

BRCS200N04YB

Rev.A May.-2023

DATA SHEET

描述 / Descriptions

PDFN3×3A-8L 塑封封装 N 沟道 MOS 场效应管。

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

特征 / Features

$V_{DS}=40V$ $I_D=21A$

$R_{DS(ON)}@10V < 20m\Omega$ (Typ.18mR)

$R_{DS(ON)}@4.5V < 35m\Omega$ (Typ.24mR)

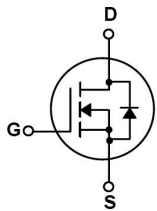
无卤产品。HF Product.

用途 / Applications

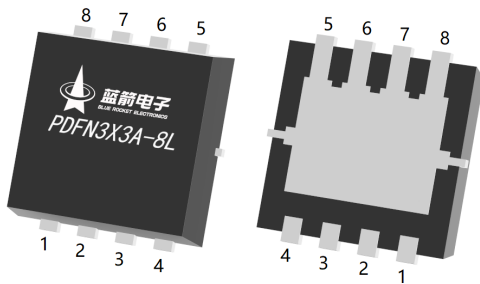
电机驱动、电动工具、LED 照明、快速充电器。

Motor Drive, Power Tools, LED Lighting, Quick Charger.

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_{DSS} | 40 | V |
| Drain Current | | $I_D(T_C=25^\circ\text{C})$ | 21 | A |
| Drain Current - Pulsed | | I_{DM} | 42 | A |
| Gate-Source Voltage | | V_{GS} | ± 20 | V |
| Power Dissipation | | $P_D(T_C=25^\circ\text{C})$ | 15 | W |
| Operating and Storage Temperature Range | | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ |
| Junction-to-Ambient | Steady-State | $R_{\theta JA}$ | 80 | $^\circ\text{C/W}$ |
| Junction-to-Case | Steady-State | $R_{\theta JC}$ | 8.3 | |

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} | $V_{GS}=0V$ | $I_D=250\mu A$ | 40 | 45 | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=40V$ | $V_{GS}=0V$ | | | 1.0 | μA |
| Gate-Body leakage current | I_{GSS} | $V_{GS}=\pm 20V$ | $V_{DS}=0V$ | | | ± 100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ | $I_D=250\mu A$ | 1 | 1.8 | 3 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V$ | $I_D=6.0A$ | | 18 | 20 | m Ω |
| | | $V_{GS}=4.5V$ | $I_D=5.0A$ | | 24 | 35 | m Ω |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V$ | $I_S=1.0A$ | | | 1.2 | V |
| Input Capacitance | C_{iss} | $V_{DS}=25V$ $f=1.0MHz$ | $V_{GS}=0V$ | | 1200 | | pF |
| Output Capacitance | C_{oss} | | | | 350 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | | 250 | | pF |
| Gate resistance | R_g | $V_{DS}=0V$ $f=1.0MHz$ | $V_{GS}=0V$ | | 2.5 | | Ω |
| Total Gate Charge | $Q_{g(10V)}$ | $V_{GS}=10V$ $I_D=6A$ | $V_{DS}=20V$ | | 9.2 | | nC |
| Total Gate Charge | $Q_{g(4.5V)}$ | | | | 4.5 | | |
| Gate-Source Charge | Q_{gs} | | | | 2.5 | | nC |
| Gate-Drain Charge | Q_{gd} | | | | 1.5 | | nC |

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 | $t_{d(on)}$ | $V_{DS}=20V$ $V_{GS}=10V$ $R_L=3.3\Omega$ $R_{GEN}=3\Omega$ | | 6.5 | | ns |
| Turn-On Rise Time | t_r | | | 3.7 | | ns |
| Turn-Off Delay Time | $t_{d(off)}$ | | | | 18.2 | ns |
| Turn-Off Fall Time | t_f | | | | 7.1 | ns |

电参数曲线图 / Electrical Characteristic Curve

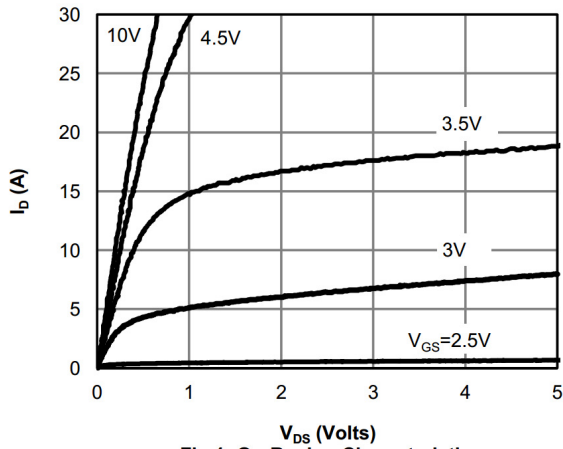


Fig 1: On-Region Characteristics

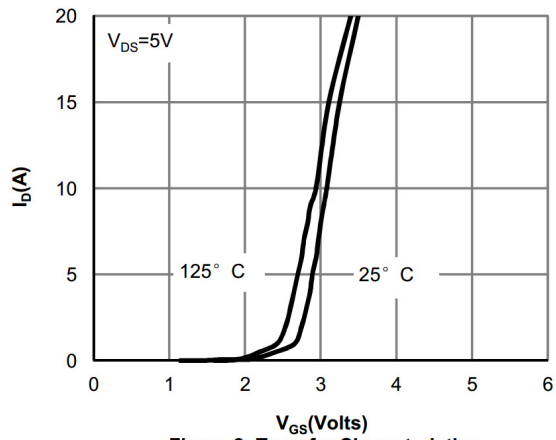


Figure 2: Transfer Characteristics

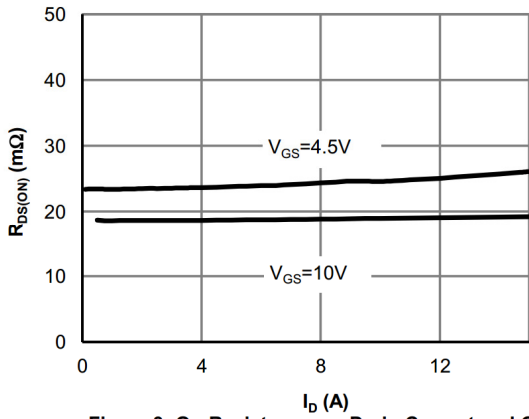


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

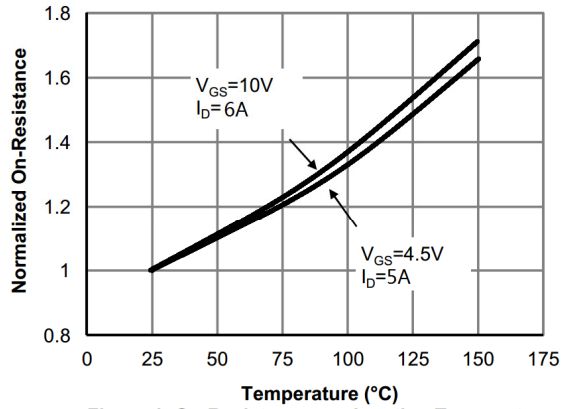


Figure 4: On-Resistance vs. Junction Temperature

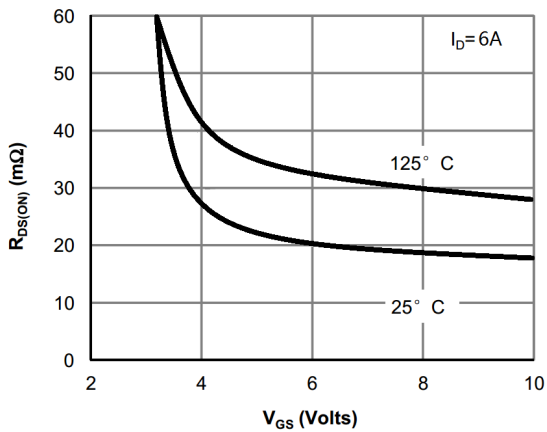


Figure 5: On-Resistance vs. Gate-Source Voltage

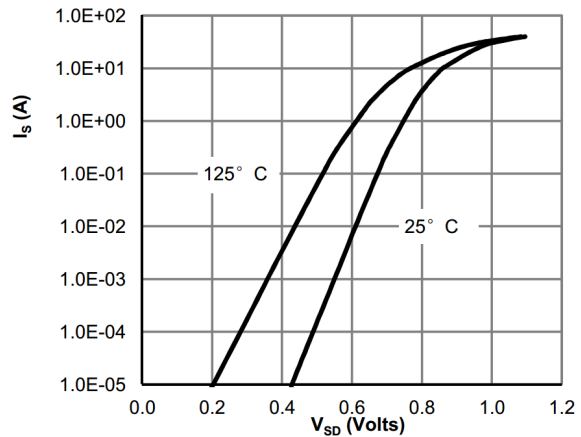


Figure 6: Body-Diode Characteristics

N-沟道电参数曲线图 / N-CHANNEL Electrical Characteristic Curve

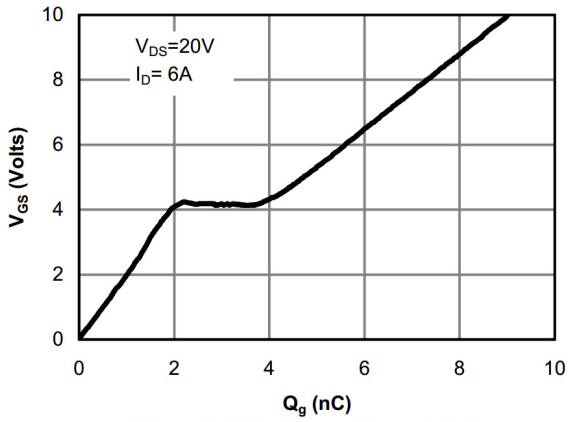


Figure 7: Gate-Charge Characteristics

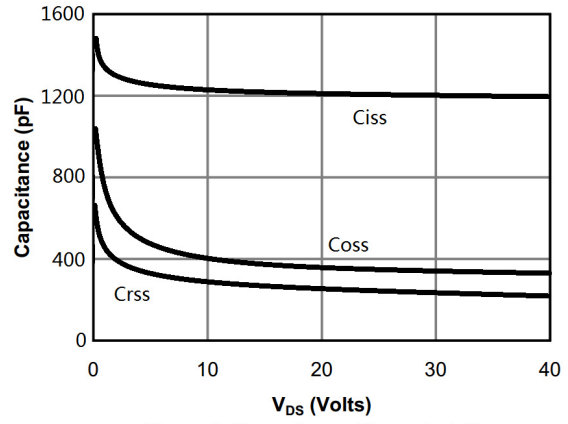


Figure 8: Capacitance Characteristics

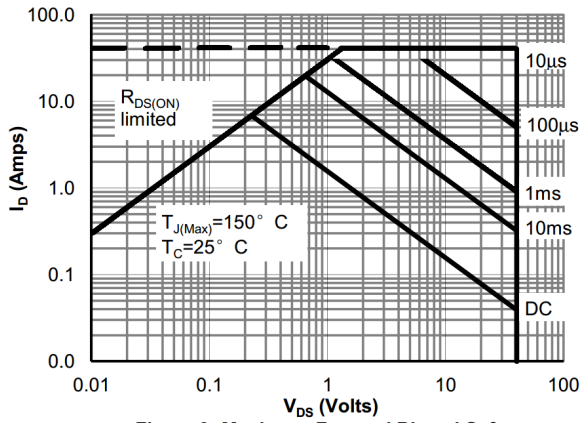


Figure 9: Maximum Forward Biased Safe Operating Area

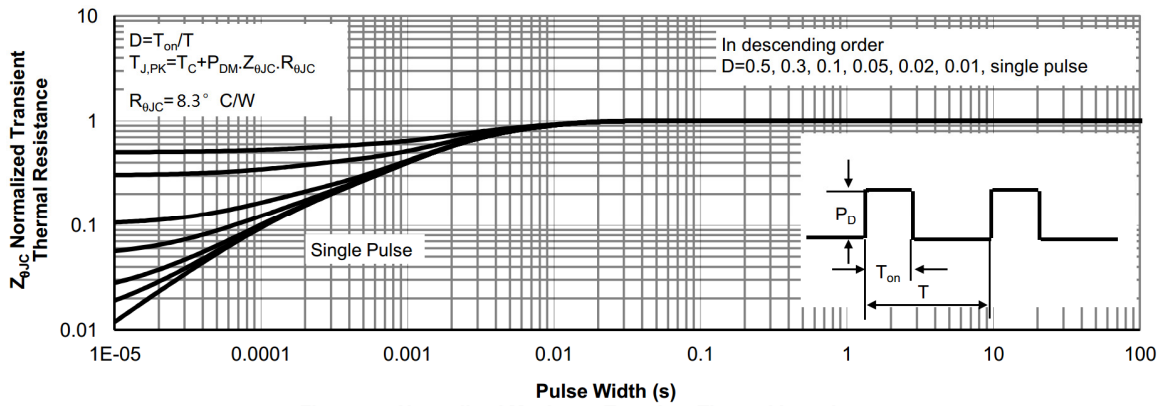
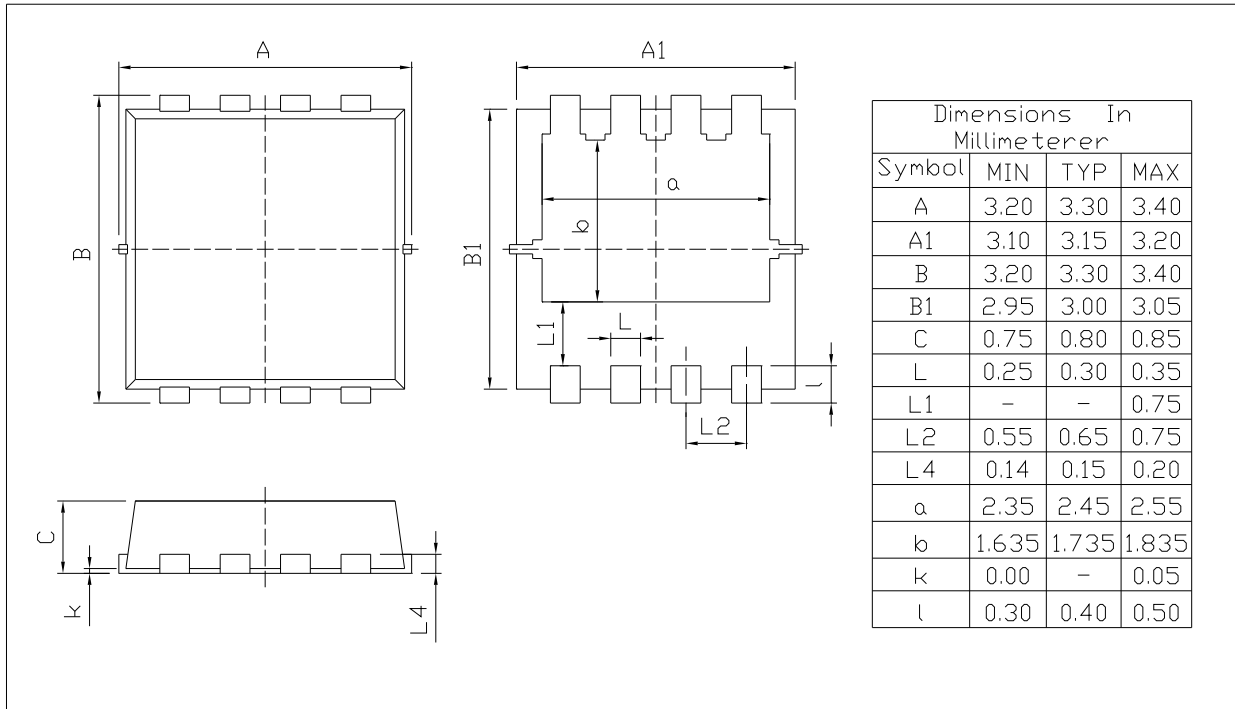


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

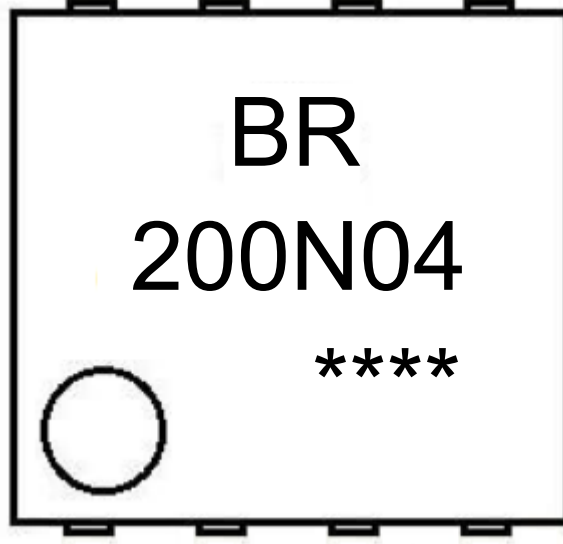
PDFN3X3A-8L

Unit:mm



Rev.00 202011

印章说明 / Marking Instructions



说明：

BR： 为公司代码

200N04： 为型号代码

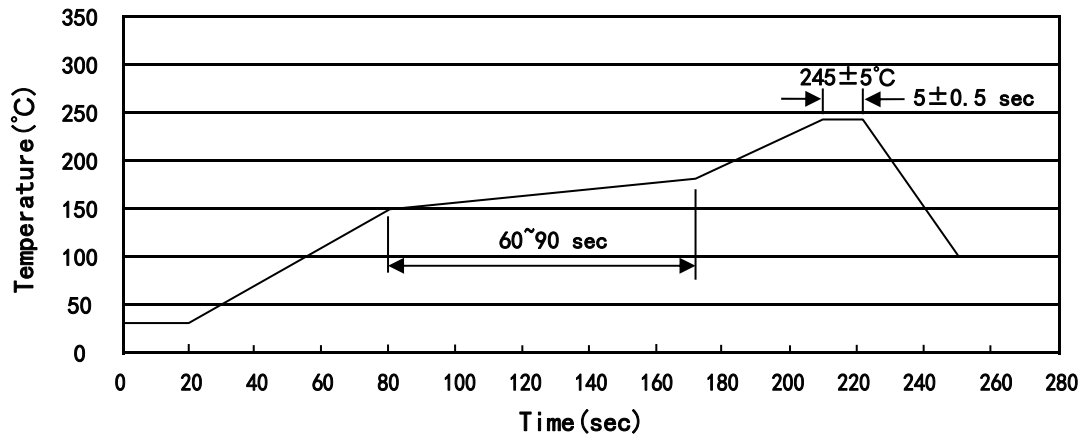
****： 为生产批号代码，随生产批号变化

Note:

BR: Company Code

200N04: 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 ³) | | |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
| | 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