**MLSM**
**MICROELECTRONICS**

# ME0E30AP

## -40V/-30A P-Channel MOSFET

### Features

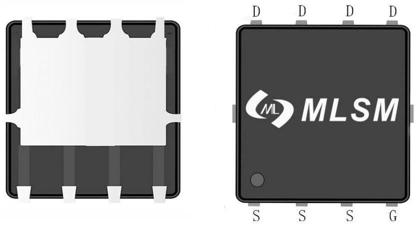
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS

### Product Summary

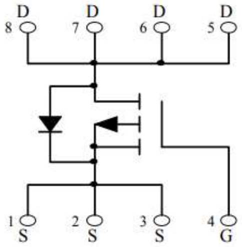
| $V_{DS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|---|---|---|
| -40V | 12mΩ@-10V | -30A |
| | 17mΩ@-4.5V | |

### Application

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



PDFN3X3-8L view



Schematic diagram

ME0E30AP : Device code
XXXX : Code

Marking and pin assignment

Pb-Free RoHS Halogen-Free

| Absolute Maximum Ratings (TA=25℃unless otherwise noted) | | | | |
|---|---|---|---|---|
| **Symbol** | **Parameter** | | **Rating** | **Unit** |
| **Common Ratings (TC=25°C Unless Otherwise Noted)** | | | | |
| $V_{DS}$ | Drain-Source Breakdown Voltage | | -40 | V |
| $V_{GS}$ | Gate-Source Voltage | | ±20 | V |
| $E_{AS}$ | Single pulse avalanche energy | | 500 | mJ |
| $T_J$,$T_{STG}$ | Storage Temperature Range | | -55 to 175 | °C |
| $I_S$ | Diode Continuous Forward Current | Tc=25°C | -30 | A |
| **Mounted on Large Heat Sink** | | | | |
| $I_{DM}$ | Pulse Drain Current Tested | Tc=25°C | -144 | A |
| $I_D$ | Continuous Drain Current | Tc=25°C | -30 | A |
| $P_D$ | Maximum Power Dissipation | Tc=25°C | 30 | W |
| $R_{θJA}$ | 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 |
|---|---|---|---|---|---|---|
| ME0E30AP | PDFN3X3-8L | ME0E30AP | 5,000 | 10,000 | 70,000 | 13"reel |

Rev 1.1 Dec 2024

| Electrical Characteristics (TJ=25℃ unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **Symbol** | **Parameter** | **Condition** | **Min** | **Typ** | **Max** | **Unit** |
| **Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)** | | | | | | |
| $BV_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V，$I_D$=-250μA | -40 | -- | -- | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=-40V，$V_{GS}$=0V | -- | -- | -1.0 | μA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$=±20V，$V_{DS}$=0V | -- | -- | ±100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$，$I_D$=-250μA | -1.0 | -1.5 | -2.5 | V |
| $R_{DS(on)}$ | Drain-Source On-State Resistance | $V_{GS}$=-10V，$I_D$=-20A | -- | 9 | 12 | mΩ |
| | | $V_{GS}$=-4.5V，$I_D$=-10A | -- | 12.5 | 17 | mΩ |
| **Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)** | | | | | | |
| $C_{ISS}$ | Input Capacitance | $V_{DS}$=-20V，$V_{GS}$=0V，f=1MHz | -- | 2900 | -- | pF |
| $C_{OSS}$ | Output Capacitance | | -- | 350 | -- | pF |
| $C_{RSS}$ | Reverse Transfer Capacitance | | -- | 300 | -- | pF |
| **Switching Characteristics** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-20V，$I_D$=-12A，$V_{GS}$=-10V | -- | 65 | -- | nC |
| $Q_{gs}$ | Gate Source Charge | | -- | 14 | -- | nC |
| $Q_{gd}$ | Gate Drain Charge | | -- | 15 | -- | nC |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DS}$=-20V，$I_D$=-12A，$V_{GS}$=-10V，$R_G$=3Ω | -- | 100 | -- | nS |
| $t_r$ | Turn-on Rise Time | | -- | 17 | -- | nS |
| $t_{d(off)}$ | Turn-Off Delay Time | | -- | 35 | -- | nS |
| $t_f$ | Turn-Off Fall Time | | -- | 23 | -- | nS |
| **Source- Drain Diode Characteristics** | | | | | | |
| $V_{SD}$ | Forward on voltage | Tj=25℃，Is=-20A | -- | -- | -1.2 | V |

## Typical Operating Characteristics

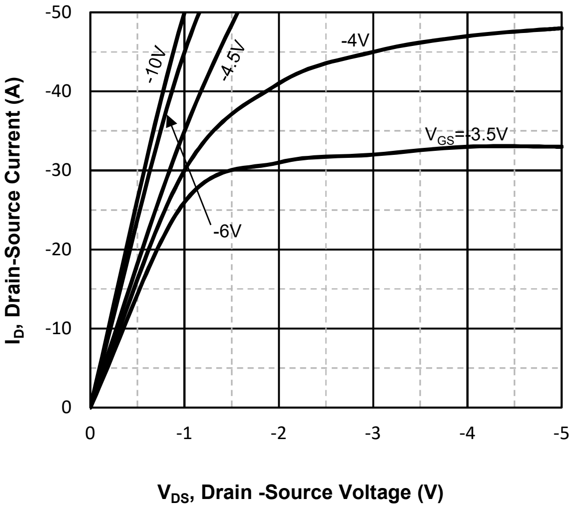


Fig1. Typical Output Characteristics

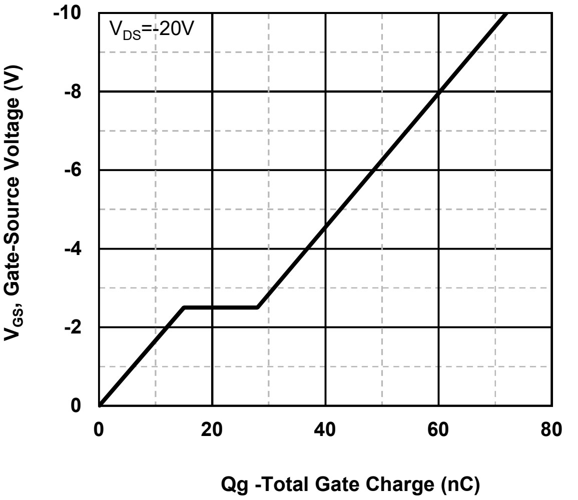


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

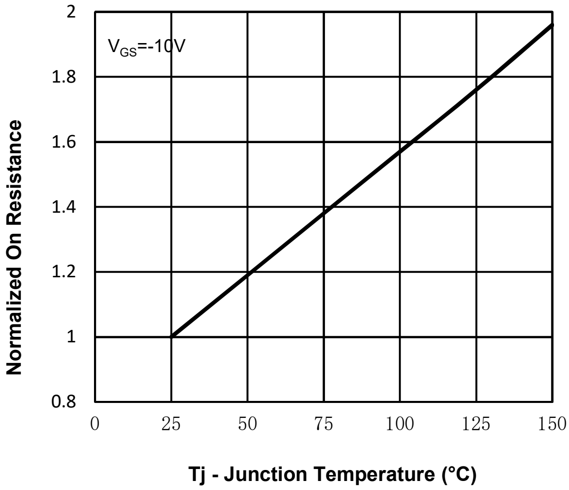


Fig3. Normalized On-Resistance Vs. Temperature

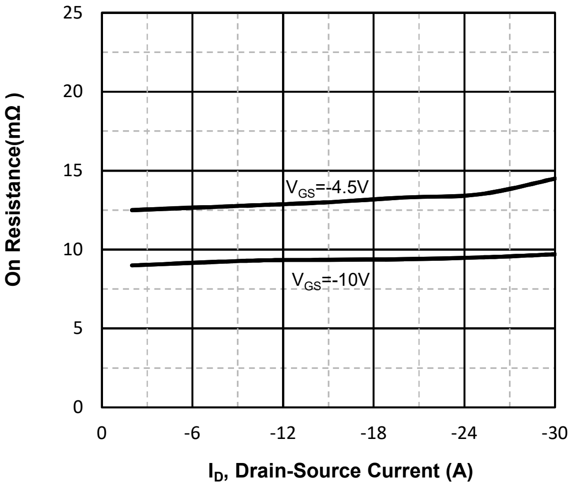


Fig4. On-Resistance Vs. Drain-Source Current

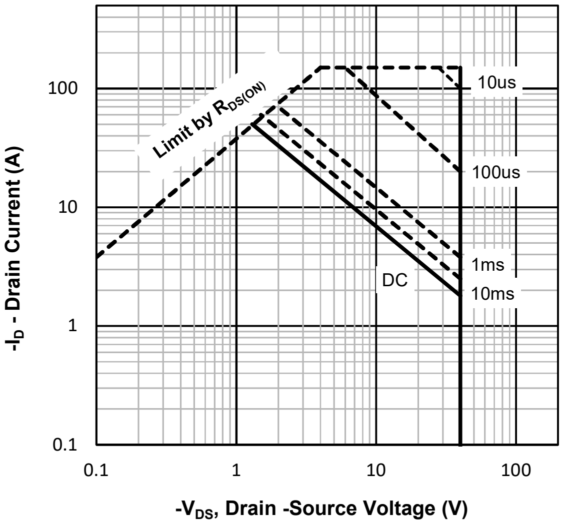


Fig5. Maximum Safe Operating Area

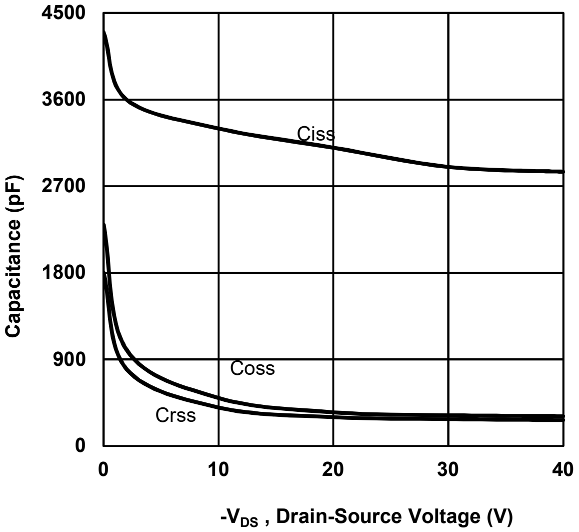
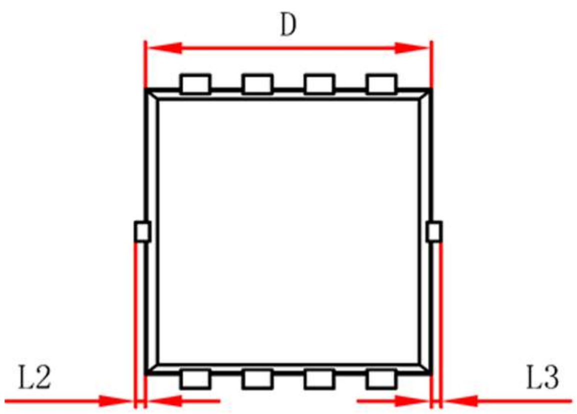
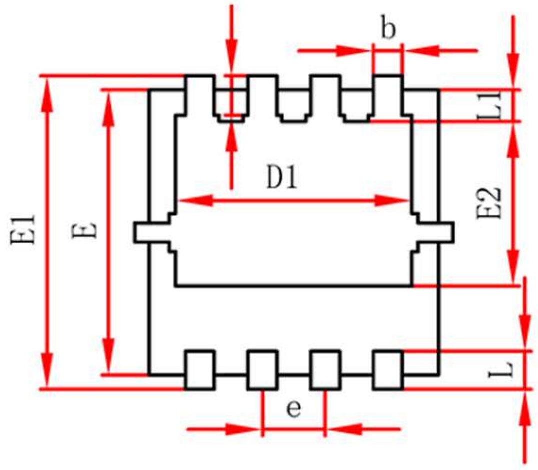
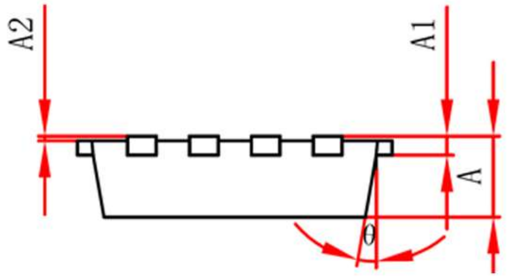


Fig6 Typical Capacitance Vs.Drain-Source Voltage

**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° |