BR20N50

Rev.D Nov.-2015

蓝箭电子
BLUE ROCKET ELECTRONICS

DATA SHEET

描述 / Descriptions

TO-220 塑封封装 N 沟道 MOS 场效应管。N-CHANNEL MOSFET in a TO-220 Plastic Package.

特征 / Features

低栅极电荷，开关速度快，雪崩能量高，dv/dt 能力强。

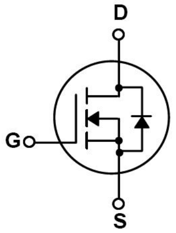
Low gate charge, Fast switching capability, Avalanche energy specified, Improved dv/dt capability.

用途 / Applications

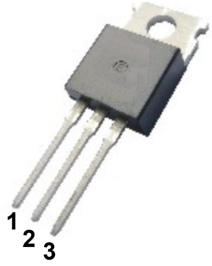
用于高电压、高速功率开关应用，如高效率开关模电源、功率因数校正。

Designed for high voltage, high speed power switching applications such as high efficiency switched mode power supplies, active power factor correction.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1 : G PIN 2 : D PIN 3 : S

放大及印章代码 / h_{FE} Classifications & Marking

见印章说明。 See Marking Instructions.

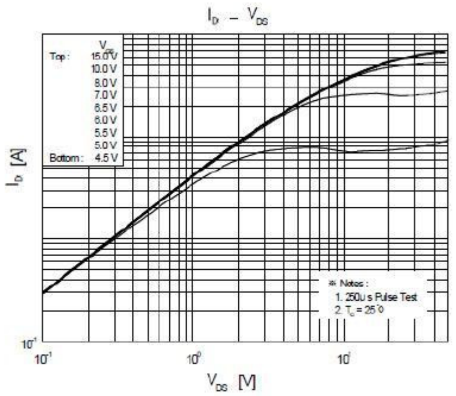
极限参数 / Absolute Maximum Ratings(Ta=25℃)

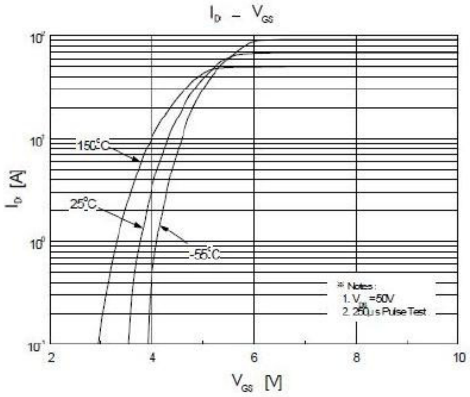
参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DSS}	500	V
Drain Current	I_D(Tc=25℃)	20	A
Drain Current	I_D(Tc=100℃)	13	A
Drain Current - Pulsed	I_{DP}	80	A
Gate-Source Voltage	V_{GSS}	±30	V
Single Pulsed Avalanche Energy	E_{AR}	28	mJ
Repetitive Avalanche Energy	E_{AS}	1110	mJ
Peak Diode Recovery dv/dt	dv/dt	4.5	V/ns
Power Dissipation	P_D(Tc=25℃)	280	W
Junction Temperature Range	T_j	150	℃
Storage Temperature Range	T_{stg}	-55～150	℃
Thermal Resistance Junction-Ambient	R_{thJA}	40	℃/W
Thermal Resistance Junction-Case	R_{thJC}	0.44	℃/W

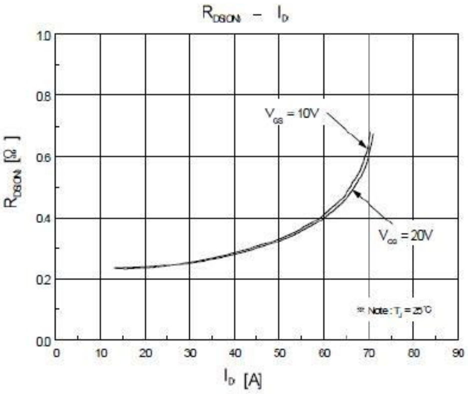
电性能参数 / Electrical Characteristics(Ta=25℃)

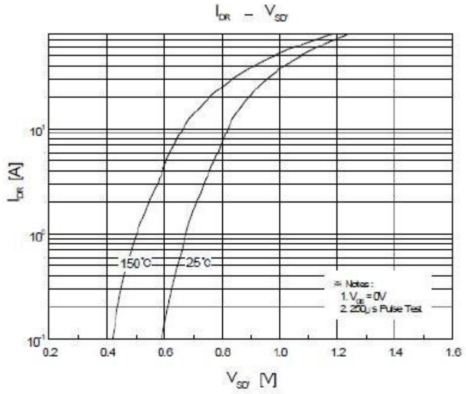
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	V_{DSS}	V_{GS}=0V I_D=250μA	500			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=500V V_{GS}=0V			1.0	μA
		V_{DS}=400V T_C=125℃			10	
Gate-Body Leakage Current, Forward	I_{GSS}	V_{GS}=±30V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=10A		0.21	0.26	Ω
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=20A			1.5	V
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1.0MHz		2700		pF
Output Capacitance	C_{oss}			400		
Reverse Transfer Capacitance	C_{rss}			40		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=250V I_D=20A R_G=2.5Ω		100		ns
Turn-On Rise Time	t_r			400		
Turn-Off Delay Time	$t_{d(off)}$			100		
Turn-Off Fall Time	t_f			100		
Total Gate Charge	Q_g	V_{DS}=400V I_D=20A V_{GS}=10V		70		nC
Gate-Source Charge	Q_{gs}			18		
Gate-Drain Charge	Q_{gd}			35		

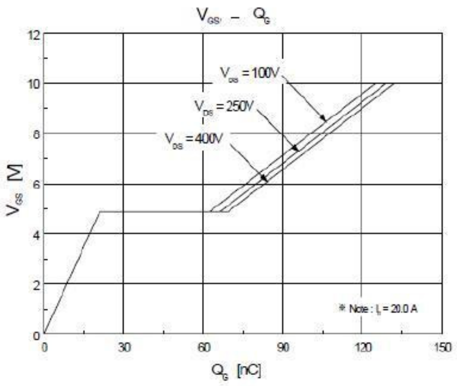
电参数曲线图 / Electrical Characteristic Curve

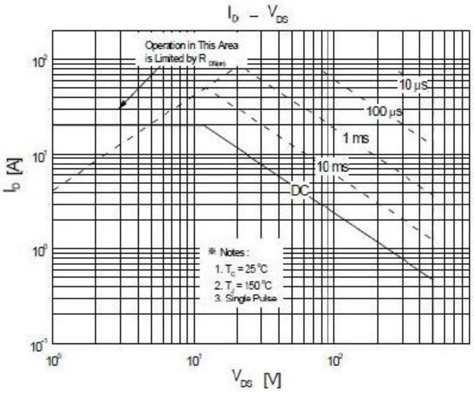


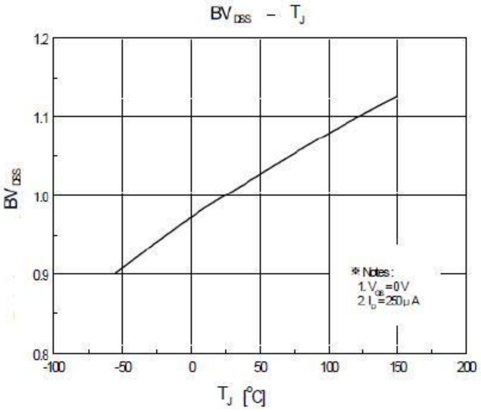


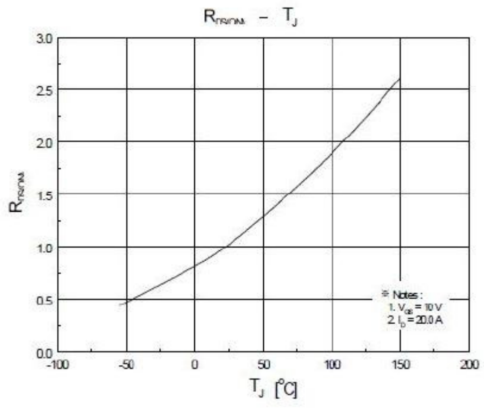






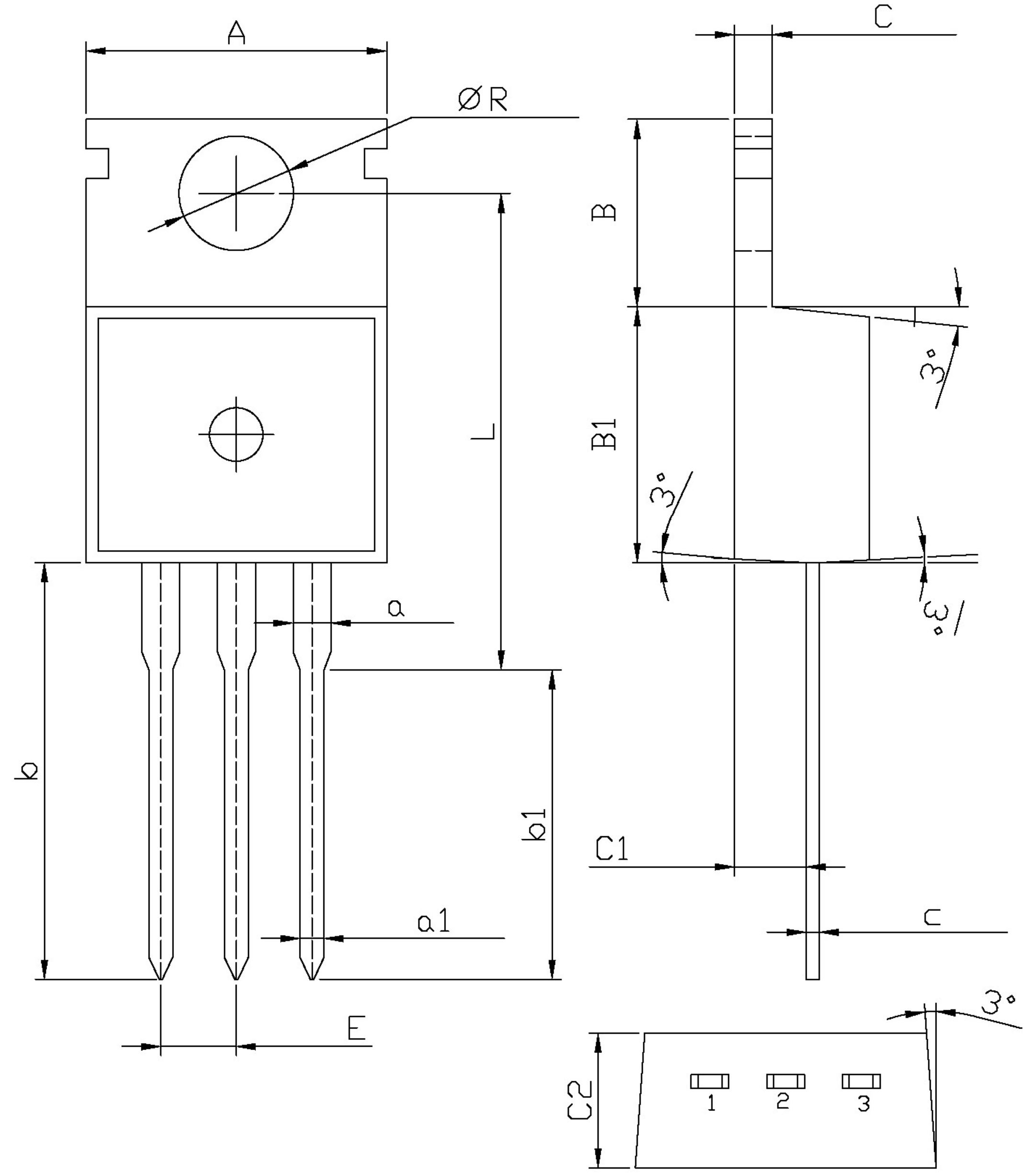






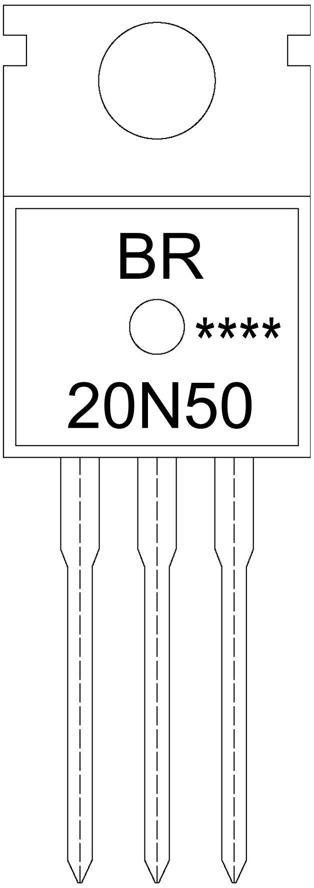
外形尺寸图 / Package Dimensions

TO-220 单位：mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	9.8	10.2	C	1.2	1.4
R	3.56	3.64	B	6.3	6.7
L	15.7	16.1	B1	9.0	9.4
b	12.6	13.6	C1	2.2	2.6
b1	9.6	10.6	a1	0.7	0.9
a	1.22	1.32	c	0.4	0.6
E	2.34	2.74	C2	4.3	4.7

印章说明 / Marking Instructions



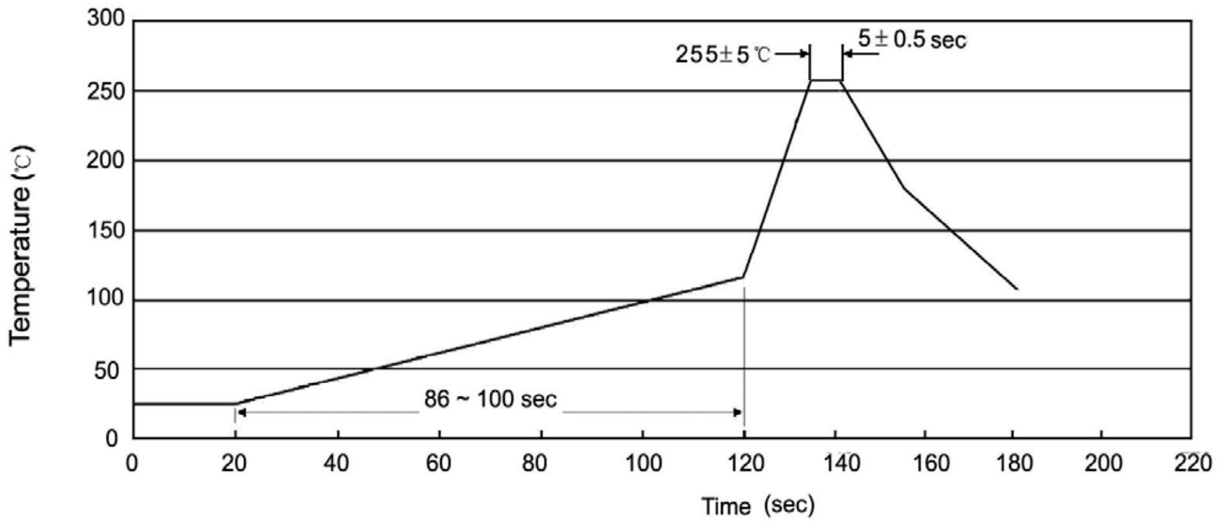
说明：

BR：	为公司代码
20N50：	为型号代码
****：	为生产批号代码，随生产批号变化。

Note:

BR:	Company Code
20N50:	Product Type.
****:	Lot No. Code, code change with Lot No.

波峰焊温度曲线图(无铅)　/　Temperature Profile for Dip Soldering(Pb-Free)



说明：
1、预热温度 25 ~ 150℃，时间 60 ~ 90sec;
2、峰值温度 255±5℃，时间持续为 5±0.5sec;
3、焊接制程冷却速度为 2 ~ 10℃/sec.

Note:
1.Preheating:25~150℃, Time:60~90sec.
2.Peak Temp.:255±5℃, Duration:5±0.5sec.
3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件　/　Resistance to Soldering Heat Test Conditions

温度：270±5℃　　时间：10±1 sec.　　Temp.:270±5℃　　Time:10±1 sec

包装规格　/　Packaging SPEC.

散件包装　/　BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

套管包装　/　TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

使用说明　/　Notices