

20V 4.5A N-Channel Enhancement Mode Power MOSFET

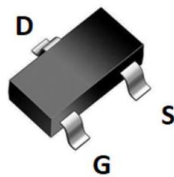
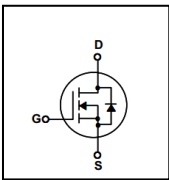
General Description

This Power MOSFET has been developed using advanced trench process, which is specifically designed to minimize input capacitance and gate charge. This renders the device suitable for use as primary switch in advanced high-efficiency isolated DC-DC converters for telecom and computer applications, and applications with low gate charge driving requirements.

FEATURES

- $R_{DS(ON)} \leq 27m\Omega$ @ $V_{GS}=4.5V, I_D=4A$
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

SYMBOL



SOT-23 top view

ASSEMBLY MESSAGE

Product Name	Marking	Package	Packaging
BXT270N02M	2302C	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}	20	V
Drain Current	Continuous ($T_C = 25^\circ C$)	I_D	4.5	A
	Continuous ($T_C = 100^\circ C$)		3.6	A
Drain Current	Pulsed (Note1)	I_{DM}	18	A
Gate-Source Voltage		V_{GSS}	± 12	V
Power Dissipation	$T_C = 25^\circ C$	P_D	1.0	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- Ambient	R _{θJA}	125	°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	20			V
Zero Gate Voltage Drain Current	I _{DSS}	VDS=20V, VGS=0V			1	μA
Gate-Body Leakage Current, Forward	I _{GSS}	VGS=12V			100	nA
Gate-Body Leakage Current, Reverse		VGS=-12V			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	VGS(TH)	VDS=VGS, ID=250μA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	VGS=4.5V, ID=4A		22	27	mΩ
		VGS=2.5V, ID=3A		29	44	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	VDS=10V, VGS=0V, f=1.0MHz		610		pF
Output Capacitance	C _{OSS}			110		pF
Reverse Transfer Capacitance	C _{RSS}			58		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	t _{D(ON)}	VDD=10V, ID=4.5A, VGS = 4.5V, RG=3Ω		13		ns
Turn-ON Rise Time	t _R			54		ns
Turn-OFF Delay Time	t _{D(OFF)}			20		ns
Turn-OFF Fall-Time	t _F			18		ns
Total Gate Charge(Note2)	Q _G	VDS =10V, VGS =4.5V, ID =4.5A		5.8		nC
Gate Source Charge	Q _{GS}			0.9		nC
Gate Drain Charge	Q _{GD}			1		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	IS=4.5A, VGS=0V			1.2	V
Diode Continuous Forward Current	I _S				4.5	A

Note: 2. Essentially independent of operating temperature

TYPICAL CHARACTERISTICS

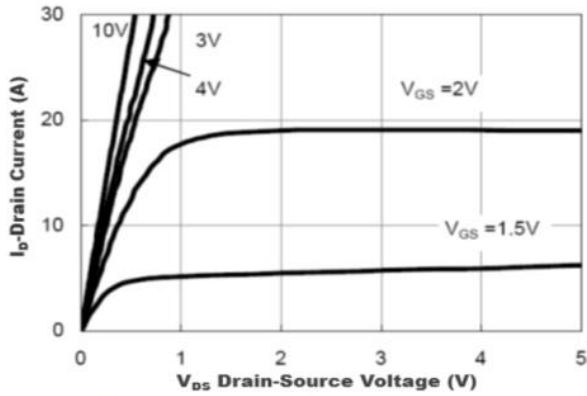


Figure1. Output Characteristics

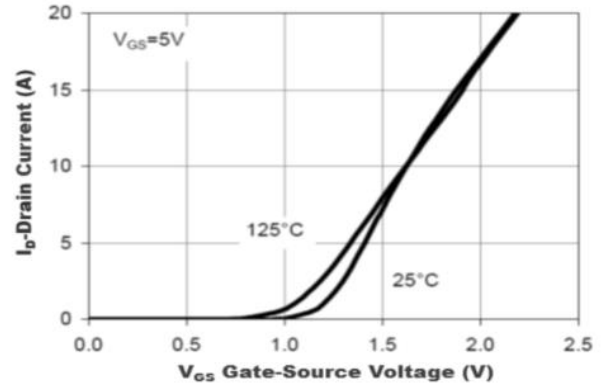


Figure2. Transfer Characteristics

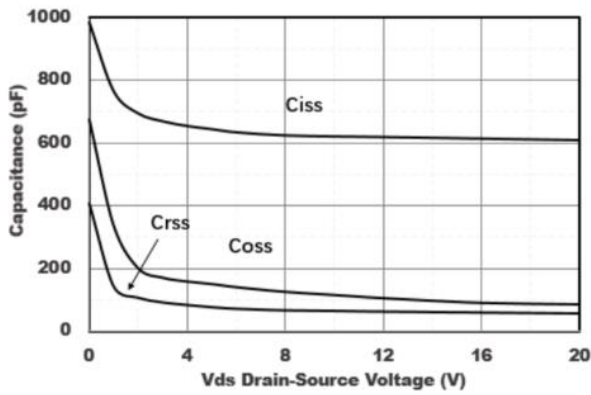


Figure3. Capacitance Characteristics

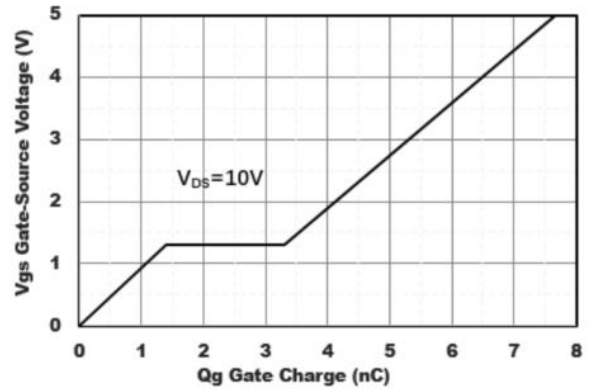


Figure4. Gate Charge

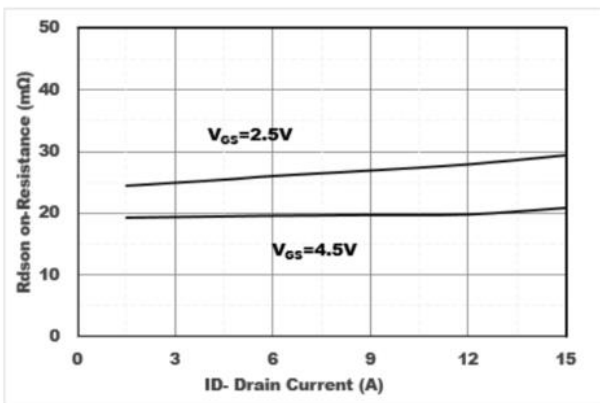


Figure5. Drain-Source on Resistance

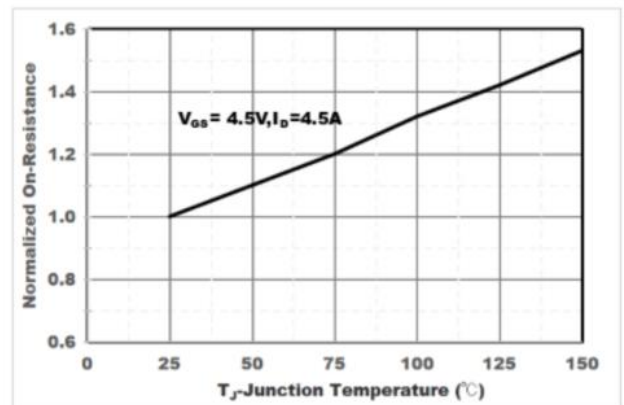


Figure6. Drain-Source on Resistance

