

**5HN01S**

## Ultrahigh-Speed Switching Applications

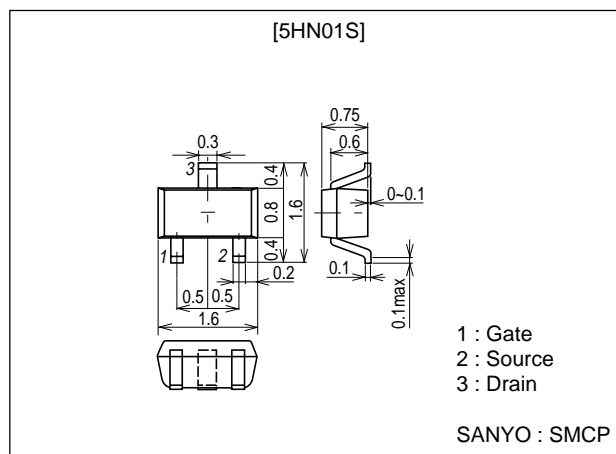
### Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

### Package Dimensions

unit : mm

2192



### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		50	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		0.1	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	0.4	A
Allowable Power Dissipation	$P_D$		0.15	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0$	50			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=50\text{V}$ , $V_{GS}=0$			10	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=100\mu\text{A}$	1		2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=50\text{mA}$	85	120		mS
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50\text{mA}$ , $V_{GS}=10\text{V}$		5.8	7.5	$\Omega$
	$R_{DS(on)2}$	$I_D=30\text{mA}$ , $V_{GS}=4\text{V}$		7.5	10.5	$\Omega$

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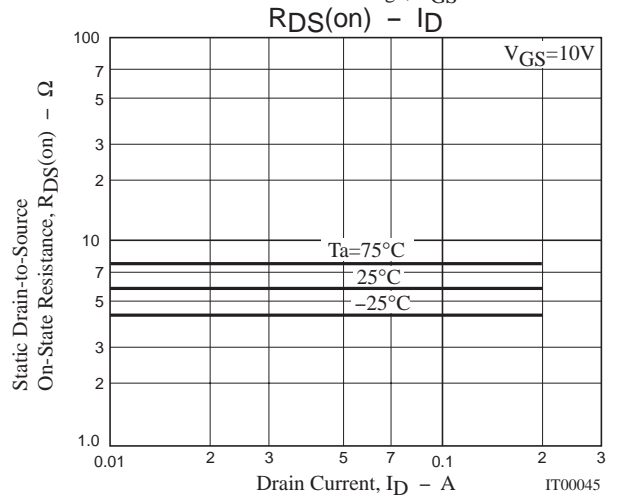
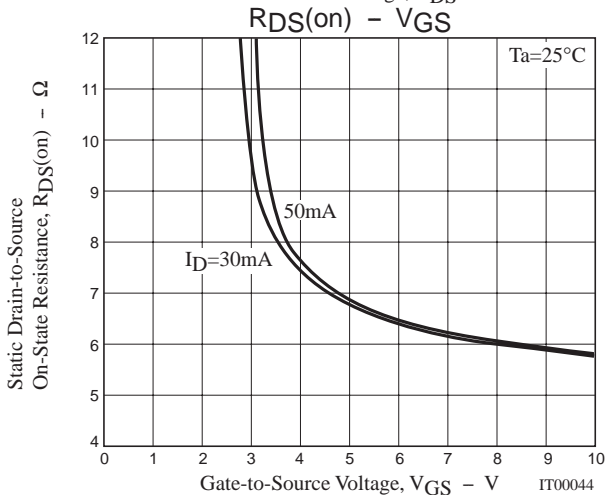
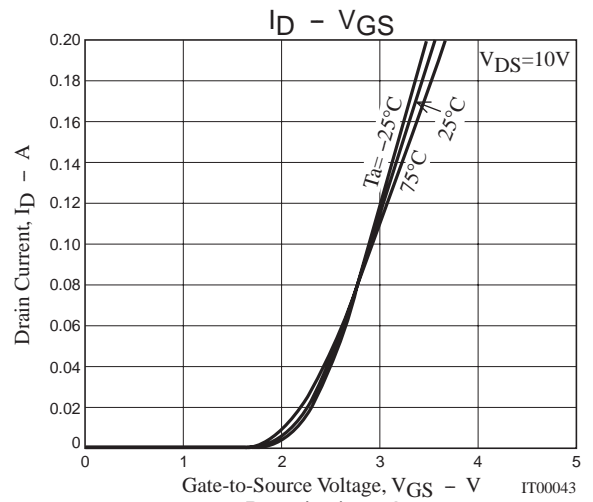
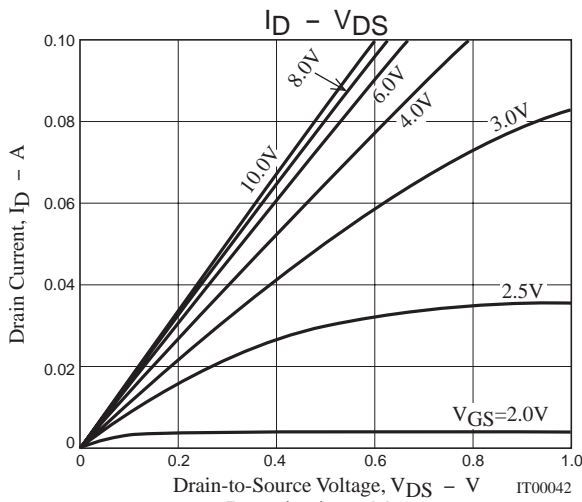
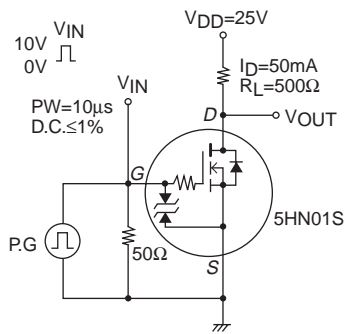
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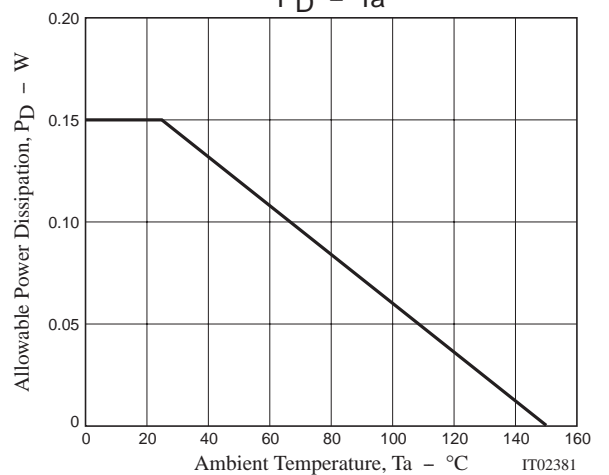
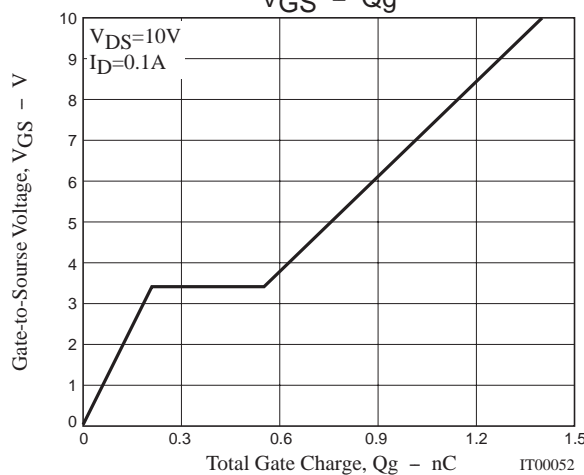
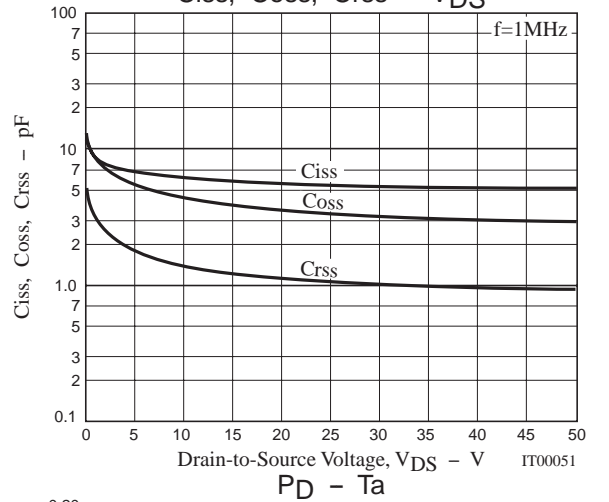
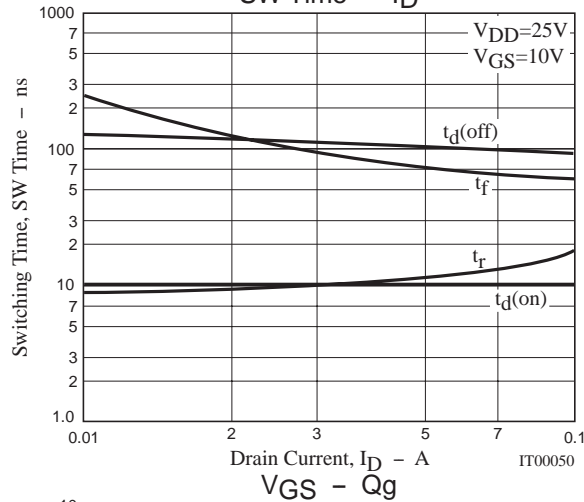
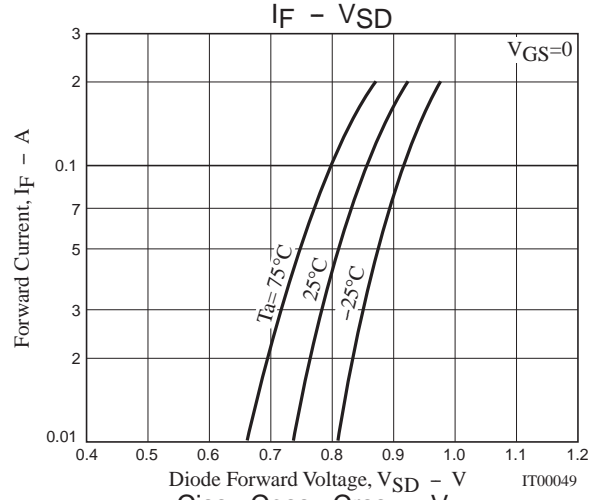
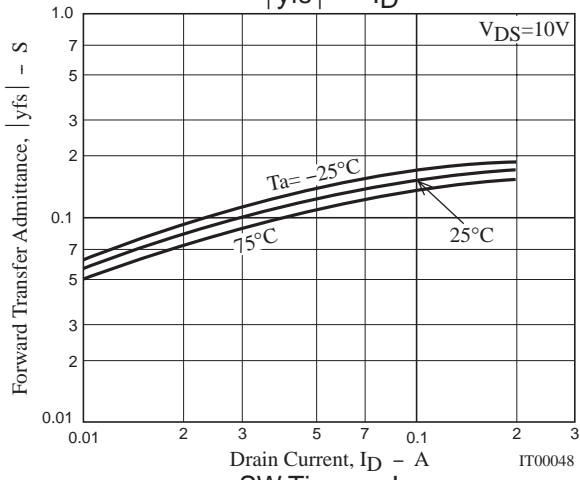
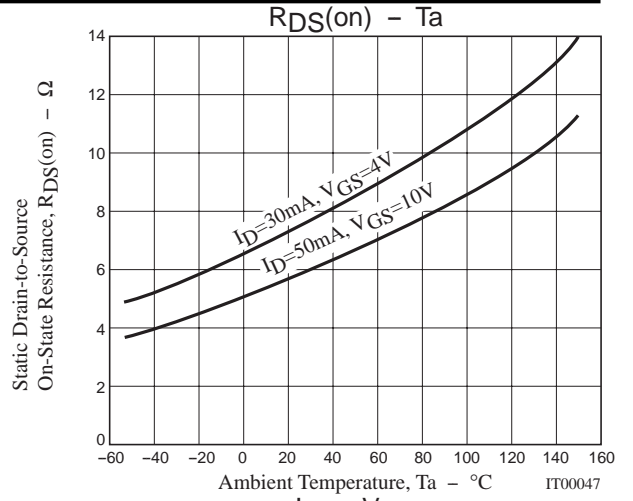
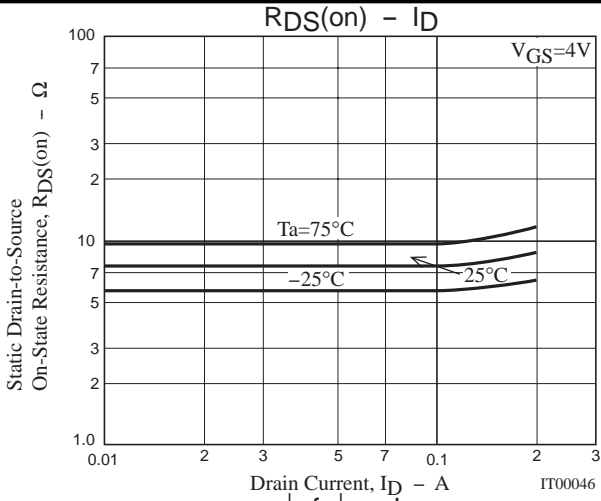
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V <sub>DS</sub> =10V, f=1MHz		6.2		pF
Output Capacitance	Coss	V <sub>DS</sub> =10V, f=1MHz		4.4		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =10V, f=1MHz		1.5		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit		10		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit		11		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit		105		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit		75		ns
Total Gate Charge	Qg	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =100mA		1.40		nC
Gate-to-Source Charge	Qgs	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =100mA		0.21		nC
Gate-to-Drain "Miller" Charge	Qgd	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =100mA		0.34		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =100mA, V <sub>GS</sub> =0		0.85	1.2	V

Marking : YC

## Switching Time Test Circuit



# 5HN01S



Note on usage : Since the 5HN01S is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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