

BRCS120N03YB

Rev.A Mar.-2022

DATA SHEET

描述 / Descriptions

PDFN 3×3A-8L 塑封封装 N 沟道 MOS 场效应管。

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

特征 / Features

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

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

$R_{DS(ON)} @ 10V \leq 13mR (Typ. 11mR)$

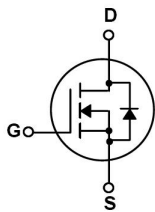
无卤产品。HF Product.

用途 / Applications

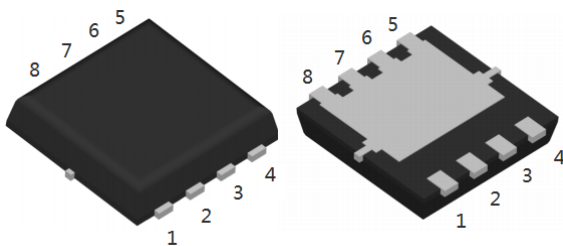
用于高功率 DC/DC 转换和功率开关。

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

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} | 30 | V |
| Drain Current | $I_D(T_c=25^\circ\text{C})$ | 20 | A |
| Drain Current - Pulsed | I_{DM} | 55 | A |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Single Pulsed Avalanche Energy | E_{AS} | 199 | mJ |
| Avalanche Current | I_{AS} | 12.9 | A |
| Power Dissipation | $P_D(T_c=25^\circ\text{C})$ | 15.5 | W |
| Operating and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ |
| Junction-to-Ambient | $t \leq 10$ | $R_{\theta JA}$ | $^\circ\text{C/W}$ |
| Junction-to-Ambient | Steady-State | | |
| Junction-to-Case | Steady-State | | |
| | $R_{\theta JC}$ | 8 | |

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} | $V_{GS}=0V$ | $I_D=250\mu A$ | 30 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V$ | $V_{GS}=0V$ | | | 1 | μA |
| Gate-Body Leakage Current Forward | I_{GSS} | $V_{GS}=\pm 20V$ | $V_{DS}=0V$ | | | ± 0.1 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ | $I_D=250\mu A$ | 1.0 | 1.8 | 3.0 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V$ | $I_D=20A$ | | 11 | 13 | m Ω |
| | | $V_{GS}=4.5V$ | $I_D=10A$ | | 16 | 20 | m Ω |
| Drain-Source Diode Forward Voltage | V_{SD} | $V_{GS}=0V$ | $I_S=1A$ | | | 1.2 | V |
| Input Capacitance | C_{iss} | $V_{DS}=25V$ $f=1.0MHz$ | $V_{GS}=0V$ | | 666 | | pF |
| Output Capacitance | C_{oss} | | | | 26 | | |
| Reverse Transfer Capacitance | C_{rss} | | | | 63 | | |
| Gate resistance | R_g | $V_{GS}=0V$ $f=1MHz$ | $V_{DS}=0V$ | | 1.7 | | Ω |
| Total Gate Charge | $Q_{g(10V)}$ | $V_{GS}=10V$ $I_D=8A$ | $V_{DS}=15V$ | | 13.6 | | nC |
| Total Gate Charge | $Q_{g(4.5V)}$ | | | | 6.8 | | |
| Gate Source Charge | Q_{gs} | | | | 1.6 | | |
| Gate Drain Charge | Q_{gd} | | | | 3.6 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}=10V$ $R_L=1.87\Omega$ | $V_{DS}=15V$ $R_{GEN}=4.5\Omega$ | | 5 | | ns |
| Turn-On Rise Time | t_r | | | | 3.5 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | | 22 | | |
| Turn-Off Fall Time | t_f | | | | 4.5 | | |

电参数曲线图 / Electrical Characteristic Curve

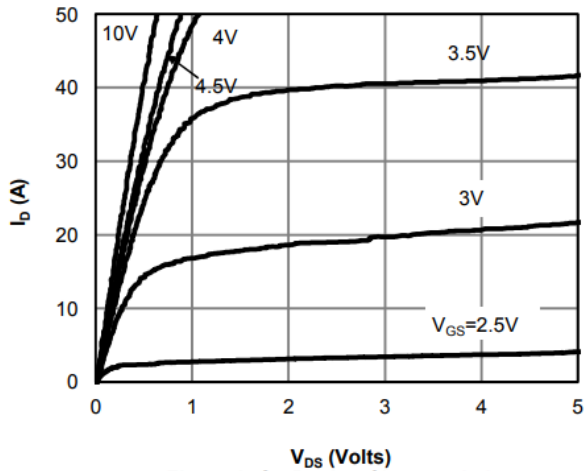


Figure 1: On-Region Characteristics

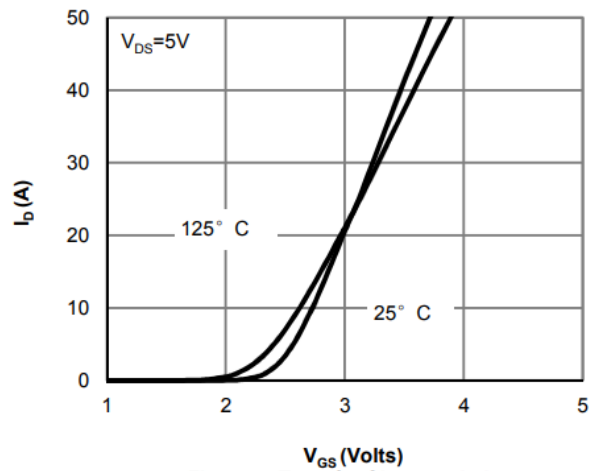


Figure 2: Transfer Characteristics

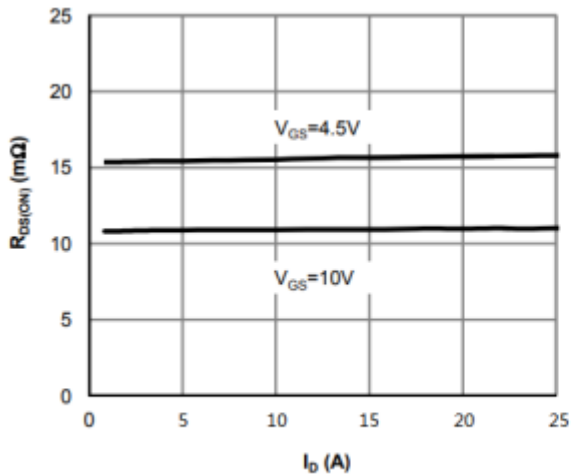


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

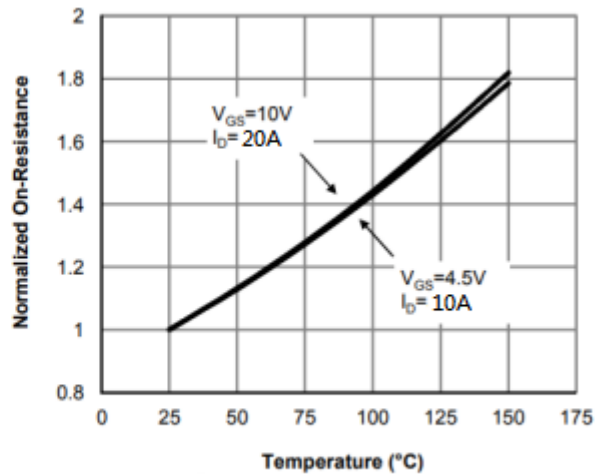


Figure 4: On-Resistance vs. Junction Temperature

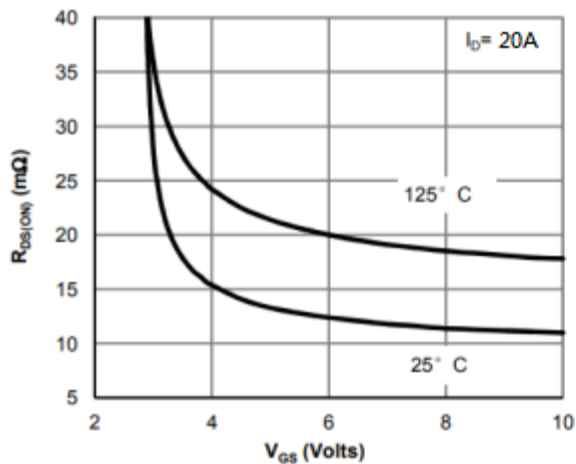


Figure 5: On-Resistance vs. Gate-Source Voltage

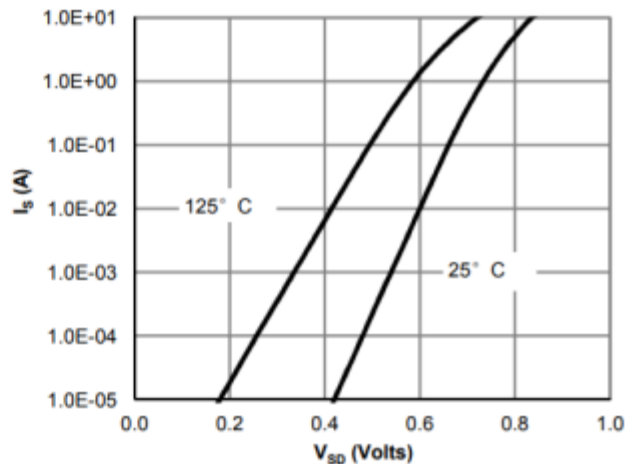


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

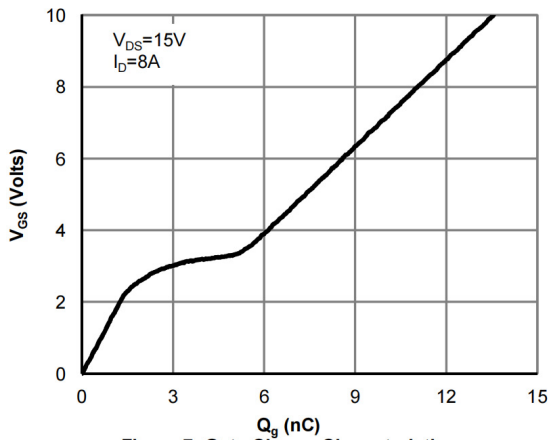


Figure 7: Gate-Charge Characteristics

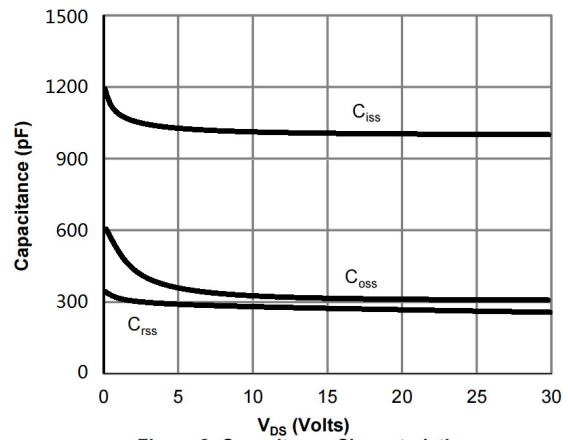


Figure 8: Capacitance Characteristics

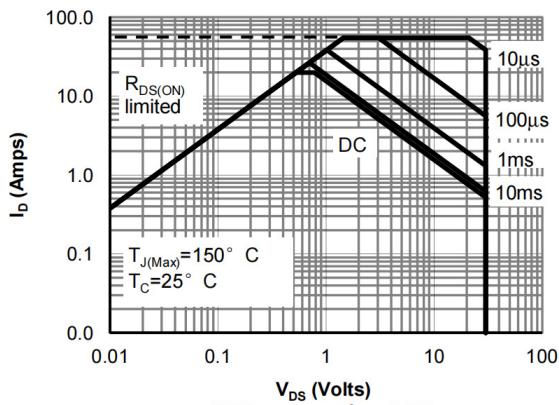


Figure 9: Maximum Forward Biased Safe Operating Area

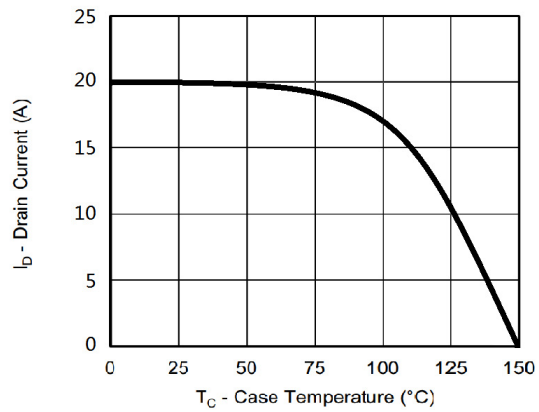


Figure 10: Maximum Continuous Drain Current vs Case Temperature

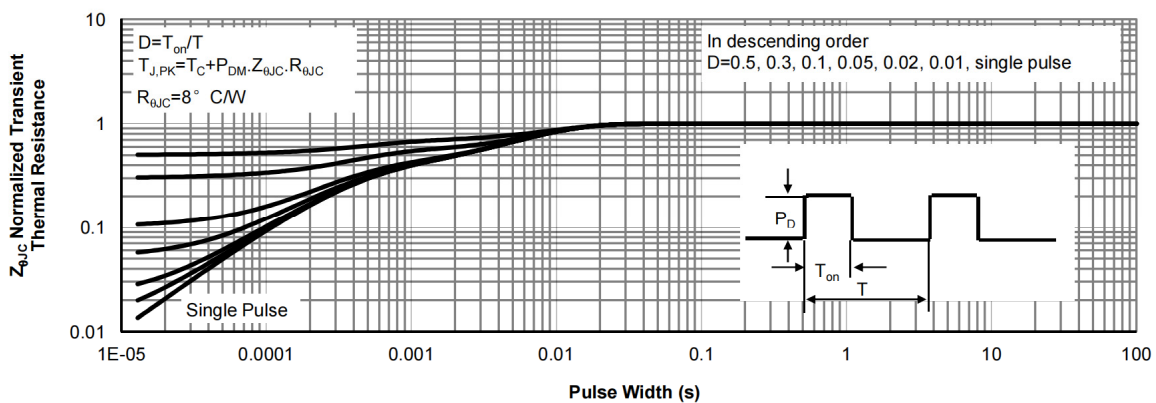
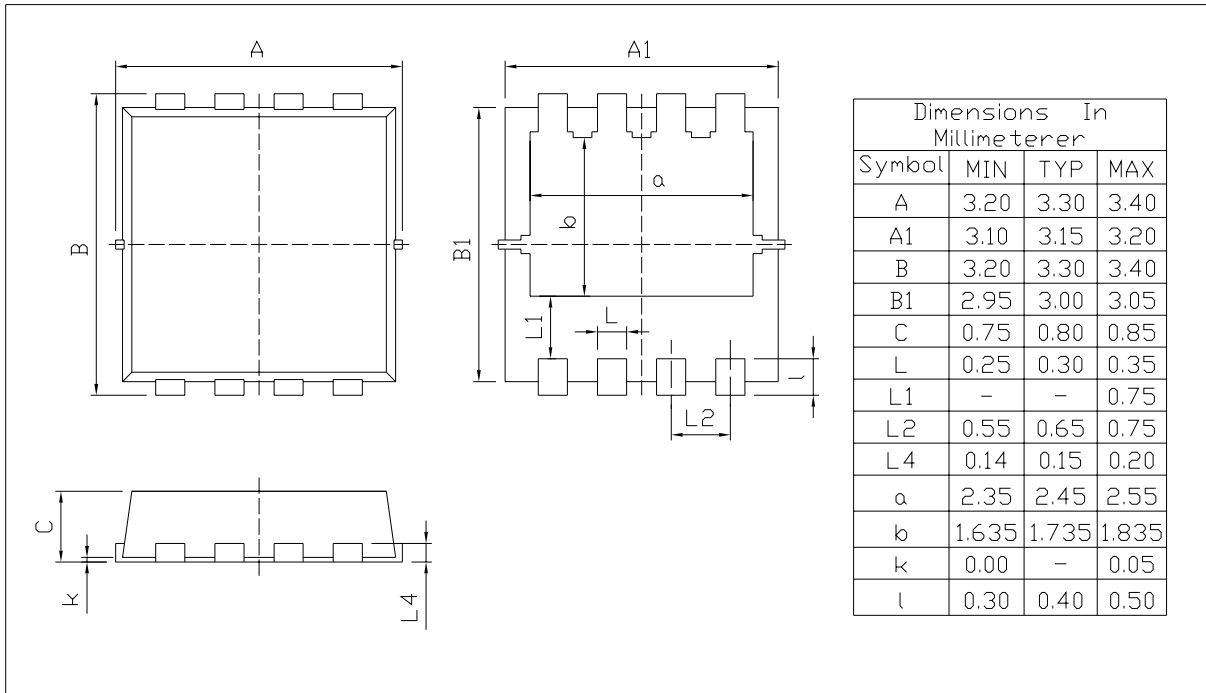


Figure 11: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

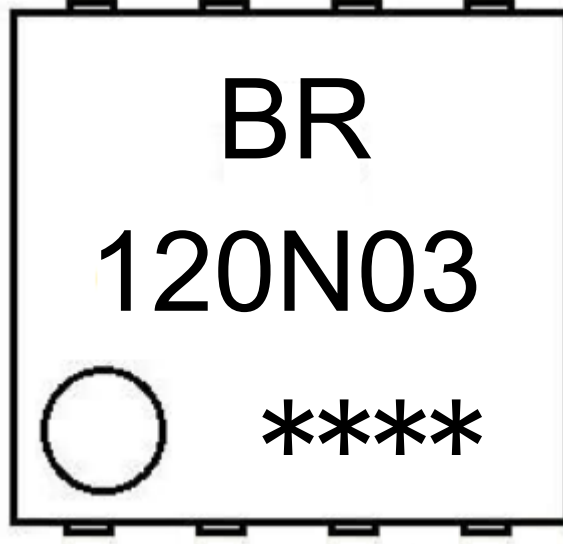
PDFN3X3A-8L

Unit:mm



Rev.00 202011

印章说明 / Marking Instructions



说明：

BR： 为公司代码

120N03： 为型号代码

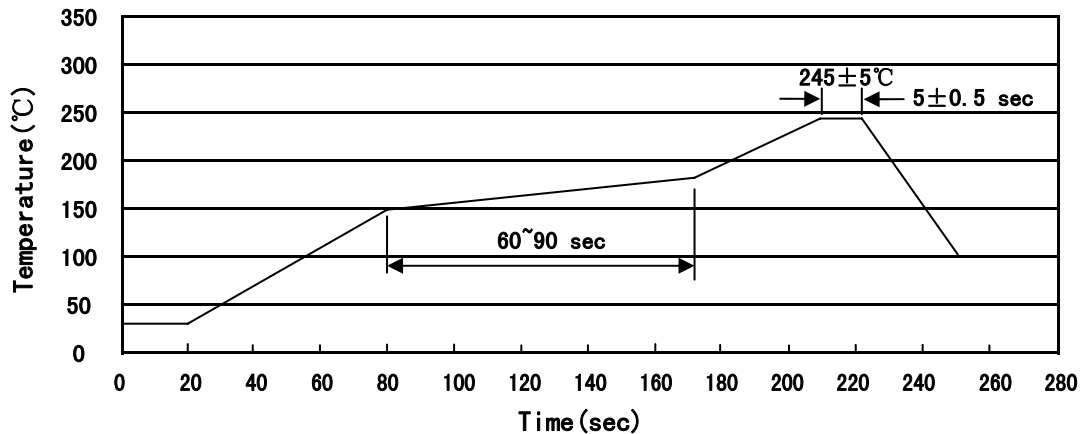
****： 为生产批号代码，随生产批号变化

Note:

BR: Company Code.

120N03: 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 |
| PDFN 3 × 3A-8L | 5,000 | 2 | 10,000 | 6 | 60,000 | 13" ×12 | 360×360×50 | 380×335×366 |

使用说明 / Notices