



Description

The BSN20 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 50V$ $I_D = 0.5A$

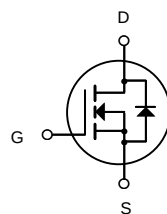
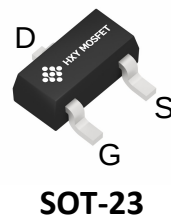
$R_{DS(ON)} < 2\Omega$ @ $V_{GS}=10V$

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
BSN20	SOT-23	M8W	3000

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter		Limit	Unit
V_{DS}	Drain-Source Voltage		50	V
V_{GS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current ($T_J = 150^\circ\text{C}$)	$T_A = 25^\circ\text{C}$	0.5	A
		$T_A = 100^\circ\text{C}$	0.29	
I_{DM}	Drain Current-Pulsed (Note 1)		1.2	A
P_D	Maximum Power Dissipation		0.6	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 To 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)		200	$^\circ\text{C/W}$



Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

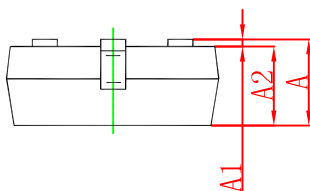
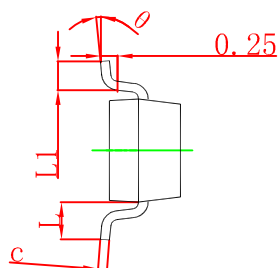
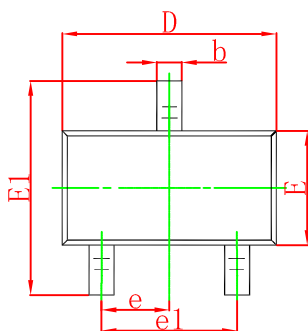
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID = 250μA	50			V
Gate-source threshold voltage	VGS(th)	VDS =VGS, ID = 250μA	1.0		3	V
Gate-source leakage	IGSS	VDS =0V, VGS = ±20V			±100	nA
Zero gate voltage drain current	IDSS	VDS = 50V, VGS =0V			0.5	μA
Drain-source on-state esistancea	RDS(on)	VGS = 10V, ID = 500mA		1.2	2	Ω
		VGS = 4.5V, ID = 200mA		1.3	2.2	Ω
Forward transconductancea	gfs	VDS = 10V, ID = 0.2A	80			mS
Diode forward voltage	VSD	IS=0.5A,VGS=0V		0.85	1.5	V
Dynamic						
nput capacitance	Ciss	VDS = 10V,VGS =0V, f=1MHz		22		pF
Output capacitance	Coss			6		pF
Reverse transfer capacitanceb	Crss			4		pF
Total gate charge	Qg	VDS = 25V,VGS = 10V, ID =0.5A		800		nC
Gate-source charge	Qgs			100		nC
Gate-drain charge	Qgd			100		nC
Gate resistance	Rg	f=1MHz		49		Ω
Switchingb						
Turn-on delay time	td(on)	VDD= 25V RL=25Ω, ID =0.5A, VGEN= 10V,Rg=50Ω		3		ns
Rise time	tr			3.1		ns
Turn-off delay time	td(off)			9.5		ns
Fall time	tf			8.3		ns
Drain-source body diode characteristics						
Continuous Source-Drain Diode Current	IS	Tc=25℃			0.194	A
Pulsed Diode forward Curren	ISM				1.2	A

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t < 5$ sec.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

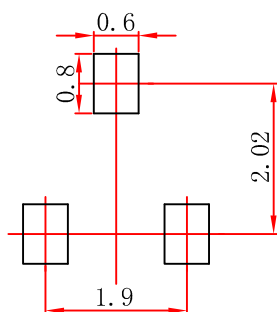


SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.



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