# MZ0G10AP

## -60V/-10A P-Channel MOSFET

### Features

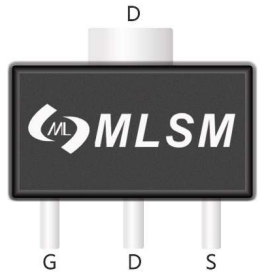
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

### Product Summary

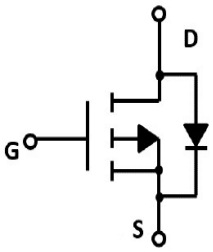
| $V_{DS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|---|---|---|
| -60V | 35mΩ@-10V | -10A |
| | 50mΩ@-4.5V | |

### Application

- PWM applications
- Power management
- Load switch




SOT-89-3L top view




Schematic diagram


0G10AP : 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 | | -60 | V |
| $V_{GS}$ | Gate-Source Voltage | | ±20 | V |
| $T_J$ | Maximum Junction Temperature | | 150 | °C |
| $T_{STG}$ | Storage Temperature Range | | -55 to 150 | °C |
| $I_S$ | Diode Continuous Forward Current | Tc=25°C | -10 | A |
| **Mounted on Large Heat Sink** | | | | |
| $I_{DM}$ | Pulse Drain Current Tested | Tc=25°C | -40 | A |
| $I_D$ | Continuous Drain Current | Tc=25°C | -10 | A |
| $P_D$ | Maximum Power Dissipation | Tc=25°C | 1.7 | W |
| $R_{\theta JA}$ | Thermal Resistance Junction-to-Ambient | | 315 | °C/W |

## Ordering Information (Example)

| Type | Package | Marking | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|---|---|---|---|---|---|---|
| MZ0G10AP | SOT-89-3L | 0G10AP | 1,000 | 10,000 | 40,000 | 7"reel |

| 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 | -60 | -- | -- | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=-60V, $V_{GS}$=0V | -- | -- | -1 | 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 | -1.8 | -2.5 | V |
| $R_{DS(on)}$ | Drain-Source On-State Resistance | $V_{GS}$=-10V, $I_D$=-10A | -- | 25 | 35 | mΩ |
| | | $V_{GS}$=-4.5V, $I_D$=-5A | -- | 38 | 50 | mΩ |
| **Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)** | | | | | | |
| $C_{ISS}$ | Input Capacitance | $V_{DS}$=-30V, $V_{GS}$=0V, f=1MHz | -- | 3880 | -- | pF |
| $C_{OSS}$ | Output Capacitance | | -- | 169 | -- | pF |
| $C_{RSS}$ | Reverse Transfer Capacitance | | -- | 138 | -- | pF |
| **Switching Characteristics** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-30V, $I_D$=-10A, $V_{GS}$=-10V | -- | 111 | -- | nC |
| $Q_{gs}$ | Gate Source Charge | | -- | 25 | -- | nC |
| $Q_{gd}$ | Gate Drain Charge | | -- | 15.5 | -- | nC |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD}$=-10V, $I_D$=-10A, $V_{GS}$=-10V, $R_G$=6Ω | -- | 20 | -- | nS |
| $t_r$ | Turn-on Rise Time | | -- | 25 | -- | nS |
| $t_{d(off)}$ | Turn-Off Delay Time | | -- | 71 | -- | nS |
| $t_f$ | Turn-Off Fall Time | | -- | 30 | -- | nS |
| **Source- Drain Diode Characteristics** | | | | | | |
| $V_{SD}$ | Forward on voltage | Tj=25℃, Is=-10A | -- | -- | -1.2 | V |

## Typical Operating Characteristics

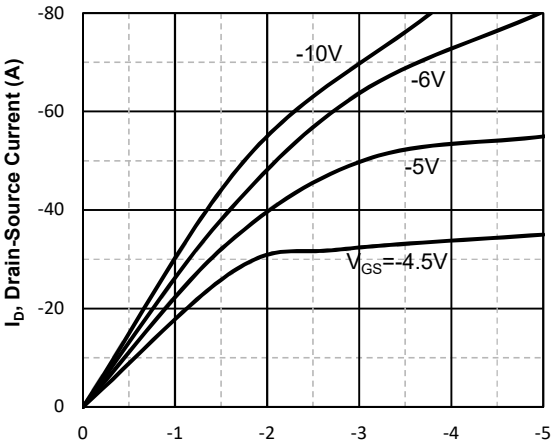



Fig1. Typical Output Characteristics

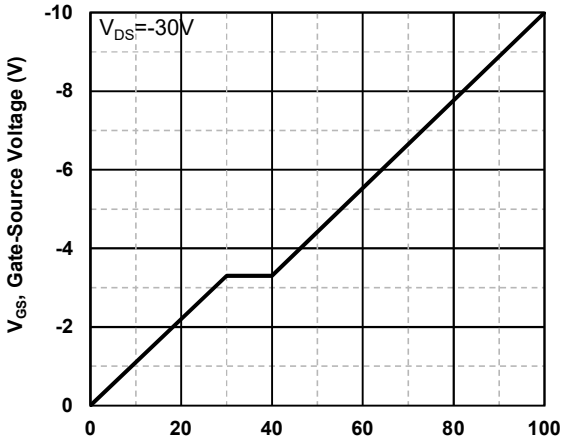



Fig2. Typical Gate Charge Vs.Gate-Source Voltage

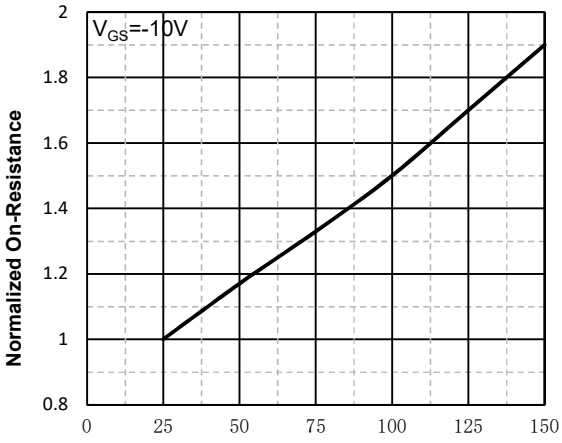



Fig3. Normalized On-Resistance Vs. Temperature

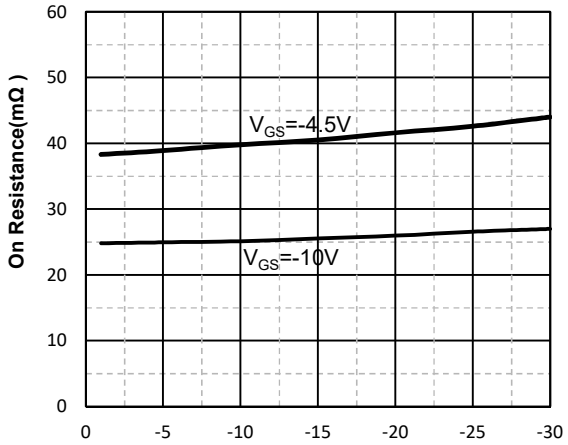



Fig4. Drain-Source on Resistance Vs.Drain-Source Current

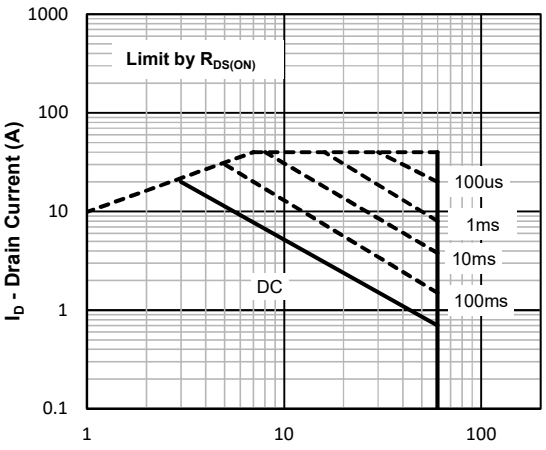



Fig5. Maximum Safe Operating Area

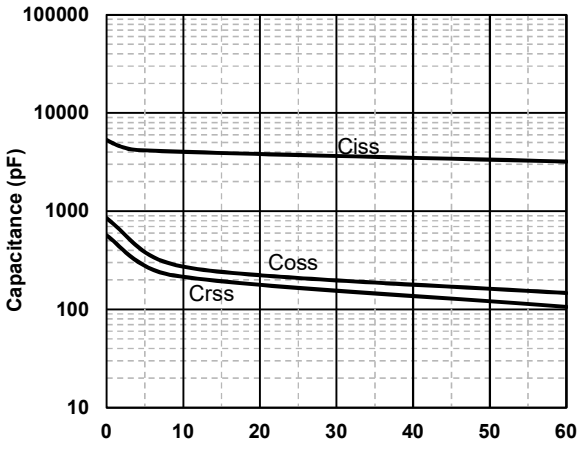
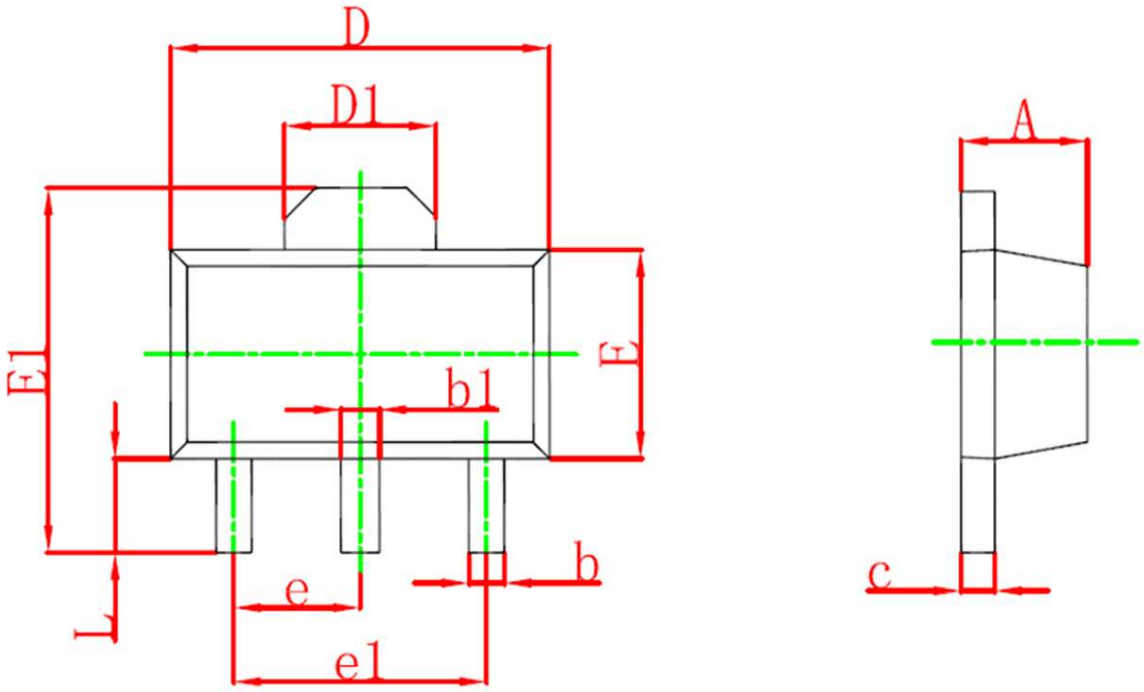



Fig6 Typical Capacitance Vs.Drain-Source Voltage

## SOT-89-3L Package information




| Symbol | Dimensions in Millimeters(mm) | | Dimensions in Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF | | 0.061 REF | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP | | 0.060 TYP | |
| e1 | 3.000 TYP | | 0.118 TYP | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |