

## / Descriptions

PDFN5×6 N

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

## / Features

 $V_{DS}(V)=40\text{ V}$   $I_D=98\text{ A}$  $R_{DS(ON)}@10V\leq 3.5\text{ m}\Omega(\text{Typ.}3.0\text{ m}\Omega)$  $R_{DS(ON)}@4.5V\leq 5.0\text{ m}\Omega(\text{Typ.}4.0\text{ m}\Omega)$ 

AEC-Q101

Qualified to AEC-Q101 Standards for High Reliability,

HF Product.

## / Applications

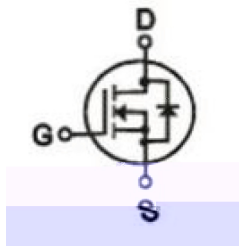
MB/NB/UMPC/VGA

Buck

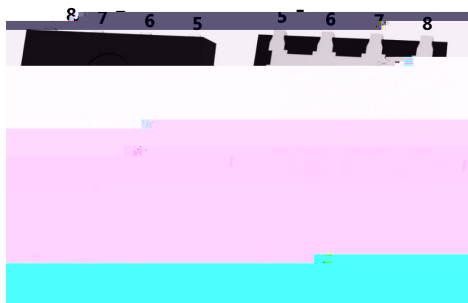
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Battery Management, High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA, Networking DC-DC Power System, Load Switch, Meet the stringent requirements of automotive applications.

## / Equivalent Circuit



## / Pinning



PIN1、2、3: S      PIN4: G      PIN5、6、7、8: D

## / Marking

See Marking Instructions.

| Parameter                              |              | Symbol                 | Rating     | Unit |
|----------------------------------------|--------------|------------------------|------------|------|
| Drain-Source Voltage                   |              | $V_{DS}$               | 40         | V    |
| Continuous Drain Current               |              | $I_D(T_c=25^{\circ}C)$ | 98         | A    |
| Pulsed Drain Current                   |              | $I_{DM}$               | 195        | A    |
| Gate-Source Voltage                    |              | $V_{GS}$               | $\pm 20$   | V    |
| Power Dissipation                      |              | $P_D(T_c=25^{\circ}C)$ | 60         | W    |
| Avalanche energy(L=0.5mH)              |              | $E_{AS}$               | 435        | mJ   |
| Avalanche Current(L=0.5mH)             |              | $I_{AS}$               | 33         | A    |
| Junction and Storage Temperature Range |              | $T_j, T_{stg}$         | -55 to 150 |      |
| Maximum Junction-to-Ambient            | $t \leq 10s$ | $R_{\theta JA}$        | 22         | / W  |
|                                        | Steady-State |                        | 53         |      |
| Maximum Junction-to-Case               | Steady-State | $R_{\theta JC}$        | 2.08       |      |

| Parameter                       | Symbol     | Test Conditions                | Min | Typ | Max | Unit    |
|---------------------------------|------------|--------------------------------|-----|-----|-----|---------|
| Drain-Source Breakdown Voltage  | $BV_{DSS}$ | $V_{GS}=0V \quad I_D=250\mu A$ | 40  | 44  |     | V       |
| Zero Gate Voltage Drain Current | $I_{DSS}$  | $V_{DS}=40V \quad V_{GS}=0V$   |     |     | 1.0 | $\mu A$ |
| Gate-Body Leakage Current       | I          |                                |     |     |     |         |
| Forward                         |            |                                |     |     |     |         |

/ 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> =1 Ω      R <sub>GEN</sub> =3 Ω |     | 11  |     | ns   |
| Turn-On Rise Time   | t <sub>r</sub>      |                                                                                                |     | 11  |     |      |
| Turn-Off Delay Time | t <sub>d(off)</sub> |                                                                                                |     | 40  |     |      |
| Turn-Off Fall Time  | t <sub>f</sub>      |                                                                                                |     | 10  |     |      |

/ Electrical Characteristic Curve

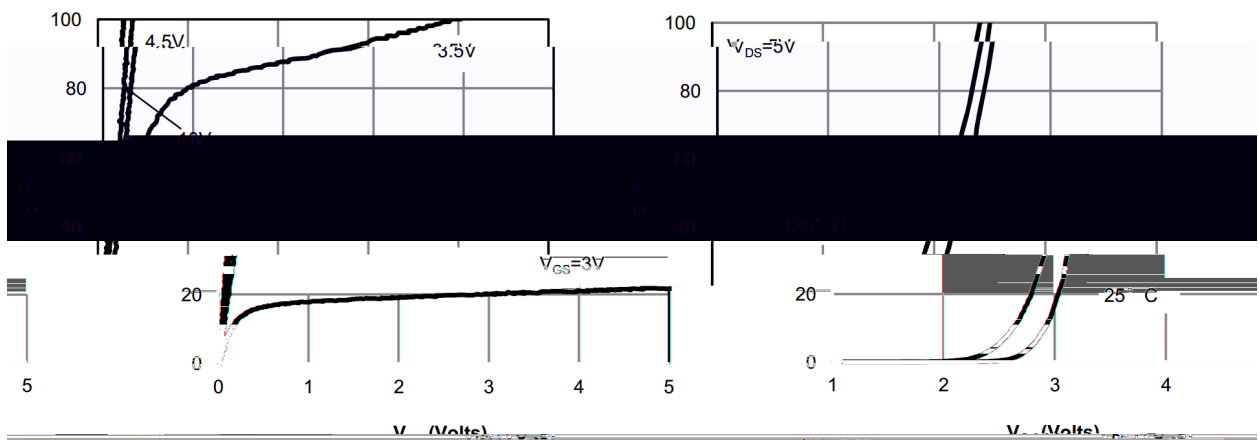


Figure 1: On-Region Characteristics

Figure 2: Transfer Characteristics

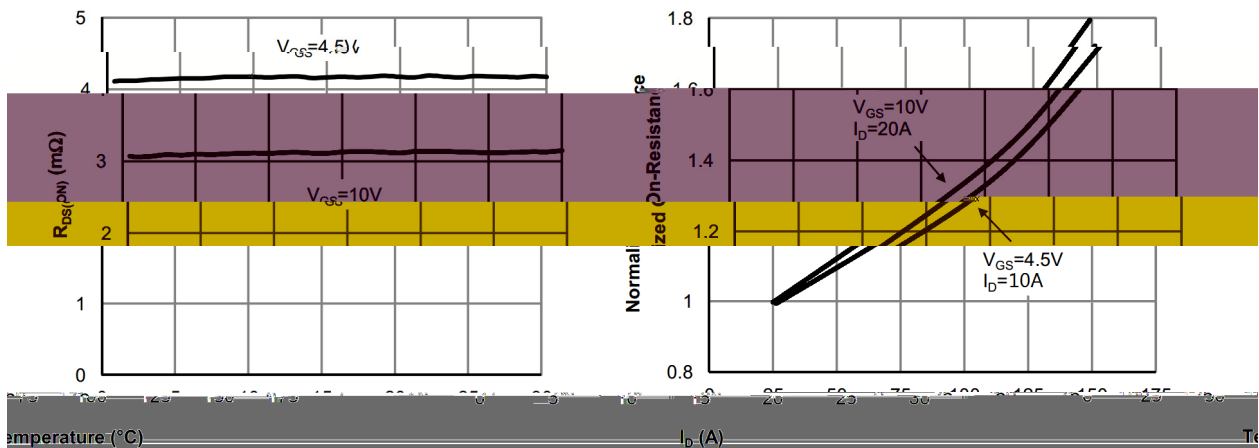
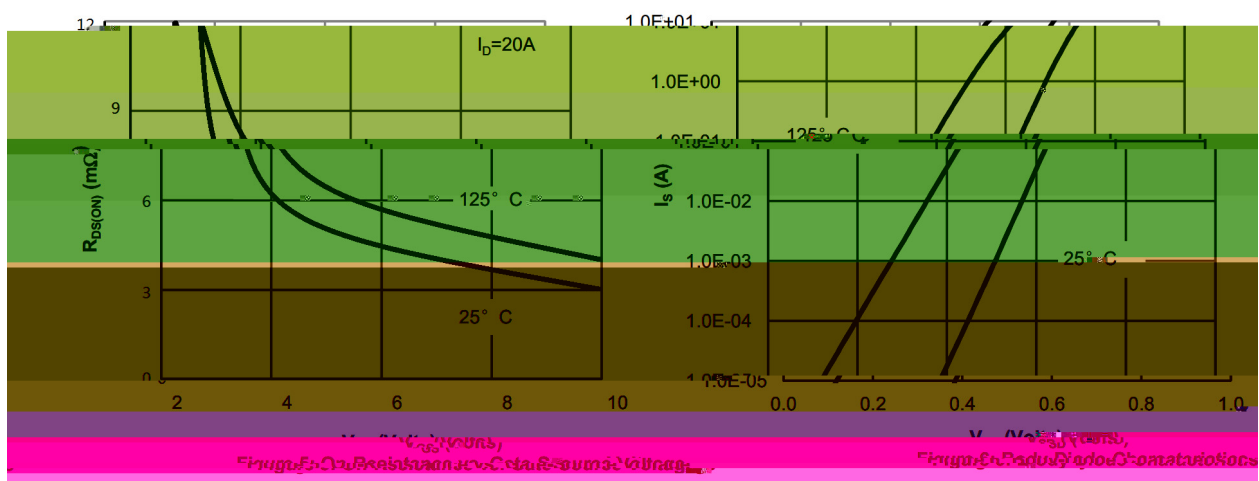


Figure 4: On-Resistance vs. Junction Temperature

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



/ Electrical Characteristic Curve

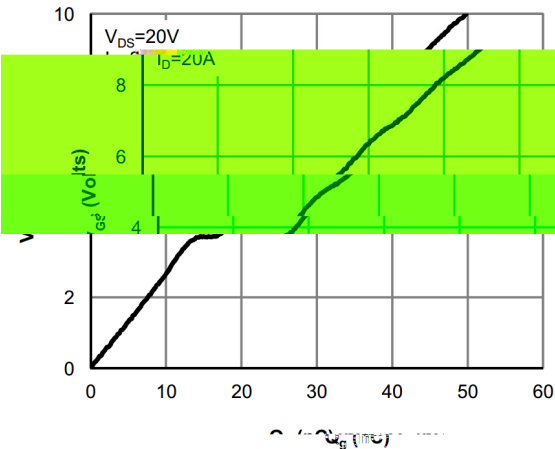


Figure 7: Gate-Charge Characteristics

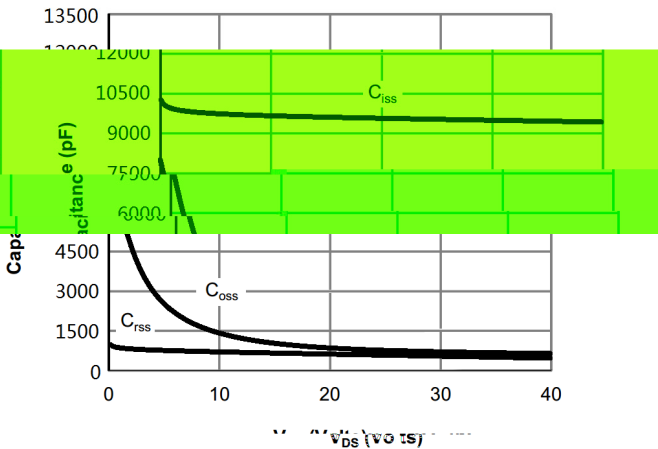


Figure 8: Capacitance Characteristics

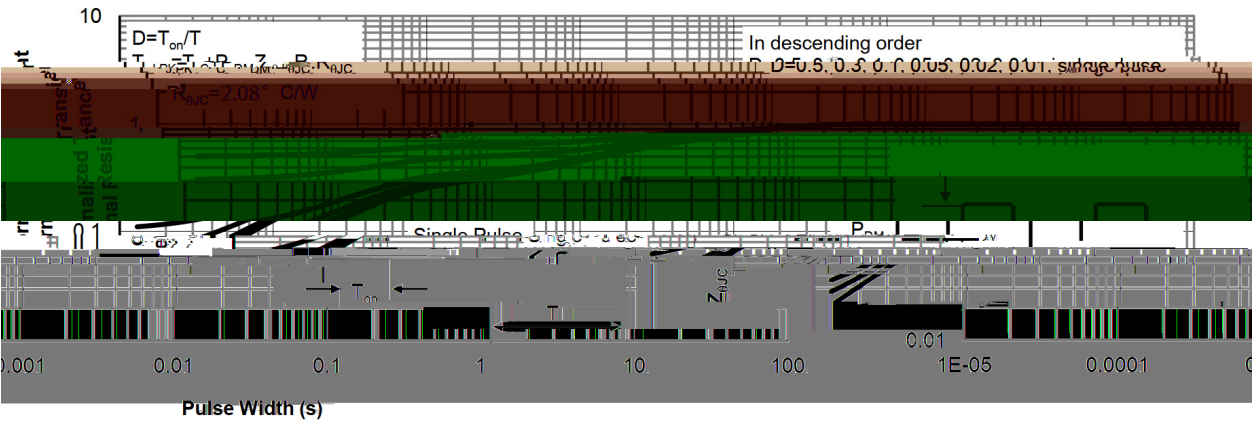
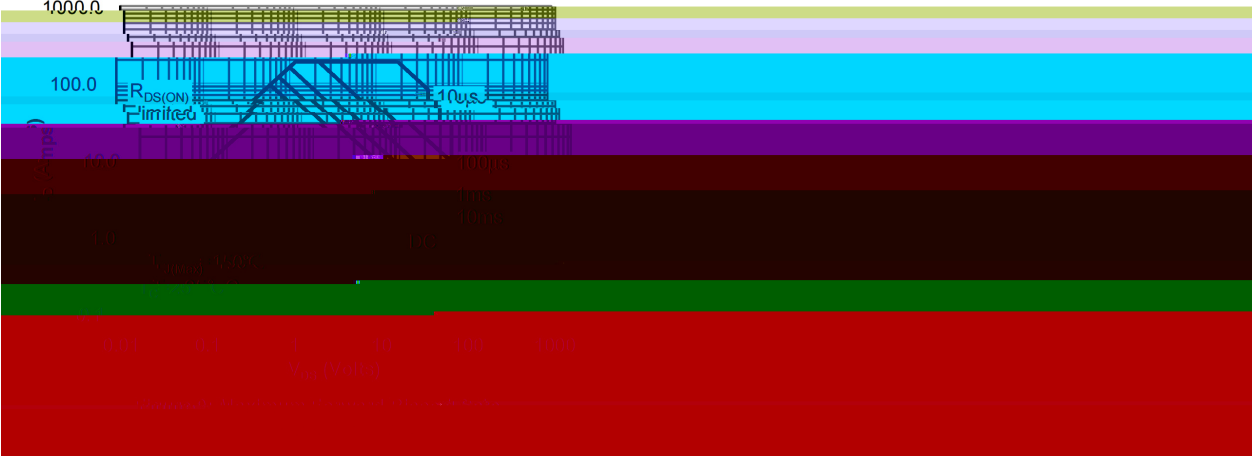
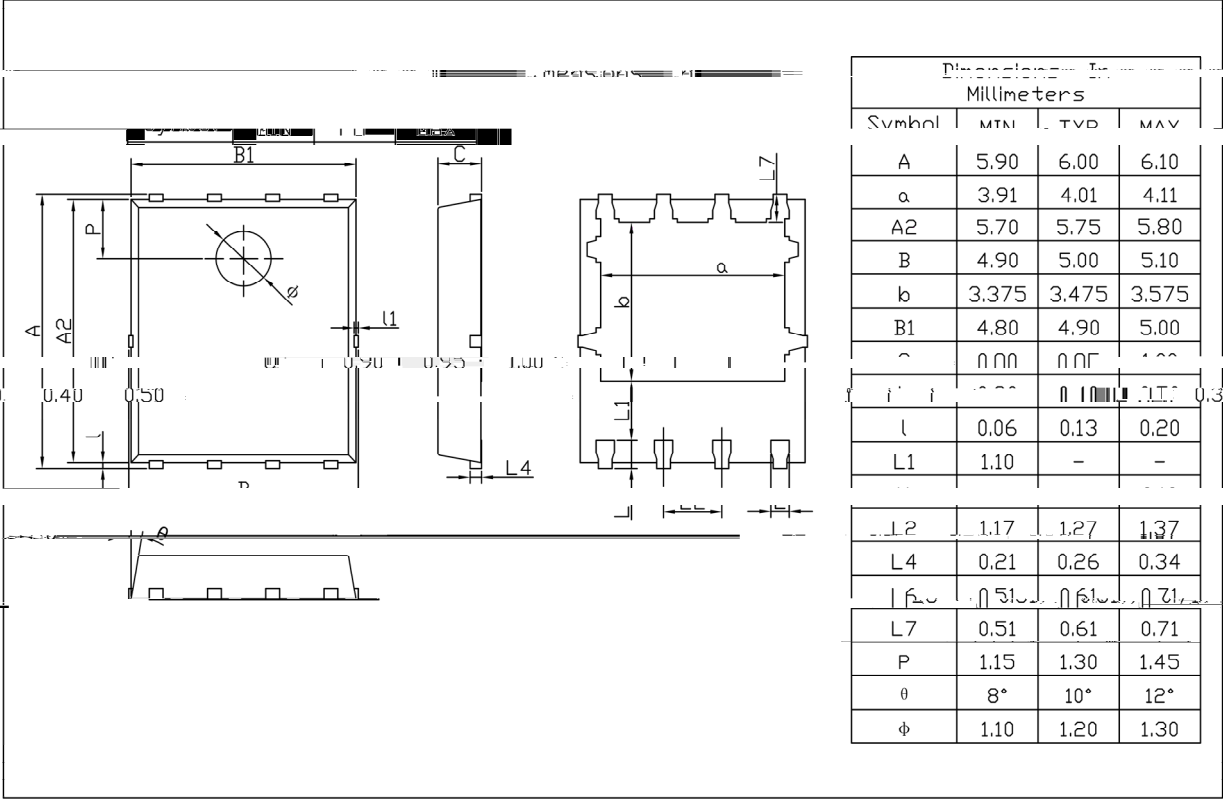


Figure 10: Normalized Maximum Transient Thermal Impedance

Figure 10

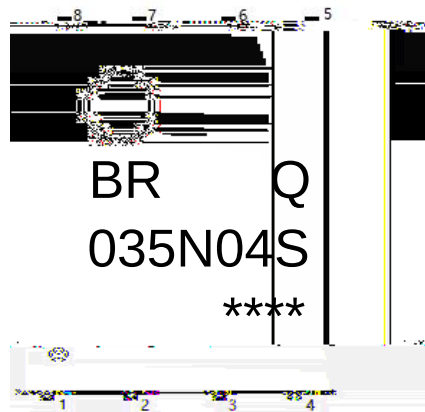
/ Package Dimensions

PDFN5×6 Unit:mm



Rev.01 202209

/ Marking Instructions



BR

Q

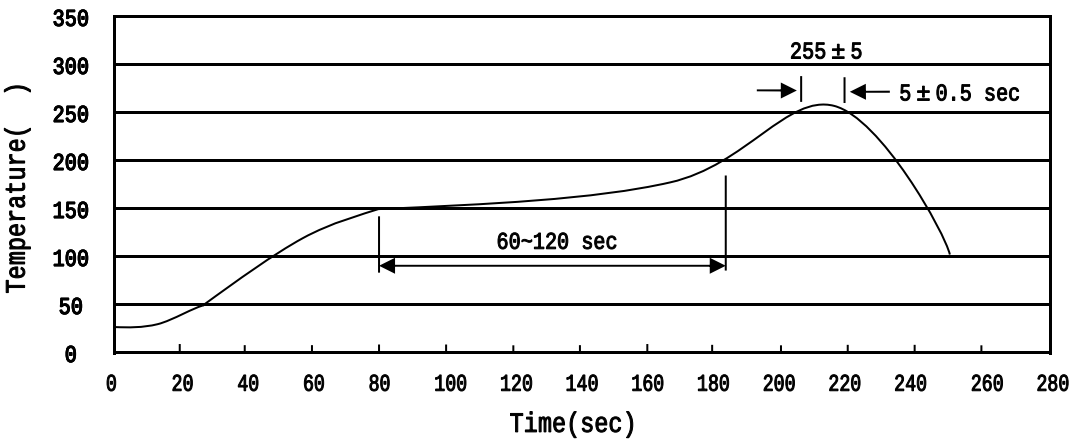
035N04S

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Note

|         |                                       |
|---------|---------------------------------------|
| BR      | Company Code                          |
| Q:      | Automobile halogen-free product Code  |
| 035N04S | 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.

/ 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> ) |            |             |
|--------------|-----------------|----------------------|----------------------|----------------------------|----------------------|-----------------------------------|------------|-------------|
|              | Units/Reel<br>/ | Reels/Inner Box<br>/ | Units/Inner Box<br>/ | Inner Boxes/Outer Box<br>/ | Units/Outer Box<br>/ | Reel                              | Inner Box  | Outer Box   |
| PDFN5×6      | 5,000           | 2                    | 10,000               | 6                          | 60,000               | 13"×12                            | 360×360×50 | 380×335×366 |

/ Notices