

**5LN01SP**

Ultrahigh-Speed Switching Applications

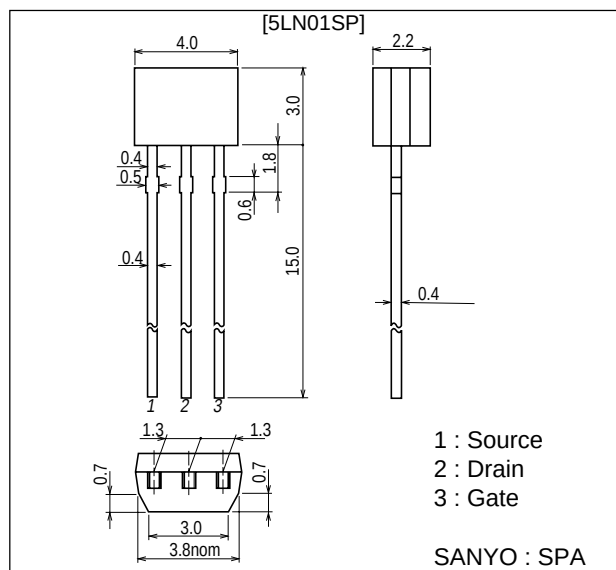
Features

- 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_{DSS}		50	V
Gate-to-Source Voltage	V_{GSS}		± 10	V
Drain Current (DC)	I_D		0.1	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	0.4	A
Allowable Power Dissipation	P_D		0.25	W
Channel Temperature	T_{ch}		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1mA$, $V_{GS} = 0$	50			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 50V$, $V_{GS} = 0$			10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 8V$, $V_{DS} = 0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10V$, $I_D = 100\mu A$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10V$, $I_D = 50mA$	0.13	0.18		S

Marking : YB

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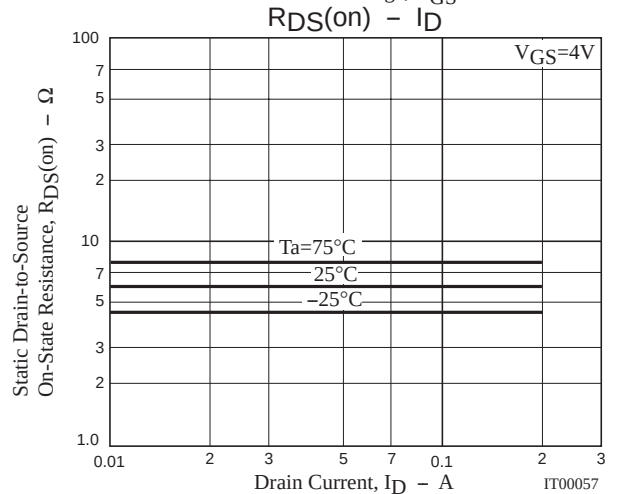
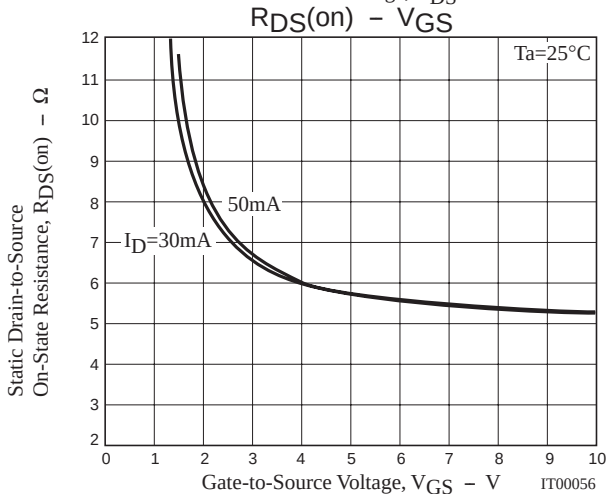
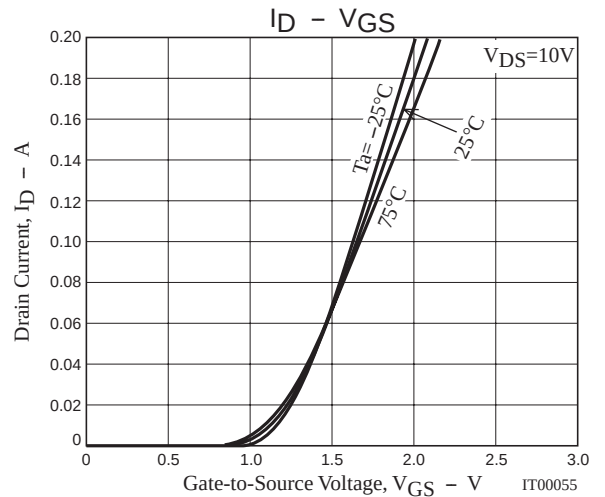
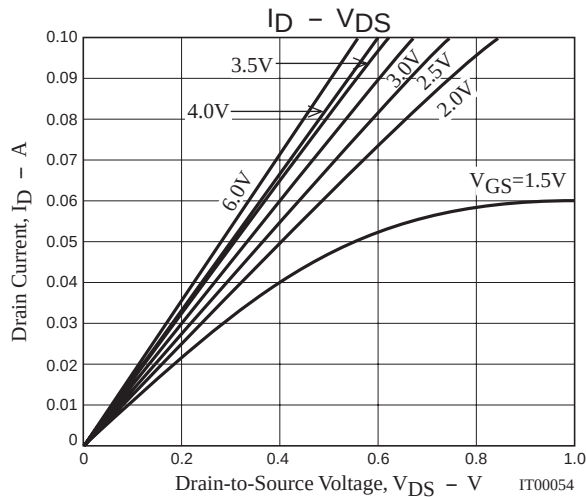
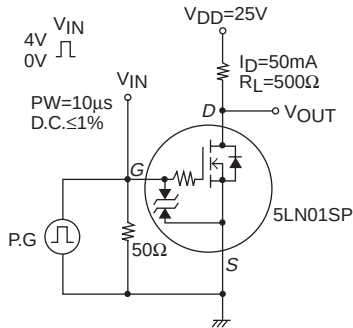
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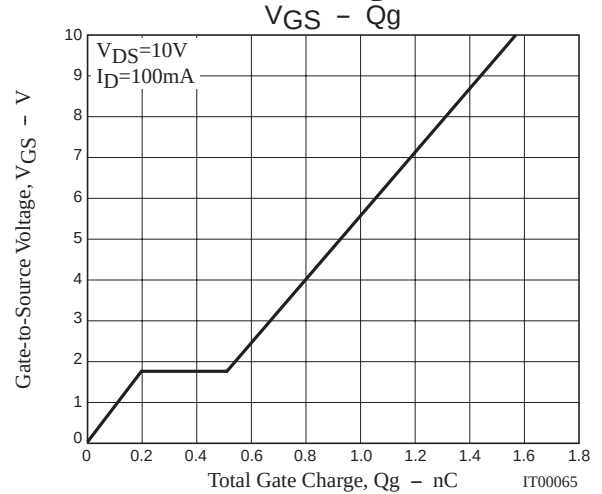
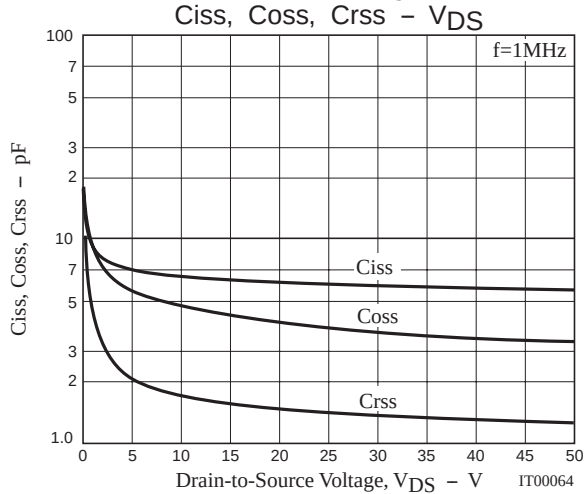
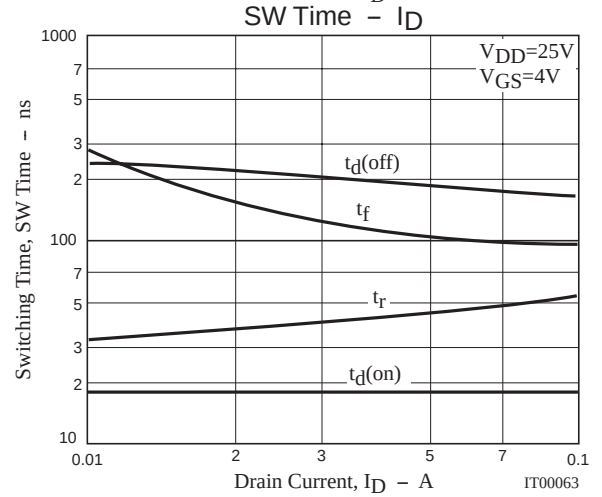
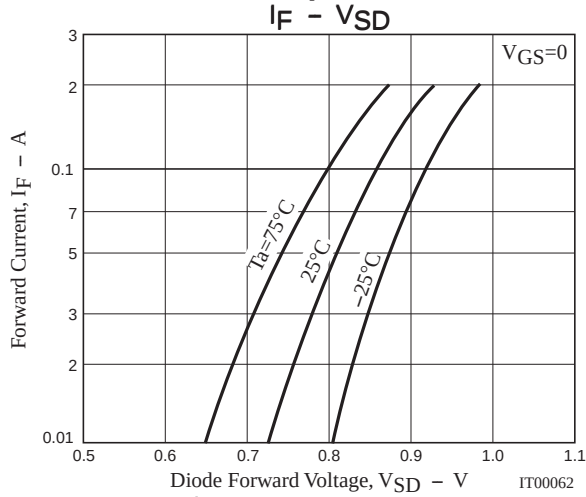
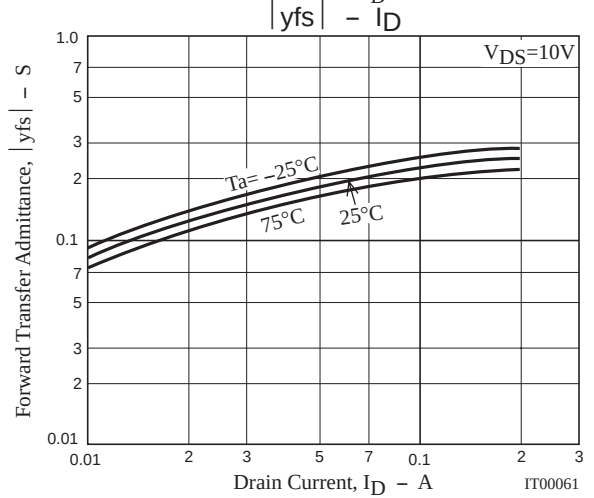
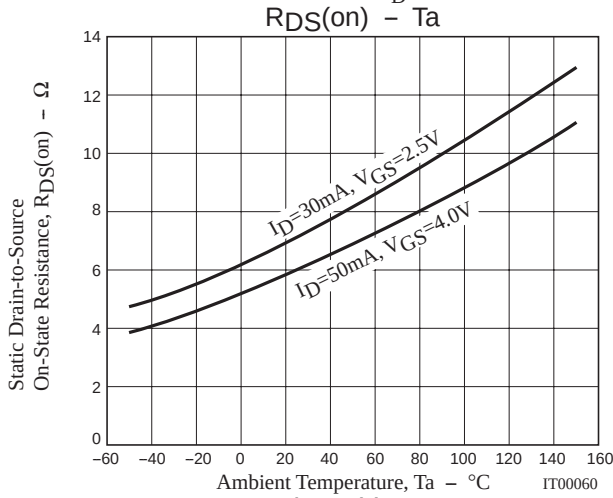
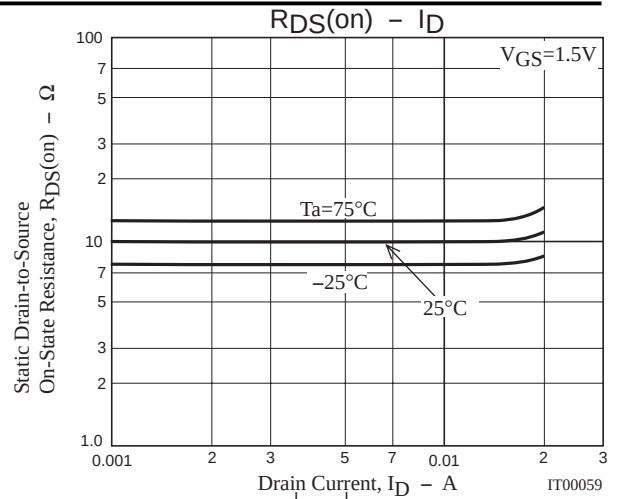
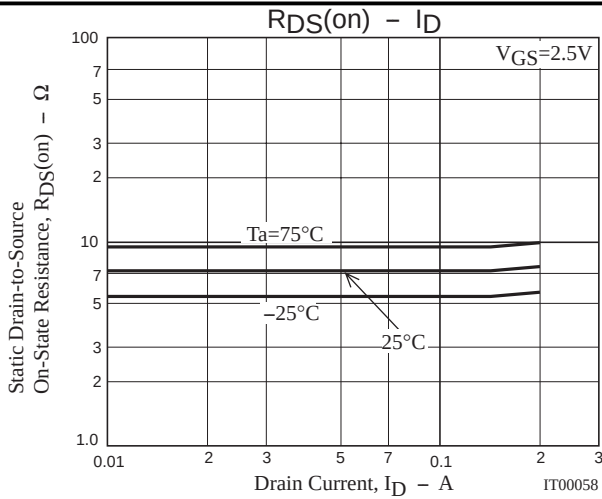
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50\text{mA}$, $V_{GS}=4\text{V}$		6	7.8	Ω
	$R_{DS(on)2}$	$I_D=30\text{mA}$, $V_{GS}=2.5\text{V}$		7.1	9.9	Ω
	$R_{DS(on)3}$	$I_D=10\text{mA}$, $V_{GS}=1.5\text{V}$		10	20	Ω
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $f=1\text{MHz}$		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

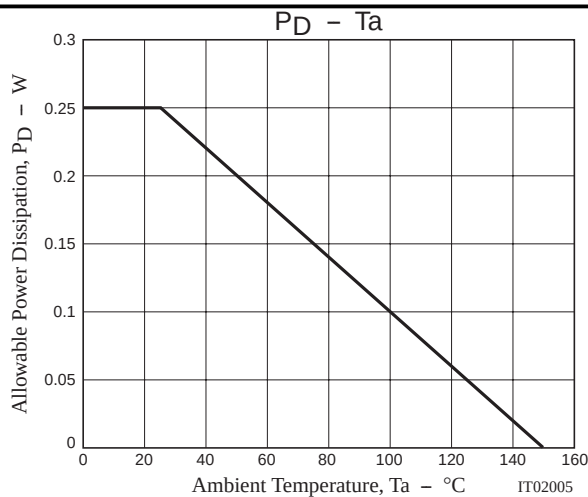
Switching Time Test Circuit



5LN01SP



5LN01SP



Note on usage : Since the 5LN01SP is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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