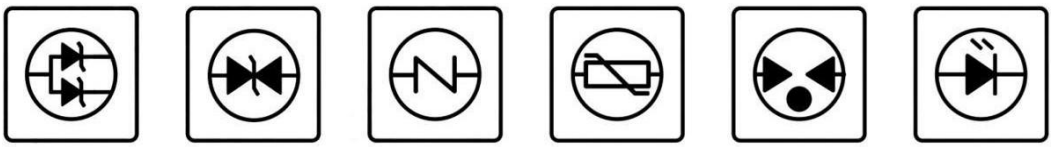
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# MSZ0G05AP

**Product specification**

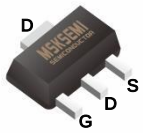
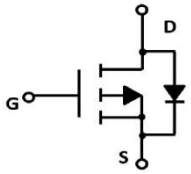
# MSZ0G05AP

## -60V/-5A P-Channel MOSFET

## Features

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

## Reference News

| SOT-89-3L | Schematic diagram | Marking |
|---|---|---|
|  |  | 0G05AP **** |

## Application

- PWM applications
- Power management
- Load switch

## Product Summary

| $V_{DS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|---|---|---|
| -60V | 100mΩ@-10V | -5A |
| | 125mΩ@-4.5V | |

## 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 | -5 | A |
| **Mounted on Large Heat Sink** | | | | |
| $I_{DM}$ | Pulse Drain Current Tested | Tc=25°C | -16 | A |
| $I_D$ | Continuous Drain Current | Tc=25°C | -5 | A |
| $P_D$ | Maximum Power Dissipation | Tc=25°C | 1.2 | W |
| $R_{\theta JA}$ | Thermal Resistance Junction-to-Ambient | | 250 | °C/W |

## Ordering Information (Example)

| Type | Package | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|---|---|---|---|---|---|
| MSZ0G05AP | SOT-89-3L | 1,000 | 4,000 | 24,000 | 7"reel |

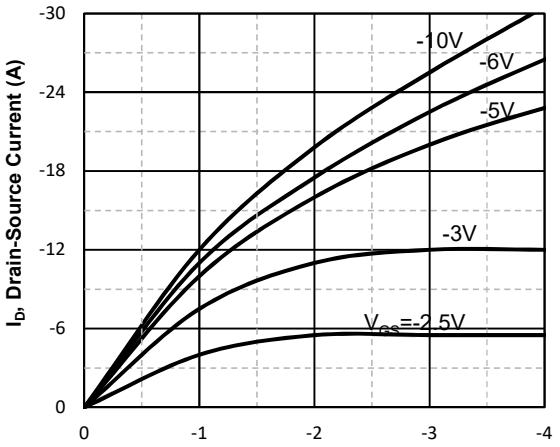
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## Electrical Characteristics (TJ=25℃ unless otherwise noted)

| 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 , $I_D$=-4A | -- | 83 | 100 | mΩ |
| | | $V_{GS}$=-4.5V , $I_D$=-3A | -- | 100 | 125 | mΩ |
| **Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)** | | | | | | |
| $C_{ISS}$ | Input Capacitance | $V_{DS}$=-30, $V_{GS}$=0V, f=1MHz | -- | 1630 | -- | pF |
| $C_{OSS}$ | Output Capacitance | | -- | 90 | -- | pF |
| $C_{RSS}$ | Reverse Transfer Capacitance | | -- | 78 | -- | pF |
| **Switching Characteristics** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-30, $I_D$=-5A, $V_{GS}$=-10V | -- | 37.5 | -- | nC |
| $Q_{gs}$ | Gate Source Charge | | -- | 4 | -- | nC |
| $Q_{gd}$ | Gate Drain Charge | | -- | 7.2 | -- | nC |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD}$=-30, $I_D$=-5A, $V_{GS}$=-1, $R_G$=3.3Ω | -- | 11 | -- | nS |
| $t_r$ | Turn-on Rise Time | | -- | 14 | -- | nS |
| $t_{d(off)}$ | Turn-Off Delay Time | | -- | 33 | -- | nS |
| $t_f$ | Turn-Off Fall Time | | -- | 13 | -- | nS |
| **Source- Drain Diode Characteristics** | | | | | | |
| $V_{SD}$ | Forward on voltage | Tj=25℃, Is=-5A | -- | -- | -1.2 | V |

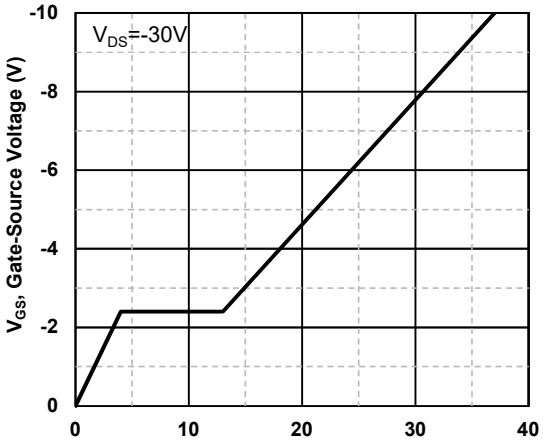
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## Typical Operating Characteristics



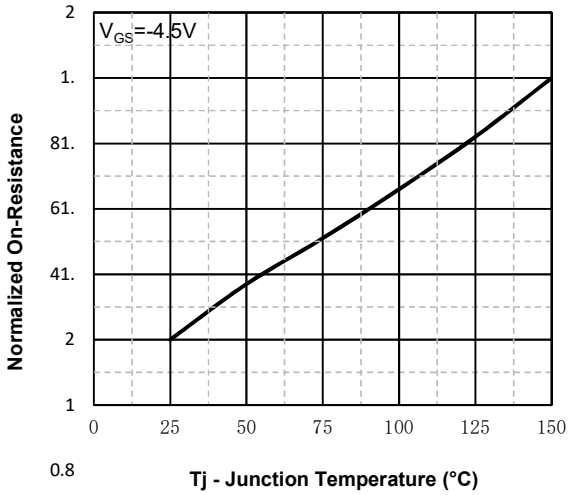

$V_{DS}$, Drain -Source Voltage (V)

**Fig1. Typical Output Characteristics**



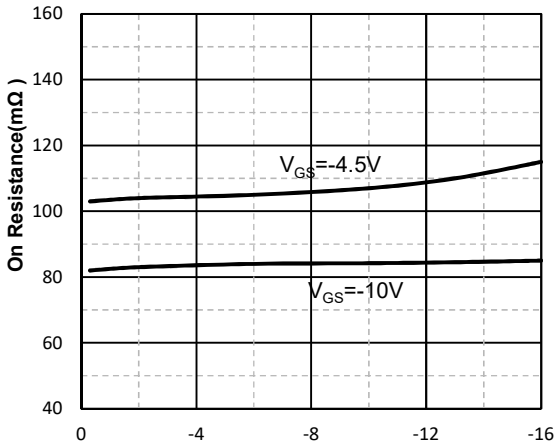

Qg -Total Gate Charge (nC)

**Fig2. Typical Gate Charge Vs.Gate-Source Voltage**



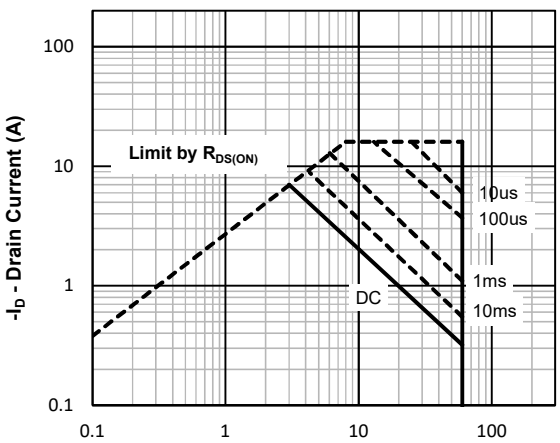

Tj - Junction Temperature (°C)

**Fig3. Normalized On-Resistance Vs. Temperature**



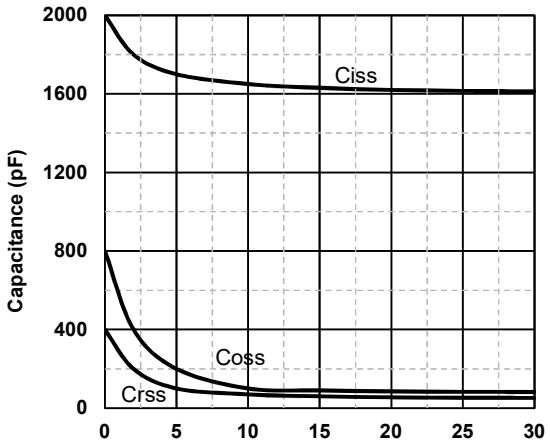

$I_D$, Drain-Source Current (A)

**Fig4. On Resistance Vs.Drain-Source Current**




$-V_{DS}$, Drain -Source Voltage (V)

**Fig5. Maximum Safe Operating Area**

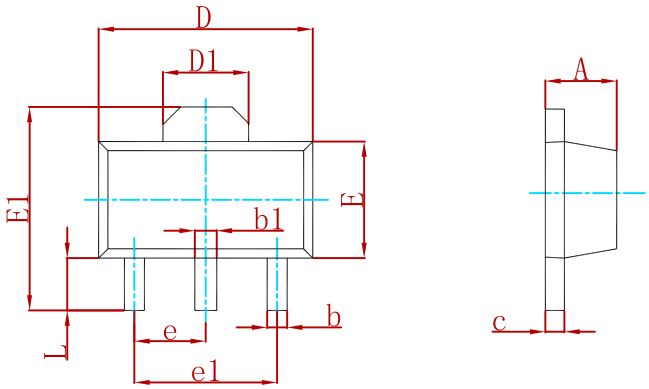



$-V_{DS}$ , Drain-Source Voltage (V)

**Fig6 Typical Capacitance Vs.Drain-Source Voltage**

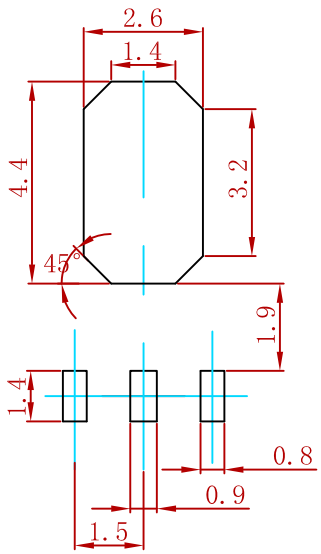
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## PACKAGE MECHANICAL DATA




| Symbol | Dimensions In Millimeters | | 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 |

## Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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