

## 5 é / Descriptions

PDFN5~6A .&gt; // x E N ?ú 3 « | • ' ož

Dual N-CHANNEL MOSFET in a PDFN5×6A Plastic Package.

## □ ª / Features

Dual N-Ch

VDS(V)=40V

ID=60.2A

RDS(ON)&lt;6.5m (VGS=10V)

RDS(ON)&lt;12.5m (VGS=4.5V)

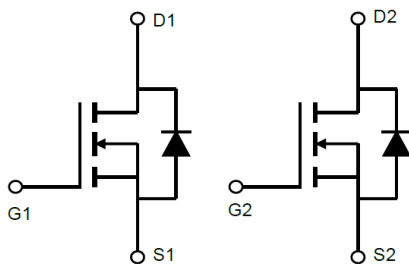
—)í D }ož HF Product.

## Đ ÷ / Applications

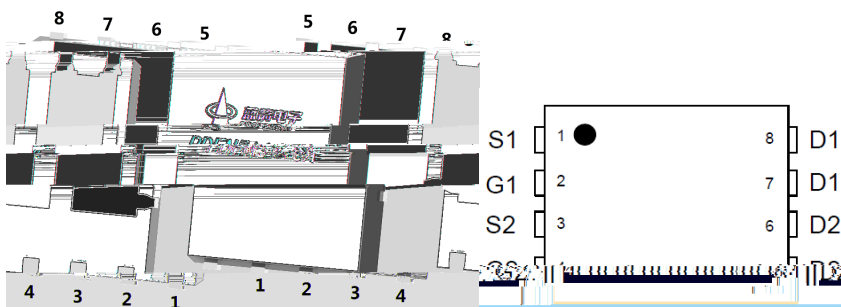
PWM • o • ħ ú • ¼o • &gt; ' òo • LED ² °

PWM Application, Load Switch, Power Management, Dimming LED.

## Ã W ] Ô • / Equivalent Circuit



## • Ů - æ / Pinning



## , M V / Marking

• - ~ ª ¢ ÄSee Marking Instructions.

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

| Parameter                               | Symbol                      | Rating     | Unit |
|-----------------------------------------|-----------------------------|------------|------|
| Drain-Source Voltage                    | $V_{DS}$                    | 40         | V    |
| Drain Current                           | $I_D(T_c=25^\circ\text{C})$ | 60.2       | A    |
| Drain Current - Pulsed                  | $I_{DM}$                    | 217        | A    |
| Gate-Source Voltage                     | $V_{GS}$                    | $\pm 20$   | V    |
| Single Pulsed Avalanche Energy          | $E_{AS}$                    | 240.1      | mJ   |
| Avalanche Current                       | $I_{AS}$                    | 24.5       | A    |
| Power Dissipation                       | $P_D(T_c=25^\circ\text{C})$ | 36         | W    |
| Operating and Storage Temperature Range | $T_J, T_{stg}$              | -55 to 150 |      |
| Junction-to-Ambient                     | $R_{JA}$                    | 45         | /W   |
| Junction-to-Ambient Steady-State        |                             | 80         |      |
| Junction-to-Case Steady-State           | $R_{JC}$                    | 3.5        |      |

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

| Parameter                          | Symbol        | Test Conditions                   | Min | Typ  | Max       | Unit       |
|------------------------------------|---------------|-----------------------------------|-----|------|-----------|------------|
| Drain-Source Breakdown Voltage     | $BV_{DS}$     | $V_{GS}=0V, I_D=250\mu A$         | 40  | 45   |           | V          |
| Zero Gate Voltage Drain Current    | $I_{DSS}$     | $V_{DS}=40V, V_{GS}=0V$           |     |      | 1         | A          |
| Gate-Body Leakage Current Forward  | $I_{GSS}$     | $V_{GS}=\pm 20V, V_{DS}=0V$       |     |      | $\pm 0.1$ | A          |
| Gate Threshold Voltage             | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=250\mu A$     | 1.0 | 1.5  | 3.0       | V          |
| Static Drain-Source On-Resistance  | $R_{DS(on)}$  | $V_{GS}=10V, I_D=20A$             |     | 6.1  | 6.5       | m $\Omega$ |
|                                    |               | $V_{GS}=4.5V, I_D=10A$            |     | 9.1  | 12.5      | m $\Omega$ |
| Drain-Source Diode Forward Voltage | $V_{SD}$      | $V_{GS}=0V, I_S=1A$               |     |      | 1.2       | V          |
| Input Capacitance                  | $C_{iss}$     | $V_{DS}=25V, V_{GS}=0V, f=1.0MHz$ |     | 2300 |           | pF         |
| Output Capacitance                 | $C_{oss}$     |                                   |     | 170  |           |            |
| Reverse Transfer Capacitance       | $C_{rss}$     |                                   |     | 130  |           |            |
| Gate resistance                    | $R_g$         | $V_{GS}=0V, V_{DS}=0V, f=1MHz$    |     | 2.2  |           |            |
| Total Gate Charge                  | $Q_{g(10V)}$  | $V_{GS}=10V, V_{DS}=20V, I_D=10A$ |     | 27.3 |           | nC         |
| Total Gate Charge                  | $Q_{g(4.5V)}$ |                                   |     | 13.4 |           |            |
| Gate Source Charge                 | $Q_{gs}$      |                                   |     | 4.3  |           |            |
| Gate Drain Charge                  | $Q_{gd}$      |                                   |     | 6.2  |           |            |

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> =2Ω      R <sub>GEN</sub> =3Ω |     | 6.3  |     | ns   |
| Turn-On Rise Time   | t <sub>r</sub>      |                                                                                                |     | 17.1 |     |      |
| Turn-Off Delay Time | t <sub>d(off)</sub> |                                                                                                |     | 28.7 |     |      |
| Turn-Off Fall Time  | t <sub>f</sub>      |                                                                                                |     | 15.9 |     |      |

Electrical Characteristic Curve

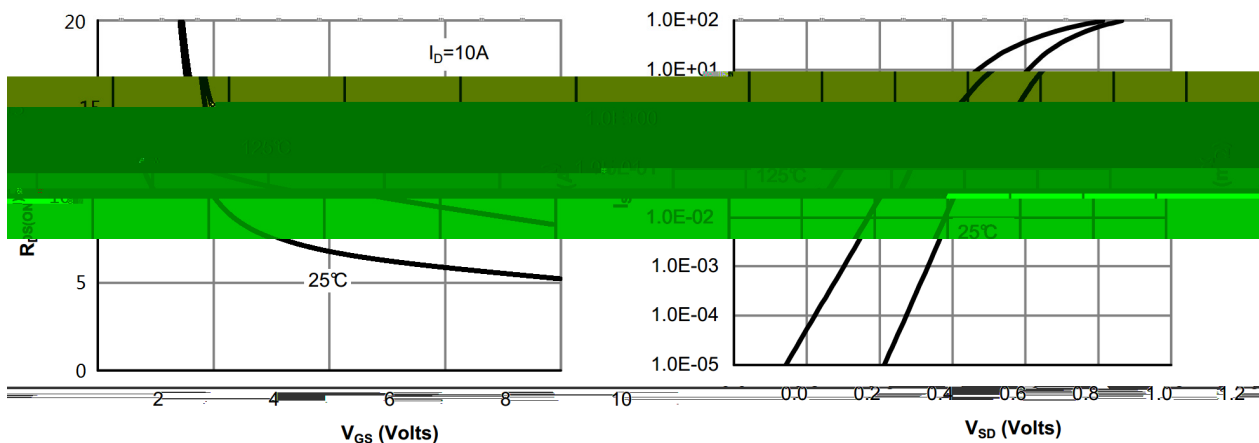
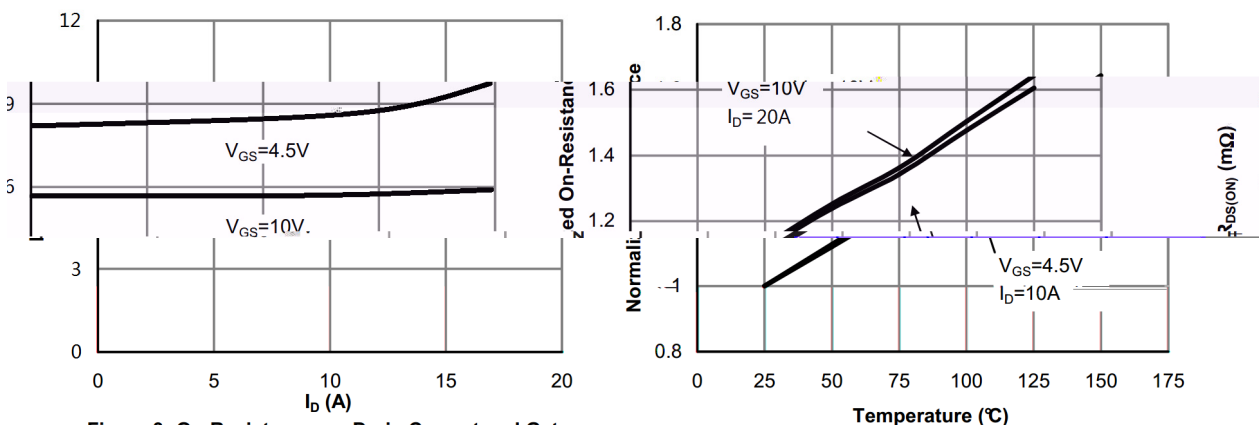
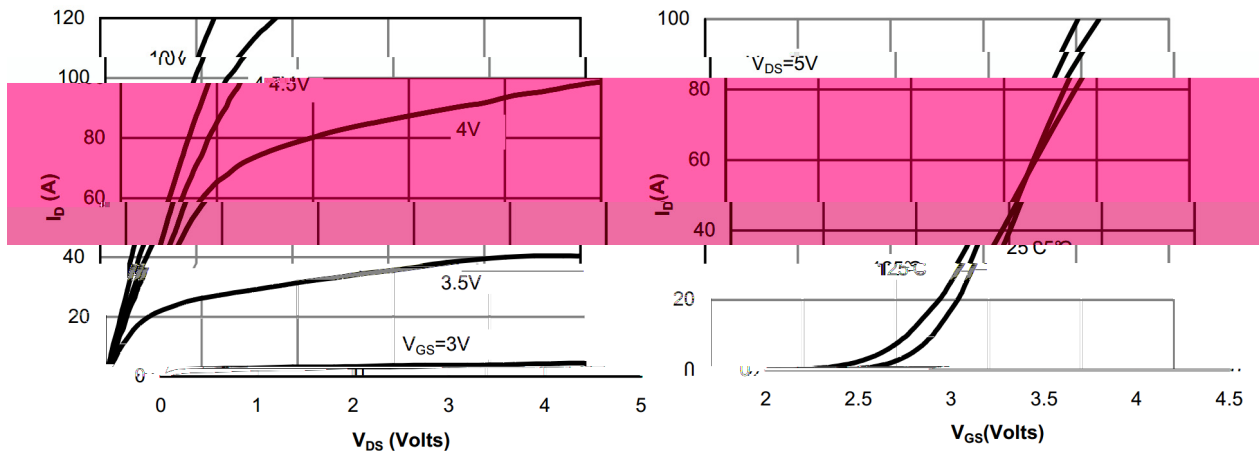
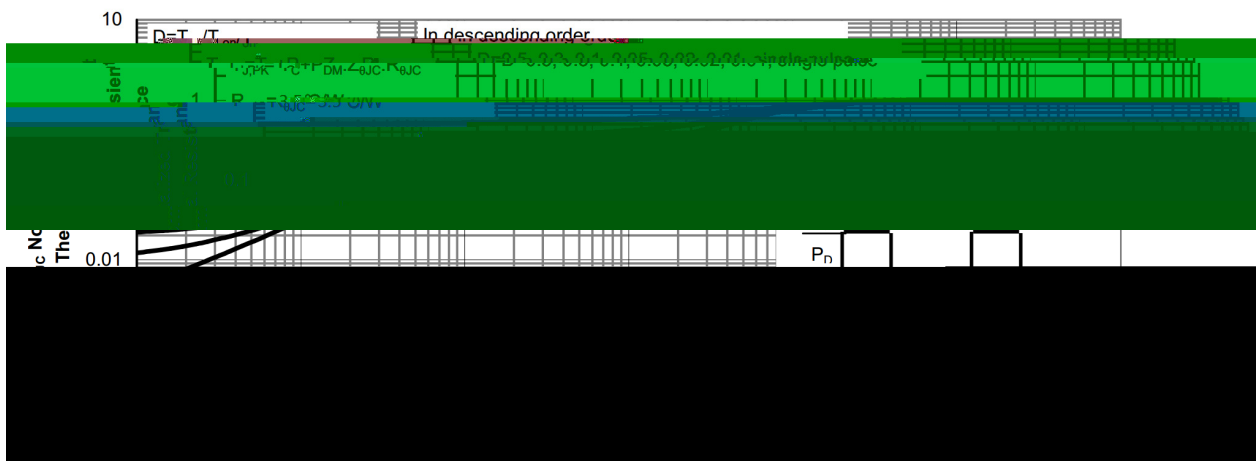
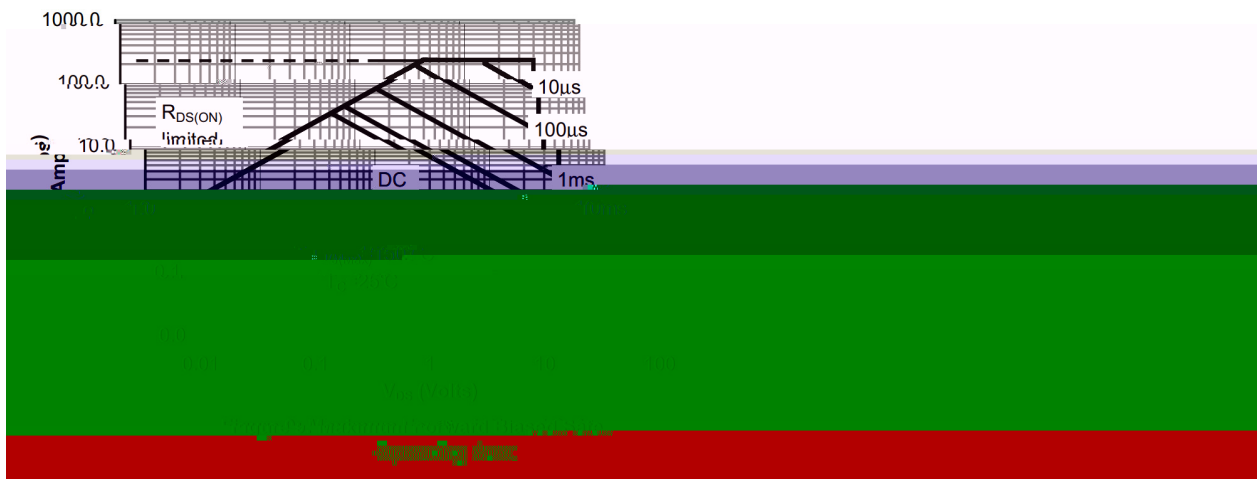
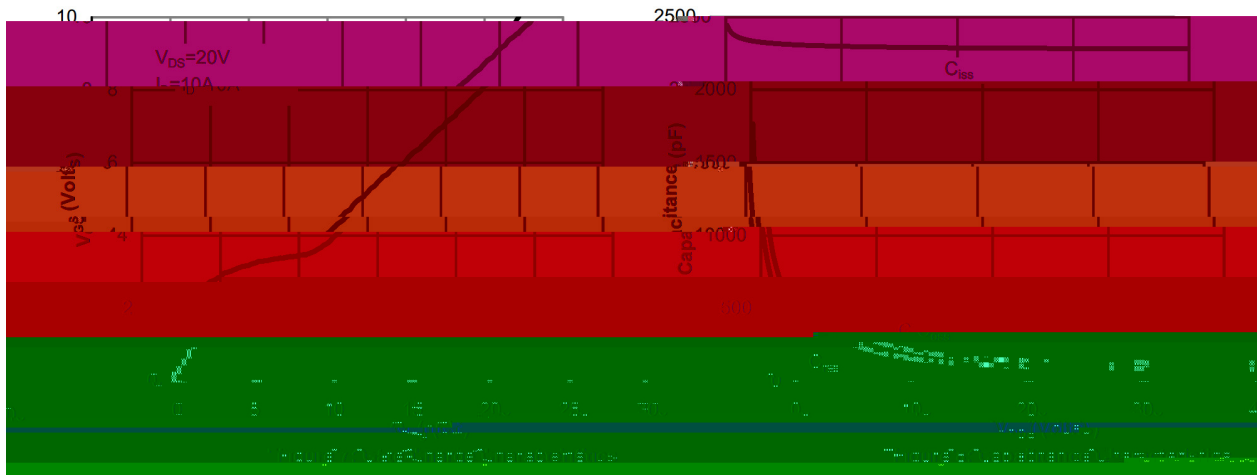


Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Body-Diode Characteristics

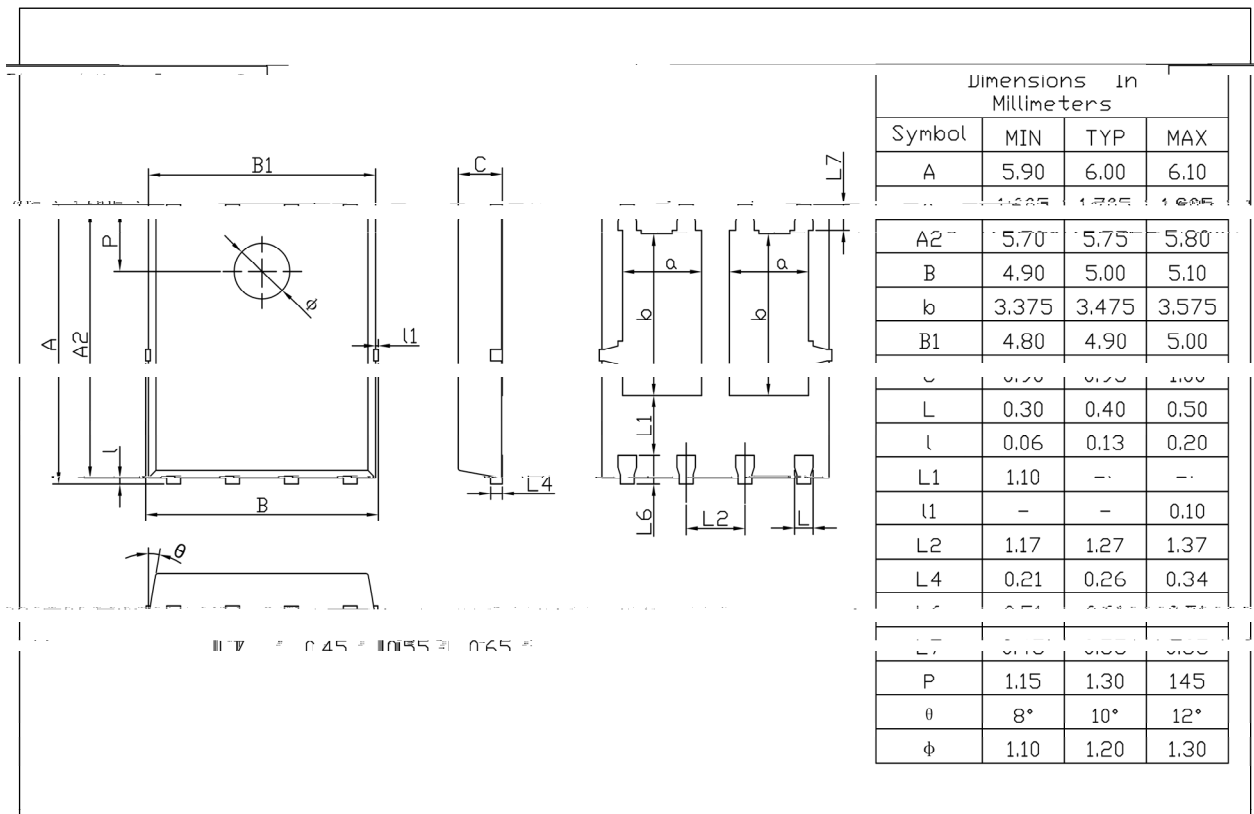
Electrical Characteristic Curve



$\varnothing \square = ) \Phi$  / Package Dimensions

PDFN5 X6A

Unit:mm



Rev.01 202209

, M y f / Marking Instructions



|          |                                       |
|----------|---------------------------------------|
| a ¢ y    |                                       |
| ( 8 y    | , [ W A                               |
| 060N04 y | D } ° Z                               |
| y        | ŷ D Z W A k š ŷ D Z J                 |
| Note y   |                                       |
| BR y     | Company Code                          |
| 060N04 y | Product Type                          |
| ****:    | Lot No. Code, code change with Lot No |

ŠWD t... • Žč (x/ ) / :KSVKXGZ[XK 6XULORK LUX /8 8KLRU] 9URJKXOTM 6

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10• Ä ½ “† 150 ½180 - k ž • 60 ½90sec;

20• Q > “† 245 r5 - k ž • 4 Ò 5 r0.5sec;

30•D N ò i Ò 0 ,† 2 ½10 - /sec.

Note:

1.Preheating:150~180 - , Time:60~90sec.

2.Peak Temp.:245 r5 - , Duration:5 r0.5sec.

3. Cooling Speed: 2~10 - /sec.

ÂD /Cã p ¯ »] / Resistance to Soldering Heat Test Conditions

“† y 260 r5 -

ž • y 10 r1 sec.

Temp.:260 r5 -

Time:10 r1 sec

G P á / Packaging SPEC.

2 & x / REEL

| Package Type<br>/ x ¥ " | Units ;>û ĤH        |                          |                        |                              |                        | Dimension ;>û p . (unit /mm³) |            |             |
|-------------------------|---------------------|--------------------------|------------------------|------------------------------|------------------------|-------------------------------|------------|-------------|
|                         | Units/Reel<br>Q 2 & | Reels/Inner Box<br>2 & " | Units/Inner Box<br>Q " | Inner Boxes/Outer Box<br>" " | Units/Outer Box<br>Q " | Reel                          | Inner Box  | Outer Box   |
| PDFN5×6A                | 5000                | 2                        | 10000                  | 6                            | 60000                  | 13"×12                        | 360×360×50 | 380×335×366 |

„ Ð y f / Notices