January 1996, Rev A FN7284

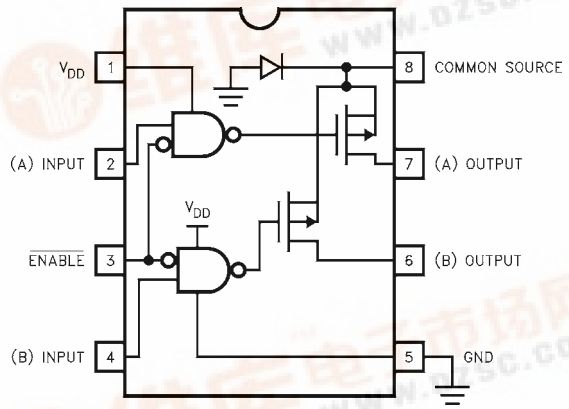
High Speed Coil Drivers

élantec

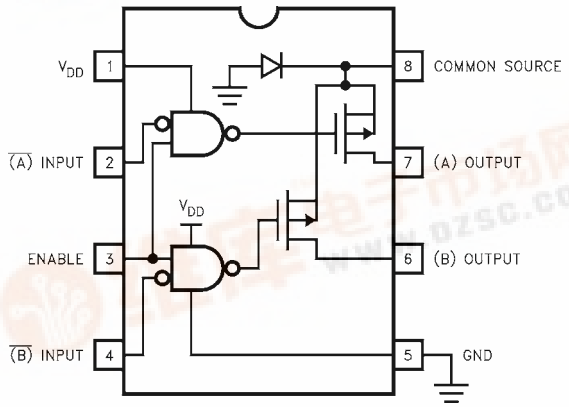
The EL7240/EL7241 high speed coil drivers accept logic inputs which independently control a pair of 3Ω PMOS FET's. The output transistors share a common source, making these devices well suited for “current steering” and analog switching applications. The typical clamping diodes to ground are removed, thus allowing pins (6) and (7) to swing negative. This feature is desirable when driving “center-tapped” coils referenced to ground. The logic “NAND” input configuration can be used to “enable” the outputs. The EL7240 and EL7241 differ only by their logic polarity.

Pinouts

EL7240
(8-PIN PDIP, SOIC)
TOP VIEW



EL7241
(8-PIN PDIP, SOIC)
TOP VIEW



Features

- 20ns Propagation delay
- Clock to 10MHz
- 2 Amp peak output drive
- 3Ω output impedance
- 3V/5V Logic input compatible
- Outputs “OK” below ground
- Operating voltage 4.5V to 16V

Applications

- Tape drive-write head driver
- Current switching
- Center-Tapped transformer driver
- ATE-pin drivers
- Analog switching
- AC switching
- T - switch

Ordering Information

PART NUMBER	TEMP. RANGE	PACKAGE	PKG. NO.
EL7240CN	-40°C to +85°C	8-Pin PDIP	MDP0031
EL7240CS	-40°C to +85°C	8-Pin PSOIC	MDP0027
EL7241CN	-40°C to +85°C	8-Pin PDIP	MDP0031
EL7241CS	-40°C to +85°C	8-Pin PSOIC	MDP0027

Operating Voltage Range

PINS	MIN/MAX (VOLTS)
V_{DD}/GND	4.5/16
V_{DD}/Output	0/-20
Source/Output	0/-16
Output/GND	16/-10

Absolute Maximum Ratings (T_A = 25°C)

Supply (V+ to GND) 16.5V
Input Pins . . . . . -0.3V to +0.3V above V+
Combined Peak Output Current 4A
Storage Temperature Range . . . . . .-65°C to +150°C
Ambient Operating Temperature . . . . . .-40°C to +85°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 = 15V unless otherwise specified

PARAMETER	DESCRIPTION	TEST CONDITIONS	MIN	TYP	MAX	UNITS
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_{ON}	Pull-Up Resistance	I_{OUT} = -100mA		3	6	Ω
I_{OFF}	Off Leakage	V_{OUT} = 0V	0.2		10	µA
I_{PK}	Peak Output Current	Source		2.0		A
I_{DC}	Continuous Output Current	Channel	100			mA
V_S	Source Potential with Grounded Drain	Channel A or B, 100mA Load		2.3	2.75	V
POWER SUPPLY						
I_S	Power Supply Current	Inputs High		1	2.5	mA
V_S	Operating Voltage		4.5		16	V

AC Electrical Specifications

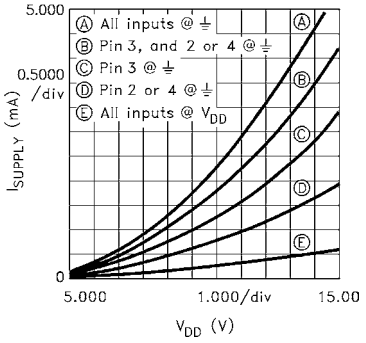
T_A = 25°C, V = 15V unless otherwise specified

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNITS
SWITCHING CHARACTERISTICS					
t_{D-ON}	Turn-On Delay Time		18	25	ns
t_{D-OFF}	Turn-Off Delay Time		20	25	ns

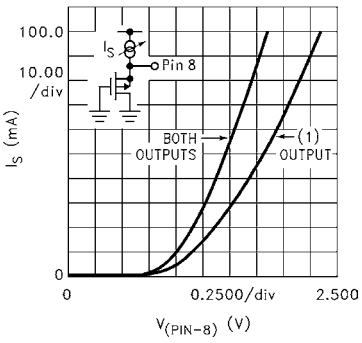
Rise and Fall times (t_R and t_F) are load dependent.

Typical Performance Curves

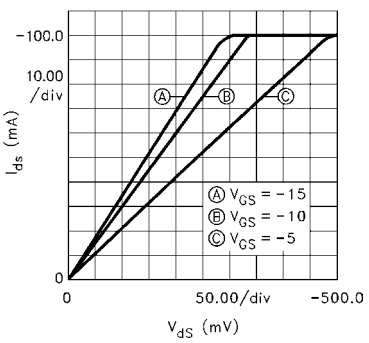
Supply Current vs V_{DD} and Input Connection



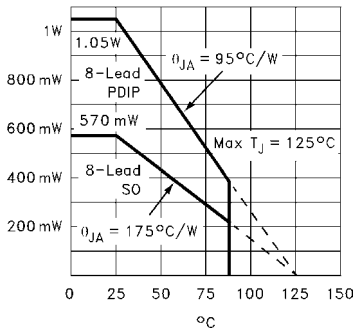
Source Voltage vs Current (Grounded Drain)



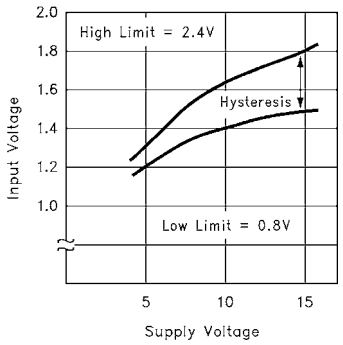
Output Conduction vs V_{GS}



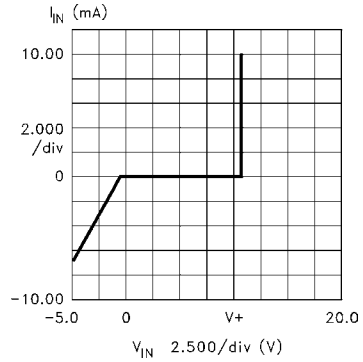
Max Power/Derating Curves



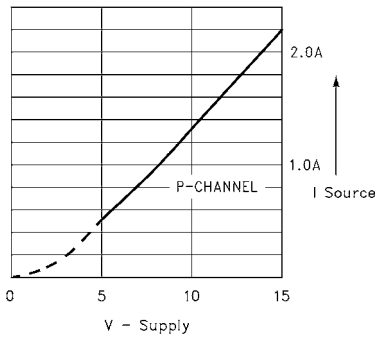
Switch Threshold vs Supply Voltage



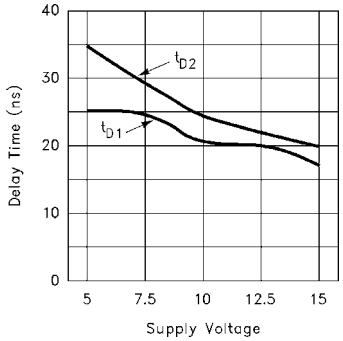
Input Current vs Voltage



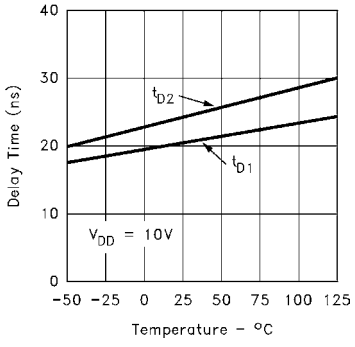
Peak Drive vs Supply Voltage



Propagation Delay vs Supply Voltage

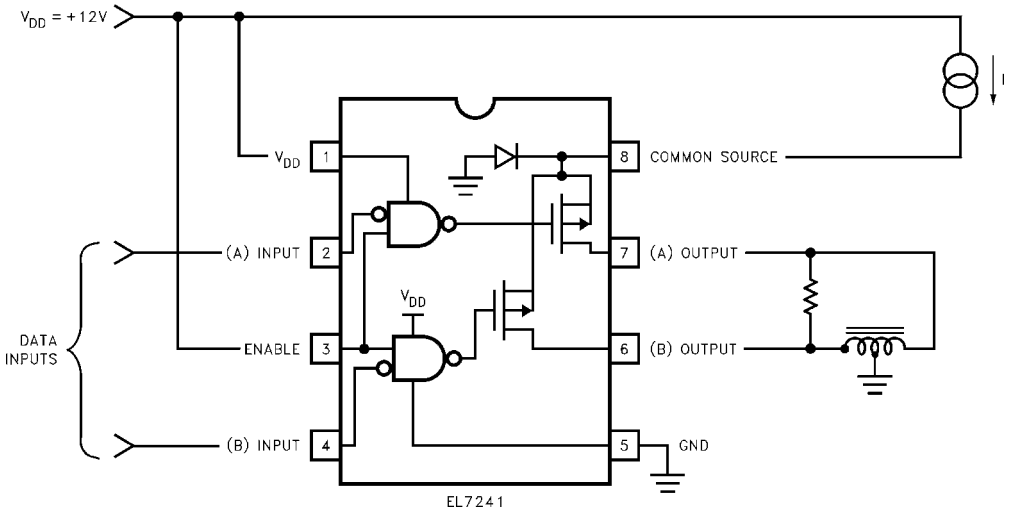


Delay vs Temperature

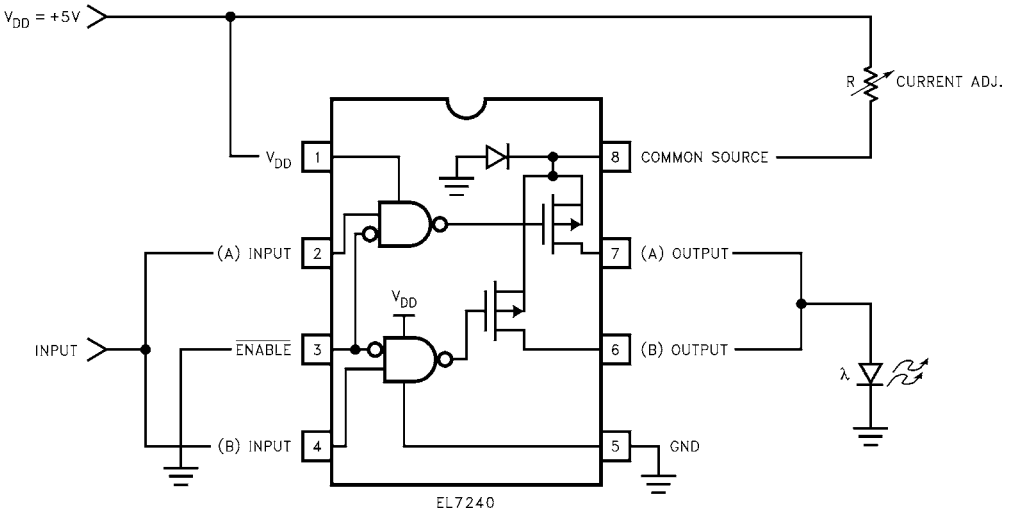


Typical Applications

Write Head Driver

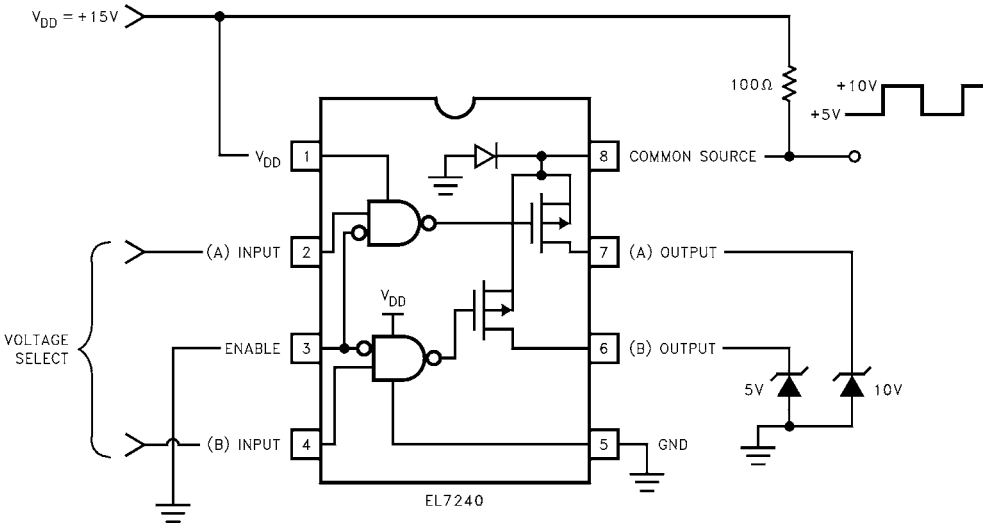


High Current LED/Laser Diode Driver

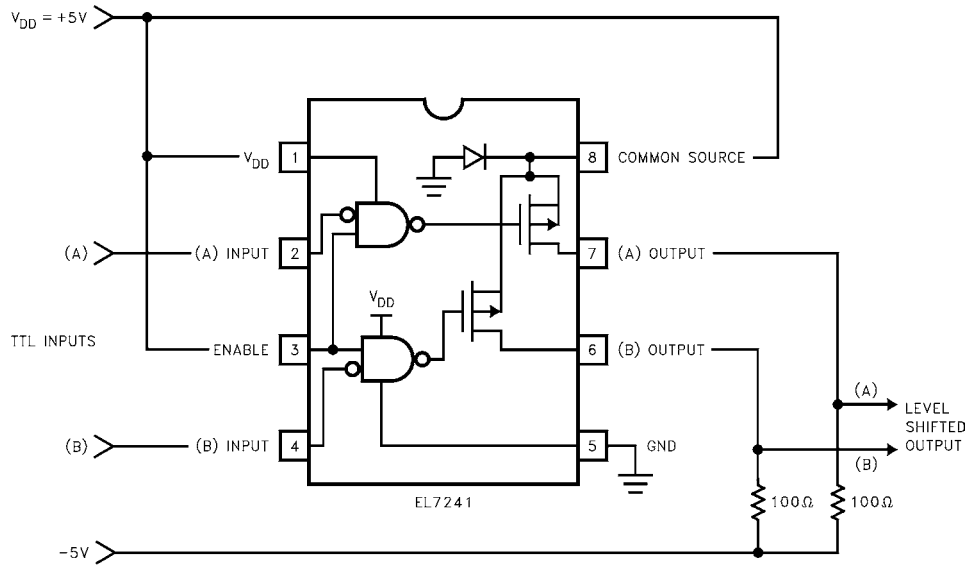


Typical Applications (Continued)

Bi-Level Step Generator

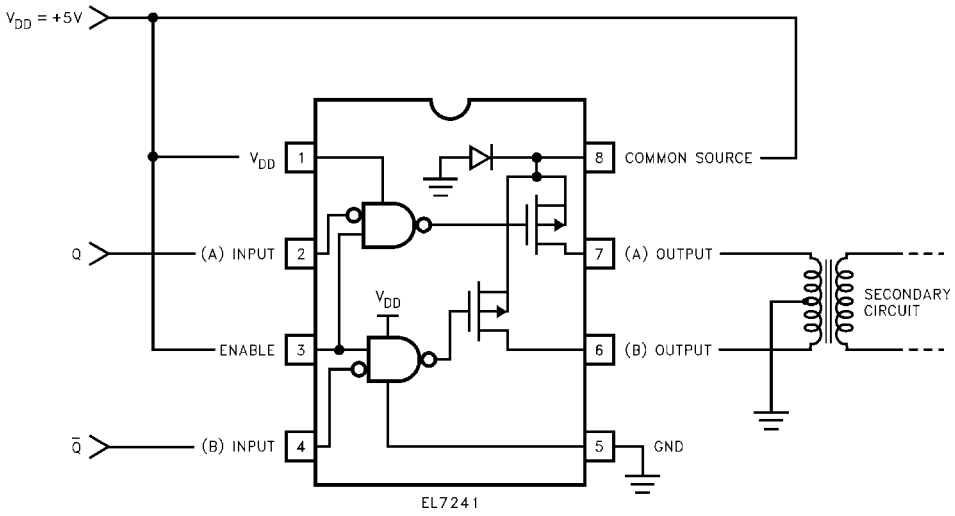


Level Shifter

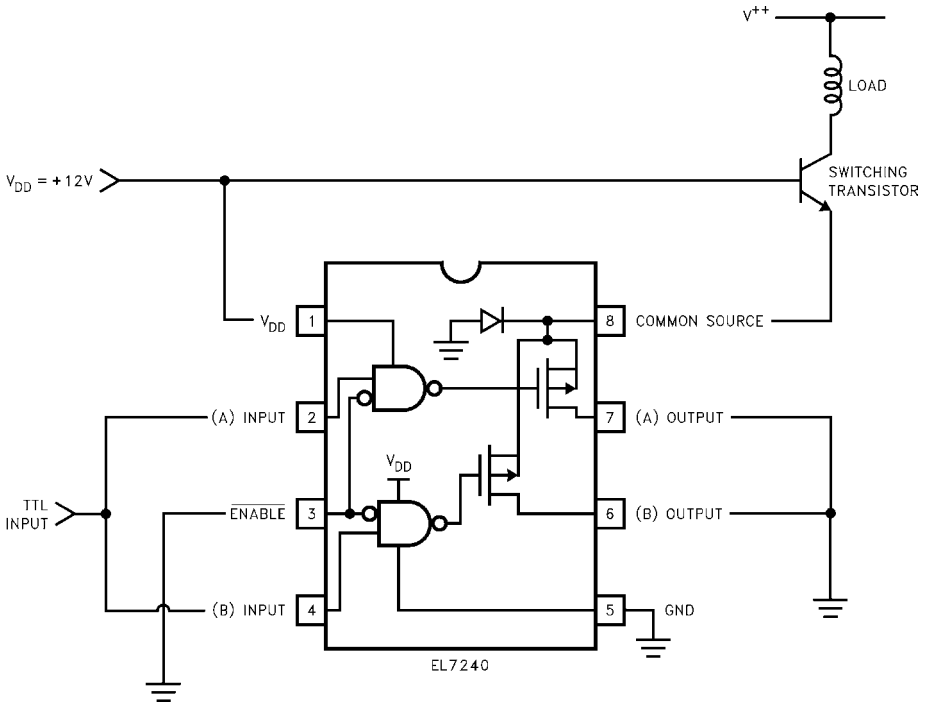


Typical Applications (Continued)

Push-Pull Transformer Driver



High Speed Bipolar Drive Circuit



Typical Applications (Continued)

"Two-Bit" Current Source with Gating