



5LP01S

Ultrahigh-Speed Switching Applications

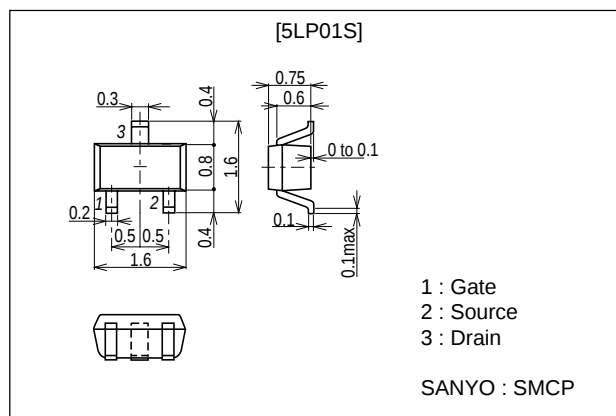
Features

- 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 _{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
Allowable Power Dissipation	P _D		0.15	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1mA, V_{GS} = 0$	-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		-1.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10V, I_D = -40mA$	70	100		mS

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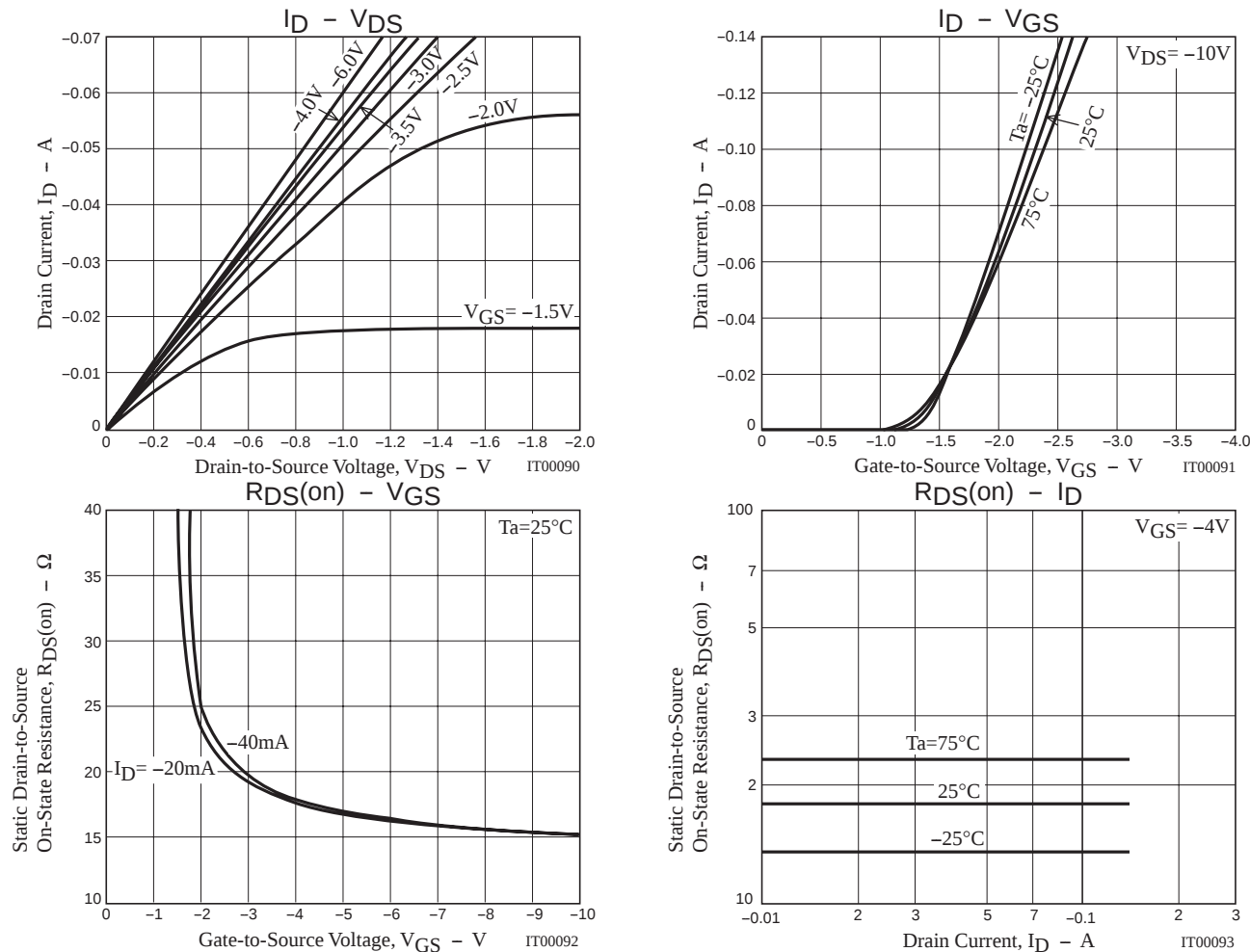
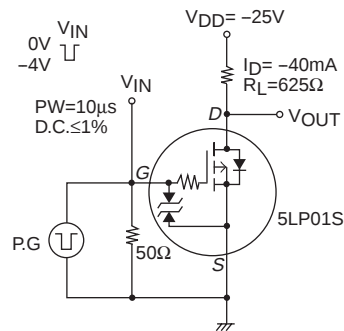
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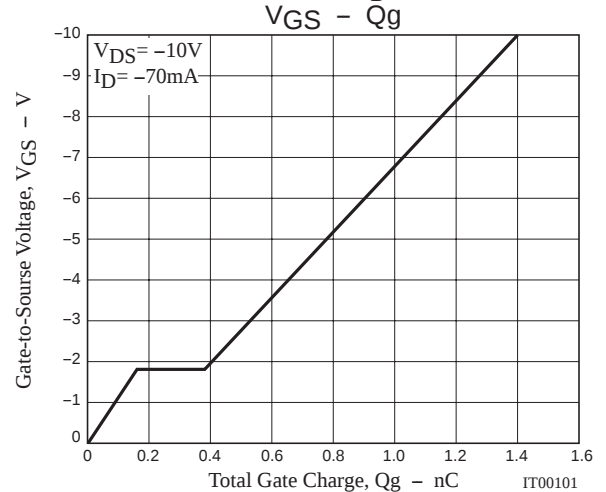
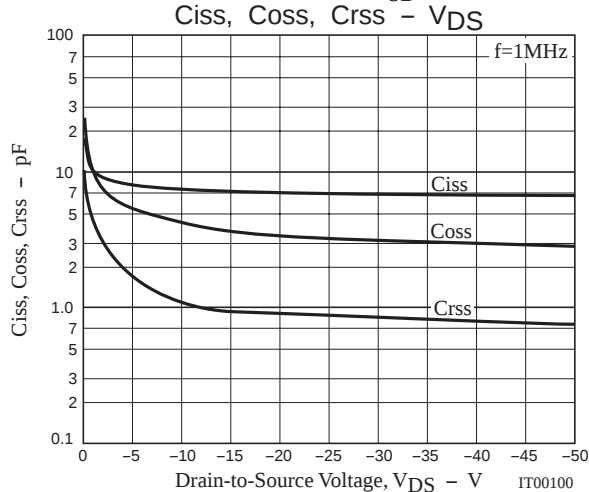
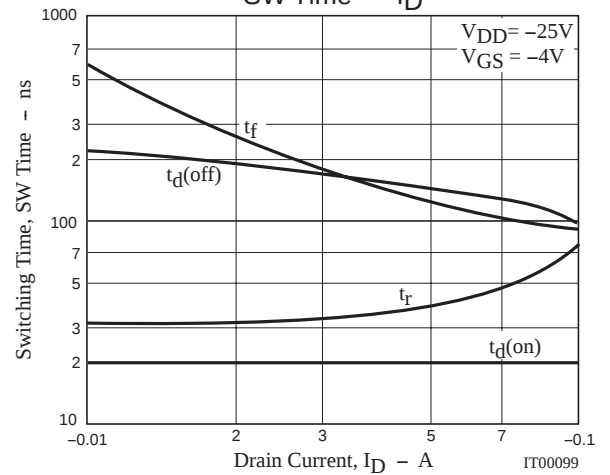
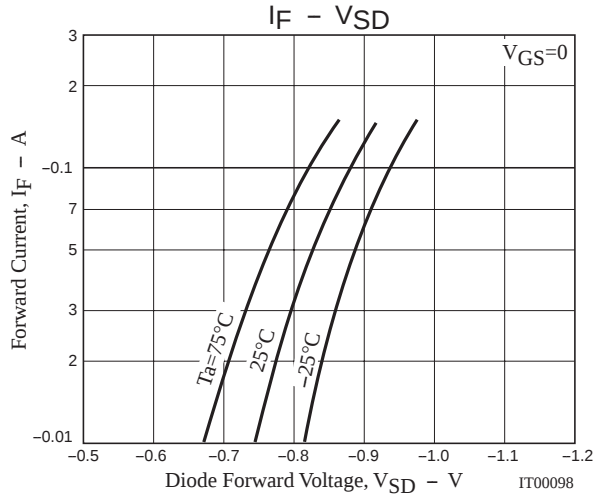
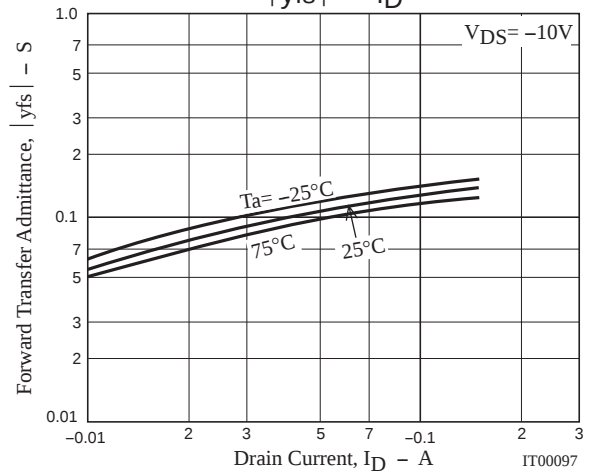
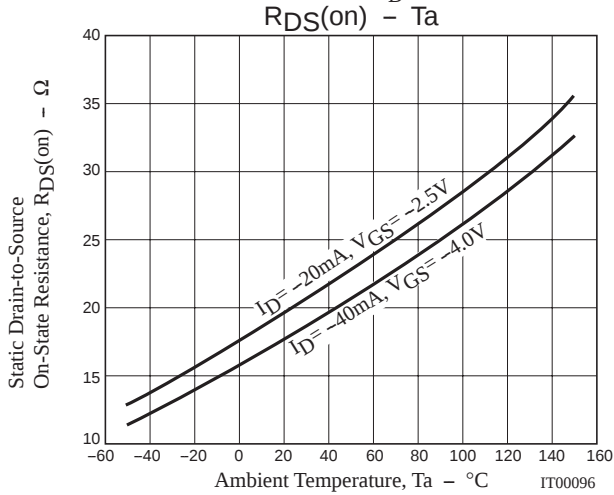
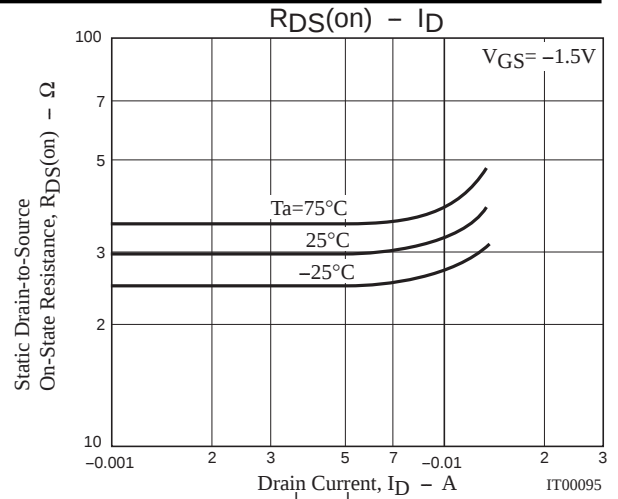
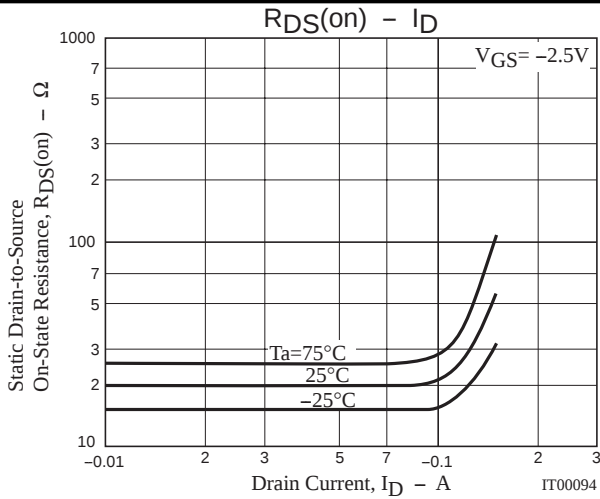
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -40\text{mA}$, $V_{GS} = -4\text{V}$		18	23	Ω
	$R_{DS(on)2}$	$I_D = -20\text{mA}$, $V_{GS} = -2.5\text{V}$		20	28	Ω
	$R_{DS(on)3}$	$I_D = -5\text{mA}$, $V_{GS} = -1.5\text{V}$		30	60	Ω
Input Capacitance	C_{iss}	$V_{DS} = -10\text{V}$, $f = 1\text{MHz}$		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

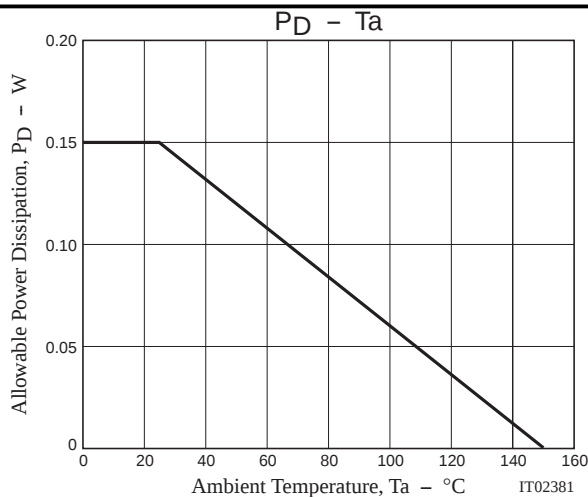
Marking : XB

Switching Time Test Circuit





5LP01S



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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