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# ON Semiconductor DATA SHEET

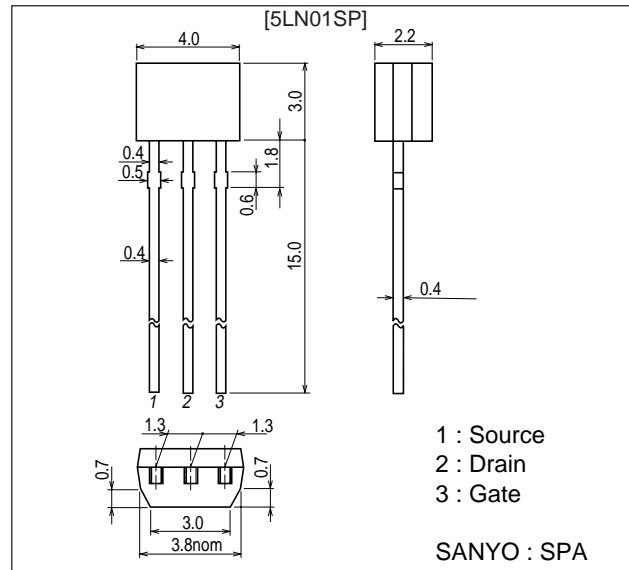
## 5LN01SP — N-Channel Silicon MOSFET — Ultrahigh-Speed Switching Applications

### Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

### Package Dimensions

unit : mm  
2180



### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		50	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		0.1	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	0.4	A
Allowable Power Dissipation	P <sub>D</sub>		0.25	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0	50			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0			10	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =100μA	0.4		1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =50mA	0.13	0.18		S

Marking : YB

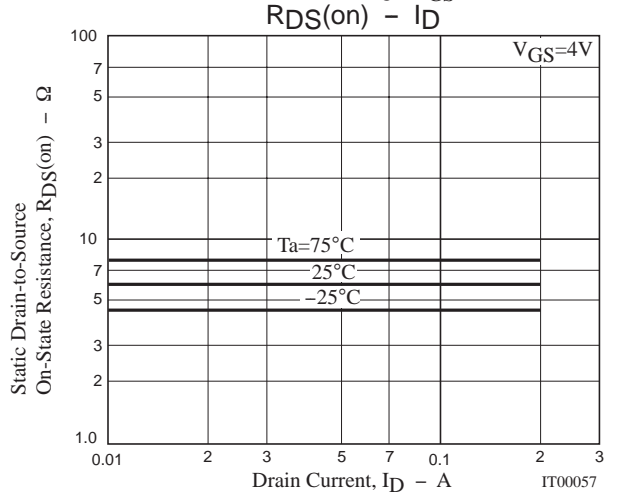
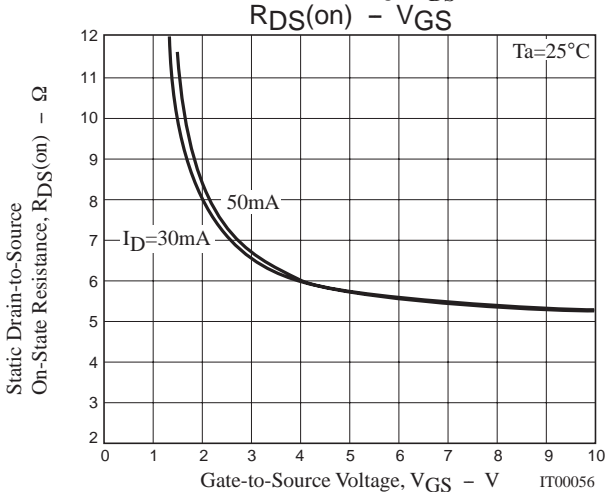
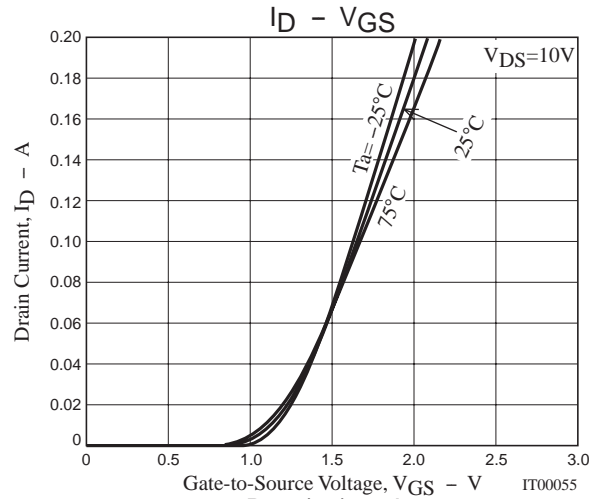
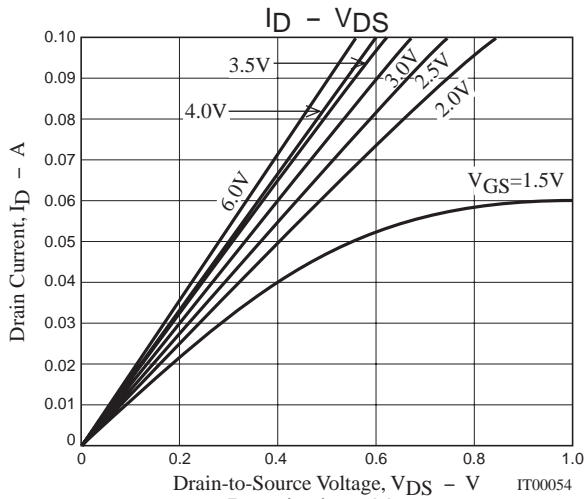
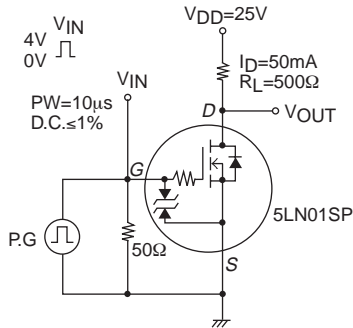
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# 5LN01SP

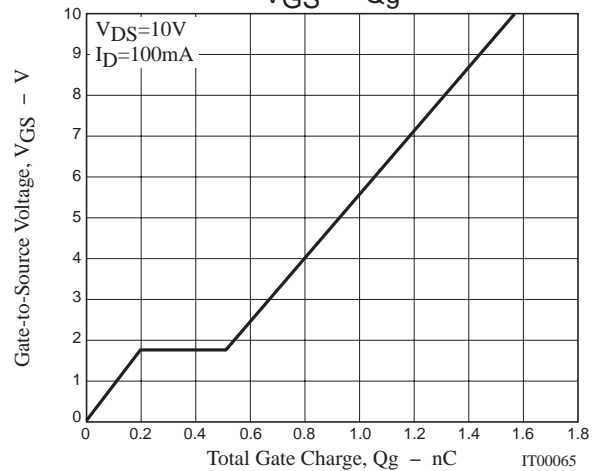
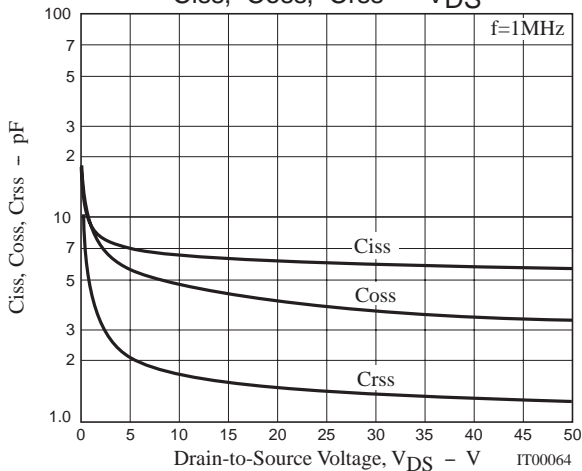
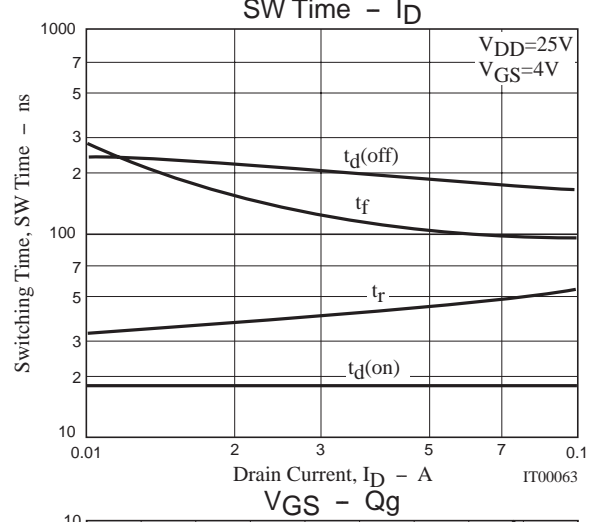
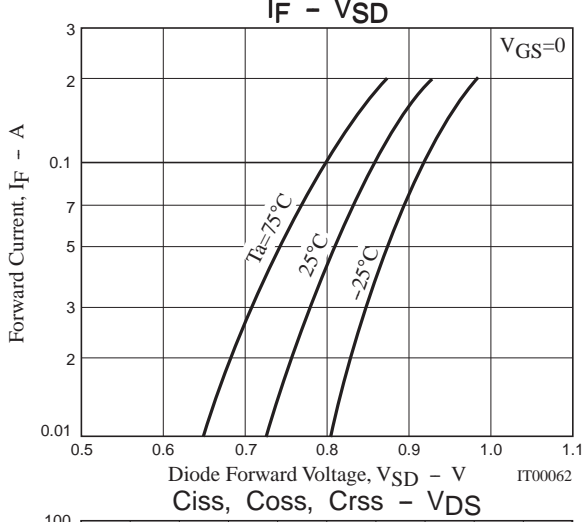
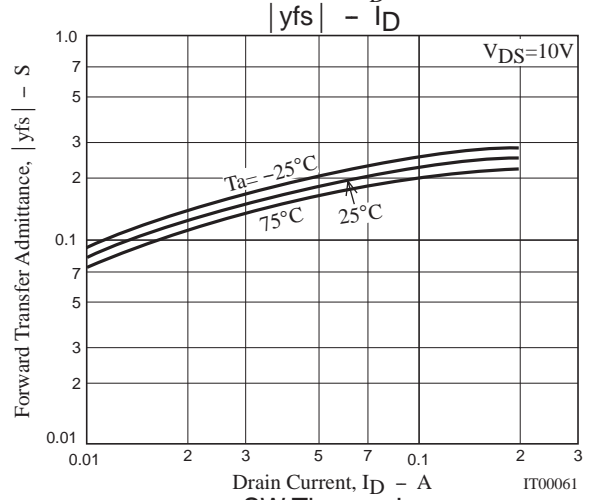
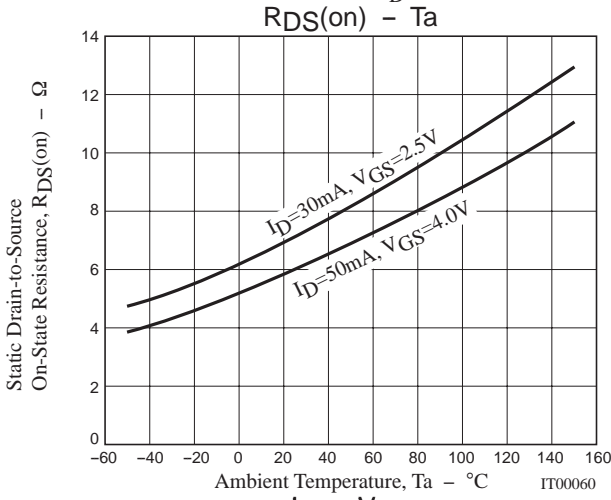
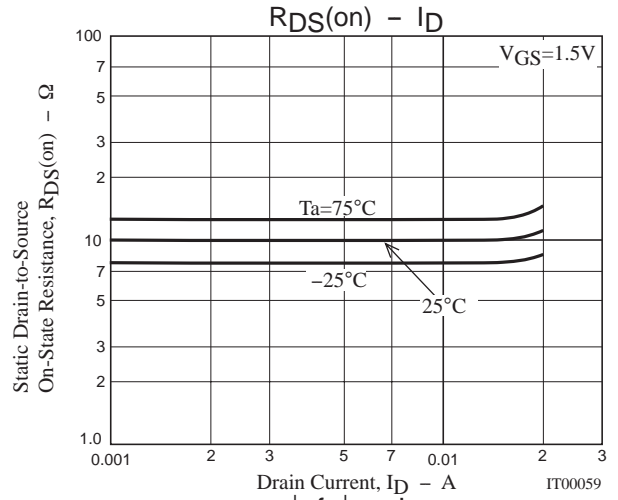
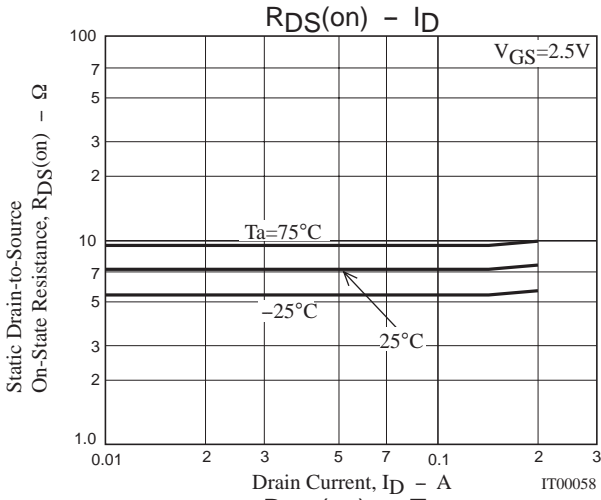
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50\text{mA}, V_{GS}=4\text{V}$		6	7.8	$\Omega$
	$R_{DS(on)2}$	$I_D=30\text{mA}, V_{GS}=2.5\text{V}$		7.1	9.9	$\Omega$
	$R_{DS(on)3}$	$I_D=10\text{mA}, V_{GS}=1.5\text{V}$		10	20	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10\text{V}, f=1\text{MHz}$		6.6		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10\text{V}, f=1\text{MHz}$		4.7		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10\text{V}, f=1\text{MHz}$		1.7		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		18		ns
Rise Time	$t_r$	See specified Test Circuit		42		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		190		ns
Fall Time	$t_f$	See specified Test Circuit		105		ns
Total Gate Charge	$Q_g$	$V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=100\text{mA}$		1.57		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=100\text{mA}$		0.20		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10\text{V}, V_{GS}=10\text{V}, I_D=100\text{mA}$		0.32		nC
Diode Forward Voltage	$V_{SD}$	$I_S=100\text{mA}, V_{GS}=0$		0.85	1.2	V

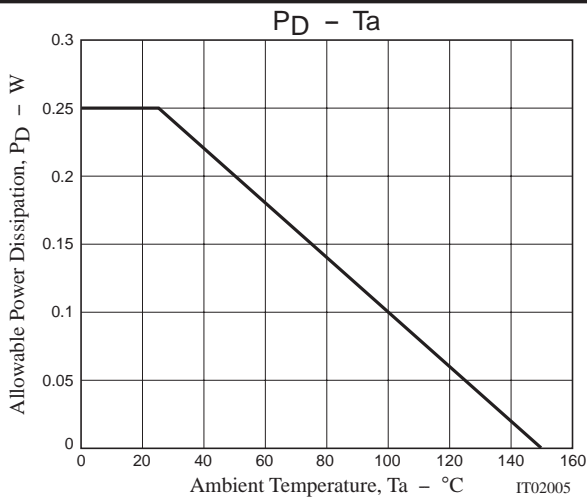
## Switching Time Test Circuit



# 5LN01SP



## 5LN01SP



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