

# BRCS250N03YAQ

Rev.A Jun.-2023



DATA SHEET

PDFN3×3-8L                      N                      MOS

Double N-CHANNEL MOSFET in a PDFN3×3-8L Plastic Package.

N-channel

VDS(V)=30V

ID=20A

RDS(ON)<25m $\Omega$  (VGS=10V)

RDS(ON)<40m $\Omega$  (VGS=4.5V)

AEC-Q101

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

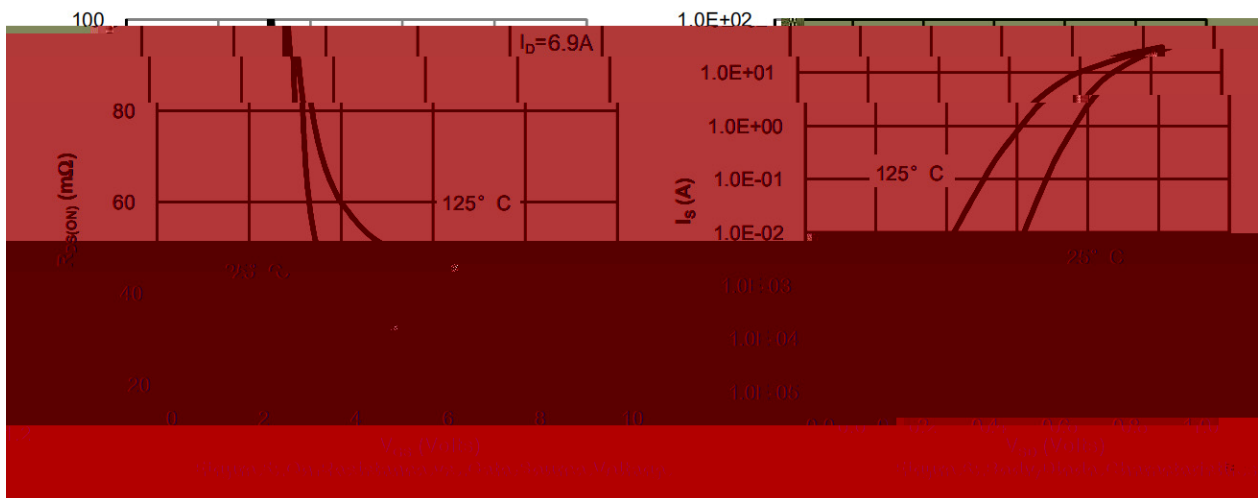
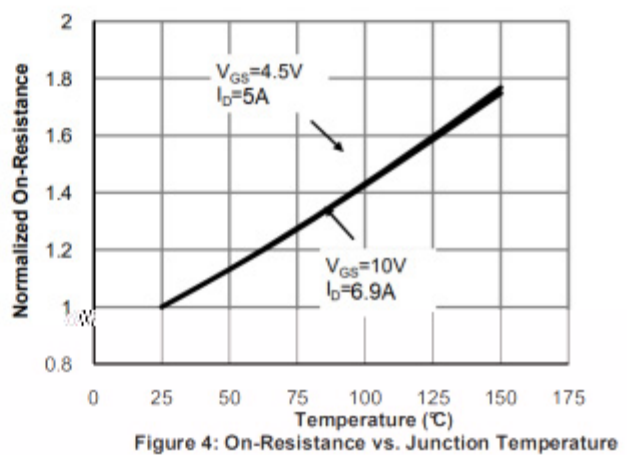
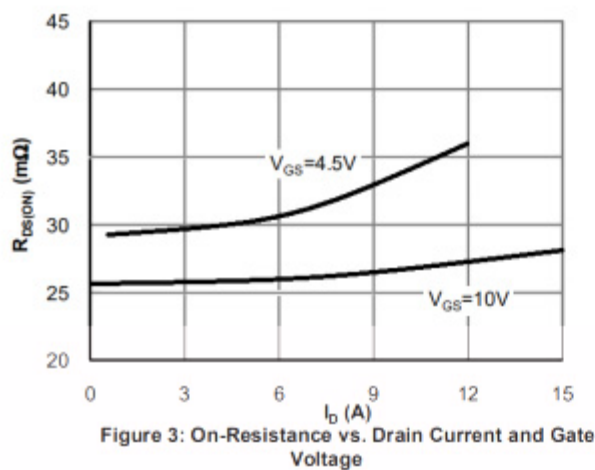
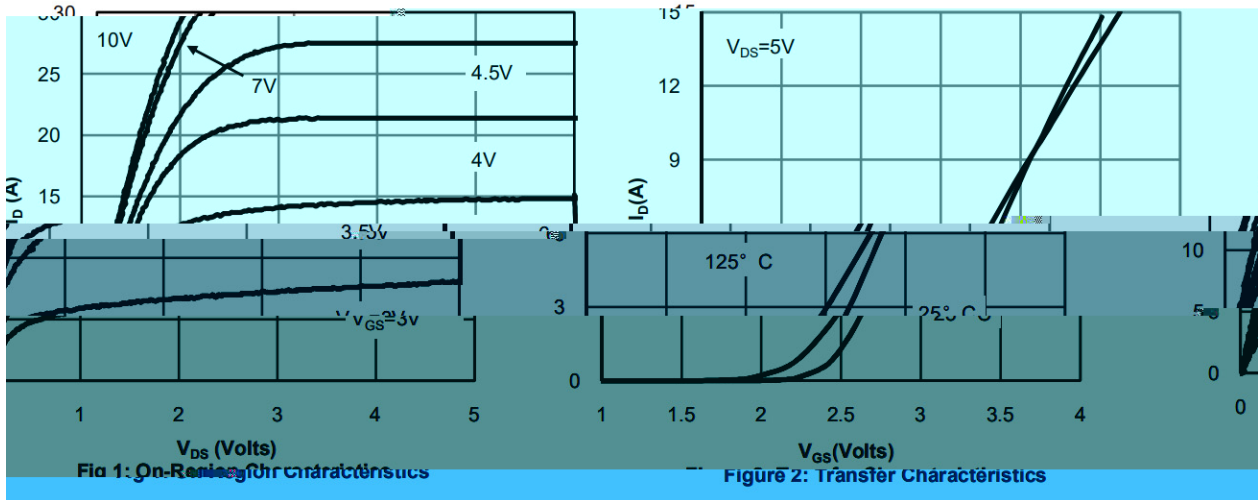
## / Absolute Maximum Ratings(Ta=25 )

| Parameter                              | Symbol                         | Rating      | Unit |
|----------------------------------------|--------------------------------|-------------|------|
| Drain-Source Voltage                   | $V_{DS}$                       | 30          | V    |
| Gate-Source Voltage                    | $V_{GS}$                       | $\pm 20$    | V    |
| Continuous Drain Current               | $I_D$ (Ta=25°C)                | 20          | A    |
| Power Dissipation                      | $P_D$ (Ta=25 )                 | 11.2        | W    |
| Junction and Storage Temperature Range | $T_J, T_{STG}$                 | -55 to +150 |      |
| Maximum Junction-to-Case               | $R_{\theta JC}$ (Steady-State) | 11.2        | /W   |
| Maximum Junction-to-Ambient            | $R_{\theta JA}$ (Steady-State) | 45          | /W   |

## / Electrical Characteristics(Ta=25 )

| Parameter                         | Symbol       | Test Conditions                                                | Min | Typ  | Max | Unit       |
|-----------------------------------|--------------|----------------------------------------------------------------|-----|------|-----|------------|
| Drain-Source Breakdown Voltage    | $BV_{DS}$    | $V_{GS}=0V$ $I_D=250\mu A$                                     | 30  | 35   |     | V          |
| Zero Gate Voltage Drain Current   | $I_{DSS}$    | $V_{DS}=30V$ $V_{GS}=0V$                                       |     |      | 1.0 | $\mu A$    |
| Gate-Body leakage current         | $I_{GSS}$    | $V_{GS}=\pm 20V$ $V_{DS}=0V$                                   |     |      | 100 | nA         |
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\mu A$                                 | 1.0 | 1.6  | 2.5 | V          |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=6.9A$                                        |     | 20   | 25  | m $\Omega$ |
|                                   |              | $V_{GS}=4.5V$ $I_D=5.0A$                                       |     | 28   | 40  | m $\Omega$ |
| Diode Forward Voltage             | $V_{SD}$     | $V_{GS}=0V$ $I_S=1.0A$                                         |     | 0.78 | 1.2 | V          |
| Input Capacitance                 | $C_{iss}$    | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$                         |     | 690  |     | pF         |
| Output Capacitance                | $C_{oss}$    |                                                                |     | 200  |     | pF         |
| Reverse Transfer Capacitance      | $C_{rss}$    |                                                                |     | 130  |     | pF         |
| Gate resistance                   | $R_g$        | $V_{DS}=0V$ $V_{GS}=0V$<br>$f=1.0MHz$                          |     | 2.7  |     | $\Omega$   |
| Total Gate Charge(10V)            | $Q_g$        | $V_{GS}=10V$ $V_{DS}=15V$<br>$I_D=6A$                          |     | 5.2  |     | nC         |
| Total Gate Charge(4.5V)           |              |                                                                |     | 2.5  |     | nC         |
| Gate-Source Charge                | $Q_{gs}$     |                                                                |     | 0.8  |     | nC         |
| Gate-Drain Charge                 | $Q_{gd}$     |                                                                |     | 1.3  |     | nC         |
| Turn-On Delay Time                | $t_{d(on)}$  | $V_{DS}=15V$ $V_{GS}=10V$<br>$R_L=2.5\Omega$ $R_{GEN}=3\Omega$ |     | 4.5  |     | ns         |
| Turn-On Rise Time                 | $t_r$        |                                                                |     | 2.5  |     | ns         |
| Turn-Off Delay Time               | $t_{d(off)}$ |                                                                |     | 14.5 |     | ns         |
| Turn-Off Fall Time                | $t_f$        |                                                                |     | 3.5  |     | ns         |

## / Electrical Characteristic Curve



/ Electrical Characteristic Curve

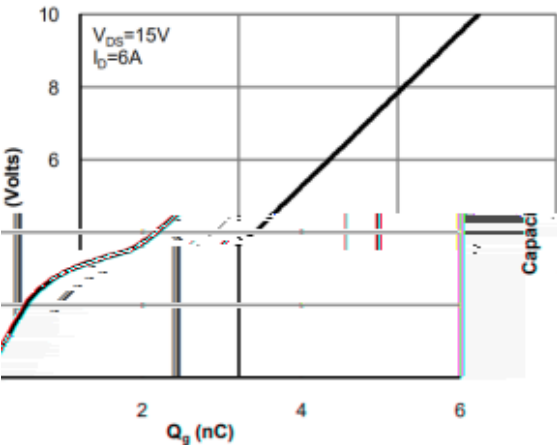


Figure 1: Transfer Characteristics

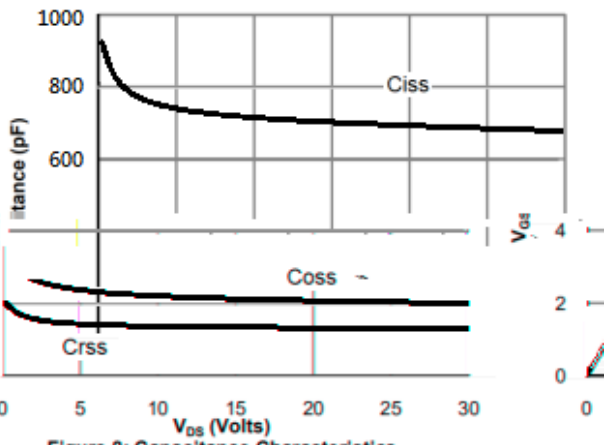
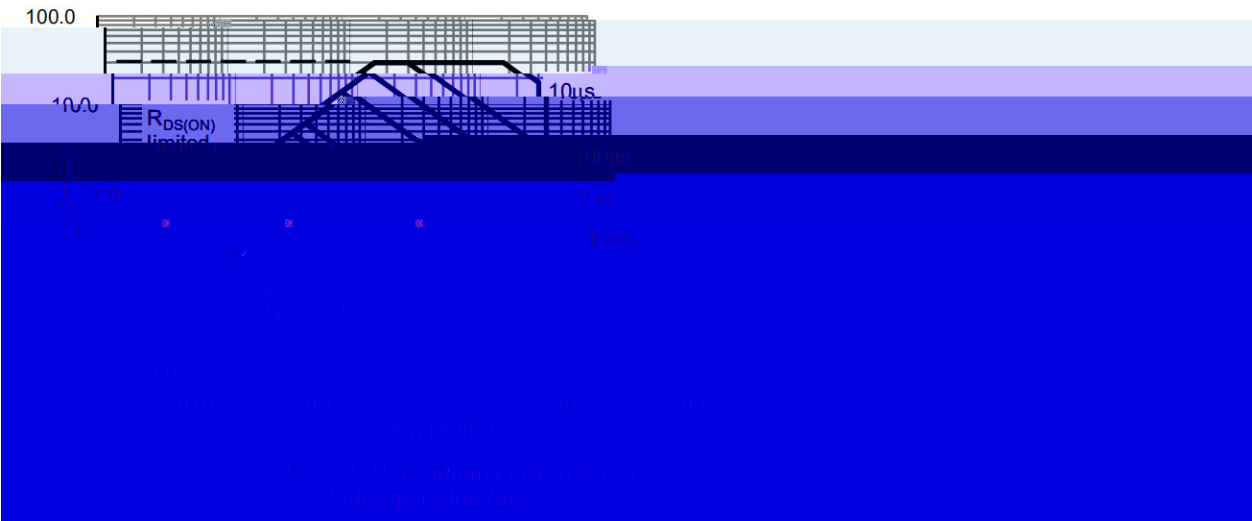


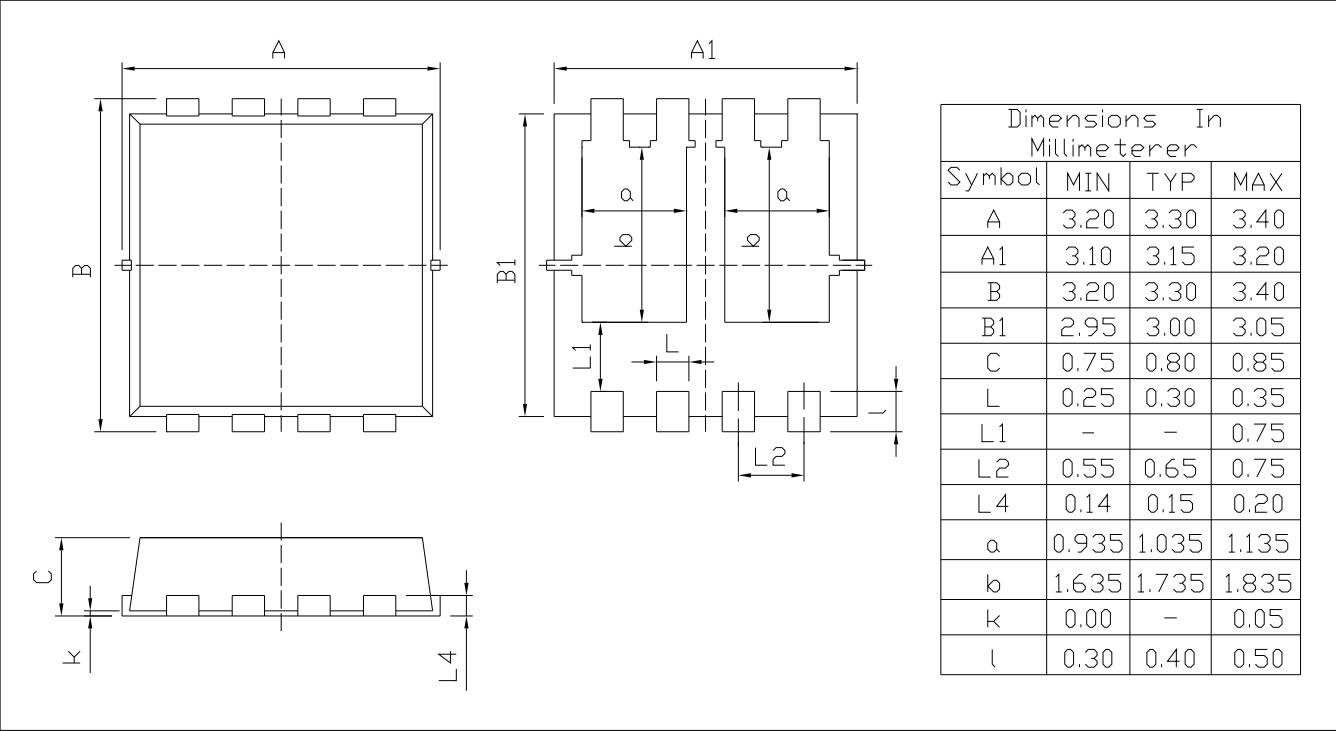
Figure 2: Capacitance Characteristics



/ Package Dimensions

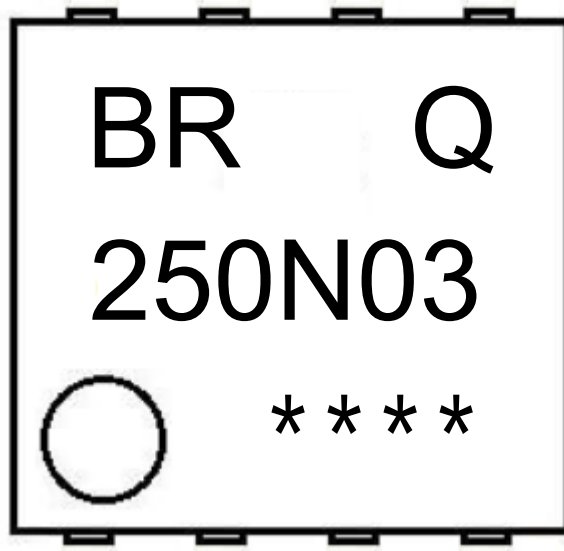
PDFN3X3-8L

Unit:mm



Rev.00 202011

/ Marking Instructions



BR

Q

250N03

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Note:

BR: Company Code

Q: Automobile halogen-free product Code

250N03: Product Type Code

\*\*\*\*: Lot No. Code, code change with Lot No

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