## / Descriptions

N-Channel Enhancement Mode Field Effect Transistor in a PDFN3 3A-8L Plastic Package.

## / Features

$V_{DS}$ (V) = 40V

$I_D$ =82A ($V_{GS}$ = ±20V)

$R_{DS(ON)}$@10V≤3mR(Typ.2.5mR)

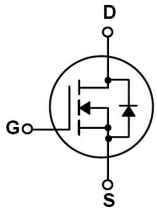
$R_{DS(ON)}$@4.5V≤5mR(Typ.3.5mR)

HF Product.

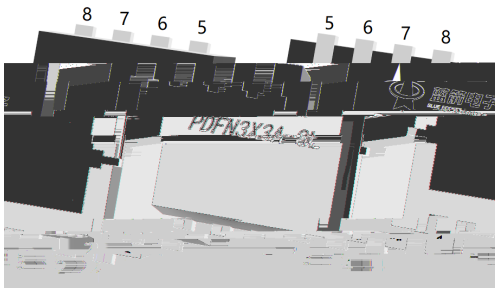
## / Applications

Load Switch Applications,Battery Power Management.

## / Equivalent Circuit




## / Pinning




| 出脚 | 定义 |
|---|---|
| Pin1 | S |
| Pin2 | S |

## / Marking

See Marking Instructions.

## / Absolute Maximum Ratings(Ta=25 )

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 40 | V |
| Drain Current | | $I_D$(Tc=25 ) | 57 | A |
| Drain Current - Pulsed | | $I_{DM}$ | 137 | A |
| Gate-Source Voltage | | $V_{GSS}$ | ±20 | V |
| Single Pulsed Avalanche Energy | | $E_{AS}$ | 348 | mJ |
| Avalanche Current | | $I_{AS}$ | 33 | A |
| Power Dissipation | | $P_D$(Tc=25 ) | 37 | W |
| Operating and Storage Temperature Range | | $T_J$,$T_{stg}$ | -55 to 150 | |
| Junction-to-Ambient | t ≤ 10 | $R_{\theta JA}$ | 42 | /W |
| Junction-to-Ambient | Steady-State | | 78 | |
| Junction-to-Case | Steady-State | $R_{\theta JC}$ | 3.4 | |

## / Electrical Characteristics(Ta=25 )

| Parameter | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V | $I_D$=250μA | 40 | 47 | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=40V | $V_{GS}$=0V | | | 1 | μA |
| Gate-Body Leakage Current Forward | $I_{GSS}$ | $V_{GS}$=±20V | $V_{DS}$=0V | | | ±0.1 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$ | $I_D$=250μA | 1.0 | 1.7 | 3.0 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=10V | $I_D$=20A | | 2.5 | 3 | mΩ |
| | | $V_{GS}$=4.5V | $I_D$=10A | | 3.5 | 5 | mΩ |
| Drain-Source Diode Forward Voltage | $V_{SD}$ | $V_{GS}$=0V | $I_S$=1A | | | 1.2 | V |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=25V f=1.0MHz | $V_{GS}$=0V | | 9600 | | pF |
| Output Capacitance | $C_{oss}$ | | | | 740 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | | 650 | | |
| Gate resistance | $R_g$ | $V_{GS}$=0V f=1MHz | $V_{DS}$=0V | | 1.3 | | Ω |
| Total Gate Charge | $Q_{g(10V)}$ | $V_{GS}$=10V $I_D$=20A | $V_{DS}$=20V | | 51 | | nC |
| Total Gate Charge | $Q_{g(4.5V)}$ | | | | 23 | | |
| Gate Source Charge | $Q_{gs}$ | | | | 13.2 | | |
| Gate Drain Charge | $Q_{gd}$ | | | | 3.1 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}$=10V $R_L$=1Ω | $V_{DS}$=20V $R_{GEN}$=3.0Ω | | 11 | | ns |
| Turn-On Rise Time | $t_r$ | | | | 11 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | | 40 | | |
| Turn-Off Fall Time | $t_f$ | | | | 10 | | |

## / Electrical Characteristic Curve

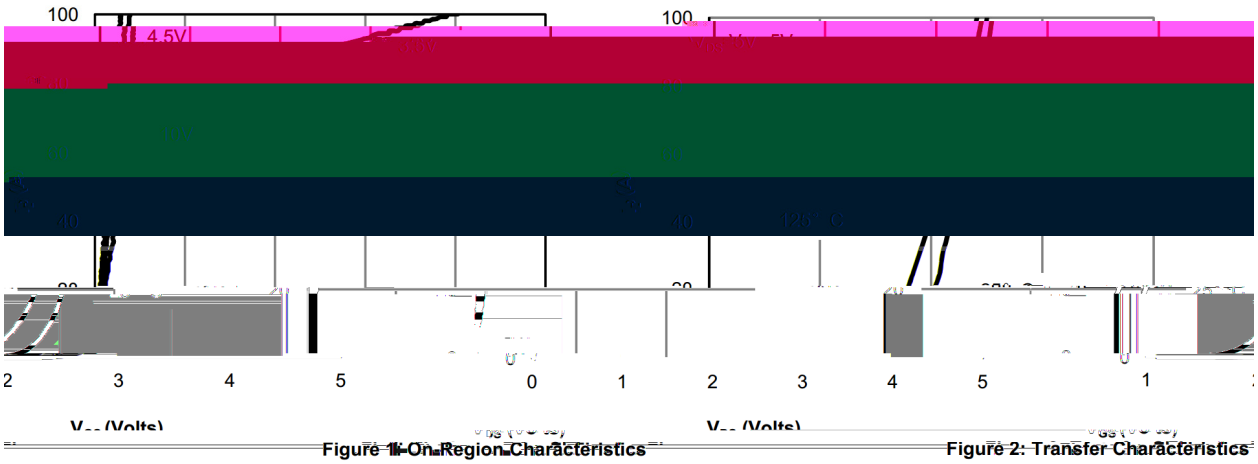



Figure 1: On-Region Characteristics




Figure 2: Transfer Characteristics

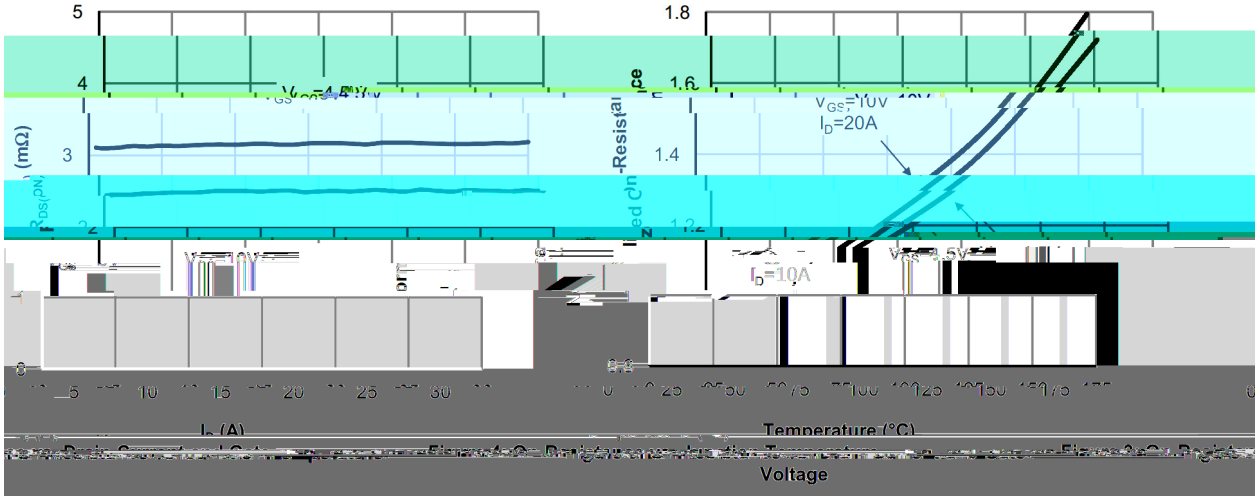
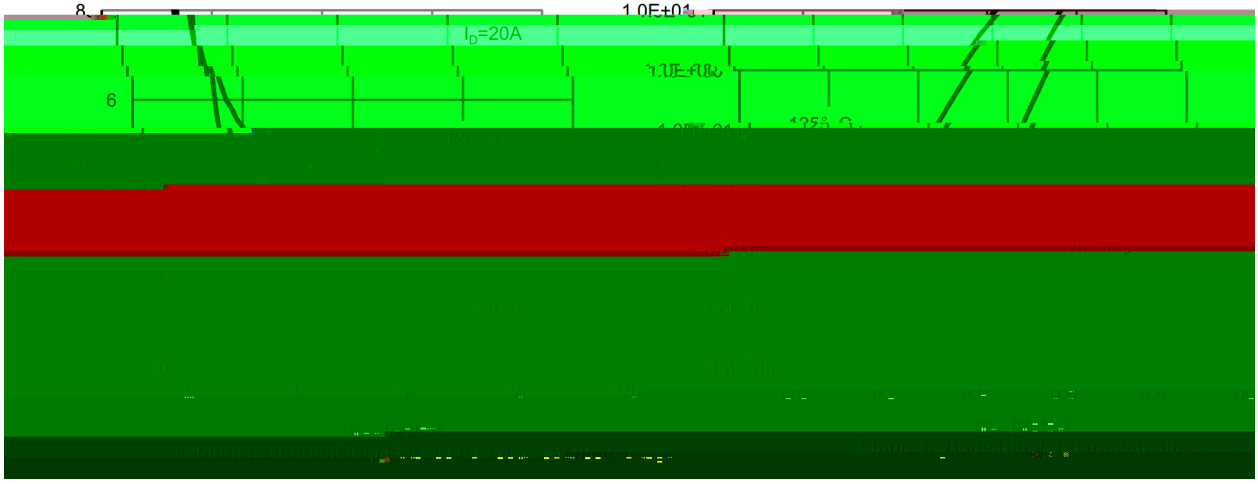



Figure 3: On-Resistance vs. Drain Current and Gate Voltage

Figure 4: On-Resistance Variation with Temperature



## / Electrical Characteristic Curve

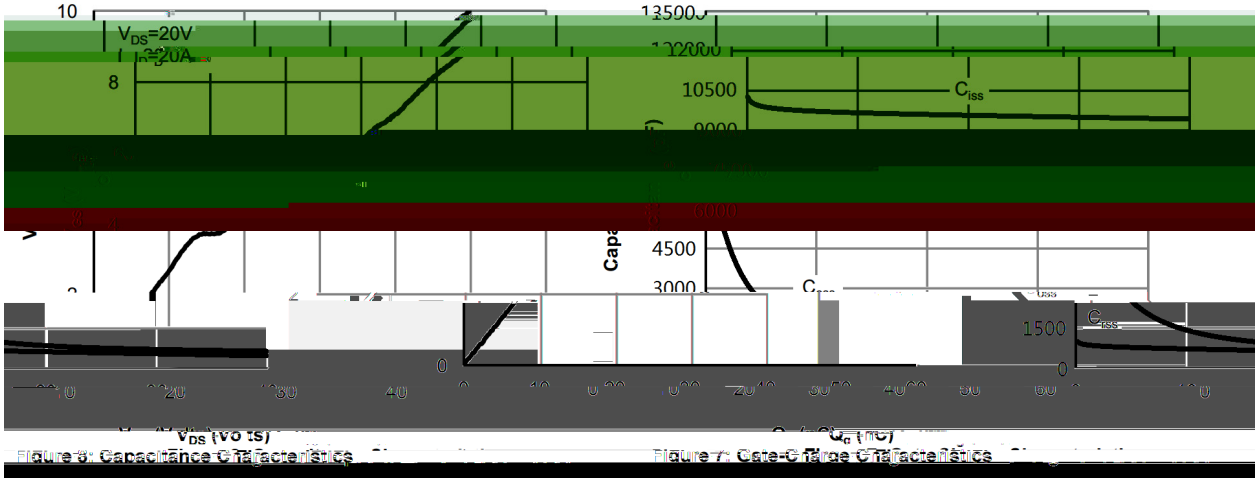
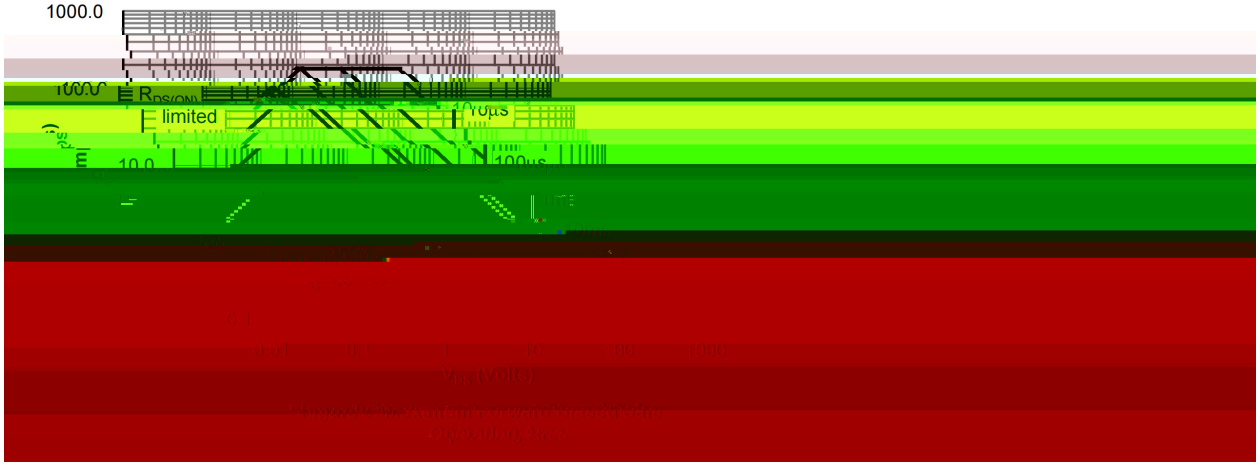
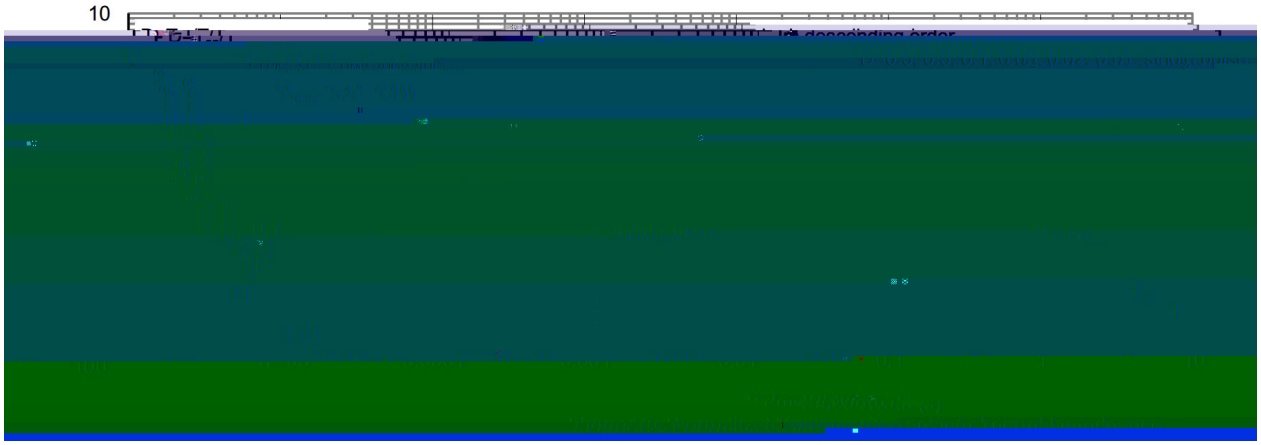



Figure 6: Capacitance Characteristics

Figure 7: Gate-Charge Characteristics

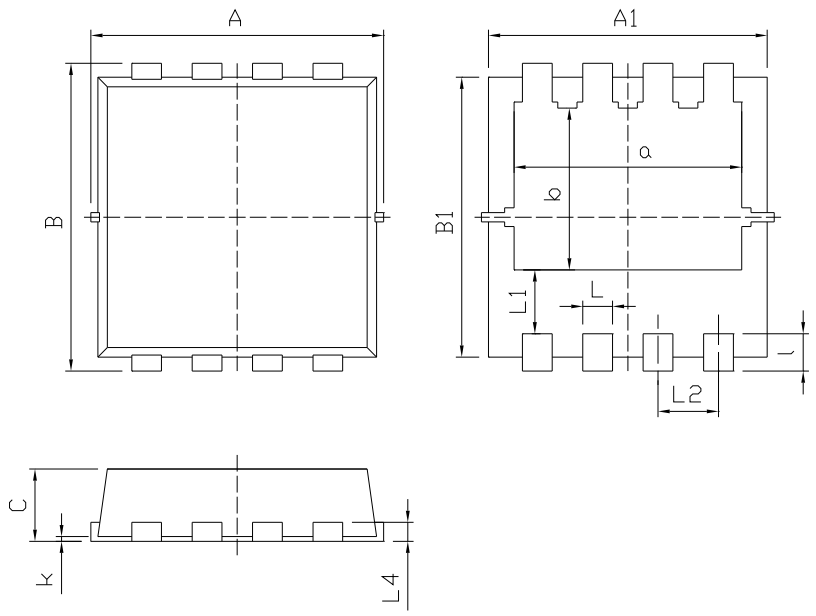


## / Package Dimensions

PDFN3X3A-8L

Unit:mm




| Dimensions In Millimeterer | | | |
|---|---|---|---|
| Symbol | MIN | TYP | MAX |
| A | 3.20 | 3.30 | 3.40 |
| A1 | 3.10 | 3.15 | 3.20 |
| B | 3.20 | 3.30 | 3.40 |
| B1 | 2.95 | 3.00 | 3.05 |
| C | 0.75 | 0.80 | 0.85 |
| L | 0.25 | 0.30 | 0.35 |
| L1 | - | - | 0.75 |
| L2 | 0.55 | 0.65 | 0.75 |
| L4 | 0.14 | 0.15 | 0.20 |
| a | 2.35 | 2.45 | 2.55 |
| b | 1.635 | 1.735 | 1.835 |
| k | 0.00 | - | 0.05 |
| l | 0.30 | 0.40 | 0.50 |

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## / Marking Instructions



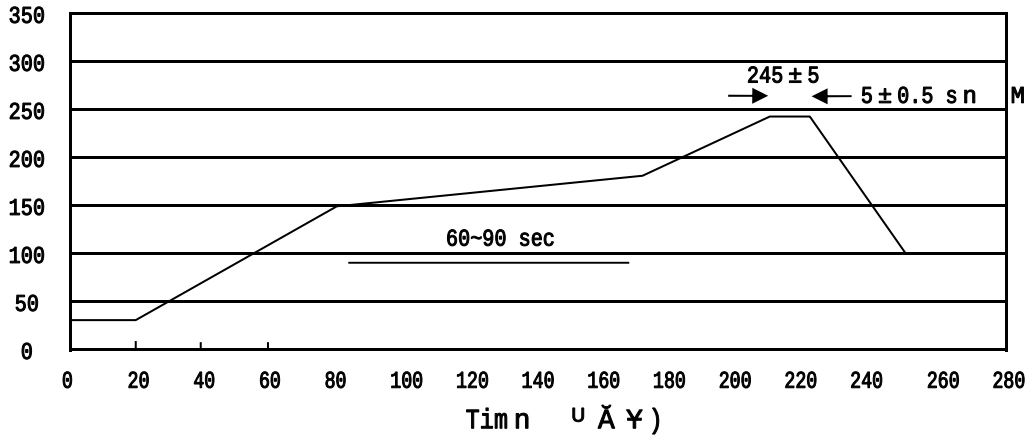

BR

030N04

Note:

| | |
|---|---|
| BR: | Company Code |
| 030N04: | Product Type Code |
| ****: | Lot No. Code, code change with Lot No |

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




Note:

| | | |
|---|---|---|
| 1 | 150 180 60 90sec; | 1.Preheating:150~180 , Time:60~90sec. |
| 2 | 245 5 5 0.5sec; | 2.Peak Temp.:245 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 mm³) |
|---|---|---|---|---|---|---|---|---|---|
| | Units/Reel / | Reels/Inner Box / | Units/Inner Box / | Inner Boxes/Outer Box / | Units/Outer Box / | Reel | Inner Box | Outer Box | [redacted]360k5 |