

élantec
HIGH PERFORMANCE ANALOG INTEGRATED CIRCUITS

EL7242C/EL7252C

Dual Input, High Speed, Dual Channel Power MOSFET Driver

EL7242C/EL7252C

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

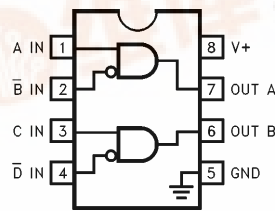
| Part No. | Temp. Range | Pkg. | Outline # |
|----------|----------------|-------------|-----------|
| EL7242CN | -40°C to +85°C | 8-Pin P-DIP | MDP0031 |
| EL7242CS | -40°C to +85°C | 8-Pin SOIC | MDP0027 |
| EL7252CN | -40°C to +85°C | 8-Pin P-DIP | MDP0031 |
| EL7252CS | -40°C to +85°C | 8-Pin SOIC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

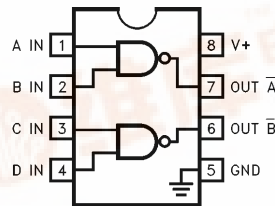
Connection Diagrams

EL7242C



7242-1

EL7252C



7242-2

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

Note: All information contained in this data sheet has been carefully checked and is believed to be accurate as of the date of publication; however, this data sheet cannot be a "controlled document". Current revisions, if any, to these specifications are maintained at the factory and are available upon your request. We recommend checking the revision level before finalization of your design documentation.

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January 1996 Rev. B



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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 $T_A = 25^\circ\text{C}$ 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 $T_A = 25^\circ\text{C}$, $V = 15\text{V}$ unless otherwise specified

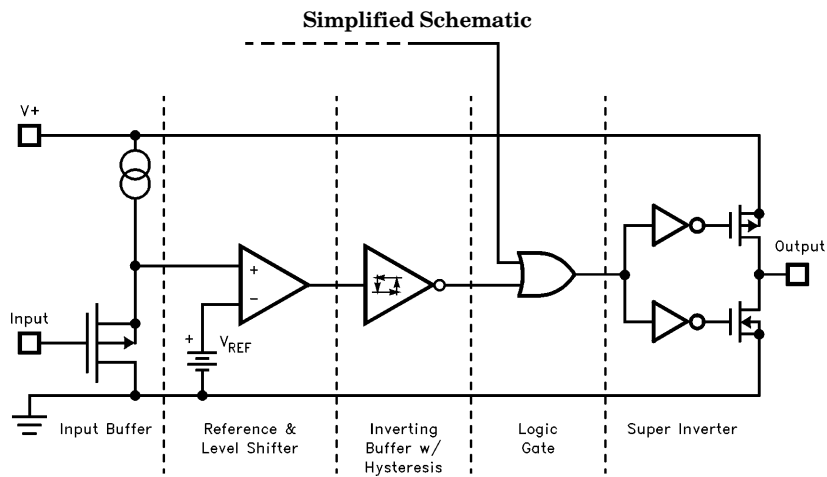
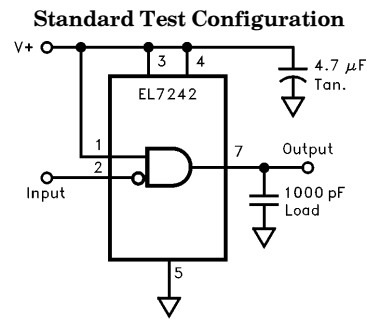
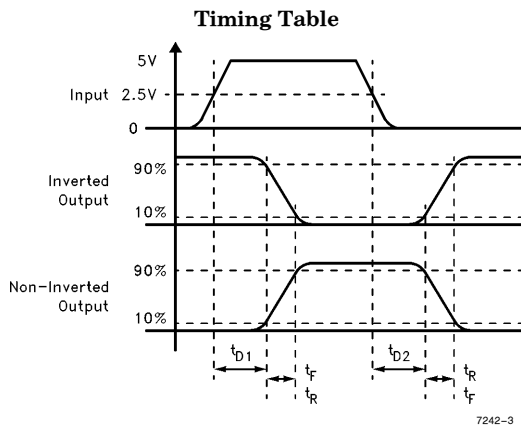
| Parameter | Description | Test Conditions | Min | Typ | Max | Test Level | Units |
|---------------------|---------------------------|----------------------------|-----|--------|-----|------------|---------------|
| Input | | | | | | | |
| V_{IH} | Logic "1" Input Voltage | | 2.4 | | | I | V |
| I_{IH} | 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 | $I_{OUT} = -100\text{ mA}$ | | 3 | 6 | I | Ω |
| R_{OL} | Pull-Down Resistance | $I_{OUT} = +100\text{ mA}$ | | 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 |

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AC Electrical Characteristics $T_A = 25^\circ\text{C}$, $V = 15\text{V}$ unless otherwise specified

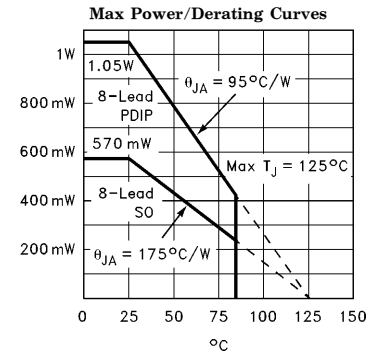
| Parameter | Description | Test Conditions | Min | Typ | Max | Test Level | Units |
|----------------------------------|---------------------|---|-----|-----|----------|------------|-------|
| Switching Characteristics | | | | | | | |
| t_R | Rise Time | $C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$ | | | 10 20 | IV | ns |
| t_F | Fall Time | $C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$ | | | 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 |



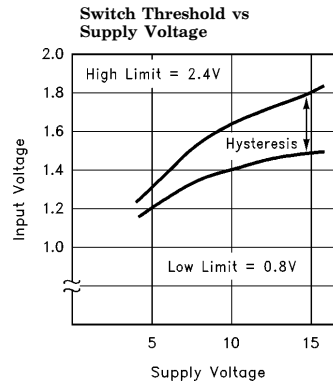
EL7242C/EL7252C

Dual Input, High Speed, Dual Channel Power MOSFET Driver

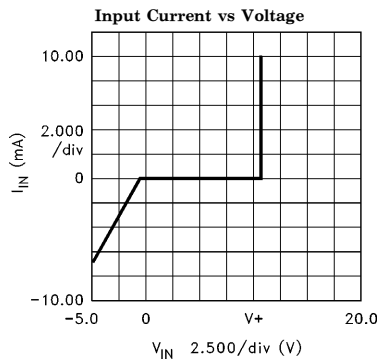
Typical Performance Curve



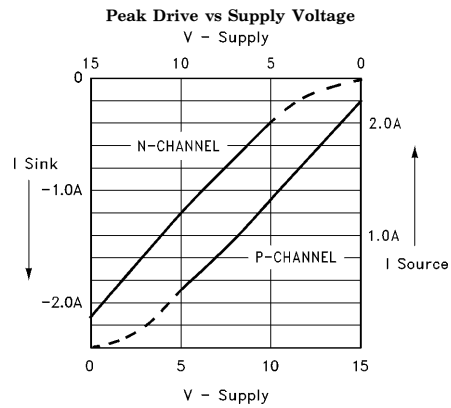
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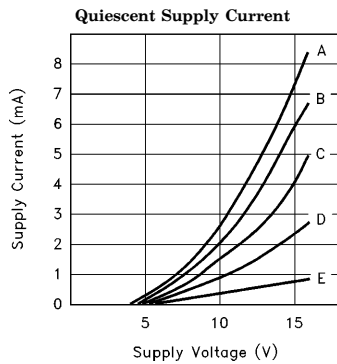
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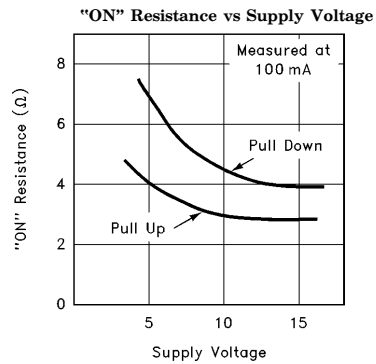


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CASE:

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



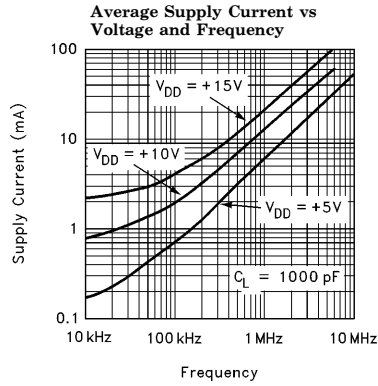
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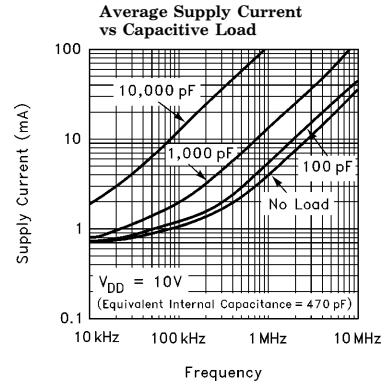
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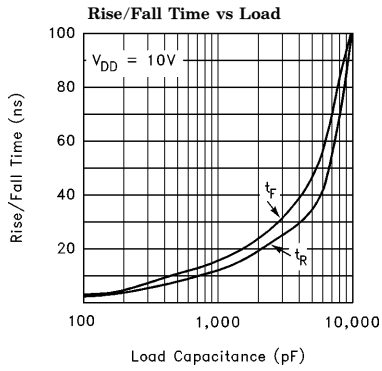
Typical Performance Curve — Contd.



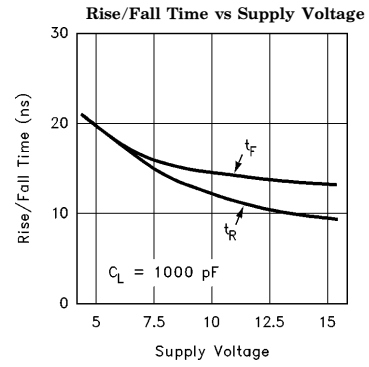
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7242-11



7242-16

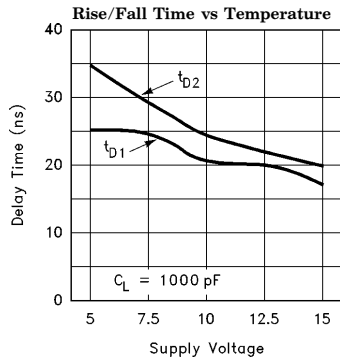


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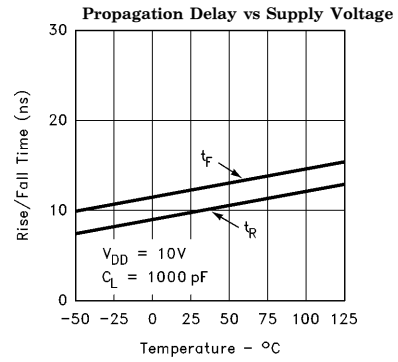
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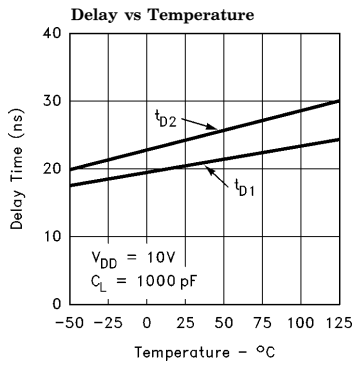
Typical Performance Curve — Contd.



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7242-14



7242-15

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General Disclaimer

Specifications contained in this data sheet are in effect as of the publication date shown. Elantec, Inc. reserves the right to make changes in the circuitry or specifications contained herein at any time without notice. Elantec, Inc. assumes no responsibility for the use of any circuits described herein and makes no representations that they are free from patent infringement.

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HIGH PERFORMANCE ANALOG INTEGRATED CIRCUITS

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