Ordering number:ENN6554

P-Channel Silicon MOSFET

3LP02SP

Ultrahigh-Speed Switching Applications

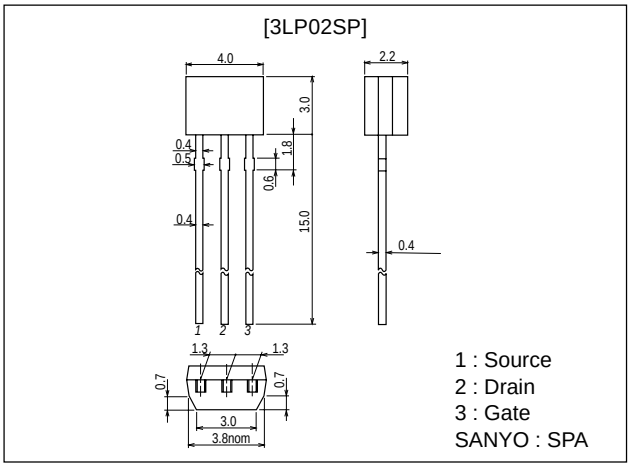
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V 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}		–30	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		–0.2	A
Drain Current (pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	–0.8	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	–30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=–30V, V_{GS}=0			–10	μA
Gate-to-Source 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
Forward Transfer Admittance	| yfs |	V_{DS}=–10V, I_D=–100mA	0.21	0.3		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=–100mA, V_{GS}=–4V		2.4	3.1	Ω
	R_{DS}(on)2	I_D=–50mA, V_{GS}=–2.5V		3.5	4.9	Ω
	R_{DS}(on)3	I_D=–10mA, V_{GS}=–1.5V		10	20	Ω

Marking : XD

Continued on next page.

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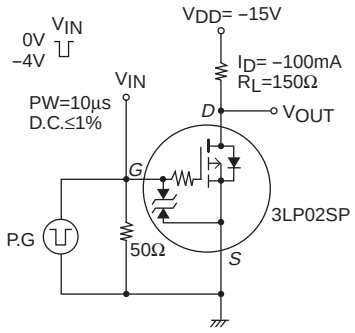
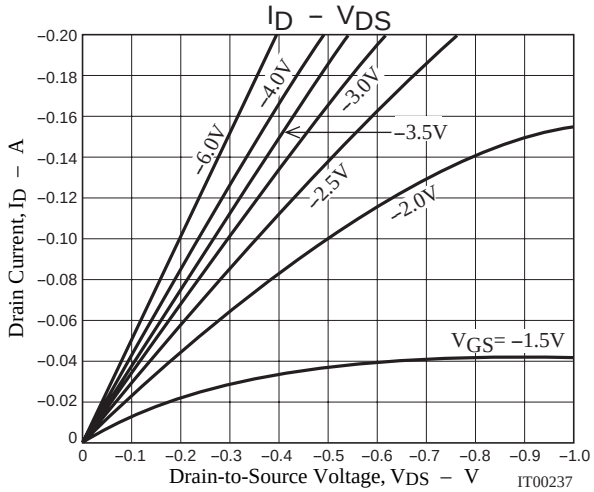
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

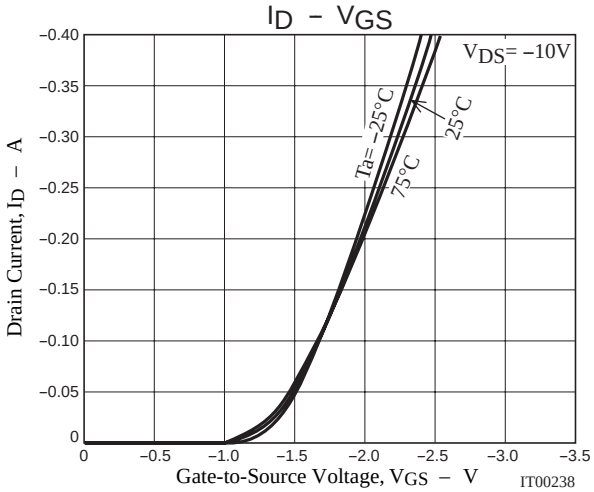
Continued from preceding page.

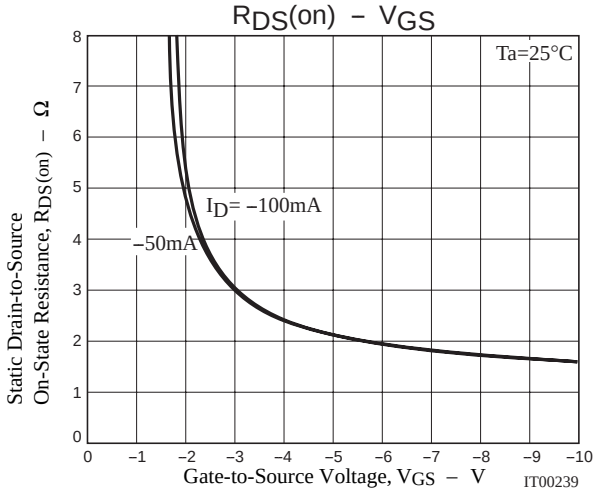
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		28		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		15		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		5.2		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit		24		ns
Rise Time	t_r	See specified Test Circuit		75		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit		200		ns
Fall Time	t_f	See specified Test Circuit		150		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=–200mA		2		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_D=–200mA		0.25		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_D=–200mA		0.35		nC
Diode Forward Voltage	V_{SD}	I_S=–200mA, V_{GS}=0		–0.82	–1.2	V

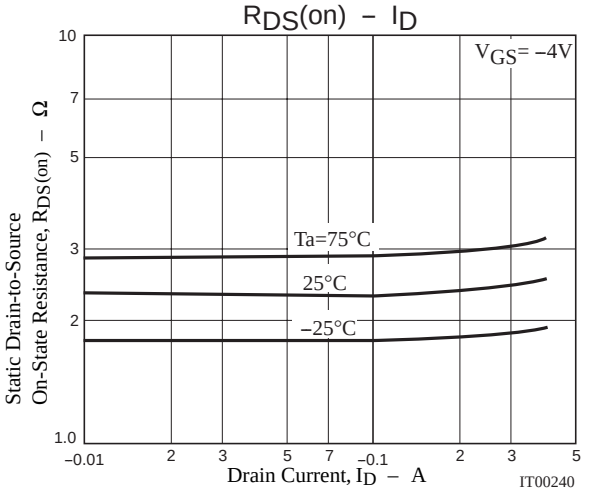
Switching Time Test Circuit

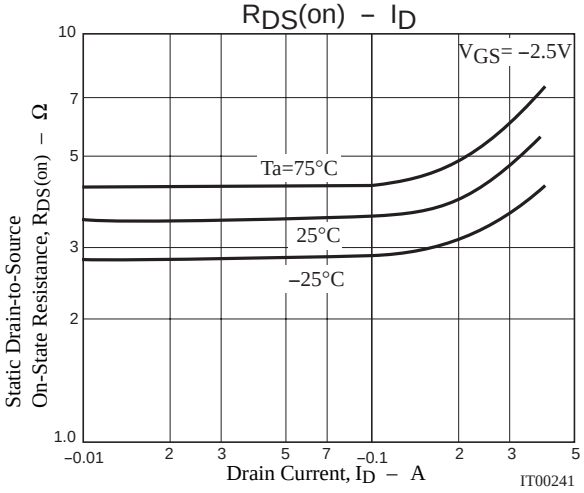


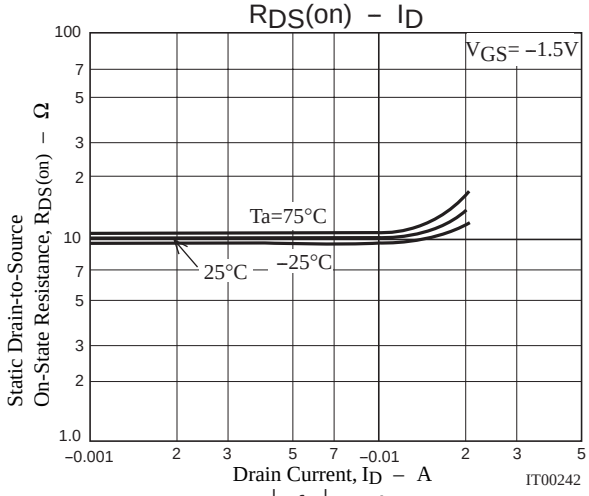


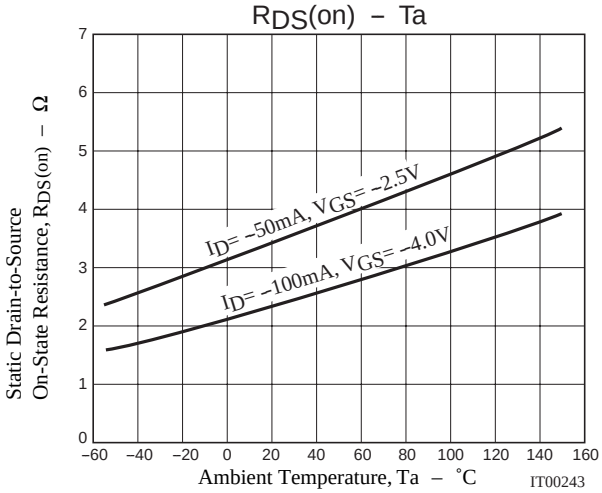


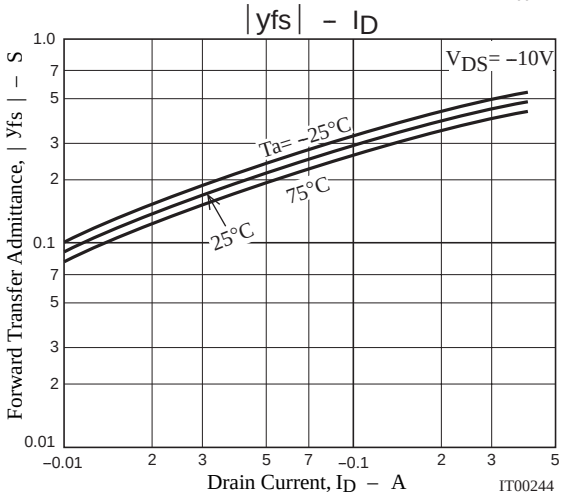


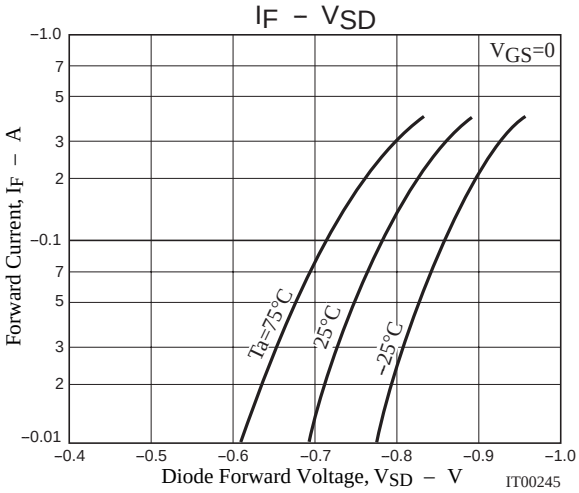


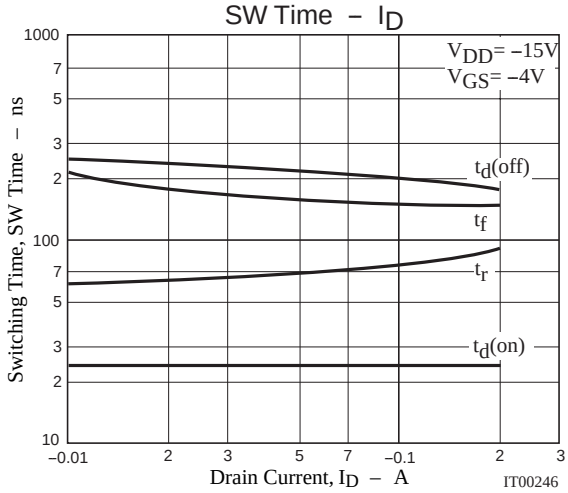

RDS(on) – ID
VGS= –2.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00241

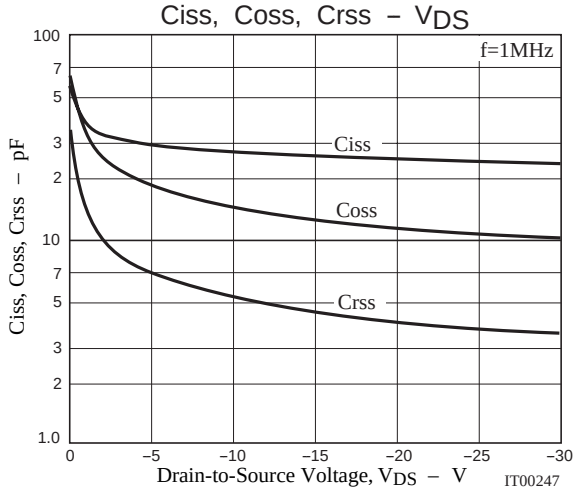

RDS(on) – ID
VGS= –1.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00242

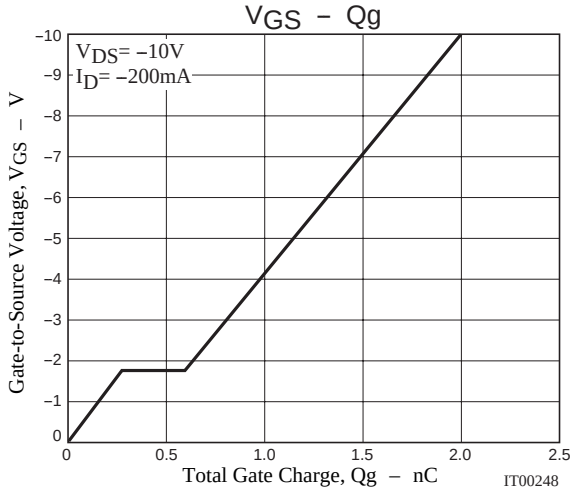

RDS(on) – Ta
ID= –50mA, VGS= –2.5V
ID= –100mA, VGS= –4.0V
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00243

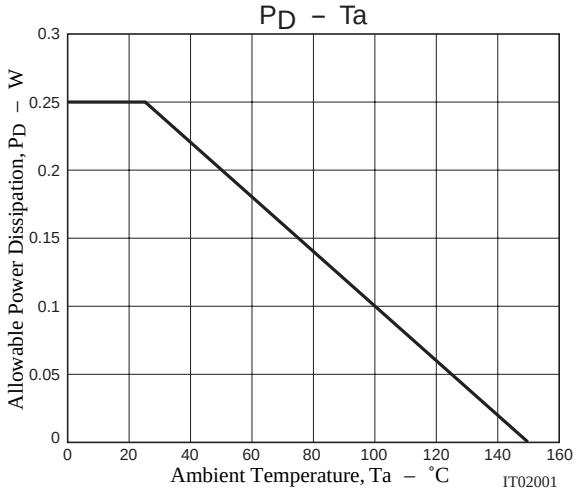

|yfs| – ID
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT00244


IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT00245


SW Time – ID
VDD= –15V
VGS= –4V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00246


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00247


VGS – Qg
VDS= –10V
ID= –200mA
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00248



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