

PDFN 3 3A-8L N MOS

N-Channel Enhancement Mode Field Effect Transistor in a PDFN 3 3A-8L Plastic Package.

 $V_{DS} (V) = 30V$ 
 $I_D = 40 A (V_{GS} = 20V)$ 
 $R_{DS(ON)} @ 10V = 6m\Omega (Typ. 4.7m\Omega)$ 

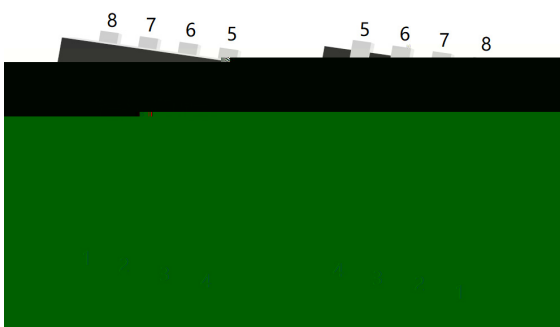
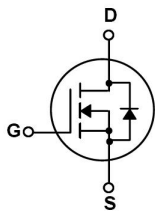
AEC-Q101

HF Product.

Qualified to AEC-Q101 Standards for High Reliability,

### DC/DC

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies, Meet the stringent requirements of automotive applications.

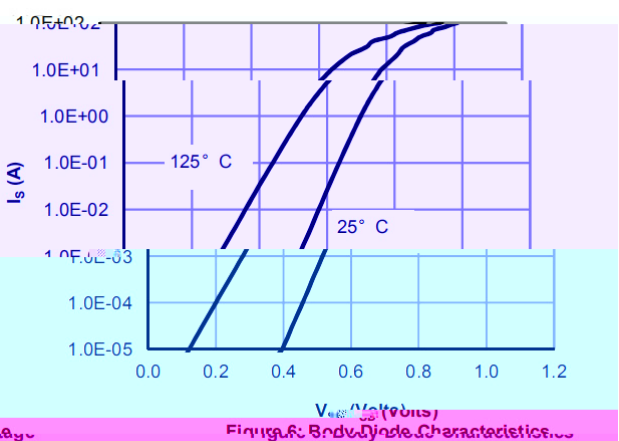
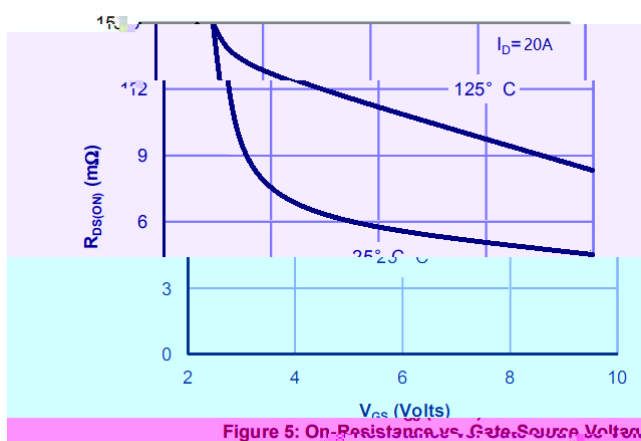
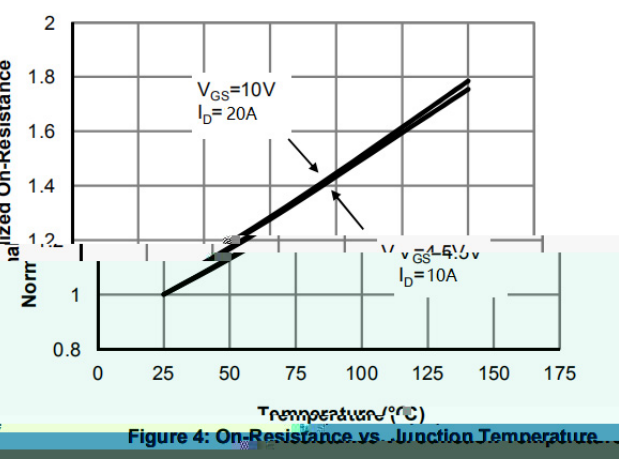
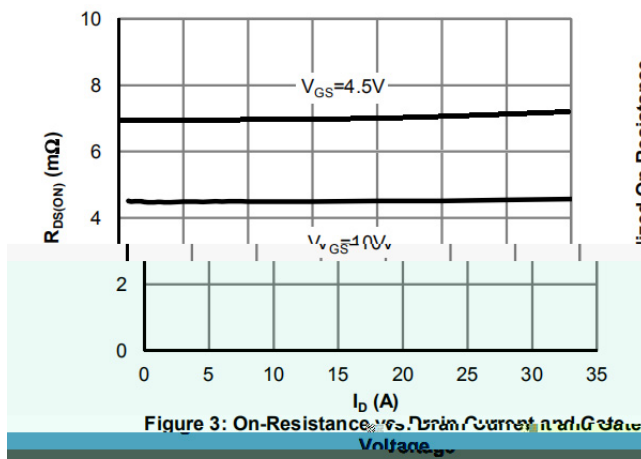
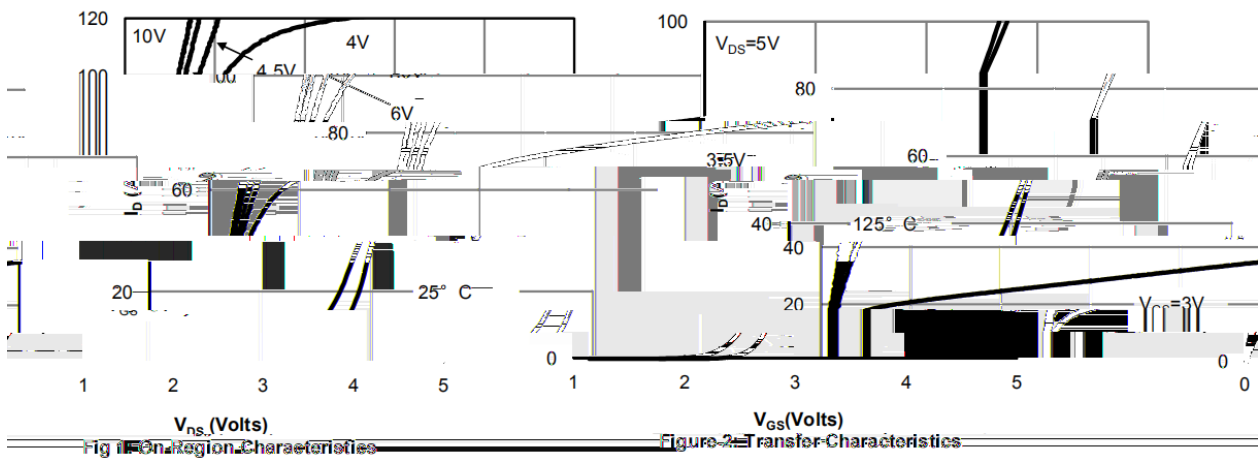


| 出脚   | 定义 |
|------|----|
| Pin1 | S  |
| Pin2 | S  |
| Pin3 | S  |
| Pin4 | G  |
| Pin5 | D  |
| Pin6 | D  |
| Pin7 | D  |
| Pin8 | D  |

See Marking Instructions.

| Parameter                               |              | Symbol                      | Rating     | Unit |
|-----------------------------------------|--------------|-----------------------------|------------|------|
| Drain-Source Voltage                    |              | $V_{DS}$                    | 30         | V    |
| Drain Current                           |              | $I_D(T_c=25^\circ\text{C})$ | 40         | A    |
| Drain Current - Pulsed                  |              | $I_{DM}$                    | 130        | A    |
| Gate-Source Voltage                     |              | $V_{GS}$                    | $\pm 20$   | V    |
| Single Pulsed Avalanche Energy          |              | $E_{AS}$                    | 211        | mJ   |
| Avalanche Current                       |              | $I_{AS}$                    | 23         | A    |
| Power Dissipation                       |              | $P_D(T_c=25^\circ\text{C})$ | 29         | W    |
| Operating and Storage Temperature Range |              | $T_J, T_{stg}$              | -55 to 150 |      |
| Junction-to-Ambient                     | $t \leq 10$  | $R_{JA}$                    | 40         | /W   |
| Junction-to-Ambient                     | Steady-State |                             | 75         |      |
| Junction-to-Case                        | Steady-State | $R_{JC}$                    | 4.2        |      |

| Parameter                          | Symbol        | Test Conditions                                     | Min | Typ  | Max       | Unit |
|------------------------------------|---------------|-----------------------------------------------------|-----|------|-----------|------|
| Drain-Source Breakdown Voltage     | $BV_{DSS}$    | $V_{GS}=0V$ $I_D=250\text{ A}$                      | 30  | 32   |           | V    |
| Zero Gate Voltage Drain Current    | $I_{DSS}$     | $V_{DS}=30V$ $V_{GS}=0V$                            |     |      | 1         | A    |
| Gate-Body Leakage Current Forward  | $I_{GSS}$     | $V_{GS}=\pm 20V$ $V_{DS}=0V$                        |     |      | $\pm 0.1$ | A    |
| Gate Threshold Voltage             | $V_{GS(th)}$  | $V_{DS}=V_{GS}$ $I_D=250\text{ A}$                  | 1.0 | 1.8  | 2.5       | V    |
| Static Drain-Source On-Resistance  | $R_{DS(on)}$  | $V_{GS}=10V$ $I_D=20A$                              |     | 4.7  | 6         | m    |
|                                    |               | $V_{GS}=4.5V$ $I_D=10A$                             |     | 7.1  | 9         | m    |
| Drain-Source Diode Forward Voltage | $V_{SD}$      | $V_{GS}=0V$ $I_S=10A$                               |     | 0.75 | 1.2       | V    |
| Input Capacitance                  | $C_{iss}$     | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$              |     | 2090 |           | pF   |
| Output Capacitance                 | $C_{oss}$     |                                                     |     | 790  |           |      |
| Reverse Transfer Capacitance       | $C_{rss}$     |                                                     |     | 634  |           |      |
| Gate resistance                    | $R_g$         | $V_{GS}=0V$ $V_{DS}=0V$<br>$f=1MHz$                 |     | 1.9  |           |      |
| Total Gate Charge                  | $Q_{g(10V)}$  | $V_{GS}=10V$ $V_{DS}=15V$<br>$I_D=18A$              |     | 33   |           | nC   |
| Total Gate Charge                  | $Q_{g(4.5V)}$ |                                                     |     | 16   |           |      |
| Gate Source Charge                 | $Q_{gs}$      |                                                     |     | 5.2  |           |      |
| Gate Drain Charge                  | $Q_{gd}$      |                                                     |     | 6.2  |           |      |
| Turn-On Delay Time                 | $t_{d(on)}$   | $V_{DD}=10V$ $V_{DS}=15V$<br>$R_L=0.83$ $R_{GEN}=3$ |     | 6    |           | ns   |
| Turn-On Rise Time                  | $t_r$         |                                                     |     | 4    |           |      |
| Turn-Off Delay Time                | $t_{d(off)}$  |                                                     |     | 33   |           |      |
| Turn-Off Fall Time                 | $t_f$         |                                                     |     | 7.5  |           |      |



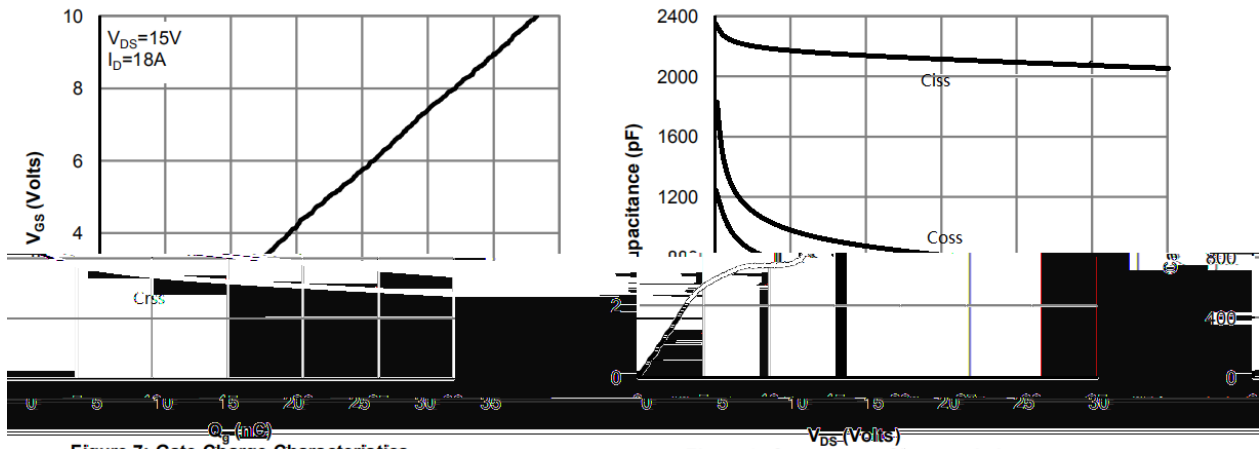


Figure 7: Gate Charge Characteristics

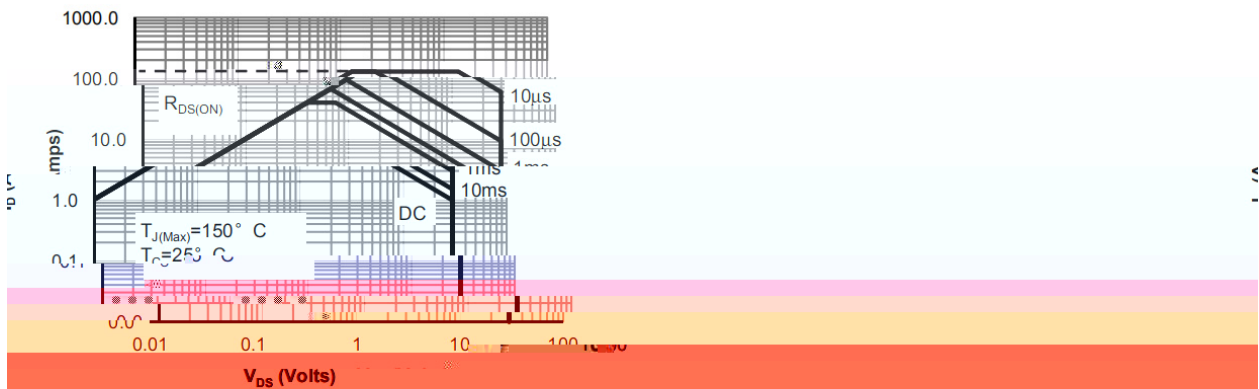


Figure 9: Maximum Forward Biased Safe Operating Area

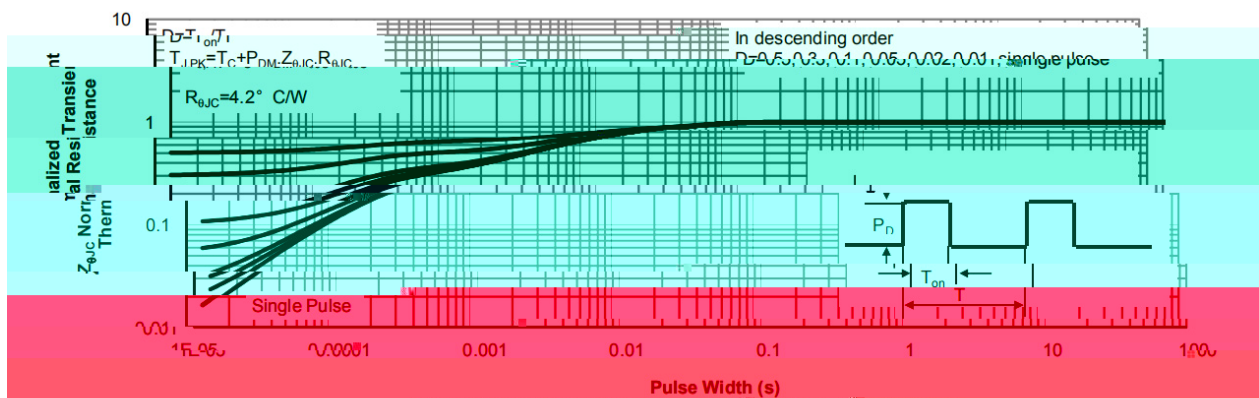
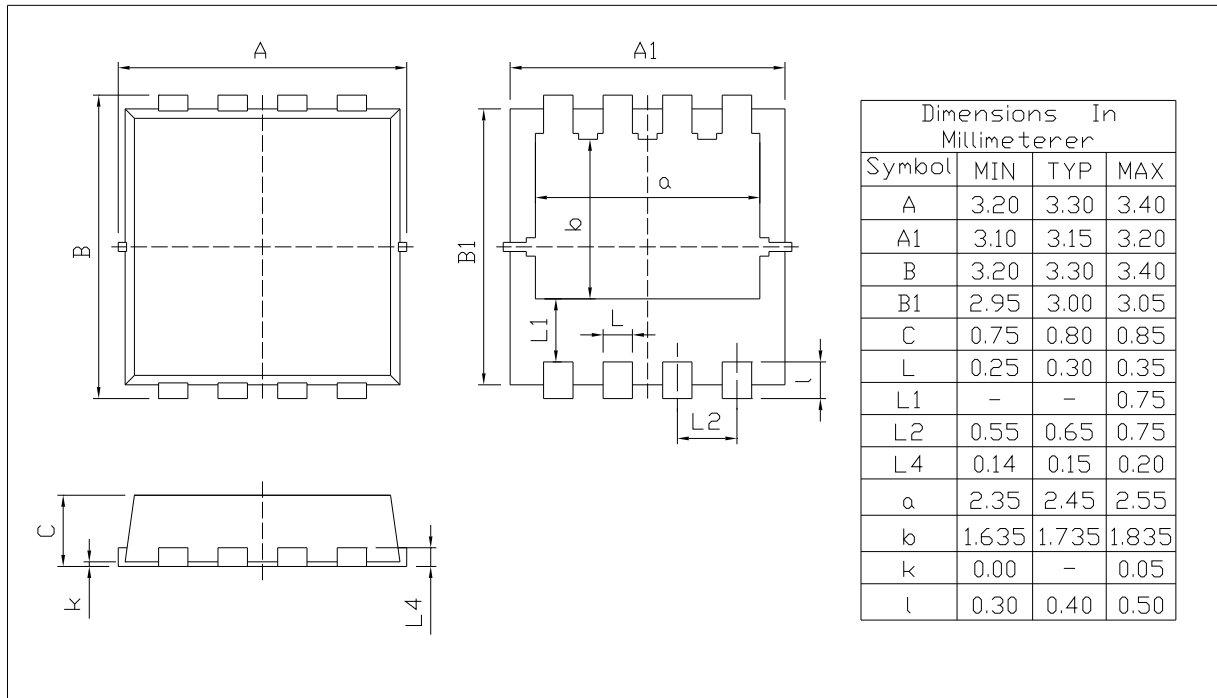


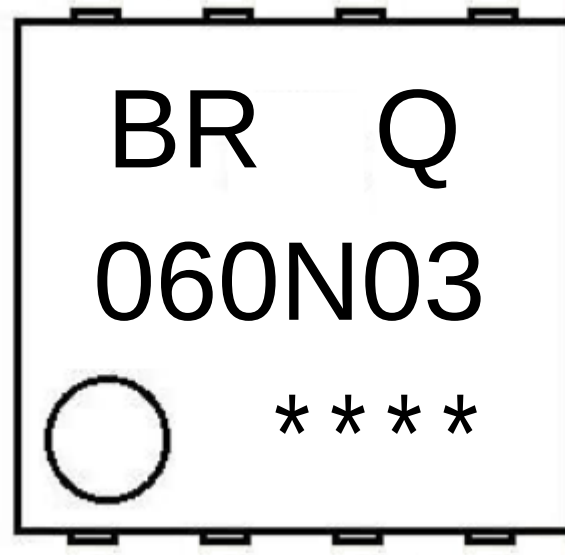
Figure 10: Normalized maximum transient thermal impedance

PDFN3X3A-8L

Unit:mm



Rev.00 202011



BR

Q

060N03

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Note:

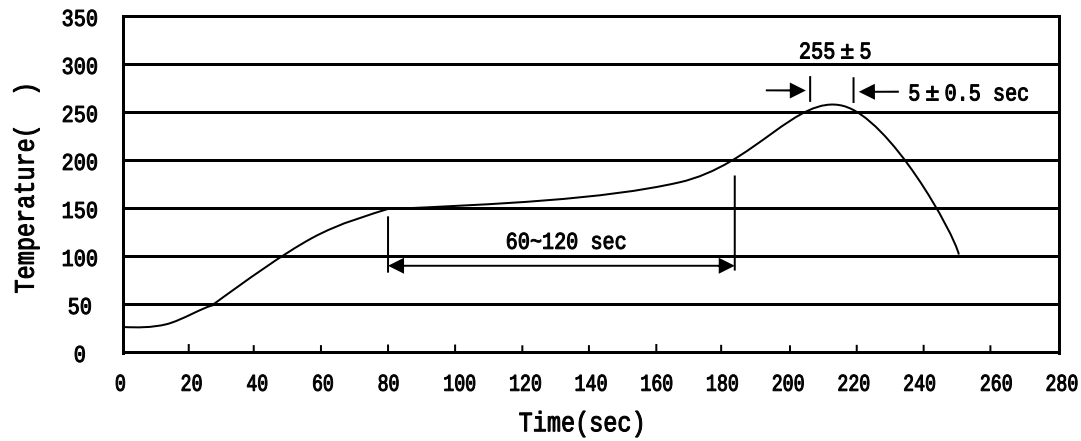
BR: Company Code

Q: Automobile halogen-free product Code

060N03: Product Type Code

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

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



Note:

- |   |       |     |           |         |                                         |
|---|-------|-----|-----------|---------|-----------------------------------------|
| 1 | 150   | 200 | 60        | 120sec; | 1.Preheating:150~200 , Time:60~120sec.  |
| 2 | 255±5 |     | 5±0.5sec; |         | 2.Peak Temp.:255±5 , Duration:5±0.5sec. |
| 3 |       | 2   | 10        | /sec.   | 3. Cooling Speed: 2~10 /sec.            |

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

/ REEL

| Package Type | Units      |                 |                 |                       |                 | Dimension (unit mm <sup>3</sup> ) |            |             |
|--------------|------------|-----------------|-----------------|-----------------------|-----------------|-----------------------------------|------------|-------------|
|              | Units/Reel | Reels/Inner Box | Units/Inner Box | Inner Boxes/Outer Box | Units/Outer Box | Reel                              | Inner Box  | Outer Box   |
| PDFN3×3A-8L  | 5,000      | 2               | 10,000          | 6                     | 60,000          | 13 ×12                            | 360×360×50 | 380×335×366 |