

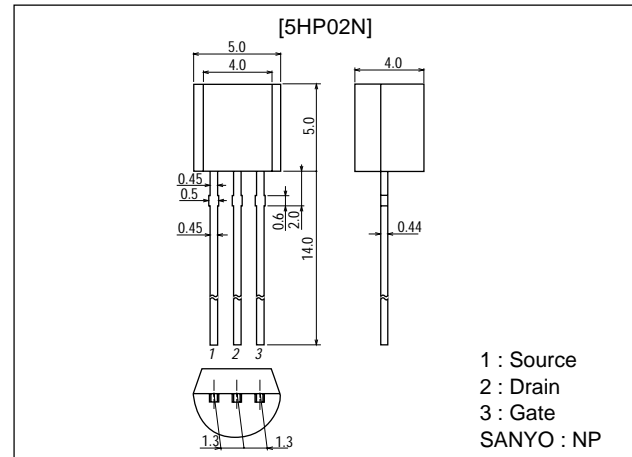
**5HP02N****Ultrahigh-Speed Switching Applications****Features**

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V 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	$V_{GSS}$		±20	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	$I_{GSS}$	$V_{GS} = \pm 16V$ , $V_{DS} = 0$			±10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10V$ , $I_D = -100\mu A$	-1		-2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10V$ , $I_D = -70mA$	0.12	0.16		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -70mA$ , $V_{GS} = -10V$		4.7	6.1	Ω
	$R_{DS(on)2}$	$I_D = -40mA$ , $V_{GS} = -4V$		6.5	9.1	Ω

Marking : XF

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**SANYO Electric Co., Ltd. Semiconductor Company**

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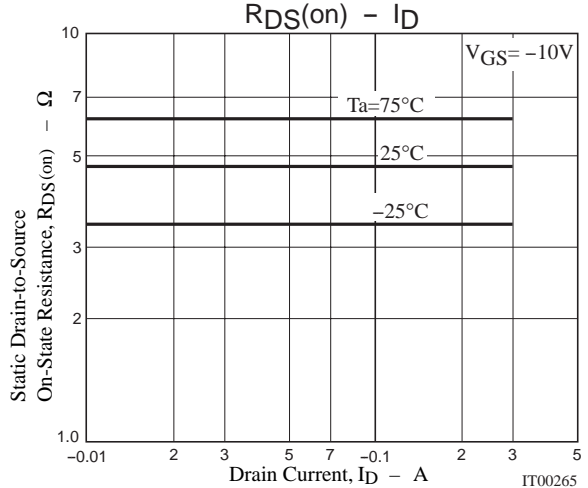
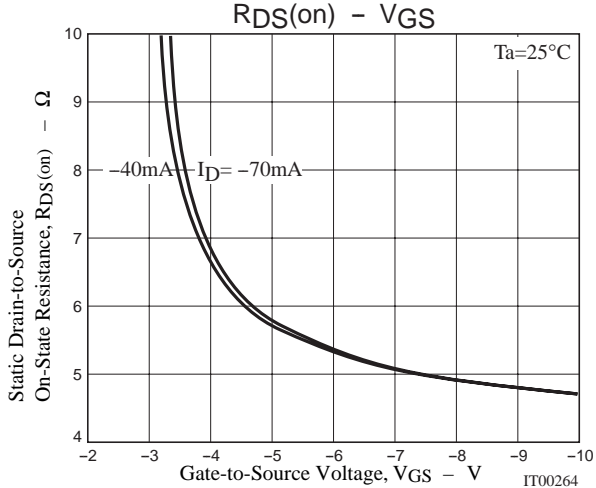
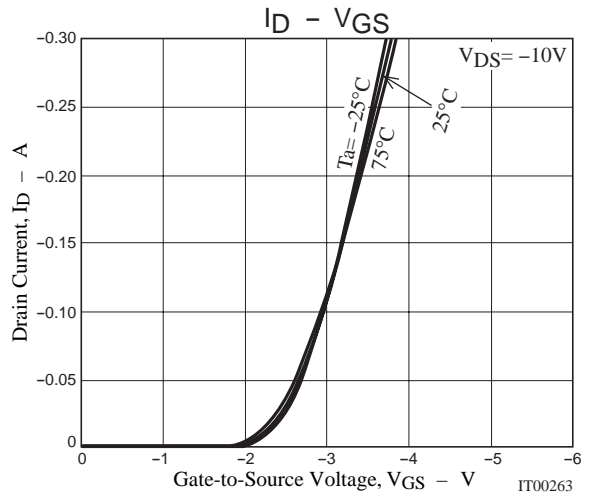
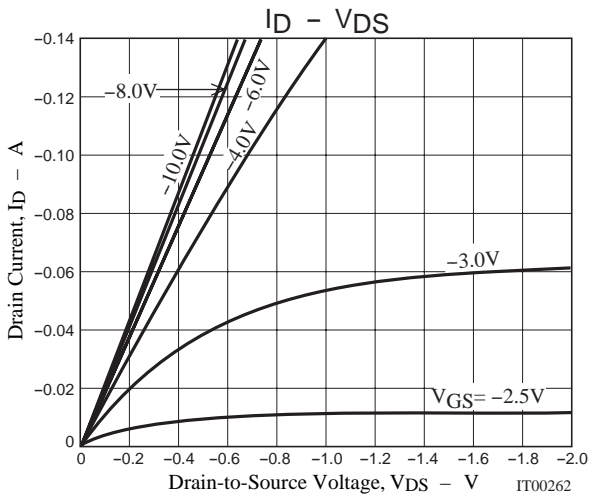
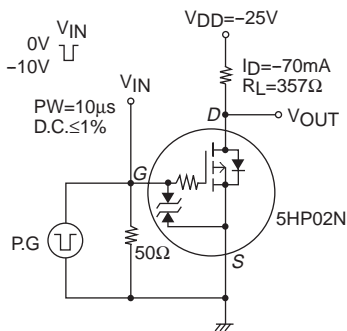
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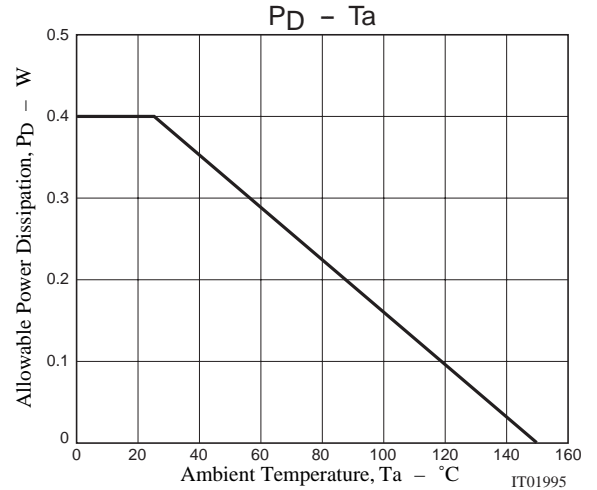
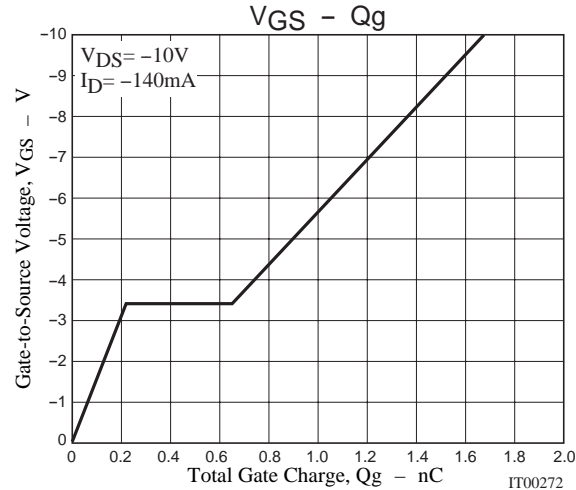
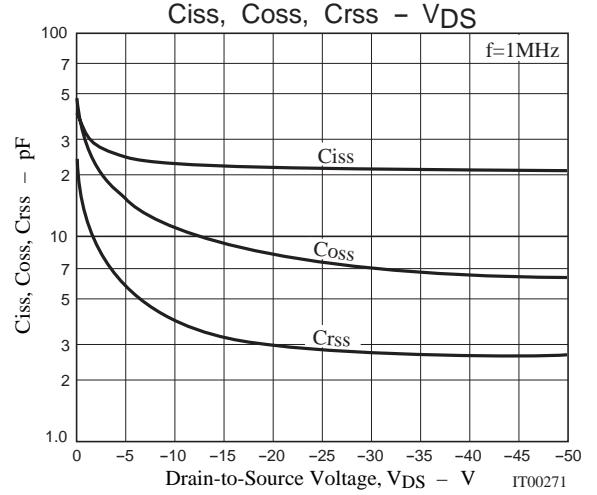
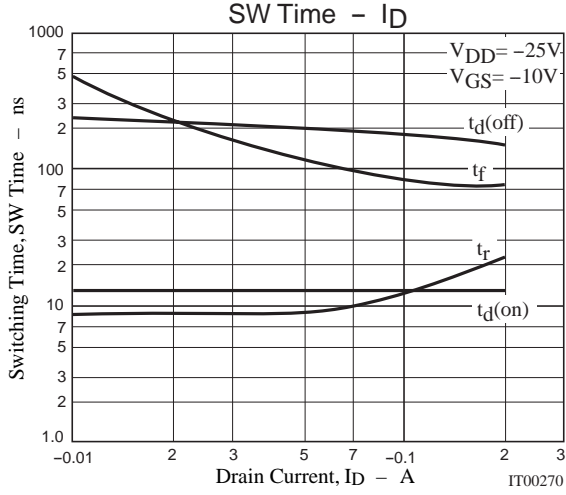
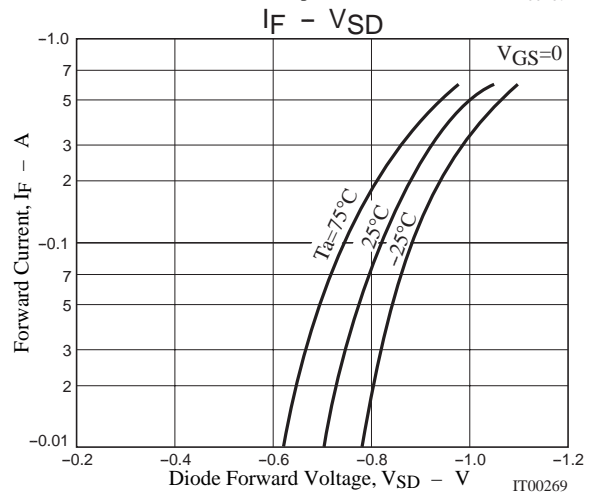
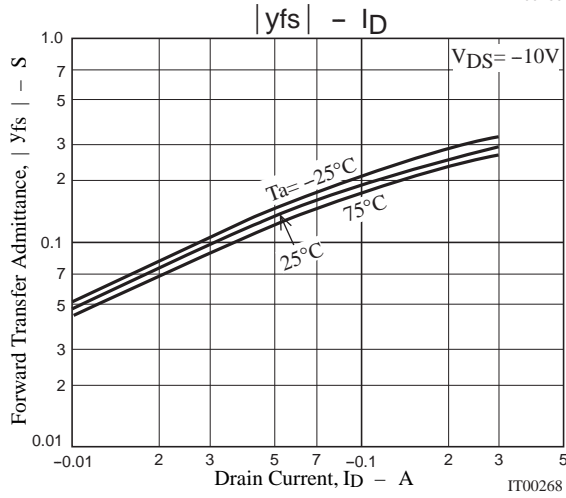
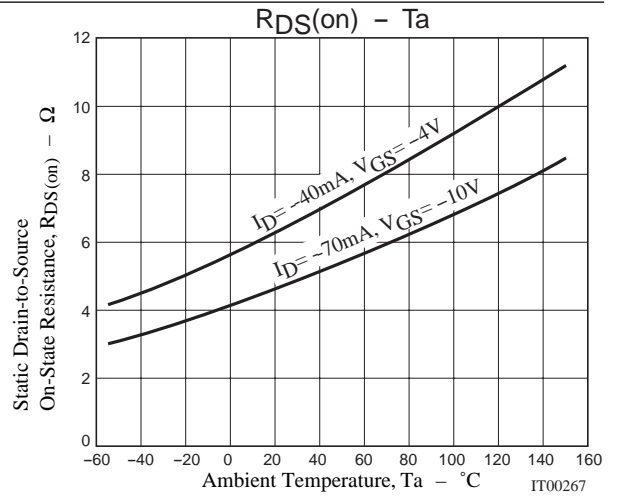
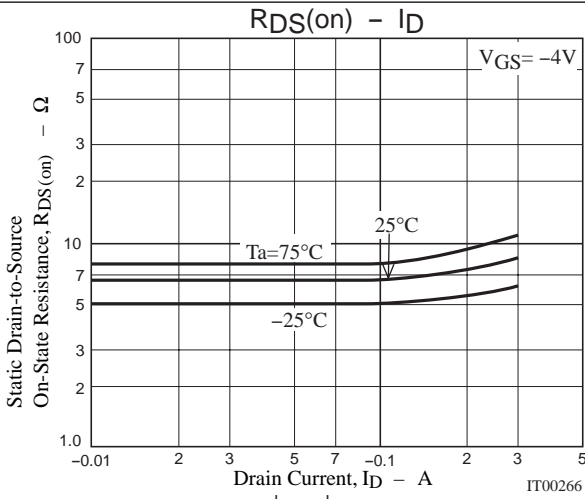
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, f=1MHz$		23		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10V, f=1MHz$		11		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10V, f=1MHz$		4		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		13		ns
Rise Time	$t_r$	See specified Test Circuit		10		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		190		ns
Fall Time	$t_f$	See specified Test Circuit		95		ns
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-140mA$		1.68		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-140mA$		0.22		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-140mA$		0.43		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-140mA, V_{GS}=0$		-0.83	-1.2	V

## Switching Time Test Circuit



# 5HP02N



## 5HP02N

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Note on usage : Since the 5HP02N is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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