

# SP1404BW

## HIGH VOLTAGE INTERFACE CIRCUIT

The SP1404 is a bipolar integrated circuit comprising five individual digital current amplifier circuits. Each circuit accepts a logic input from TTL, CMOS or a similar source and drives a high-current load at the output. The outputs are capable of withstanding high negative voltages in the 'off' state, making the SP1404 particularly suited to telecommunications applications.

### CIRCUIT DESCRIPTION (Fig.2)

The SP1404 operates as a power amplifier interfacing from a voltage-level sensitive input to a high-current output switch. The input threshold is TTL-compatible, with a low input current requirement enabling one standard TTL output to drive many interfaces. The low input current requirement also makes it possible to use series current-limiting resistors to protect the SP1404 inputs.

Each element of the device performs as inverting function, i.e. a low voltage level on the input causes a high current in the output. If the input is left open-circuit, the output will be off and the output current will be zero.

The isolation of the integrated circuit is biased to the more negative of the two earth points by diodes D1 and D2 so that differences of up to  $(V_{CC} - 1)$  volts can be tolerated between the 'noisy' exchange earth and the 'quiet' electronic earth.

### ABSOLUTE MAXIMUM RATINGS

Storage temperature	-55°C to +175°C
Chip operating temperature	+150°C
Ambient temperature ( $I_{OUT} = 50mA$ )	+85 °C
Load current	80mA
Voltage between output and 'noisy earth'	-65V
$V_{CC}$ to output voltage	75V
$V_{CC}$ to electronic earth	7V
Input voltage	$V_{CC} + 1V$

### ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):

Temperature range = 0°C to +70°C,  $V_{CC} = +5V \pm 0.5V$

Characteristic	Value			Units	Conditions
	Min.	Typ.	Max.		
Input current		-20		$\mu A$	$V_{IN} = 0V$
Output voltage			1.5	$\mu A$	$V_{IN} = V_{CC}$
Output current (Off state)			100	V	$V_{IN} = 0.8V, I_{OUT} = 50mA$
Output current (On state)	50	80		$\mu A$	$V_{IN} = 2V, V_{OUT} = -60V$
$V_{CC}$ supply current		30		mA	$V_{IN} = 0.8V$
Total power dissipation		450		mW	$V_{CC} = 5V, \text{all inputs low}$
					$V_{CC} = 5V, \text{all inputs low}$
					all outputs $I_{OUT} = 50mA$

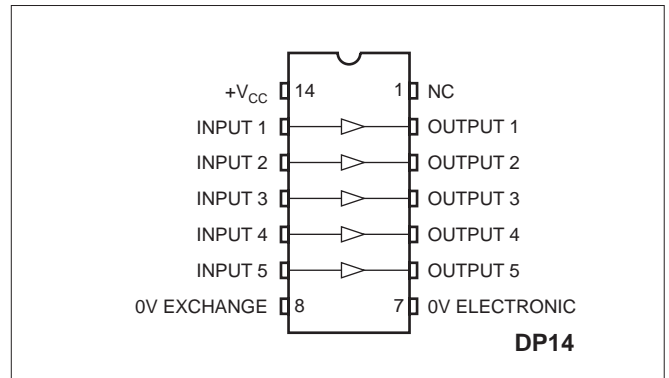


Figure 1: Pin connections (viewed from underside)

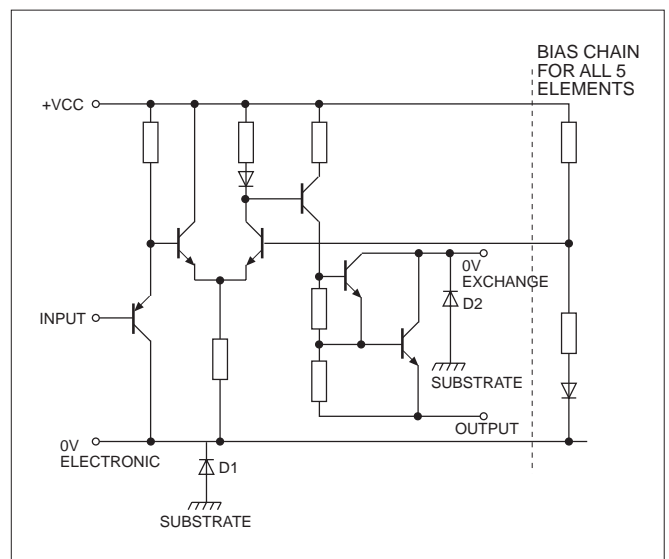


Figure 2: Circuit diagram of one element



**For more information about all Zarlink products  
visit our Web Site at  
[www.zarlink.com](http://www.zarlink.com)**

Information relating to products and services furnished herein by Zarlink Semiconductor Inc. trading as Zarlink Semiconductor or its subsidiaries (collectively "Zarlink") is believed to be reliable. However, Zarlink assumes no liability for errors that may appear in this publication, or for liability otherwise arising from the application or use of any such information, product or service or for any infringement of patents or other intellectual property rights owned by third parties which may result from such application or use. Neither the supply of such information or purchase of product or service conveys any license, either express or implied, under patents or other intellectual property rights owned by Zarlink or licensed from third parties by Zarlink, whatsoever. Purchasers of products are also hereby notified that the use of product in certain ways or in combination with Zarlink, or non-Zarlink furnished goods or services may infringe patents or other intellectual property rights owned by Zarlink.

This publication is issued to provide information only and (unless agreed by Zarlink in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. The products, their specifications, services and other information appearing in this publication are subject to change by Zarlink without notice. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. Manufacturing does not necessarily include testing of all functions or parameters. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to Zarlink's conditions of sale which are available on request.

Purchase of Zarlink's I<sup>2</sup>C components conveys a licence under the Philips I<sup>2</sup>C Patent rights to use these components in an I<sup>2</sup>C System, provided that the system conforms to the I<sup>2</sup>C Standard Specification as defined by Philips.

Zarlink and the Zarlink Semiconductor logo are trademarks of Zarlink Semiconductor Inc.

Copyright 2002, Zarlink Semiconductor Inc. All Rights Reserved.

**TECHNICAL DOCUMENTATION - NOT FOR RESALE**

---