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## 1 Introduction

This application note describes a method for using external components to provide overvoltage protection for the ZSC31010, ZSC31015, and ZSC31050. It also provides details about each product's internal current limitation.

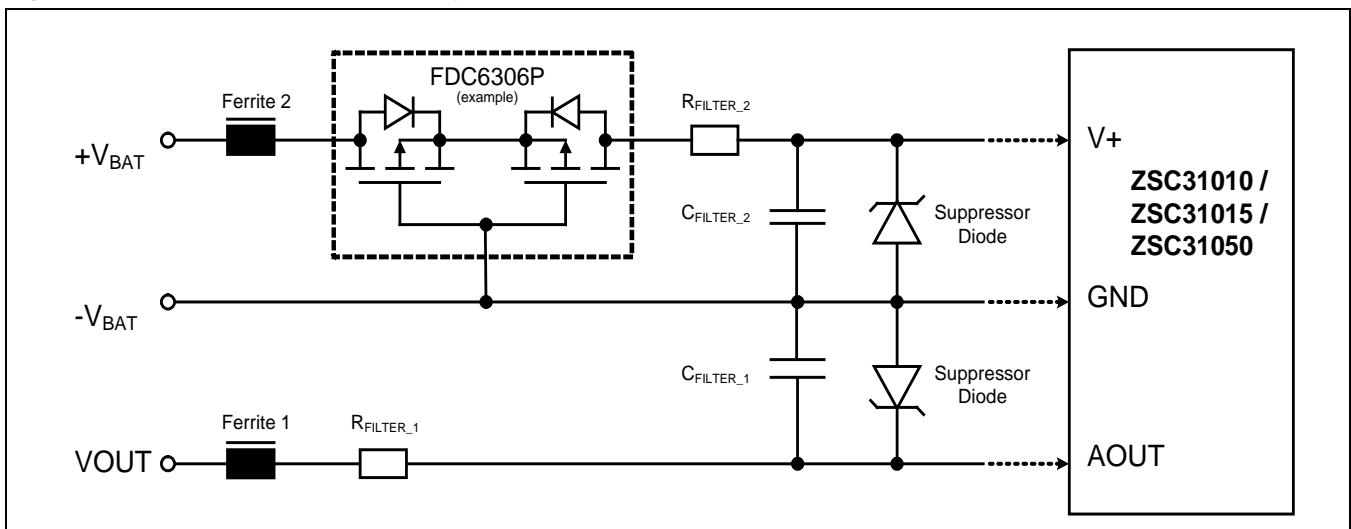
## 2 Basic Principles of the Protection Circuitry for the ZSC31010/15/50

Figure 2.1 illustrates the basic circuit needed to provide external overvoltage protection for the ZSC31010, ZSC31015, or ZSC31050. The dimensions of the passive parts used in the protection circuitry depend on the potential overvoltage level and pulse width. This circuitry is not applicable for protection from Type 5 Schaffner pulses.

The analog output stages of the ZSC31015 and ZSC31050 are internally limited to 20mA for protection in the event of a short circuit at VOUT. The ZSC31010's analog output is not protected internally against short circuit conditions, so the load current must be limited externally (e.g., by  $R_{\text{FILTER}_1}$ , but this causes additional error in relation to the input resistance of the processing unit).

When supplying the ZSC31010, ZSC31015, or ZSC31050 with voltages > 5.5 VDC and using an external JFET, a common diode (e.g., 1N400X for reverse polarity protection) replaces the FDC6306P.

**Figure 2.1** Example Protection Circuitry for the ZSC31010, ZSC31015, or ZSC31050



### 3 Related Documents

Documents
<i>ZSC31010 Data Sheet</i>
<i>ZSC31015 Data Sheet</i>
<i>ZSC31050 Data Sheet</i>

Visit the product page for the ZSC310101, ZSC31015, or ZSC31050 on IDT's web site at [www.IDT.com](http://www.IDT.com) or contact your nearest sales office for the latest version of these documents.

### 4 Document Revision History

Revision	Date	Description
1.01	September 18, 2009	Revision of document format.
1.10	April 5, 2011	Revision of document format.
1.11	November 19, 2013	Updates for contact information and imagery for cover and headers.
	April 26, 2016	Changed to IDT branding.



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