



5LN01M

N-Channel Small Signal MOSFET 50V, 0.1A, 7.8Ω, Single MCP

ON Semiconductor®

<http://onsemi.com>

Features

- Low ON-resistance
- Ultrahigh-speed switching
- 1.5V drive

Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|------------------|------------------------|-------------|------|
| Drain to Source Voltage | V _{DSS} | | 50 | V |
| Gate to Source Voltage | V _{GSS} | | ±10 | V |
| Drain Current (DC) | I _D | | 0.1 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 0.4 | A |
| Allowable Power Dissipation | P _D | | 0.15 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |

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

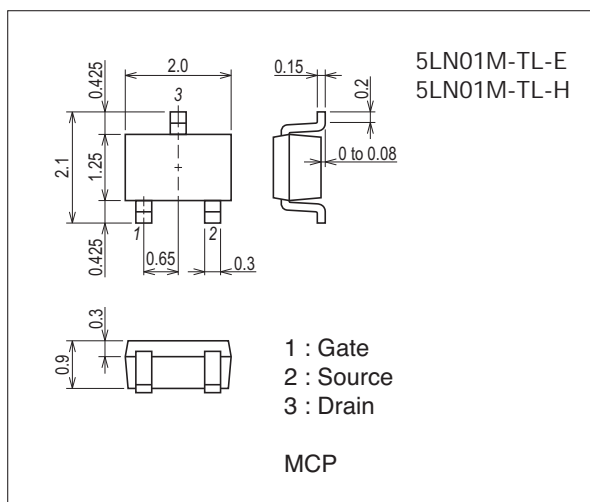
* Machine Model

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

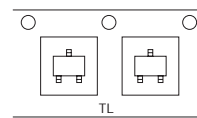
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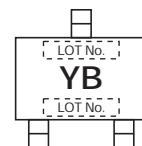
Ordering & Package Information

| Device | Package | Shipping | memo |
|-------------|-----------------------|----------------|--------------------------------|
| 5LN01M-TL-E | MCP SC-70, SOT-323 | 3,000pcs./reel | Pb-Free |
| 5LN01M-TL-H | MCP SC-70, SOT-323 | 3,000pcs./reel | Pb-Free and Halogen Free |

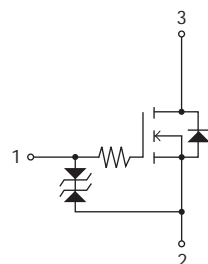
Packing Type: TL



Marking



Electrical Connection

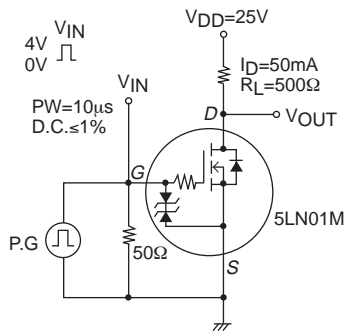


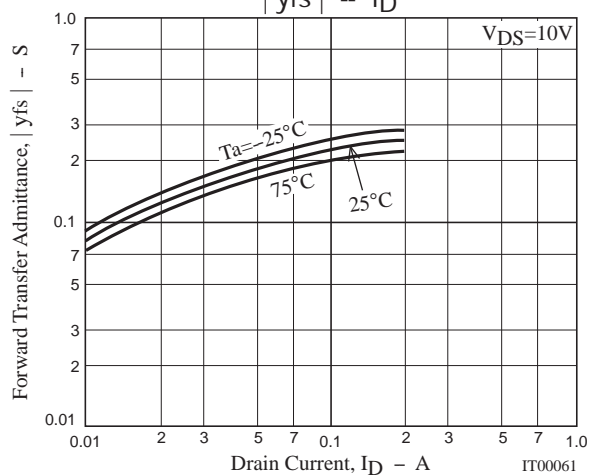
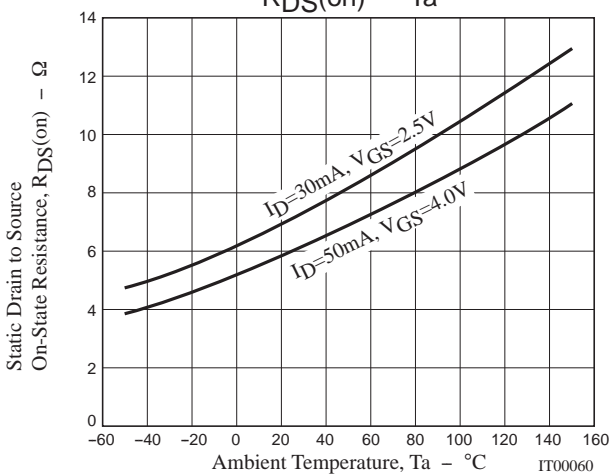
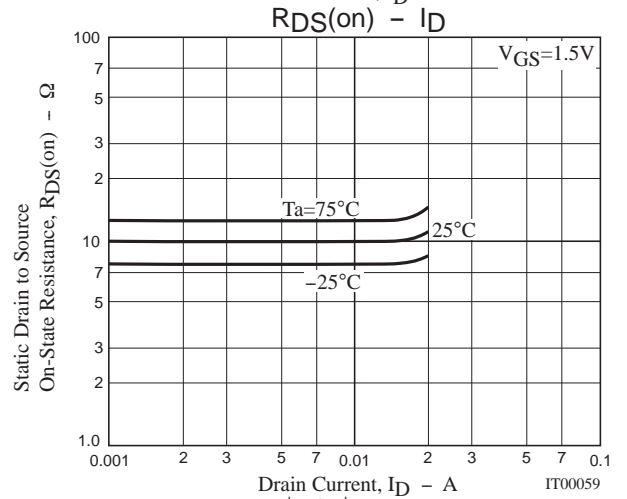
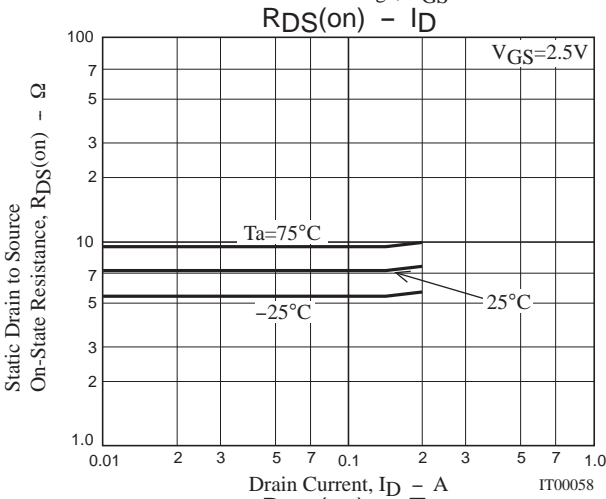
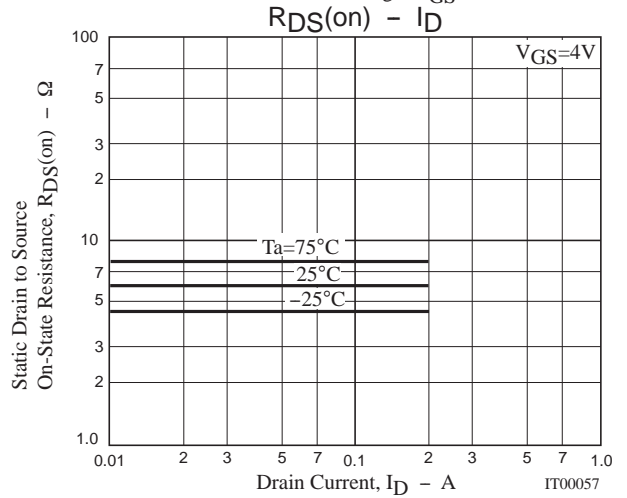
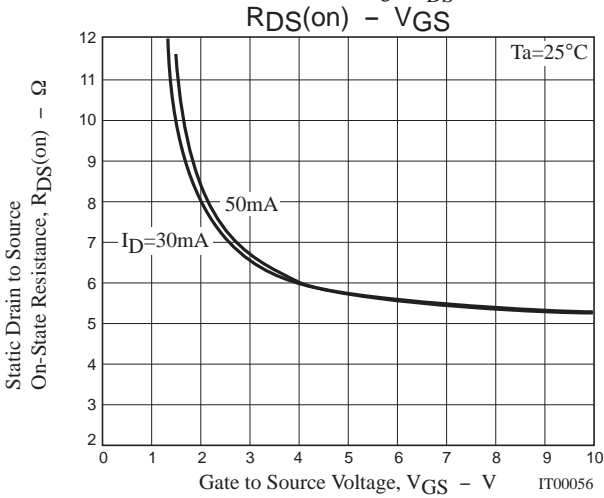
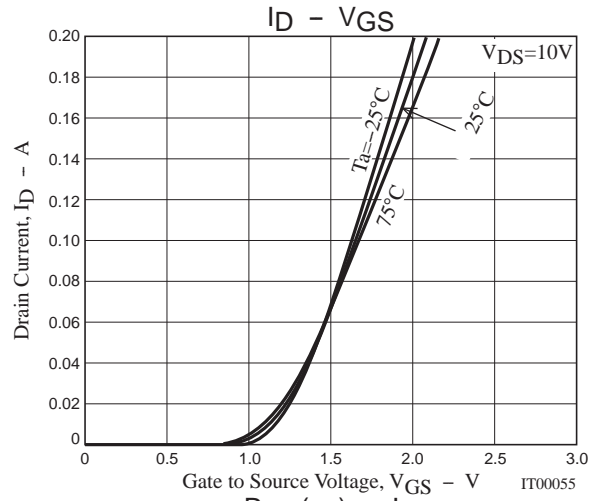
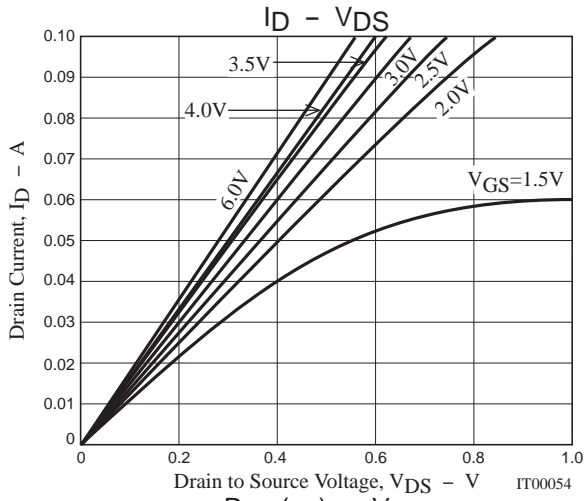
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Electrical Characteristics at $T_a=25^\circ\text{C}$

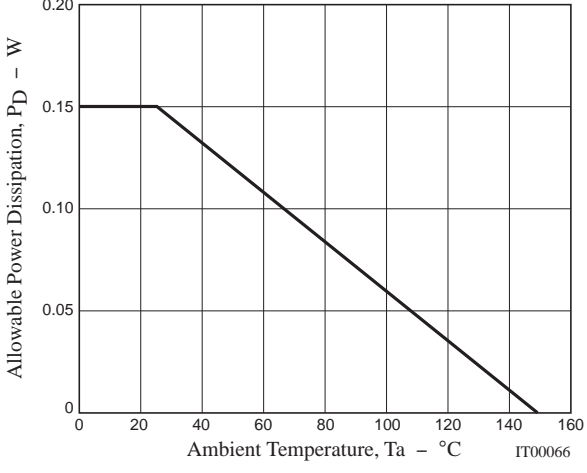
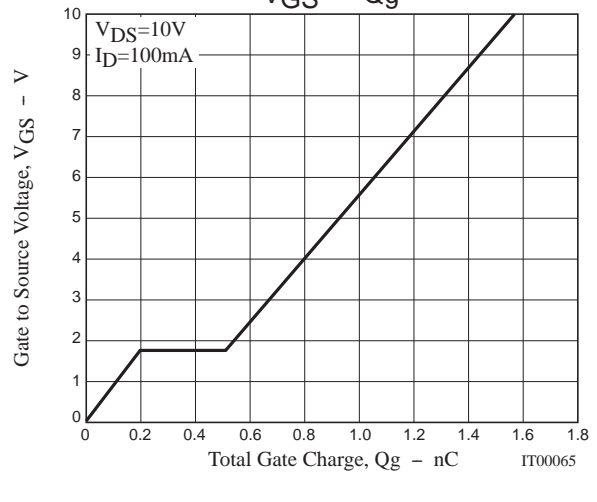
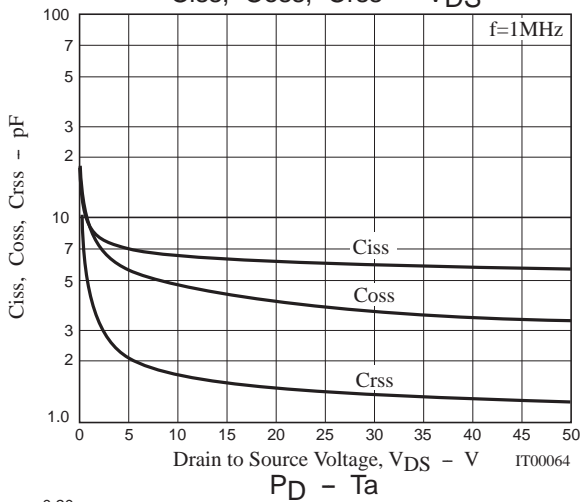
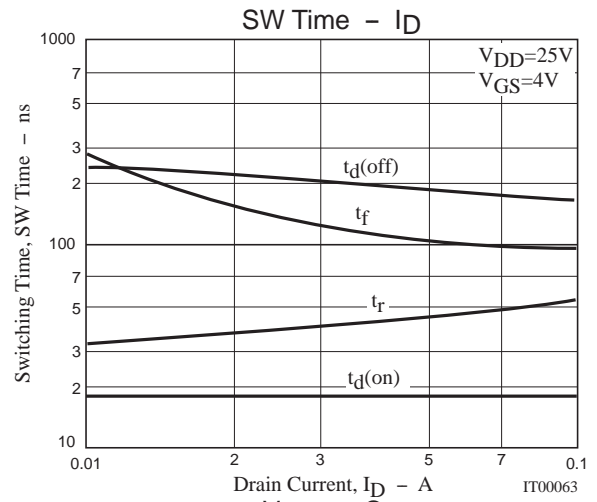
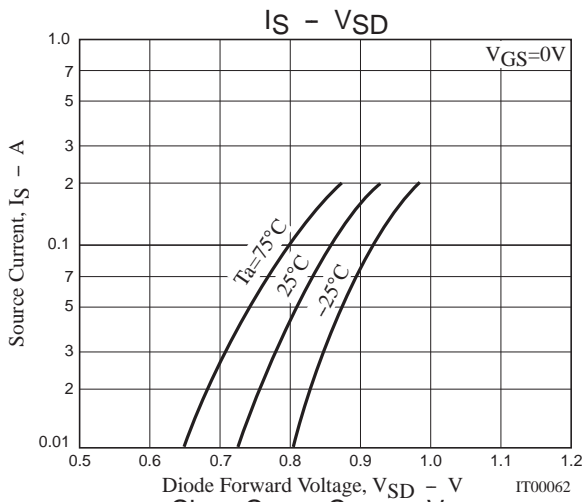
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|--|-----------------------------|------|----------|---------------|
| | | | min | typ | max | |
| Drain to Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=1\text{mA}, V_{GS}=0\text{V}$ | 50 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS}=50\text{V}, V_{GS}=0\text{V}$ | | | 1 | μA |
| Gate to Source Leakage Current | I_{GSS} | $V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$ | | | ± 10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}=10\text{V}, I_D=100\mu\text{A}$ | 0.4 | | 1.3 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS}=10\text{V}, I_D=50\text{mA}$ | 0.13 | 0.18 | | S |
| Static Drain to Source On-State Resistance | $R_{DS(on)1}$ | $I_D=50\text{mA}, V_{GS}=4\text{V}$ | | 6 | 7.8 | Ω |
| | $R_{DS(on)2}$ | $I_D=30\text{mA}, V_{GS}=2.5\text{V}$ | | 7.1 | 9.9 | Ω |
| | $R_{DS(on)3}$ | $I_D=10\text{mA}, V_{GS}=1.5\text{V}$ | | 10 | 20 | Ω |
| Input Capacitance | C_{iss} | | | 6.6 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=10\text{V}, f=1\text{MHz}$ | | 4.7 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | 1.7 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | | See specified Test Circuit. | | 18 | |
| Rise Time | t_r | | | 42 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | | 190 | | ns |
| Fall Time | t_f | | | 105 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=100\text{mA}$ | | | 1.57 | |
| Gate to Source Charge | Q_{gs} | | | 0.20 | | nC |
| Gate to Drain "Miller" Charge | Q_{gd} | | | 0.32 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=100\text{mA}, V_{GS}=0\text{V}$ | | 0.85 | 1.2 | V |

Switching Time Test Circuit





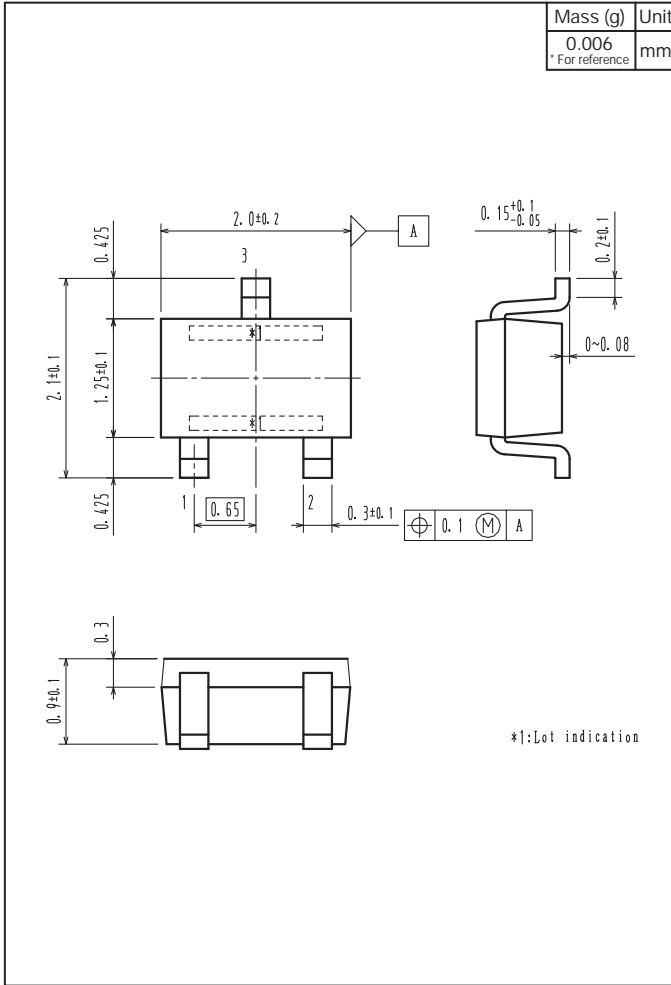
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Outline Drawing

5LN01M-TL-E, 5LN01M-TL-H



Land Pattern Example



Note on usage : Since the 5LN01M is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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