

Features

- Programmable Delay
- 1 MHz Operation
- Shutdown Function
- 1.0 Amp Peak Current
- Matched Rise and Fall Times
- Low Supply Current
- Low Output Impedance
- Low Input Capacitance

Applications

- Uninterruptible Power Supplies
- Distributed Power Systems
- IGBT Drive
- DC-DC Converters
- Motor Control
- Power MOSFET Drive
- Switch Mode Power Supplies

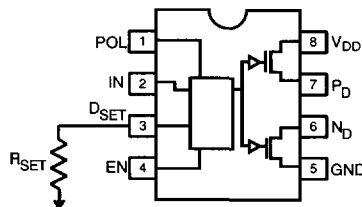
Ordering Information

Part No.	Temp. Range	Package	Outline #
EL7861CN	-40°C to +85°C	8-Pin P-DIP	MDP0031
EL7861CS	-40°C to +85°C	8-Pin SOIC	MDP0027

General Description

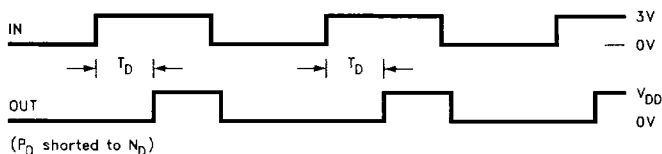
The EL7861 provides 1.0A of peak current for many driver applications. The rising edge of the output can be delayed up to 1.5 μ s from the corresponding input edge. A single resistor from D_{SET} to GND sets the delay time. Connecting the D_{SET} pin to V_{DD} disables the delay block giving approximately 30 ns delay times. The circuit contains an enable feature as well as user definable polarity. The programmable delay is useful in applications requiring compensation for long switch turn off times and applications using resonant mode technology.

Connection Diagram



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7861 Waveform Example
POL = V_{DD}



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POL	Polarity
V _{DD}	Non-Inverting
GND	Inverting

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Rising Edge Delay Driver

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Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Supply (V_{DD} to GND)	16.5V	Ambient Operating Temperature	-40°C to $+85^\circ\text{C}$
Input Pins	-0.3V below GND, $+0.3\text{V}$ above V_{DD}	Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Operating Junction Temperature	125°C	Power Dissipation	SOIC 570 mW PDIP 1050 mW
Peak Output Current	2A		

Important Note:

All parameters having Min/Max specifications are guaranteed. The Test Level column indicates the specific device testing actually performed during production and Quality inspection. Elantec performs most electrical tests using modern high-speed automatic test equipment, specifically the LTX77 Series system. Unless otherwise noted, all tests are pulsed tests, therefore $T_J = T_C = T_A$.

Test Level	Test Procedure
I	100% production tested and QA sample tested per QA test plan QCX0002.
II	100% production tested at $T_A = 25^\circ\text{C}$ and QA sample tested at $T_A = 25^\circ\text{C}$, T_{MAX} and T_{MIN} per QA test plan QCX0002.
III	QA sample tested per QA test plan QCX0002.
IV	Parameter is guaranteed (but not tested) by Design and Characterization Data.
V	Parameter is typical value at $T_A = 25^\circ\text{C}$ for information purposes only.

DC Electrical Characteristics ($T_A = 25^\circ\text{C}$, $V_{DD} = 15\text{V}$, $C_{LOAD} = 1000\text{ pF}$, unless otherwise specified)

Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
Input/Output							
V_{IH}	Logic "1" Input Voltage		3.0	2.4		I	V
I_{IH}	Logic "1" Input Current			0.1	10.0	I	μA
V_{IL}	Logic "0" Input Voltage			1.6	0.8	I	V
I_{IL}	Logic "0" Input Current			0.1	10.0	I	μA
V_{HVS}	Input Hysteresis			0.5		V	V
V_{ENH}	Enable Threshold	Positive Edge	2.8	1.6		I	V
V_{ENL}	Disable Threshold	Negative Edge		0.9	0.6	I	V
V_{ENHYS}	Enable Hysteresis			0.7		V	V
$I_{DS OFF}$	Output Leakage	$\text{GND} \leq V_{OUT} \leq V_{DD}$		0.2	10.0	I	μA
R_{OH}	Pull-Up Resistance	$I_{OUT} = -100\text{ mA}$		5.0	10.0	I	Ω
R_{OL}	Pull-Down Resistance	$I_{OUT} = +100\text{ mA}$		5.0	10.0	I	Ω
I_{PK}	Peak Output Current			1.0		IV	A
I_{DC}	Continuous Output Current Source/Sink		50.0			IV	mA

Power Supply

I_{DD}	Supply Current into V_{DD}	$R_{SET} = 5.1\text{k}$		6.0	10.0	I	mA
$I_{DD OFF}$	Supply Current into V_{DD}	$V_{EN} = 0.6\text{V}$			750.0	I	μA
V_{DD}	Operating Voltage		4.5		15.0	I	V

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Rising Edge Delay Driver

AC Electrical Characteristics ($T_A = 25^\circ\text{C}$, $V_{DD} = 15\text{V}$, $C_{LOAD} = 1000\text{ pF}$, unless otherwise specified)

Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
Power Supply							
t_R	Rise Time	$C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$		15.0 20.0	40.0	IV	ns
t_F	Fall Time	$C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$		15.0 20.0	40.0	IV	ns
t_{DON}	Turn On Delay Time	$D_{SET} = V_{DD}$ $R_{SET} = 5.1\text{k}$ $R_{SET} = 400\text{k}$	10.0 25.0 750.0	30.0 50.0 1150.0	150.0 200.0 1500.0	IV I I	ns
t_{DOFF}	Turn Off Delay Time	$D_{SET} = V_{DD}$		30.0	50.0	IV	ns

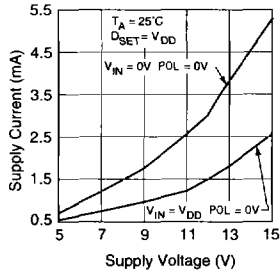
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Rising Edge Delay Driver

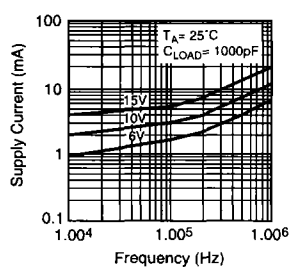
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Typical Performance Curves

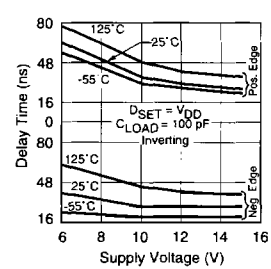
Quiescent Supply Current vs Supply Voltage



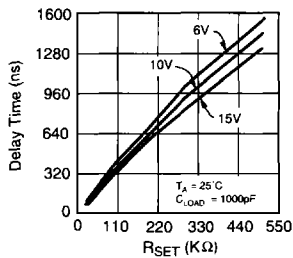
Average Supply Current vs Voltage and Frequency



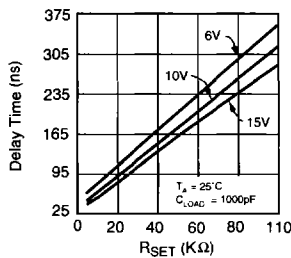
Delay Times vs Supply Voltage and Temp



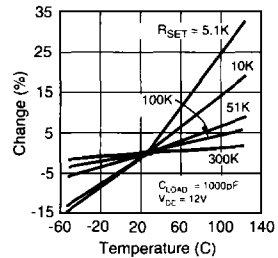
Output Rising Edge Delay vs RSET and Supply Voltage



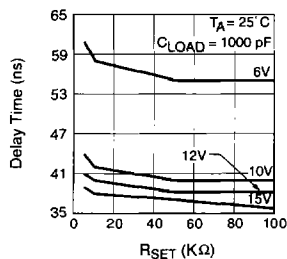
Output Rising Edge Delay vs RSET and Supply Voltage (Detail)



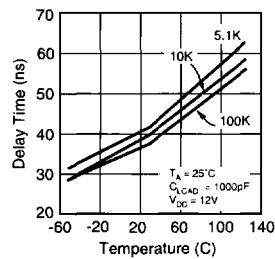
Output Rising Edge Delay Change vs Temperature



Output Falling Edge Delay vs RSET and VDD



Output Falling Edge Delay vs Temperature and RSET

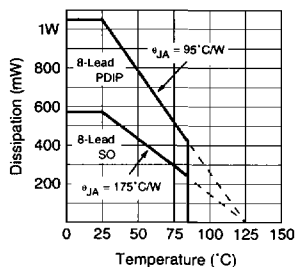


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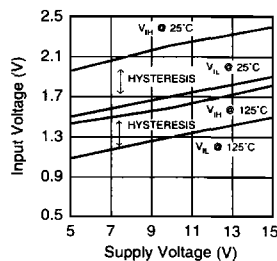
Rising Edge Delay Driver

Typical Performance Curves — Contd.

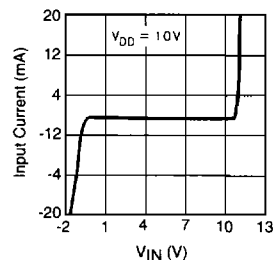
Max. Power/Derating
Curves 8-Pin Package



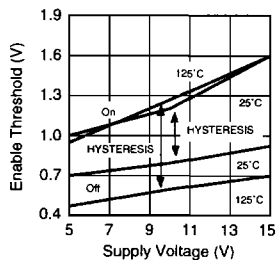
Input Threshold vs.
Supply Voltage



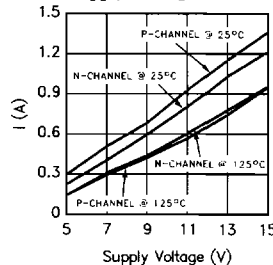
Input Current vs
Input Voltage



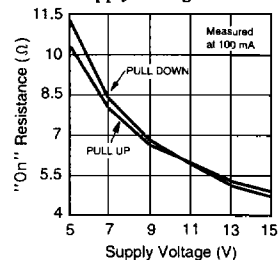
Enable Threshold vs
Supply Voltage



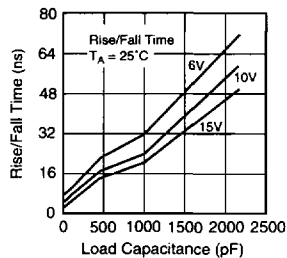
Peak Drive vs
Supply Voltage



"On" Resistance vs
Supply Voltage



Rise/Fall Time vs
Load and Supply



Rise/Fall Time
vs Temperature

