élantec
HIGH PERFORMANCE ANALOG INTEGRATED CIRCUITS

EL7104C, EL7114C

High Speed, Single Channel, Power MOSFET Drivers

Features

- Industry-standard driver replacement
- Improved response times
- Matched rise and fall times
- Reduced clock skew
- Low output impedance
- Low input capacitance
- High noise immunity
- Improved clocking rate
- Low supply current
- Wide operating range
- Separate drain connections

Applications

- Clock/line drivers
- CCD drivers
- Ultrasound transducer drivers
- Power MOSFET drivers
- Switch mode power supplies
- Resonant charging
- Cascoded drivers

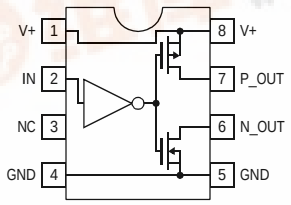
Ordering Information

Part No.	Package	Tape & Reel	Outline #
EL7154CN	8-Pin PDIP		MDP0031
EL7154CS	8-Pin SO		MDP0027

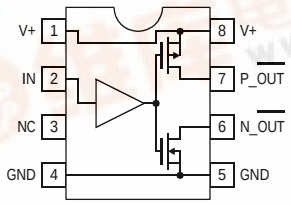
General Description

The EL7104C and EL7114C ICs are matched driver ICs that improve the operation of the industry-standard TC-4420/29 clock drivers. The Elantec versions are very high speed drivers capable of delivering peak currents of 1A into highly capacitive loads. The high speed performance is achieved by means of a proprietary “Turbo-Driver” circuit that speeds up input stages by tapping the wider voltage swing at the output. Improved speed and drive capability are enhanced by matched rise and fall delay times. These matched delays maintain the integrity of input-to-output pulse-widths to reduce timing errors and clock skew problems. This improved performance is accompanied by a 10-fold reduction in supply currents over bipolar drivers, yet without the delay time problems commonly associated with CMOS drivers.

Connection Diagrams



EL7104C
Non-inverting Driver



EL7114C
Inverting Driver

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Absolute Maximum Ratings (T_A = 25°C)

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

Important Note:

All parameters having Min/Max specifications are guaranteed. Typ 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 Characteristics

T_A = 25°C, V+ = 15V unless otherwise specified.

Parameter	Description	Test Conditions	Min	Typ	Max	Unit
Input						
V_{IH}	Logic "1" Input Voltage		2.4			V
I_{IH}	Logic "1" Input Current	@V+		0.1	10	µA
V_{IL}	Logic "0" Input Voltage				0.8	V
I_{IL}	Logic "0" Input Current	@0V		0.1	10	µA
V_{HVS}	Input Hysteresis			0.3		V
Output						
R_{OH}	Pull-Up Resistance	I_{OUT} = -100 mA		1.5	4	Ω
R_{OL}	Pull-Down Resistance	I_{OUT} = +100 mA		2	4	Ω
I_{OUT}	Output Leakage Current	V+/GND		0.2	10	µA
I_{PK}	Peak Output Current	Source Sink		4.0 4.0		A
I_{DC}	Continuous Output Current	Source/Sink	200			mA
Power Supply						
I_S	Power Supply Current	Input = V+ EL7104C EL7114C		4.5 1	7.5 2.5	mA
V_S	Operating Voltage		4.5		16	V

AC Electrical Characteristics

T_A = 25°C, V = 15V unless otherwise specified.

Parameter	Description	Test Conditions	Min	Typ	Max	Unit
Switching Characteristics ($V_{DD} = V_H$ = 12V; V_L = -3V)						
t_R	Rise Time	C_L = 1000 pF		7.5		ns
		C_L = 2000 pF		10	20	ns
t_F	Fall Time	C_L = 1000 pF		10		ns
		C_L = 2000 pF		15	20	ns
t_{D-ON}	Turn-On Delay Time	See Timing Table		18	25	ns
t_{D-OFF}	Turn-Off Delay Time	See Timing Table		18	25	ns

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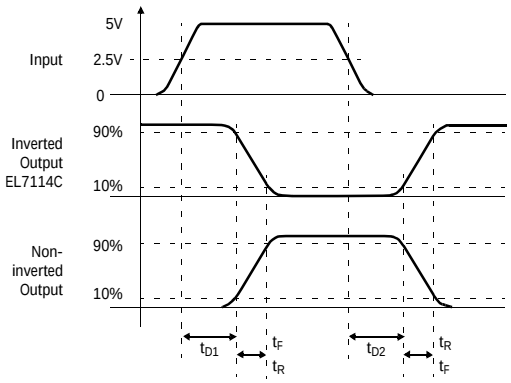
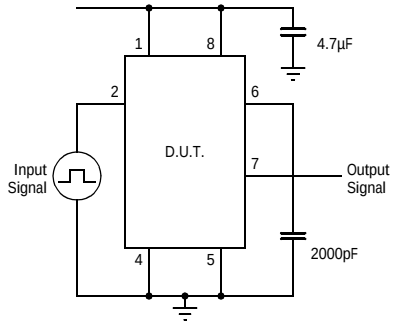
Timing Table



Standard Test Configuration



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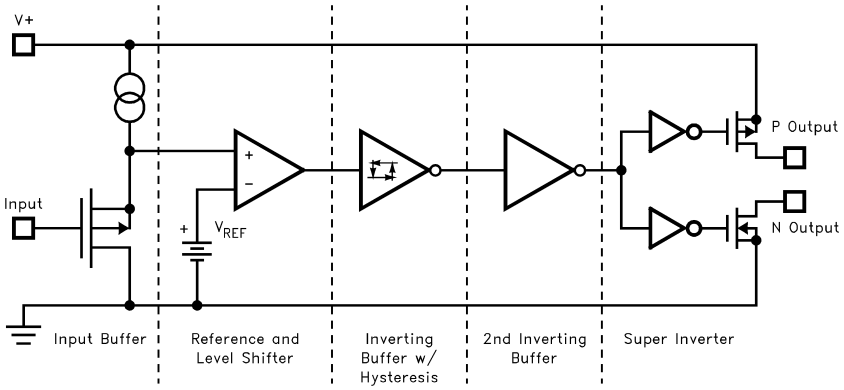
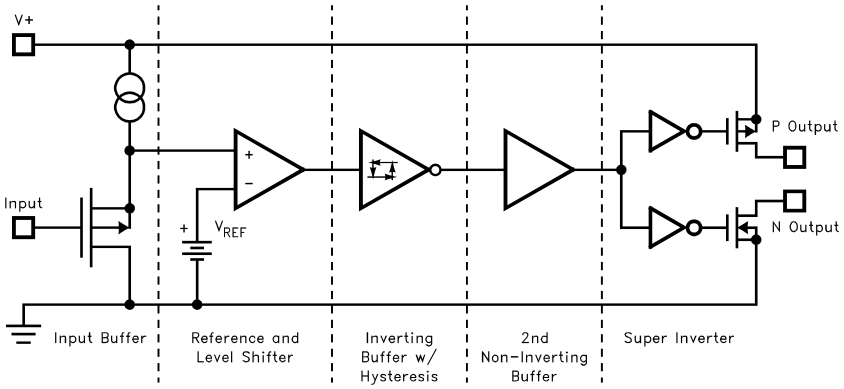
EL7104C Simplified Schematic



EL7114C Simplified Schematic



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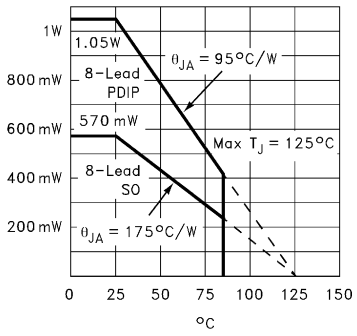
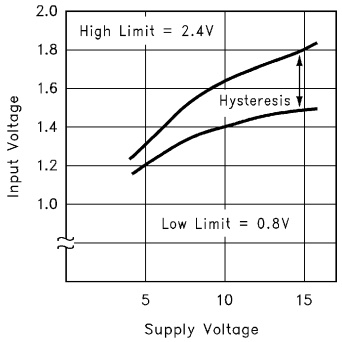
Typical Performance Curves

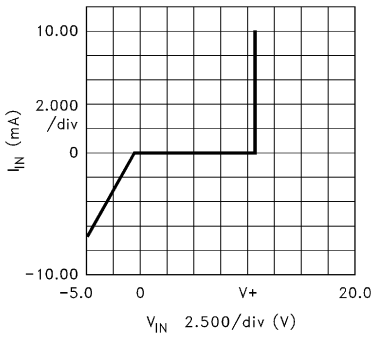
Max Power/Derating Curves



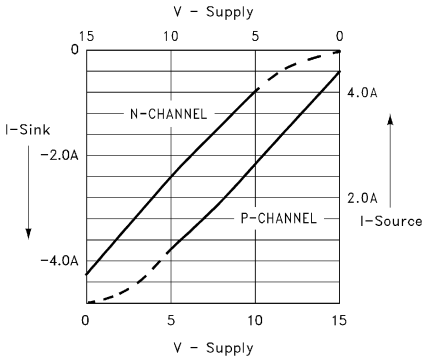
Switch Threshold vs Supply Voltage



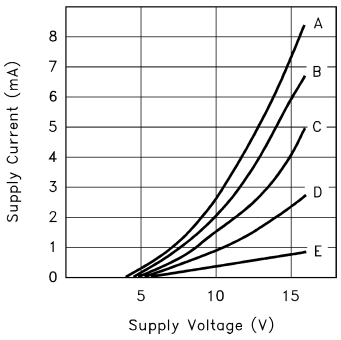
Input Current vs Voltage



Peak Drive vs Supply Voltage



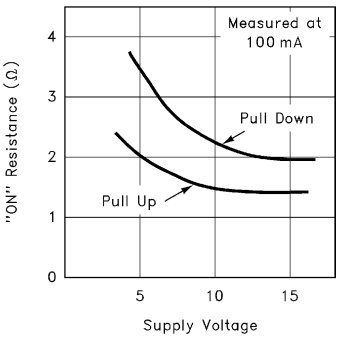
Quiescent Supply Current



CASE:

Device	Input Level	Curve
EL7104	GND	A
EL7104	V+	C
EL7114	GND	C
EL7114	V+	E

"ON" Resistance vs Supply Voltage



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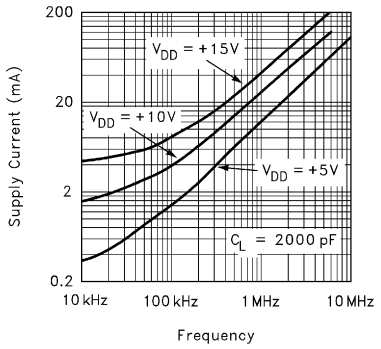
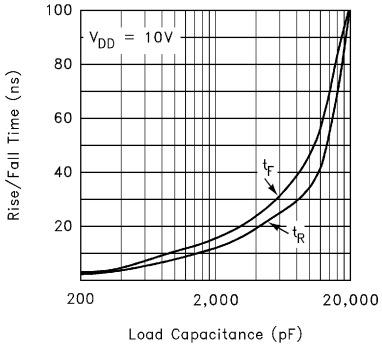
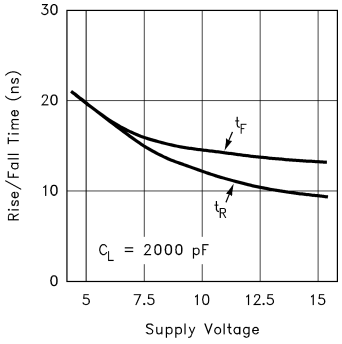
Average Supply Current vs Voltage and Frequency



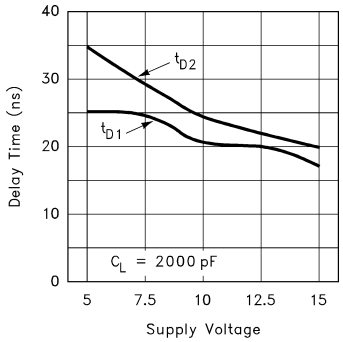
Rise/Fall Time vs Load



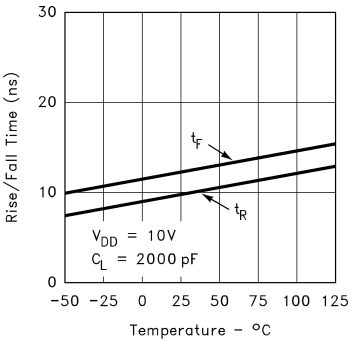
Rise/Fall Time vs Supply Voltage



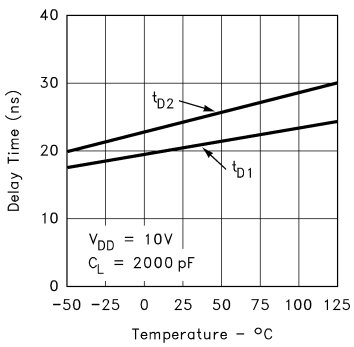
Propagation Delay vs Supply Voltage



Rise/Fall Time vs Temperature



Rise/Fall Time vs Temperature



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General Disclaimer

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