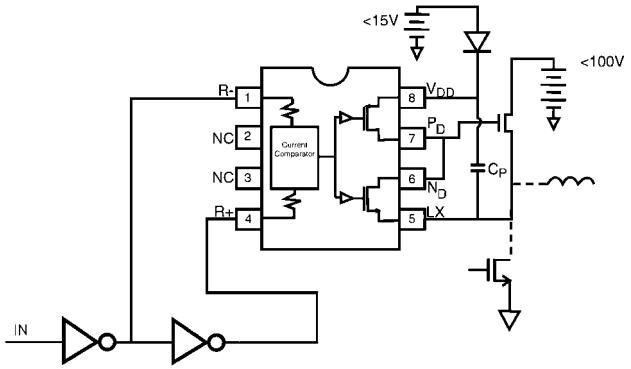
January 1996, Rev B FN7289

100V High Side Driver

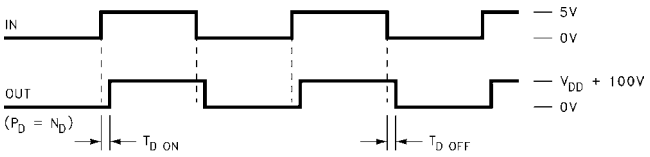
élantec

The EL7501 provides a low cost solution to many high side drive applications. The EL7501 is DC coupled so there are no start up problems associated with AC coupled schemes. The EL7501 is driven by user supplied complementary signals.

Pinout



7501 Waveform Example



Features

- 100V High Side Voltage
- Rail to Rail Output
- 1MHz Operation
- 1.0A Peak Current
- Matched Rise and Fall Times
- Direct Coupled
- No Start Up Ambiguity

Applications

- Uninterruptible Power Supplies
- DC-DC Converters
- Motor Control
- Power MOSFET Driver

Ordering Information

PART NUMBER	TEMP. RANGE	PACKAGE	PKG. NO.
EL7501CN	-40° C to +85°C	8-Pin PDIP	MDP0031
EL7501CS	-40° C to +85°C	8-Pin SO	MDP0027

Absolute Maximum Ratings (T_A = 25°C)

Supply (V_{DD} or LX to R- or R+) 100V
Supply (V_{DD} to LX) 16.5V
Output Pins . . . . . -0.3V below GND,
. . . . . .+0.3V above V_{DD}
Peak Output Current 2A

Ambient Operating Temperature . . . . . .-40°C to +85°C
Storage Temperature Range . . . . . .-65°C to +150°C
Operating Junction Temperature . . . . . .125°C
Power Dissipation SOIC 570mW
PDIP. 1050mW

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

IMPORTANT NOTE: All parameters having Min/Max specifications are guaranteed. Typical values are for information purposes only. Unless otherwise noted, all tests are at the specified temperature and are pulsed tests, therefore: $T_J = T_C = T_A$

DC Electrical Specifications

T_A = 25° C, V_{DD} = 15V, C_{LOAD} = 1000pF, unless otherwise specified.

PARAMETER		DESCRIPTION	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input/Output	$V_{DIFF\ (Min)}$	Minimum Differential Input Signal to Switch Output		1.0			V
	$I_{DS\ OFF}$	Output Leakage	GND < V_{OUT} < V_{DD}	-10.0	0.2	+10.0	µA
	R_{OH}	Pull-up Resistance	I_{OUT} = -100mA		5.0	10.0	Ω
	R_{OL}	Pull-down Resistance	I_{OUT} = +100mA		5.0	10.0	Ω
	I_{PK}	Peak Output Current			1.0		A
	I_{DC}	Continuous Output Current Source/Sink		50.0			mA
Power Supply	I_{DD}	Supply Current into V_{DD}				4.0	mA
	V_{DD}	Operating Voltage		4.5		15.0	V

AC Electrical Specifications

T_A = 25°C, V_{DD} = 15V, C_{LOAD} = 1000pF, unless otherwise specified.

PARAMETER		DESCRIPTION	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Switching Characteristics	t_R	Rise Time	C_L = 500pF C_L = 1000pF		15.0 20.0	 40.0	ns
	t_F	Fall Time	C_L = 500pF C_L = 1000pF		15.0 20.0	 40.0	ns
	$t_{D\ OFF}$	Turn Off Delay Time			90.0	140.0	ns
	$t_{D\ ON}$	Turn On Delay Time			90.0	140.0	ns

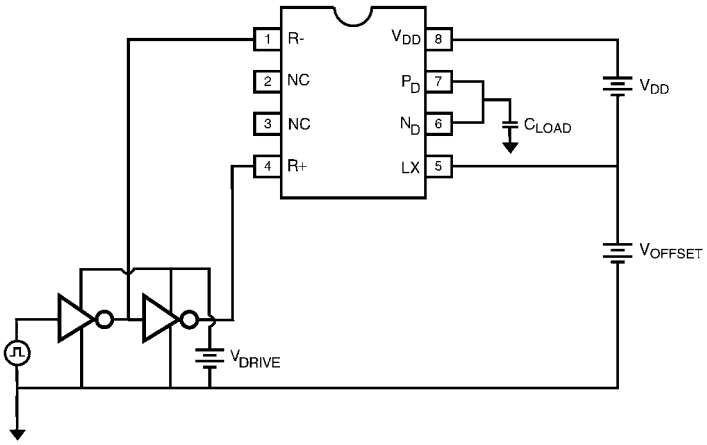


FIGURE 1. EL7501 TEST CIRCUIT

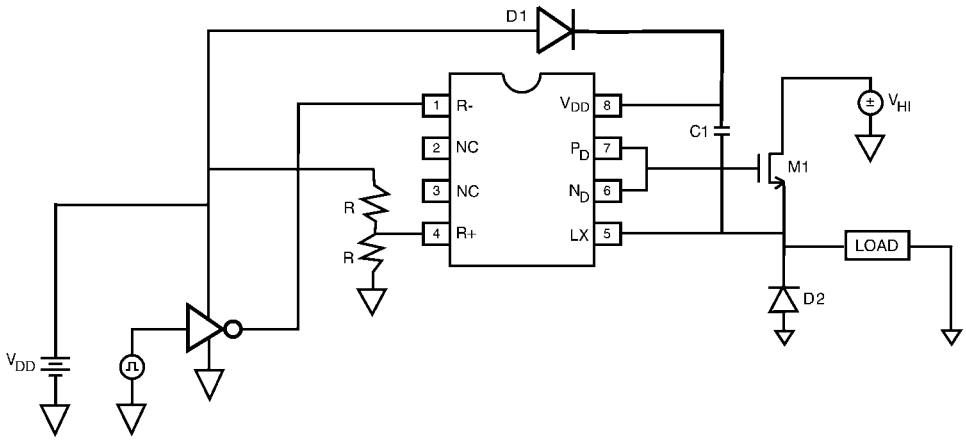
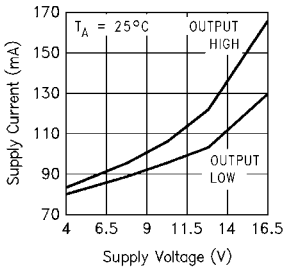


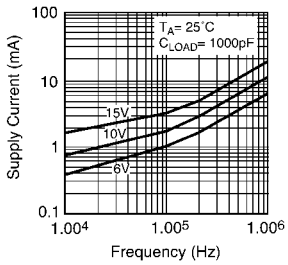
FIGURE 2. EL7501 ALTERNATE DRIVE METHOD

Typical Performance Curves

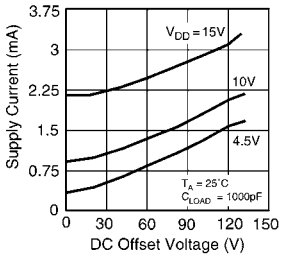
Quiescent Supply Current vs Supply Voltage



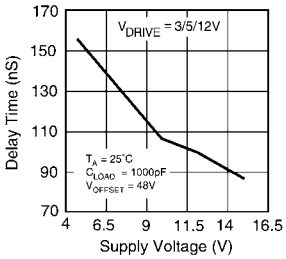
Average Supply Current vs Voltage and Frequency



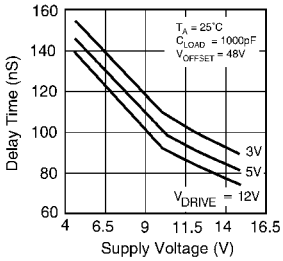
Supply Current vs DC Offset Voltage and V_{DD}



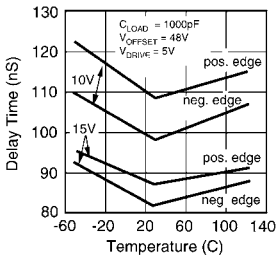
Output Rising Edge Delay Time vs Supply Voltage and Drive Voltage



Output Falling Edge Delay Time vs Supply Voltage and Drive Voltage

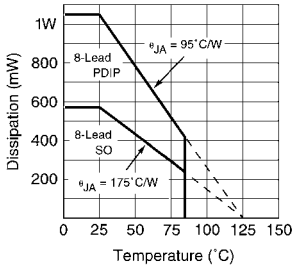


Delay Time vs Temperature and Supply Voltage

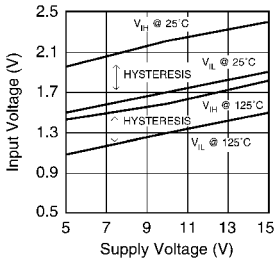


Typical Performance Curves (Continued)

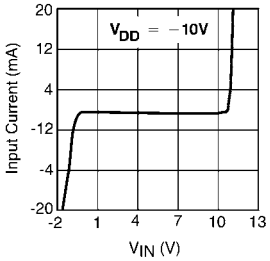
Max. Power/ Derating Curves 8-Pin Package



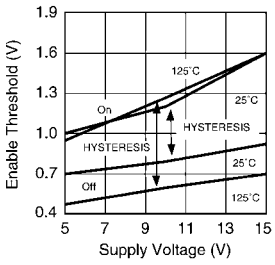
Input Threshold vs Supply Voltage



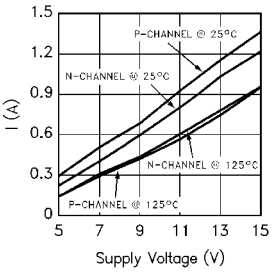
Input Current vs Input Voltage



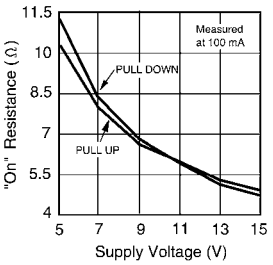
Enable Threshold vs Supply Voltage



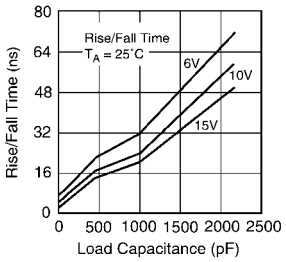
Peak Drive vs Supply Voltage



"On" Resistance vs Supply Voltage



Rise/Fall Time vs Load and Supply



Rise/Fall Time vs Temperature