

BRCS030N03BD

Rev.A Apr.-2023

描述 / Descriptions

TO-263 塑封封装 N 沟道场效应管。

N-CHANNEL MOSFET in a TO-263 Plastic Package.

特征 / Features

低电阻,开关速度快,无卤产品。

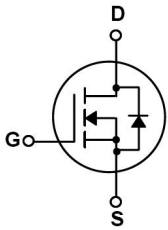
Ultra Low On-Resistance,fast switching, HF Product.

用途 / Applications

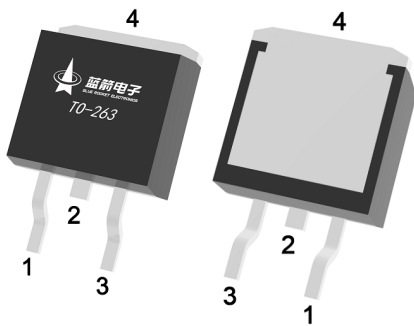
该器件适用于高效电源模块,基于半桥拓扑结构的电子节能灯。

These devices are well suited for high efficient switched mode power supplies, electronic lamp ballast based on half bridge topology.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1 : G

PIN 2、 4 : D

PIN 3 : S

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 _{DS} | 30 | V |
| Drain Current | I _D (Tc=25°C) | 167 | A |
| Pulsed Drain Current | I _{DM} | 530 | A |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Single Pulsed Avalanche Energy L=0.5mH | E _{AS} | 590 | mJ |
| Avalanche Current | I _{AS} | 33.5 | A |
| Total Power Dissipation | P _D (Tc=25°C) | 140 | W |
| Junction and Storage Temperature Range | T _J , T _{STG} | -55 to 150 | °C |
| Thermal Resistance-Junction to Ambient | t ≤ 10s | 15 | °C/W |
| | Steady-State | 60 | |
| Thermal Resistance-Junction to Case | Steady-State | 0.9 | |

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 =250μA | 30 | 35 | | 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} =±20V V _{DS} =0V | | | ±100 | nA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} I _D =250μA | 1 | 1.5 | 3 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =10V I _D =20A | | 2.5 | 3.0 | mΩ |
| | | V _{GS} =4.5V I _D =10A | | 3.0 | 3.5 | |
| Forward On Voltage | V _{SD} | V _{GS} =0V I _S =1A | | | 1.2 | V |
| Input Capacitance | C _{iSS} | V _{DS} =25V V _{GS} =0V f=1MHz | | 5700 | | pF |
| Output Capacitance | C _{oss} | | | 610 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 460 | | |

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 |
|---------------------|-----------------------|--|------------|------------|------------|------------|
| Gate resistance | R _g | f=1MHz | | 1.5 | | Ω |
| Total Gate Charge | Q _g (10V) | V _{GS} =10V V _{DS} =20V I _D =20A | | 67 | | nC |
| Total Gate Charge | Q _g (4.5V) | | | 29 | | |
| Gate Source Charge | Q _{gs} | | | 16.7 | | |
| Gate Drain Charge | Q _{gd} | | | 4.8 | | |
| Turn-On Delay Time | t _{d(on)} | V _{GS} =10V V _{DS} =20V R _L =1Ω R _{GEN} =3Ω | | 12.7 | | ns |
| Turn-On Rise Time | t _r | | | 9.5 | | |
| Turn-Off Delay Time | t _{d(off)} | | | 58 | | |
| Turn-Off Fall Time | t _f | | | 11 | | |

电参数曲线图 / Electrical Characteristic Curve

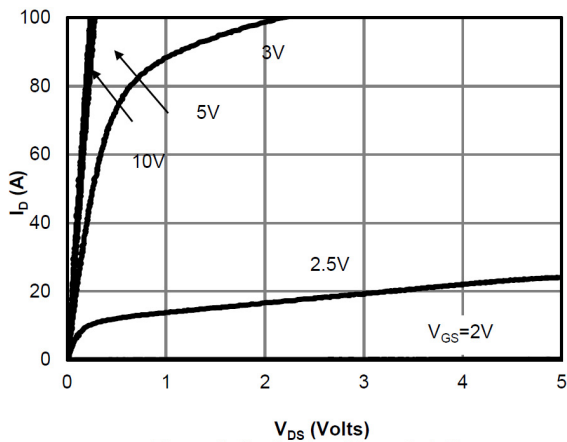


Figure 1: On-Region Characteristics

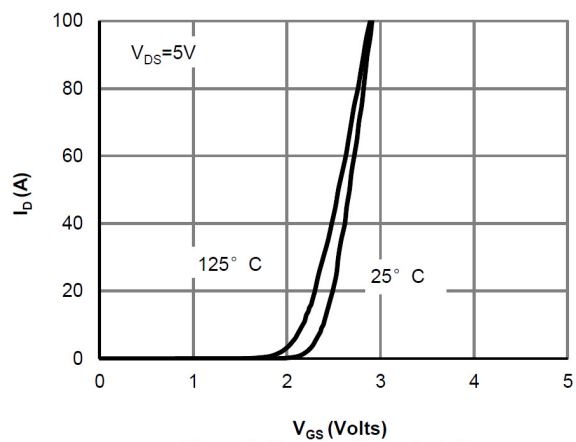


Figure 2: Transfer Characteristics

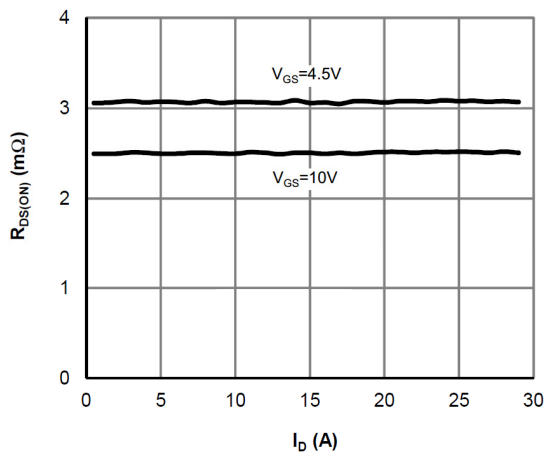


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

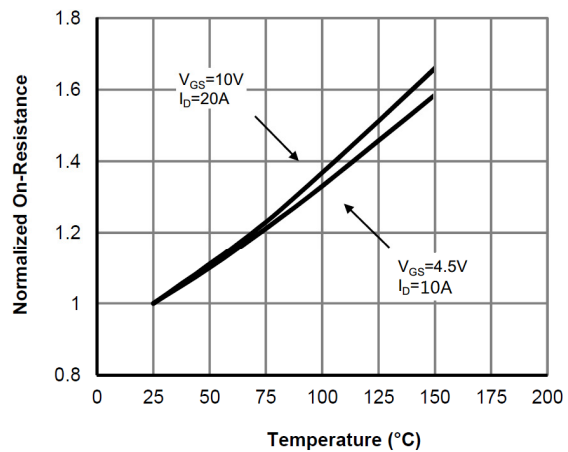


Figure 4: On-Resistance vs. Junction Temperature

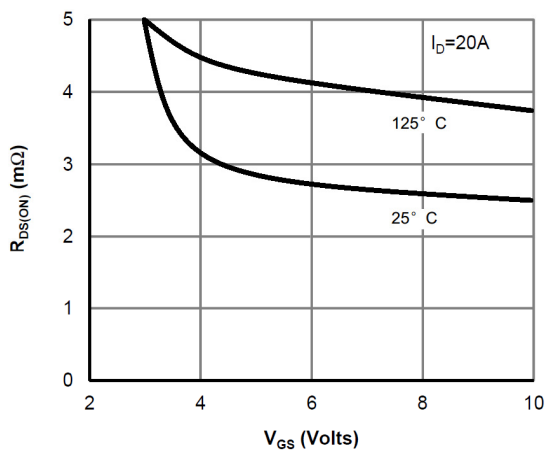


Figure 5: On-Resistance vs. Gate-Source Voltage

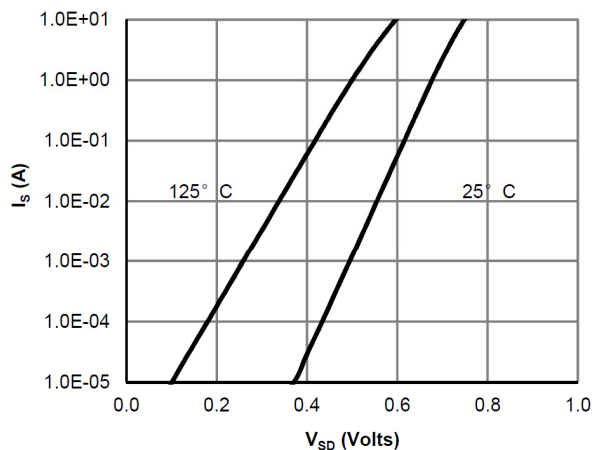


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

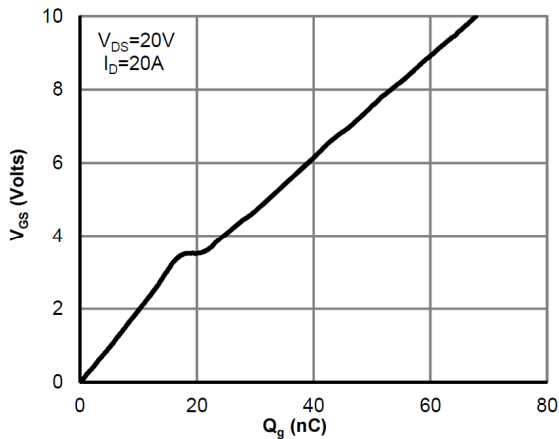


Figure 7: Gate-Charge Characteristics

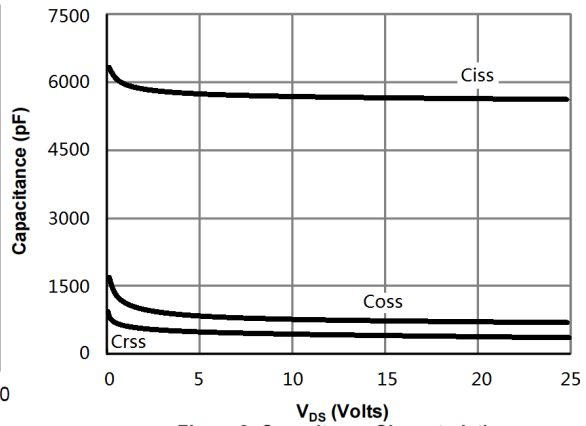


Figure 8: Capacitance Characteristics

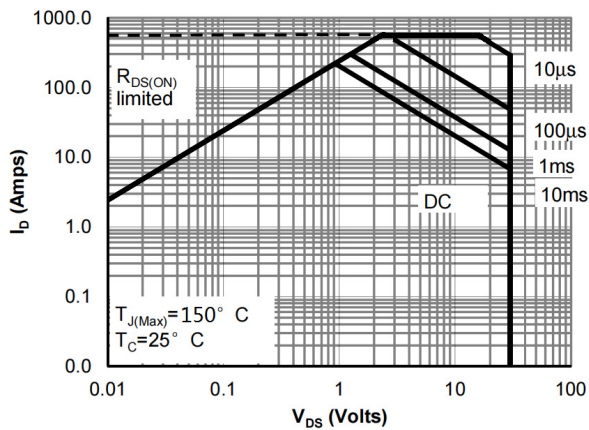


Figure 9: Maximum Forward Biased Safe Operating Area
V_{GS} > or equal to 4.5V

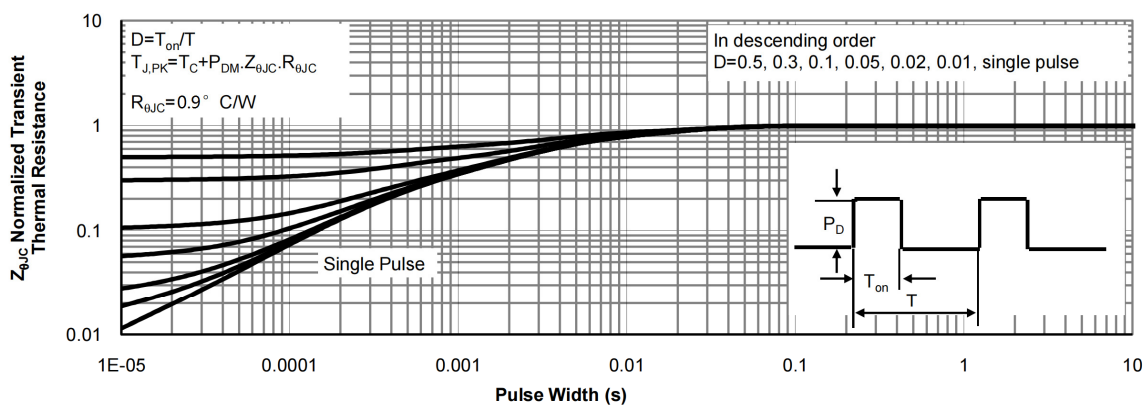
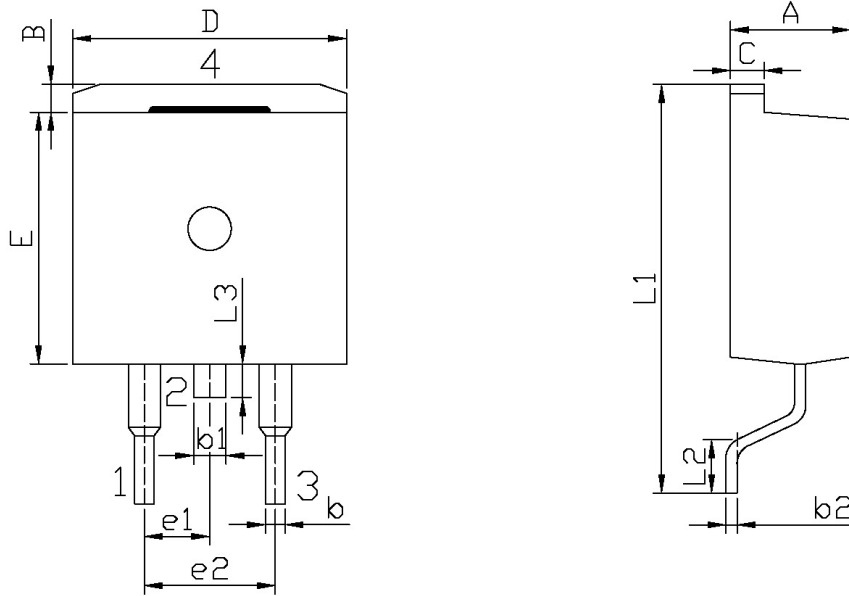


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

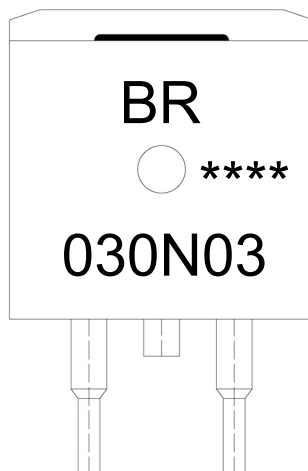


单位: mm

| Symbol | Dimensions In Millimeters | | Symbol | Dimensions In Millimeters | |
|--------|---------------------------|-------|--------|---------------------------|-------|
| | Min | Max | | Min | Max |
| A | 4.30 | 4.70 | E | 9.00 | 9.40 |
| B | 1.00 | 1.40 | e1 | 2.34 | 2.74 |
| b | 0.70 | 0.90 | e2 | 4.88 | 5.28 |
| b1 | 1.15 | 1.35 | L1 | 15.00 | 16.00 |
| b2 | 0.40 | 0.60 | L2 | 2.24 | 2.84 |
| C | 1.20 | 1.40 | L3 | 1.20 | 1.60 |
| D | 9.80 | 10.20 | | | |

T0-263

印章说明 / Marking Instructions



说明：

BR： 为公司代码

030N03： 为型号代码

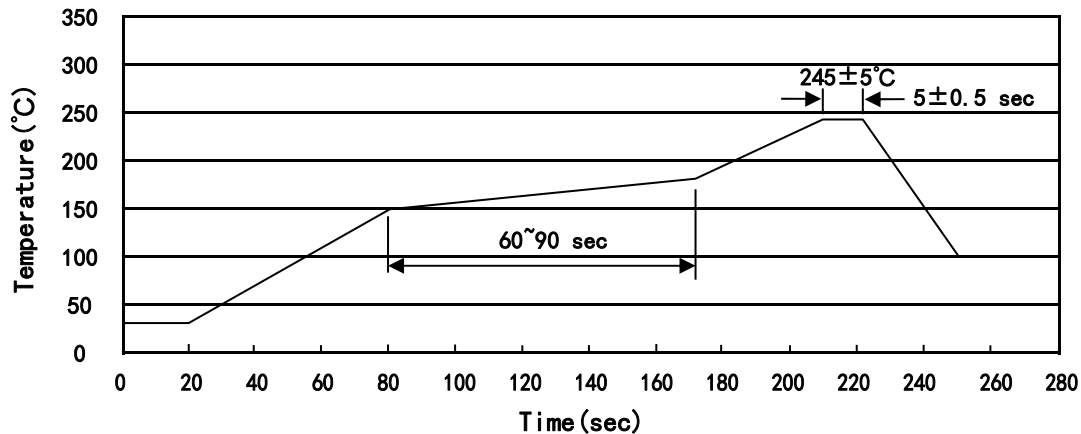
****： 为生产批号代码，随生产批号变化

Note:

BR: Company Code

030N03: 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 |
| TO-263 | 800 | 1 | 800 | 6 | 4,800 | 13" ×24 | 360×360×50 | 380×335×366 |

套管包装 / TUBE

| Package Type 封装形式 | Units 包装数量 | | | | | Dimension 包装尺寸 (unit: mm ³) | | |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
| | Units/Tube 只/套管 | Tubes/Inner Box 套管/盒 | Units/Inner Box 只/盒 | Inner Boxes/Outer Box 盒/箱 | Units/Outer Box 只/箱 | Tube 套管 | Inner Box 盒 | Outer Box 箱 |
| TO-263 | 50 | 20 | 1,000 | 5 | 5,000 | 532×33×7.0 | 555×164×50 | 575×290×180 |

使用说明 / Notices