

## 4 Channel Buffer Device

### DEVICE DESCRIPTION

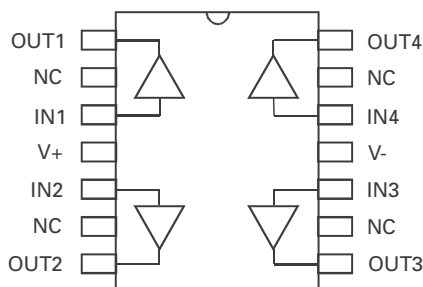
The ZXFBF04 is a low cost, high slew rate, quad buffer amplifier. Built using the Zetex CA700 technology, this buffer has a small signal bandwidth of greater than 100MHz and a 1 volt pk-pk bandwidth of greater than 20 MHz. Each channel draws only 1.9mA. The device operates from a  $\pm 5$  volt supply, which makes it ideal in a majority of applications.

This space saving buffer may be used in a wide variety of applications such as, video switching matrix, multi-channel instrumentation equipment, and A/D input buffer, etc.

### FEATURES AND BENEFITS

- 4 Buffers per package
- 100MHz bandwidth
- Low cost
- Low supply current (1.9mA per buffer)
- No thermal runaway
- 14 pin SOIC package

### CONNECTION DIAGRAM



14 PIN SOIC PACKAGE

### APPLICATIONS

- Video Switching Matrix input buffer
- Instrumentation
- Multi-channel A/D input buffer
- Multi-isolation buffer

| PART NUMBER | PACKAGE | PART MARK |
|-------------|---------|-----------|
| ZXFBF04N14  | SOIC14N | ZXFBF04   |

### ORDERING INFORMATION

| PART NUMBER  | CONTAINER | INCREMENT |
|--------------|-----------|-----------|
| ZXFBF04N14TA | Reel 7"   | 500       |
| ZXFBF04N14TC | Reel 13"  | 2500      |

### RELATED PRODUCTS

ZXFBF05 4 Channel Buffer with high capacitance drive

ZXFBF08 8 Channel Buffer

ZXFBF25 4 Channel Buffer with output enable

# ZXFBF04

## ABSOLUTE MAXIMUM RATINGS

|                             |                                      |
|-----------------------------|--------------------------------------|
| Voltage on any pin          | 20V (relative to V-)                 |
| Operating temperature range | 0 to 70°C (de-rated for -40 to 85°C) |
| Storage Temperature         | -55 to 125°C                         |

## ELECTRICAL CHARACTERISTICS

Test Conditions: Temperature =25°C, V+ = 5.00, V- = -5.00V, R<sub>L</sub> = 1kΩ, C<sub>L</sub> = 10pF

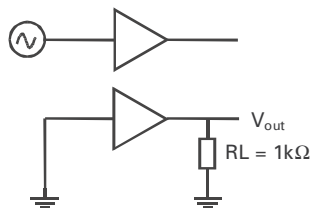
| Parameter                  | Conditions                                                                     | Min. | Typical   | Max. | Units   |
|----------------------------|--------------------------------------------------------------------------------|------|-----------|------|---------|
| Offset Voltage             | V <sub>in</sub> = 0V                                                           | -12  | -         | 12   | mV      |
| Offset Voltage Drift       | V <sub>in</sub> = 0V                                                           |      | 20        |      | V/°C    |
| Supply Current             | All inputs = 0V                                                                | 5.0  | 7.6       | 12   | mA      |
| Input Bias Current         | V <sub>in</sub> = 0V                                                           | 0.1  | 0.5       | 2.0  | μA      |
| Output Voltage             | R <sub>L</sub> = 1kΩ<br>R <sub>L</sub> = 10kΩ                                  |      | ±1<br>±4  |      | V       |
| DC Gain                    | V <sub>in</sub> = ± 0.5V, R <sub>L</sub> = 1kΩ<br>V <sub>offset</sub> = 0.0V   | 0.95 | 0.98      | 1.00 | V/V     |
| DC Gain                    | V <sub>in</sub> = ±0.5V, R <sub>L</sub> = 1kΩ<br>V <sub>offset</sub> = 0.25V   | 0.95 | 0.99      | 1.00 | V/V     |
| Sink Current               | V <sub>in</sub> = 0V, V <sub>out</sub> =0.5V                                   | 1.0  | 2.2       | 5.0  | mA      |
| Source Current             | V <sub>in</sub> = 0V, V <sub>out</sub> =-0.5V                                  | 6.0  | 9.0       | 12.0 | mA      |
| Input Resistance           |                                                                                | 10   | 20        | 100  | MΩ      |
| Output Resistance          |                                                                                | 5    | 10        | 15   | Ω       |
| Bandwidth                  | 20mVp-p,<br>1.0Vp-p                                                            |      | 100<br>20 |      | MHz     |
| Slew Rate                  |                                                                                |      | 40        |      | V/μs    |
| Voltage Noise              | 10 – 100 kHz                                                                   |      | 15        |      | nV/√Hz  |
| Differential Gain<br>NTSC  | F = 3.58MHz, V <sub>in</sub> = 0.286Vp-p,<br>DC ΔV <sub>in</sub> = 0 to 0.714V |      | 0.1       |      | %       |
| Differential Phase<br>NTSC |                                                                                |      | 0.15      |      | Degrees |
| Differential Gain<br>PAL   | F = 4.43MHz, V <sub>in</sub> = 0.286Vp-p,<br>DC ΔV <sub>in</sub> = 0 to 0.714V |      | 0.1       |      | %       |
| Differential Phase<br>PAL  |                                                                                |      | 0.15      |      | Degrees |
| Channel Isolation          | V <sub>in</sub> = 370mVp-p, R <sub>L</sub> = 1kΩ<br>F = 4 MHz                  |      | -60       |      | dB      |

## NOTES

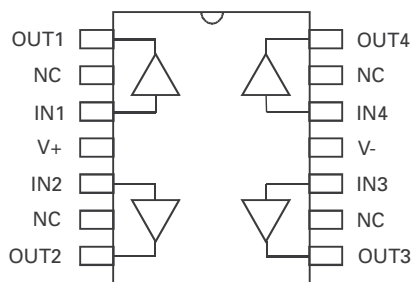
### Test circuit for measuring channel isolation.

Channel Isolation = 20 x LOG<sub>10</sub> (V<sub>out</sub> / V<sub>in</sub>) dB

V<sub>in</sub>=370mV pk-pk,  
F = 4 MHz



## PIN DESCRIPTION



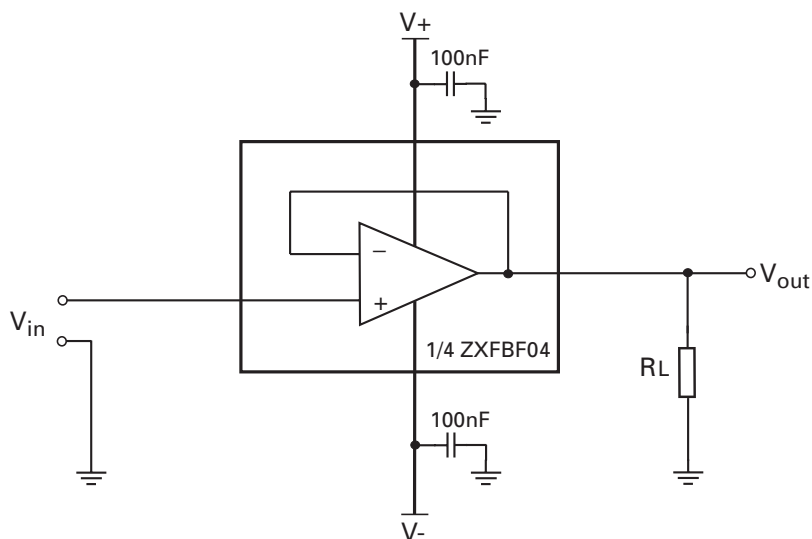
14 PIN SOIC PACKAGE

OUT 1,2,3,4  
IN 1,2,3,4  
V+  
V-

Buffer outputs.  
Buffer Inputs.  
Positive supply pin, +5 volts.  
Negative supply pin, -5 volts.

## APPLICATION CIRCUIT

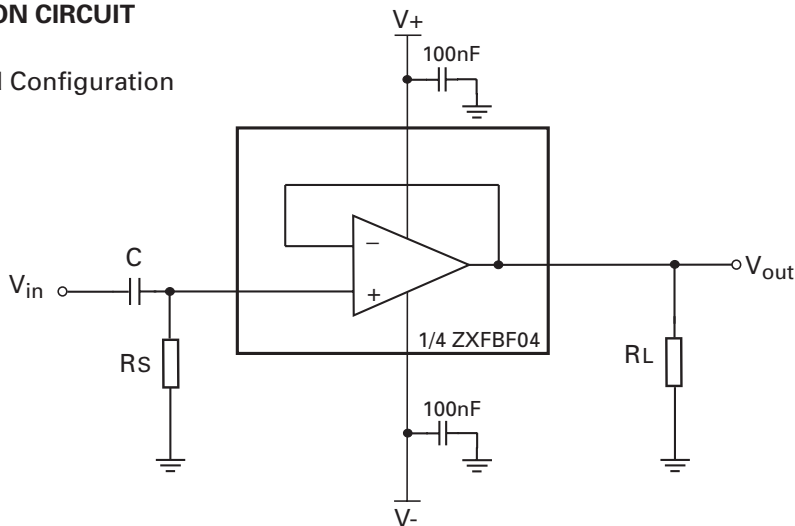
### DC Coupled Configuration



# ZXFBF04

## APPLICATION CIRCUIT

### AC Coupled Configuration

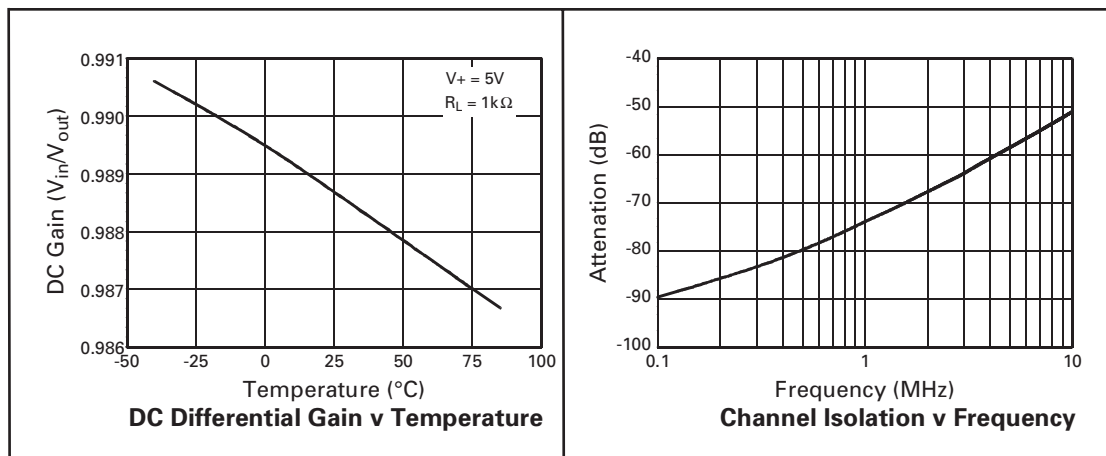


### NOTE.

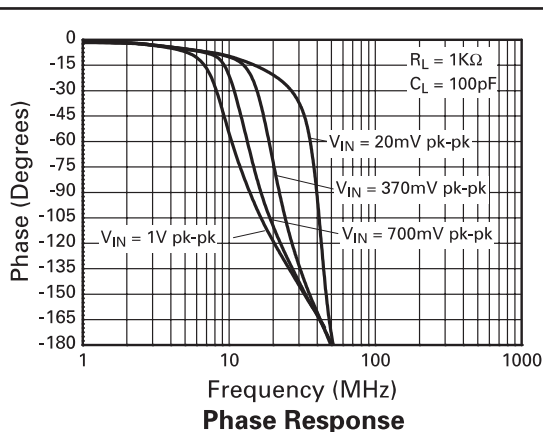
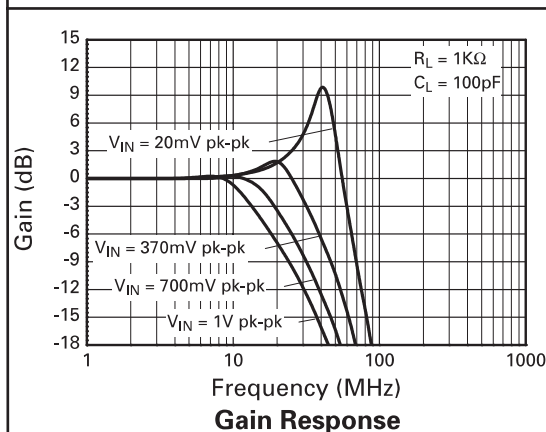
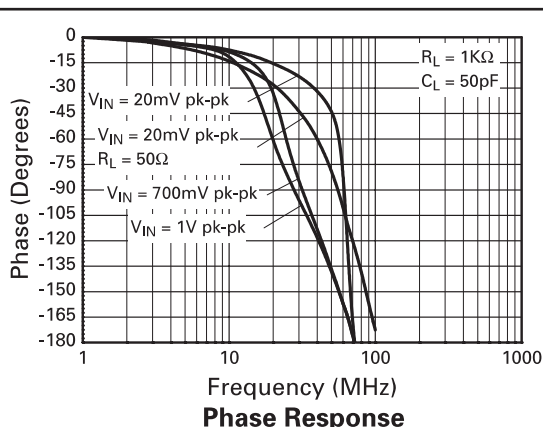
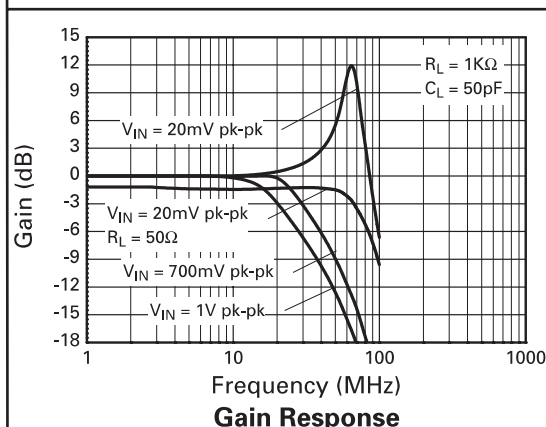
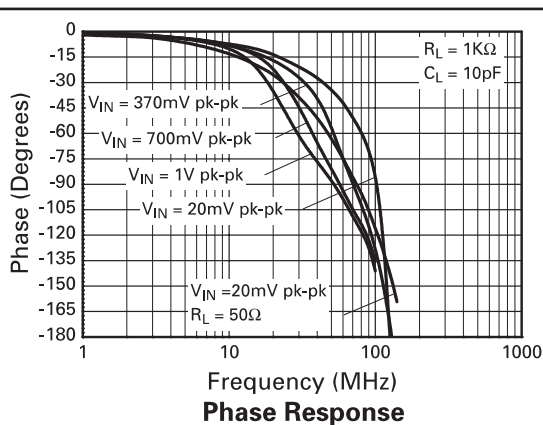
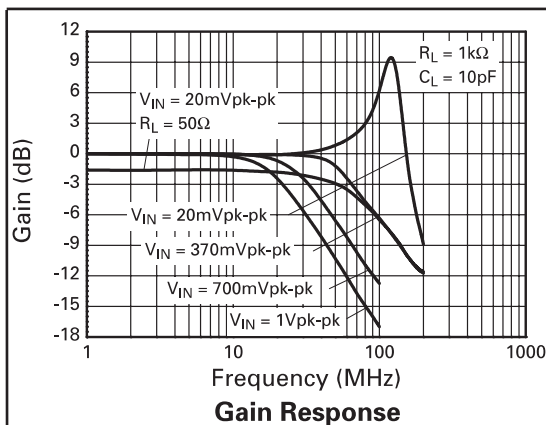
$R_S$ : Source Resistor, provides DC bias for buffer input.  $R_S \leq 10k\Omega$

Both 100nF decoupling capacitors should be situated close to device supply pins.

## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS



Test Conditions:  $V_+ = 5V$ , Temperature =  $25^\circ C$ .

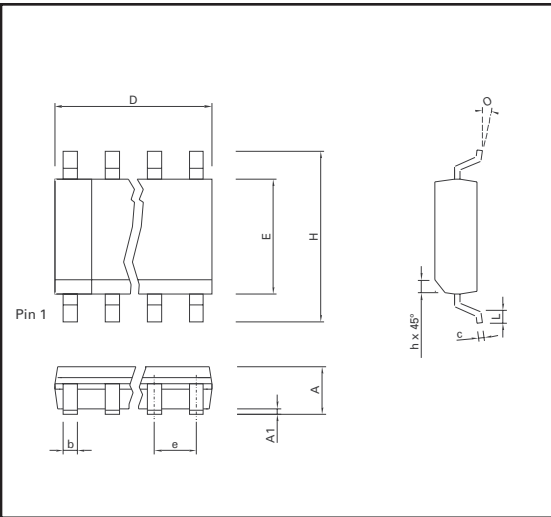
**ZXFBF04**

**NOTES**

**NOTES**

# ZXFBF04

## PACKAGING INFORMATION



## SOIC 14 Lead

| DIM | Inches    |       | Millimetres |      |
|-----|-----------|-------|-------------|------|
|     | Min       | Max   | Min         | Max  |
| A   | 0.053     | 0.069 | 1.35        | 1.75 |
| A1  | 0.004     | 0.010 | 0.10        | 0.25 |
| D   | 0.337     | 0.344 | 8.55        | 8.75 |
| H   | 0.228     | 0.244 | 5.80        | 6.20 |
| E   | 0.150     | 0.157 | 3.80        | 4.00 |
| L   | 0.016     | 0.050 | 0.4         | 1.27 |
| e   | 0.050 BSC |       | 1.27 BSC    |      |
| b   | 0.013     | 0.020 | 0.33        | 0.51 |
| c   | 0.008     | 0.010 | 0.19        | 0.25 |
| O   | 0°        | 8°    | 0°          | 8°   |



# ZETEX

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