



5LP01SP

P-Channel Small Signal MOSFET -50V, -0.07A, 23Ω, Single SPA

ON Semiconductor®

<http://onsemi.com>

Features

- Low ON-resistance
- Ultrahigh-speed switching
- 2.5V drive
- Protection diode in

Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | value | Unit |
|-------------------------|------------------|------------------------|-------------|------|
| Drain to Source Voltage | V _{DSS} | | -50 | V |
| Gate to Source Voltage | V _{GSS} | | ±10 | V |
| Drain Current (DC) | I _D | | -0.07 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | -0.28 | A |
| Power Dissipation | P _D | | 0.25 | W |
| Junction Temperature | T _j | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |

This product is designed to "ESD immunity < 200V**", so please take care when handling.

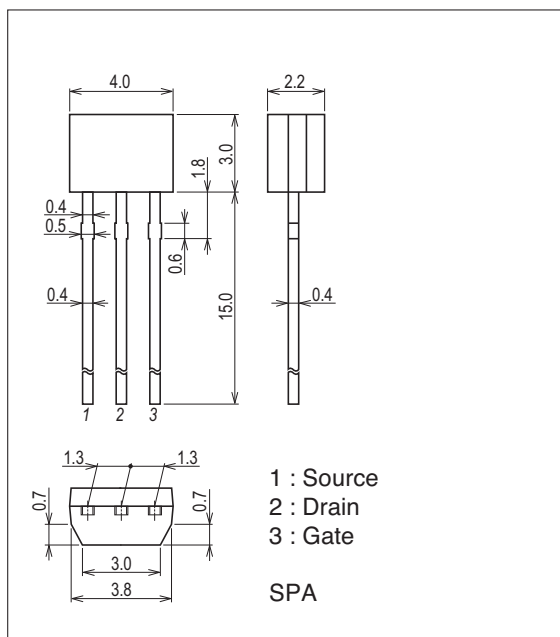
* Machine Model

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Package Dimensions

unit : mm (typ)

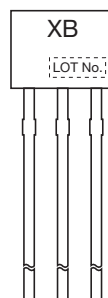
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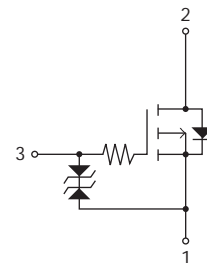
Ordering & Package Information

| Device | Package | Shipping | memo |
|------------|--------------|---------------|---------|
| 5LP01SP | SPA SC-72 | 500pcs./bag | Pb-Free |
| 5LP01SP-AC | SPA SC-72 | 2,500pcs./box | |

Marking



Electrical Connection



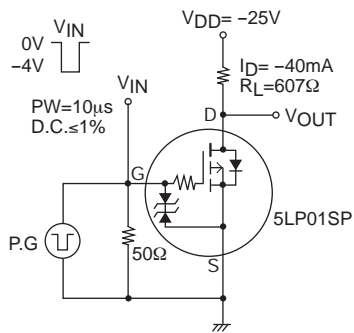
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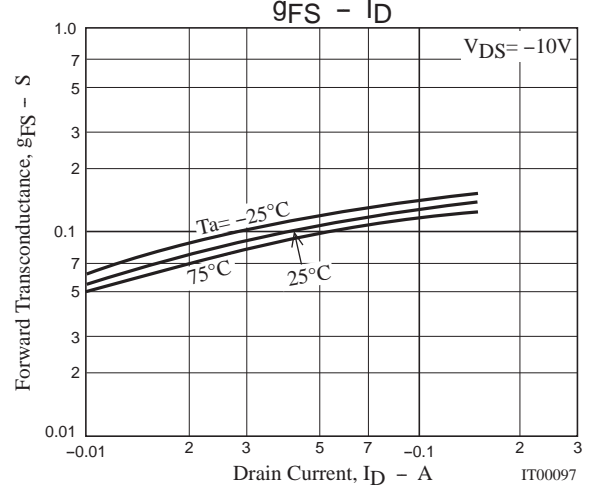
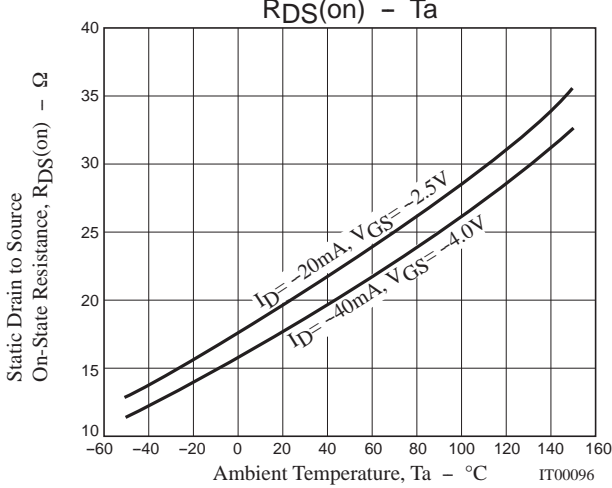
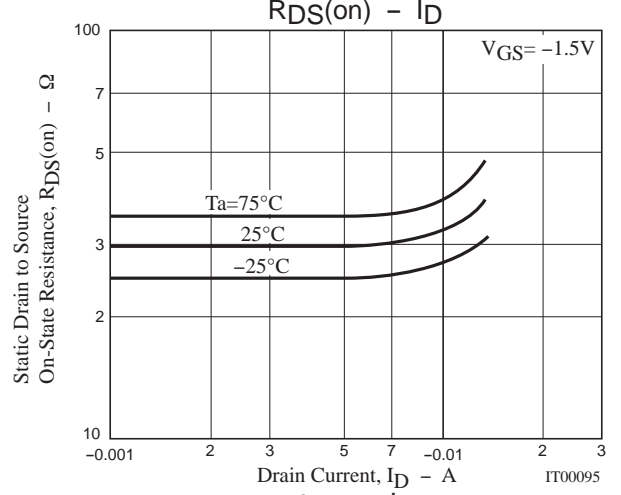
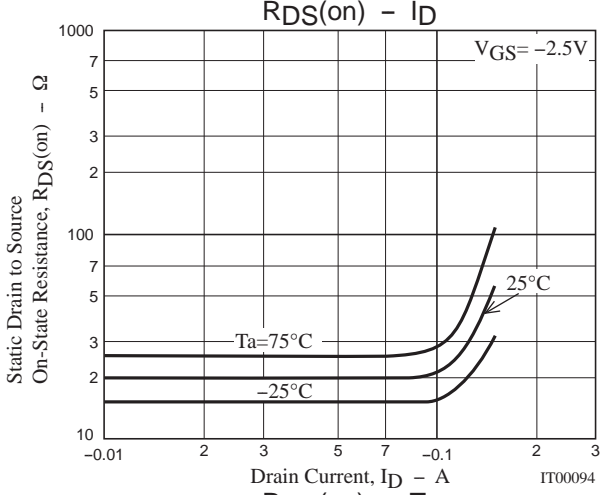
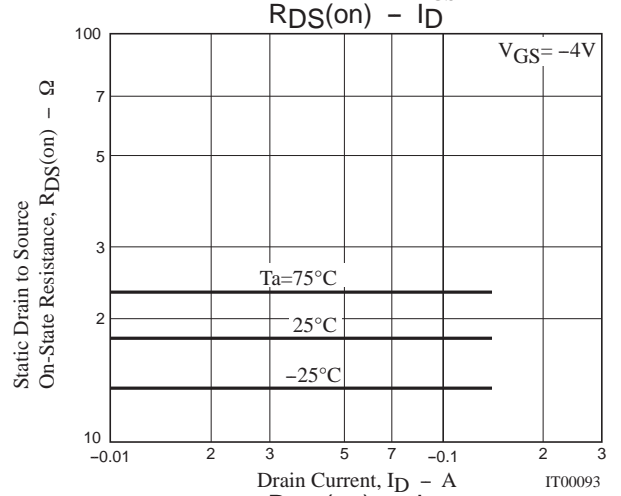
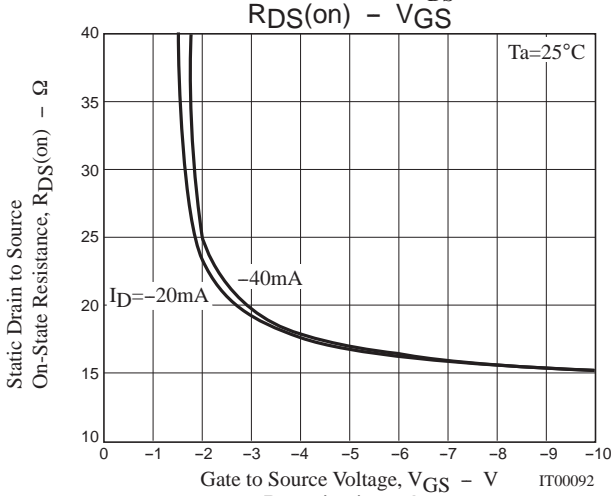
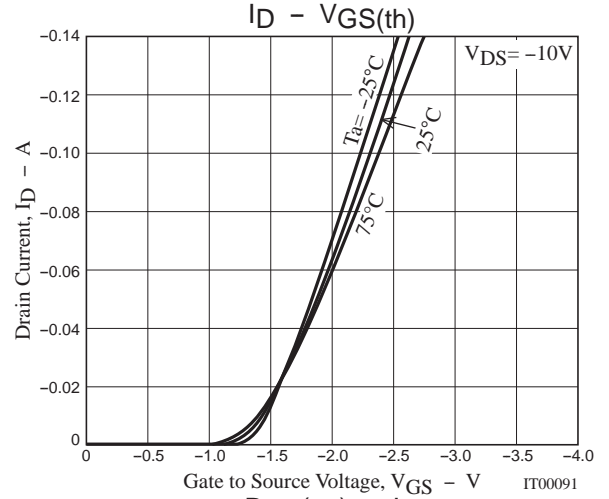
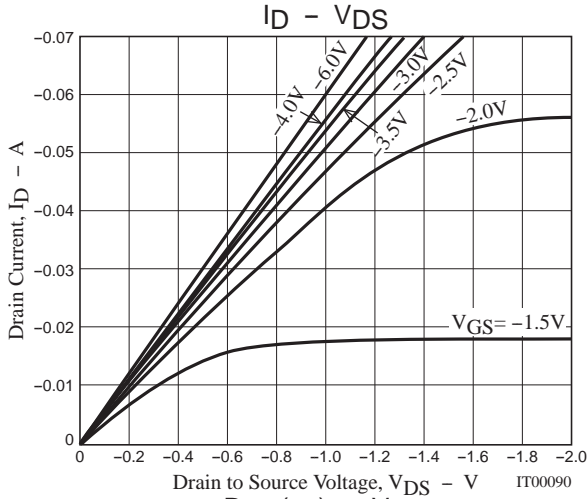
Electrical Characteristics at $T_a=25^\circ\text{C}$

| Parameter | Symbol | Conditions | Value | | | Unit |
|--|---------------|--|-------|------|----------|---------------|
| | | | min | typ | max | |
| Drain to Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=-1\text{mA}, V_{GS}=0\text{V}$ | -50 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-50\text{V}, V_{GS}=0\text{V}$ | | | 10 | μA |
| Gate to Source Leakage Current | I_{GSS} | $V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$ | | | ± 10 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=-10\text{V}, I_D=-100\mu\text{A}$ | -0.4 | | -1.4 | V |
| Forward Transconductance | g_{FS} | $V_{DS}=-10\text{V}, I_D=-40\text{mA}$ | 70 | 100 | | mS |
| Static Drain to Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-40\text{mA}, V_{GS}=-4\text{V}$ | | 18 | 23 | Ω |
| | $R_{DS(on)2}$ | $I_D=-20\text{mA}, V_{GS}=-2.5\text{V}$ | | 20 | 28 | Ω |
| | $R_{DS(on)3}$ | $I_D=-5\text{mA}, V_{GS}=-1.5\text{V}$ | | 30 | 60 | Ω |
| Input Capacitance | C_{iss} | | | 7.4 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=-10\text{V}, f=1\text{MHz}$ | | 4.2 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | 1.3 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 20 | | ns |
| Rise Time | t_r | | | 35 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | | 160 | | ns |
| Fall Time | t_f | | | 150 | | ns |
| Total Gate Charge | Q_g | | | | 1.40 | |
| Gate to Source Charge | Q_{gs} | $V_{DS}=-10\text{V}, V_{GS}=-10\text{V}, I_D=-70\text{mA}$ | | 0.16 | | nC |
| Gate to Drain "Miller" Charge | Q_{gd} | | | 0.23 | | nC |
| Forward Diode Voltage | V_{SD} | $I_S=-70\text{mA}, V_{GS}=0\text{V}$ | | 0.85 | 1.2 | V |

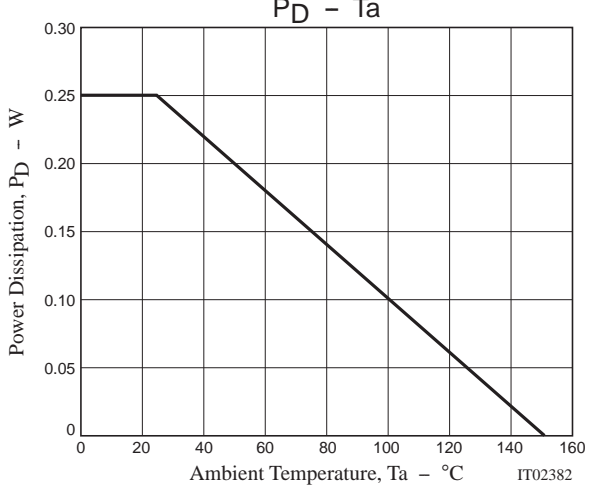
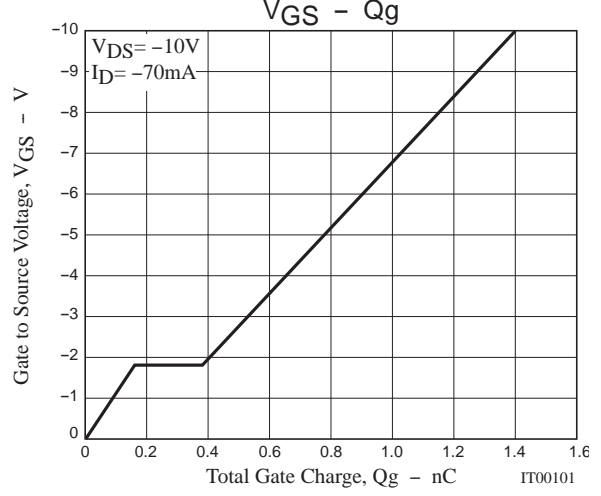
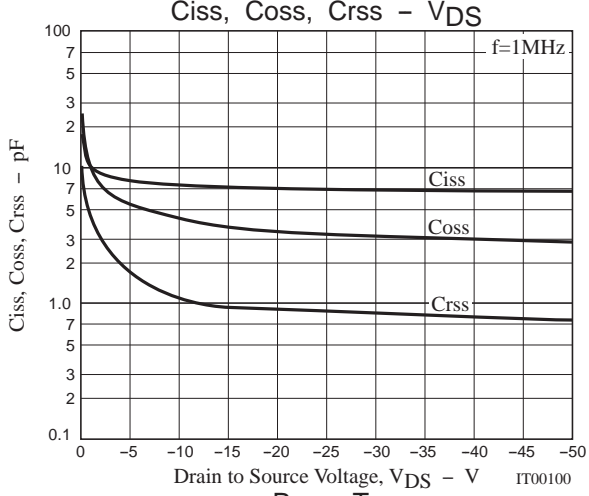
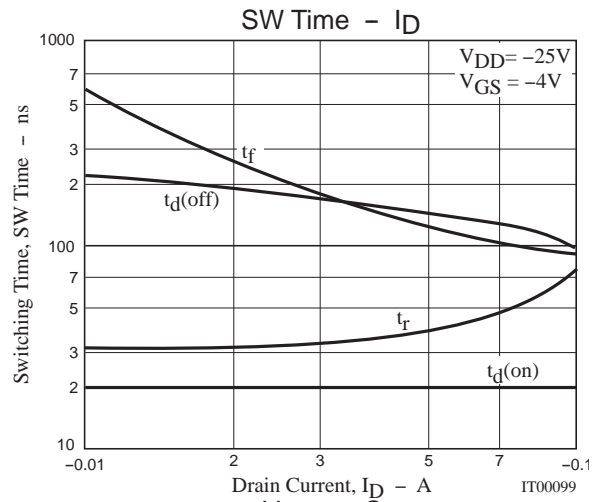
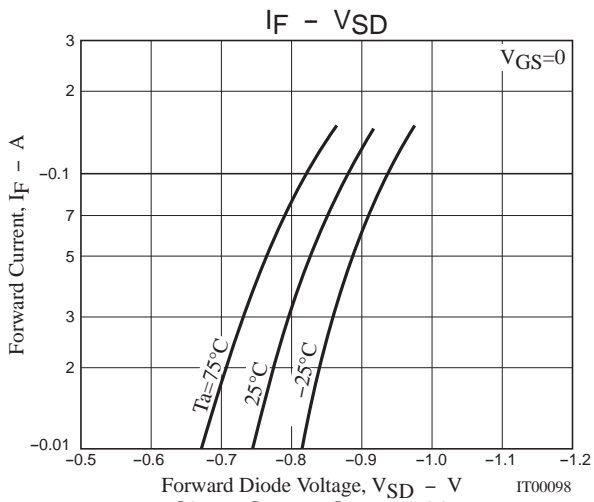
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit





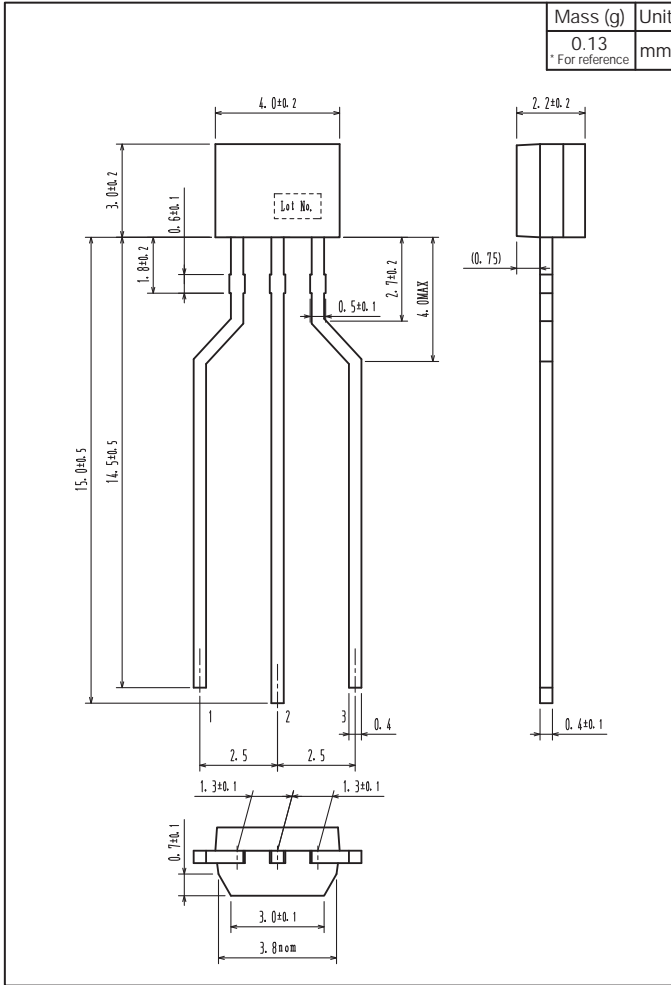
5LP01SP



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Outline Drawing

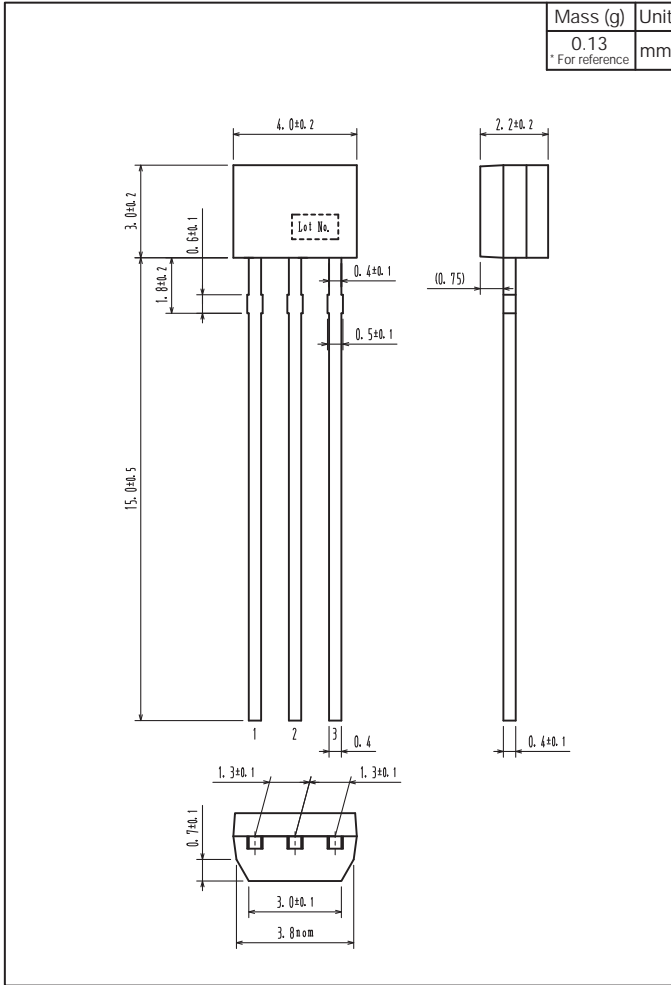
5LP01SP-AC



5LP01SP

Outline Drawing

5LP01SP



Note on usage : Since the 5LP01SP is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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