Protecting T3, E3 & STS-1 Systems

As telecommunications carriers rush to increase bandwidth, high-speed interfaces such as T3, E3, and STS-1 interfaces are gaining popularity. STS-1 for example, is the first data line speed defined in the Synchronous Optical Network (SONET), a standard for connecting fiber-optic transmission systems. The data rates for these interfaces differ slightly with T3 running at 44.73 Mbps, E3 at 34.36 Mbps, and STS-1 at 51.840 Mbs. All are unbalanced lines with coax cable connections. Most of these interfaces have to meet ESD and/or Bellcore 1089 intra-building surge requirements (in the U.S.) since they are typically used in "short haul" applications running less than 450 feet. Figure 1 illustrates how to use the LC03-6 to protect T3/E3 and STS-1 interfaces. The data lines from the BNC interface are run through the LC03-6 (i.e. enters at pin 1 and exits at pin8) with the ground connection made at the other side of the device (pins 4 & 5). The center pins (2, 3, 6, and 7) are not connected. In this configuration, the LC03-6 adds less than 12pF of capacitance to each line and provides surge protection to 100A (tp=8/20µs). In cases where the connection is in the same building and no lightning or high differential induced energy is expected, the SR05 RailClamp will be sufficient. It provides protection from ESD and low level lightning surges to 24A (tp=8/20µs).

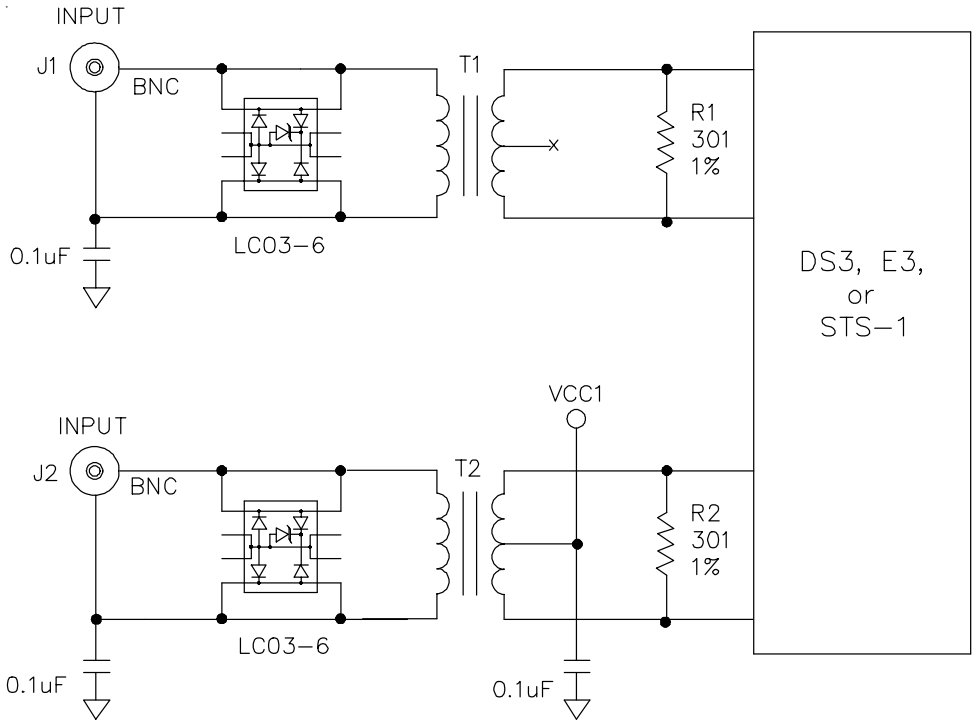

Figure 1 - T3/E3 & STS-1 Protection Circuit to Bellcore 1089 (Intra-Building)