

**5LP02N**

Ultrahigh-Speed Switching Applications

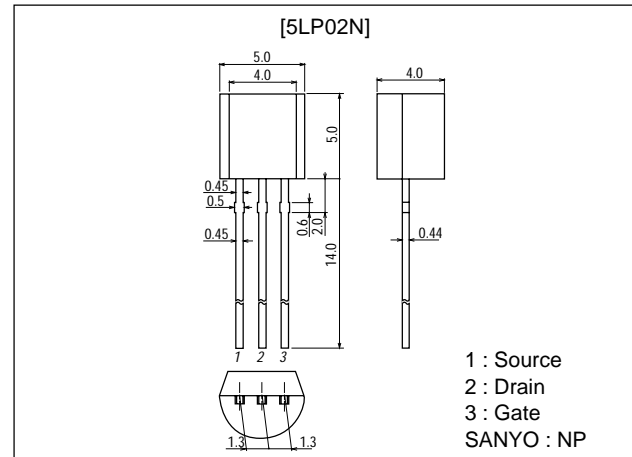
Features

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

Package Dimensions

unit:mm

2178



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		-0.14	A
Drain Current (pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	-0.56	A
Allowable Power Dissipation	P_D		0.4	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		-1.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10V$, $I_D = -70mA$	0.17	0.24		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -70mA$, $V_{GS} = -4V$		5.1	6.6	Ω
	$R_{DS(on)2}$	$I_D = -40mA$, $V_{GS} = -2.5V$		6	8.4	Ω
	$R_{DS(on)3}$	$I_D = -10mA$, $V_{GS} = -1.5V$		10	20	Ω

Marking : XE

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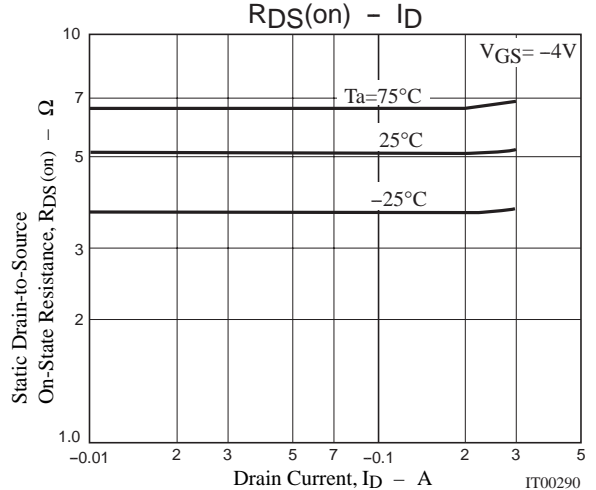
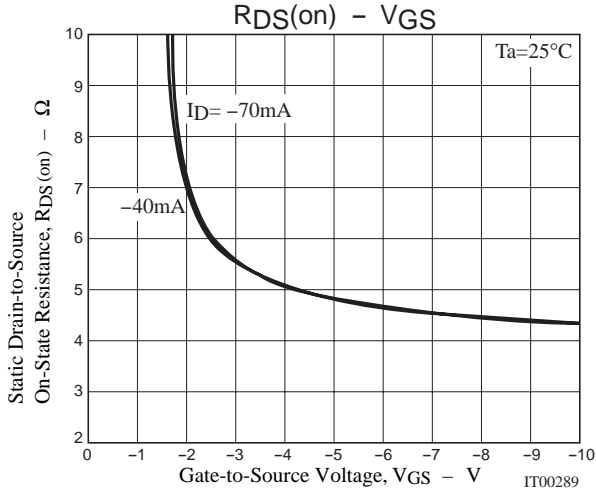
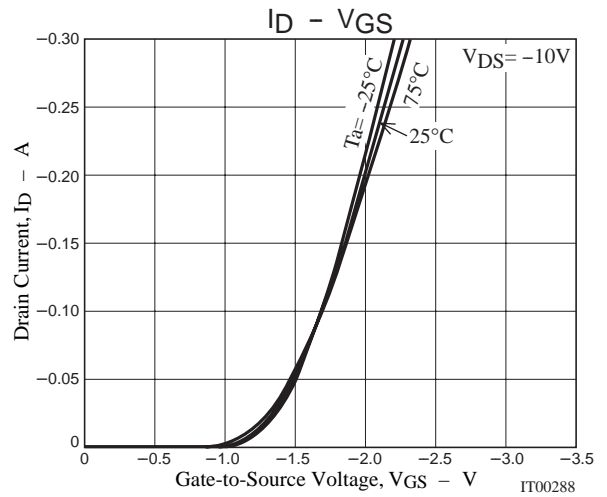
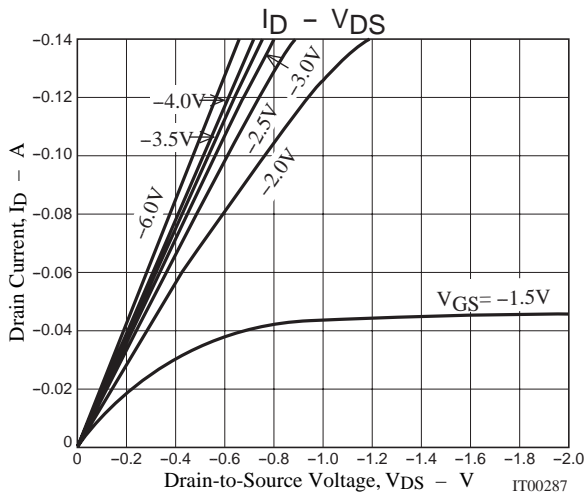
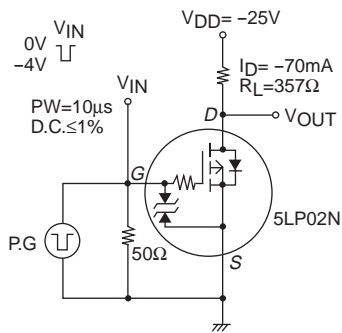
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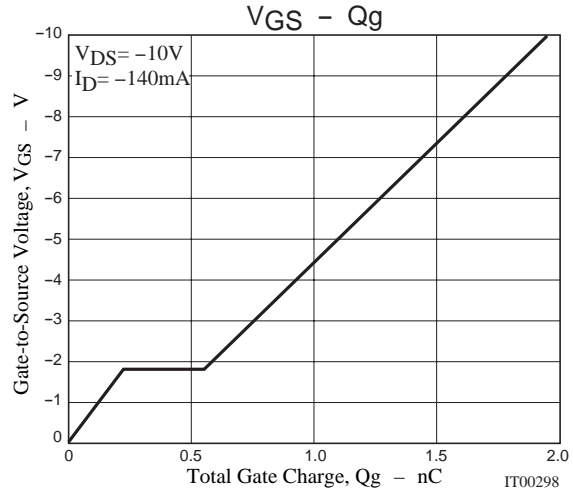
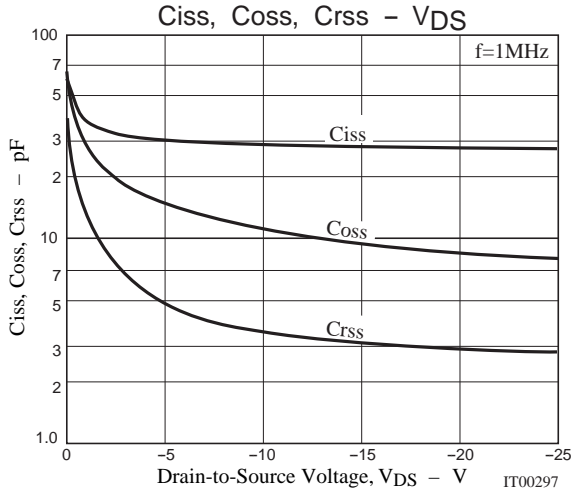
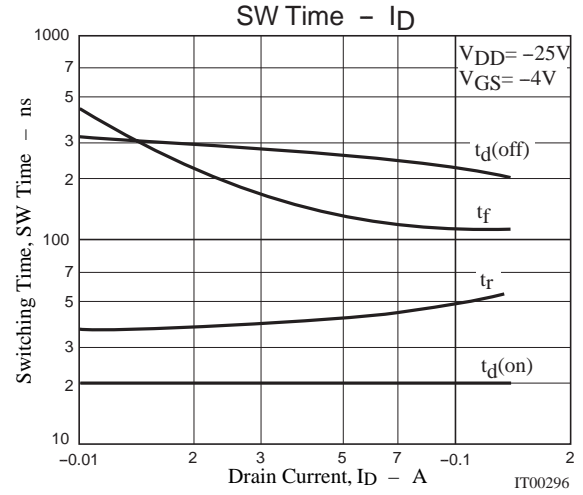
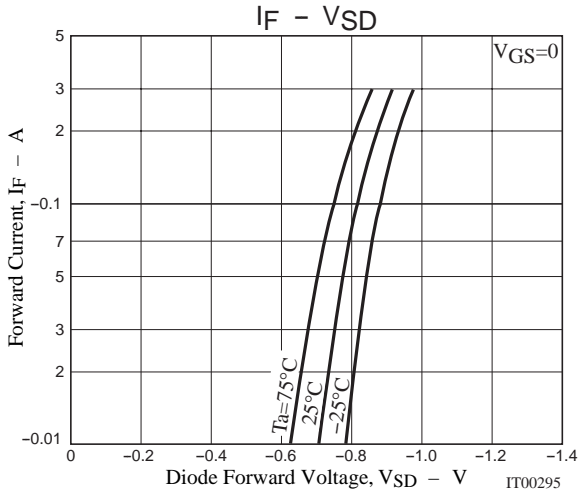
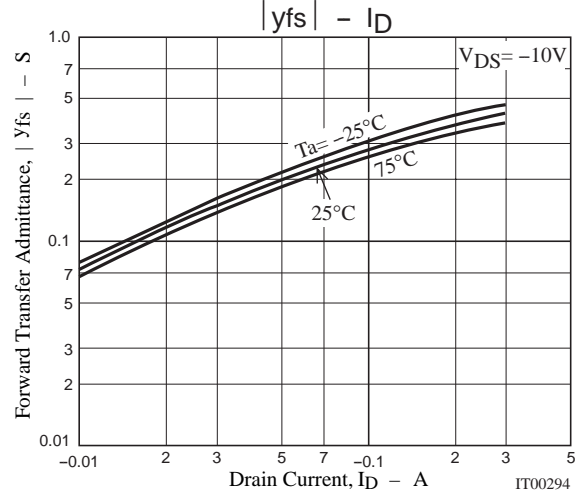
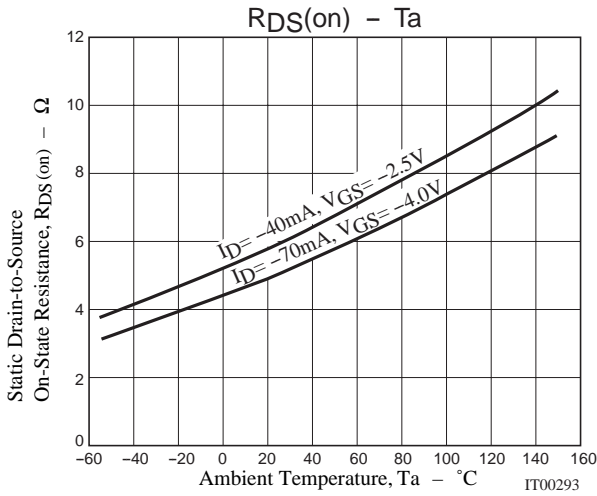
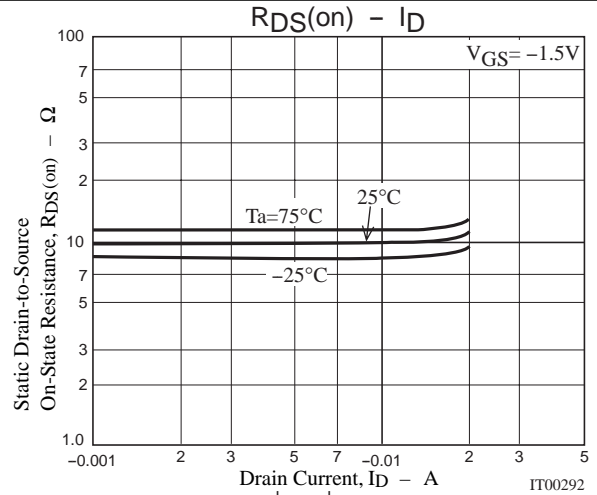
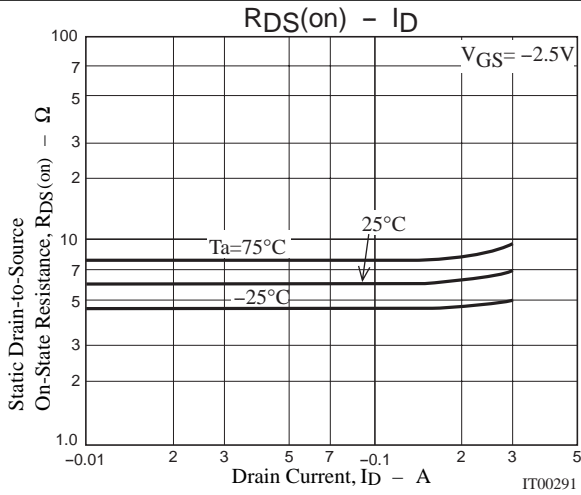
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=-10V, f=1MHz$		28		pF
Output Capacitance	Coss	$V_{DS}=-10V, f=1MHz$		11		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=-10V, f=1MHz$		3.5		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		20		ns
Rise Time	t_r	See specified Test Circuit		45		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		250		ns
Fall Time	t_f	See specified Test Circuit		120		ns
Total Gate Charge	Qg	$V_{DS}=-10V, V_{GS}=-10V, I_D=-140mA$		1.98		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-10V, V_{GS}=-10V, I_D=-140mA$		0.22		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-10V, V_{GS}=-10V, I_D=-140mA$		0.33		nC
Diode Forward Voltage	V_{SD}	$I_S=-140mA, V_{GS}=0$		-0.83	-1.2	V

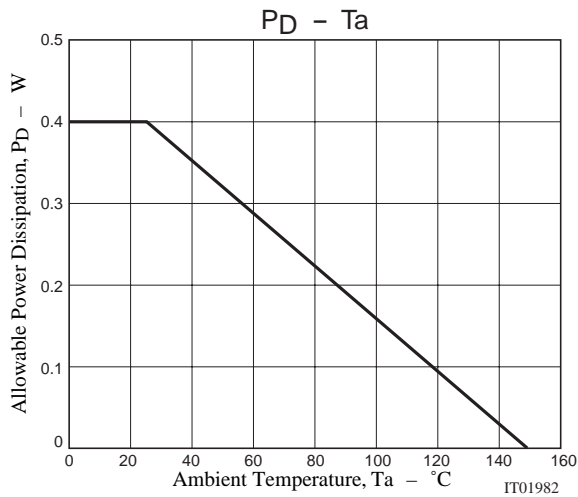
Switching Time Test Circuit



5LP02N



5LP02N



Note on usage : Since the 5LP02N is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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