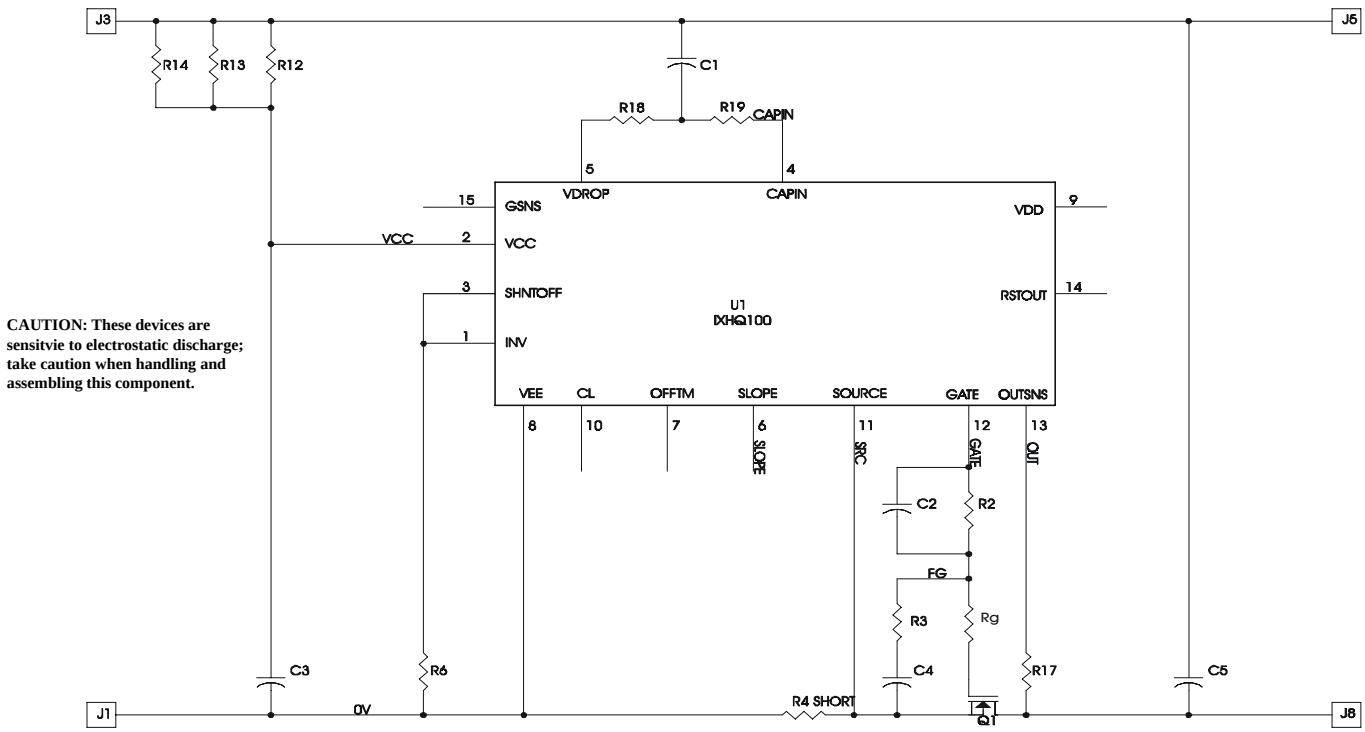
Active Power Filter only Evalvation Board

Although the IXHQ100 incorporates all the functions necessary to implement a state of the art negative voltage hot swap, a key feature of the IXHQ100 is its Power Active Filter. For those size and cost sensitive applications requiring only a Power Active Filter, the evaluation board schematic is given in Figure 1,with bill of materials in Figure 4. Figure 2 is aripple rejection plot of the Power Active Filter placed in the test circuit provided in Figure 3.

Some of the advantages of a Power Active Filter over standard passive filters are:

* Significantly reduced size of the power supply bypass capacitors.
* Eliminate magnetic noise generation by eliminating the need for power filter inductors.
* Reduced sensitivity to power supply noise.
* Reduce size, weight, and overall system cost.

ACTIVE POWER FILTER



CAUTION: These devices are sensitvie to electrostatic discharge; take caution when handling and assembling this component.

Figure 1

IXYS reserves the right to change limits, test conditions and dimensions.

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Typical Ripple Noise Attenuation

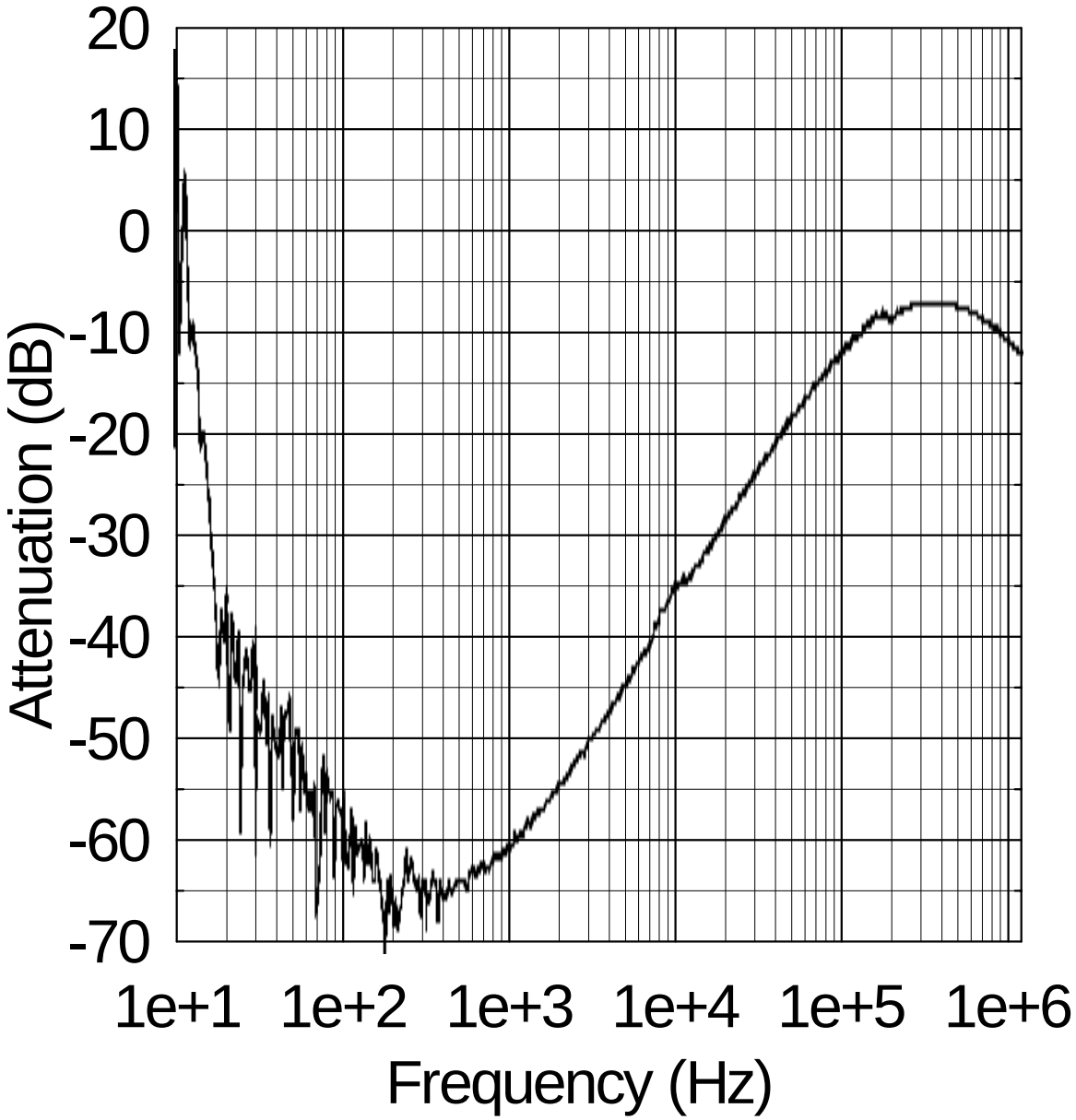

Figure 2

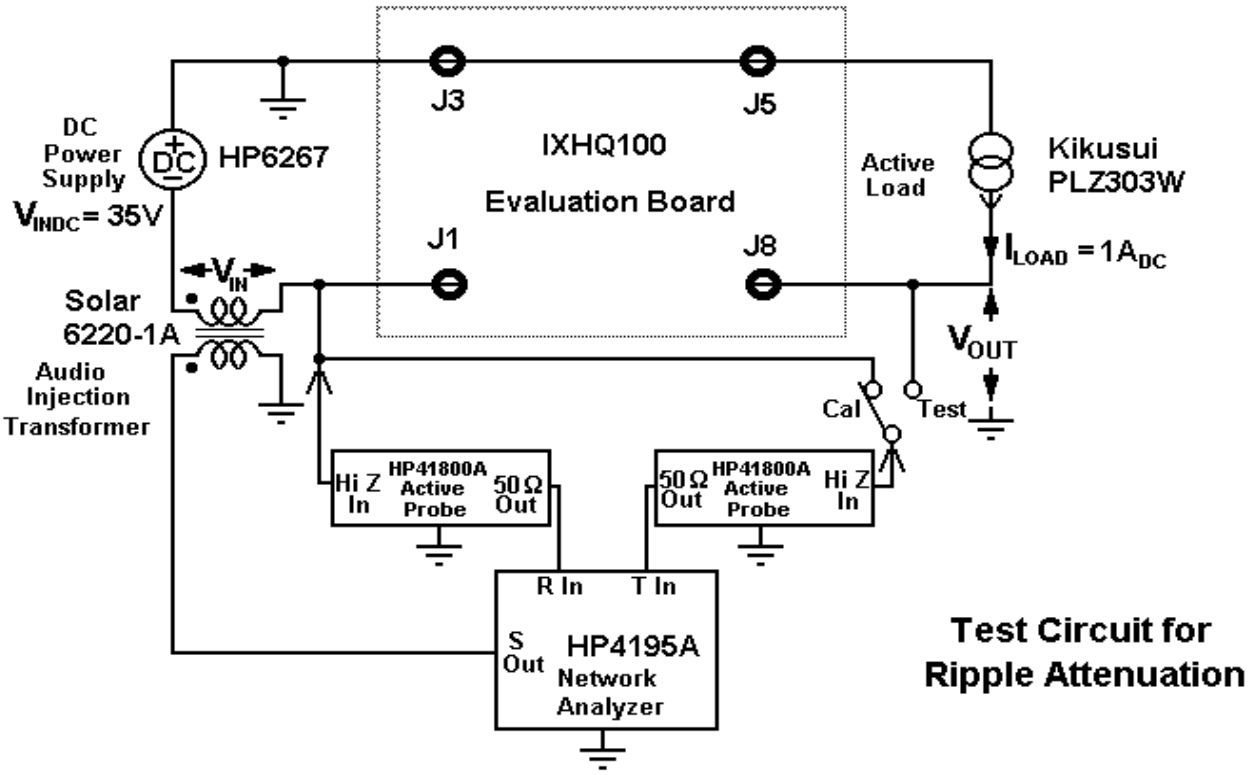

Figure 3

Bill of Materials

Item	Reference	Number		Part Value	
1	C1		10uF/100V		TH
2	C2		3.3nF	25V	0805
3	C3		10uF/25V		TH
4	C4		10uF/16V		TH
5	C5		100uF/100V		TH
6	Q1		IRF2807S		D2
7	R2		10 Kohm	0.1Watt	0805
8	R3		3 Kohm	0.1Watt	0805
9	R6		0 ohm	0.1Watt	0805
10	R7		0 ohm	0.1Watt	0805
11	R12		16 Kohm	0.1Watt	0805
12	R13		16 Kohm	0.1Watt	0805
13	R14		16 Kohm	0.1Watt	0805
14	R17		10 Kohm	0.1Watt	0805
15	R18		10 Kohm	0.1Watt	0805
16	R19		100 kohm	0.1Watt	0805
17	Rg		10 ohm	0.1Watt	0805
18	U1		IXHQ100		

Figure 4

Using the IXHQ100 active filter minimizes the number of extra de-coupling capacitors. This improves noise immunity of the circuit board. Additionaly, low output impedance of the filter also improves the performance of noise cancellation on power lines. An extra advantage of using the IXHQ100 over capacitors is the amount of space one can save. Figure 6 gives an example of cross talk noise cancellation by the IXHQ100 and an comparison of the size difference between an IXHQ100 chip and a capacitor (to scale).

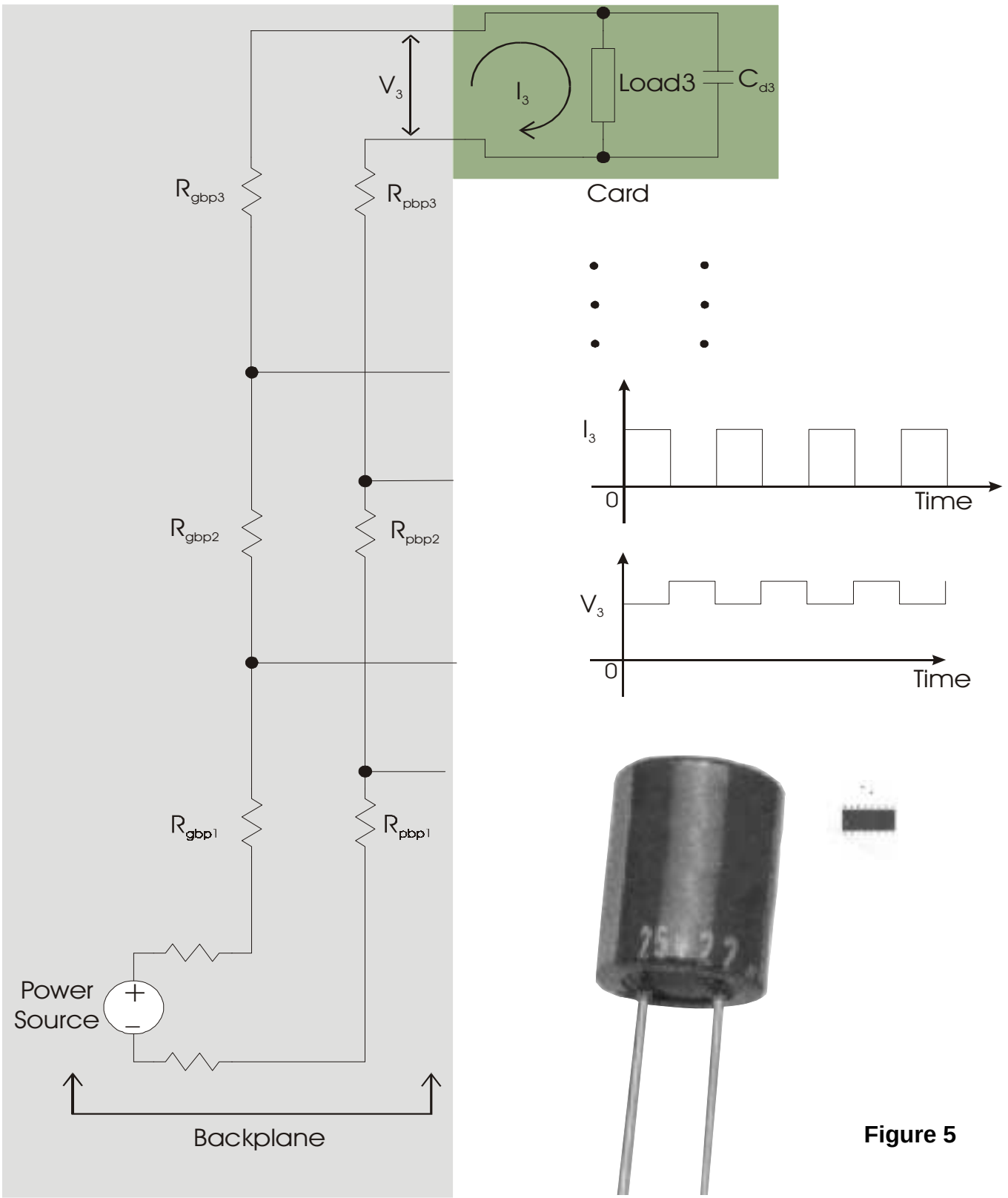

Figure 5