

## / Descriptions

PDFN5×6 N

N-Channel MOSFET in a PDFN5×6 Plastic Package.

## / Features

 $V_{DS}(V)=60\text{ V}$   $I_D=158\text{ A}$  $R_{DS(ON)}@10V\leq 2.0\text{ m}\Omega$  (Typ.1.8mR) $R_{DS(ON)}@4.5V\leq 3.0\text{ m}\Omega$  (Typ.2.5mR)

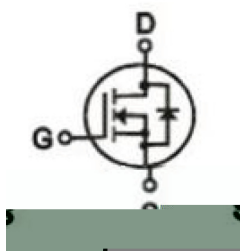
HF Product.

## / Applications

DC-DC

Secondary Side Synchronous Rectification, DC-DC Converter, Motor Control, Load Switching.

## / Equivalent Circuit



## / Pinning



PIN1 2 3 S PIN4 G PIN5 6 7 8 D

## / Marking

See Marking Instructions.

/ Absolute Maximum Ratings( $T_a=25^\circ\text{C}$ )

| Parameter                              |                     | Symbol                      | Rating     | Unit |
|----------------------------------------|---------------------|-----------------------------|------------|------|
| Drain-Source Voltage                   |                     | $V_{DS}$                    | 60         | V    |
| Continuous Drain Current               |                     | $I_D(T_c=25^\circ\text{C})$ | 158        | A    |
| Pulsed Drain Current                   |                     | $I_{DM}$                    | 316        | A    |
| Gate-Source Voltage                    |                     | $V_{GS}$                    | $\pm 20$   | V    |
| Power Dissipation                      |                     | $P_D(T_c=25^\circ\text{C})$ | 90         | W    |
| Avalanche energy( $L=0.5\text{mH}$ )   |                     | $E_{AS}$                    | 380        | mJ   |
| Avalanche Current( $L=0.5\text{mH}$ )  |                     | $I_{AS}$                    | 30.8       | A    |
| Junction and Storage Temperature Range |                     | $T_j, T_{stg}$              | -55 to 150 |      |
| Maximum Junction-to-Ambient            | $t \leq 10\text{s}$ | $R_{\theta JA}$             | 20         | / W  |
|                                        | Steady-State        |                             | 57         |      |
| Maximum Junction-to-Case               | Steady-State        | $R_{\theta JC}$             | 1.39       |      |

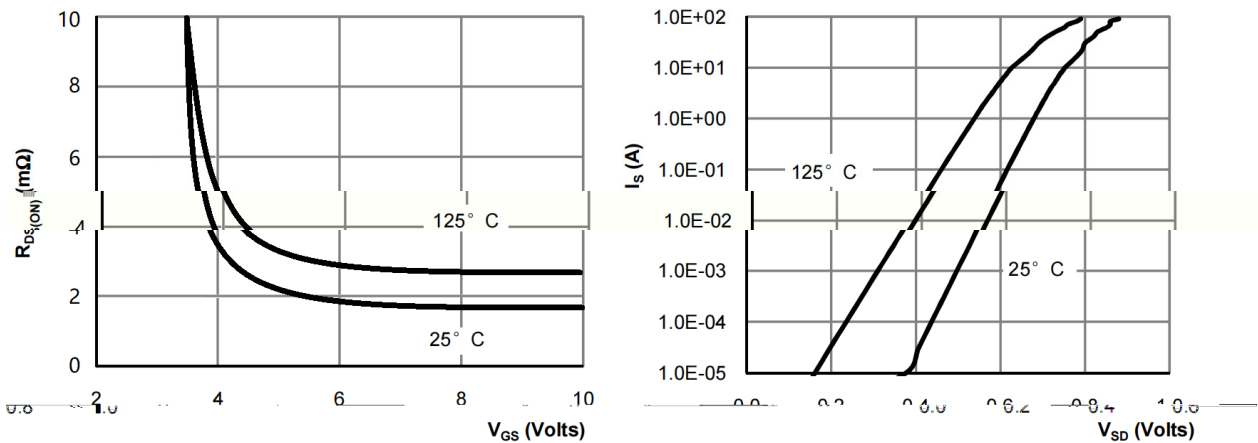
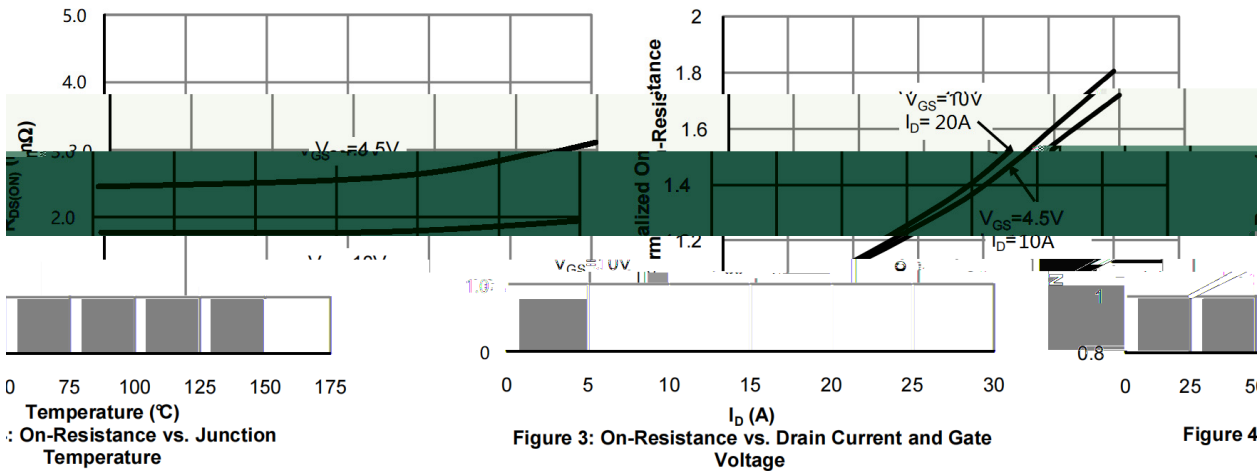
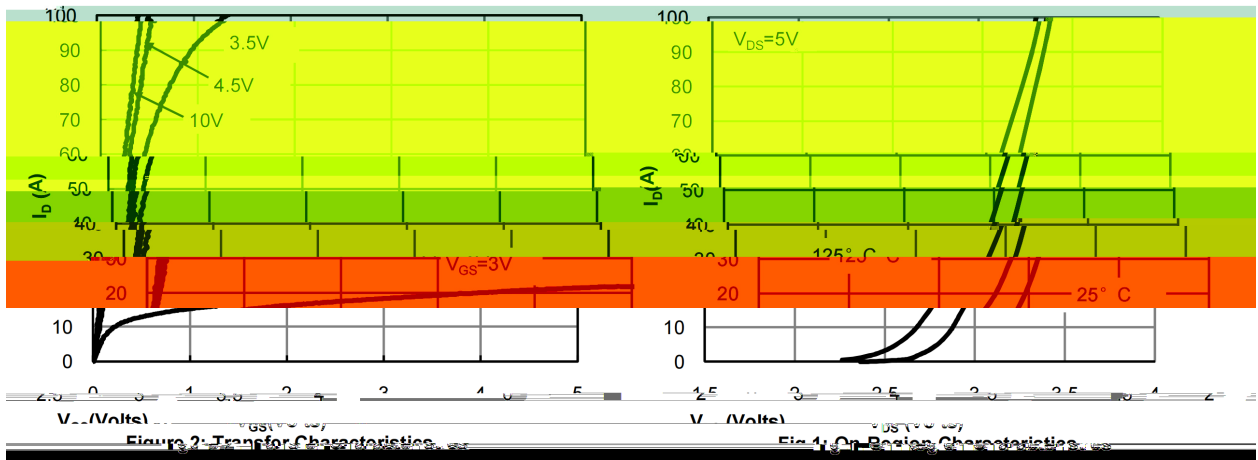
/ Electrical Characteristics( $T_a=25^\circ\text{C}$ )

| Parameter                         | Symbol        | Test Conditions                                                 | Min | Typ  | Max       | Unit          |
|-----------------------------------|---------------|-----------------------------------------------------------------|-----|------|-----------|---------------|
| Drain-Source Breakdown Voltage    | $BV_{DSS}$    | $V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$                         | 60  | 65   |           | V             |
| Zero Gate Voltage Drain Current   | $I_{DSS}$     | $V_{DS}=60\text{V}$ $V_{GS}=0\text{V}$                          |     |      | 1         | $\mu\text{A}$ |
| Gate-Body Leakage Current Forward | $I_{GSS}$     | $V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$                      |     |      | $\pm 100$ | nA            |
| Gate Threshold Voltage            | $V_{GS(th)}$  | $V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$                            | 1   | 1.6  | 2.5       | V             |
| Static Drain-Source On-Resistance | $R_{DS(on)}$  | $V_{GS}=10\text{V}$ $I_D=20\text{A}$                            |     | 1.8  | 2.5       | m $\Omega$    |
|                                   |               | $V_{GS}=4.5\text{V}$ $I_D=10\text{A}$                           |     | 2.4  | 3.5       |               |
| Forward On Voltage                | $V_{SD}$      | $V_{GS}=0\text{V}$ $I_S=1\text{A}$                              |     |      | 1.2       | V             |
| Gate resistance                   | $R_g$         | $f=1\text{MHz}$                                                 |     | 1.0  |           | $\Omega$      |
| Input Capacitance                 | $C_{iss}$     | $V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$<br>$f=1.0\text{MHz}$     |     | 6700 |           | pF            |
| Output Capacitance                | $C_{oss}$     |                                                                 |     | 1400 |           |               |
| Reverse Transfer Capacitance      | $C_{rss}$     |                                                                 |     | 70   |           |               |
| Total Gate Charge                 | $Q_{g(10V)}$  | $V_{GS}=10\text{V}$ , $V_{DS}=30\text{V}$ ,<br>$I_D=20\text{A}$ |     | 60   |           | nC            |
| Total Gate Charge                 | $Q_{g(4.5V)}$ |                                                                 |     | 23   |           |               |
| Gate Source Charge                | $Q_{gs}$      |                                                                 |     | 16   |           |               |
| Gate Drain Charge                 | $Q_{gd}$      |                                                                 |     | 3    |           |               |

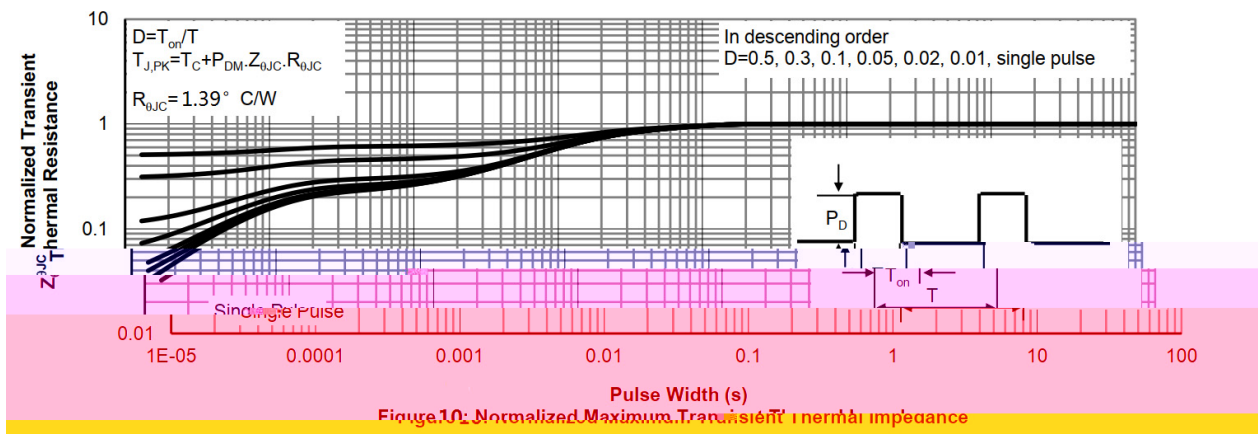
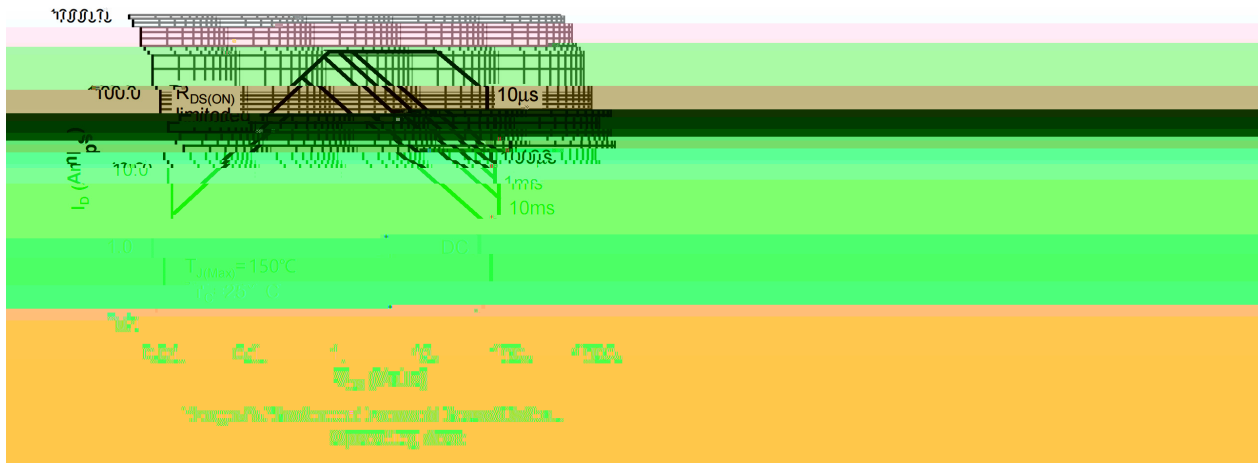
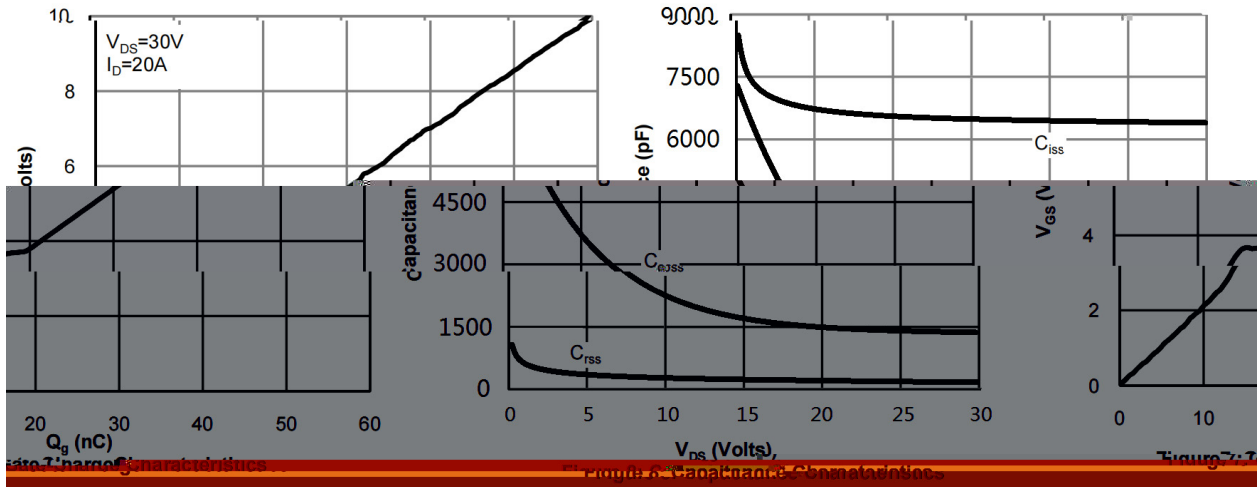
/ Electrical Characteristics(Ta=25 )

| Parameter           | Symbol              | Test Conditions                                                                                | Min | Typ | Max | Unit |
|---------------------|---------------------|------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| Turn-On Delay Time  | t <sub>d(on)</sub>  | V <sub>GS</sub> =10V    V <sub>DS</sub> =20V<br>R <sub>L</sub> =1Ω        R <sub>GEN</sub> =3Ω |     | 13  |     | ns   |
| Turn-On Rise Time   | t <sub>r</sub>      |                                                                                                |     | 4   |     |      |
| Turn-Off Delay Time | t <sub>d(off)</sub> |                                                                                                |     | 47  |     |      |
| Turn-Off Fall Time  | t <sub>f</sub>      |                                                                                                |     | 6.5 |     |      |

## / Electrical Characteristic Curve



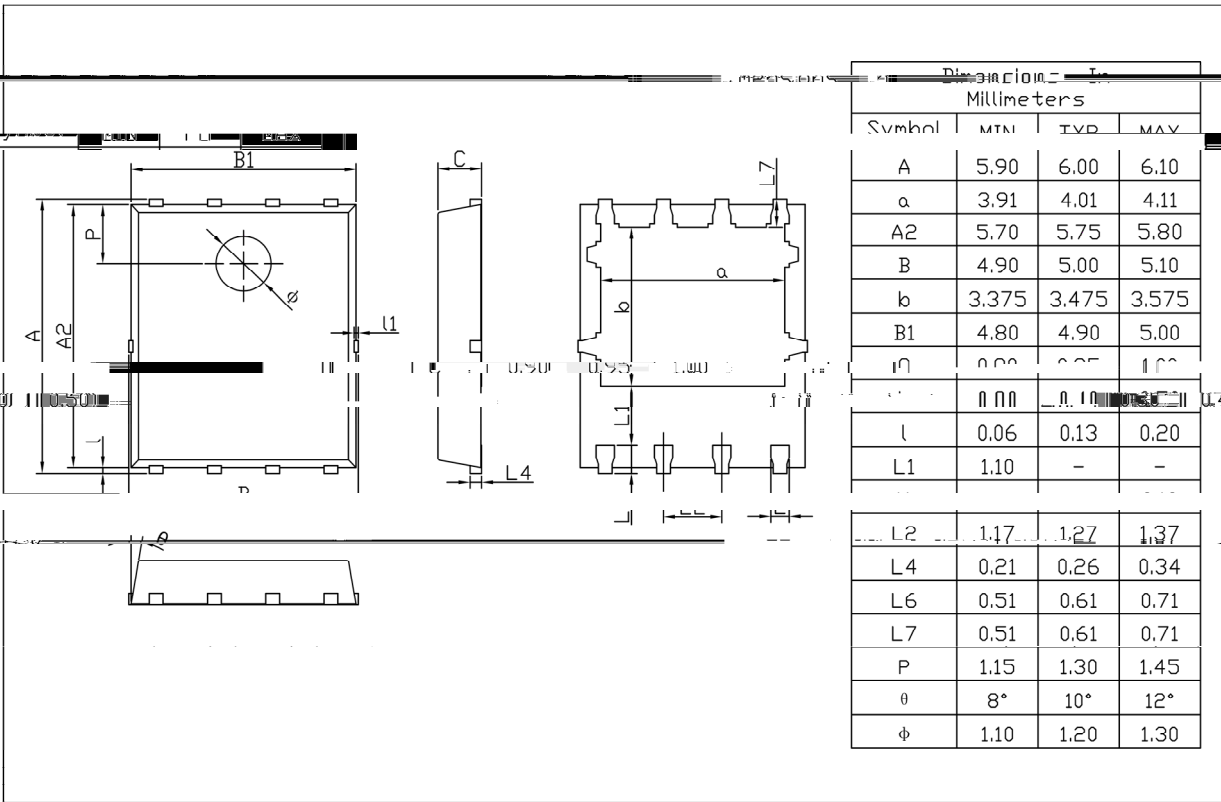
## / Electrical Characteristic Curve



/ Package Dimensions

PDFN5 X6

Unit:mm



Rev.01 202209

**BRCS020N06SZC**

Rev.B Dec.-2024

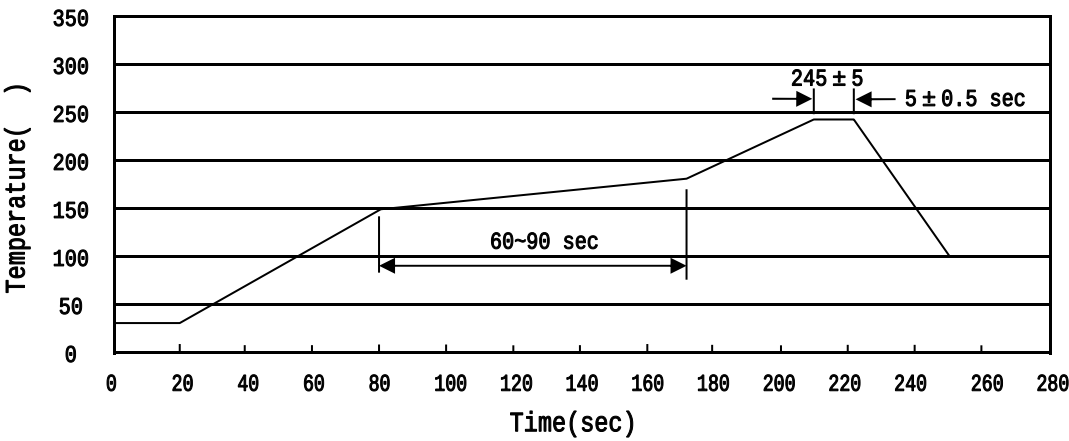


**蓝箭电子**  
BLUE ROCKET ELECTRONICS

**DATA SHEET**

**/ Marking Instructions**

(     ) / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- 1

150 180

60 90sec;
- 2

245±5

5±0.5sec;
- 3

2 10 /sec.
- 1.Preheating:150~180

, Time:60~90sec.
- 2.Peak Temp.:245±5

, Duration:5±0.5sec.
3. Cooling Speed: 2~10

/sec.

/ Resistance to Soldering Heat Test Conditions

260±5                      10±1 sec.                      Temp.:260±5                      Time:10±1 sec

/ Packaging SPEC.

/ REEL

| Package Type | Units |   |        |   |        | Dimension (unit mm <sup>3</sup> ) |            |             |
|--------------|-------|---|--------|---|--------|-----------------------------------|------------|-------------|
|              | /     | / | /      | / | /      |                                   |            |             |
| PDFN5×6      | 5,000 | 2 | 10,000 | 6 | 60,000 | 13"×12                            | 360×360×50 | 380×335×366 |

/ Notices