



Ultrahigh-Speed Switching Applications

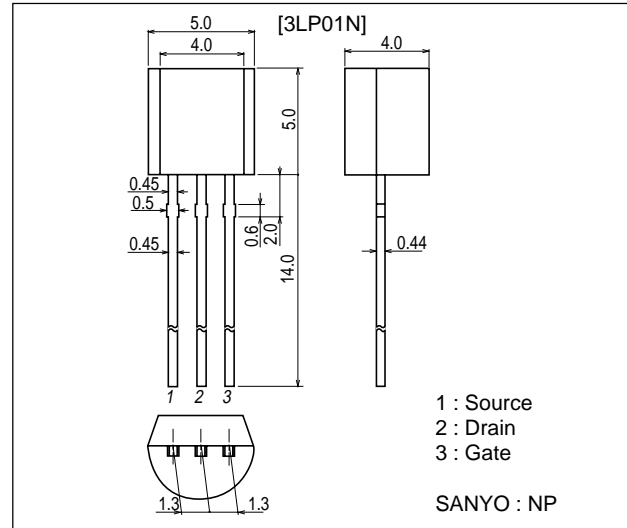
Features

- 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}		-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		0.4	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-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	y _{fs}	V _{DS} =-10V, I _D =-50mA	80	110		mS

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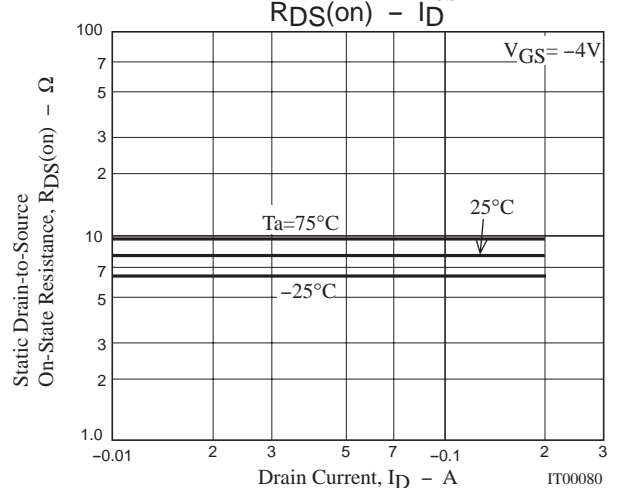
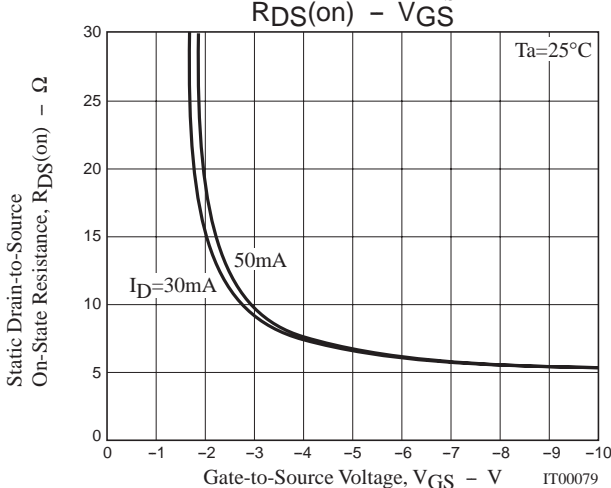
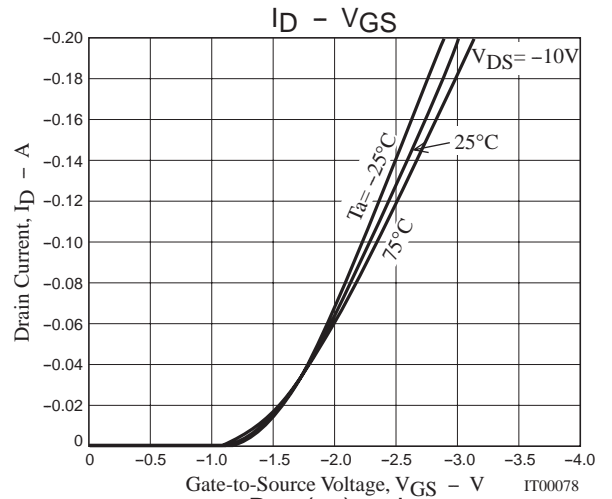
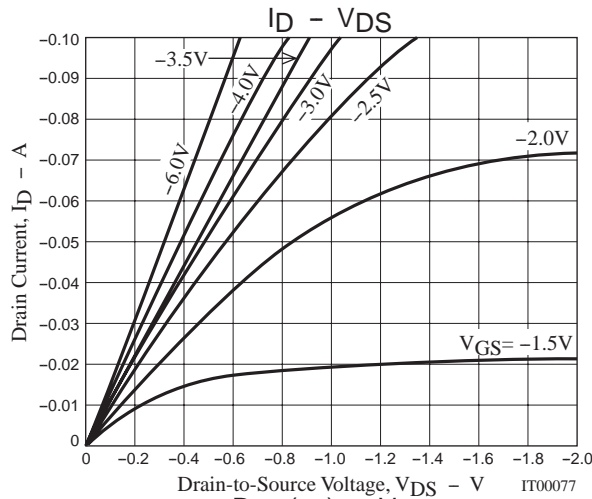
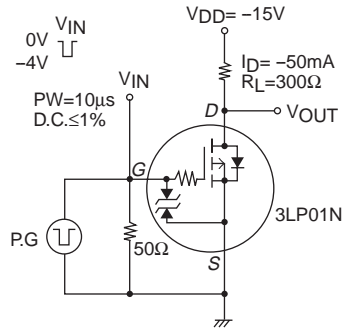
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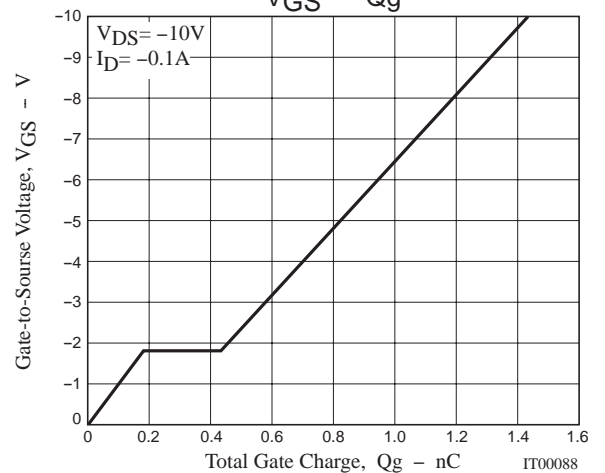
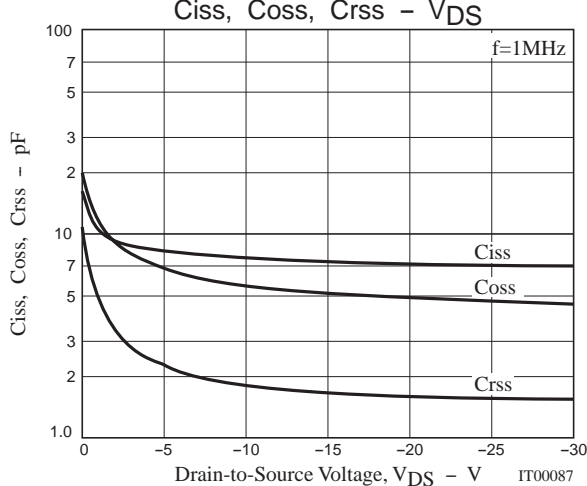
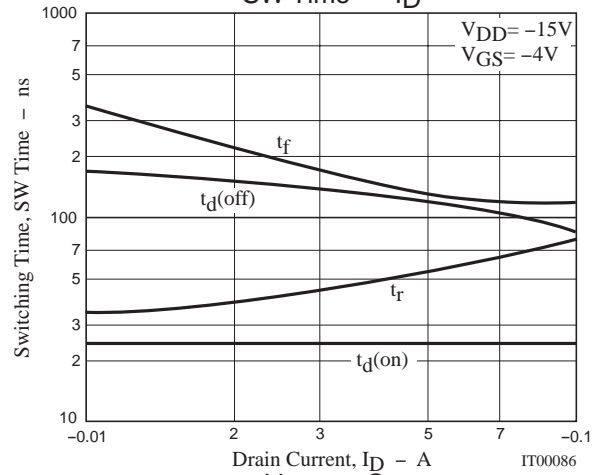
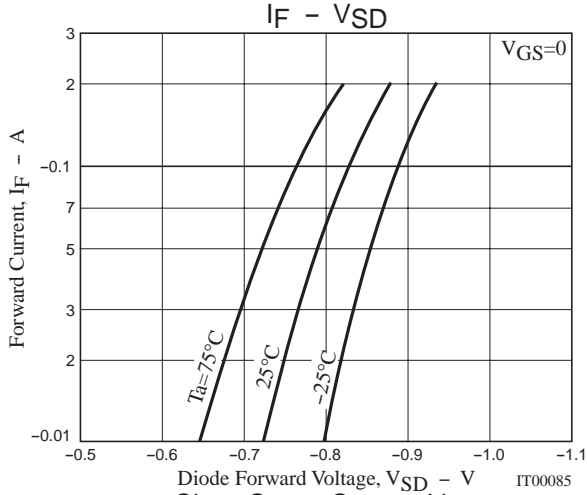
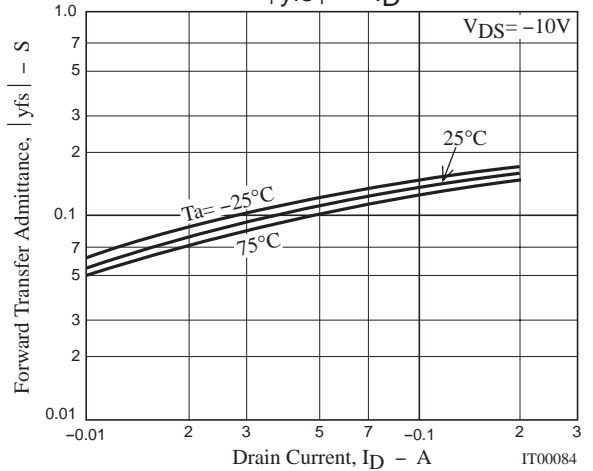
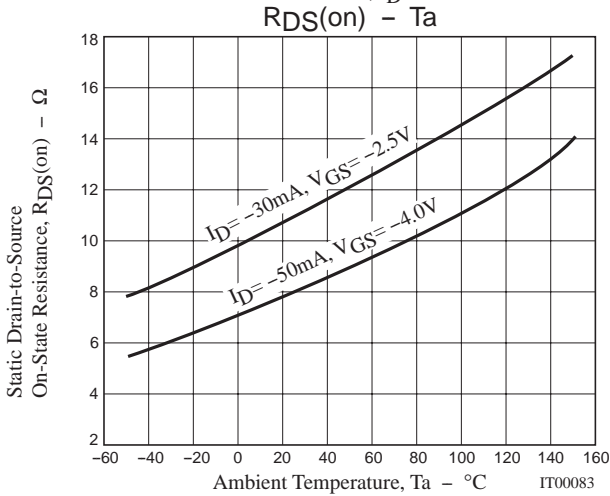
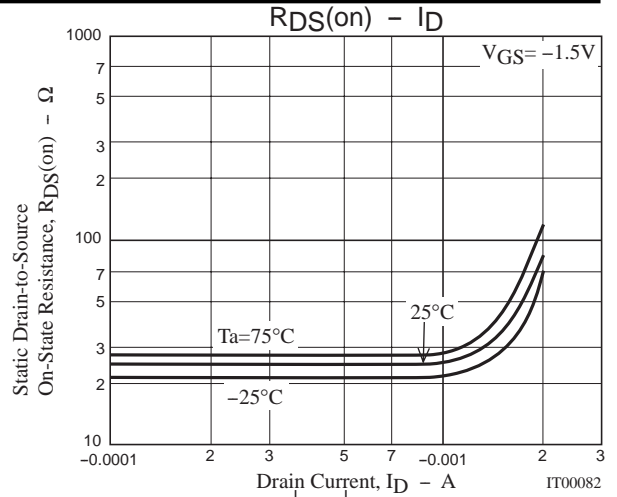
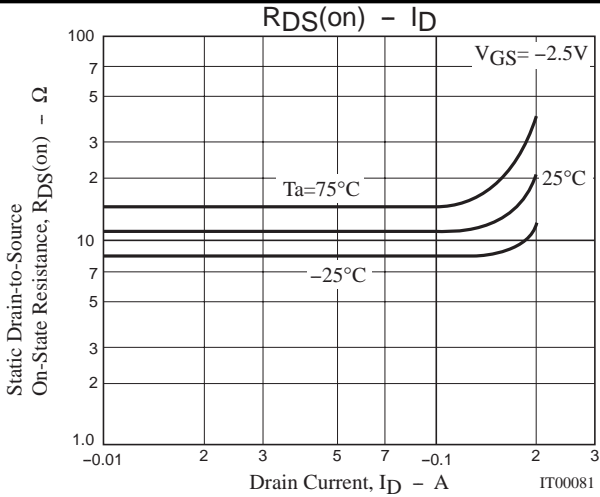
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -50\text{mA}, V_{GS} = -4\text{V}$		8	10.4	Ω
	$R_{DS(on)2}$	$I_D = -30\text{mA}, V_{GS} = -2.5\text{V}$		11	15.4	Ω
	$R_{DS(on)3}$	$I_D = -1\text{mA}, V_{GS} = -1.5\text{V}$		27	54	Ω
Input Capacitance	C_{iss}	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		7.5		pF
Output Capacitance	C_{oss}	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		5.7		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		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	Q_g	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -100\text{mA}$		1.43		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -100\text{mA}$		0.18		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -100\text{mA}$		0.25		nC
Diode Forward Voltage	V_{SD}	$I_S = -100\text{mA}, V_{GS} = 0$		0.83	1.2	V

Marking : XA

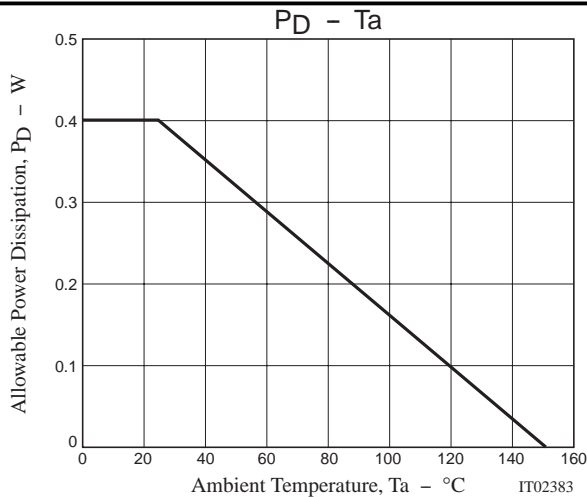
Switching Time Test Circuit



3LP01N



3LP01N



Note on usage : Since the 3LP01N is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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