élantec
HIGH PERFORMANCE ANALOG INTEGRATED CIRCUITS

EL7242C/EL7252C

Dual Input, High Speed, Dual Channel Power MOSFET Driver

Features

- Logic AND/NAND input
- 3V and 5V Input compatible
- Clocking speeds up to 10 MHz
- 20 ns Switching/delay time
- 2A Peak drive
- Isolated drains
- Low output impedance
- Low quiescent current
- Wide operating voltage—4.5V–16V

Applications

- Short circuit protected switching
- Under-voltage shut-down circuits
- Switch-mode power supplies
- Motor controls
- Power MOSFET switching
- Switching capacitive loads
- Shoot-thru protection
- Latching drivers

Ordering Information

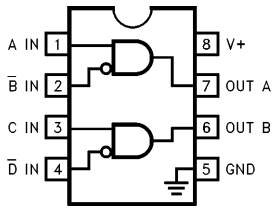
Part No.	Temp. Range	Pkg.	Outline #
EL7242CN	−40°C to +85°C	8-Pin P-DIP	MDP0031
EL7242CS	−40°C to +85°C	8-Pin SOIC	MDP0027
EL7252CN	−40°C to +85°C	8-Pin P-DIP	MDP0031
EL7252CS	−40°C to +85°C	8-Pin SOIC	MDP0027

General Description

The EL7242C/EL7252C dual input, 2-channel drivers achieve the same excellent switching performance of the EL7212 family while providing added flexibility. The 2-input logic and configuration is applicable to numerous power MOSFET drive circuits. As with other Elantec drivers, the EL7242C/EL7252C are excellent for driving large capacitive loads with minimal delay and switching times. "Shoot-thru" protection and latching circuits can be implemented by simply "cross-coupling" the 2-channels.

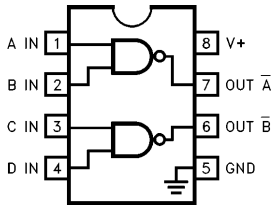
Connection Diagrams

EL7242C



7242–1

EL7252C



7242–2

Manufactured under U.S. Patent Nos. 5,334,883, #5,341,047

January 1996 Rev. B

Absolute Maximum Ratings

Supply (V+ to Gnd)	16.5V	Operating Junction Temperature	125°C
Input Pins	−0.3V to +0.3V above V+	Power Dissipation	
Combined Peak Output Current	4A	SOIC	570 mW
Storage Temperature Range	−65°C to +150°C	PDIP	1050 mW
Ambient Operating Temperature	−40°C to +85°C		

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°C and QA sample tested at T_A = 25°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°C for information purposes only.

DC Electrical Characteristics T_A = 25°C, V = 15V unless otherwise specified

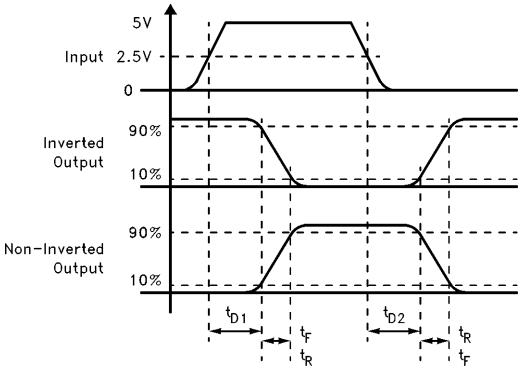
Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
Input							
V_{IH}	Logic "1" Input Voltage		2.4			I	V
I_{IH}	Logic "1" Input Current	@V+		0.1	10	I	µA
V_{IL}	Logic "0" Input Voltage				0.8	I	V
I_{IL}	Logic "0" Input Current	@0V		0.1	10	I	µA
V_{HVS}	Input Hysteresis			0.3		V	V
Output							
R_{OH}	Pull-Up Resistance	I_{OUT} = −100 mA		3	6	I	Ω
R_{OL}	Pull-Down Resistance	I_{OUT} = +100 mA		4	6	I	Ω
I_{PK}	Peak Output Current	Source Sink		2 2		IV	A
I_{DC}	Continuous Output Current	Source/Sink	100			I	mA
Power Supply							
I_S	Power Supply Current	Inputs High		1	2.5	I	mA
V_S	Operating Voltage		4.5		16	I	V

TD is 3.1in

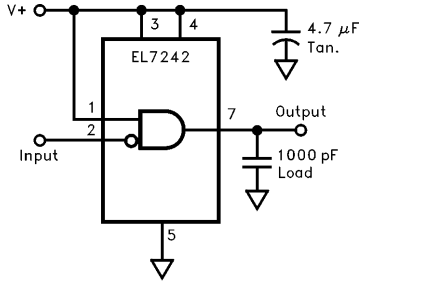
AC Electrical Characteristics T_A = 25°C, V = 15V unless otherwise specified

Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
Switching Characteristics							
t_R	Rise Time	C_L = 500 pF C_L = 1000 pF			10 20	IV	ns
t_F	Fall Time	C_L = 500 pF C_L = 1000 pF			10 20	IV	ns
t_{D-ON}	Turn-On Delay Time			20	25	IV	ns
t_{D-OFF}	Turn-Off Delay Time			20	25	IV	ns

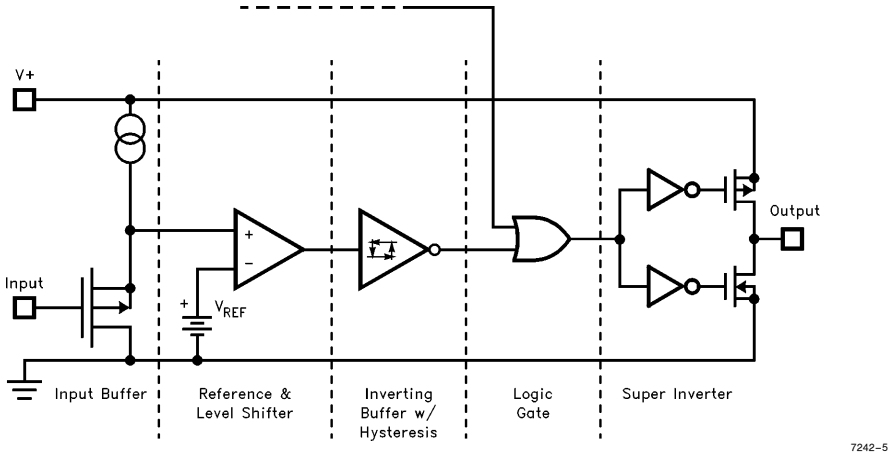
Timing Table



Standard Test Configuration



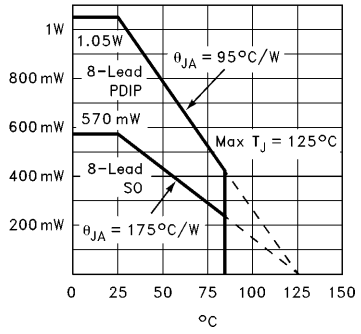
Simplified Schematic



TD is 1.5in

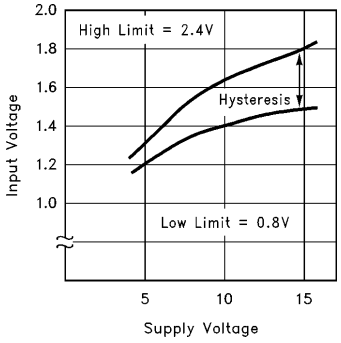
Typical Performance Curve

Max Power/Derating Curves



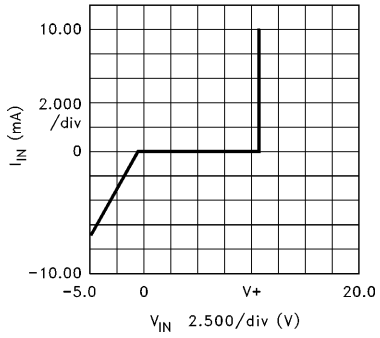
7242-17

Switch Threshold vs Supply Voltage



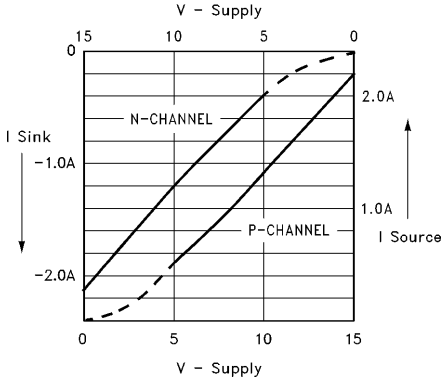
7242-6

Input Current vs Voltage



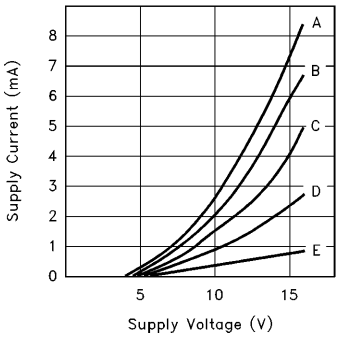
7242-7

Peak Drive vs Supply Voltage



7242-8

Quiescent Supply Current

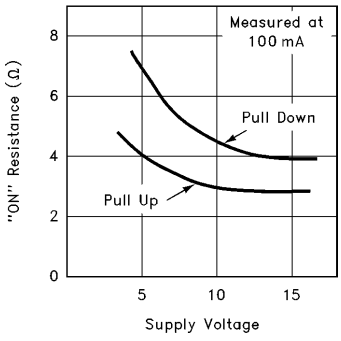


CASE:

A	ALL INPUTS GND
B	3 INPUTS GND
C	2 INPUTS GND
D	1 INPUT GND
E	ALL INPUTS V+

7242-9

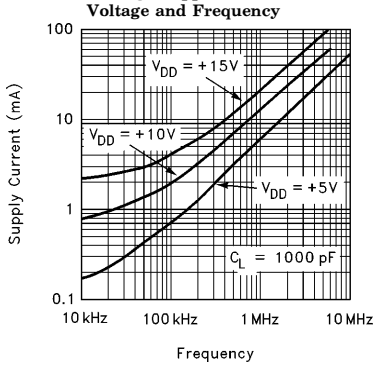
"ON" Resistance vs Supply Voltage



7242-18

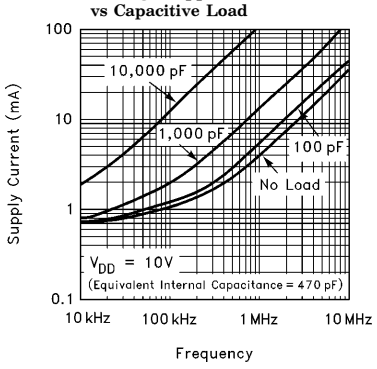
Typical Performance Curve — Contd.

Average Supply Current vs Voltage and Frequency



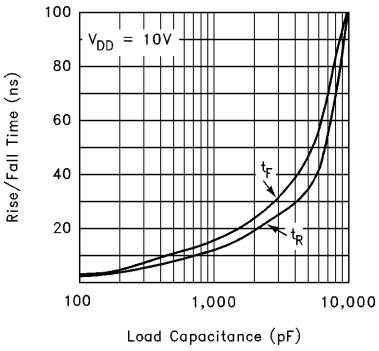
7242–10

Average Supply Current vs Capacitive Load



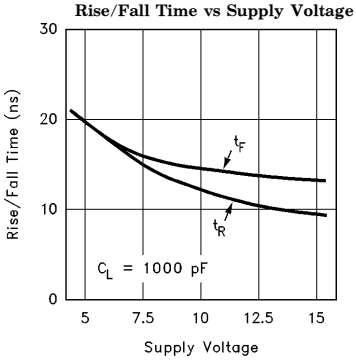
7242–11

Rise/Fall Time vs Load



7242–16

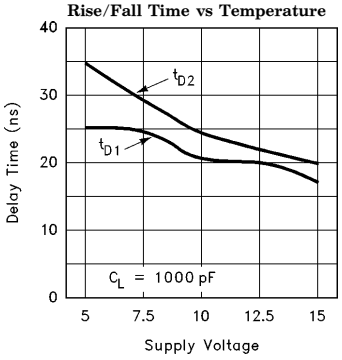
Rise/Fall Time vs Supply Voltage



7242–12

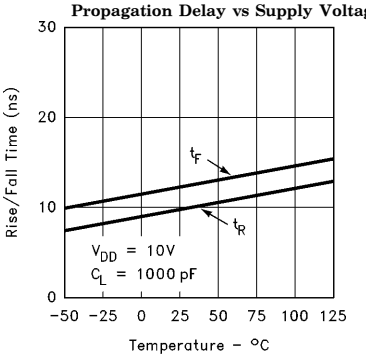
Typical Performance Curve — Contd.

Rise/Fall Time vs Temperature



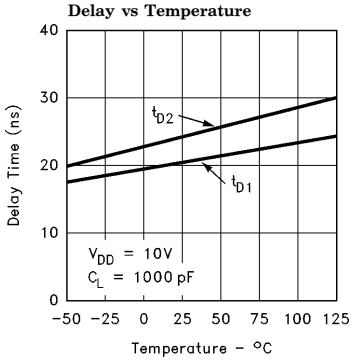
7242–13

Propagation Delay vs Supply Voltage



7242–14

Delay vs Temperature



7242–15

BLANK

EL7242C/EL7252C

Dual Input, High Speed, Dual Channel Power MOSFET Driver

élantec
HIGH PERFORMANCE ANALOG INTEGRATED CIRCUITS

Elantec, Inc.
1996 Tarob Court
Milpitas, CA 95035
Telephone: (408) 945-1323
(800) 333-6314
Fax: (408) 945-9305
European Office: 44-71-482-4596

January 1996 Rev. B

Printed in U.S.A.