

-60V -3A P-Channel Enhancement Mode Power MOSFET

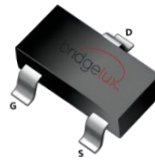
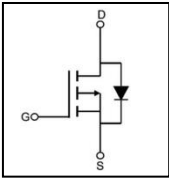
Features

- $R_{DS(on)} \leq 380m\Omega$ @ $V_{gs}=-10V$
- Advanced trench technology
- Excellent $R_{DS(on)}$ and Low Gate Charge
- Lead free product is acquired

Application

- Load Switch
- PWM Application
- Power management

SYMBOL



SOT-23

ASSEMBLY MESSAGE

Product Name	Package	Packaging
BXT3800P06M	SOT-23	Reel

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

Parameter		Symbol	Rating	Unit
			SOT-23	
Drain-Source Voltage		V_{DSS}	-60	V
Drain Current	Continuous ($T_C = 25^\circ C$)	I_D	-3	A
	Continuous ($T_C = 100^\circ C$)		-2.1	A
Drain Current	Pulsed (Note1)	I_{DM}	-12	A
Gate-Source Voltage		V_{GSS}	± 20	V
Power Dissipation	$T_C = 25^\circ C$	P_D	1.2	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
		SOT-23	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	104	$^\circ C / W$

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	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	VDS=-60V, VGS=0V			-1	μA
Gate-Body Leakage Current, Forward	I _{GSS}	VGS=20V			1	μA
Gate-Body Leakage Current, Reverse		VGS=-20V			-1	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	VDS=VGS, ID=-250μA	-1.0		-2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	VGS=-10V, ID=-1.5A		300	380	mΩ
		VGS=-4.5V, ID=-1A		420	550	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	VDS=-30V, VGS=0V, f=1.0MHz		420		pF
Output Capacitance	C _{OSS}			43		pF
Reverse Transfer Capacitance	C _{RSS}			20		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	t _{D(ON)}	VDD=-30V, ID=-1.5A, VGS = -10V, RG=7.5Ω		5		ns
Turn-ON Rise Time	t _R			1.5		ns
Turn-OFF Delay Time	t _{D(OFF)}			13		ns
Turn-OFF Fall-Time	t _F			3		ns
Total Gate Charge(Note2)	Q _G	VDS = -30V, VGS = -10V, ID=-1.5A		11		nC
Gate Source Charge	Q _{GS}			1		nC
Gate Drain Charge	Q _{GD}			3		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =-3A, VGS=0V			-1.5	V
Diode Continuous Forward Current	I _S				-3	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}				-12	A

Note: 2. Essentially independent of operating temperature

TYPICAL CHARACTERISTICS

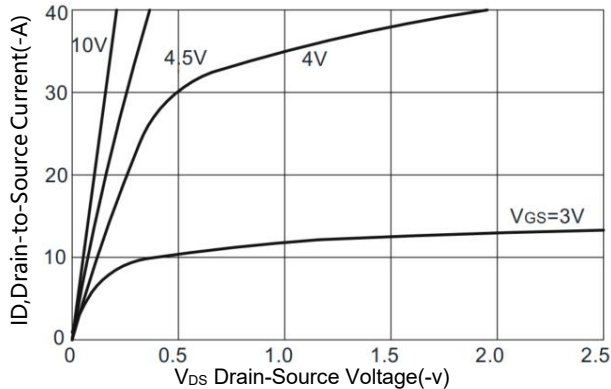


Figure1. Typical Output Characteristics

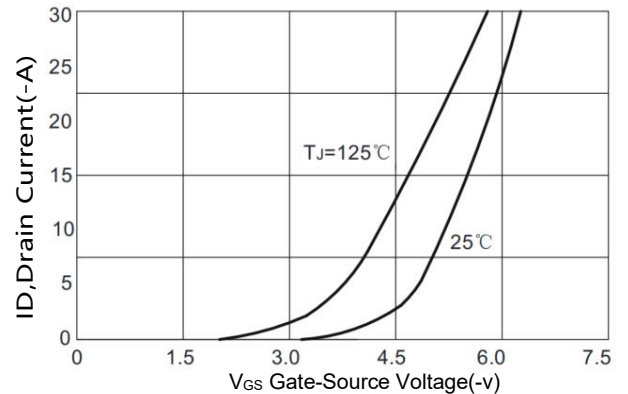


Figure2. Typical Transfer Characteristics

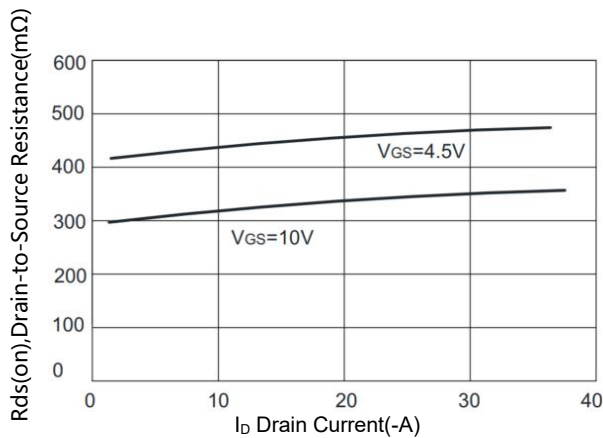


Figure3. On-Resistance versus Drain Current

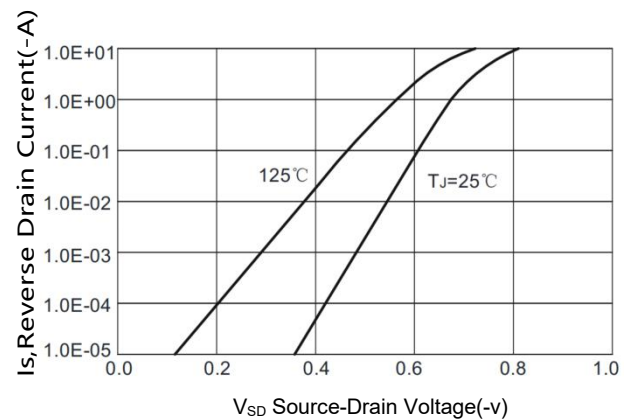


Figure4. Diode forward voltage versus Current

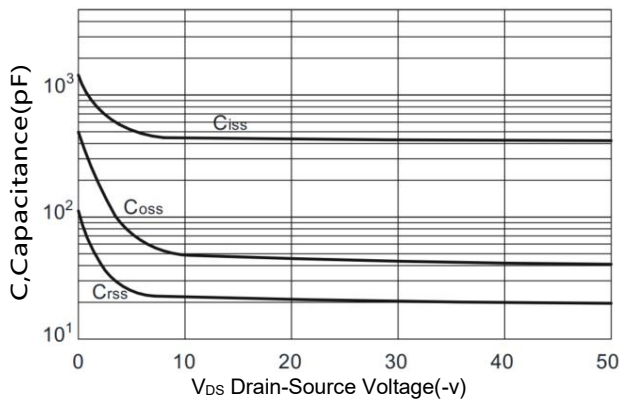


Figure5. Typical Capacitance versus V_{DS}

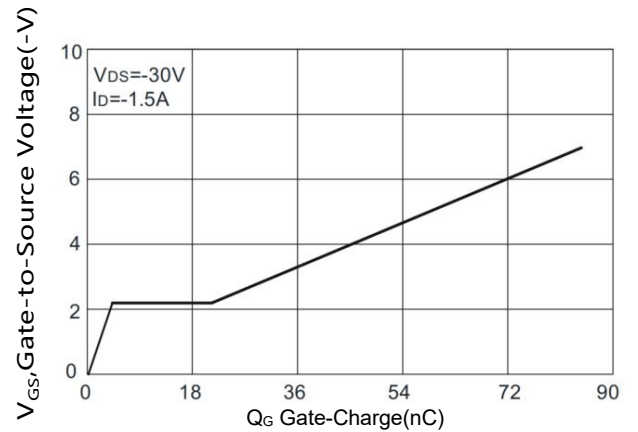


Figure6. Typical Gate Charge versus V_{GS}

TYPICAL CHARACTERISTICS(Cont.)

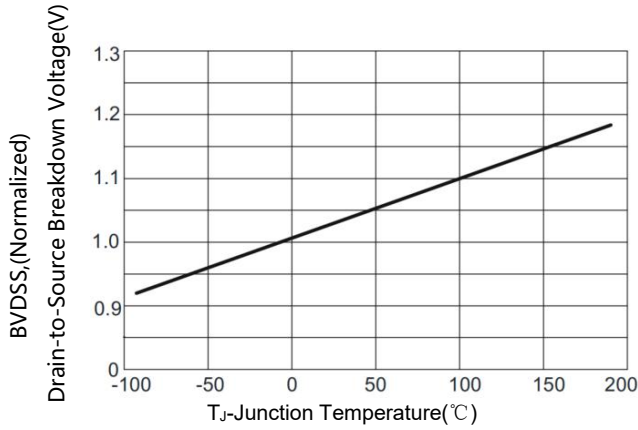


Figure7. BV_{DSS} Variation with Temperature

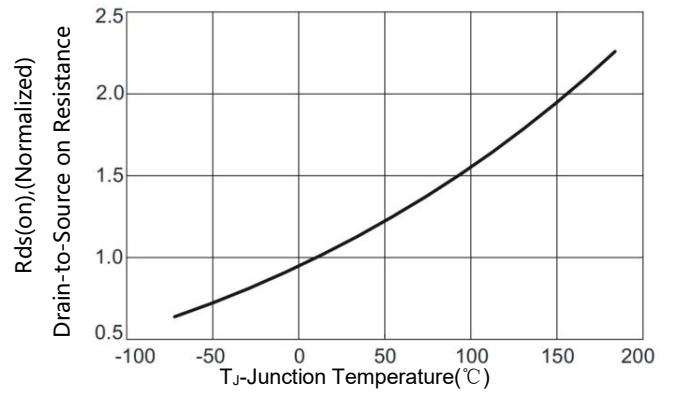


Figure8. On-Resistance Variation with Temperature

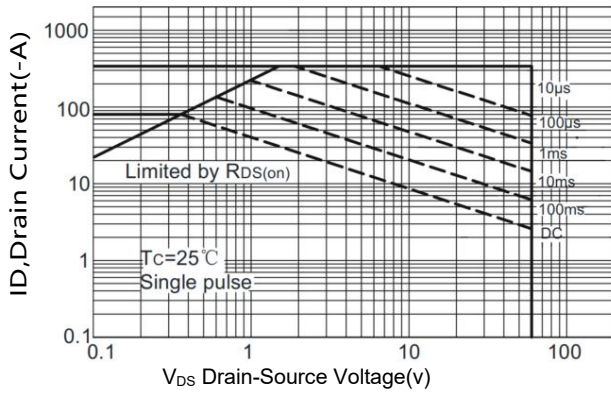


Figure9. Maximum Safe Operating Area

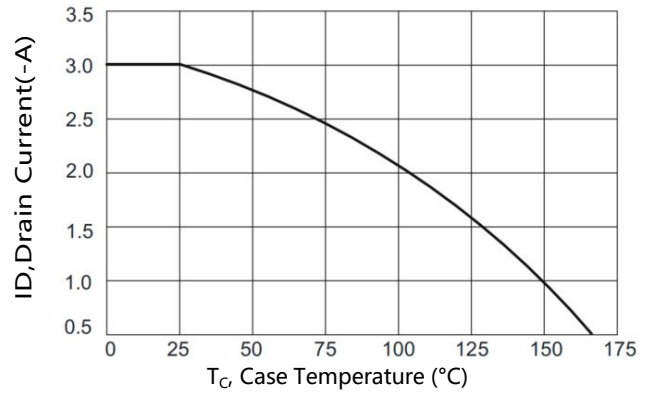
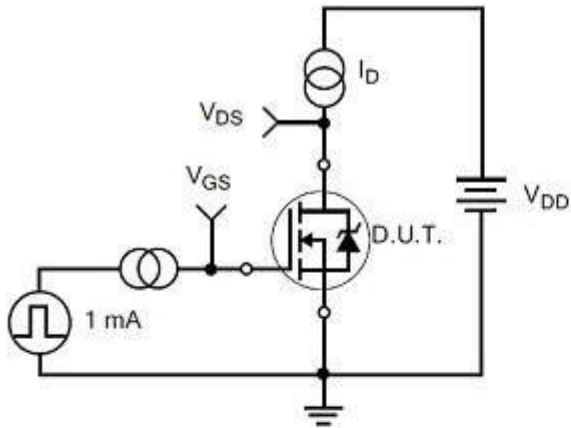
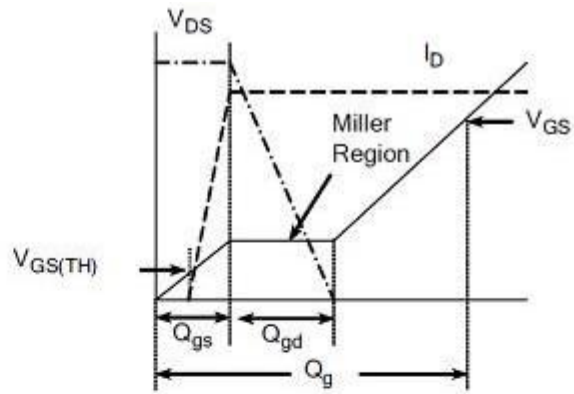


Figure10. Maximum Continuous Drain Current versus Case Temperature

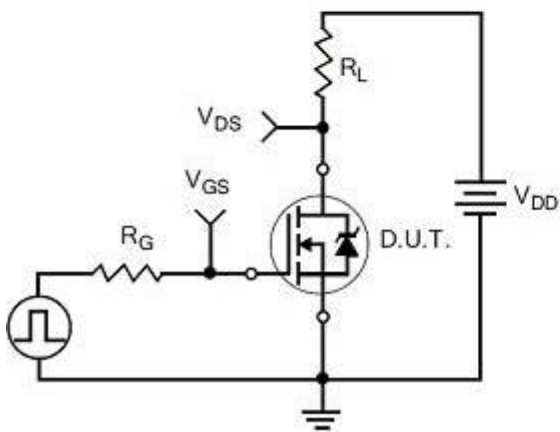
TEST CIRCUITS AND WAVEFORMS



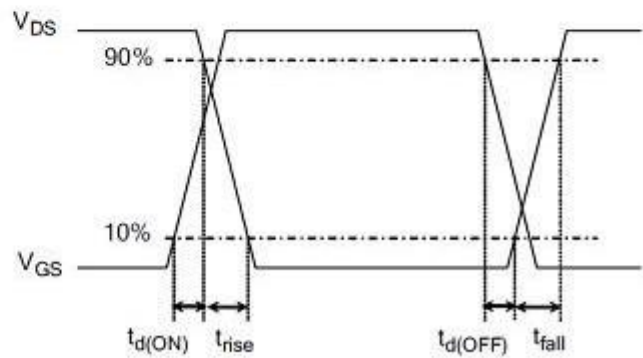
Gate Charge Test Circuit



Gate Charge Waveform

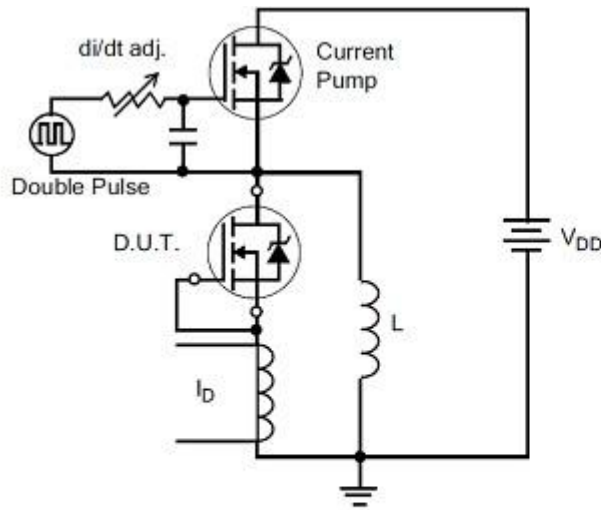


Resistive Switching Test Circuit

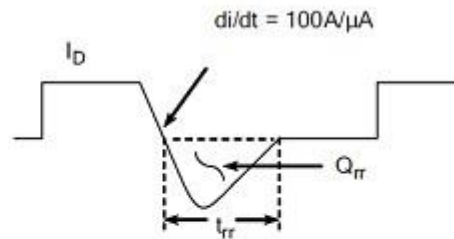


Resistive Switching Waveforms

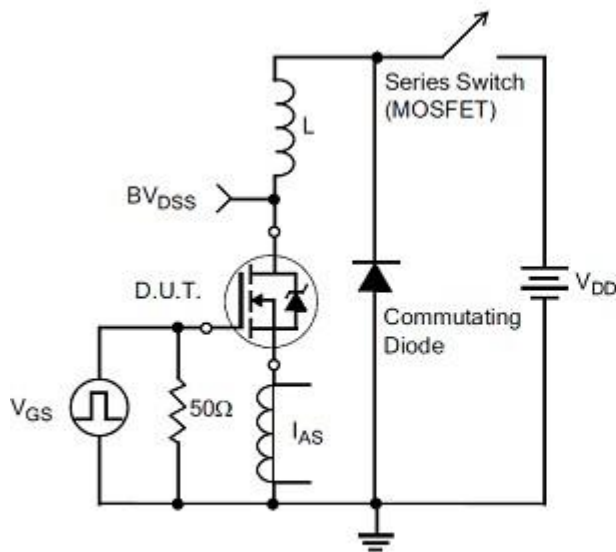
TEST CIRCUITS AND WAVEFORMS(Cont.)



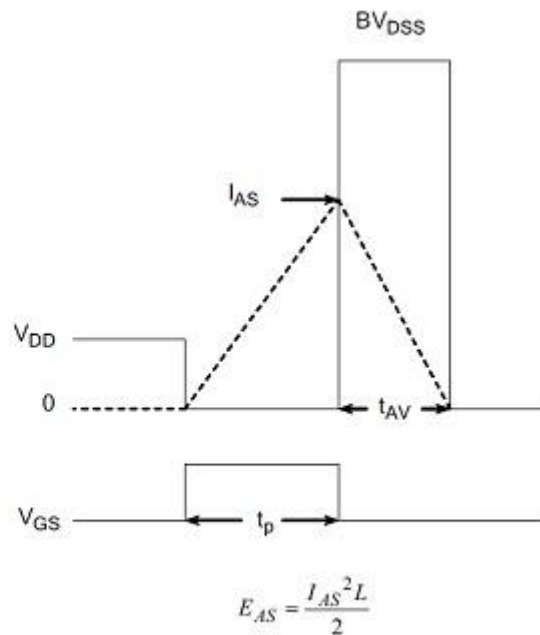
Diode Reverse Recovery Test Circuit



Diode Reverse Recovery Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

Revision history**Document revision history**

Date	Revision	Changes
30-Oct-2021	1.0	First release

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