# BRCS26N50PH

Rev.A Jul.-2019

蓝箭电子
BLUE ROCKET ELECTRONICS
**DATA SHEET**

## 描述 / Descriptions

N 沟道 TO-3PH 塑封封装场效应管。

N-Channel MOSFET in a TO-3PH Plastic Package.

## 特征 / Features

快速本征整流器，低$R_{DS(ON)}$和$Q_g$值，低封装电感。

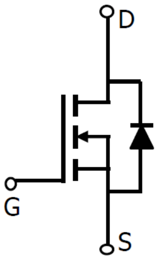
Fast Intrinsic Rectifier,Low $R_{DS(ON)}$ and $Q_g$,Low Package Inductance

## 用途 / Applications

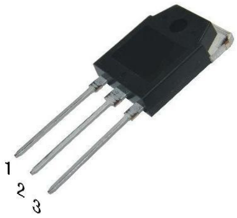
开关电源和谐振电源，DC-DC变换器，激光驱动器，交流和直流电机驱动，机器人和伺服控制。

Switch-Mode and Resonant-Mode Power Supplies,DC-DC Converters,Laser Drivers,AC and DC Motor Drives,Robotics and Servo Controls.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1：Gate PIN 2：Drain PIN 3：Source

## 放大及印章代码 / $h_{FE}$ Classifications & Marking

见印章说明。See Marking Instructions.

## 极限参数 / Absolute Maximum Ratings(Ta=25℃)

| 参数<br>Parameter | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|---|---|---|---|
| Drain Source Voltage | $V_{DSS}$ | 500 | V |
| Gate-Source Voltage | $V_{GSS}$ | ±30 | V |
| Drain Continuous- Current(Note 1) | $I_D$(Tc=25℃) | 26 | A |
| Drain Current Pulsed(Note 2) | $I_{DM}$ | 104 | A |
| Avalanche Current(Note 2) | $I_{AS}$ | 19 | A |
| Single Pulse Avalanche Energy L=0.5mH | $E_{AS}$ | 1600 | mJ |
| Peak Diode Recovery dv/dt | dv/dt | 15 | V/ns |
| Power Dissipation | $P_D$(Tc=25℃) | 290 | W |
|  | Derate above 25℃ | 2.33 | W/℃ |
| Junction Temperature | $T_J$ | +150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~+150 | ℃ |

说明：

1. 最大结温时的漏极电流。
2. 重复范围：最大结温时的脉冲量。

Note:

1. Drain current limited by maximum junction temperature.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.

## 热数据 / Thermal Data

| 参数<br>Parameter | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|---|---|---|---|
| Junction to Ambient | $R_{\theta JA}$ | 40 | °C/W |
| Junction to Case | $R_{\theta JC}$ | 0.45 | °C/W |

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

| 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 | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=250μA | 500 | | | V |
| Drain-Source Leakage Current | $I_{DSS}$ | $V_{DS}$=500V $V_{GS}$=0V | | | 1 | μA |
| Gate- Source Leakage Current Forward | $I_{GSSF}$ | $V_{DS}$=0V $V_{GS}$=+30V | | | +100 | nA |
| Gate-Source Leakage Current Reverse | $I_{GSSR}$ | $V_{DS}$=0V $V_{GS}$=-30V | | | -100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$= $V_{GS}$ $I_D$=250μA | 3.0 | | 5.0 | V |
| Static Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$ =10V $I_D$=13A | | 0.17 | 0.2 | Ω |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=25V $V_{GS}$ =0V, f=1.0MHZ | | 3360 | | pF |
| Output Capacitance | $C_{oss}$ | | | 280 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 35 | | |
| Total Gate Charge | Qg | $V_{GS}$=10V $V_{DS}$=400V $I_D$=26A (Note 1, 2) | | 81 | 120 | nC |
| Gate to Source Charge | Qgs | | | 23 | | |
| Gate to Drain Charge | Qgd | | | 35 | | |
| Turn-ON Delay Time | $t_{D(ON)}$ | $V_{DD}$=250V $I_D$=26A $R_G$=25Ω (Note 1, 2) | | 80 | 170 | ns |
| Rise Time | $t_R$ | | | 2500 | 500 | |
| Turn-OFF Delay Time | $t_{D(OFF)}$ | | | 200 | 400 | |
| Fall-Time | $t_F$ | | | 155 | 320 | |
| Maximum Body-Diode Continuous Current | $I_S$ | | | | 26 | A |
| Maximum Body-Diode Pulsed Current | $I_{SM}$ | | | | 104 | A |
| Drain-Source Diode Forward Voltage | $V_{SD}$ | $I_S$=26A $V_{GS}$=0V | | | 1.4 | V |
| Body Diode Reverse Recovery Time | $T_{rr}$ | $I_S$=26A $V_{GS}$=0V dIF/dt=100A/μs (Note 1) | | 530 | | ns |
| Body Diode Reverse Recovery Charge | $Q_{RR}$ | | | 8.2 | | μC |

说明：

1.脉冲测试：脉冲宽度≤300μs，占空比≤2%。

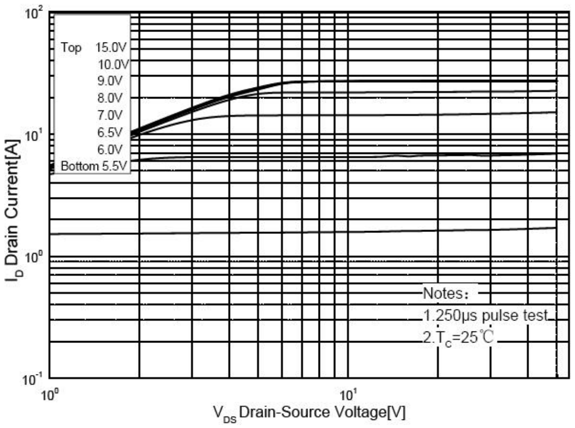
2.本质上与工作温度无关。

Note:

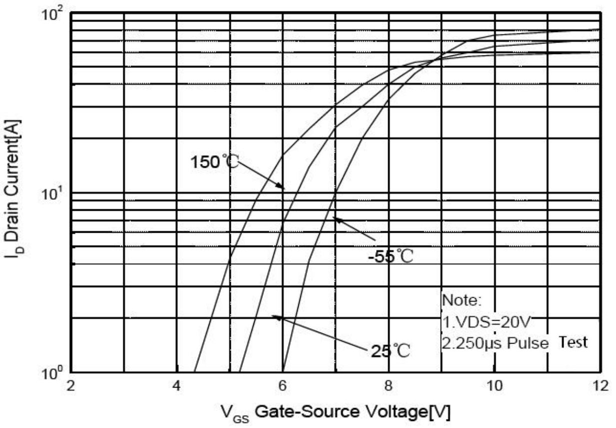
1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

## 电参数曲线图 / Electrical Characteristic Curve

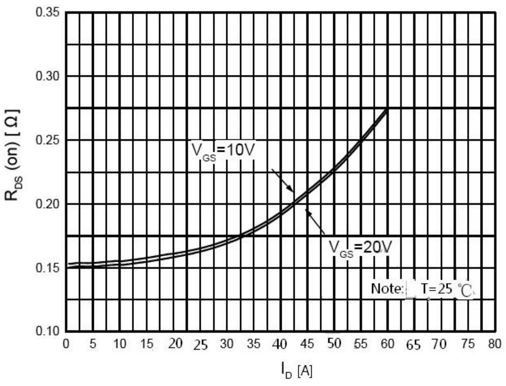
### On-Region Characteristics



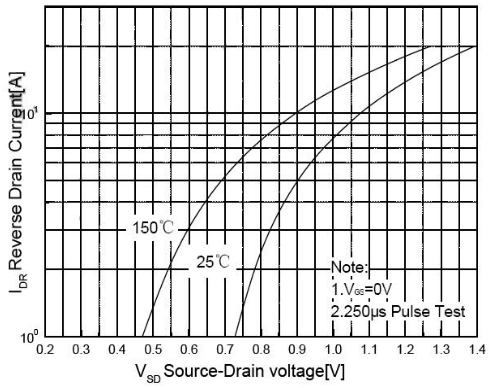
### Transfer Characteristics



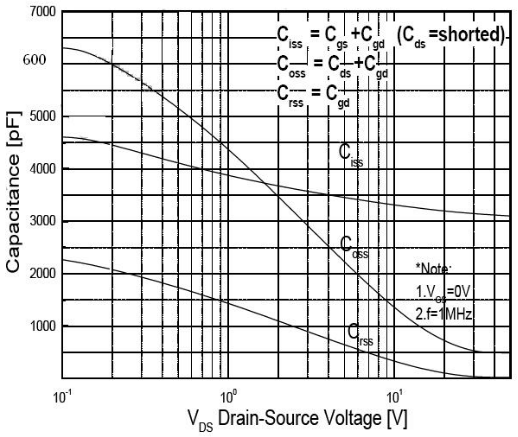
### On-Resistance Variation vs Drain Current and Gate Voltage



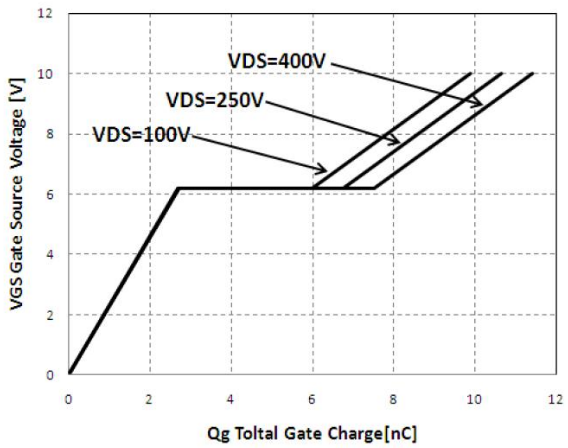
### Body Diode Forward Voltage Variation vs. Source Current and Temperature



### Capacitance Characteristics

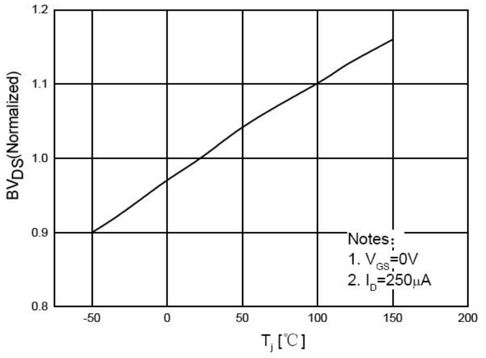


### Capacitance Characteristics

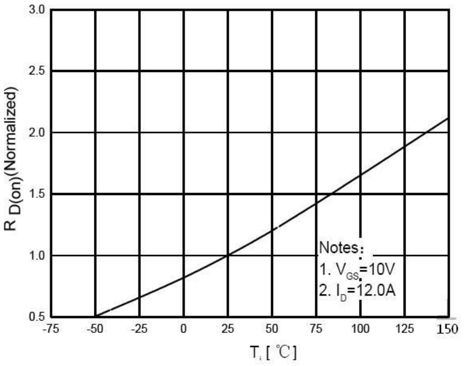


## 电性能参数 / Electrical Characteristics(Ta=25℃)

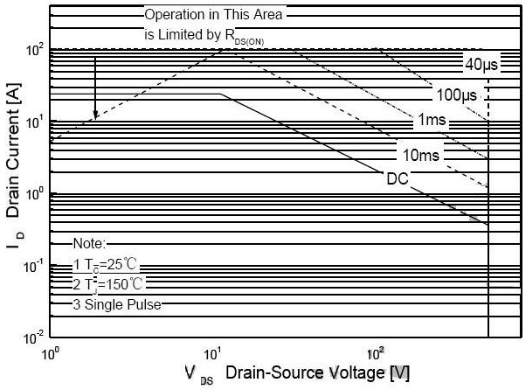
**Breakdown Voltage Variation vs. Temperature**



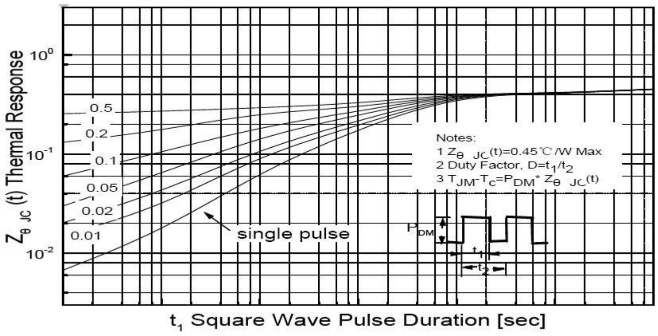
**On-Resistance Variation vs. Temperature**



**Maximum Safe Operating Area**



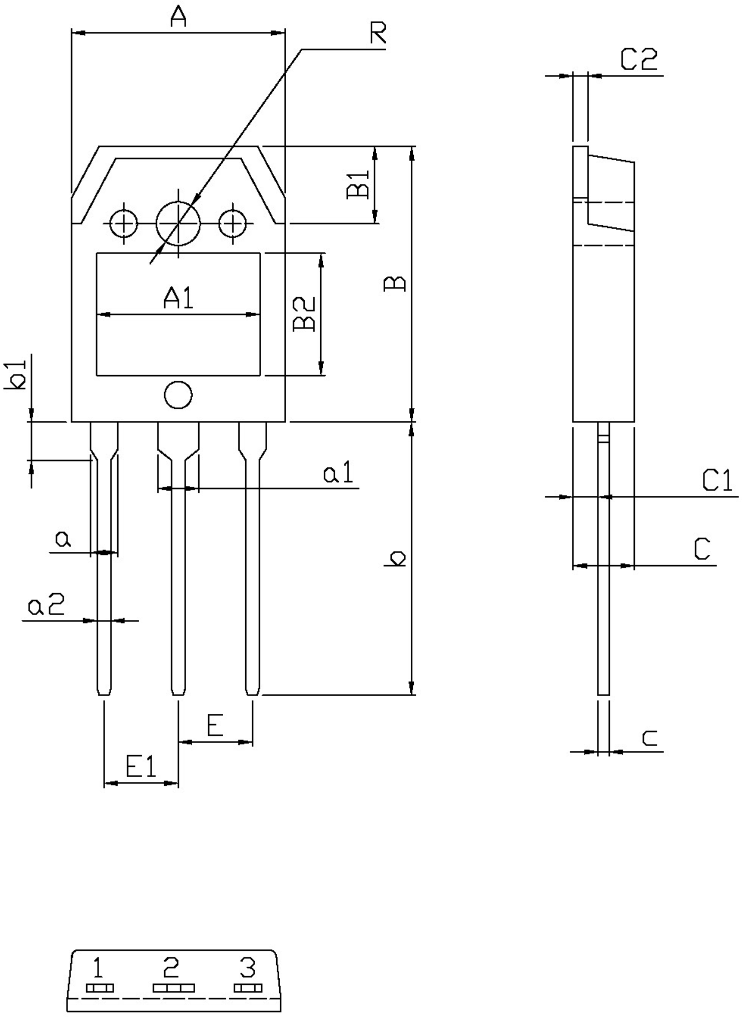
**Transient Thermal Response Curve**



## 外形尺寸图 / Package Dimensions

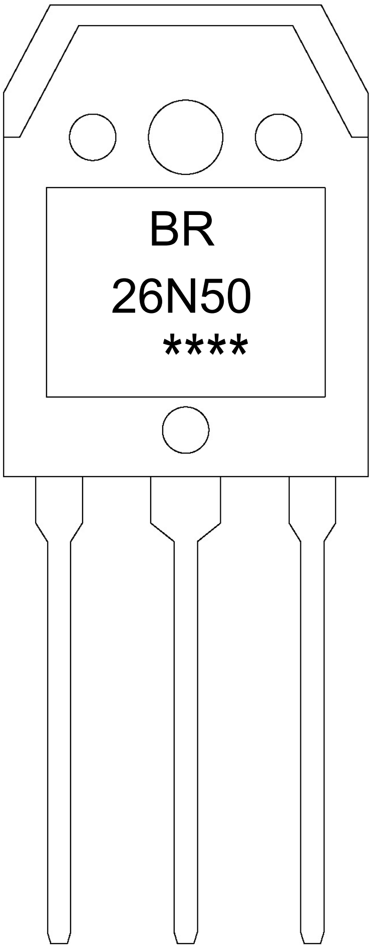
TO-3PH

Unit:mm



| Symbol | Dimensions In Millimeters | | Symbol | Dimensions In Millimeters | |
|---|---|---|---|---|---|
| | Min | Max | | Min | Max |
| A | 15.4 | 16.0 | a2 | 0.8 | 1.2 |
| R | 3.1 | 3.5 | E | 5.45 | |
| B | 19.8 | 20.8 | E1 | 5.45 | |
| B1 | 5.5 | 5.9 | C | 4.6 | 5.0 |
| B2 | 8.5 | | C1 | 2.2 | 2.6 |
| A1 | 12.0 | | C2 | 1.4 | 1.6 |
| b | 19.6 | 20.6 | c | 0.5 | 0.7 |
| b1 | 2.6 | 3.0 | | | |
| a | 1.8 | 2.2 | | | |
| a1 | 2.8 | 3.2 | | | |

## 印章说明 / Marking Instructions



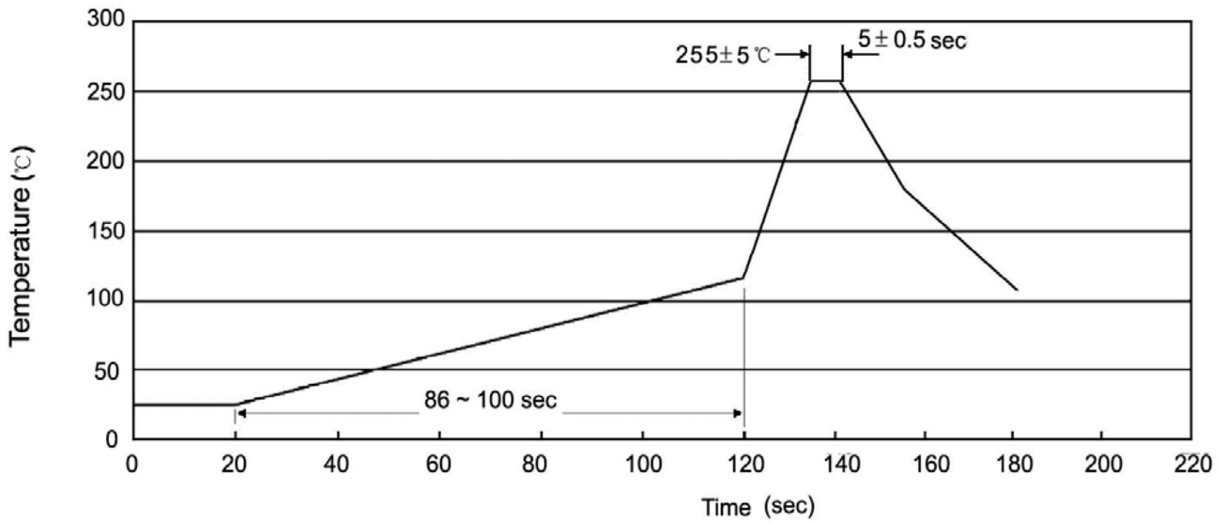
说明：

| | |
|---|---|
| BR: | 为公司代码 |
| 26N50： | 为型号代码 |
| ****： | 为生产批号代码，随生产批号变化。 |

Note:

| | |
|---|---|
| BR: | Company Code. |
| 26N50: | Product Type. |
| ****: | Lot No. Code, code change with Lot No. |

## 波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)



| 说明： | Note: |
|---|---|
| 1、预热温度 25～150℃，时间 60～90sec; | 1.Preheating:25~150℃, Time:60~90sec. |
| 2、峰值温度 255±5℃，时间持续为 5±0.5sec; | 2.Peak Temp.:255±5℃, Duration:5±0.5sec. |
| 3、焊接制程冷却速度为 2～10℃/sec. | 3. Cooling Speed: 2~10℃/sec. |

## 耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：270±5℃　时间：10±1 sec.　Temp:270±5℃　Time:10±1 sec

## 包装规格 / Packaging SPEC.

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-3PH | 30 | 15 | 450 | 5 | 2250 | 497.5×46×8 | 555×164×50 | 575×290×180 |

## 使用说明 / Notices