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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

# 4 Channel Buffer Device with high capacitance load capability

## DEVICE DESCRIPTION

The ZXFBF05 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 7.5mA. The device operates from a ±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
- Low distortion Class A O/P
- 100MHz bandwidth
- Low cost
- Designed for up to 300pF load
- Low supply current (7.5mA per buffer)
- No thermal runaway
- 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 |
|---|---|---|
| ZXFBF05N14 | SOIC14N | ZXFBF05 |

## ORDERING INFORMATION

| PART NUMBER | CONTAINER | INCREMENT |
|---|---|---|
| ZXFBF05N14TA | Reel 7" | 500 |
| ZXFBF05N14TC | Reel 13" | 2500 |

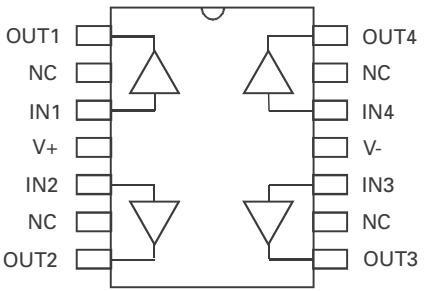
## RELATED PRODUCTS

ZXFBF04 4 Channel Buffer

ZXFBF08 8 Channel Buffer

ZXFBF25 4 Channel Buffer with output enable

## CONNECTION DIAGRAM




14 PIN SOIC PACKAGE

## 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

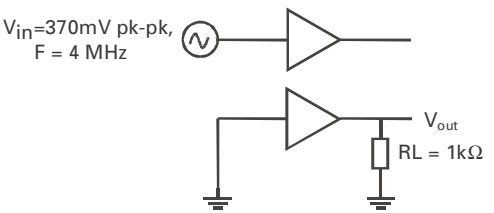
Test Conditions: Temperature =25°C, V+ = 5.00, V- = -5.00V, $R_L$ = 1kΩ, $C_L$ = 10pF

| Parameter | Conditions | Min. | Typical | Max. | Units |
|---|---|---|---|---|---|
| Offset Voltage | $V_{in}$ = 0V | -25 | - | 25 | mV |
| Offset Voltage Drift | $V_{in}$ = 0V | | 20 | | V/°C |
| Supply Current | All inputs = 0V | 5.0 | 30 | 40 | mA |
| Input Bias Current | $V_{in}$ = 0V | 0.1 | 1.0 | 2.0 | µA |
| Output Voltage | $R_L$ = 200Ω | | ±1 | | V |
| DC Gain | $V_{in}$ = ± 0.5V, $R_L$ = 1kΩ<br>$V_{offset}$ = 0.0V | 0.95 | 0.98 | 1.00 | V/V |
| DC Gain | $V_{in}$ = ±0.5V, $R_L$ = 1kΩ<br>$V_{offset}$ = 0.25V | 0.95 | 0.98 | 1.00 | V/V |
| Sink Current | $V_{in}$ = 0V, $V_{out}$ =0.5V | 4.0 | 6.0 | 12.0 | mA |
| Source Current | $V_{in}$ = 0V, $V_{out}$ =-0.5V | 8.0 | 15.0 | 18.0 | 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 NTSC | F = 3.58MHz, $V_{in}$ = 0.286Vp-p,<br>DC $\Delta V_{in}$ = 0 to 0.714V | | 0.1 | | % |
| Differential Phase NTSC | | | 0.15 | | Degrees |
| Differential Gain PAL | F = 4.43MHz, $V_{in}$ = 0.286Vp-p,<br>DC $\Delta V_{in}$ = 0 to 0.714V | | 0.1 | | % |
| Differential Phase PAL | | | 0.15 | | Degrees |
| Channel Isolation | $V_{in}$ = 370mVp-p, RL = 1kΩ<br>F = 4 MHz | | -60 | | dB |

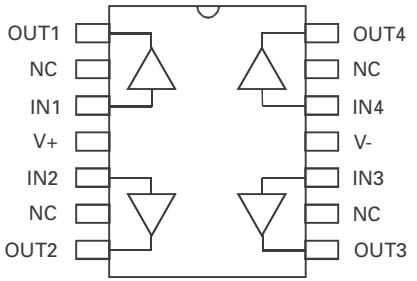
## NOTES

**Test circuit for measuring channel isolation.**

Channel Isolation = 20 x $LOG_{10}$ ($V_{out}$ / $V_{in}$) dB



## PIN DESCRIPTION

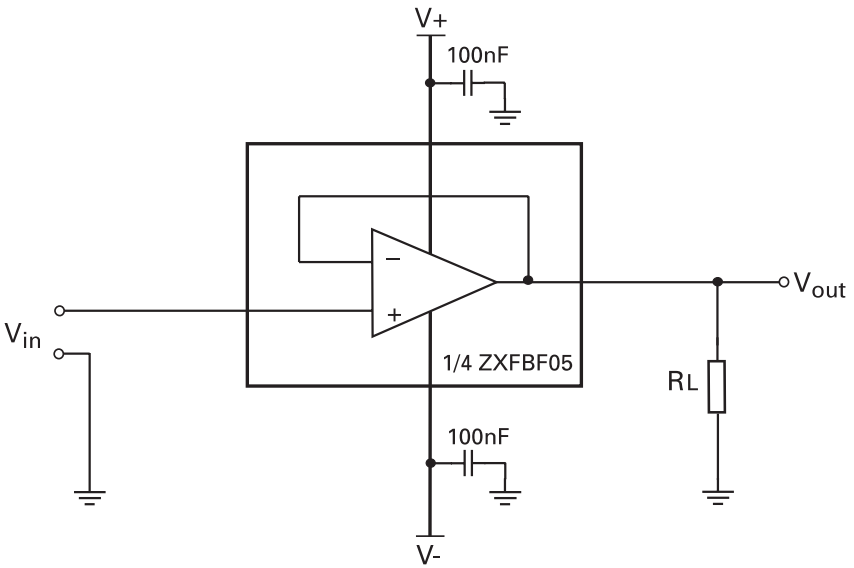



14 PIN SOIC PACKAGE

| | |
|---|---|
| OUT 1,2,3,4 | Buffer outputs. |
| IN 1,2,3,4 | Buffer Inputs. |
| V+ | Positive supply pin, +5 volts. |
| V- | Negative supply pin, -5 volts. |

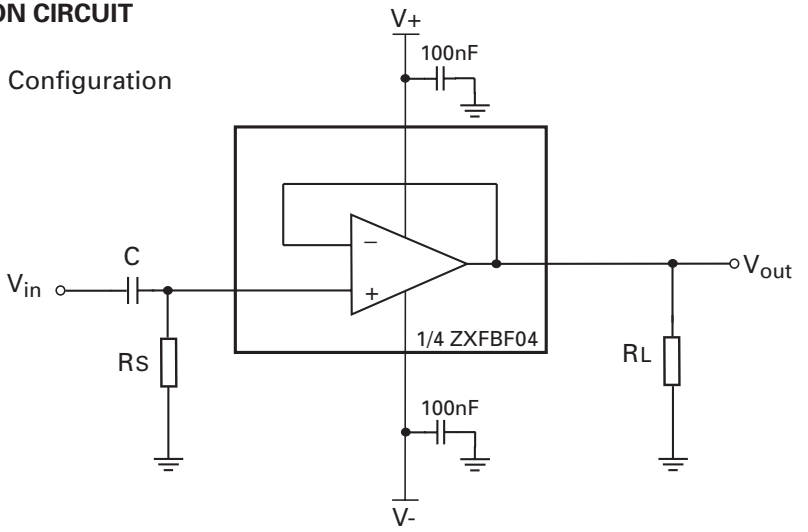
## APPLICATION CIRCUIT

DC Coupled Configuration



**APPLICATION CIRCUIT**

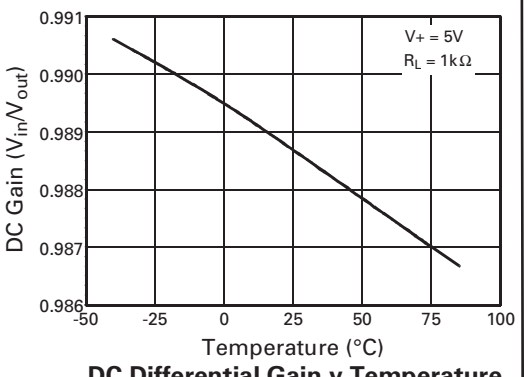
AC Coupled Configuration



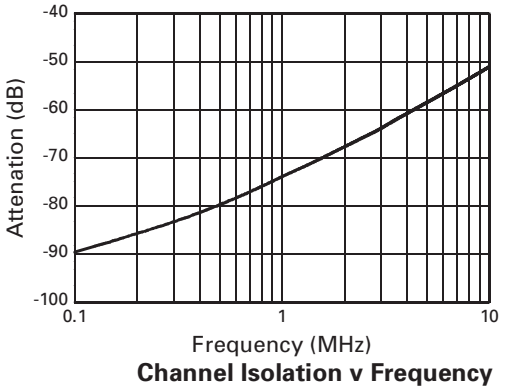

**NOTE.**

Rs: Source Resistor, provides DC bias for buffer input. Rs ⩽ 10kΩ
Both 100nF decoupling capacitors should be situated close to device supply pins.

## TYPICAL CHARACTERISTICS

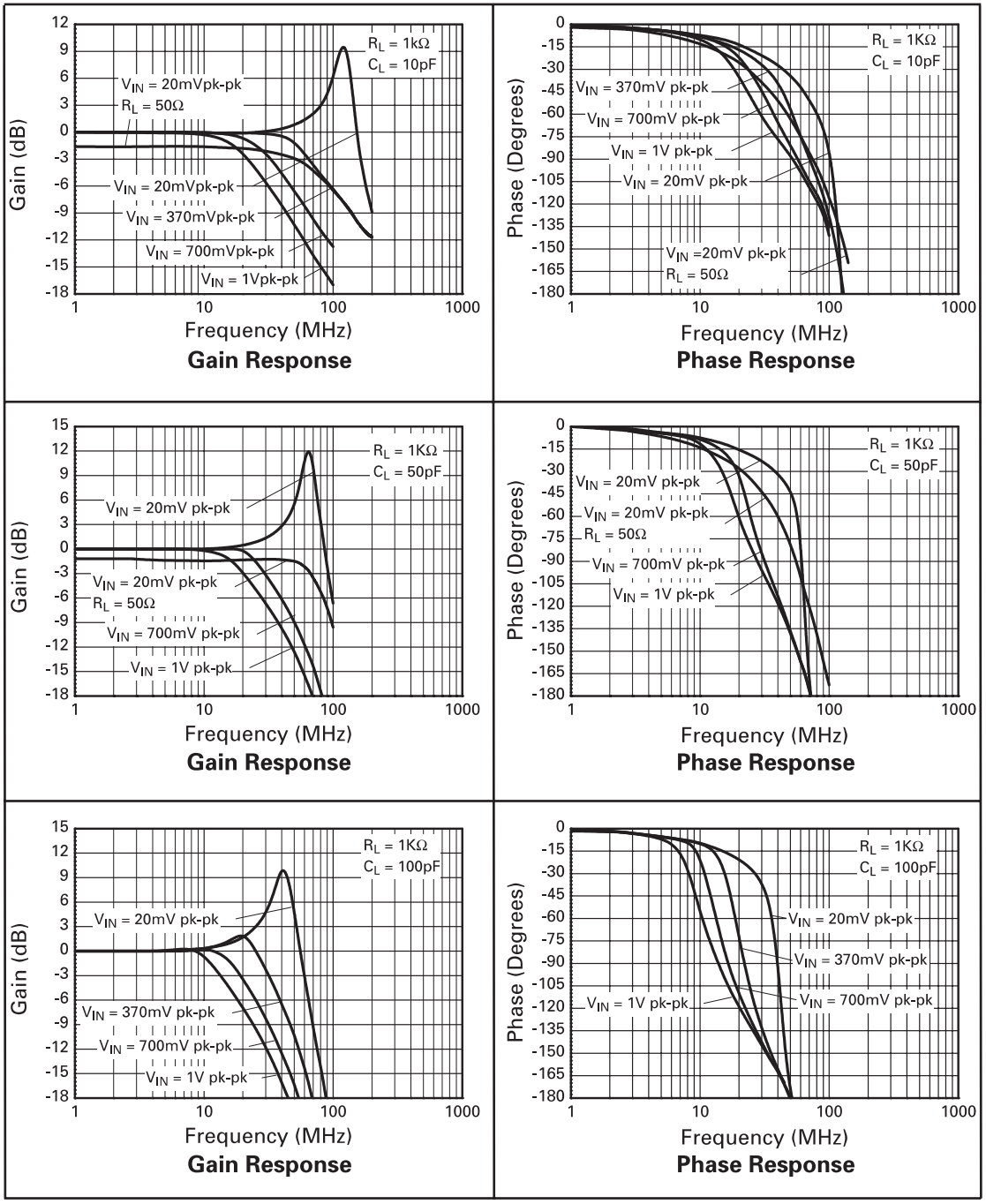



**DC Differential Gain v Temperature**



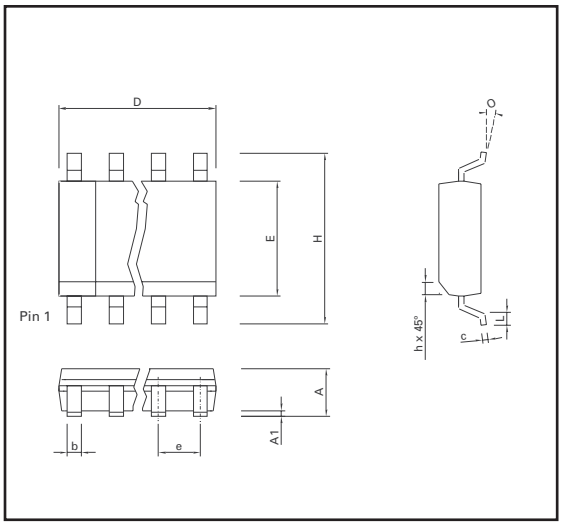

**Channel Isolation v Frequency**

## TYPICAL CHARACTERISTICS




Test Conditions:V+=5V, Temperature=25°C.

## 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 plc.
Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
Fax: (44)161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Zetex Inc.
47 Mall Drive, Unit 4
Commack NY 11725
USA
Telephone: (631) 543-7100
Fax: (631) 864-7630

Zetex (Asia) Ltd.
3701-04 Metroplaza, Tower 1
Hing Fong Road,
Kwai Fong, Hong Kong
Telephone:(852) 26100 611
Fax: (852) 24250 494

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