

# BRCS120N02LZJ

Rev.C Nov.-2021

## 描述 / Descriptions

DFN2×2B-6L 塑封封装 N 沟道 MOS 场效应管。

N-Channel Enhancement Mode Field Effect Transistor in a DFN2×2B-6L Plastic Package.

## 特征 / Features

$V_{DS} (V) = 20V$

$I_D = 8 A (V_{GS} = \pm 12V)$

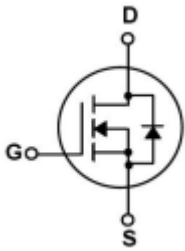
无卤产品。HF Product.

## 用途 / Applications

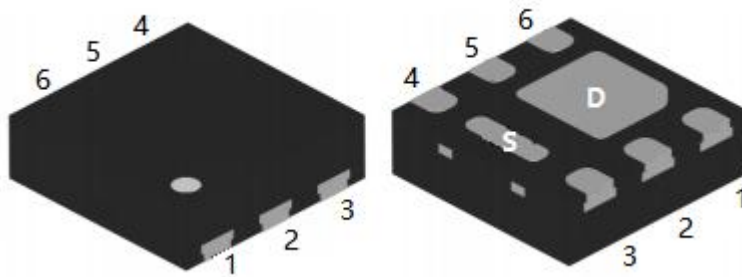
用于低压电路如：汽车电路、DC/DC 转换、便携式产品的电源高效转换。

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



出脚	定义
Pin1	D
Pin2	D
Pin3	G
Pin4	S
Pin5	D
Pin6	D

## 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°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	$V_{DSS}$	20	V
Drain Current	$I_D(T_c=25^\circ\text{C})$	8	A
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Avalanche Current	$I_{AS}$	12	A
Single Pulsed Avalanche Energy	$E_{AS}$	115	mJ
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	2.8	W
Junction Temperature Range	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ\text{C}$
Maximum Junction-to-Ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	45
	Steady-State	$R_{\theta JA}$	80

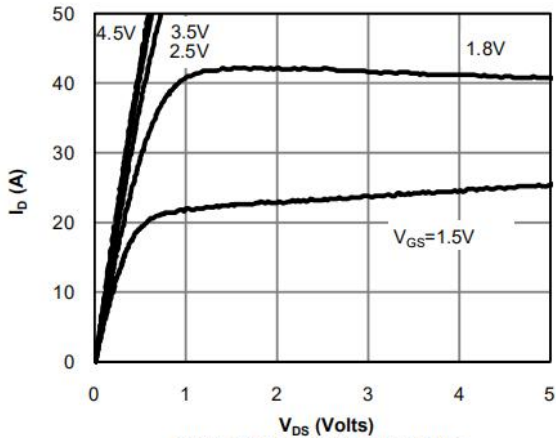
**电性能参数 / Electrical Characteristics(Ta=25°C)**

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	$BV_{DSS}$	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	20	22		V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20\text{V}$ $V_{GS}=0\text{V}$			1.0	$\mu\text{A}$
		$V_{DS}=20\text{V}$ $T_j=150^\circ\text{C}$			50	
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 12\text{V}$ $V_{DS}=0\text{V}$			$\pm 0.1$	$\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ $I_D=8.0\text{A}$		12.5	14	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$ $I_D=8.0\text{A}$		13.9	20	$\text{m}\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	0.4	0.8	1.2	V
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0\text{V}$ $I_F=1.0\text{A}$		0.7	1.2	V
Signal Source Resistance	$R_g$	$F=1\text{MHz}$		3.3		$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		460		$\text{pF}$
Output Capacitance	$C_{oss}$			75		
Reverse Transfer Capacitance	$C_{rss}$			65		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=10\text{V}$ $V_{GS}=4.5\text{V}$ $R_L=1.25\Omega$ $R_{GEN}=3\Omega$		2.7		ns
Turn-On Rise Time	$t_r$			3		
Turn-Off Delay Time	$t_{d(off)}$			37		
Turn-Off Fall Time	$t_f$			7		

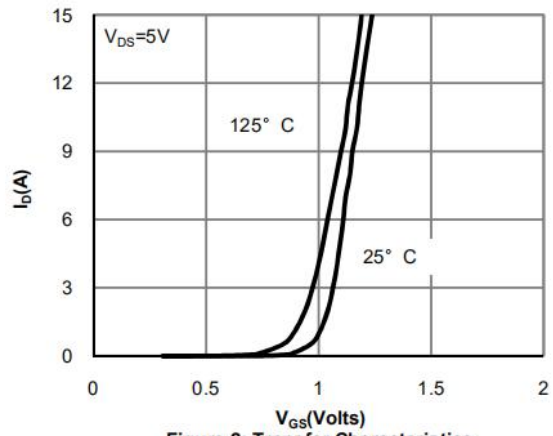
## 电性能参数 / Electrical Characteristics(Ta=25°C)

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
Total Gate Charge	$Q_g$	$V_{DS}=10V$ $V_{GS}=4.5V$ $I_D=8A$		12.5		nC
Gate-Source Charge	$Q_{gs}$			1.2		
Gate-Drain Charge	$Q_{gd}$			2.7		

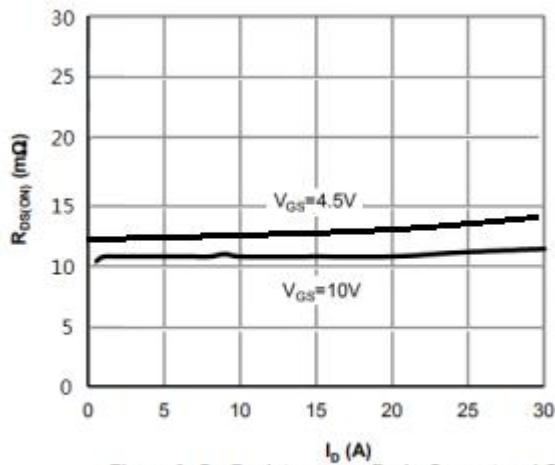
**电参数曲线图 / Electrical Characteristic Curve**



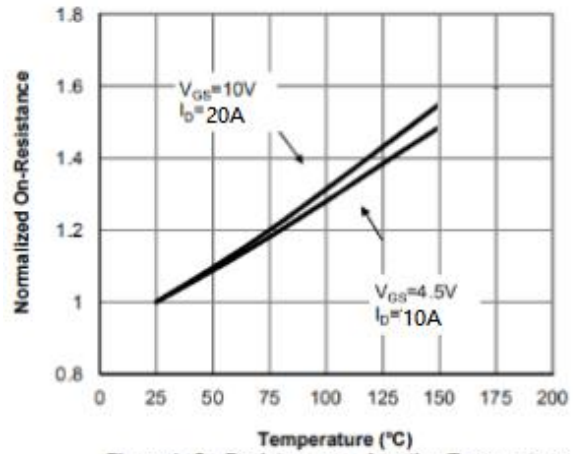
**Fig 1: On-Region Characteristics**



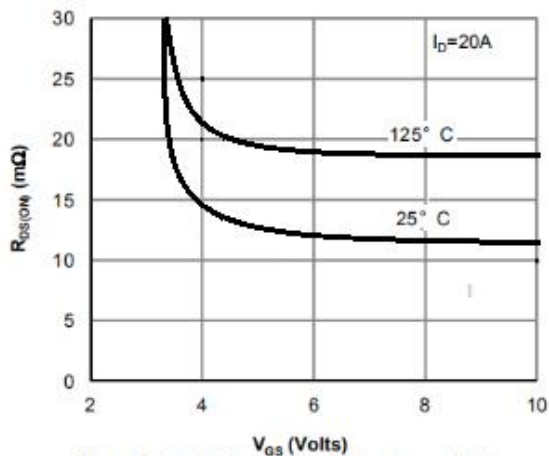
**Figure 2: Transfer Characteristics**



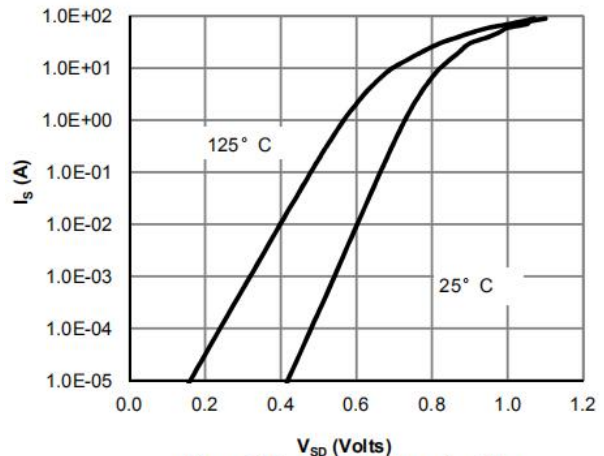
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



**Figure 4: On-Resistance vs. Junction Temperature**



**Figure 5: On-Resistance vs. Gate-Source Voltage**



**Figure 6: Body-Diode Characteristics**

## 电参数曲线图 / Electrical Characteristic Curve

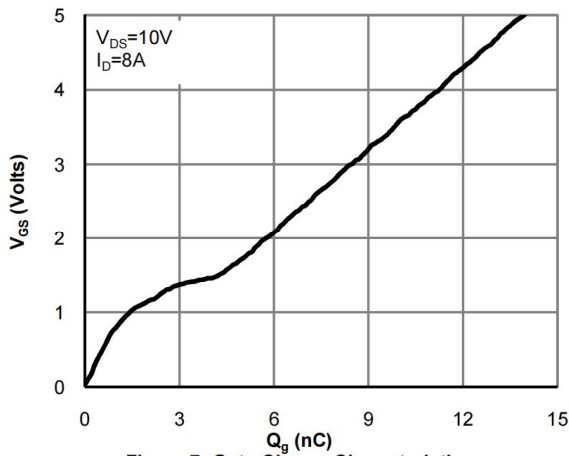


Figure 7: Gate-Charge Characteristics

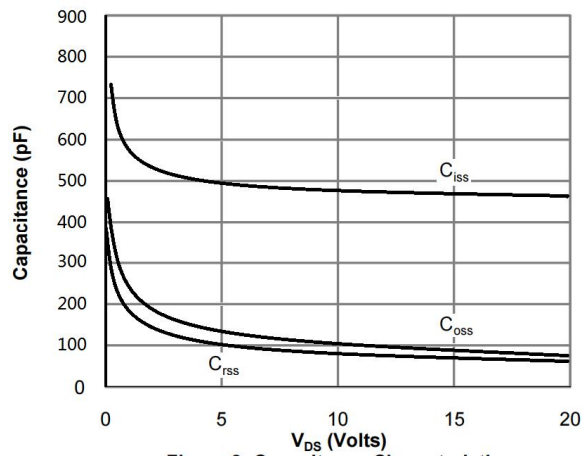


Figure 8: Capacitance Characteristics

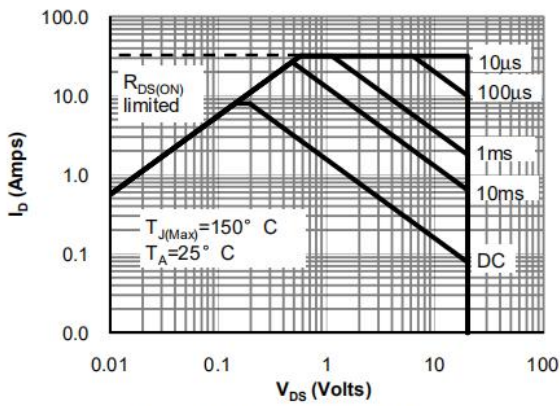


Figure 9: Maximum Forward Biased Safe Operating Area

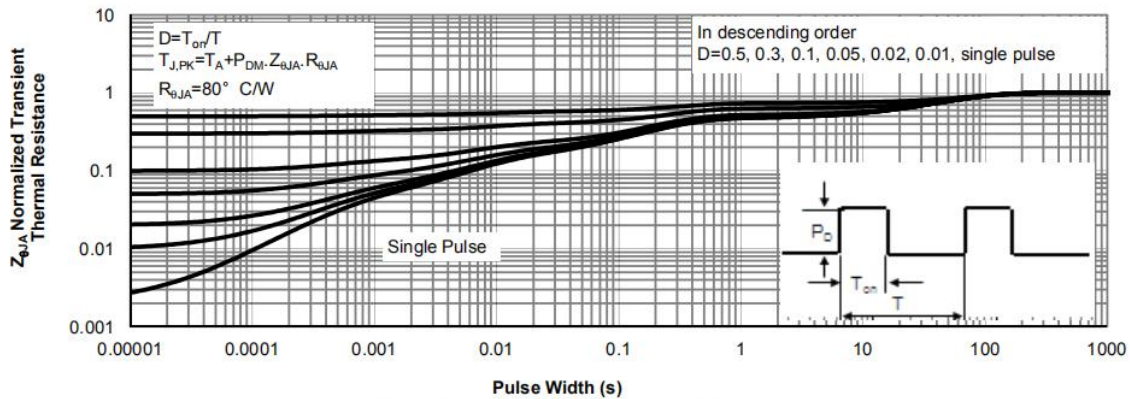


Figure 10: Normalized Maximum Transient Thermal Impedance

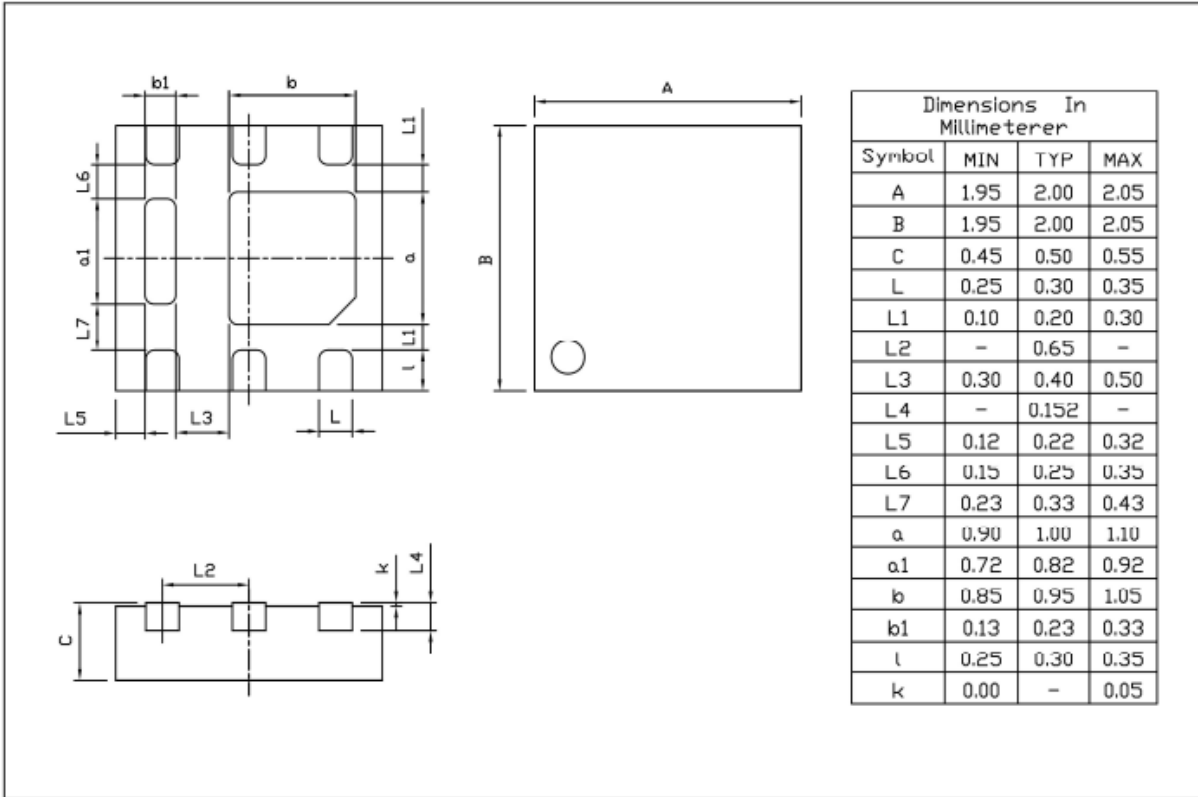
# BRCS120N02LZJ

Rev.C Nov.-2021

## 外形尺寸图 / Package Dimensions

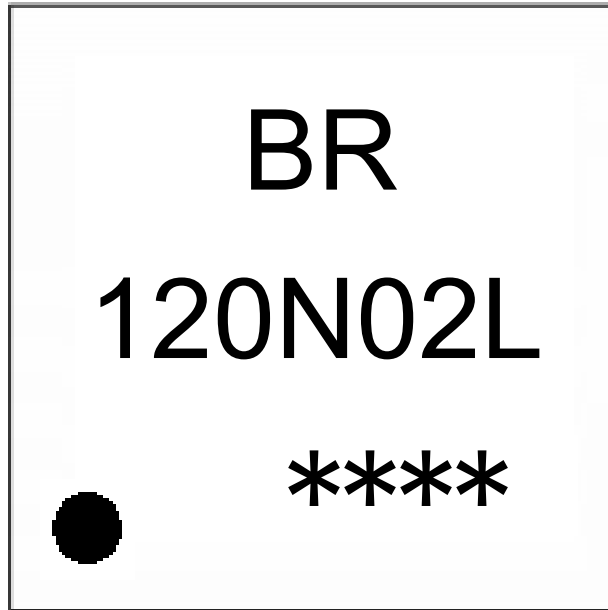
DFN2×2B-6L-0.5

Unit:mm



Rev.01 202006

**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

120N02L： 为型号代码

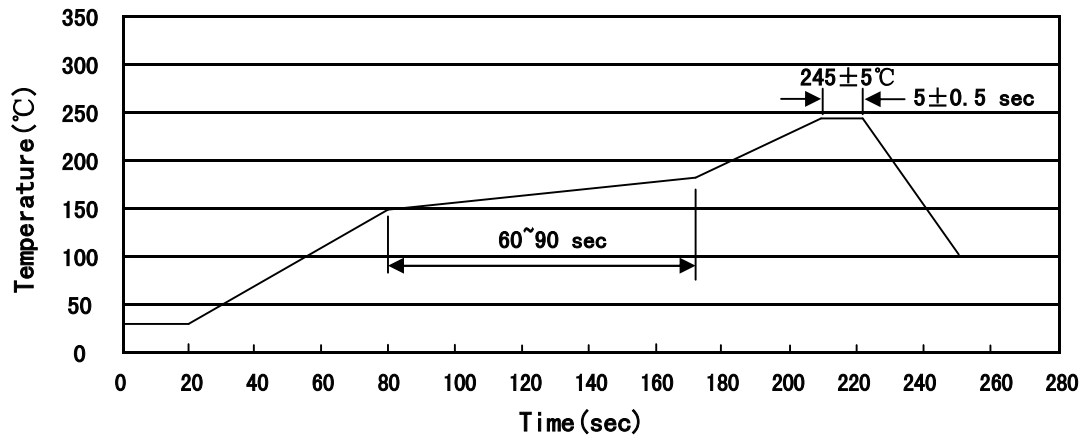
\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

BR: Company Code.

120N02L: Product Type

\*\*\*\*: Lot No. Code, code change with Lot No.

**回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)**


说明：

- 1、预热温度 150~180°C，时间 60~90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

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

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

**包装规格 / Packaging SPEC.**

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
DFN2×2B-6L	4,000	10	40,000	4	160,000	7" ×8	210×205×205	445×230×435

**使用说明 / Notices**



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