Ordering number : EN6139B

SANYO Semiconductors

DATA SHEET

P-Channel Silicon MOSFET

3LP01M — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- High-speed switching.
- 2.5V drive.

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		-0.1	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	-0.4	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}=0V	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	μA
Gate-to-Sourse Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±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=-50mA	80	110		mS
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=-50mA, V_{GS}=-4V		8	10.4	Ω
	R_{DS}(on)2	I_D=-30mA, V_{GS}=-2.5V		11	15.4	Ω
	R_{DS}(on)3	I_D=-1mA, V_{GS}=-1.5V		27	54	Ω

Marking : XA

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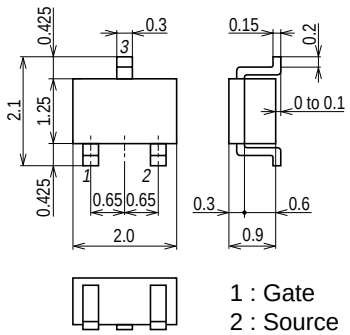
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		7.5		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		5.7		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		1.8		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		24		ns
Rise Time	t_{r}	See specified Test Circuit.		55		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		120		ns
Fall Time	t_{f}	See specified Test Circuit.		130		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_{D}=–100mA		1.43		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_{D}=–100mA		0.18		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_{D}=–100mA		0.25		nC
Diode Forward Voltage	V_{SD}	I_{S}=–100mA, V_{GS}=0V		–0.83	–1.2	V

Package Dimensions

unit : mm (typ)

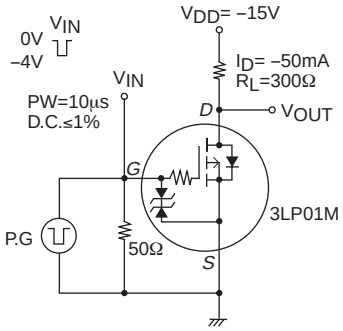
7023-010

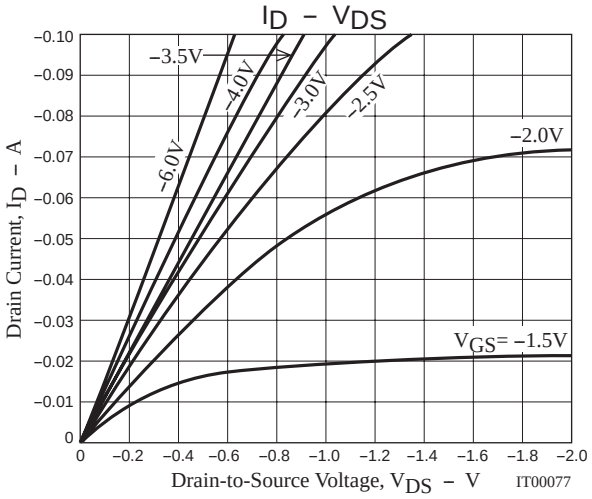


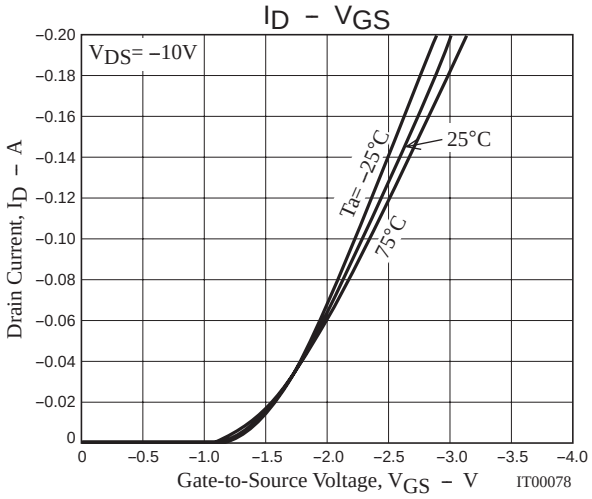
1 : Gate
2 : Source
3 : Drain

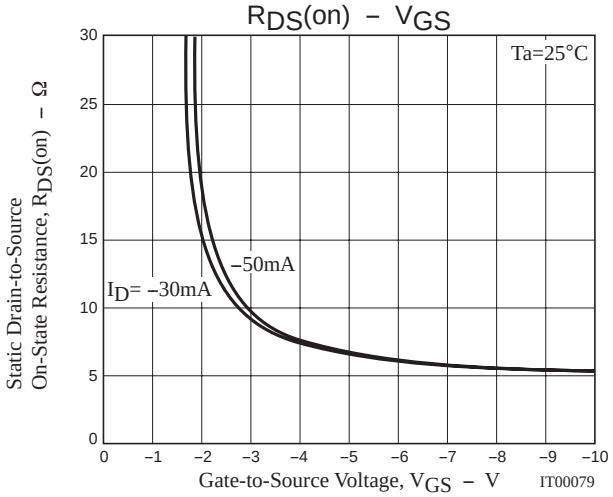
SANYO : MCP

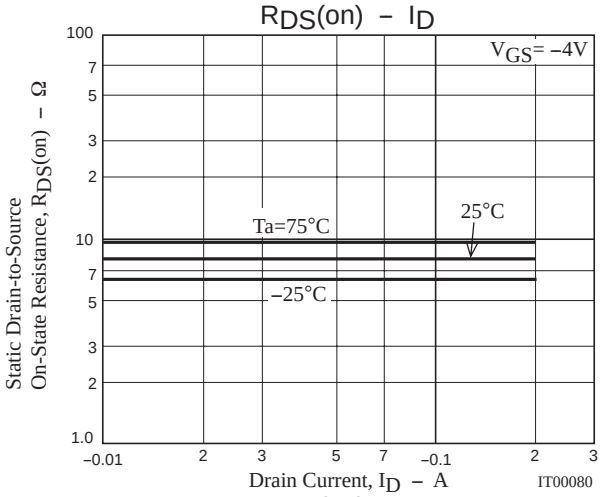
Switching Time Test Circuit

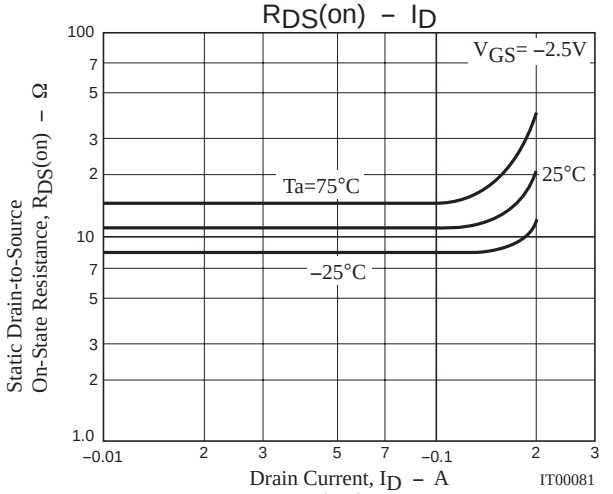


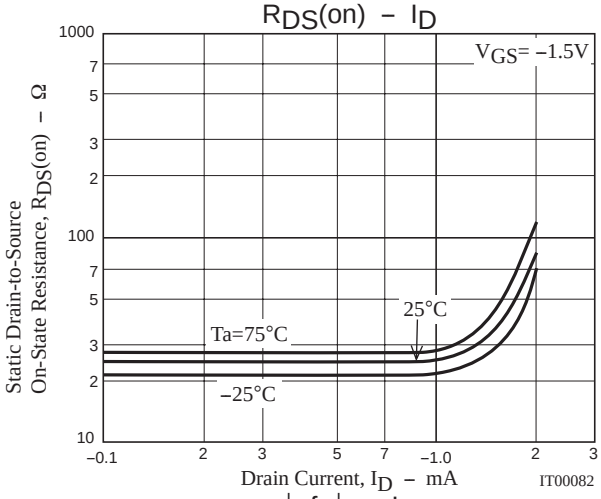


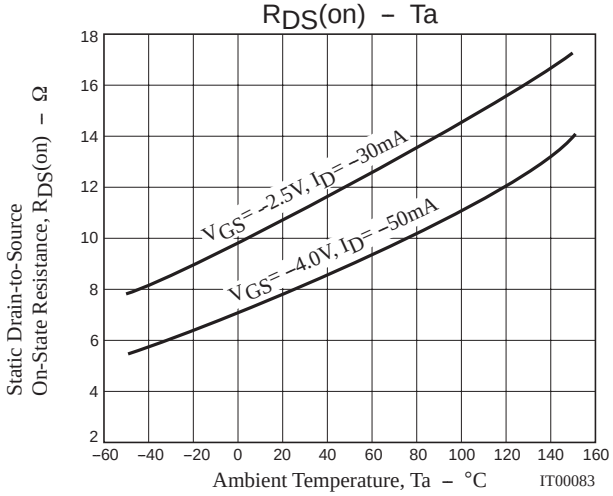


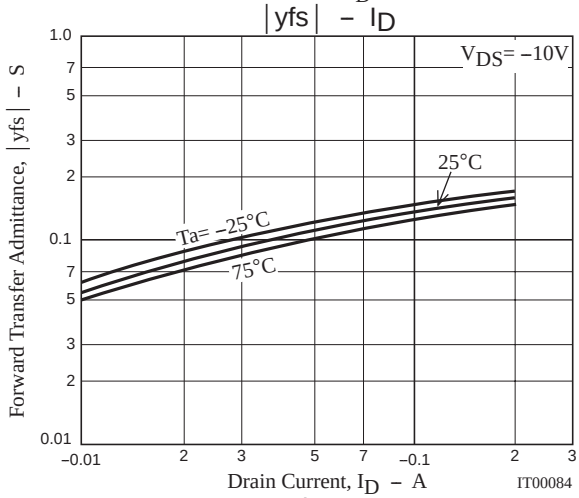

RDS(on) – VGS
Ta=25°C
ID= –30mA
–50mA
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
IT00079

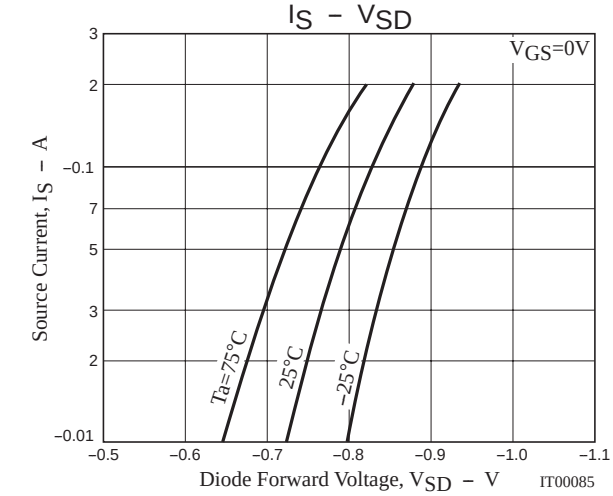

RDS(on) – ID
VGS= –4V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00080

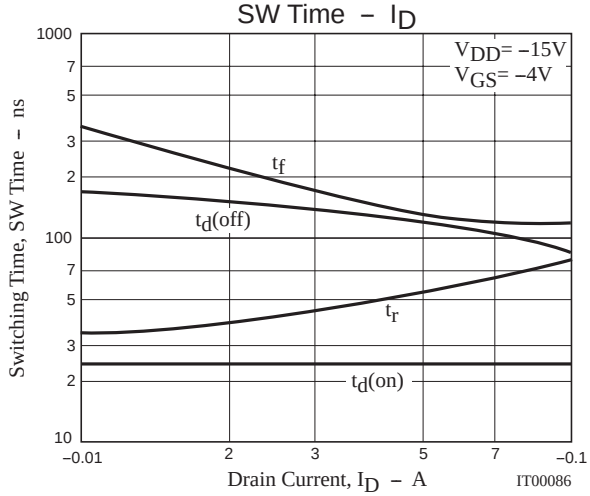

RDS(on) – ID
VGS= –2.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00081

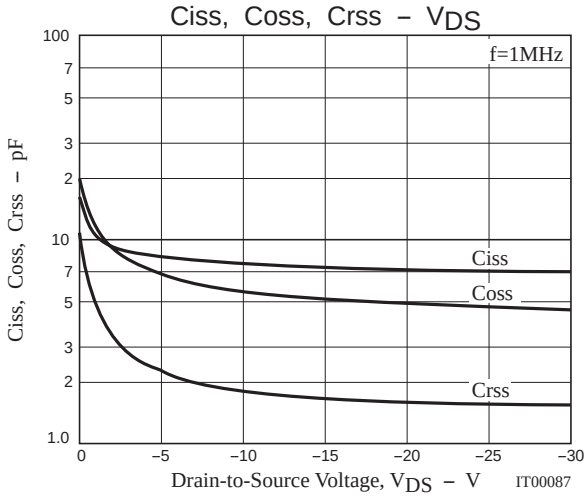

RDS(on) – ID
VGS= –1.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – mA
IT00082

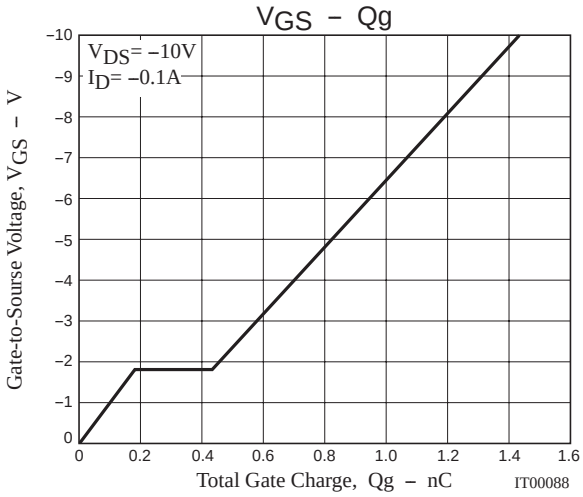

RDS(on) – Ta
VGS= –2.5V, ID= –30mA
VGS= –4.0V, ID= –50mA
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00083

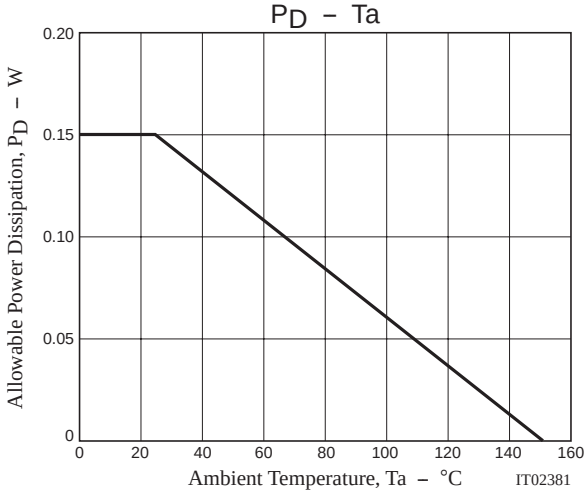

|yfs| – ID
VDS= –10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT00084


IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT00085


SW Time – ID
VDD= –15V
VGS= –4V
tf
td(off)
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00086







Note on usage : Since the 3LP01M is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of April, 2008. Specifications and information herein are subject to change without notice.