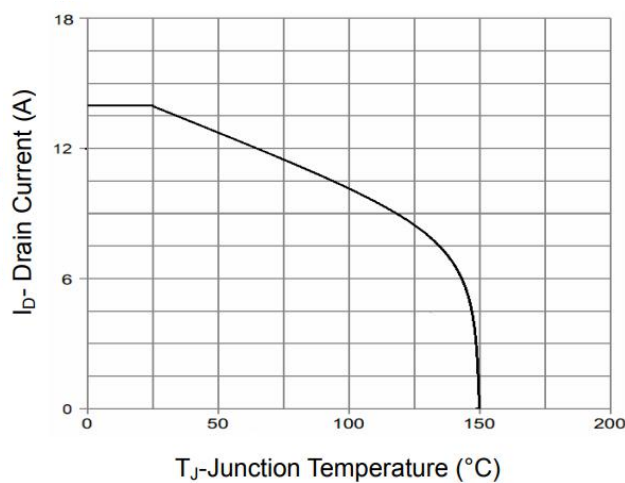


Figure 5: Current De-rating

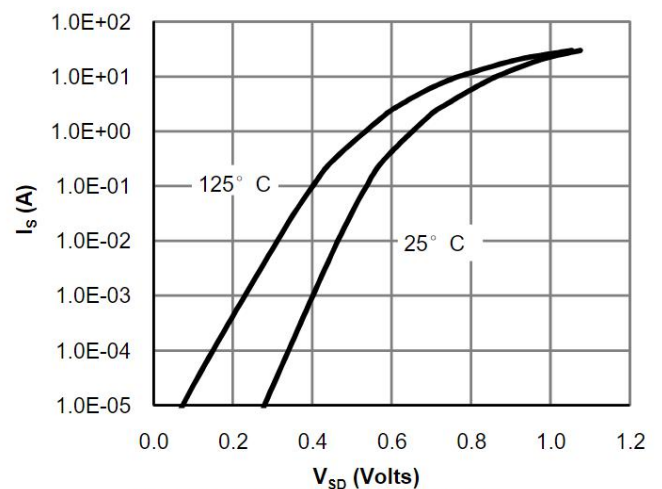
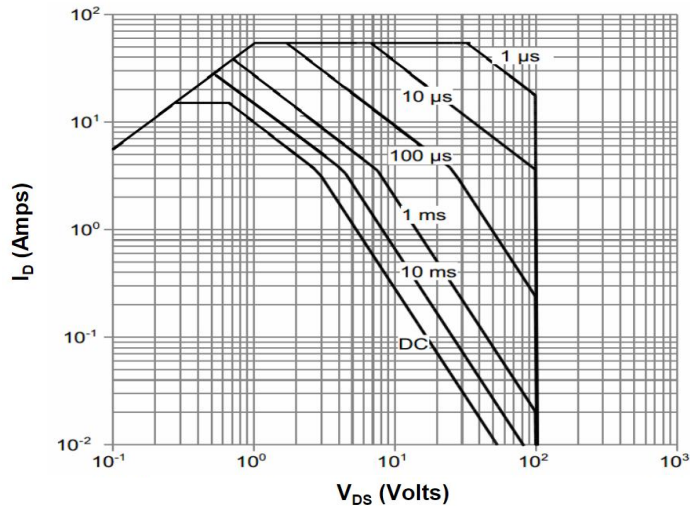
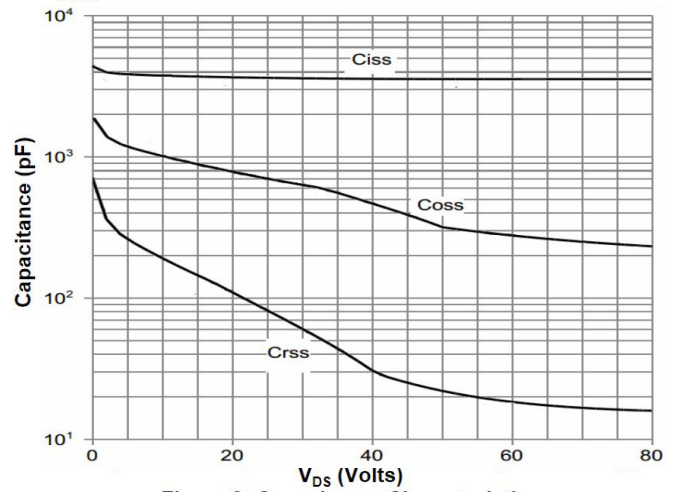
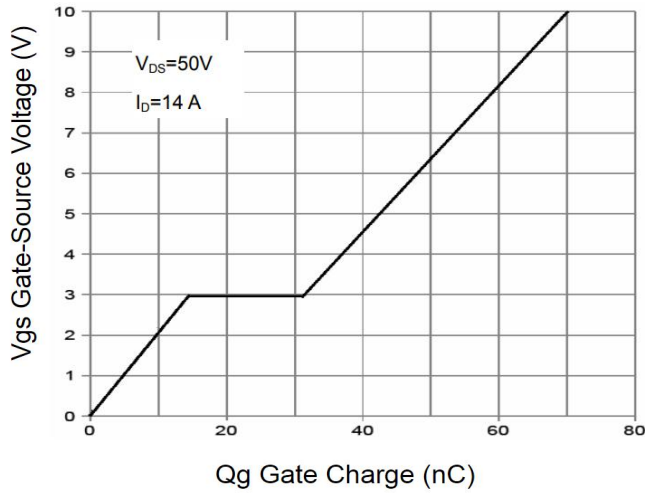
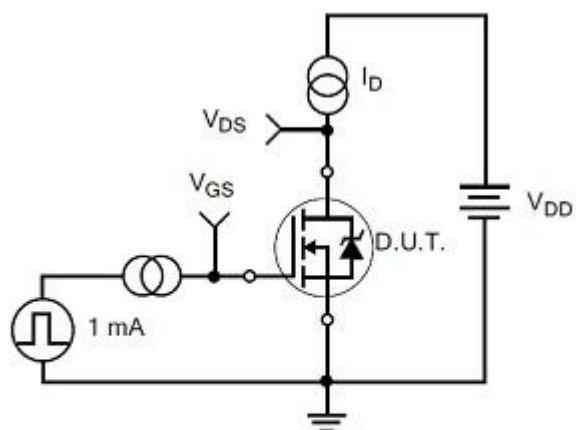


Figure 6: Body-Diode Characteristics

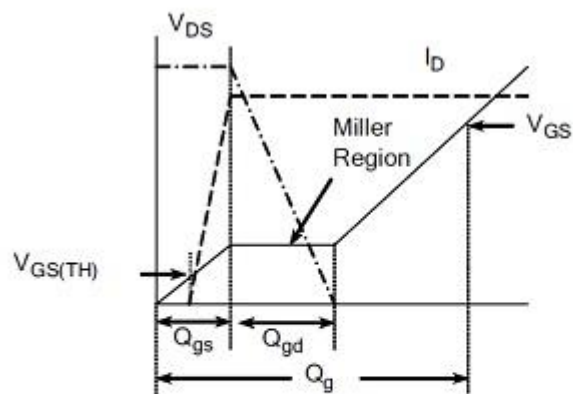
TYPICAL CHARACTERISTICS(Cont.)



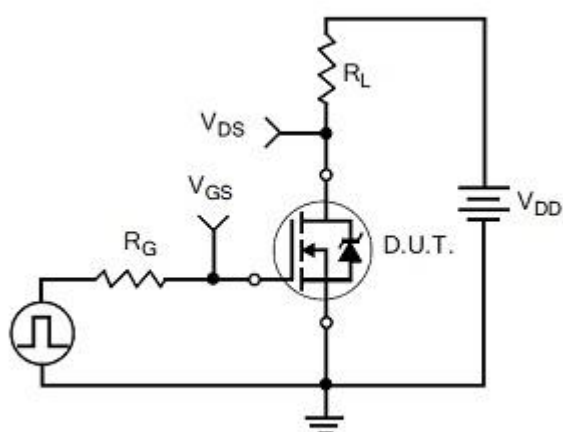
TEST CIRCUITS AND WAVEFORMS



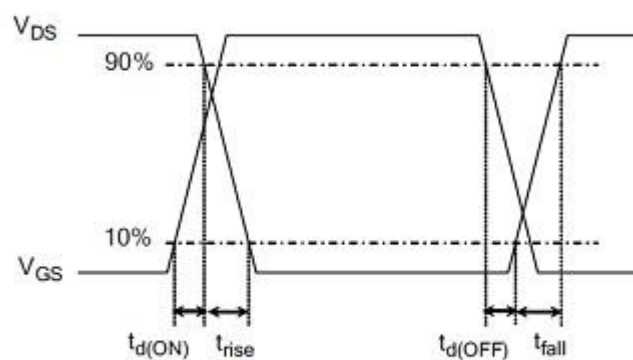
Gate Charge Test Circuit



Gate Charge Waveform

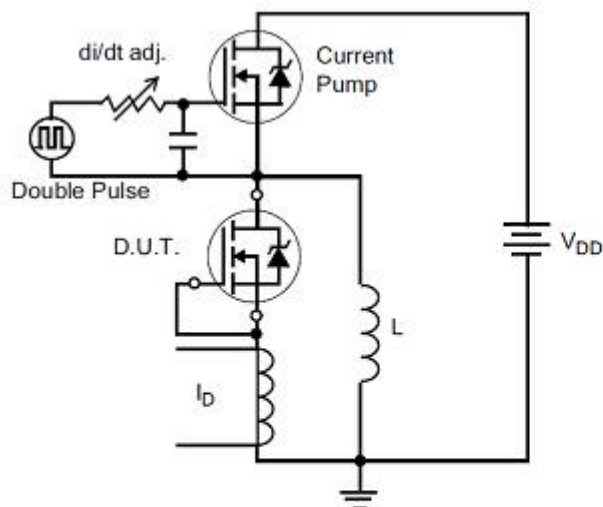


Resistive Switching Test Circuit

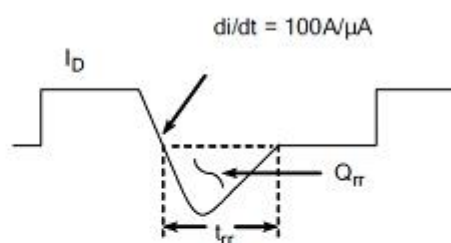


Resistive Switching Waveforms

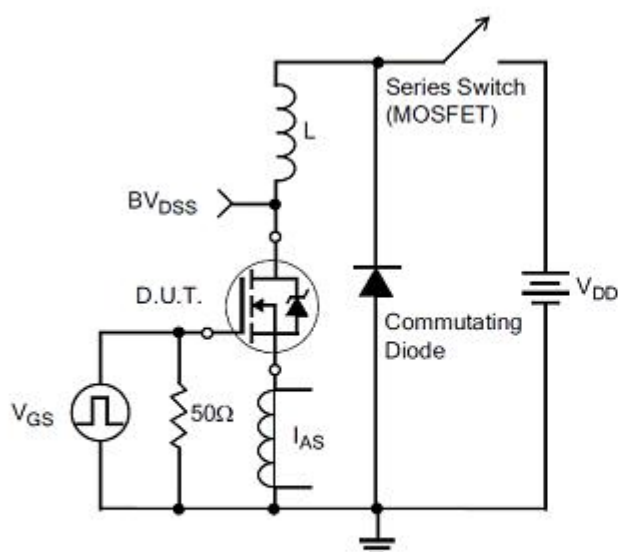
TEST CIRCUITS AND WAVEFORMS(Cont.)



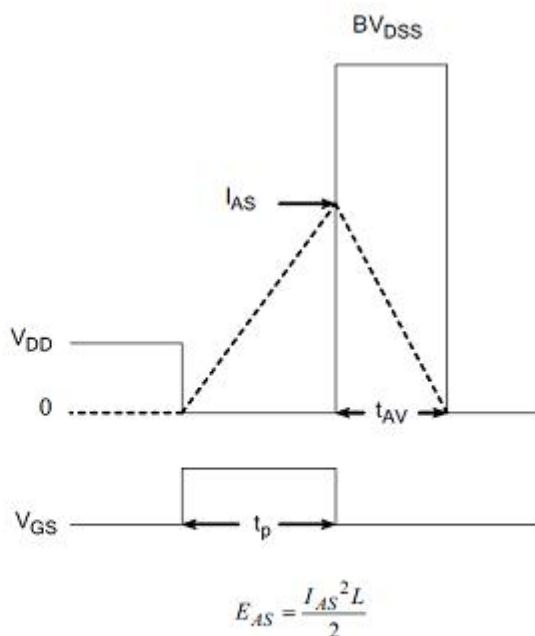
Diode Reverse Recovery Test Circuit



Diode Reverse Recovery Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

Revision history

Document revision history

Date	Revision	Changes
5-Jul-2021	1.0	First release

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