SP1012-05WTG Five Lines of Bidirectional ESD Protection in a 0402-Sized Footprint

5x ESD DIODES IN A 0402-SIZED FOOTPRINT

Same High Performance ESD Circuit Protection in 33% of the Footprint

Extremely small outline, densely packaged device to protect the data and interface lines of user interfaces, specifically touch screen displays

The SP1012-05WTG is a five-line, bidirectional, low capacitance device ideally suited to protect the lines on SIM cards and touch screens against ESD damage. The SP1012 provides five lines of ESD protection in the same size footprint as an 0402 style chip.

Although it was initially designed to protect the baseband and subscriber identity processors against ESD damage, it’s also ideal for use in other ESD protection applications. The SP1012 is particularly well suited for protecting the I²C lines on capacitive touch screen displays against ESD.

The SP1012-05WTG is the world’s smallest ESD protection array, well suited for critical interfaces in a range of wireless devices, including:

- Capacitive Touch Screen Interfaces
- Micro SIM Card Protection
- Micro SIM Card Protection
- Keypad Protection

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The capacitive touch screen display, which is the most common interface on current-generation smartphones, tablets and wearables, is particularly critical to protect because it provides, by design, a conduit to transmit wanted (control) and unwanted (electrostatic, electronic noise) signals to the most sensitive electronic elements of the device, the baseband processor.

**Capacitive touch operation**

Capacitive touch sensors are either embedded into the display module or sit above the display module on a clear, flexible substrate. Micro-thin rows and columns present a known relative capacitance to the touch screen controller chip. When a person’s finger or a stylus makes contact with the touch screen, this registers as a change in the relative capacitance in the microstrip rows and columns embedded in the flexible substrate. The location is established through a data bus to the baseband or applications processor.

The ultra-thin microstrips and the connecting circuitry present a path either towards ground or towards the most ESD-sensitive semiconductors on the smartphone, tablet, or wearable device.