Ordering number:ENN6131

P-Channel Silicon MOSFET

5HP02M

Ultrahigh-Speed Switching Applications

Features

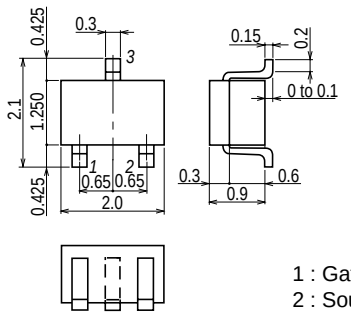
- Low ON resistance.
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit:mm

2158

[5HP02M]



1 : Gate
2 : Source
3 : Drain
SANYO : MCP3

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		0.15	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 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=–700mA	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
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

Marking : XF

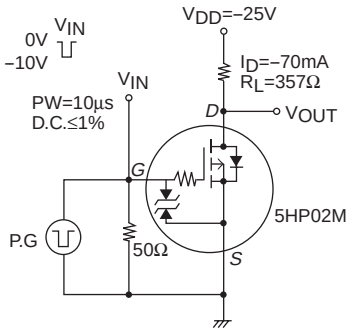
Continued on next page.

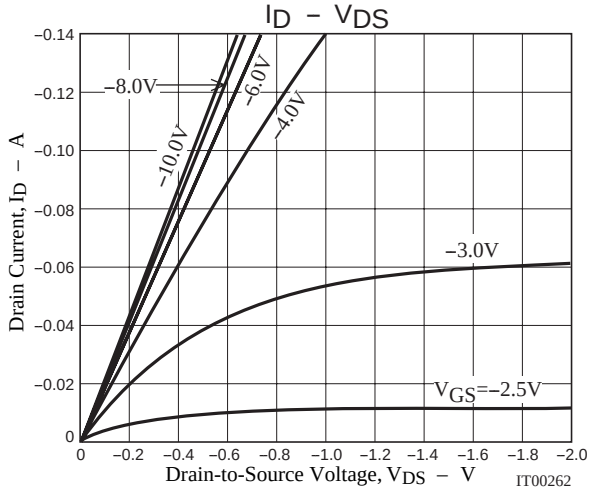
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

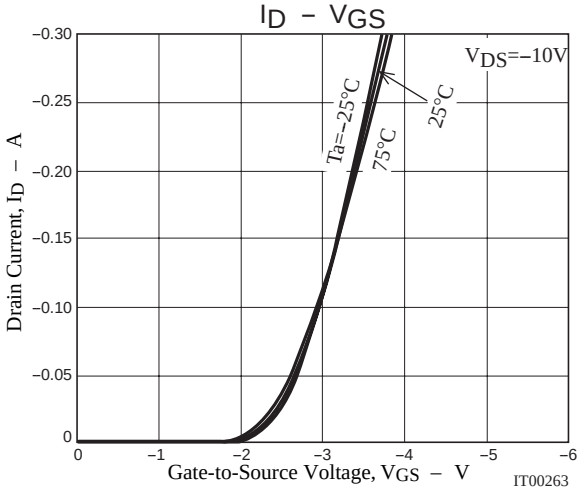
Continued from preceding page.

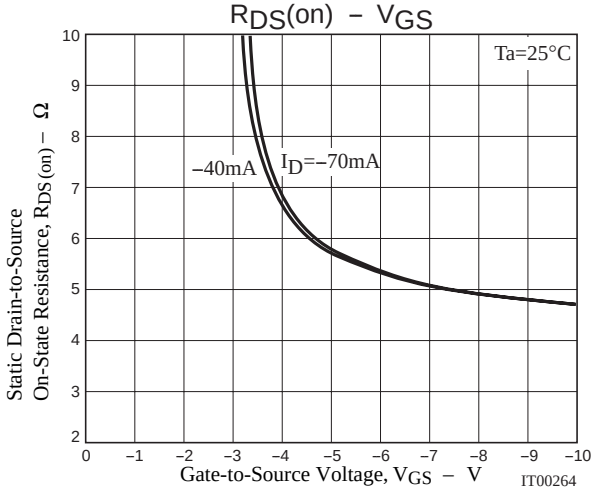
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		13		ns
Rise Time	t_r	See specified Test Circuit		10		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		190		ns
Fall Time	t_f	See specified Test Circuit		95		ns
Total Gate 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

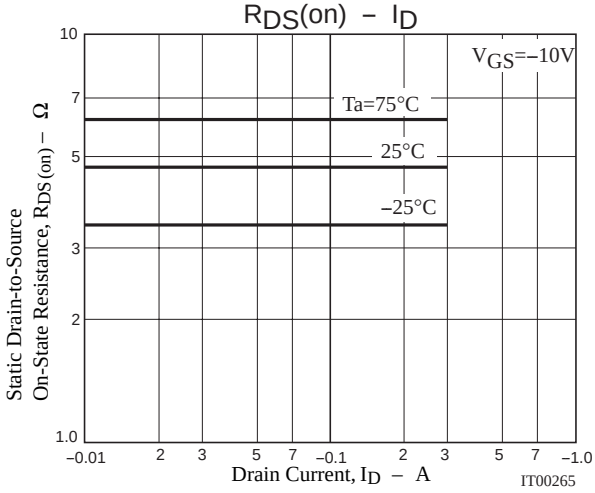
Switching Time Test Circuit

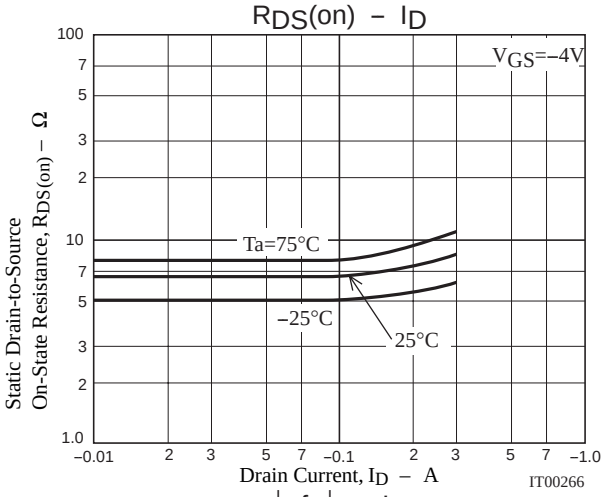


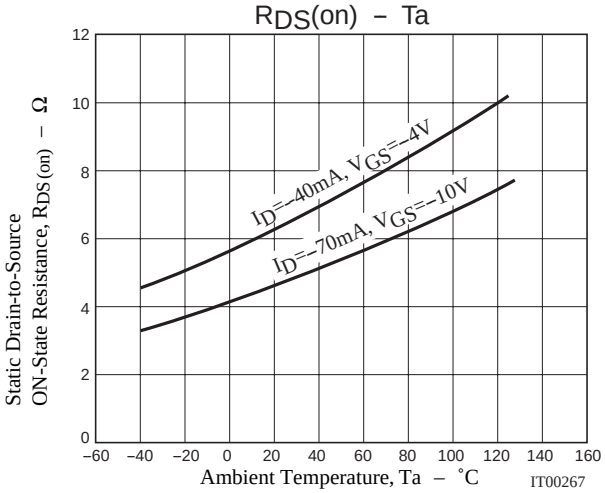


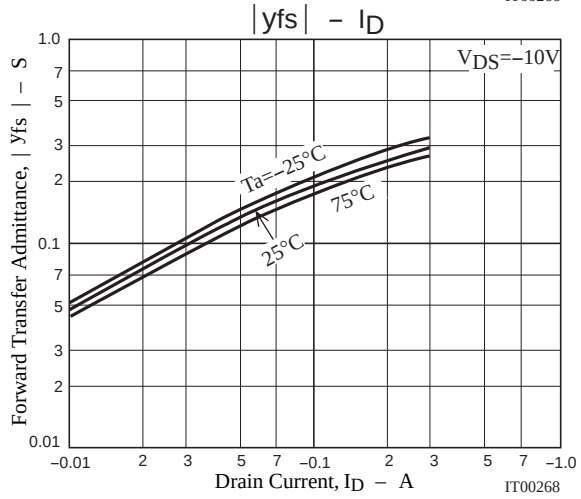


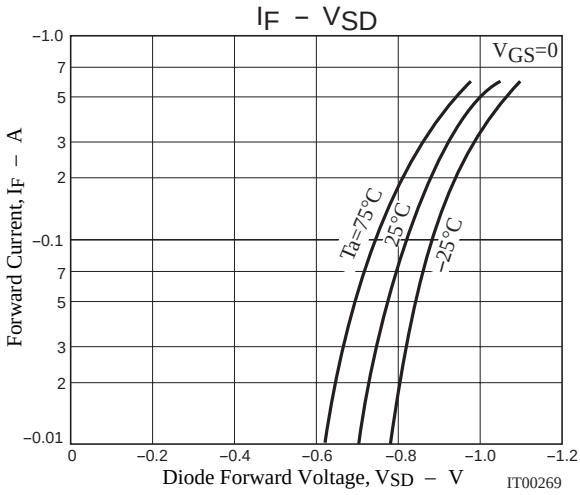


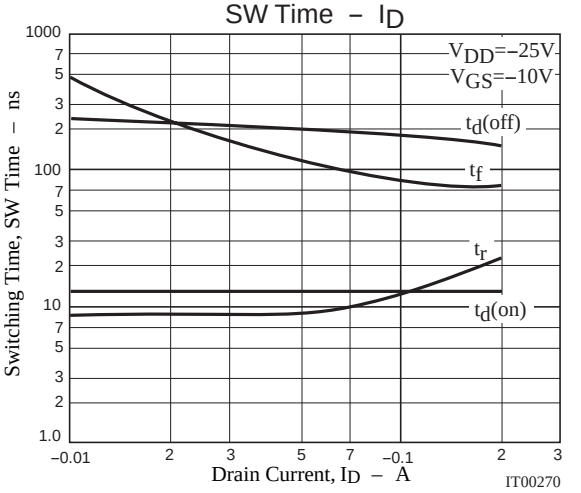


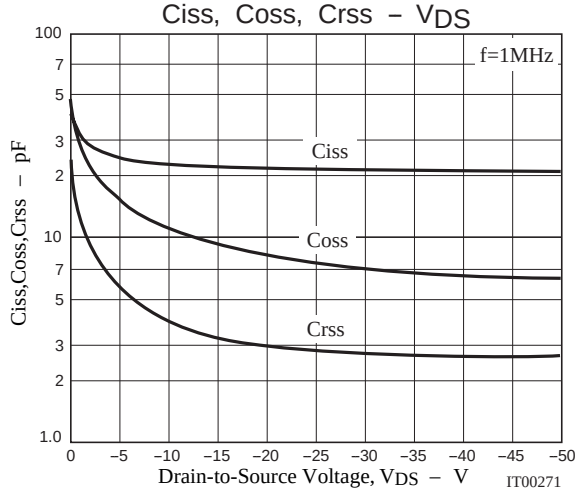

RDS(on) – ID
VGS=–4V
Ta=75°C
–25°C
25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00266

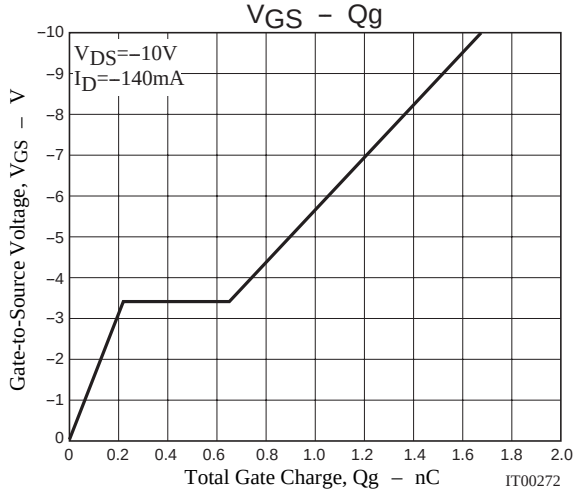

RDS(on) – Ta
ID=–40mA, VGS=–4V
ID=–70mA, VGS=–10V
Static Drain-to-Source ON-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00267

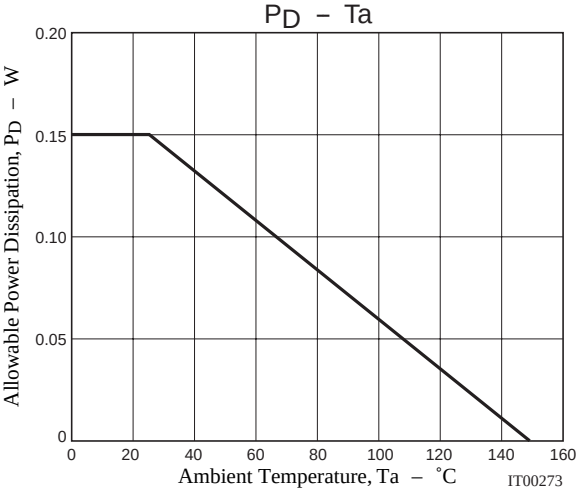

|yfs| – ID
VDS=–10V
Ta=–25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT00268


IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT00269


SW Time – ID
VDD=–25V
VGS=–10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00270


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss,Coss,Crss – pF
Drain-to-Source Voltage, VDS – V
IT00271


VGS – Qg
VDS=–10V
ID=–140mA
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00272


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT00273