Ordering number : ENN6620

P-Channel Silicon MOSFET

5LP01N

Ultrahigh-Speed Switching Applications

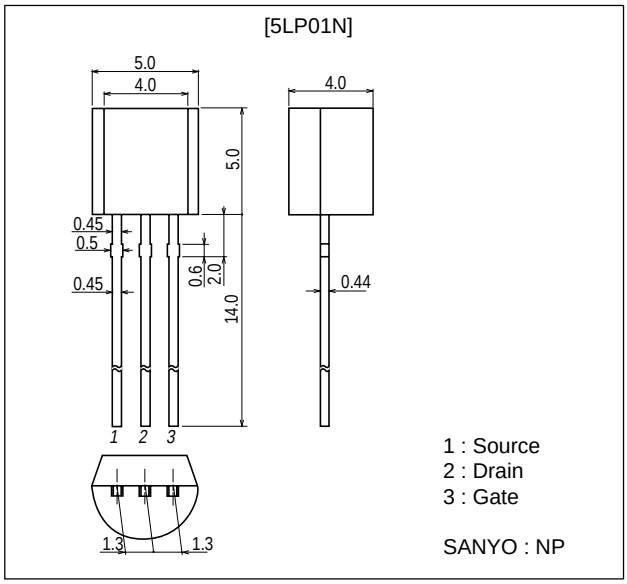
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V 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}		±10	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		0.4	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}=±8V, V_{DS}=0			±10	µA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=-10V, I_D=-100µA	-0.4		-1.4	V

Marking : XB

Continued on next page.

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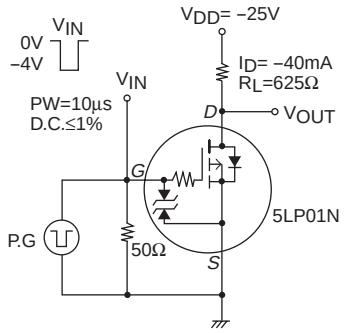
■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

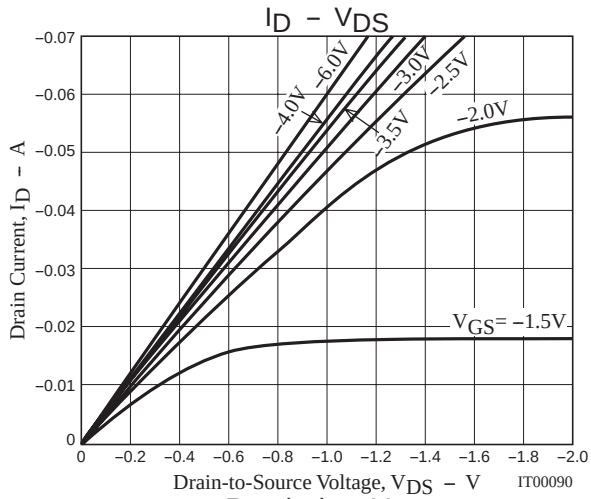
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

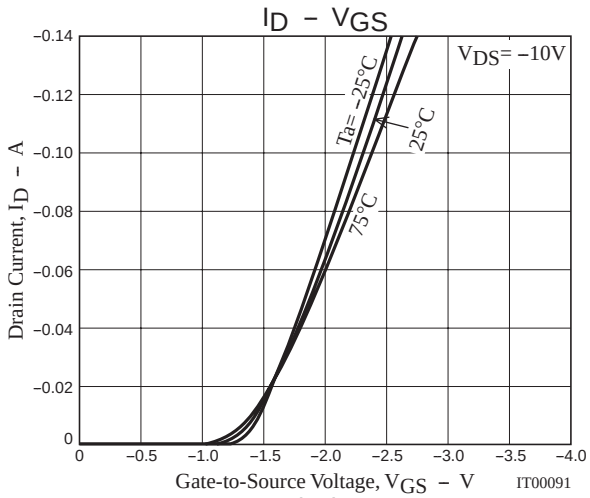
Continued from preceding page.

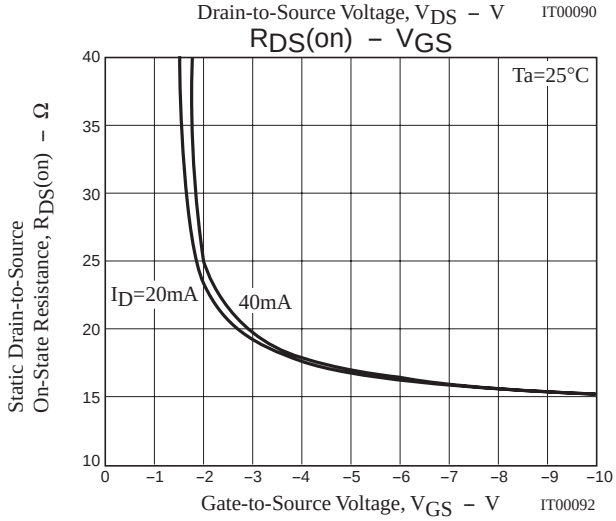
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	|yfs|	V_{DS}=-10V, I_D=-40mA	70	100		mS
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=-40mA, V_{GS}=-4V		18	23	Ω
	R_{DS}(on)2	I_D=-20mA, V_{GS}=-2.5V		20	28	Ω
	R_{DS}(on)3	I_D=-5mA, V_{GS}=-1.5V		30	60	Ω
Input Capacitance	Ciss	V_{DS}=-10V, f=1MHz		7.4		pF
Output Capacitance	Coss	V_{DS}=-10V, f=1MHz		4.2		pF
Reverse Transfer Capacitance	Crss	V_{DS}=-10V, f=1MHz		1.3		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit		20		ns
Rise Time	t_r	See specified Test Circuit		35		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit		160		ns
Fall Time	t_f	See specified Test Circuit		150		ns
Total Gate Charge	Qg	V_{DS}=-10V, V_{GS}=-10V, I_D=-70mA		1.40		nC
Gate-to-Source Charge	Qgs	V_{DS}=-10V, V_{GS}=-10V, I_D=-70mA		0.16		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=-10V, V_{GS}=-10V, I_D=-70mA		0.23		nC
Diode Forward Voltage	V_{SD}	I_S=-70mA, V_{GS}=0		0.85	1.2	V

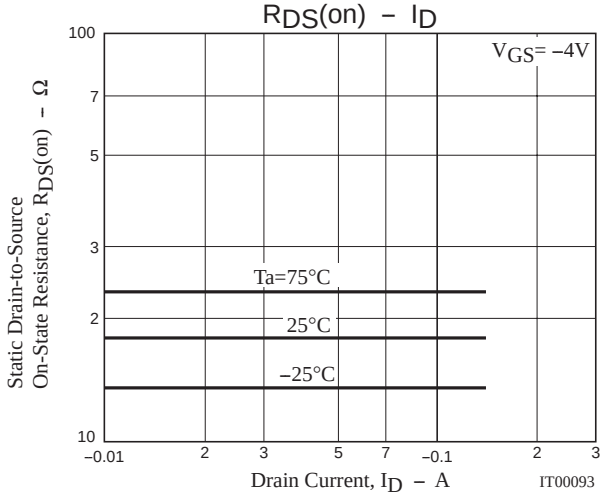
Switching Time Test Circuit

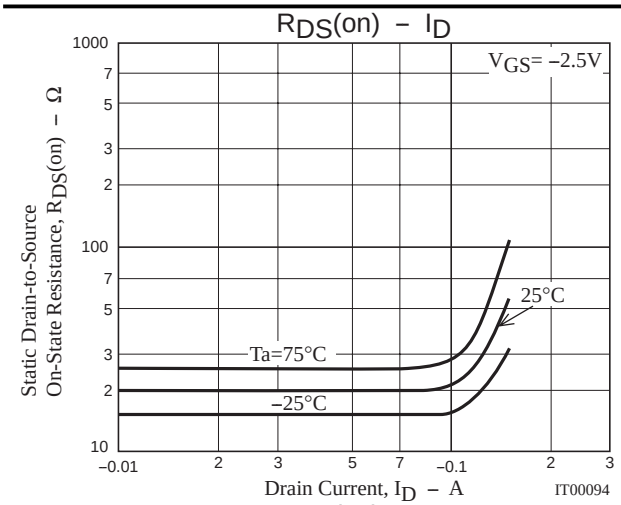


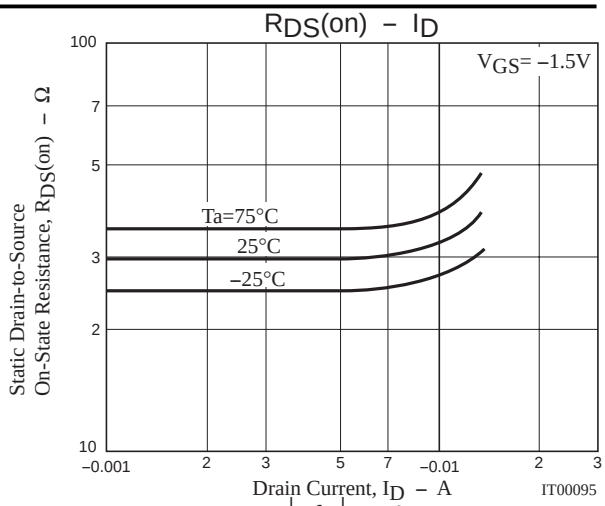


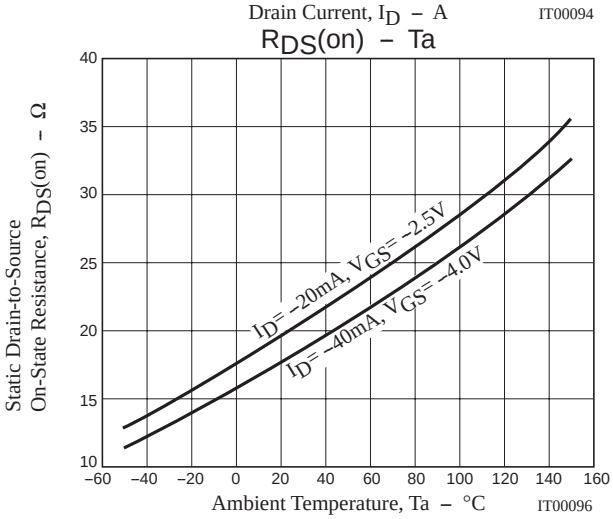


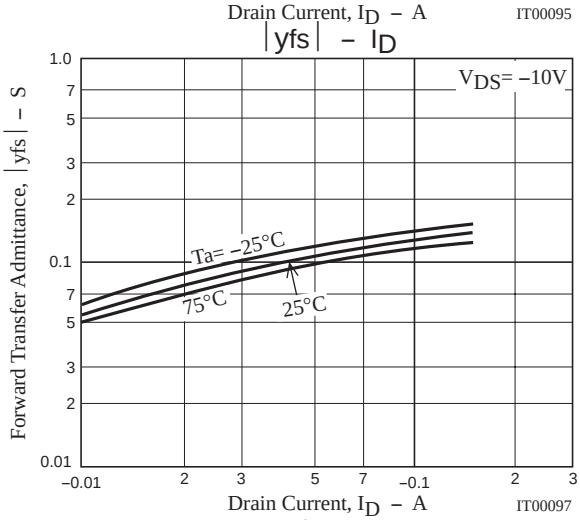


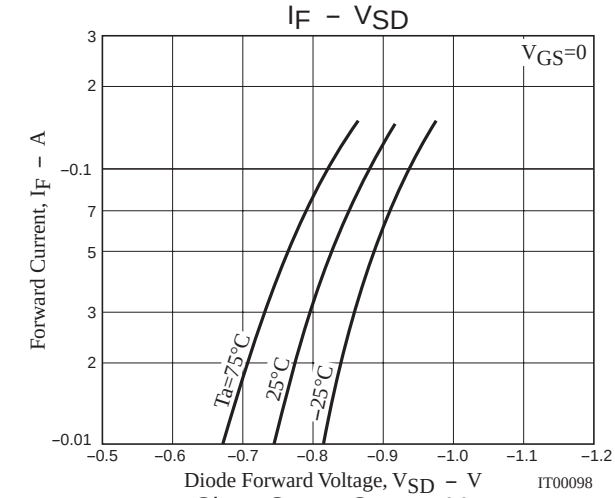


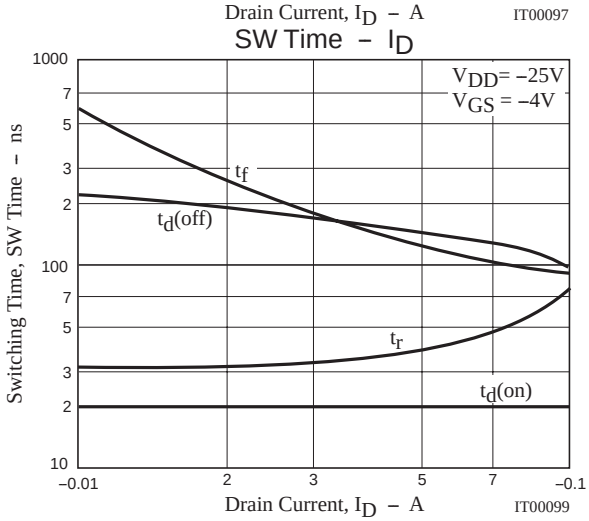

RDS(on) – ID
VGS= –2.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00094

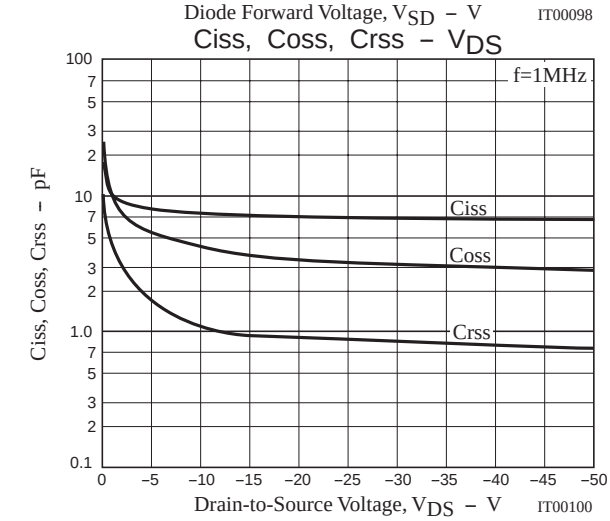

RDS(on) – ID
VGS= –1.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00095

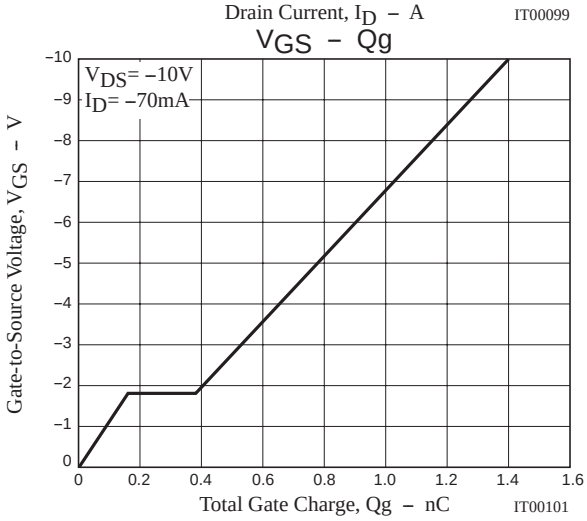

RDS(on) – Ta
ID= –20mA, VGS= –2.5V
ID= –40mA, VGS= –4.0V
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00096

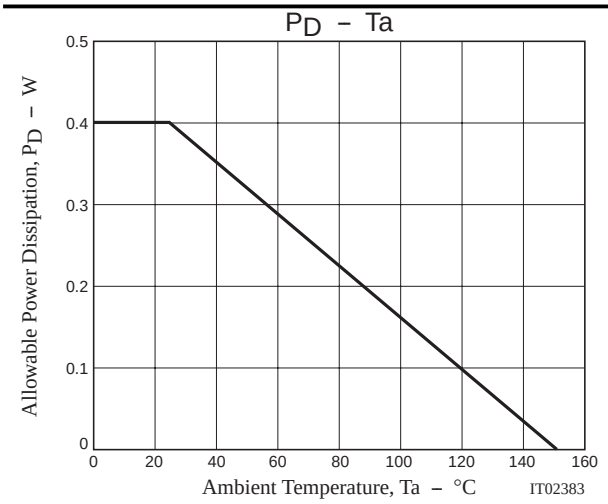

|yfs| – ID
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT00097


IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT00098


SW Time – ID
VDD= –25V
VGS = –4V
tf
td(off)
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00099


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00100


VGS – Qg
VDS= –10V
ID= –70mA
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00101



Note on usage : Since the 5LP01N is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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