Voltage Protection Devices

Semtech announced The SFC05-4, a commercial voltage surge protection device. This device represents the first integration of wafer-level CSP (chip-scale package) technology with TVS (transient voltage suppression) diode arrays. Voltage suppression devices are essential to protect today's highly-sensitive electronic components from damage or transistor &quotlatch-up&quot due to ESD (electrostatic discharge) or other voltage-induced power surges that can enter through plug ports, keyboards, or displays in handheld communications or computing devices. With space at such a premium in these products, small component size is a particularly valuable feature.

Semtech's first CSP TVS device, the SFC05-4, provides unidirectional TVS diode protection for any combination of four data input or output interfaces at standard working voltages of 5V. The new device also provides unparalleled clamping voltage performance, a measure of the maximum voltage the device imparts to protected components. Other key performance metrics include low reverse leakage current and sub-nanosecond transient response times. The SFC05-4 also meets IEC (International Electrotechnical Commission) specifications for ESD (IEC 61000-4-2), EFT (IEC 61000-4-4) and secondary lightning (IEC 61000-4-5) protection.

The Semtech SFC05-4 devices utilize a standard flip-chip, solder-ball connection technology that requires no underfill material during assembly. The package combines all the benefits of surface mount technology, in a standard JEDEC (Joint Electronic Device Engineering Council) MO-211, 0.50 mm pitch CSP. Advantages of the flip chip technology include reduced size, reduced weight, improved electrical performance, and low profile.

The size of the finished device is essentially the same size as the die, requiring only slightly more than 1.5 square millimeters of board space, representing more than a 70 percent reduction in footprint compared to the same device in an industry-standard JEDEC SOT-23 6- lead package. The device also boasts a very low profile &#151 less than 0.65 millimeters &#151 making it ideal for it's intended application.

The SFC05-4 CSP devices have undergone meticulous characterization and reliability testing, to provide customers with accurate information regarding manufacturing and assembly process integration, as well as system-level performance data.

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