Ordering number : ENN6643

P-Channel Silicon MOSFET

5HP01SP

Ultrahigh-Speed Switching Applications

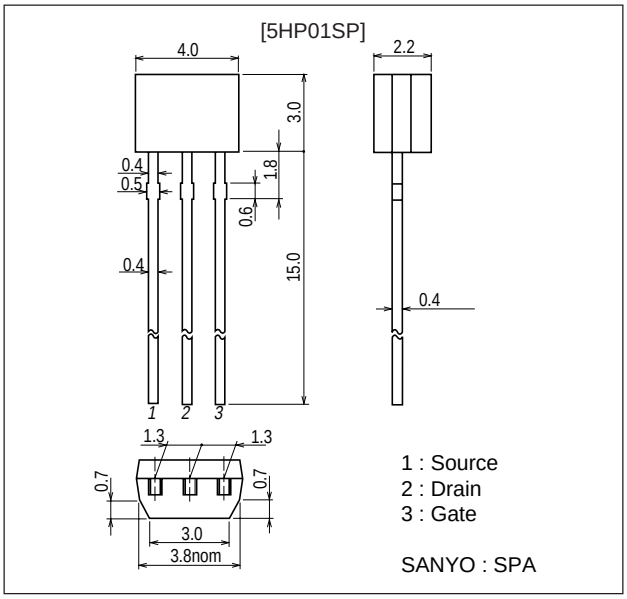
Features

- 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		−0.07	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−0.28	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-Sourse 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

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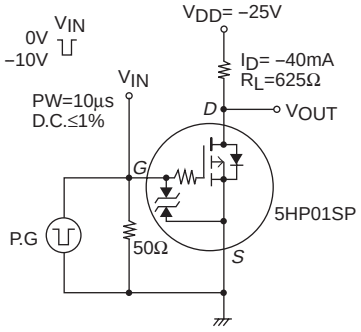
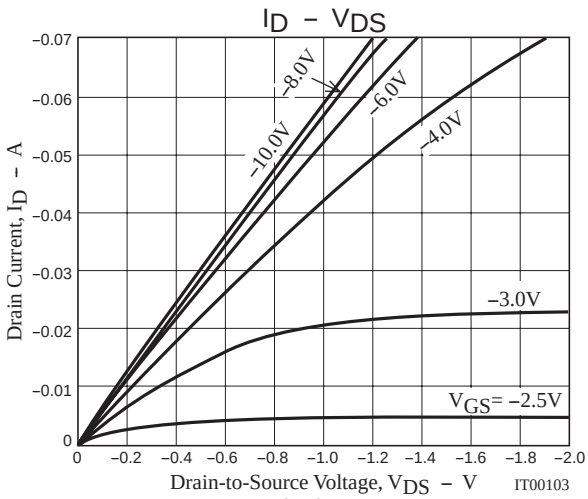
Continued from preceding page.

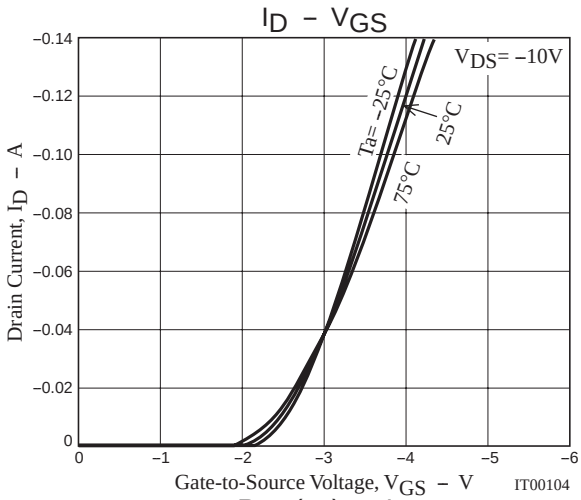
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	|yfs|	V_{DS}=–10V, I_D=–40mA	50	70		mS
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=–40mA, V_{GS}=–10V		17	22	Ω
	R_{DS}(on)2	I_D=–20mA, V_{GS}=–4V		23	32	Ω
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		6.2		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		4.0		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		1.3		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		100		ns
Fall Time	t_f	See specified Test Circuit		150		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=–70mA		1.32		nC
Gate Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_D=–70mA		0.17		nC
Gate Drain Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_D=–70mA		0.34		nC
Diode Forward Voltage	V_{SD}	I_S=–70mA, V_{GS}=0		0.85	1.2	V

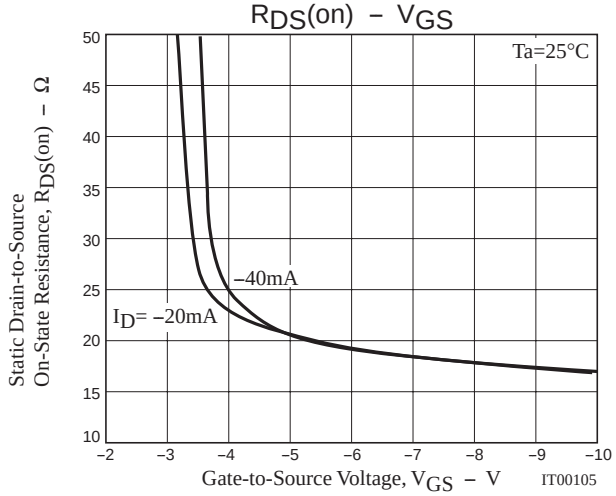
Marking : XC

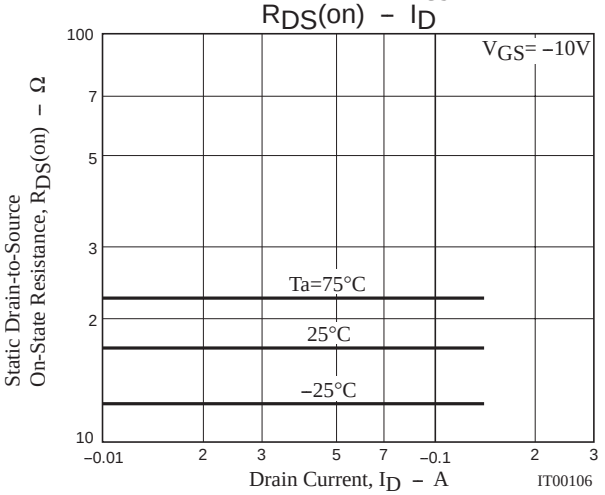
Switching Time Test Circuit



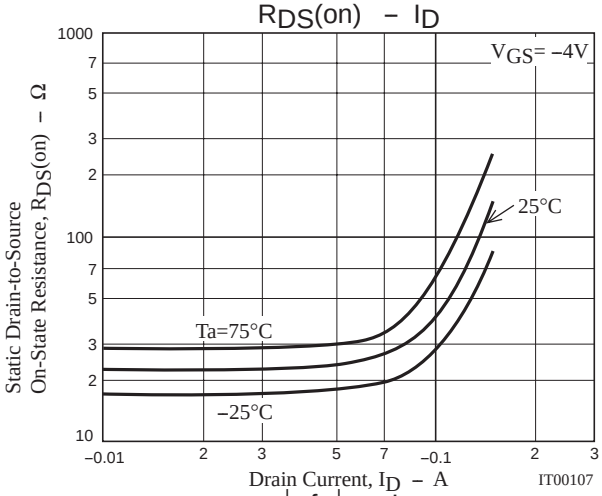




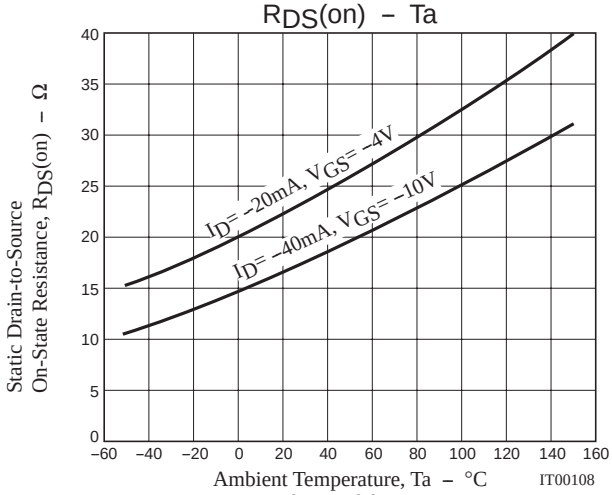




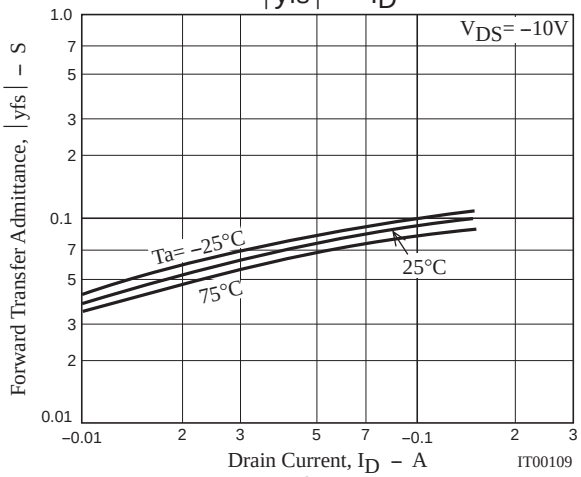
$R_{DS}(on)$ – I_D



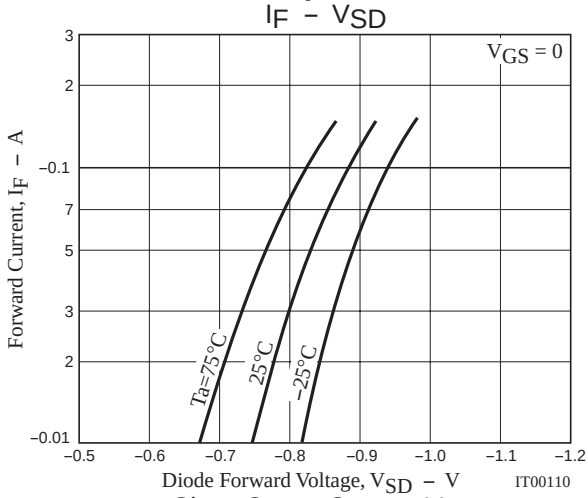
$R_{DS}(on)$ – Ta



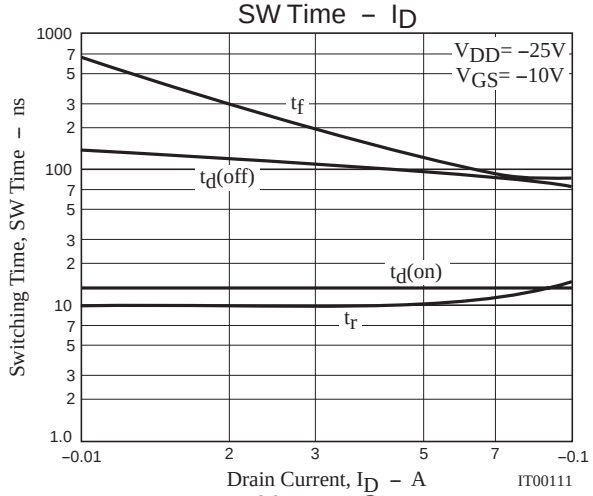
$|yfs|$ – I_D



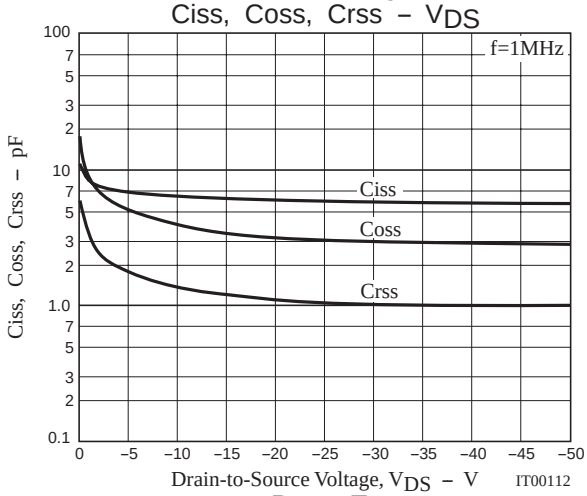
I_F – V_{SD}



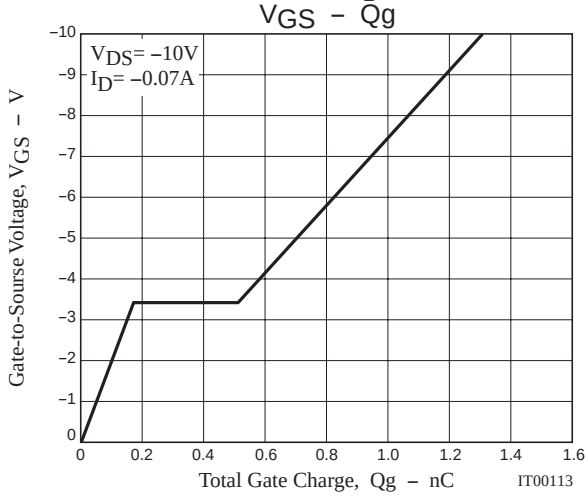
SW Time – I_D



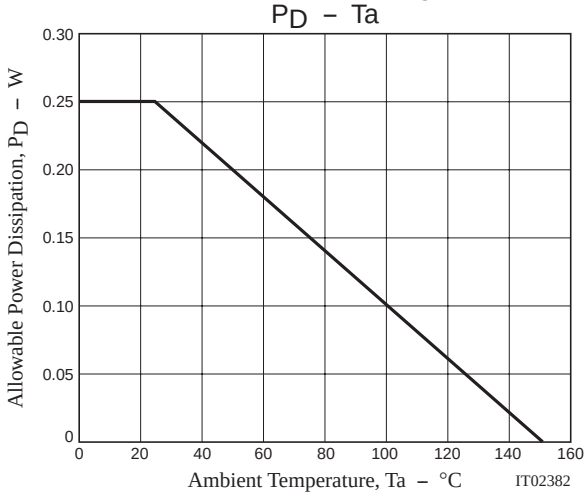
Ciss, Coss, Crss – V_{DS}



V_{GS} – Qg



P_D – Ta



Note on usage : Since the 5HP01SP is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.