

# BRCS120P03YBQ

Rev.A Nov.-2022

DATA SHEET

## 描述 / Descriptions

PDFN3×3A-8L 塑封封装 P 沟道 MOS 场效应管。

P-Channel Enhancement Mode Field Effect Transistor in a PDFN3×3A-8L Plastic Package.

## 特征 / Features

$V_{DS} (V) = -30V$

$I_D = -35 A (V_{GS} = \pm 20V)$

$R_{DS(ON)}@10V \leq 12mR (Typ. 10mR)$

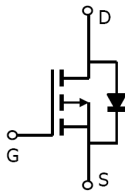
符合 AEC-Q101 标准高可靠性要求，无卤产品。Qualified to AEC-Q101 Standards for High Reliability, HF Product.

## 用途 / Applications

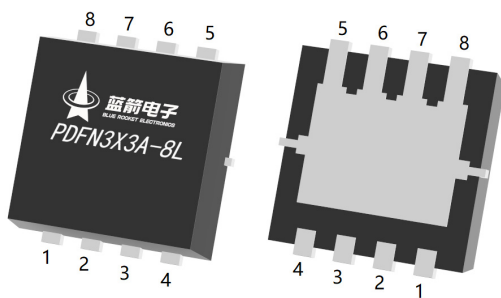
用于高功率 DC/DC 转换和功率开关，满足汽车应用的严格要求。

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies, Meet the stringent requirements of automotive applications.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



出脚	定义
Pin1	S
Pin2	S
Pin3	S
Pin4	G
Pin5	D
Pin6	D
Pin7	D
Pin8	D

## 印章代码 / 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 <sub>DSS</sub>	-30	V
Drain Current	I <sub>D</sub> (T <sub>c</sub> =25°C)	-35	A
Drain Current - Pulsed	I <sub>DM</sub>	-80	A
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Avalanche Current	I <sub>AS</sub>	17	A
Single Pulsed Avalanche Energy	E <sub>AS</sub>	151	mJ
Power Dissipation	P <sub>D</sub> (T <sub>c</sub> =25°C)	28	W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150	°C
Junction-to-Ambient	t ≤ 10	R <sub>θJA</sub>	°C/W
Junction-to-Ambient	Steady-State		
Junction-to-Ambient	Steady-State	55	
Junction-to-Case	Steady-State	R <sub>θJC</sub>	4.5

## 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 <sub>DSS</sub>	I <sub>D</sub> =-250μA V <sub>GS</sub> =0V	-30	-36		V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V V <sub>GS</sub> =0V			-1	μA
Gate-Body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V V <sub>GS</sub> =±20V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250μA	-1.0	-1.7	-2.5	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V I <sub>D</sub> =-20A		10.5	12	mΩ
		V <sub>GS</sub> =-4.5V I <sub>D</sub> =-10A		16.5	18	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1A V <sub>GS</sub> =0V			-1.2	V
Gate resistance	R <sub>g</sub>	V <sub>GS</sub> =0V V <sub>DS</sub> =0V f=1MHz		7.5	10	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V V <sub>DS</sub> =-25V f=1MHz		2100		pF
Output Capacitance	C <sub>oss</sub>			340		
Reverse Transfer Capacitance	C <sub>rss</sub>			210		
Total Gate Charge	Q <sub>g</sub> (10V)	V <sub>GS</sub> =-10V V <sub>DS</sub> =-15V I <sub>D</sub> =-17A		35		nC
Total Gate Charge	Q <sub>g</sub> (4.5V)			17		
Gate-Source Charge	Q <sub>gs</sub>			5.7		
Gate-Drain Charge	Q <sub>gd</sub>			8.8		
Turn-on Delay Time	t <sub>d(ON)</sub>	V <sub>GS</sub> =-10V V <sub>DS</sub> =-15V R <sub>L</sub> =0.9Ω R <sub>GEN</sub> =3Ω		11		ns
Turn-on Rise Time	t <sub>r</sub>			7.5		
Turn-off Delay Time	t <sub>d(OFF)</sub>			43.5		
Turn-off Fall Time	t <sub>f</sub>			17.5		

电参数曲线图 / Electrical Characteristic Curve

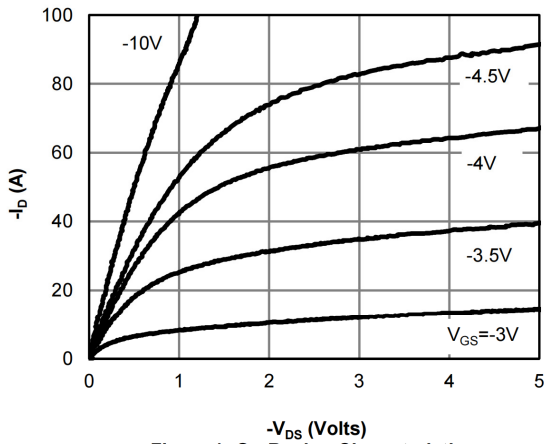


Figure 1: On-Region Characteristics

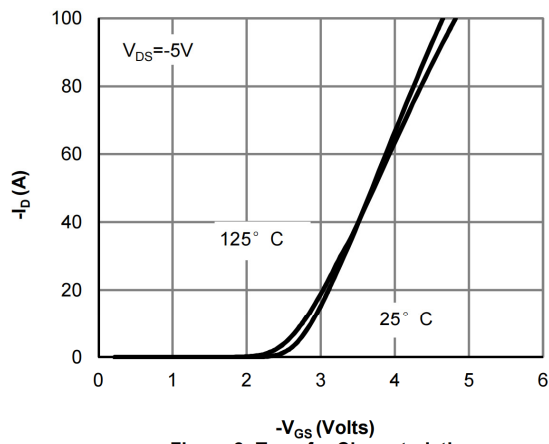


Figure 2: Transfer Characteristics

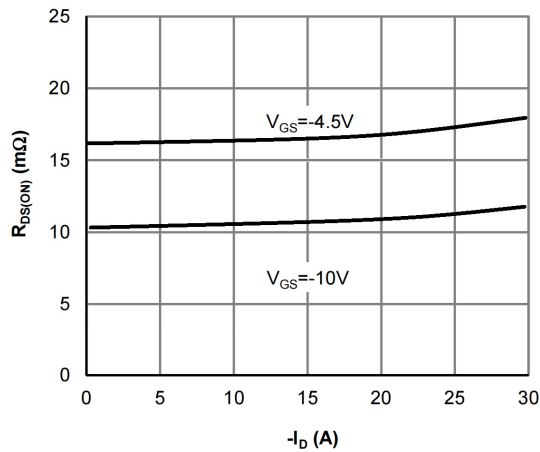


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

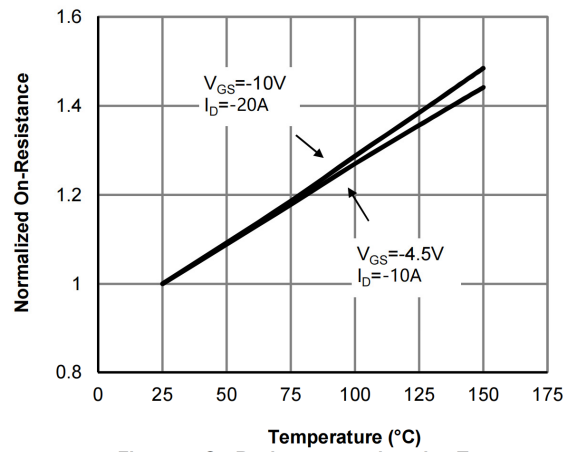


Figure 4: On-Resistance vs. Junction Temperature

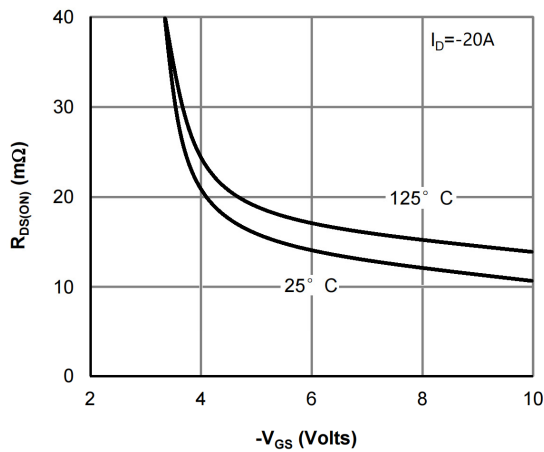


Figure 5: On-Resistance vs. Gate-Source Voltage

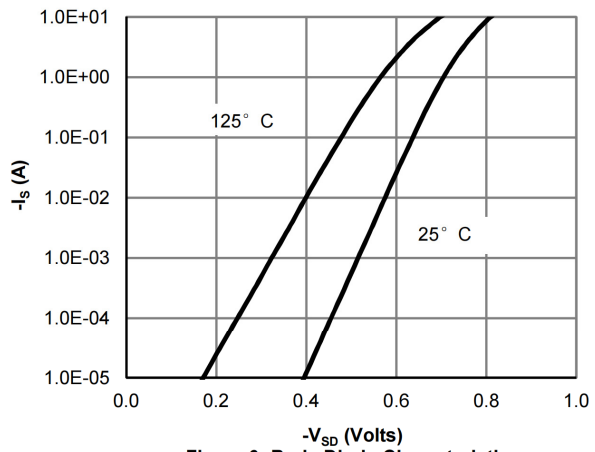


Figure 6: Body-Diode Characteristics

## 电参数曲线图 / Electrical Characteristic Curve

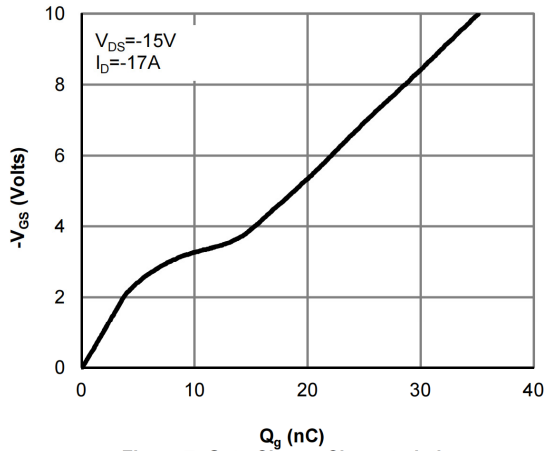


Figure 7: Gate-Charge Characteristics

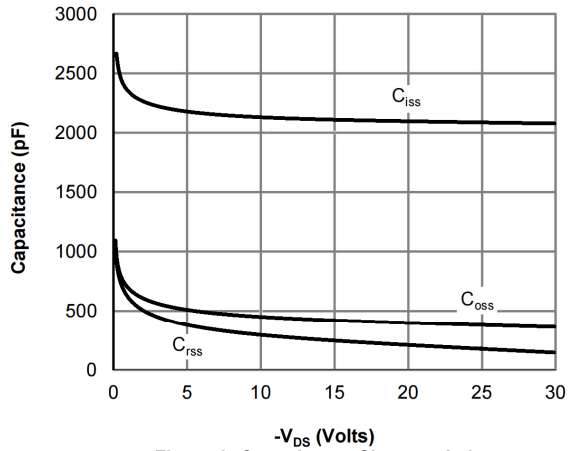


Figure 8: Capacitance Characteristics

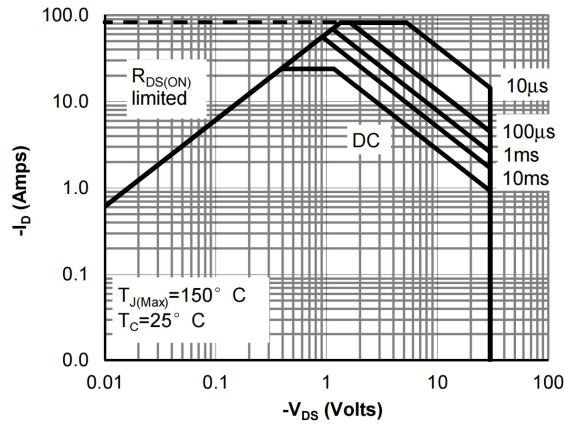


Figure 9: Maximum Forward Biased Safe Operating Area  
 $-V_{GS} >$  or equal to  $-4.5V$

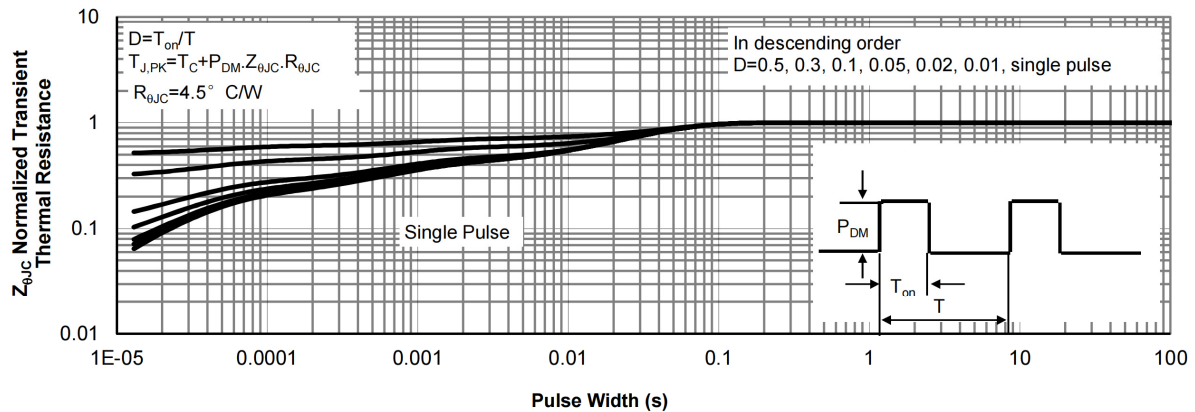
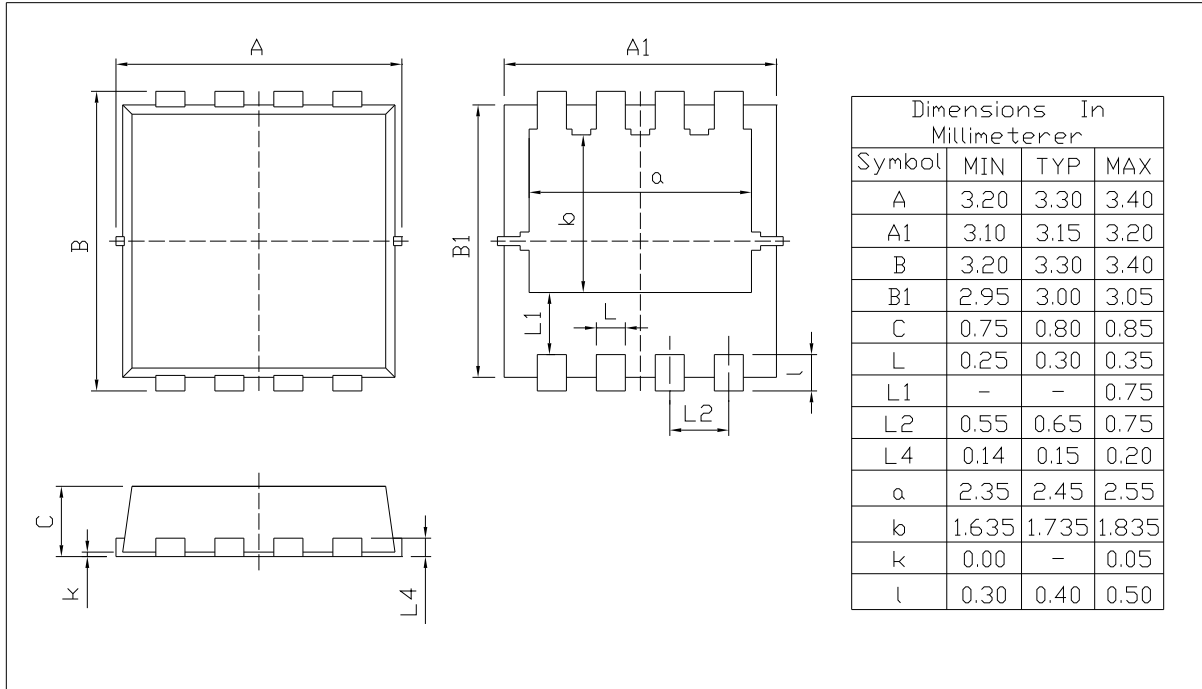


Figure 10: Normalized Maximum Transient Thermal Impedance

**外形尺寸图 / Package Dimensions**

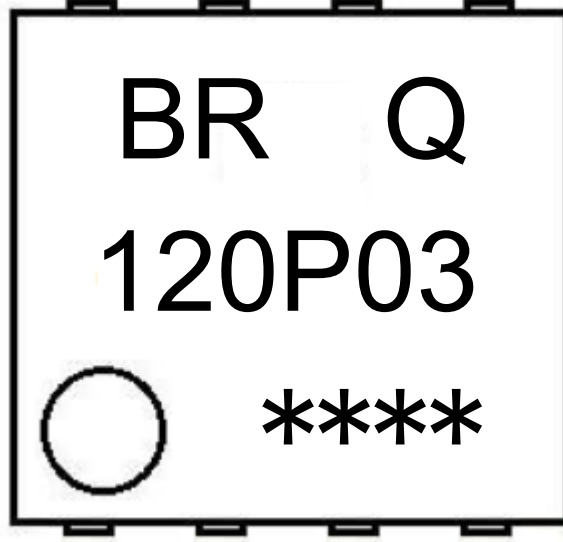
PDFN3X3A-8L

Unit:mm



Rev.00 202011

印章说明 / Marking Instructions



说明：

BR： 为公司代码

120P03： 为型号代码

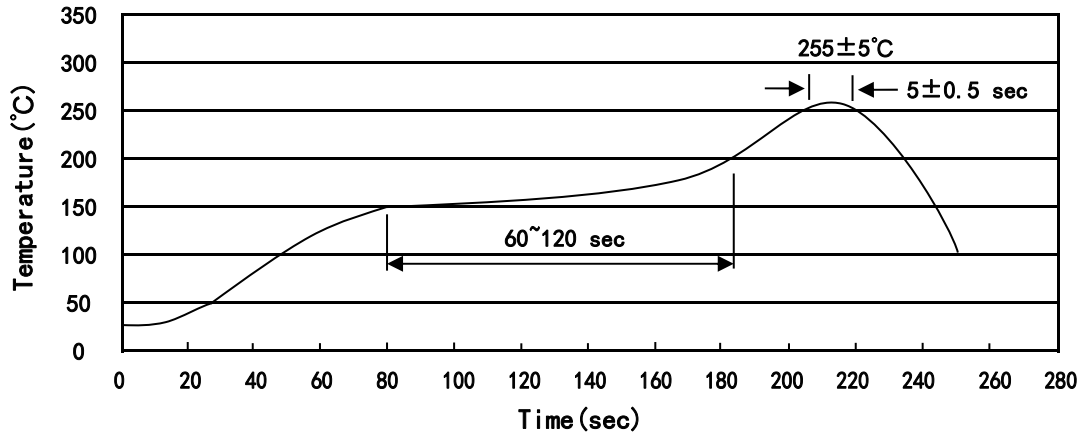
\*\*\*\*： 为生产批号代码，随生产批号变化

Note:

BR: Company Code

120P03: Product Type Code

\*\*\*\*: 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 150~200°C，时间 60~120sec;
- 2、峰值温度 255±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:150~200°C, Time:60~120sec.
- 2.Peak Temp.:255±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
PDFN3×3A-8L	5,000	2	10,000	6	60,000	13" ×12	360×360×50	380×335×366

**使用说明 / Notices**