Ordering number : EN6681C

3LP01S

P-Channel Small Signal MOSFET
–30V, –0.1A, 10.4Ω, Single SMCP

ON Semiconductor®
http://onsemi.com

Features

- Low ON-resistance
- Ultrahigh-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

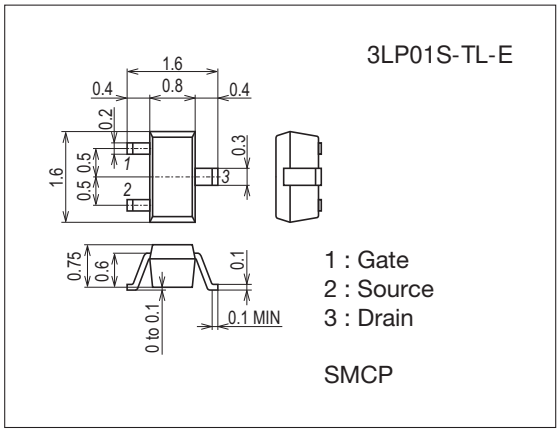
This product is designed to "ESD immunity < 200V*", so please take care when handling.

* Machine Model

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

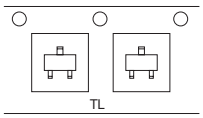
unit : mm (typ)
7013A-013



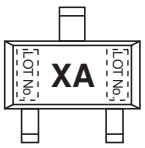
Ordering & Package Information

Device	Package	Shipping	memo
3LP01S-TL-E	SMCP SC-75,SOT-416	3,000 pcs./reel	Pb-Free

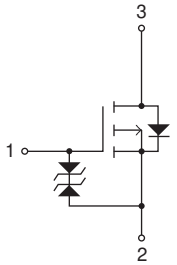
Packing Type: TL



Marking



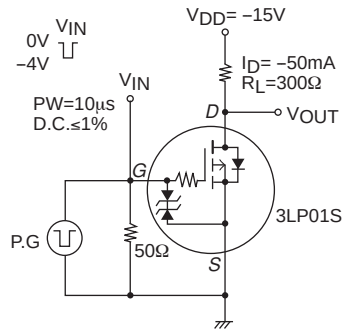
Electrical Connection

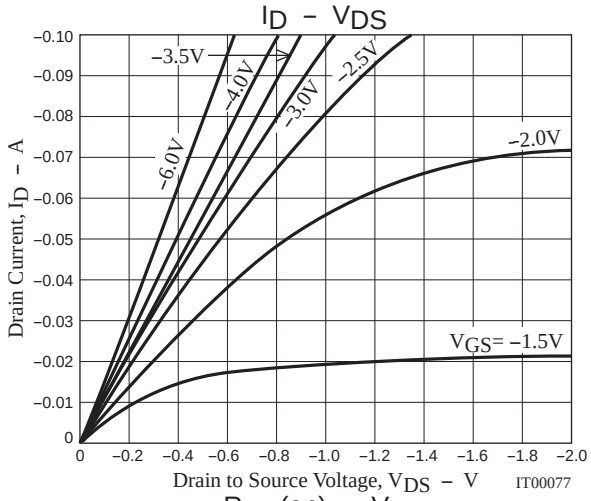


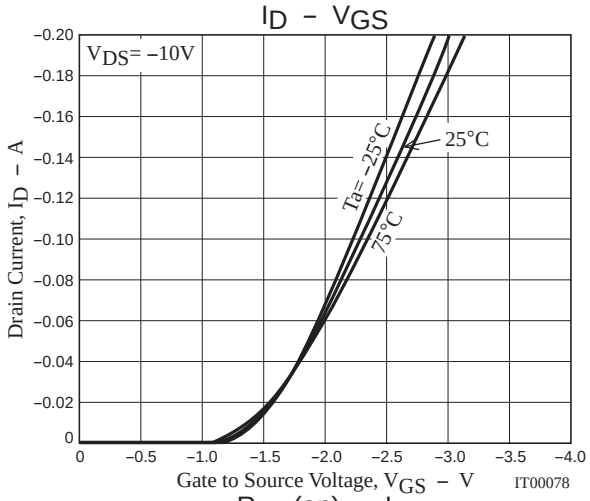
Electrical Characteristics at Ta=25°C

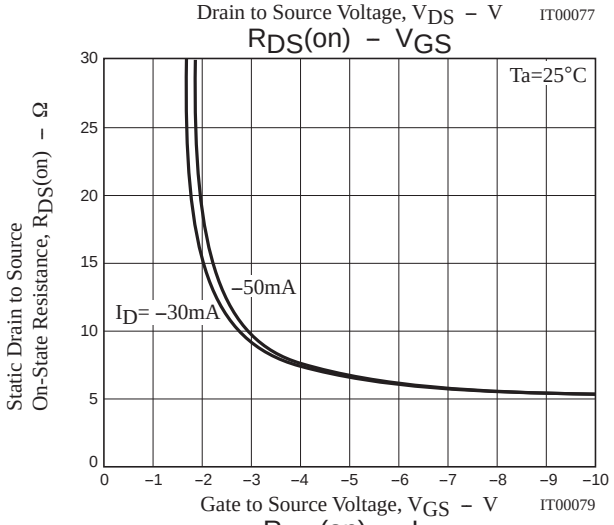
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D= −1mA, V_{GS}=0V	−30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}= −30V, V_{GS}=0V			−1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	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
Input Capacitance	Ciss	V_{DS}= −10V, f=1MHz		7.5		pF
Output Capacitance	Coss			5.7		pF
Reverse Transfer Capacitance	Crss			1.8		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		24		ns
Rise Time	t_r			55		ns
Turn-OFF Delay Time	t_d(off)			120		ns
Fall Time	t_f			130		ns
Total Gate Charge	Qg	V_{DS}= −10V, V_{GS}= −10V, I_D= −100mA		1.43		nC
Gate to Source Charge	Qgs			0.18		nC
Gate to Drain “Miller” Charge	Qgd			0.25		nC
Diode Forward Voltage	V_{SD}	I_S= −100mA, V_{GS}=0V		−0.83	−1.2	V

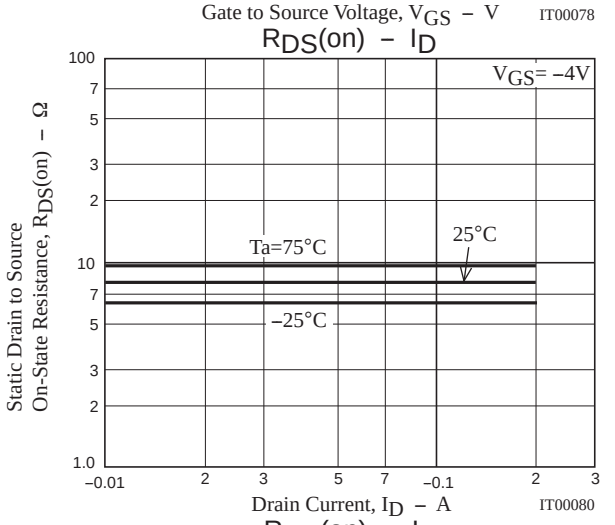
Switching Time Test Circuit

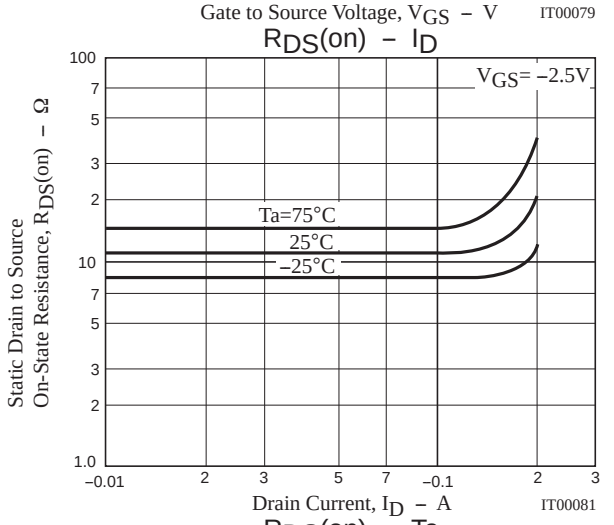


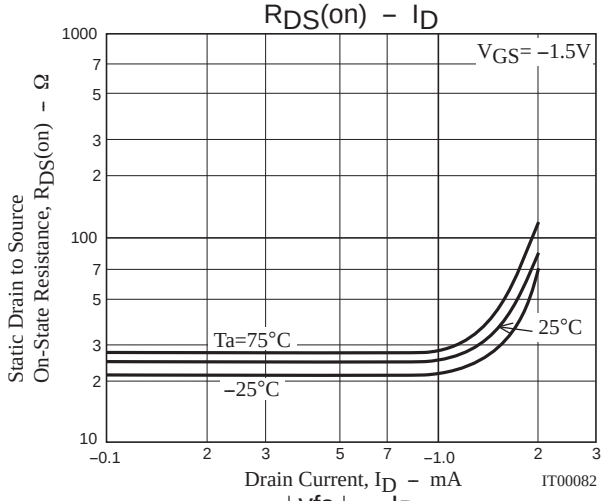

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT00077
–3.5V
–4.0V
–6.0V
–3.0V
–2.5V
–2.0V
VGS= –1.5V

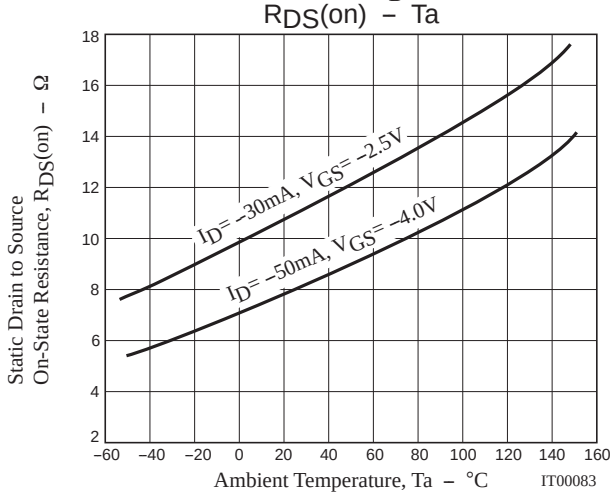

ID – VGS
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT00078
VDS= –10V
25°C
Ta= –25°C
75°C

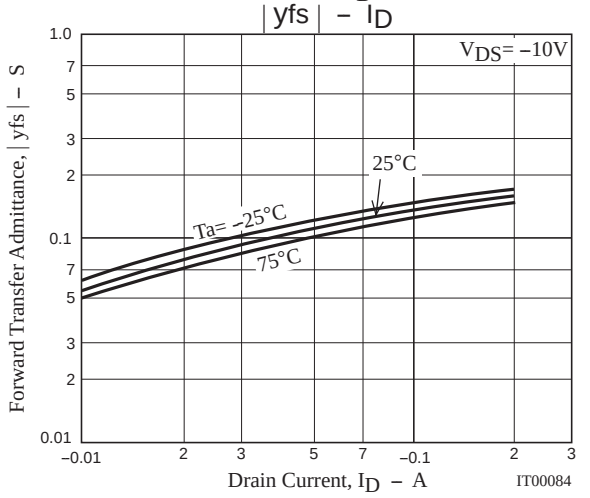

RDS(on) – VGS
Static Drain to Source On-State Resistance, RDS(on) – Ω
Gate to Source Voltage, VGS – V
IT00079
Ta=25°C
–50mA
ID= –30mA

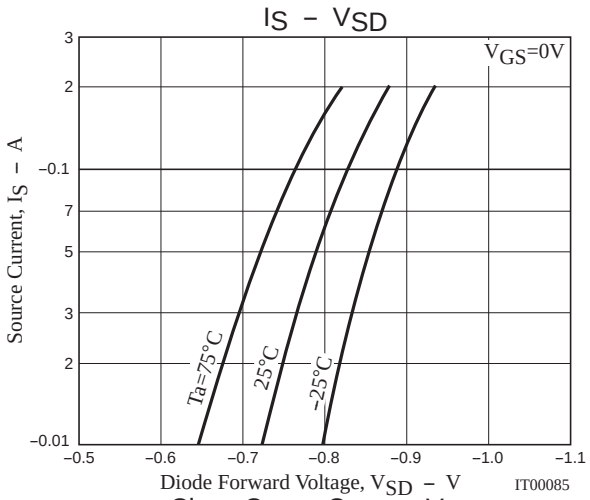

RDS(on) – ID
Static Drain to Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00080
VGS= –4V
Ta=75°C
25°C
–25°C

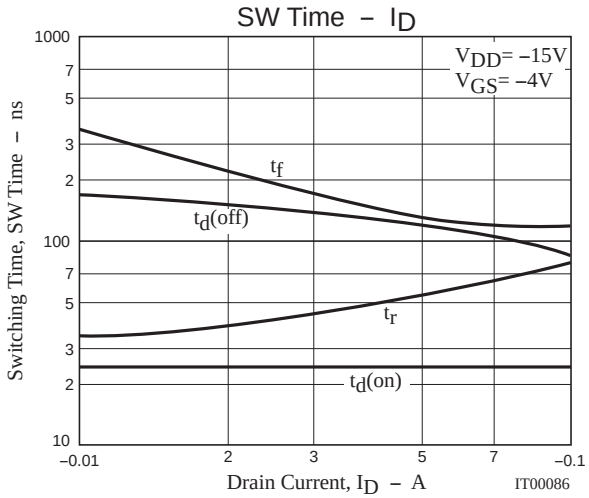

RDS(on) – ID
Static Drain to Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00081
VGS= –2.5V
Ta=75°C
25°C
–25°C

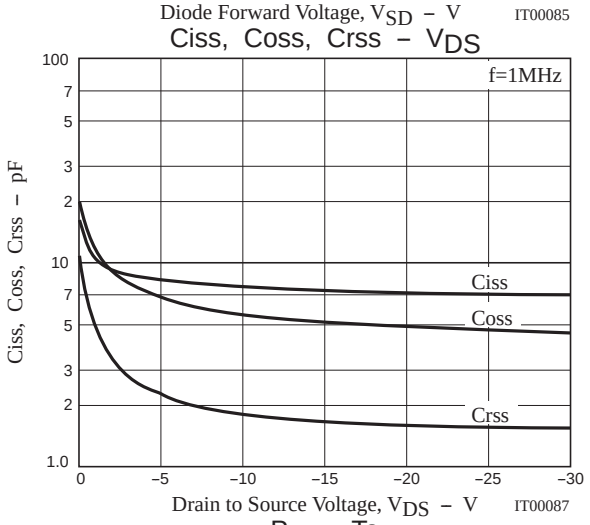

RDS(on) – ID
Static Drain to Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – mA
IT00082
VGS= –1.5V
Ta=75°C
25°C
–25°C

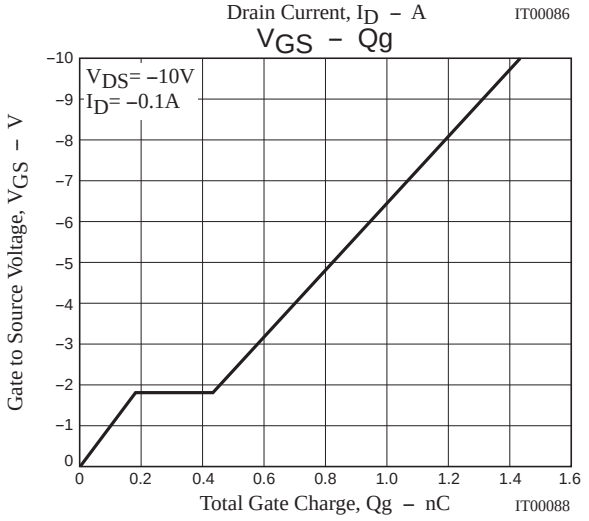

RDS(on) – Ta
Static Drain to Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00083
ID= –30mA, VGS= –2.5V
ID= –50mA, VGS= –4.0V

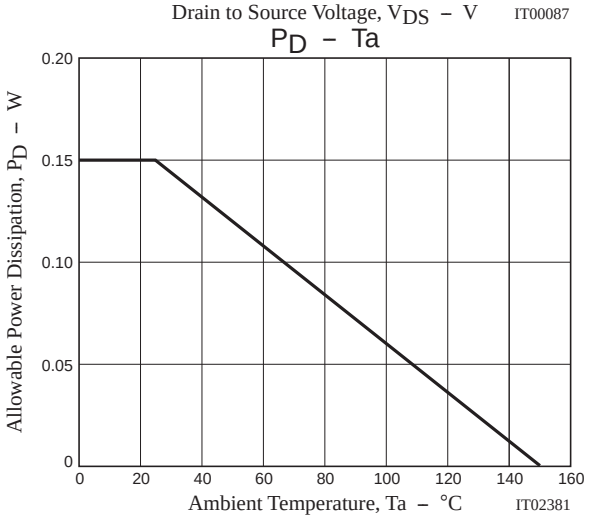

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT00084
VDS= –10V
25°C
Ta= –25°C
75°C


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


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

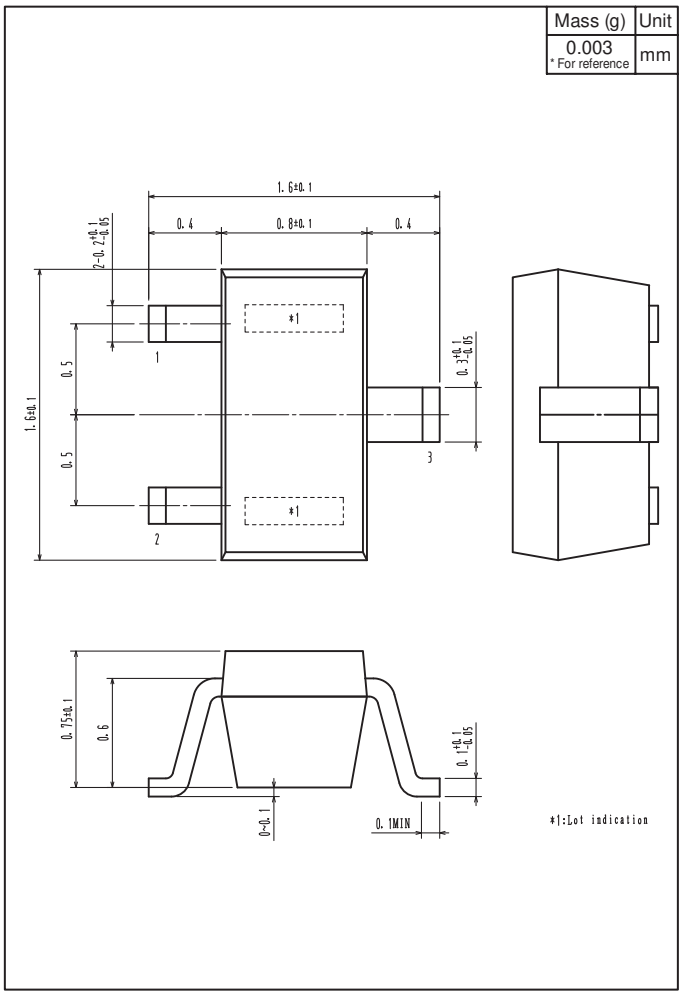

Ciss, Coss, Crss – VDS
f=1MHz
Ciss, Coss, Crss – pF
Ciss
Coss
Crss
Drain to Source Voltage, VDS – V
IT00087


VGS – Qg
VDS= –10V
ID= –0.1A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00088

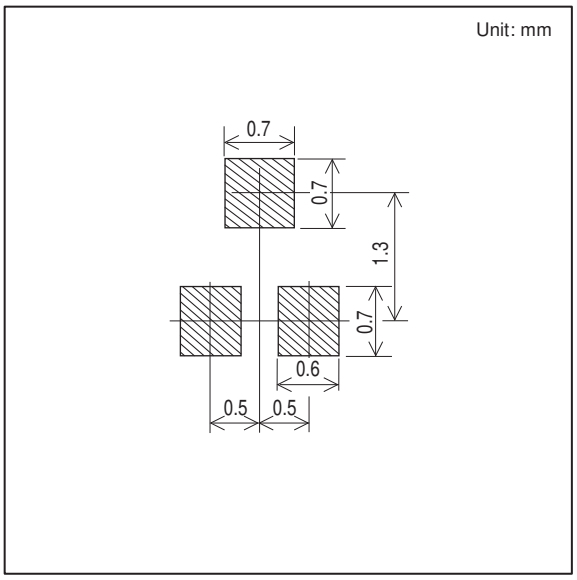

PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT02381

Outline Drawing

3LP01S-TL-E



Land Pattern Example



Note on usage : Since the 3LP01S is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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