Ordering number : ENN6683

P-Channel Silicon MOSFET

5HP01S

Ultrahigh Speed Switching Applications

Features

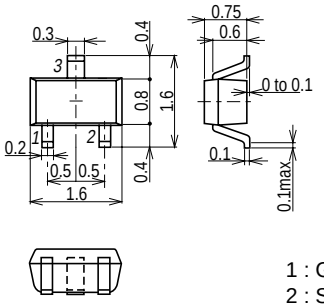
- Low ON-resistance .
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit : mm

2192

[5HP01S]



1 : Gate
2 : Source
3 : Drain

SANYO : SMCP

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source V oltage	V_{DSS}		-50	V
Gate-to-Source V oltage	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		0.15	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 V oltage	$V_{(BR)DSS}$	I_D=-1mA, V_{GS}=0	-50			V
Zero-Gate V oltage 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
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

Continued on ne xt pa ge.

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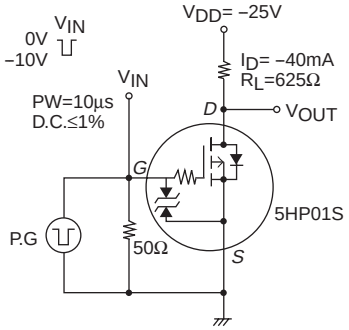
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

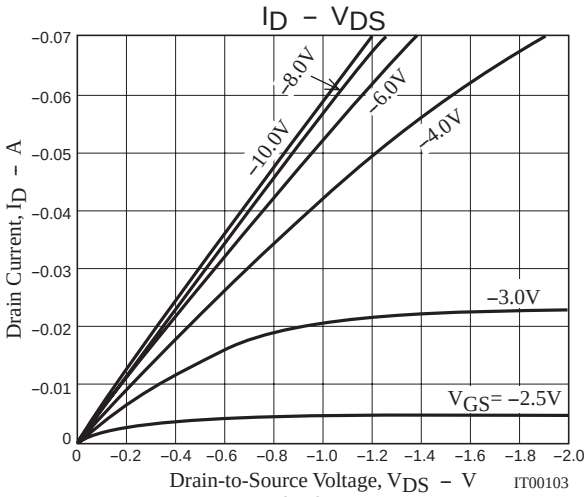
Continued from preceding page.

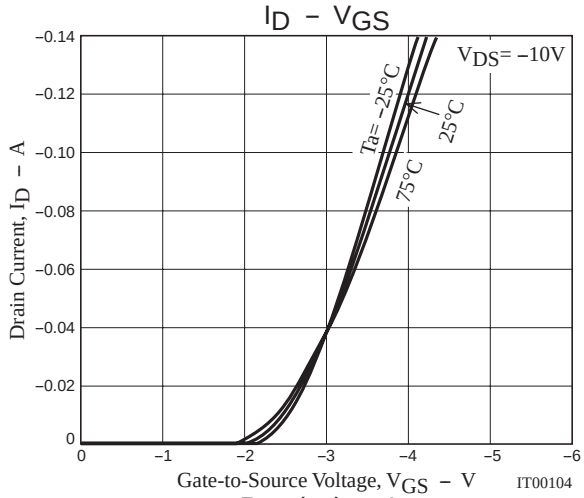
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=-10V, f=1MHz		6.2		pF
Output Capacitance	Coss	V_{DS}=-10V, f=1MHz		4.0		pF
Reverse Transfer Capacitance	Crss	V_{DS}=-10V, f=1MHz		1.3		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit		13		ns
Rise Time	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-to-Source Charge	Qgs	V_{DS}=-10V, V_{GS}=-10V, I_{D}=-70mA		0.17		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=-10V, V_{GS}=-10V, I_{D}=-70mA		0.34		nC
Diode Forward V oltage	V_{SD}	I_{S}=-70mA, V $_{GS}$=0		-0.85	-1.2	V

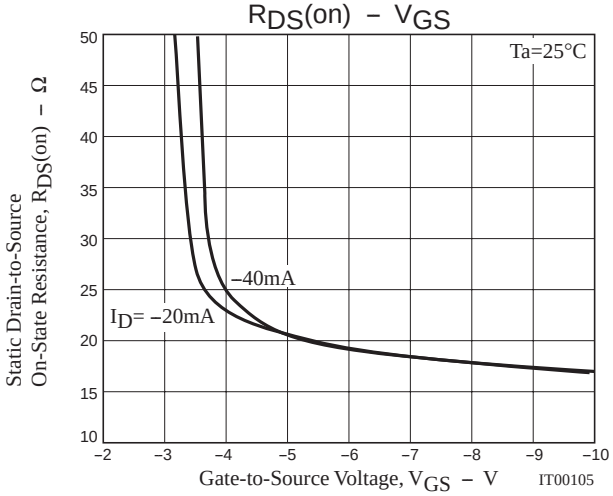
Marking : XC

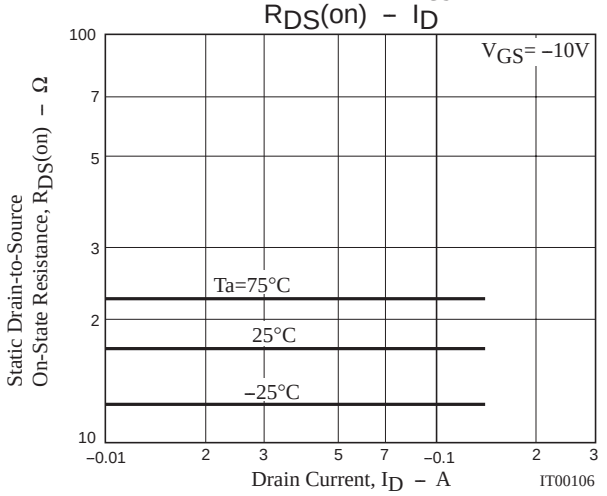
Switching Time Test Circuit

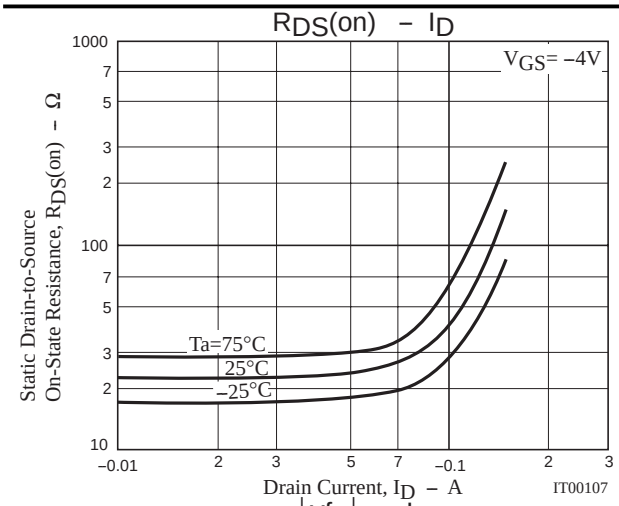


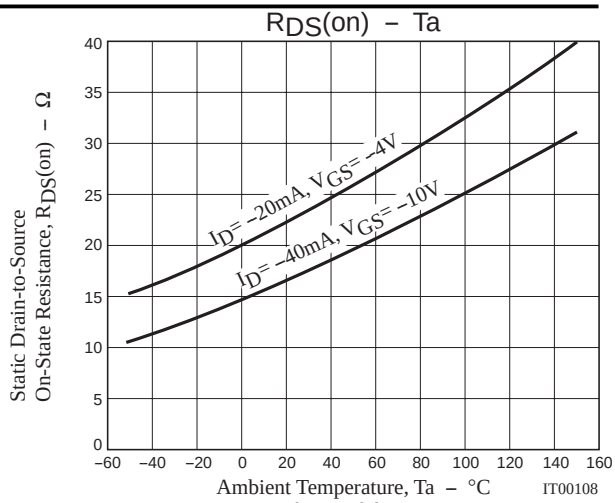


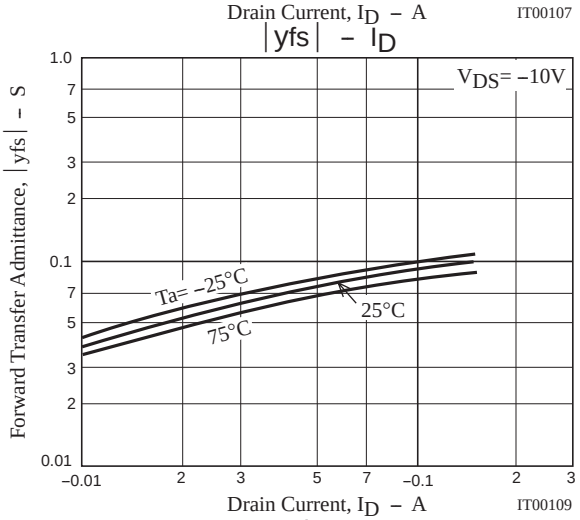


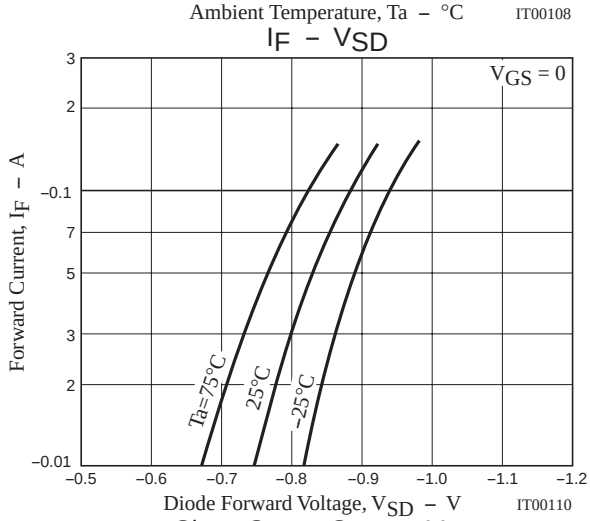


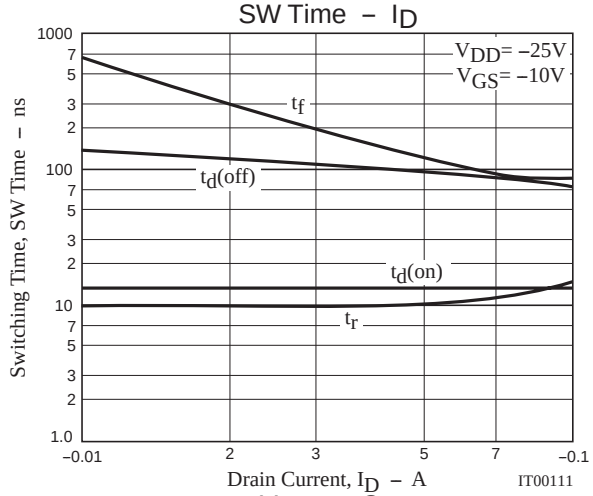


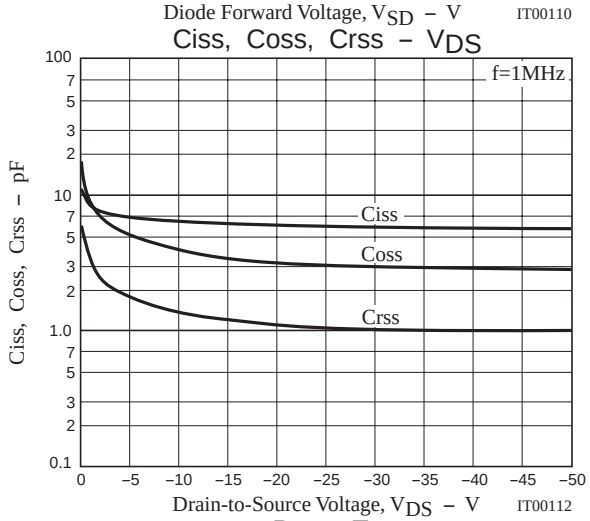

RDS(on) – ID
VGS= –4V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00107

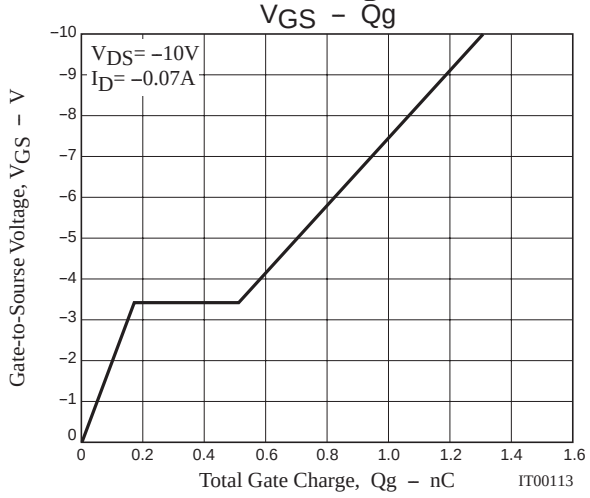

RDS(on) – Ta
ID= –20mA, VGS= –4V
ID= –40mA, VGS= –10V
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00108

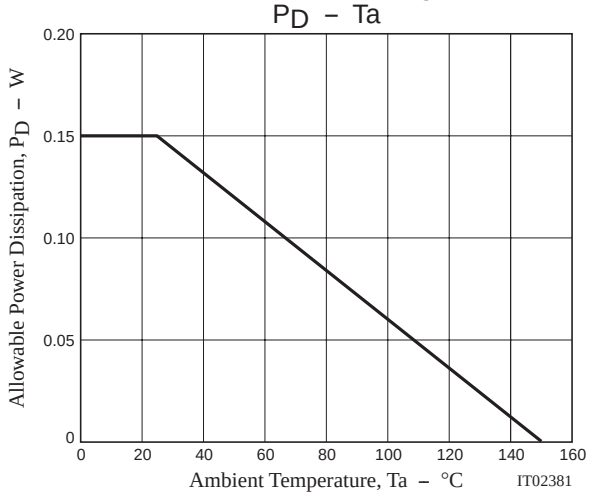

|yfs| – ID
VDS= –10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT00109


IF – VSD
VGS = 0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT00110


SW Time – ID
VDD= –25V
VGS= –10V
tf
td(off)
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT00111


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00112


VGS – Qg
VDS= –10V
ID= –0.07A
Gate-to-Sourse Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00113


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT02381

Note on usage : Since the 5HP01S is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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