

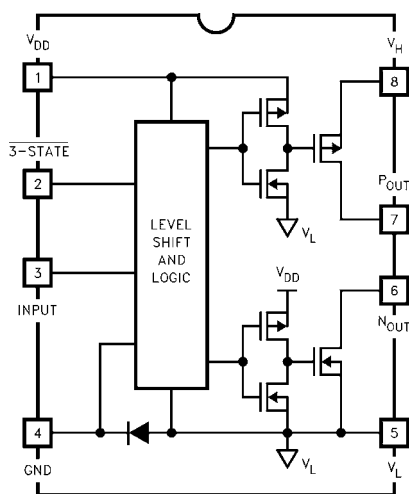
## High Speed, Monolithic Pin Driver

The EL7154 3-state pin driver is particularly well suited for ATE and level shifting applications. The 4A peak drive capability, makes the EL7154 an excellent choice when driving high speed capacitive lines.

The p-channel MOSFET is completely isolated from the power supply, providing a high degree of flexibility. Pin (7) can be grounded, and the output can be taken from pin (8) when a "source follower" output is desired. Then n-channel MOSFET has an isolated drain, but shares a common bus with pre-drivers and level shifter circuits. This is necessary to ensure that the nchannel device can turn off effectively when  $V_L$  goes below GND. In some power-FET and IGBT applications, negative drive is desirable to insure effective turn-off. The EL7154 can be used in these applications by returning  $V_L$  to a moderate negative potential.

## Pinout

**EL7154**  
**(8-PIN PDIP, SOIC)**  
**TOP VIEW**



## Truth Table

3-STATE	INPUT	POUT	NOUT
0	0	Open	Open
0	1	Open	Open
1	0	HIGH	Open
1	1	Open	LOW

Manufactured under U.S. Patent Nos. 5,334,883, #5,341,047, #5,352,578, #5,352,389, #5,351,012, #5,374,898

## Features

- Comparatively low cost
- 3-State output
- 3V and 5V Input compatible
- Clocking speeds up to 10MHz
- 20ns Switching/delay time
- 4A Peak drive
- Isolated drains
- Low output impedance—2.5Ω
- Low quiescent current—5mA
- Wide operating voltage—4.5V–16V
- Isolated P-channel device
- Separate ground and  $V_L$  pins
- Pb-Free available (RoHS compliant)

## Applications

- Loaded circuit board testers
- Digital testers
- Level shifting below GND
- IGBT drivers
- CCD drivers

## Ordering Information

PART NUMBER	PACKAGE	TAPE & REEL	PKG. DWG. #
EL7154CN	8-Pin PDIP	-	MDP0031
EL7154CS	8-Pin SOIC	-	MDP0027
EL7154CS-T7	8-Pin SOIC	7"	MDP0027
EL7154CS-T13	8-Pin SOIC	13"	MDP0027
EL7154CSZ (See Note)	8-Pin SOIC (Pb-free)	-	MDP0027
EL7154CSZ-T7 (See Note)	8-Pin SOIC (Pb-free)	7"	MDP0027
EL7154CSZ-T13 (See Note)	8-Pin SOIC (Pb-free)	13"	MDP0027

NOTE: Intersil Pb-free products employ special Pb-free material sets; molding compounds/die attach materials and 100% matte tin plate termination finish, which are RoHS compliant and compatible with both SnPb and Pb-free soldering operations. Intersil Pb-free products are MSL classified at Pb-free peak reflow temperatures that meet or exceed the Pb-free requirements of IPC/JEDEC J STD-020.

***Nominal Operating Voltage Range***

PIN	MIN	MAX
$V_L$	-3	0
$V_{DD}-V_L$	5	15
$V_H-V_L$	2	15
$V_{DD}-V_H$	-0.5	15
$V_{DD}$	5	15

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

Supply ( $V_{DD}$  to  $V_L$ ;  $V_H - V_L$ ,  $V_H$  to GND),  
 $V_+$  to  $V_H$  ..... 16.5V  
 $V_L$  to GND ..... -5V  
Input Pins ..... -0.3V below  $V_L$  to +0.3V above  $V_{DD}$   
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:  $T_J = T_C = T_A$

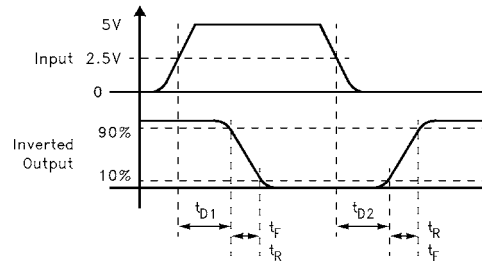
**DC Electrical Specifications**  $T_A = 25^\circ\text{C}$ ,  $V_{DD} = +12\text{V}$ ,  $V_H = +12\text{V}$ ,  $V_L = -3\text{V}$ , unless otherwise specified

PARAMETER	DESCRIPTION	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>INPUT</b>						
$V_{IH}$	Logic "1" Input Voltage		2.4			V
$I_{IH}$	Logic "1" Input Current	$V_{IH} = V_{DD}$		0.1	10	$\mu\text{A}$
$V_{IL}$	Logic "0" Input Voltage				0.6	V
$I_{IL}$	Logic "0" Input Current	$V_{IL} = 0\text{V}$		0.1	10	$\mu\text{A}$
$V_{HVS}$	Input Hysteresis			0.3		V
<b>OUTPUT</b>						
$R_{OH}$	Pull-Up Resistance	$I_{OUT} = -100\text{mA}$		1.5	4	$\Omega$
$R_{OL}$	Pull-Down Resistance	$I_{OUT} = +100\text{mA}$		2	4	$\Omega$
$I_{OUT}$	Output Leakage Current	$V_{DD}/\text{GND}$		0.2	10	$\mu\text{A}$
$I_{PK}$	Peak Output Current	Source Sink		4.0 4.0		A
$I_{DC}$	Continuous Output Current	Source/Sink	200			mA
<b>POWER SUPPLY</b>						
$I_S$	Power Supply Current	Inputs = $V_{DD}$		1	2.5	mA
$V_S$	Operating Voltage		4.5		16	V
$I_G$	Current to GND (Pin 4)			1	10	$\mu\text{A}$
$I_H$	Off Leakage at $V_H$	Pin 8 = 0V		1	10	$\mu\text{A}$

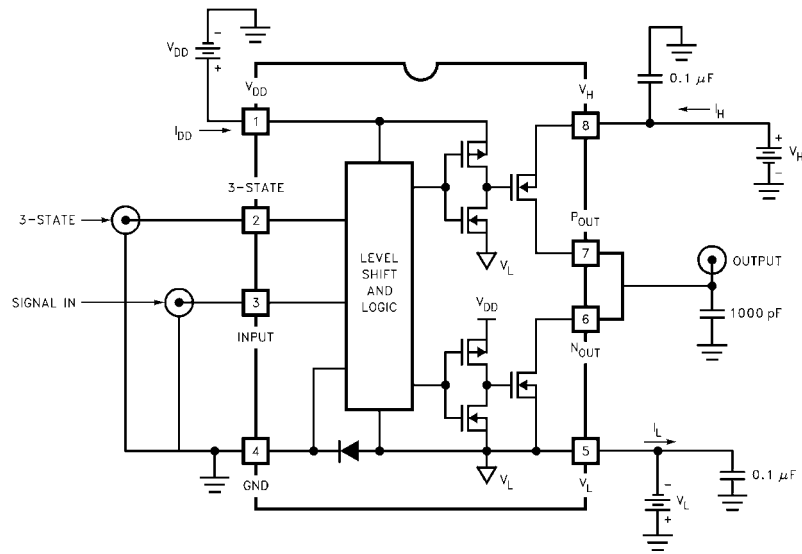
**AC Electrical Specifications**  $T_A = 25^\circ\text{C}$  unless otherwise specified

PARAMETER	DESCRIPTION	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>SWITCHING CHARACTERISTICS</b> ( $V_{DD} = V_H = 12\text{V}$ ; $V_L = -3\text{V}$ )						
$t_R$	Rise Time	$C_L = 100\text{pF}$		4	25	ns
		$C_L = 2000\text{pF}$		20		
$t_F$	Fall Time	$C_L = 100\text{pF}$		4	25	ns
		$C_L = 2000\text{pF}$		20		
$t_{D-1}$	Turn-Off Delay Time	$C_L = 2000\text{pF}$		20	25	ns
$t_{D-2}$	Turn-On Delay Time	$C_L = 2000\text{pF}$		10	25	ns
$t_{D-1}$	3-State Delay				25	ns
$t_{D-2}$	3-State Delay				25	ns

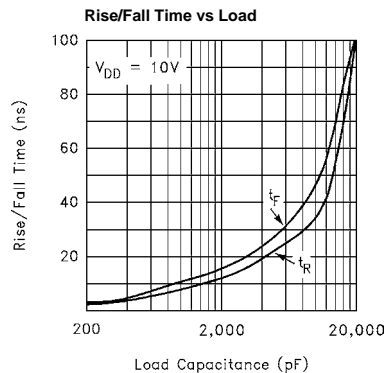
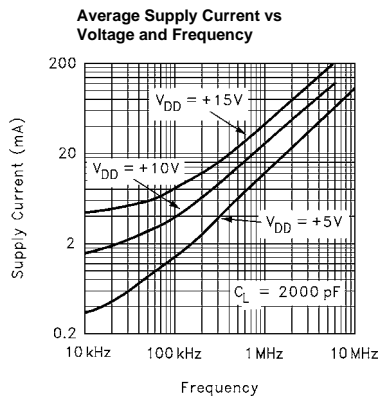
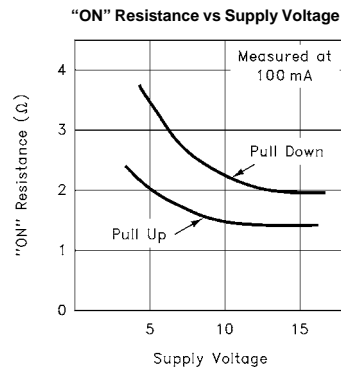
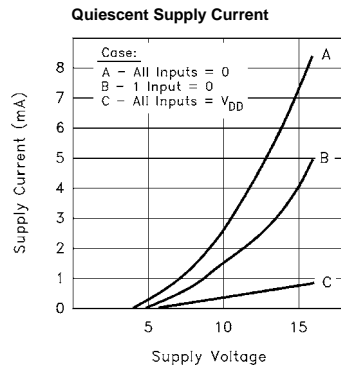
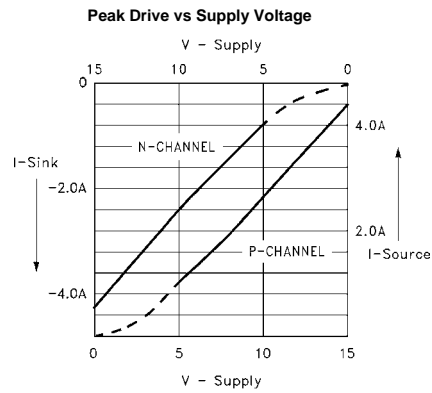
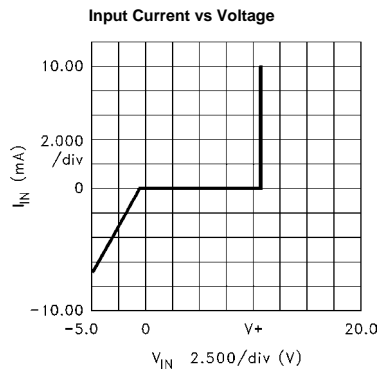
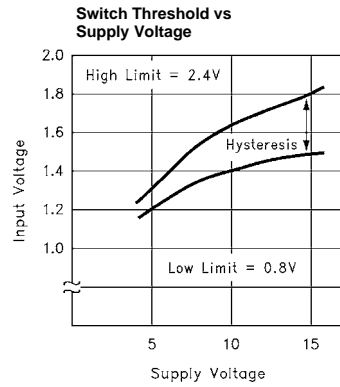
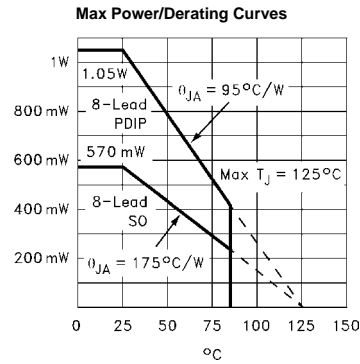
## Timing Table



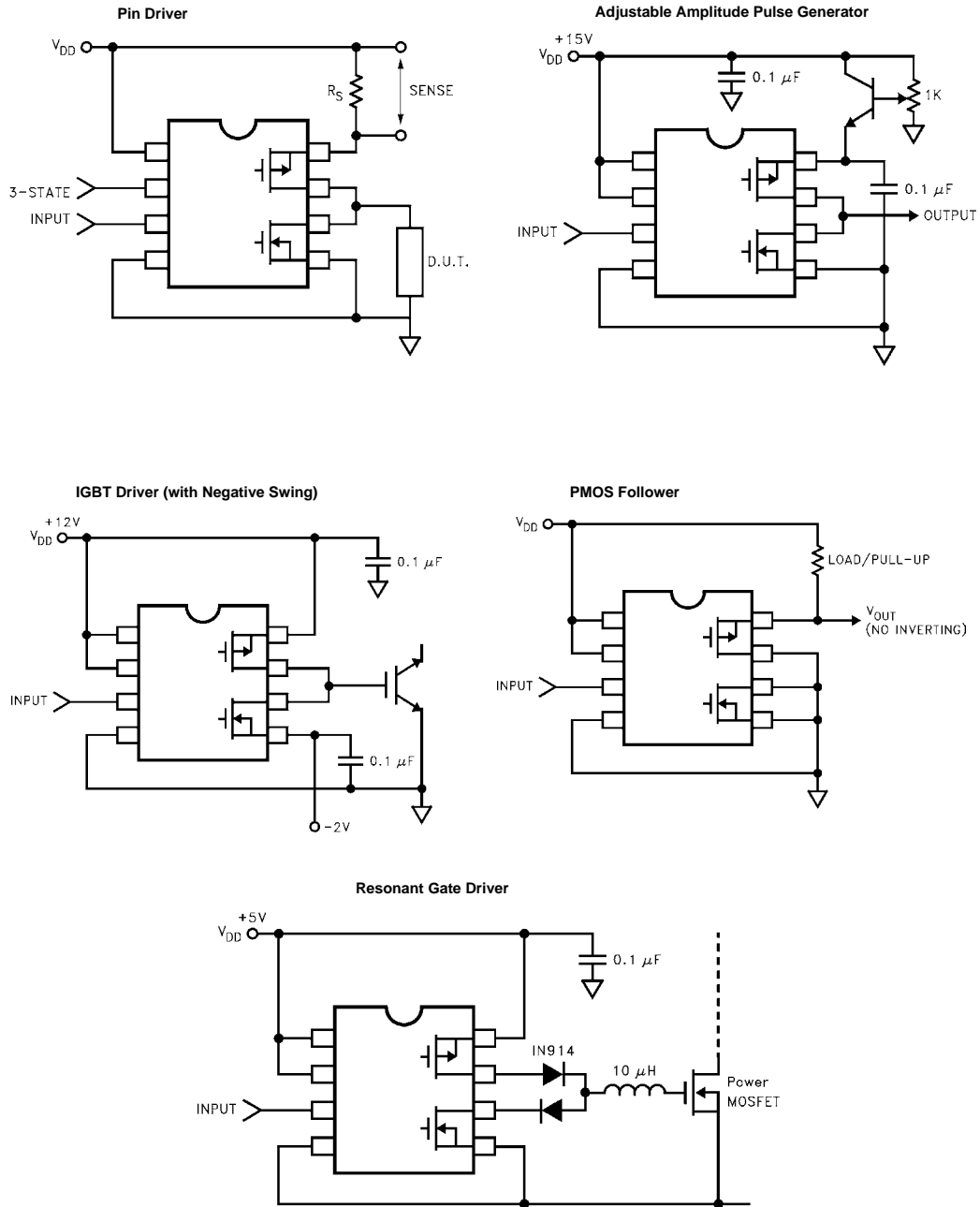
## Standard Test Configuration



## Typical Performance Curves



## Typical Applications



All Intersil U.S. products are manufactured, assembled and tested utilizing ISO9000 quality systems.

Intersil Corporation's quality certifications can be viewed at [www.intersil.com/design/quality](http://www.intersil.com/design/quality)

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