Ordering number:ENN6531

P-Channel Silicon MOSFET

5HP02SP

Ultrahigh-Speed Switching Applications

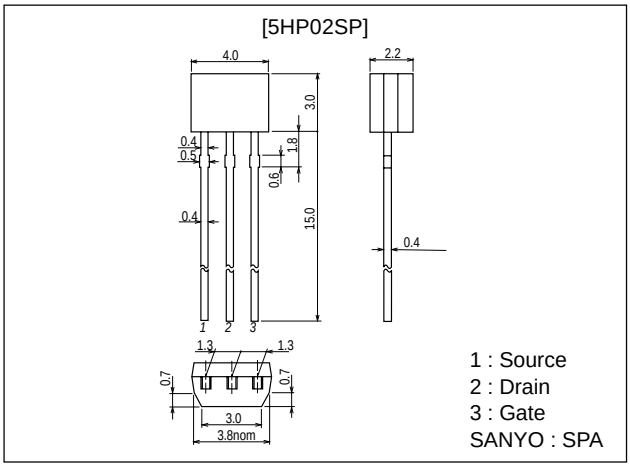
Features

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

Package Dimensions

unit:mm

2180



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≤10μs, duty cycle≤1%	–0.56	A
Allowable Power Dissipation	P_D		0.25	W
Channel Temperature	Tch		150	˚C
Storage Temperature	Tstg		–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}=±16V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=–10V, I_D=–100μA	–1		–2.5	V
Forward Transfer Admittance	| yfs |	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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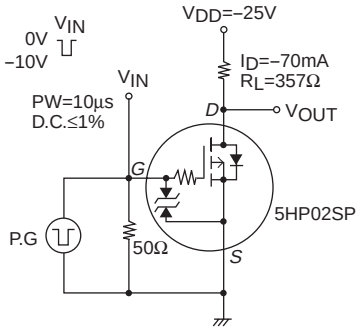
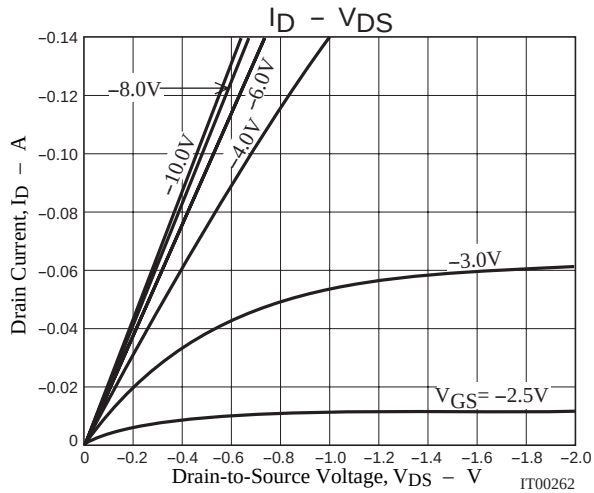
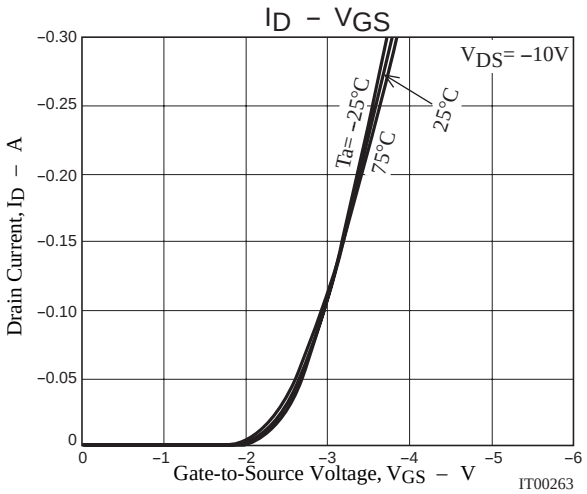
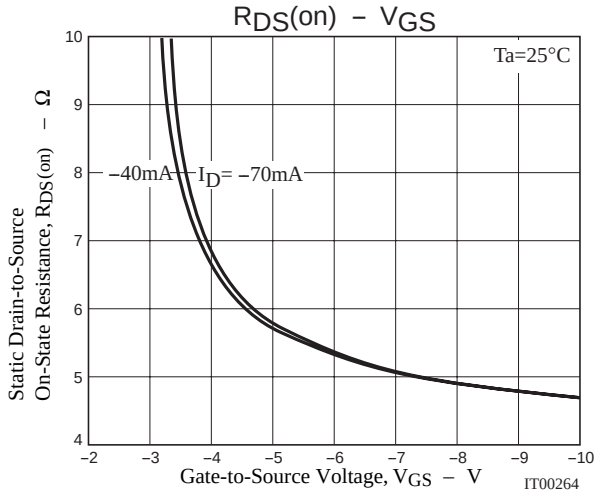
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		23		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		11		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		4		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit		13		ns
Rise Time	t_r	See 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	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=–140mA		1.68		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		0.43		nC
Diode Forward Voltage	V_{SD}	I_S=–140mA, V_{GS}=0		–0.83	–1.2	V

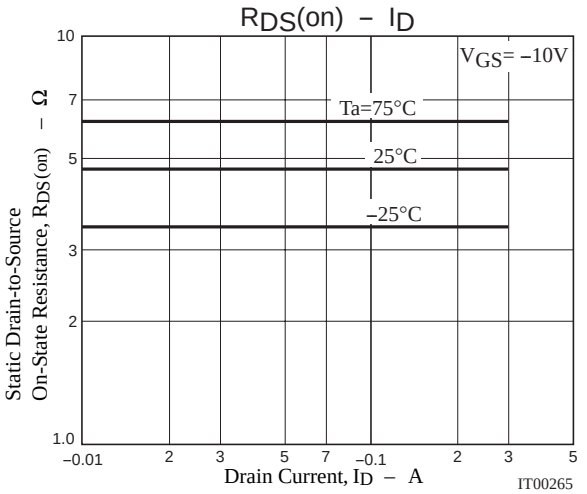
Switching Time Test Circuit



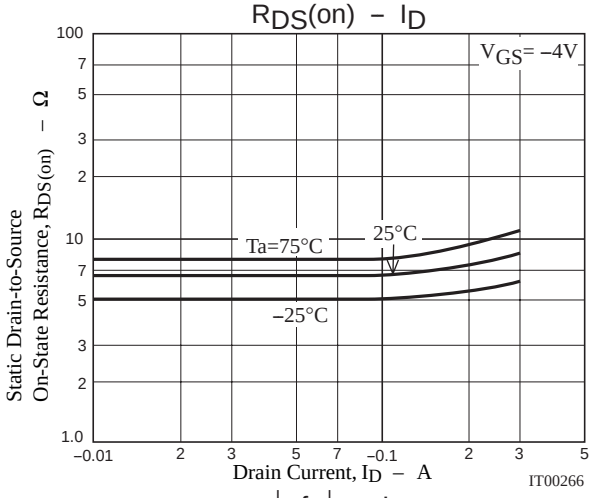




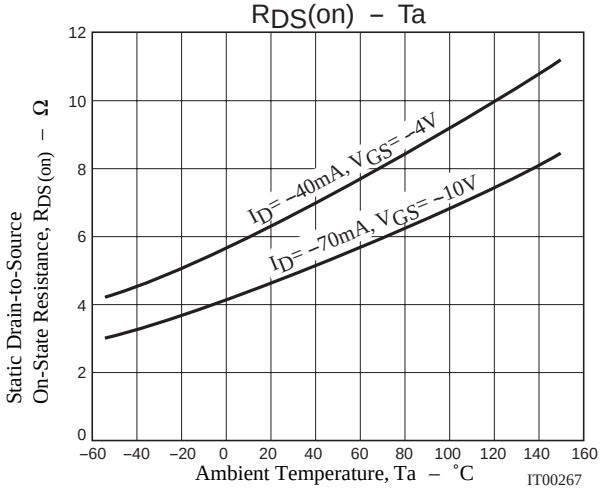




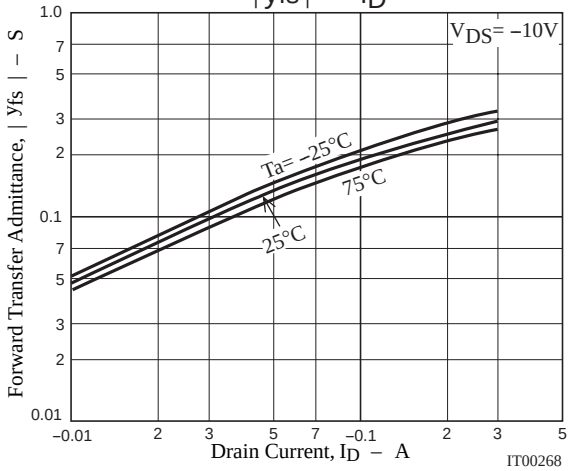
$R_{DS(on)}$ – I_D



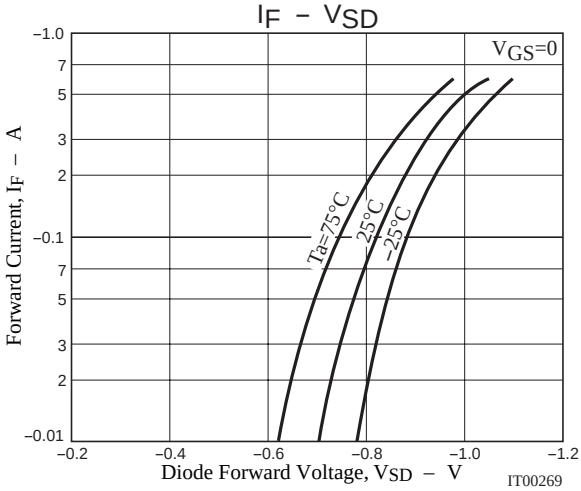
$R_{DS(on)}$ – Ta



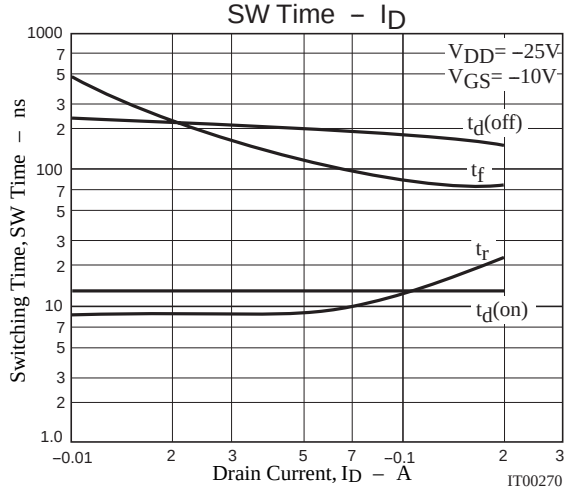
$|y_{fs}|$ – I_D



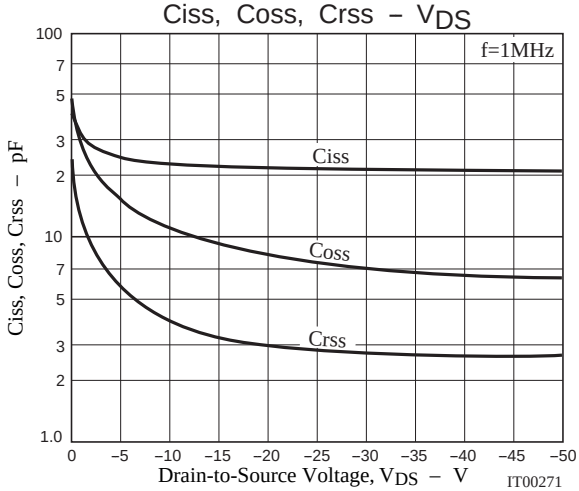
I_F – V_{SD}



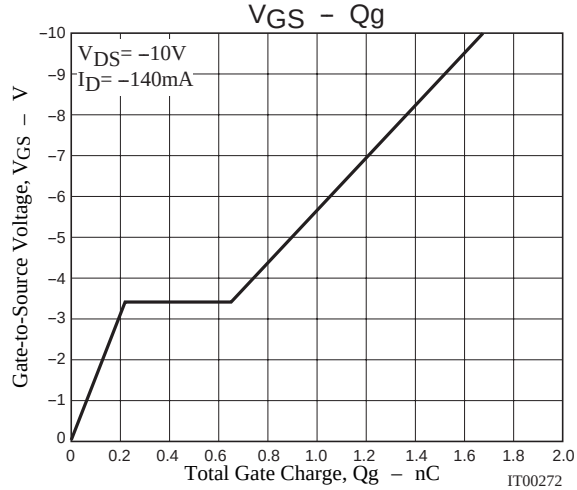
SW Time – I_D



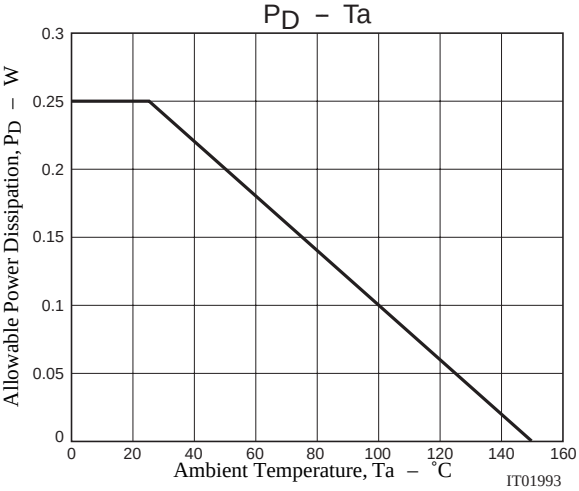
Ciss, Coss, Crss – V_{DS}



V_{GS} – Qg



P_D – Ta



Note on usage : Since the 5HP02SP is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.