



# 5LP01S

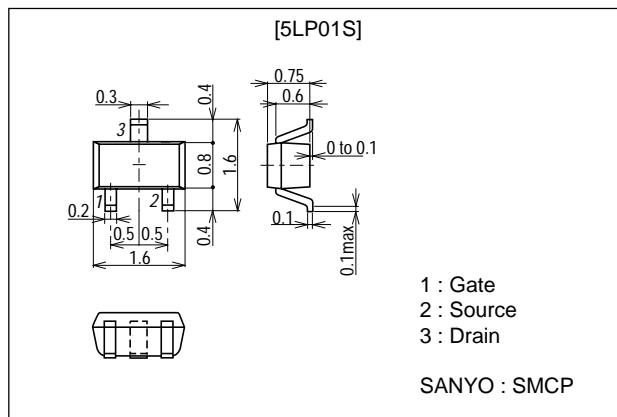
## Ultrahigh-Speed Switching Applications

### Features

- Low ON-resistance.
- Ultrahigh-Speed Switching.
- 2.5V drive.

### Package Dimensions

unit : mm  
2124



### 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>		-0.07	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-0.28	A
Allowable Power Dissipation	P <sub>D</sub>		0.15	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		-1.4	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-40mA	70	100		mS

Continued on next page.

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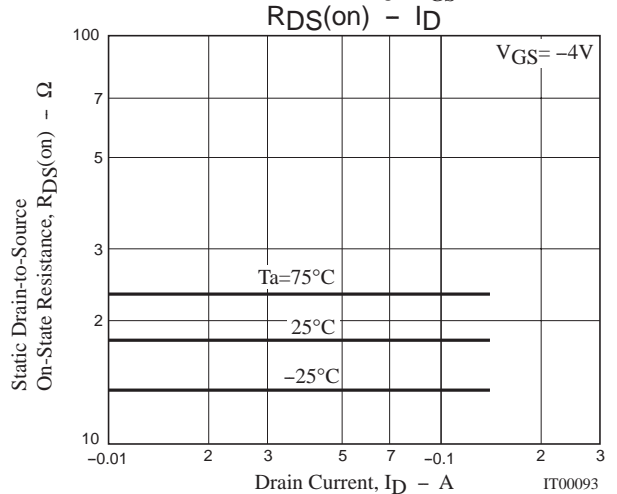
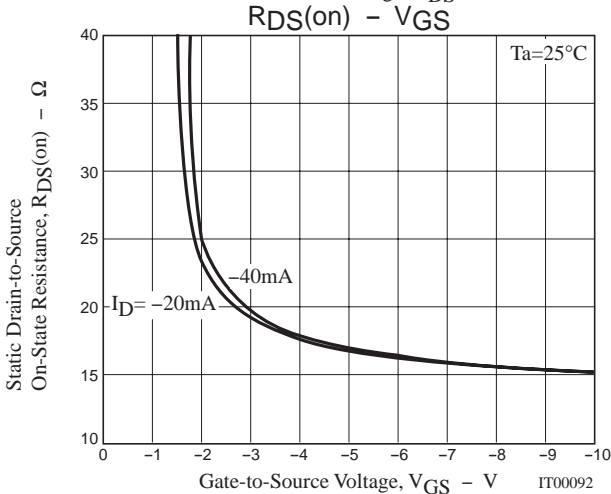
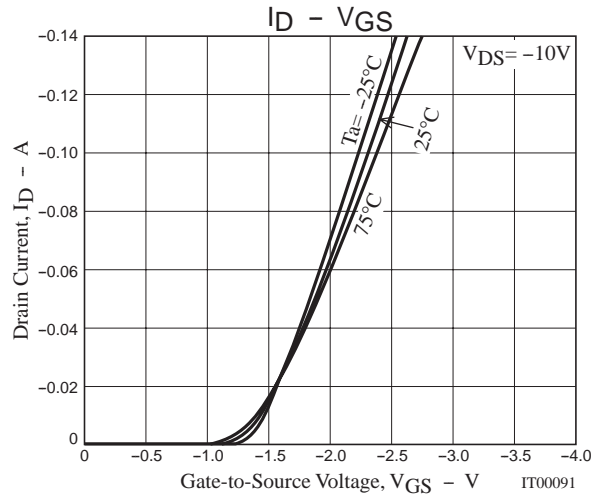
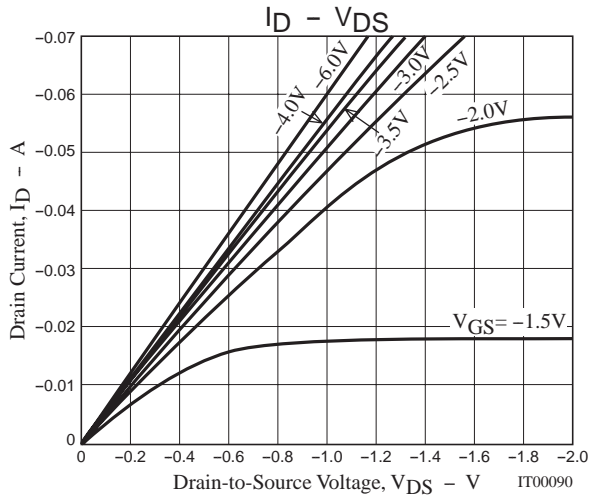
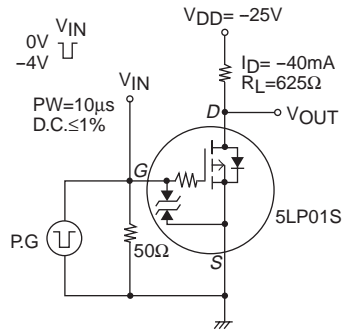
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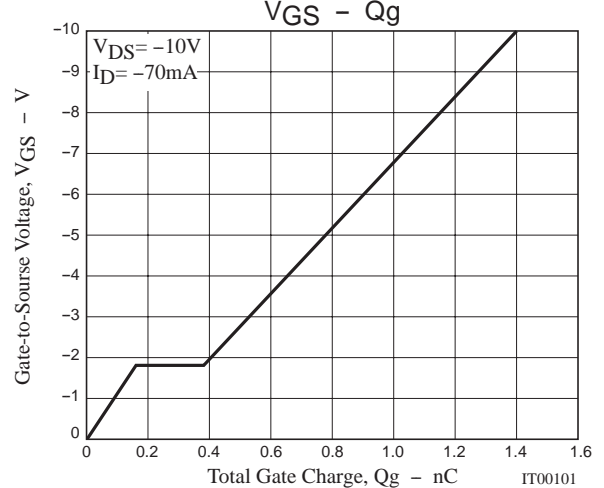
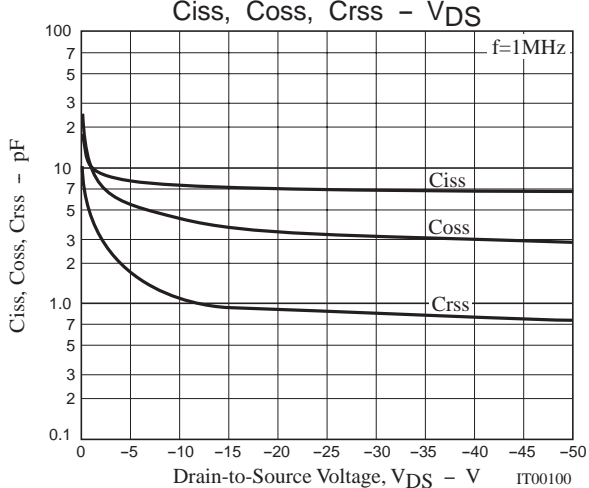
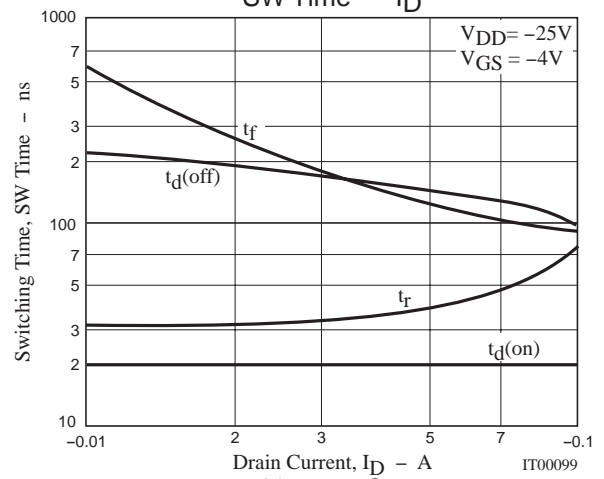
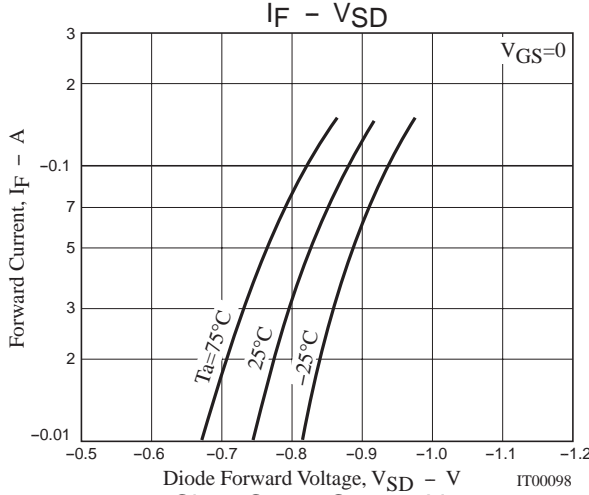
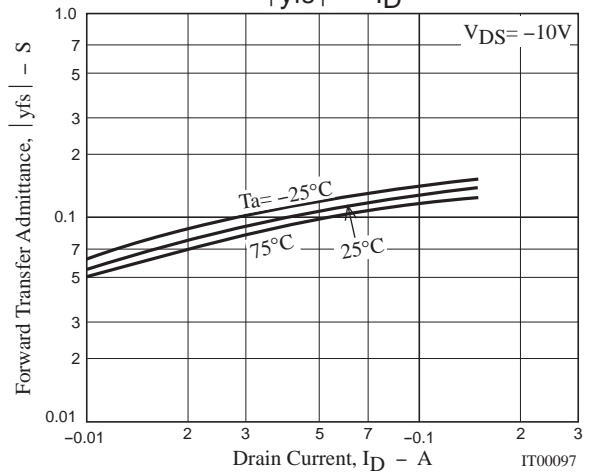
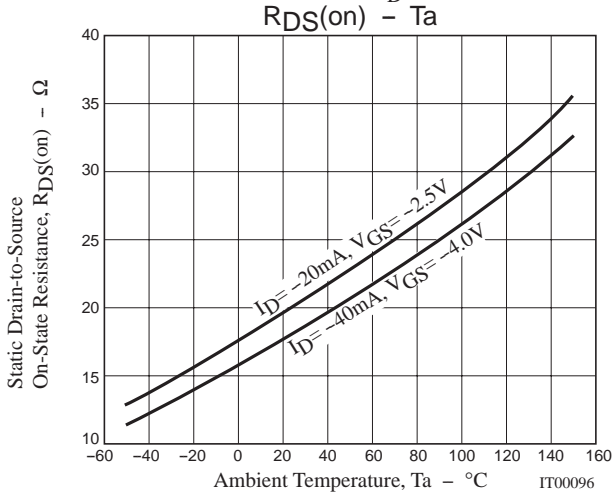
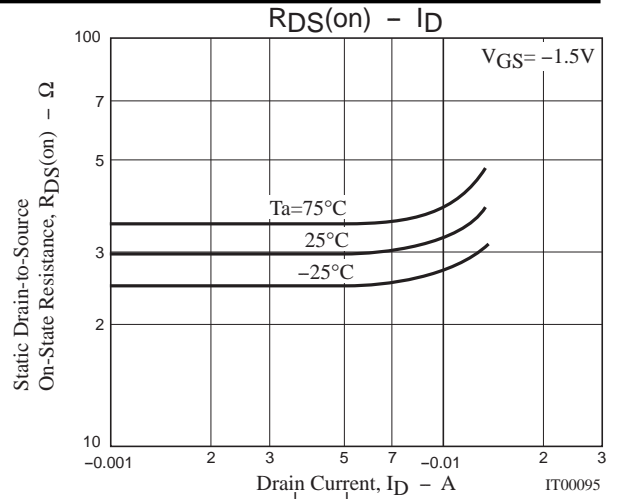
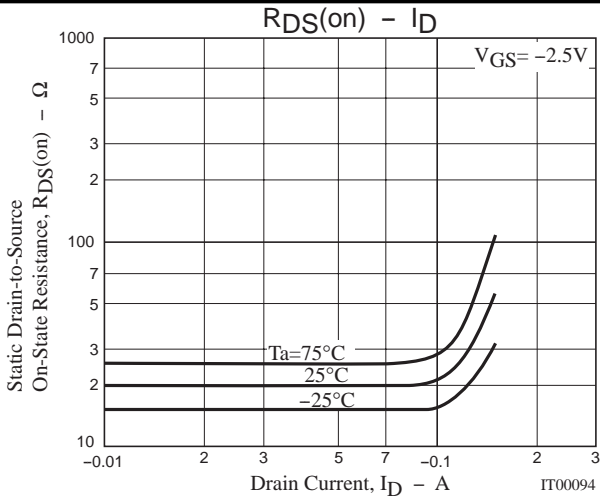
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -40\text{mA}$ , $V_{GS} = -4\text{V}$		18	23	$\Omega$
	$R_{DS(on)2}$	$I_D = -20\text{mA}$ , $V_{GS} = -2.5\text{V}$		20	28	$\Omega$
	$R_{DS(on)3}$	$I_D = -5\text{mA}$ , $V_{GS} = -1.5\text{V}$		30	60	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$		7.4		pF
Output Capacitance	$C_{oss}$	$V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$		4.2		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$		1.3		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		20		ns
Rise Time	$t_r$	See specified Test Circuit		35		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		160		ns
Fall Time	$t_f$	See specified Test Circuit		150		ns
Total Gate Charge	$Q_g$	$V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -70\text{mA}$		1.40		nC
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	$Q_{gd}$	$V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -70\text{mA}$		0.23		nC
Diode Forward Voltage	$V_{SD}$	$I_S = -70\text{mA}$ , $V_{GS} = 0$		-0.85	-1.2	V

Marking : XB

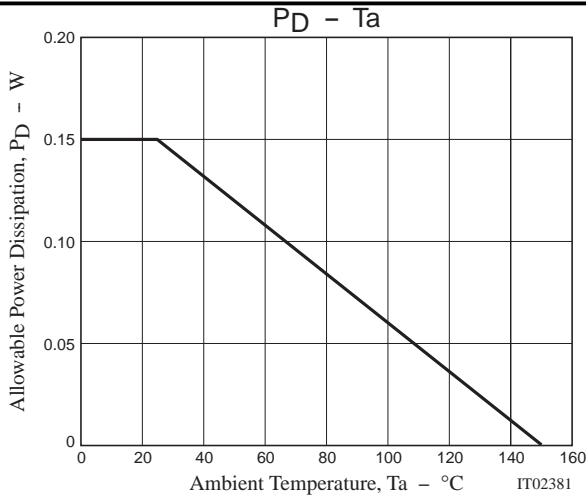
## Switching Time Test Circuit



# 5LP01S



## 5LP01S



Note on usage : Since the 5LP01S is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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