

# BRCS035N04SZC

Rev.A Mar.-2024

## 描述 / Descriptions

PDFN5×6 封装 N 沟道场效应管。  
N-Channel MOSFET in a PDFN5×6 Plastic Package.

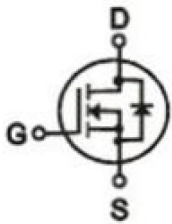
## 特征 / Features

$V_{DS}(V)=40\text{ V}$      $I_D=98\text{ A}$   
 $R_{DS(ON)}@10\text{ V}\leq 3.5\text{ m}\Omega(\text{Typ.}3.0\text{ mR})$   
 $R_{DS(ON)}@4.5\text{ V}\leq 5.0\text{ m}\Omega(\text{Typ.}4.0\text{ mR})$   
 无卤产品。HF Product.

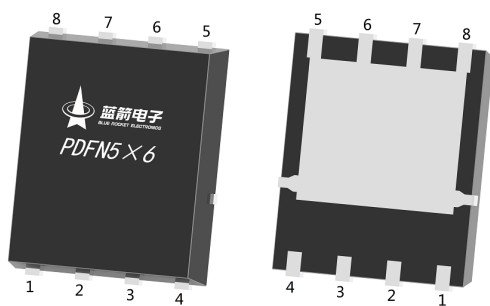
## 用途 / Applications

电池管理, MB/NB/UMPC/VGA 高频负载点同步 Buck 变换器, 联网直流-直流电力系统, 负荷开关。  
 Battery Management, High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA, Networking DC-DC Power System, Load Switch.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1、2、3: S    PIN4: G    PIN5、6、7、8: D

## 印章代码 / 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	$V_{DS}$	40	V
Continuous Drain Current	$I_D(T_c=25^{\circ}\text{C})$	98	A
Pulsed Drain Current	$I_{DM}$	195	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation	$P_D(T_c=25^{\circ}\text{C})$	60	W
Avalanche energy(L=0.5mH)	$E_{AS}$	435	mJ
Avalanche Current(L=0.5mH)	$I_{AS}$	33	A
Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 to 150	$^{\circ}\text{C}$
Maximum Junction-to-Ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	$^{\circ}\text{C}/\text{W}$
	Steady-State		
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	2.08

**电性能参数 / Electrical Characteristics( $T_a=25^{\circ}\text{C}$ )**

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	$BV_{DSS}$	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	40	44		V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=40\text{V}$ $V_{GS}=0\text{V}$			1.0	$\mu\text{A}$
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	1.0	1.7	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ $I_D=20\text{A}$		3.0	3.5	m $\Omega$
		$V_{GS}=4.5\text{V}$ $I_D=10\text{A}$		4.0	5.0	
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0\text{V}$ $I_S=1\text{A}$			1.4	V
Gate resistance	$R_g$	$V_{GS}=0\text{V}$ $V_{DS}=0\text{V}$ , $f=1\text{MHz}$		1.16		$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		9600		pF
Output Capacitance	$C_{oss}$			740		
Reverse Transfer Capacitance	$C_{rss}$			650		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10\text{V}$ , $V_{DS}=20\text{V}$ , $I_D=20\text{A}$		51		nC
Total Gate Charge	$Q_{g(4.5V)}$			23		
Gate Source Charge	$Q_{gs}$			13.2		
Gate Drain Charge	$Q_{gd}$			3.1		

## 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
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=20V$ $R_L=1\ \Omega$ $R_{GEN}=3\ \Omega$		11		ns
Turn-On Rise Time	$t_r$			11		
Turn-Off Delay Time	$t_{d(off)}$			40		
Turn-Off Fall Time	$t_f$			10		

## 电参数曲线图 / Electrical Characteristic Curve

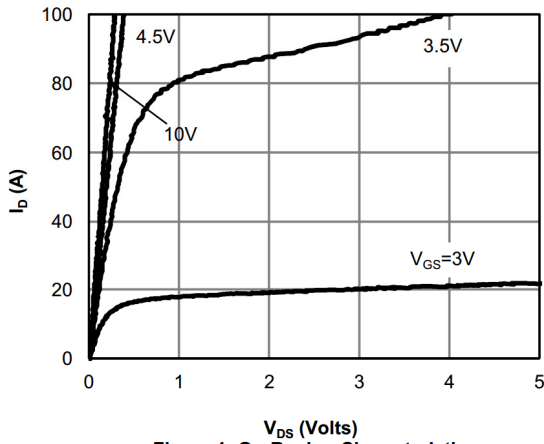


Figure 1: On-Region Characteristics

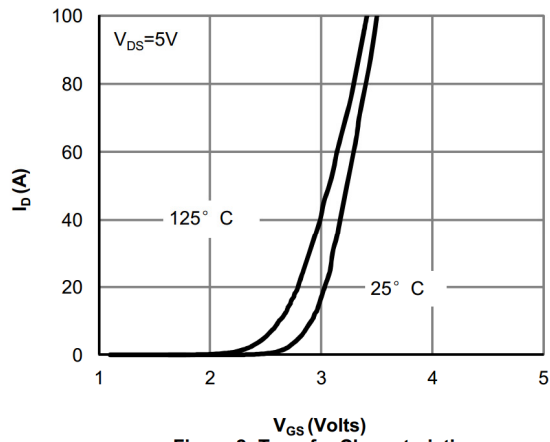


Figure 2: Transfer Characteristics

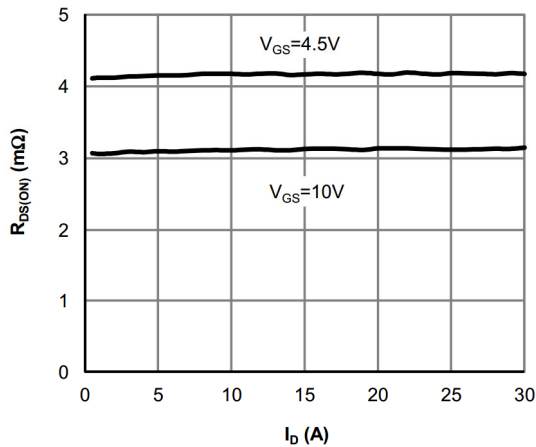


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

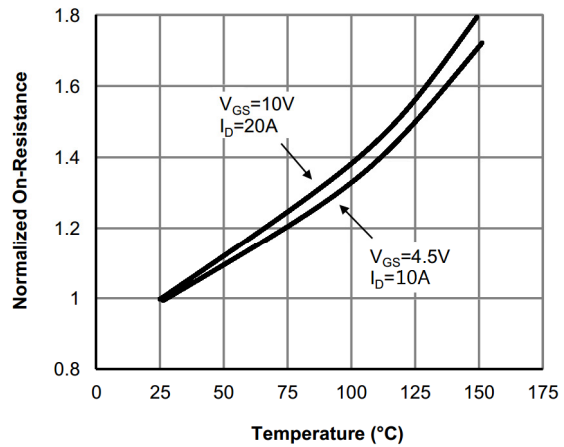


Figure 4: On-Resistance vs. Junction Temperature

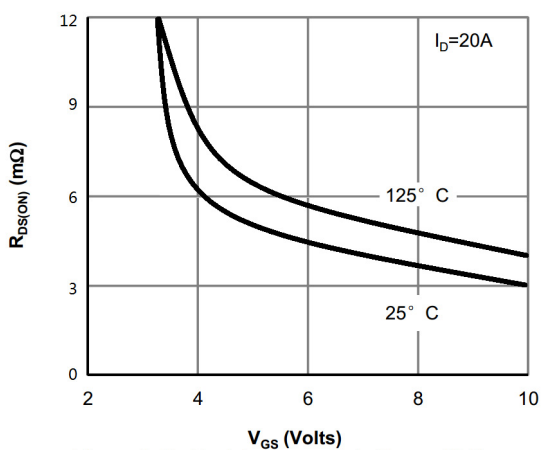


Figure 5: On-Resistance vs. Gate-Source Voltage

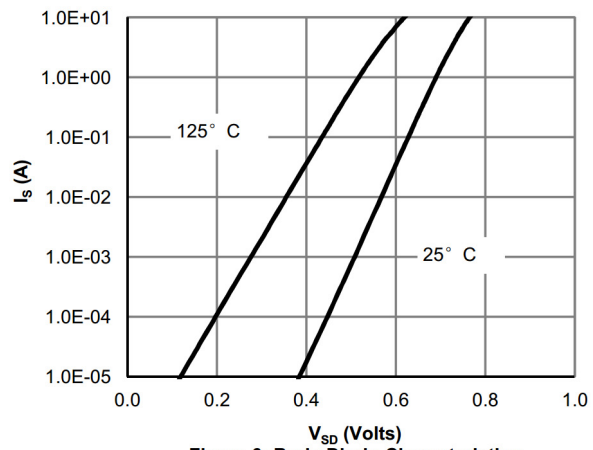
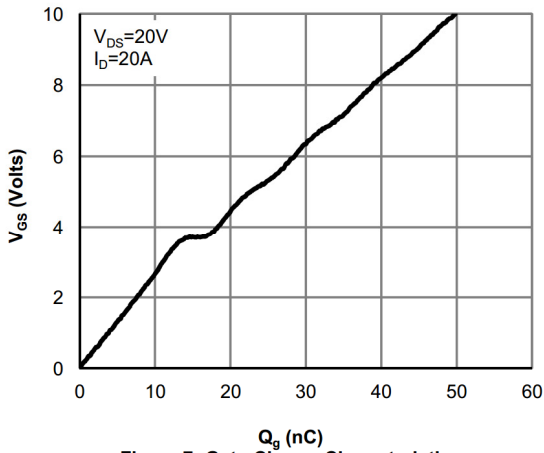
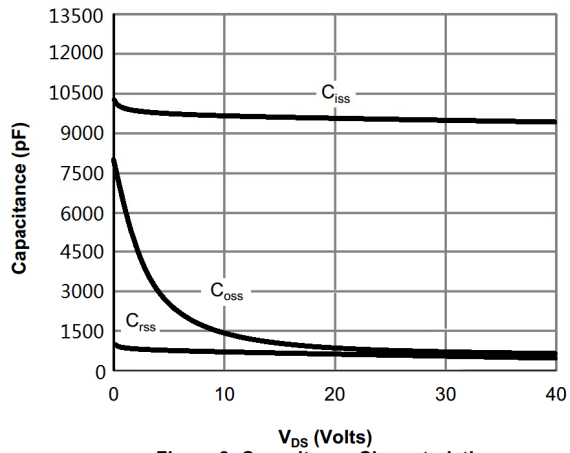


Figure 6: Body-Diode Characteristics

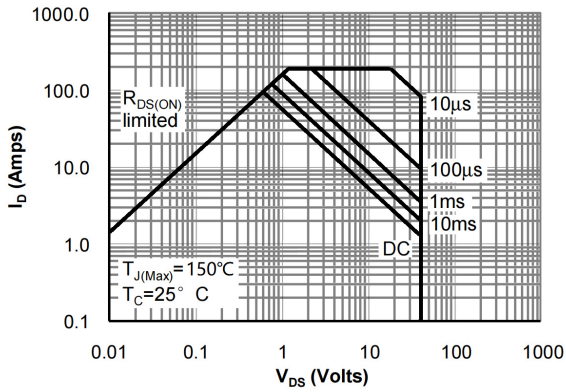
**电参数曲线图 / Electrical Characteristic Curve**



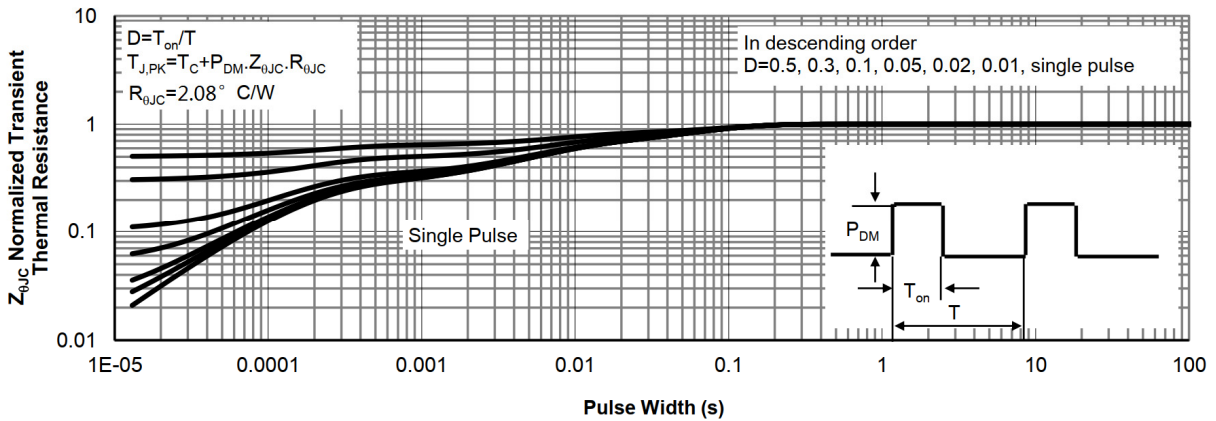
**Figure 7: Gate-Charge Characteristics**



**Figure 8: Capacitance Characteristics**



**Figure 9: Maximum Forward Biased Safe Operating Area**



**Figure 10: Normalized Maximum Transient Thermal Impedance**

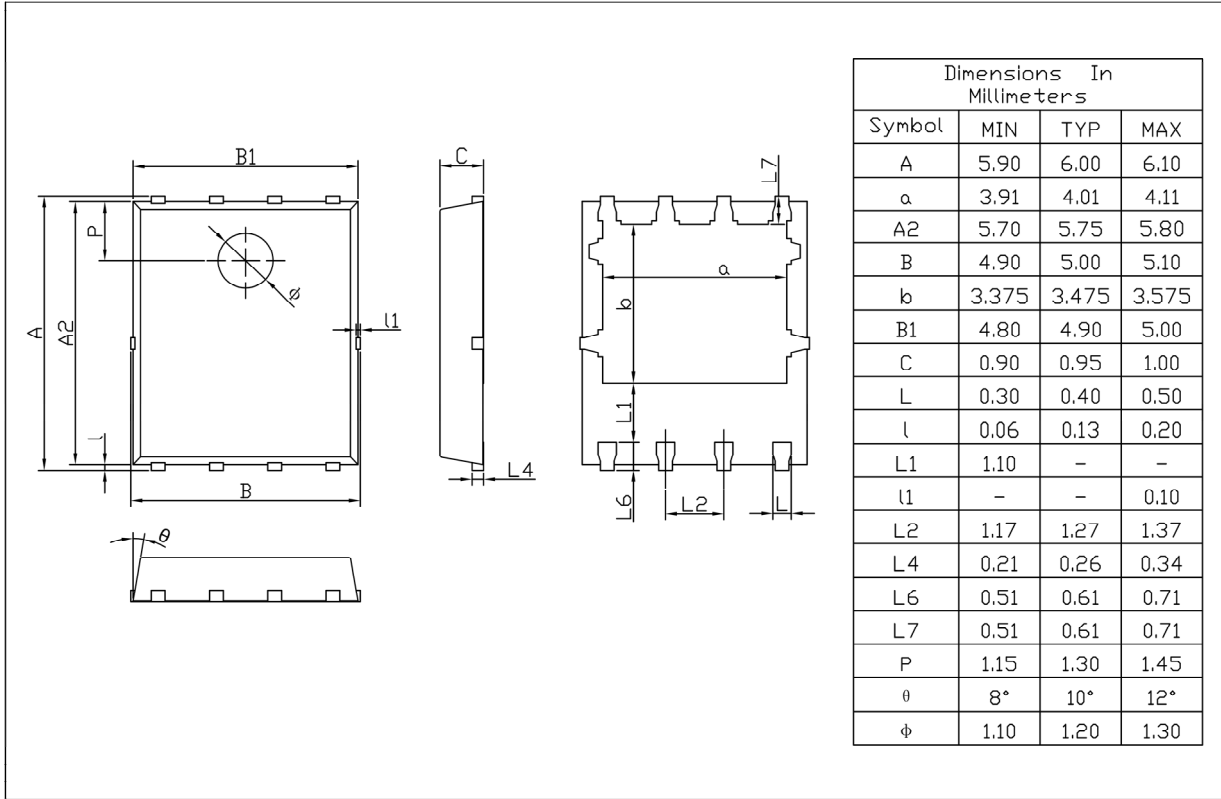
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## 外形尺寸图 / Package Dimensions

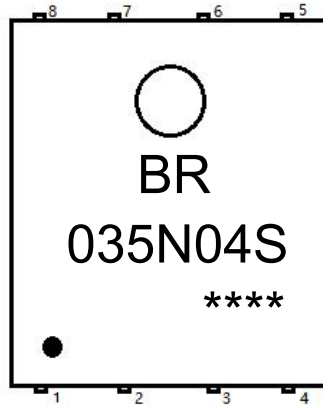
PDFN5 × 6

Unit:mm



Rev.01 202209

**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

035N04S： 为型号代码

\*\*\*\*： 为生产批号代码，随生产批号变化

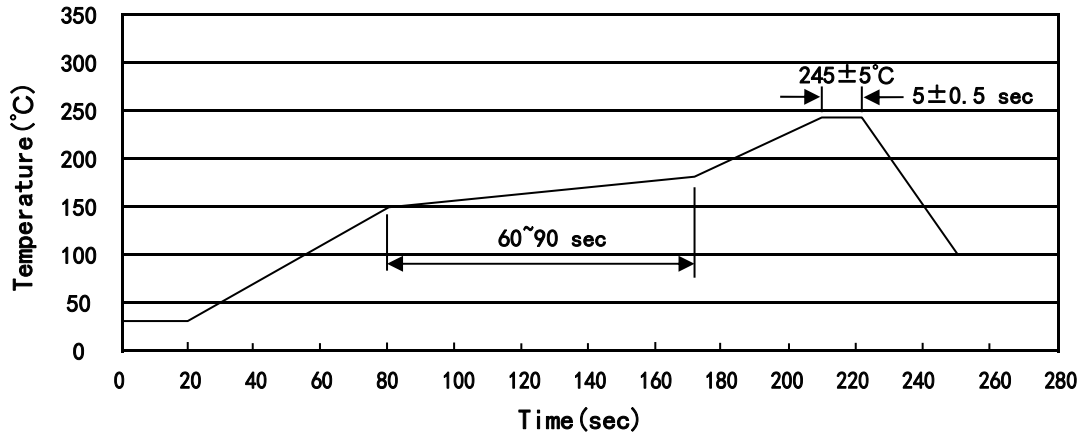
Note：

BR： Company Code

035N04S： 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 150~180°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	5,000	2	10,000	6	60,000	13"×12	360×360×50	380×335×366

**使用说明 / Notices**