

## Features

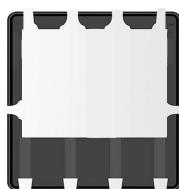
- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS

## Product Summary

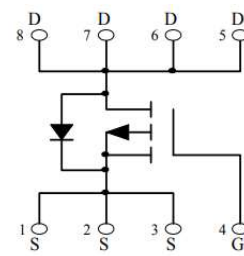
| $V_{DS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|----------|------------------|-----------|
| -30V     | 22mΩ@-10V        | -30A      |
|          | 30mΩ@-4.5V       |           |

## Application

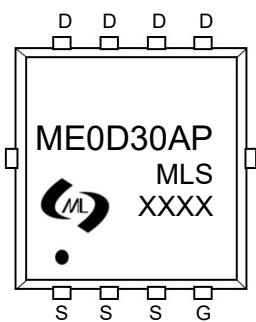
- Battery and loading switching
- Excellent package for good heat dissipation



PDFN3X3-8L view



Schematic diagram



Marking and pin assignment

ME0D30AP : Device code  
 XXXX : Code



Pb-Free



Halogen-Free

## Absolute Maximum Ratings (TA=25°C unless otherwise noted)

| Symbol | Parameter | Rating | Unit |
|--------|-----------|--------|------|
|--------|-----------|--------|------|

### Common Ratings (TC=25°C Unless Otherwise Noted)

|                |                                  |                               |    |
|----------------|----------------------------------|-------------------------------|----|
| $V_{DS}$       | Drain-Source Breakdown Voltage   | -30                           | V  |
| $V_{GS}$       | Gate-Source Voltage              | ±20                           | V  |
| $E_{AS}$       | Single pulse avalanche energy    | 77                            | mJ |
| $T_J, T_{STG}$ | Storage Temperature Range        | -55 to 175                    | °C |
| $I_S$          | Diode Continuous Forward Current | $T_C=25^\circ\text{C}$<br>-30 | A  |

### Mounted on Large Heat Sink

|                 |                                     |                                |      |
|-----------------|-------------------------------------|--------------------------------|------|
| $I_{DM}$        | Pulse Drain Current Tested          | $T_C=25^\circ\text{C}$<br>-150 | A    |
| $I_D$           | Continuous Drain Current            | $T_C=25^\circ\text{C}$<br>-30  | A    |
| $P_D$           | Maximum Power Dissipation           | $T_C=25^\circ\text{C}$<br>25   | W    |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient | 55                             | °C/W |

## Ordering Information (Example)

| Type     | Package    | Marking  | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|----------|------------|----------|----------------------|-------------------------|----------------------------|---------------|
| ME0D30AP | PDFN3X3-8L | ME0D30AP | 5,000                | 10,000                  | 70,000                     | 13"reel       |

**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

| Symbol                                                                                    | Parameter                        | Condition                                                 | Min | Typ  | Max  | Unit |
|-------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------|-----|------|------|------|
| <b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b> |                                  |                                                           |     |      |      |      |
| BV <sub>(BR)DSS</sub>                                                                     | Drain-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA               | -30 | --   | --   | V    |
| I <sub>DSS</sub>                                                                          | Zero Gate Voltage Drain Current  | V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V                | --  | --   | -1   | μA   |
| I <sub>GSS</sub>                                                                          | Gate-Body Leakage Current        | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                | --  | --   | ±100 | nA   |
| V <sub>GS(th)</sub>                                                                       | Gate Threshold Voltage           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA | -1  | -1.5 | -2.5 | V    |
| R <sub>DS(on)</sub>                                                                       | Drain-Source On-State Resistance | V <sub>GS</sub> =-10V, I <sub>D</sub> =-10A               | --  | 15   | 22   | mΩ   |
|                                                                                           |                                  | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-8A               | --  | 21   | 30   | mΩ   |

**Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)**

|                  |                              |                                                    |    |      |    |    |
|------------------|------------------------------|----------------------------------------------------|----|------|----|----|
| C <sub>ISS</sub> | Input Capacitance            | V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz | -- | 1500 | -- | pF |
| C <sub>OSS</sub> | Output Capacitance           |                                                    | -- | 327  | -- | pF |
| C <sub>RSS</sub> | Reverse Transfer Capacitance |                                                    | -- | 276  | -- | pF |

**Switching Characteristics**

|                     |                     |                                                                                             |    |     |    |    |
|---------------------|---------------------|---------------------------------------------------------------------------------------------|----|-----|----|----|
| Q <sub>g</sub>      | Total Gate Charge   | V <sub>DD</sub> =-15V, I <sub>D</sub> =-10A,<br>V <sub>GS</sub> =-10V                       | -- | 30  | -- | nC |
| Q <sub>gs</sub>     | Gate Source Charge  |                                                                                             | -- | 5.3 | -- | nC |
| Q <sub>gd</sub>     | Gate Drain Charge   |                                                                                             | -- | 7.6 | -- | nC |
| t <sub>d(on)</sub>  | Turn-on Delay Time  | V <sub>DS</sub> =-15V, I <sub>D</sub> =-10A,<br>V <sub>GS</sub> =-10V, R <sub>G</sub> =2.5Ω | -- | 14  | -- | nS |
| t <sub>r</sub>      | Turn-on Rise Time   |                                                                                             | -- | 20  | -- | nS |
| t <sub>d(off)</sub> | Turn-Off Delay Time |                                                                                             | -- | 95  | -- | nS |
| t <sub>f</sub>      | Turn-Off Fall Time  |                                                                                             | -- | 65  | -- | nS |

**Source- Drain Diode Characteristics**

|                 |                    |                                            |    |    |      |   |
|-----------------|--------------------|--------------------------------------------|----|----|------|---|
| V <sub>SD</sub> | Forward on voltage | T <sub>J</sub> =25°C, I <sub>S</sub> =-10A | -- | -- | -1.2 | V |
|-----------------|--------------------|--------------------------------------------|----|----|------|---|

## Typical Operating Characteristics

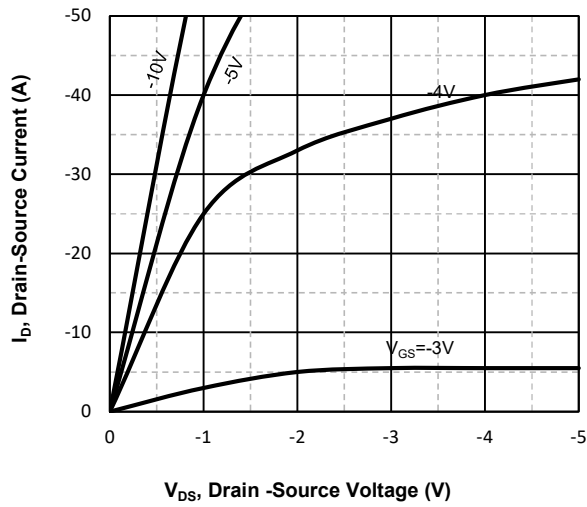


Fig1. Typical Output Characteristics

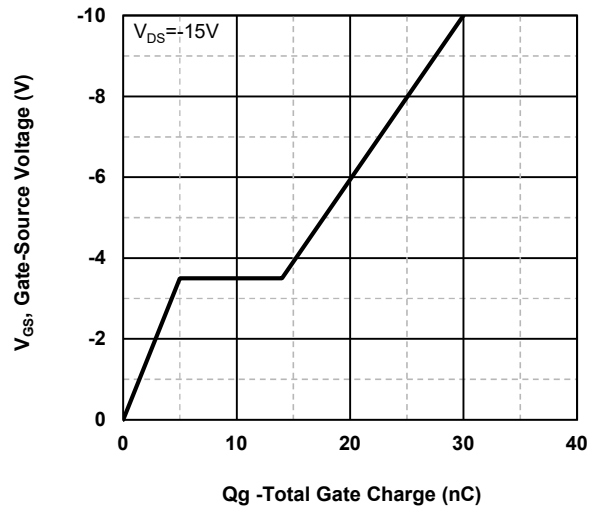


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

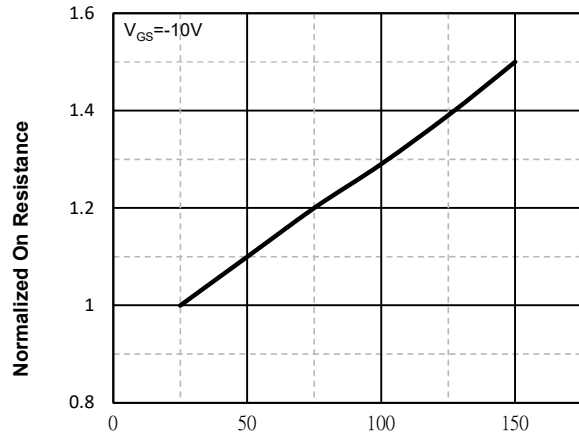


Fig3. Normalized On-Resistance Vs. Temperature

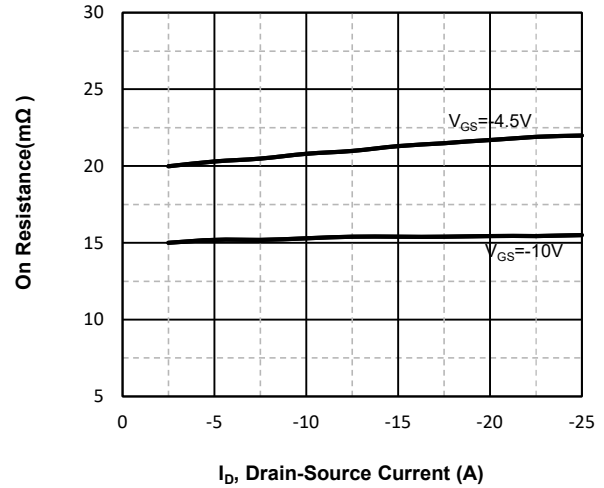


Fig4. On-Resistance Vs. Drain-Source Current

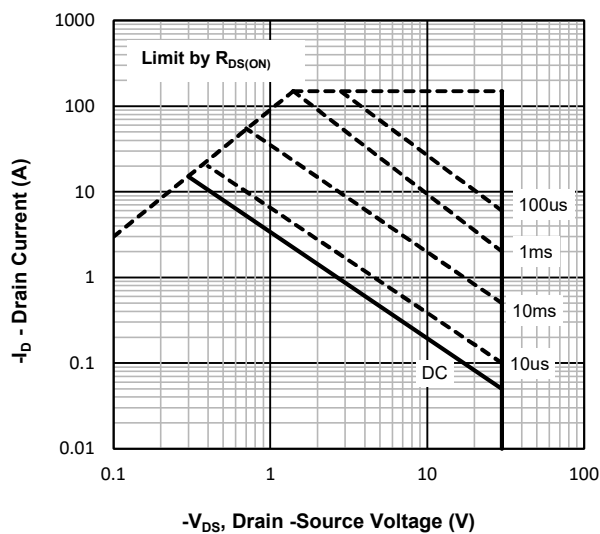


Fig5. Maximum Safe Operating Area

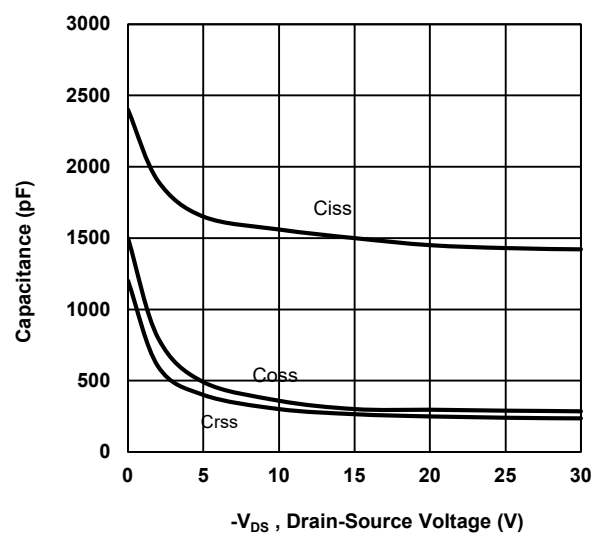
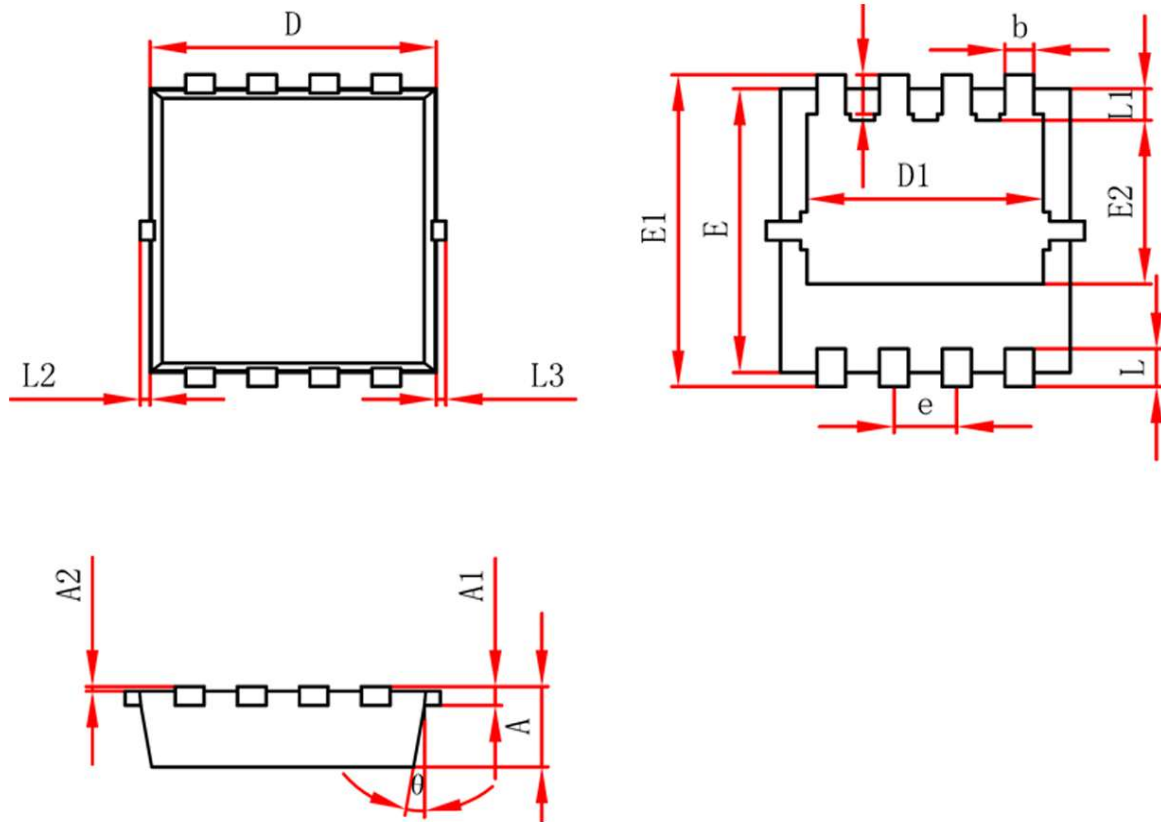


Fig6 Typical Capacitance Vs. Drain-Source Voltage

PDFN3X3-8L Package information



| Symbol | Dimensions in Millimeters(mm) |       | Dimensions in Inches |       |
|--------|-------------------------------|-------|----------------------|-------|
|        | Min                           | Max   | Min                  | Max   |
| A      | 0.750                         | 0.850 | 0.030                | 0.034 |
| A1     | 0.152 REF.                    |       | 0.006 REF.           |       |
| A2     | 0~0.05                        |       | 0~0.002              |       |
| D      | 2.950                         | 3.150 | 0.117                | 0.125 |
| D1     | 2.400                         | 2.500 | 0.095                | 0.099 |
| E      | 2.950                         | 3.050 | 0.117                | 0.121 |
| E1     | 3.250                         | 3.350 | 0.129                | 0.132 |
| E2     | 1.685                         | 1.785 | 0.067                | 0.071 |
| b      | 0.250                         | 0.350 | 0.010                | 0.014 |
| e      | 0.600                         | 0.700 | 0.024                | 0.028 |
| L      | 0.350                         | 0.450 | 0.014                | 0.018 |
| L1     | 0.325                         | 0.425 | 0.013                | 0.017 |
| L2     | 0~0.100                       |       | 0~0.004              |       |
| L3     | 0~0.100                       |       | 0~0.004              |       |
| H      | 0.365                         | 0.465 | 0.014                | 0.018 |
| θ      | 10°                           | 12°   | 10°                  | 12°   |