

PROTECTION PRODUCTS

Unidirectional & Bidirectional Operation

Unidirectional Protection

Figure 1 illustrates a large transient at the input of a circuit protected by a unidirectional TVS diode. During the positive spike, the TVS diode junction is reversed biased. The device acts in avalanche mode as the transient current i_1 flows. The spike is clamped at or below the maximum clamping voltage of the device. During the negative spike, the TVS diode junction is forward biased. The negative spike is clamped to one diode drop as the device conducts i_2 in the forward direction.

Bidirectional Protection

Figure 2 illustrates a large transient at the input of a circuit protected by a bidirectional TVS diode. The positive and negative spikes are both clamped at or below the maximum clamping voltage of the device. During the positive spike, D_1 conducts in the forward direction (i_3) and D_2 is reversed biased conducting in avalanche mode. The action is reversed (i_4) for the negative spike.

