

# BRCS900N10SYMQ

Rev.B Dec.-2023

## 描述 / Descriptions

PDFN5×6A 塑封封装双 N 沟道场效应管。

Dual N-CHANNEL MOSFET in a PDFN5×6A Plastic Package.

## 特征 / Features

$V_{DS}(V)=100V$        $I_D=13.7A$

$R_{DS(ON)}<90m\Omega(V_{GS}=10V)$

$R_{DS(ON)}<145m\Omega(V_{GS}=4.5V)$

符合 AEC-Q101 标准高可靠性要求；无卤产品。

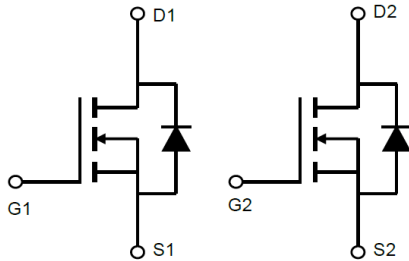
Qualified to AEC-Q101 Standards for High Reliability; HF Product.

## 用途 / Applications

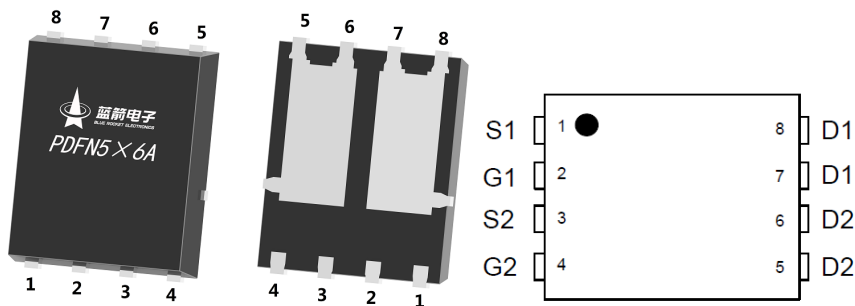
PWM 应用、负载开关、电源管理、LED 调光，满足汽车应用的严格要求。

PWM Application, Load Switch, Power Management, Dimming LED, Meet the stringent requirements of automotive applications.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



## 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<br>Parameter                        | 符号<br>Symbol                  | 数值<br>Rating    | 单位<br>Unit         |
|--|-------------------------------|-----------------|--------------------|
| Drain-Source Voltage                   | $V_{DS}$                      | 100             | V                  |
| Continuous Drain Current               | $I_D$                         | 13.7            | A                  |
| Pulsed Drain Current                   | $I_{DM}$                      | 48              | A                  |
| Gate-Source Voltage                    | $V_{GS}$                      | $\pm 20$        | V                  |
| Power Dissipation                      | $P_D(T_c=25^{\circ}\text{C})$ | 35.7            | W                  |
| Avalanche energy(L=0.5mH)              | $E_{AS}$                      | 2.7             | mJ                 |
| Avalanche Current(L=0.5mH)             | $I_{AS}$                      | 3.3             | A                  |
| Junction and Storage Temperature Range | $T_j, T_{stg}$                | -55 to 150      | $^{\circ}\text{C}$ |
| Maximum Junction-to-Ambient            | $t \leq 10\text{s}$           | $R_{\theta JA}$ | 32                 |
|  | Steady-State                  |                 | 62.5               |
| Maximum Junction-to-Case               | Steady-State                  | $R_{\theta JC}$ | 3.5                |

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

| 参数<br>Parameter                   | 符号<br>Symbol  | 测试条件<br>Test Conditions                                | 最小值<br>Min | 典型值<br>Typ | 最大值<br>Max | 单位<br>Unit    |
|-----------------------------------|---------------|--|------------|------------|------------|---------------|
| Drain-Source Breakdown Voltage    | $BV_{DSS}$    | $I_D=250\mu\text{A}, V_{GS}=0\text{V}$                 | 100        |            |            | V             |
| Zero Gate Voltage Drain Current   | $I_{DSS}$     | $V_{DS}=100, V_{GS}=0\text{V}$                         |            |            | 1.0        | $\mu\text{A}$ |
| Gate-Body leakage current         | $I_{GSS}$     | $V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$              |            |            | $\pm 100$  | nA            |
| Gate Threshold Voltage            | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$                    | 1          | 1.4        | 2.5        | V             |
| Static Drain-Source On-Resistance | $R_{DS(on)}$  | $V_{GS}=10\text{V}, I_D=10\text{A}$                    |            | 75         | 90         | m $\Omega$    |
|                                   |               | $V_{GS}=4.5\text{V}, I_D=5\text{A}$                    |            | 128        | 145        |               |
| Diode Forward Voltage             | $V_{SD}$      | $I_S=1\text{A}, V_{GS}=0\text{V}$                      |            |            | 1.2        | V             |
| Input Capacitance                 | $C_{iss}$     | $V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$ |            | 180        |            | pF            |
| Output Capacitance                | $C_{oss}$     |  |            | 105        |            |               |
| Reverse Transfer Capacitance      | $C_{rss}$     |  |            | 15         |            |               |
| Gate resistance                   | $R_g$         | $V_{GS}=0\text{V}, V_{DS}=0\text{V}, f=1\text{MHz}$    |            | 1.5        |            | $\Omega$      |
| Total Gate Charge                 | $Q_{g(10V)}$  | $V_{GS}=10\text{V}, V_{DS}=50\text{V}, I_D=5\text{A}$  |            | 6.5        |            | nC            |
| Total Gate Charge                 | $Q_{g(4.5V)}$ |  |            | 3          |            |               |
| Gate Source Charge                | $Q_{gs}$      |  |            | 1.5        |            |               |
| Gate Drain Charge                 | $Q_{gd}$      |  |            | 1.5        |            |               |

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

| 参数<br>Parameter     | 符号<br>Symbol | 测试条件<br>Test Conditions   | 最小值<br>Min | 典型值<br>Typ | 最大值<br>Max | 单位<br>Unit |
|---------------------|--------------|---|------------|------------|------------|------------|
| Turn-On Delay Time  | $t_{d(on)}$  | $V_{GS}=10V$ $V_{DS}=50V$<br>$R_L=10\ \Omega$ $R_{GEN}=3\ \Omega$ |            | 4          |            | ns         |
| Turn-On Rise Time   | $t_r$        |   |            | 2          |            |            |
| Turn-Off Delay Time | $t_{d(off)}$ |   |            | 15         |            |            |
| Turn-Off Fall Time  | $t_f$        |   |            | 2          |            |            |

## 电参数曲线图 / Electrical Characteristic Curve

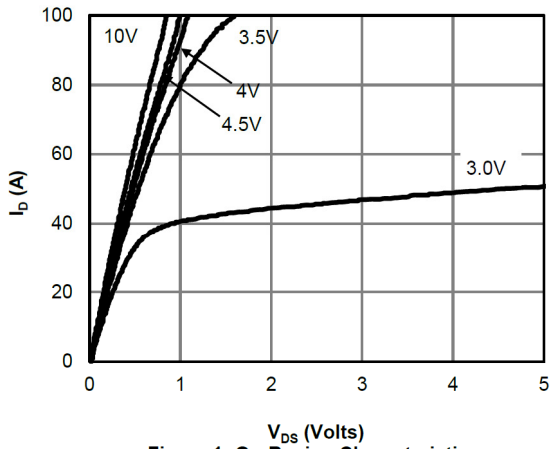


Figure 1: On-Region Characteristics

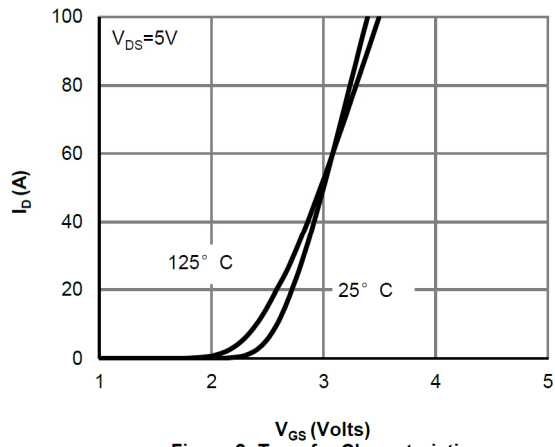


Figure 2: Transfer Characteristics

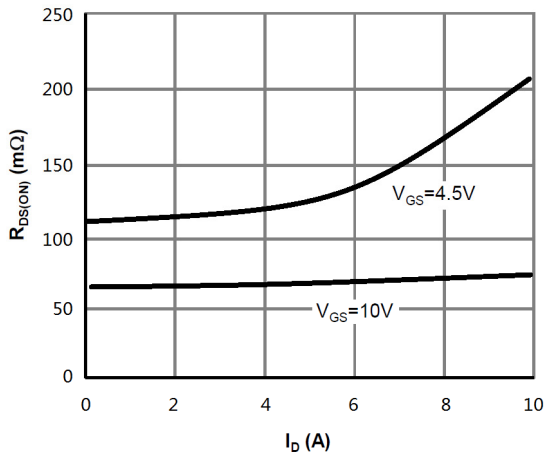


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

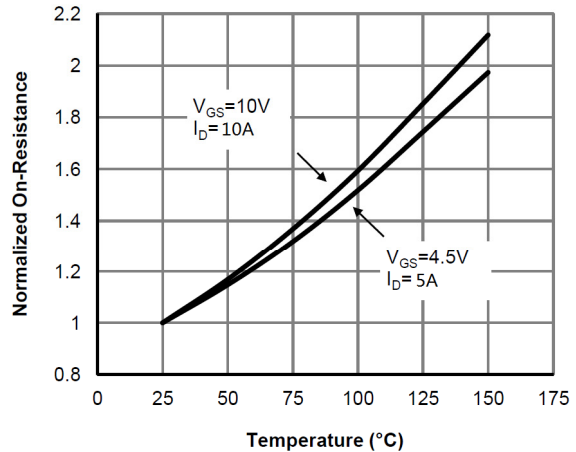


Figure 4: On-Resistance vs. Junction Temperature

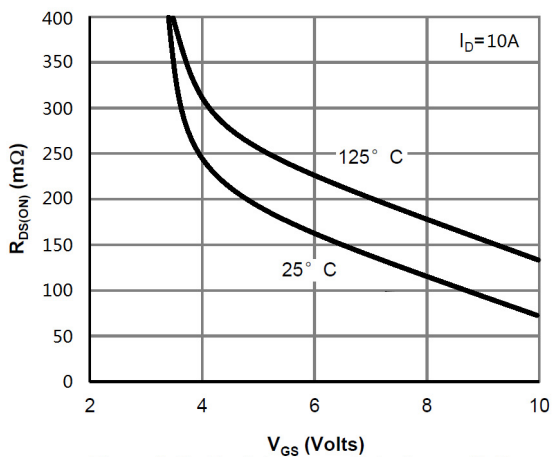


Figure 5: On-Resistance vs. Gate-Source Voltage

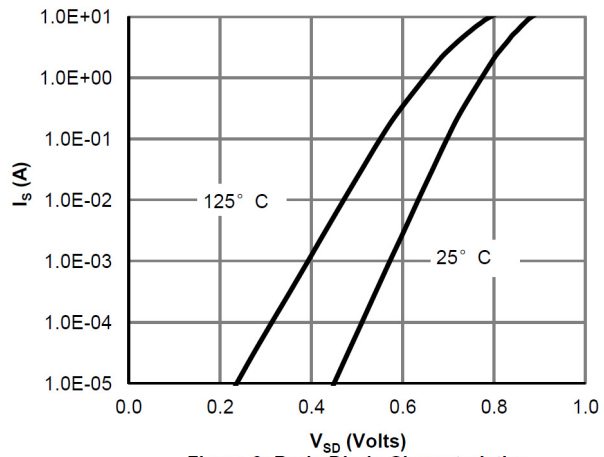


Figure 6: Body-Diode Characteristics

## 电参数曲线图 / Electrical Characteristic Curve

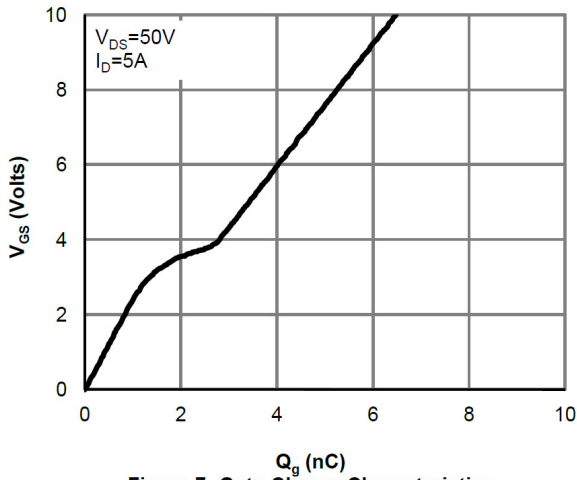


Figure 7: Gate-Charge Characteristics

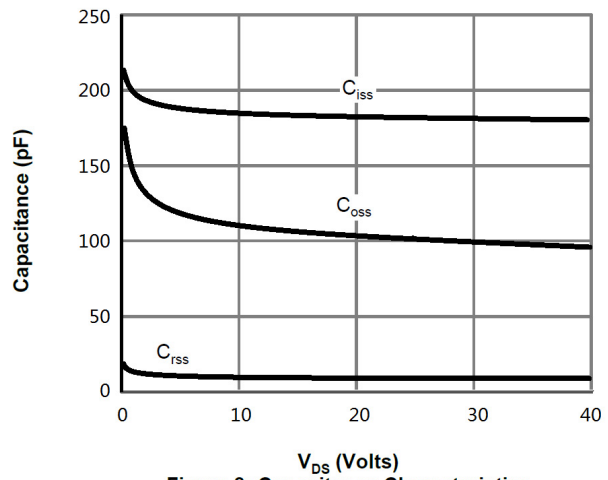


Figure 8: Capacitance Characteristics

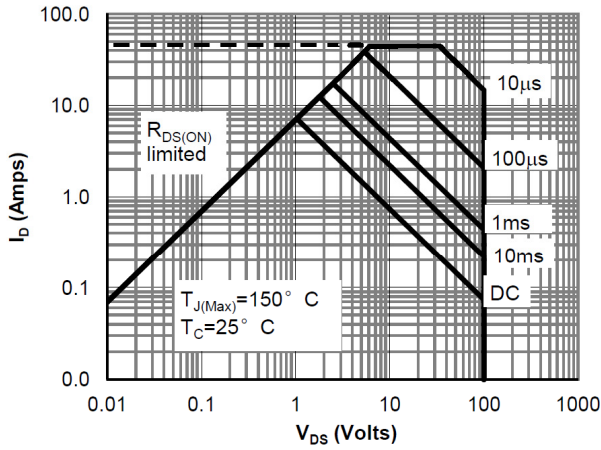


Figure 9: Maximum Forward Biased Safe Operating Area

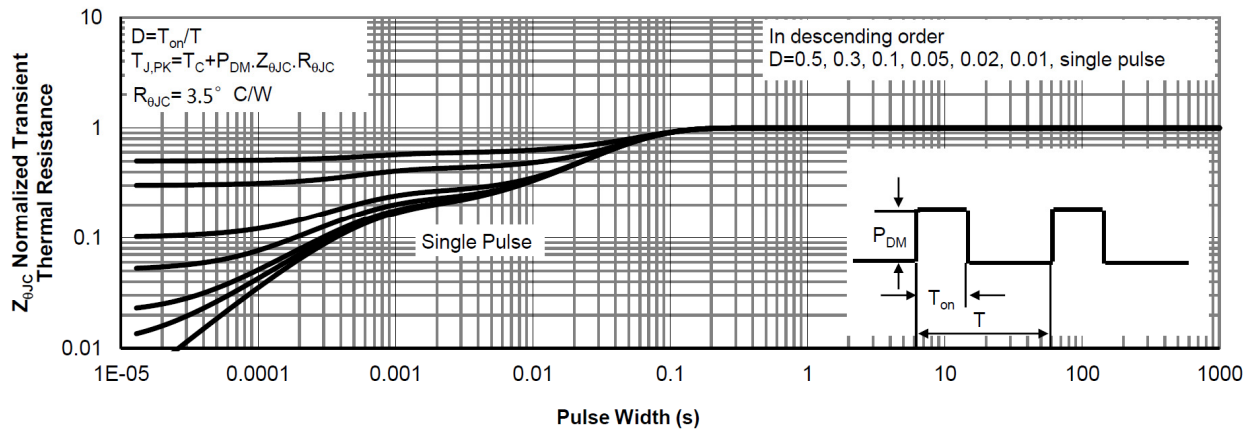
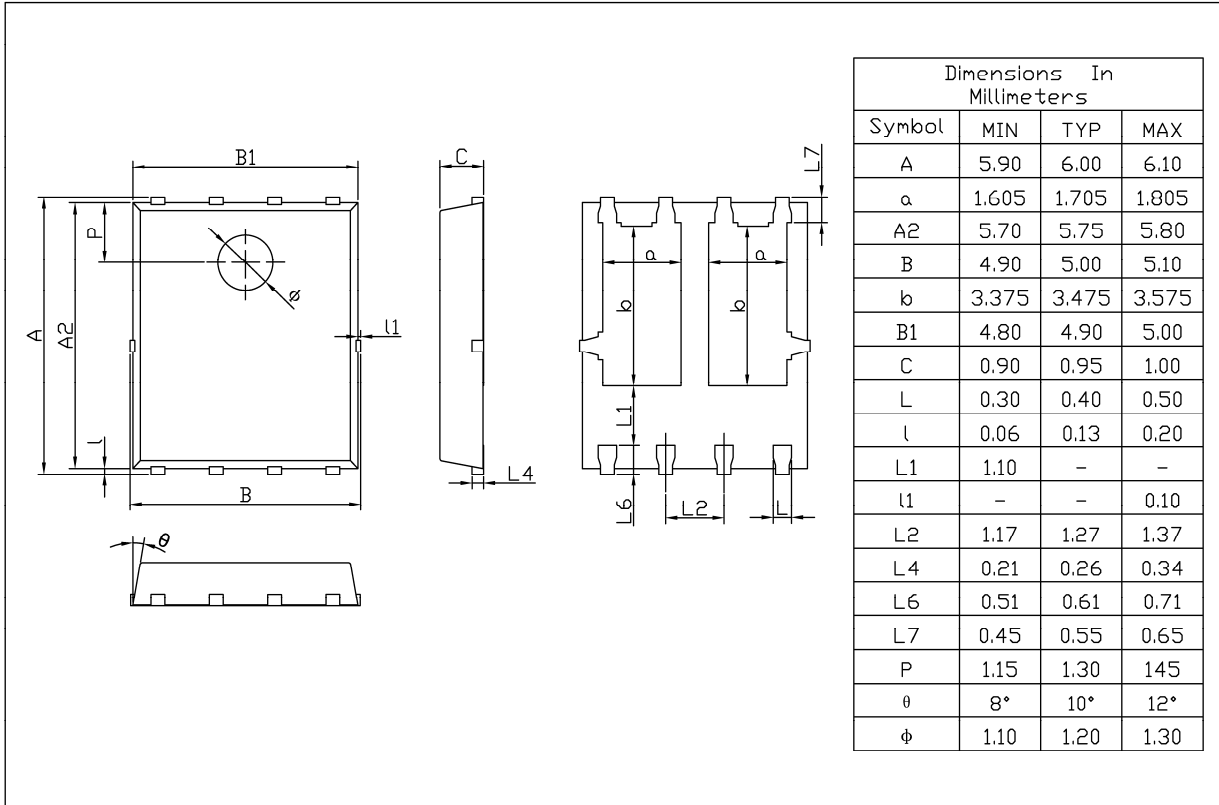


Figure 10: Normalized Maximum Transient Thermal Impedance

**外形尺寸图 / Package Dimensions**

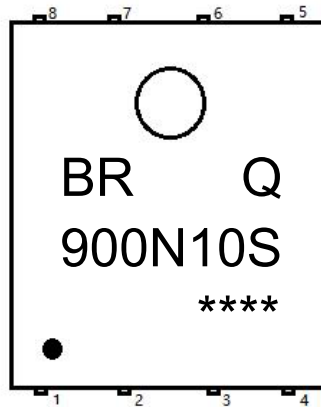
PDFN5 X6A

Unit:mm



Rev.01 202209

## 印章说明 / Marking Instructions



说明：

BR： 为公司代码

Q： 为汽车无卤产品标识

900N10S： 为型号代码

\*\*\*\*： 为生产批号代码，随生产批号变化

Note：

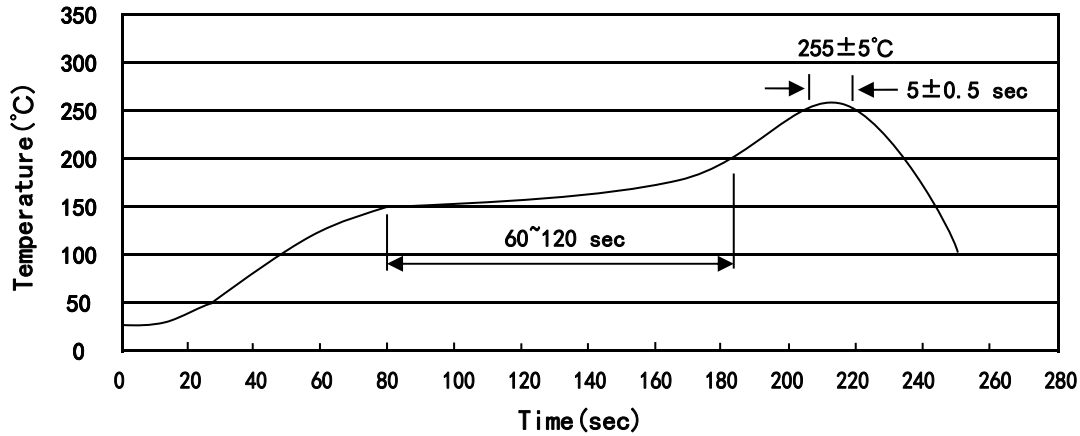
BR： Company Code

Q: Automobile halogen-free product Code

900N10S： 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<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
|                      | Units/Reel<br>只/卷盘 | Reels/Inner Box<br>卷盘/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Reel                                    | Inner Box 盒 | Outer Box 箱 |
| PDFN5×6A             | 5,000              | 2                       | 10,000                 | 6                            | 60,000                 | 13"×12                                  | 360×360×50  | 380×335×366 |

**使用说明 / Notices**