

TRIPLE AND QUAD CHANNEL VIDEO AMPLIFIER EVALUATION BOARD

Evaluation board description

The wide bandwidth of the ZXFV201/3 quad/triple channel video amplifiers necessitates some care in the layout of the printed circuit. For this reason Zetex has made available an Evaluation Board.

The evaluation board layout serves as a useful example for many applications, showing a practical implementation of the advice given below.

Figures 1, 2, 3 and 4 show the schematic and copper layout of a double-sided printed circuit board suitable for evaluation of the device in the laboratory.

BNC connector sockets allow connection to test instruments via 50Ω cables. The output circuit includes a resistor matching circuit to present a load of 150Ω to the amplifier (equivalent to a 75Ω back-terminated video line) and simultaneously provide a 50Ω output impedance.

The attenuation of this matching circuit is 15.45 dB. As the amplifier is configured for a voltage gain of 2, the overall gain is:

$$6 - 15.45 = -9.45\text{dB}$$

PCB design

A continuous ground plane is required under the device (except around its inverting input) to provide the shortest possible ground return paths for signals and power supply filtering.

A double-sided or multi-layer PCB construction is required, with plated-through via holes providing closely spaced low-inductance connections from some components to the continuous ground plane (some of these holes are not visible in the figures for the Evaluation Board - artworks and NC drill output can be provided if required).

Power supply filtering

For the power supply filtering, low inductance surface mount capacitors are normally required. It has been found that very good RF decoupling is provided on each supply using a 1000pF NPO size 0805 or smaller ceramic surface mount capacitor, closest to the device pin, with an adjacent 0.1μF X7R capacitor. Other configurations are possible and it may be found that a single 0.01μF X7R capacitor on each supply gives good results. However this should be supported by larger decoupling capacitors elsewhere on the printed circuit board. Values of 1 to 10 μF are recommended particularly where the voltage regulators are located more than a few inches from the device. These larger capacitors are recommended to be solid tantalum electrolytic or ceramic types.

A parts list is provided below.

Evaluation board parts list

QTY	Cct Ref	Value	Description
1			Printed circuit board ZDB189
Resistors, surface mount			
3 ⁽¹⁾ /4	R1 ⁽²⁾ R5 R12 R22	51R	Resistor chip
6 ⁽¹⁾ /8	R2 ⁽²⁾ R3 ⁽²⁾ R6 R7 R9 R10 R15 R16	470R	Resistor chip
3 ⁽¹⁾ /4	R4 ⁽²⁾ R8 R11 R21	130R	Resistor chip
3 ⁽¹⁾ /4	R13 R18 ⁽²⁾ R19 R23	33R	Resistor chip
3 ⁽¹⁾ /4	R14 R17 ⁽²⁾ R20 R24	24R	Resistor chip
Capacitors, surface mount			
2	C1,C2	100nF	Capacitor ceramic chip X7R
2	C3,C4	2.2μF	Capacitor ceramic chip X7R
-	C5-C8		NOT FITTED
Integrated circuits			
1	U1	ZXFV201 ⁽³⁾ /ZXFV203 ⁽¹⁾	
Miscellaneous			
8	J1-J8		Socket BNC, PCB square flange
1	J9		Terminal block, 3 way

NOTES:

- (1) Applies to ZXFV203EV only
- (2) Not present on ZXFV203EV
- (3) Applies to ZXFV201EV only

ZXFV203EV ZXFV201EV

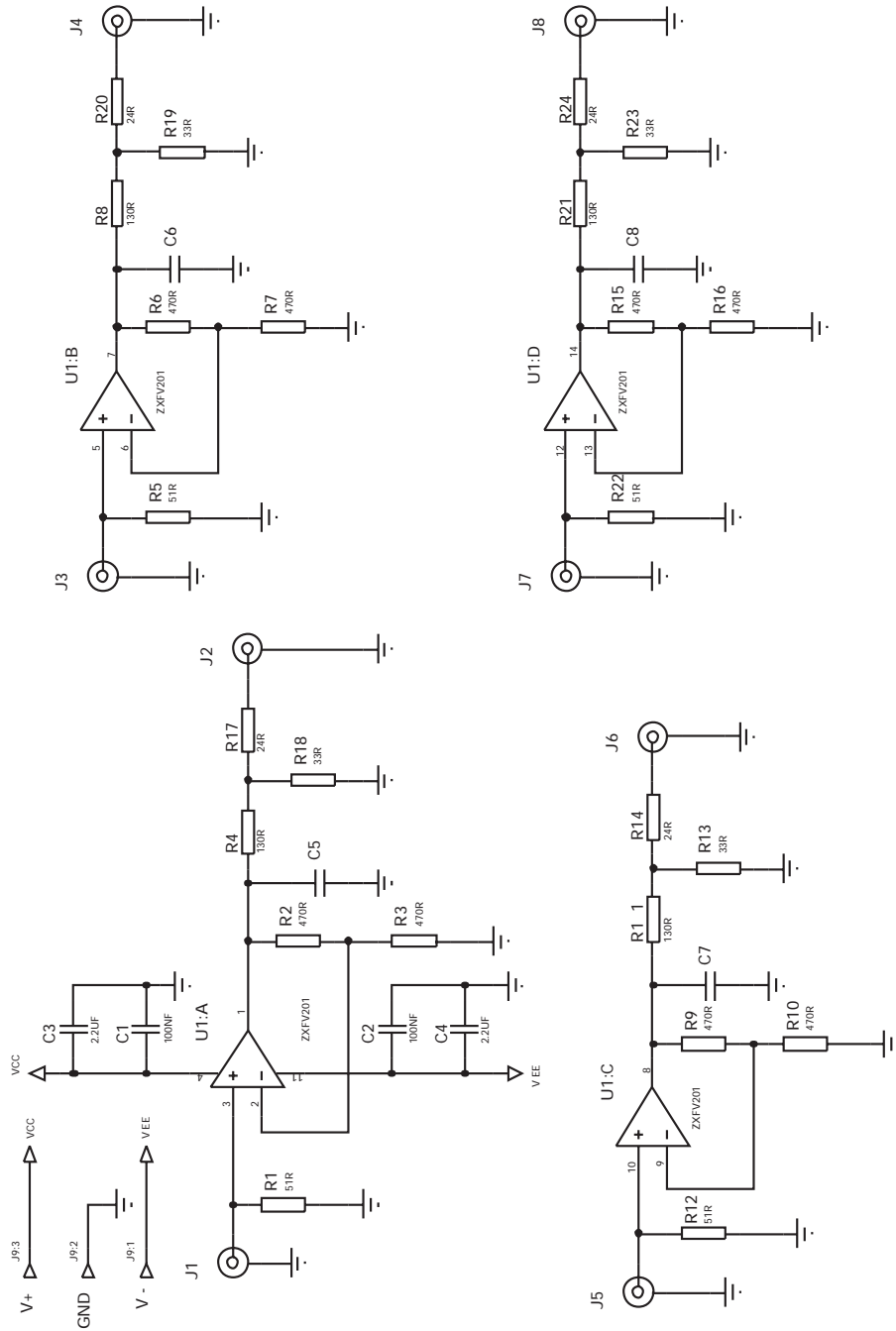


Figure 1 ZXFXV201EV/ZXFV203EV schematic

ZXFV203EV ZXFV201EV

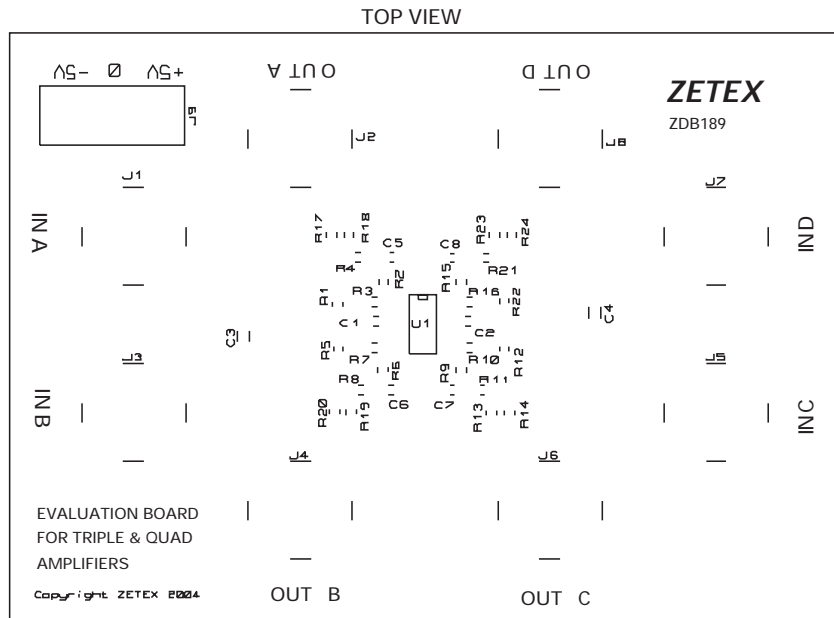


Figure 2 ZXFV201E/ZXFV203EV silkscreen

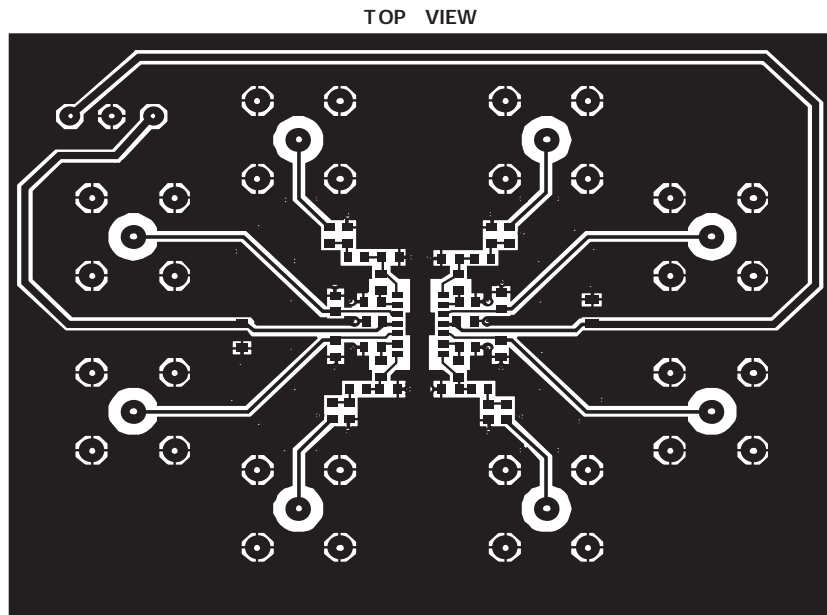


Figure 3 ZXFV201E/ZXFV203EV top copper

ZXFV203EV ZXFV201EV

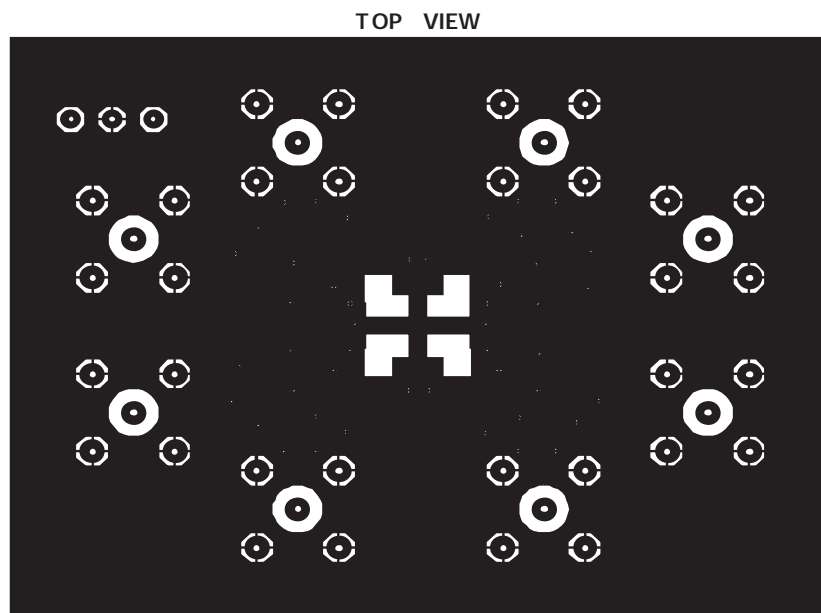


Figure 4 ZXFV201EV/ZXFV203EV bottom copper

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