

# BRCS120P03ZC

Rev.A Dec.-2021

## 描述 / Descriptions

PDFN5×6 封装 P 沟道场效应管。

P-Channel MOSFET in a PDFN5×6 Plastic Package.

## 特征 / Features

低电阻可最大地降低导电损耗；低栅极电荷，可实现快速切换；低热阻。

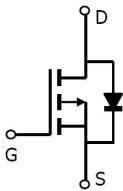
Low  $R_{DS(ON)}$  to minimize conductive loss; low Gate Charge for fast switching; Low Thermal resistance.

## 用途 / Applications

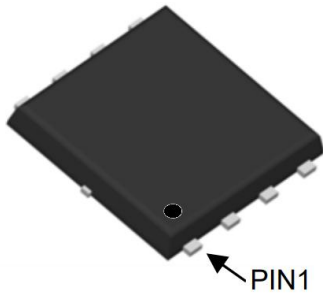
电池管理。

Battery Management.

## 内部等效电路 / Equivalent Circuit

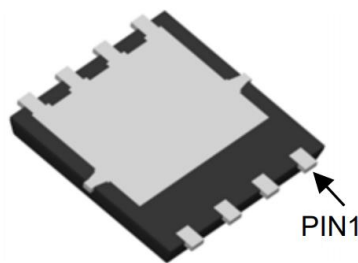


## 引脚排列 / Pinning



PIN1、2、3: S

PIN4: G



PIN5、6、7、8: D

Pin	极性
1	S
2	S
3	S
4	G
5	D
6	D
7	D
8	D

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

见印章说明。

See Marking Instructions.

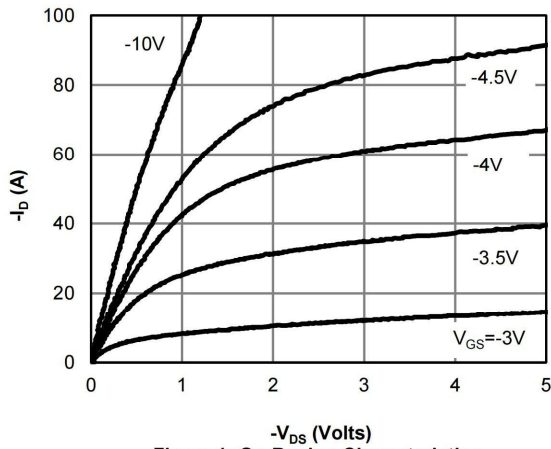
**极限参数 / Absolute Maximum Ratings( $T_a=25^{\circ}\text{C}$ )**

参数 Parameter		符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage		$V_{DSS}$	-30	V
Drain Current		$I_D(T_c=25^{\circ}\text{C})$	-24	A
Drain Current - Pulsed		$I_{DM}$	-96	A
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Avalanche Current		$I_{AS}$	17	A
Single Pulsed Avalanche Energy		$E_{AS}$	151	mJ
Power Dissipation		$P_D(T_c=25^{\circ}\text{C})$	38	W
Operating and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	$^{\circ}\text{C}$
Junction-to-Ambient	$t \leq 10$	$R_{\theta JA}$	25	$^{\circ}\text{C/W}$
Junction-to-Ambient	Steady-State		55	
Junction-to-Case	Steady-State	$R_{\theta JC}$	3.3	

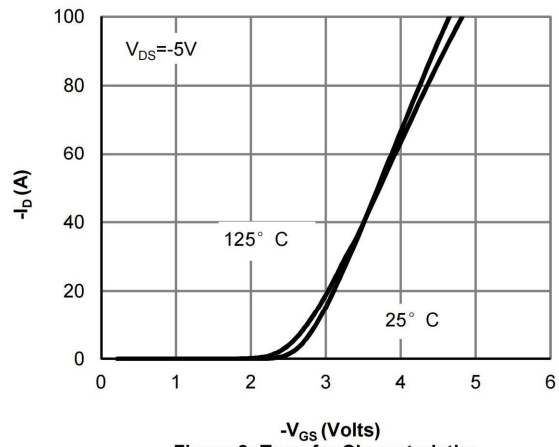
## 电性能参数 / Electrical Characteristics(Ta=25°C)

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	$BV_{DSS}$	$I_D=-250\mu A$ $V_{GS}=0V$	-30	-36		V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V$ $V_{GS}=0V$			-1	$\mu A$
Gate-Body leakage current	$I_{GSS}$	$V_{DS}=0V$ $V_{GS}=\pm 20V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu A$	-1.0	-1.7	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V$ $I_D=-20A$		10.5	12	m $\Omega$
		$V_{GS}=-4.5V$ $I_D=-10A$		16.5	18	
Diode Forward Voltage	$V_{SD}$	$I_S=-1A$ $V_{GS}=0V$			-1.2	V
Gate resistance	$R_g$	$V_{GS}=0V$ $f=1MHz$ $V_{DS}=0V$		7.5	10	$\Omega$
Input Capacitance	$C_{iss}$	$V_{GS}=0V$ $V_{DS}=-25V$ $f=1MHz$		2100		pF
Output Capacitance	$C_{oss}$			340		
Reverse Transfer Capacitance	$C_{rss}$			210		
Total Gate Charge	$Q_g(10V)$	$V_{GS}=-10V$ $V_{DS}=-15V$ $I_D=-17A$		35		nC
Total Gate Charge	$Q_g(4.5V)$			17		
Gate-Source Charge	$Q_{gs}$			5.7		
Gate-Drain Charge	$Q_{gd}$			8.8		
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=-10V$ $V_{DS}=-15V$ $R_L=0.9\Omega$ $R_{GEN}=3\Omega$		11		ns
Turn-on Rise Time	$t_r$			7.5		
Turn-off Delay Time	$t_{d(OFF)}$			43.5		
Turn-off Fall Time	$t_f$			17.5		

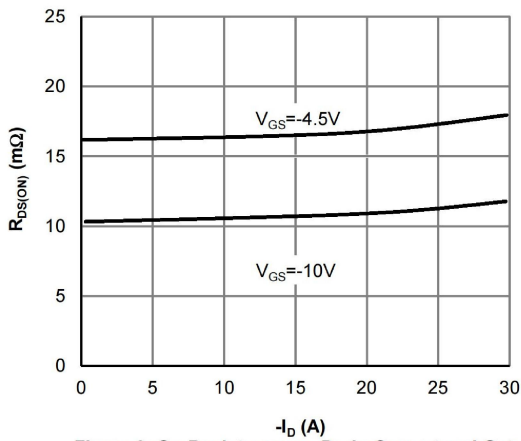
**电参数曲线图 / Electrical Characteristic Curve**



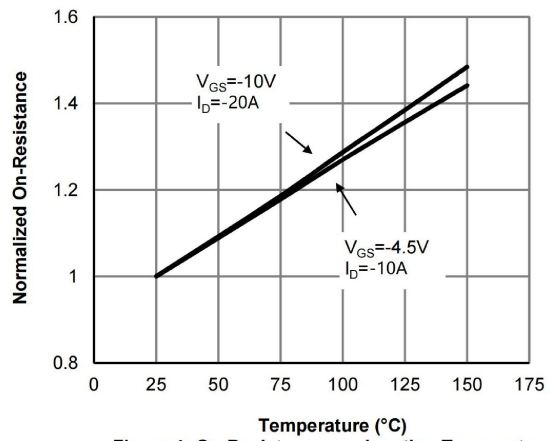
**Figure 1: On-Region Characteristics**



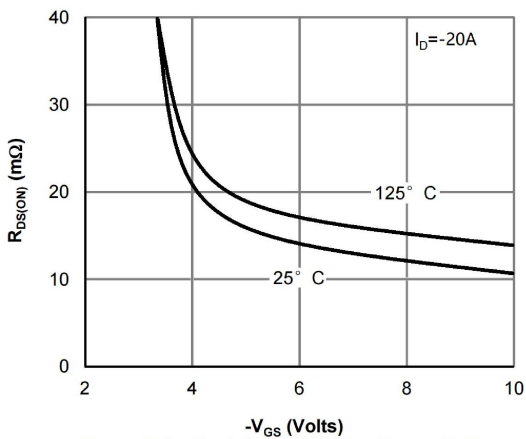
**Figure 2: Transfer Characteristics**



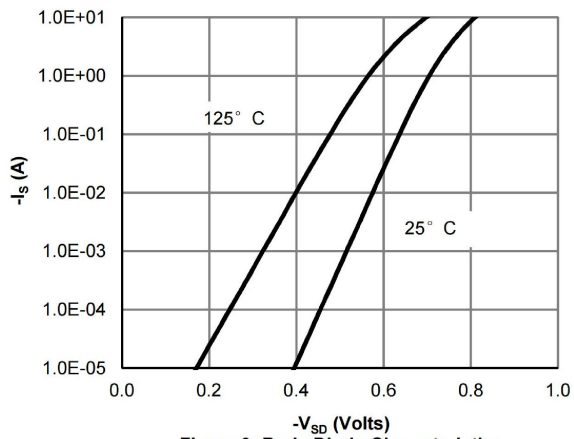
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



**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

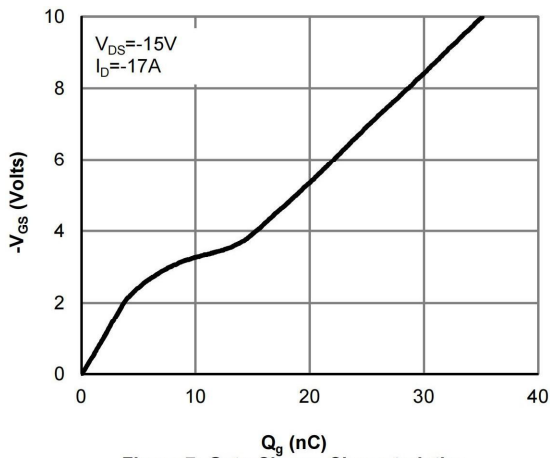


Figure 7: Gate-Charge Characteristics

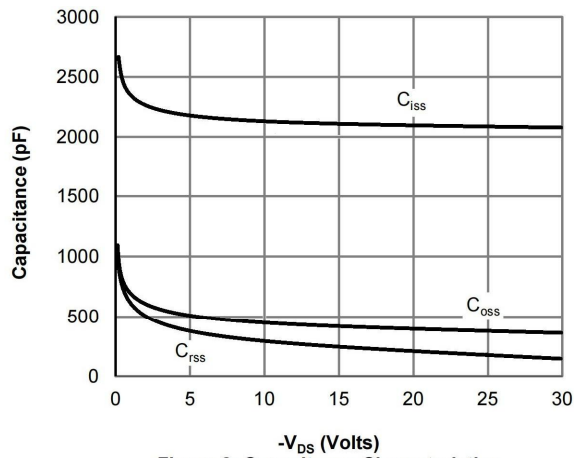


Figure 8: Capacitance Characteristics

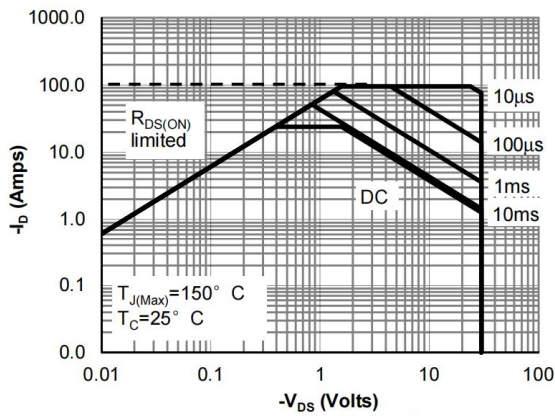


Figure 9: Maximum Forward Biased Safe Operating Area

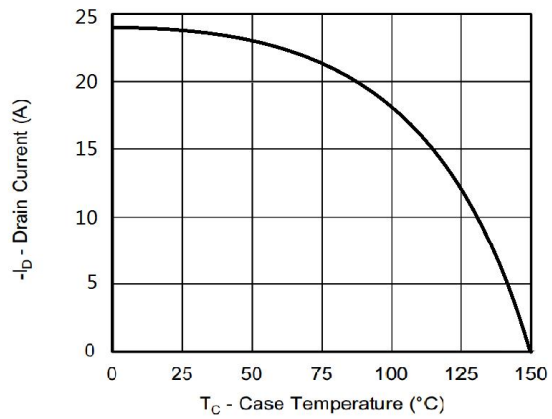


Figure 10: Maximum Continuous Drain Current vs Case Temperature

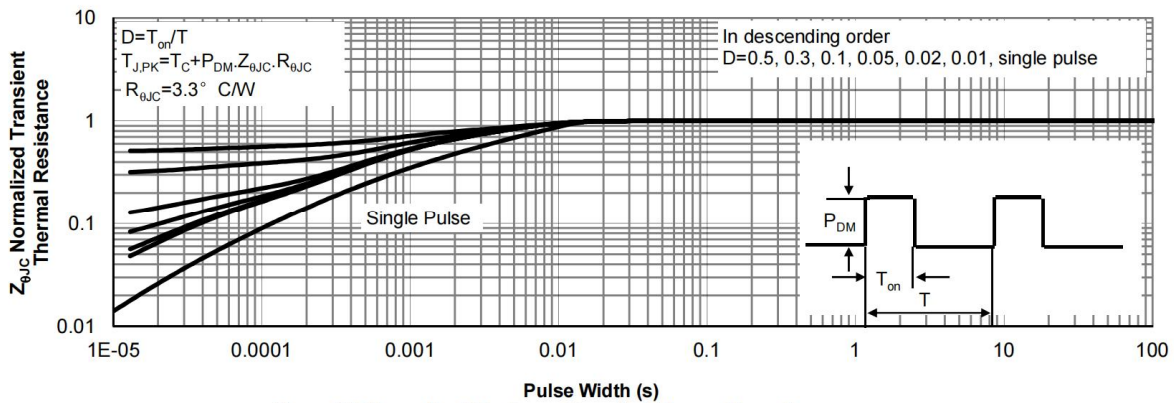
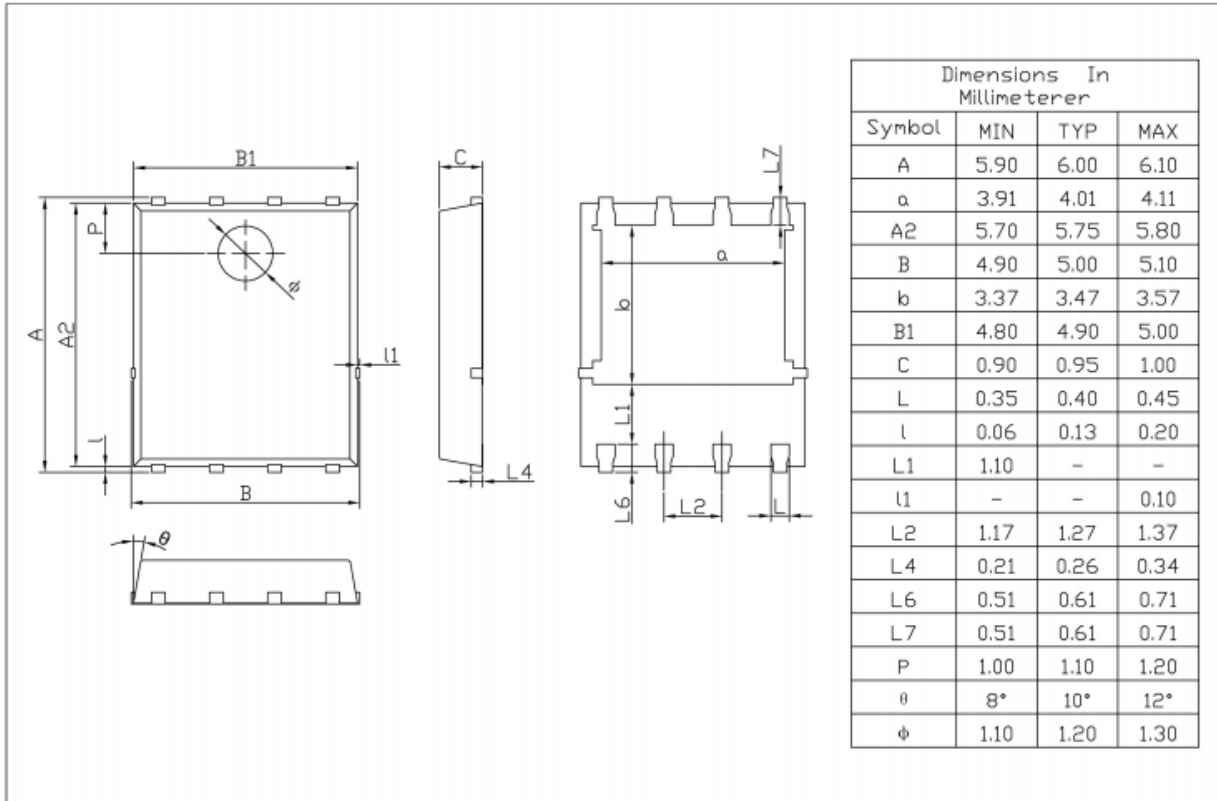


Figure 11: Normalized Maximum Transient Thermal Impedance

**外形尺寸图 / Package Dimensions**

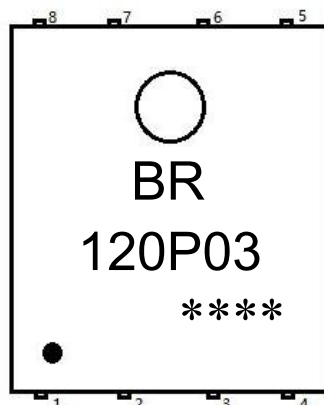
PDFN5 X6

Unit:mm



Rev.00 201812

## 印章说明 / Marking Instructions



说明：

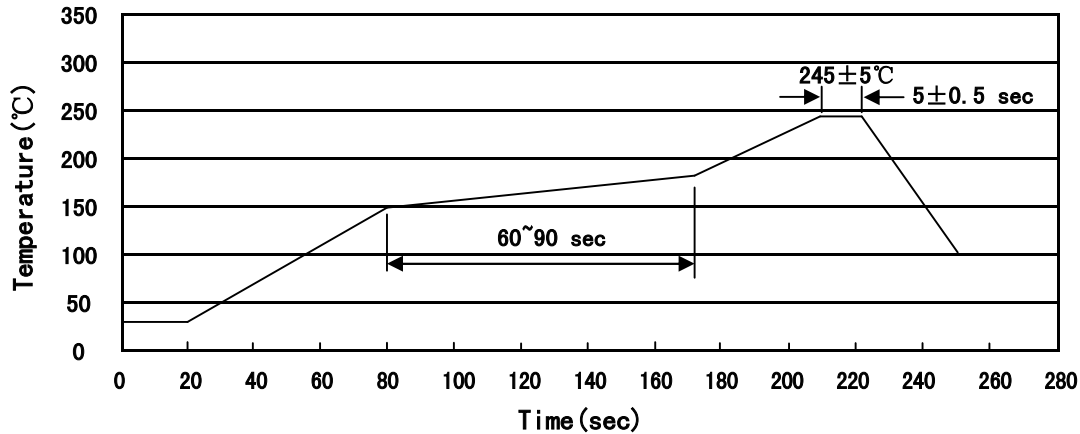
BR： 为公司代码

120P03： 为为产品型号

Note：

BR： Company Code

120P03： Product Type.

**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
PDFN5×6	5000	2	10000	6	60000	13"×12	360×360×50	380×335×366

**使用说明 / Notices**



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