

Loop Current Detection for LITELINK

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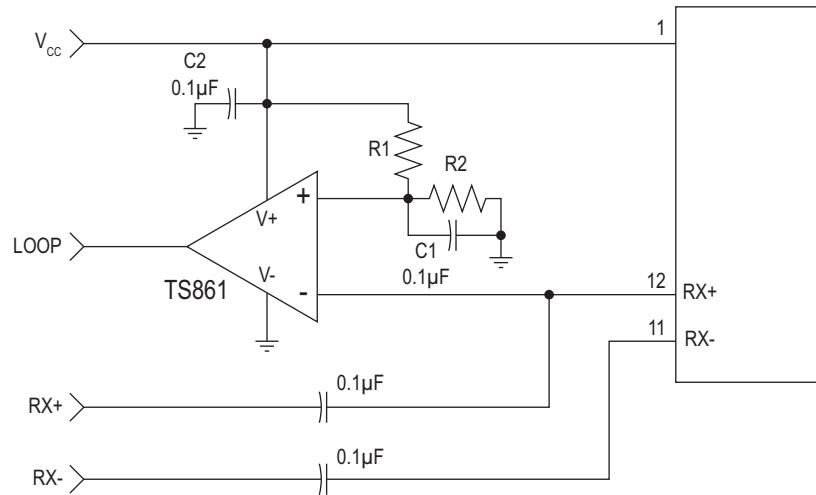
Many DAA applications require loop current detection capability especially in voice communications equipment. Traditionally, an optocoupler device in series with the telephone line performs this function. While this method can be used with the LITELINK family of DAAs such as the CPC5610, it is sometimes desirable to eliminate the voltage drop caused by a series element in the telephone line. For these applications, the circuit shown below should be considered.

When the telephone line loop current is greater than 10mA, the RX+ output of the CPC5610 will be biased up at a DC level of 1V. When the loop current drops due to the CPC5610 going on-hook, or disconnection of the remote call, the RX+ line drops to a DC level of approximately 0V.

The accompanying schematic shows the RX+ output going to the inverting input of a comparator. The non-inverting input of the comparator goes to a voltage divider in which the DC voltage is fixed at 200mV. The RX+ output will have a 1V DC bias and potentially a

maximum 1.1Vpp signal (for 0dBm differential) centered about the 1V bias. This situation requires setting a reference that is below the negative half of a signal of 0dBm magnitude yet sufficiently above 0V to facilitate reliable comparison. Considering the above yielded a reference of 200mV. Therefore, with an R2 of 25K, R1 yields 619K for a V_{CC} of 5V. For a V_{CC} of 3.3V, changing R1 to 392K maintains an approximate 200mV reference.

The output of U1 will go low when loop current is detected. If the loop current is between 5mA and 10mA, then the output of U1 will pulse as the CPC5610 attempts to start-up. Below the 5mA loop current value, the output will generally be high all the time. Capacitors C1 and C2 are recommended to provide decoupling to the comparator circuit. These components should be placed as close as possible to U1. U1 is an ST Microelectronics TS861 low voltage rail-to-rail input comparator, however, similar comparators are available from other manufacturers and may be used.



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