

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 in figure 1 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.

Figure 1 shows the RX+ output going to the inverting input of a comparator. The non-inverting input of the comparator goes to a voltage divider where 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 – 10mA 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. Capacitor 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.

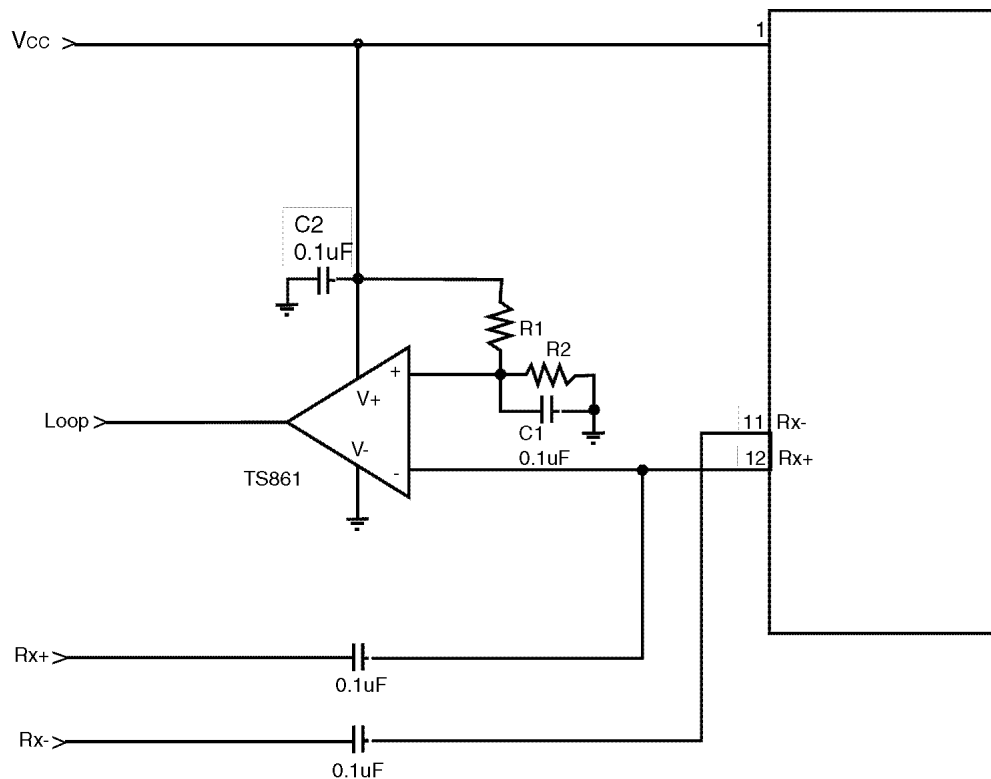


Figure 1



CLARE LOCATIONS

Clare Headquarters
 78 Cherry Hill Drive
 Beverly, MA 01915
 Tel: 1-978-524-6700
 Fax: 1-978-524-4900
 Toll Free: 1-800-27-CLARE

Clare Micronix Division
 145 Columbia
 Aliso Viejo, CA 92656-1490
 Tel: 1-949-831-4622
 Fax: 1-949-831-4628

SALES OFFICES

AMERICAS

Americas Headquarters
 Clare
 78 Cherry Hill Drive
 Beverly, MA 01915
 Tel: 1-978-524-6700
 Fax: 1-978-524-4900
 Toll Free: 1-800-27-CLARE

Eastern Region
 Clare
 603 Apache Court
 Mahwah, NJ 07430
 Tel: 1-201-236-0101
 Fax: 1-201-236-8685
 Toll Free: 1-800-27-CLARE

Central Region
 Clare Canada Ltd.
 3425 Harvester Road, Suite 202
 Burlington, Ontario L7N 3N1
 Tel: 1-905-333-9066
 Fax: 1-905-333-1824

Western Region
 Clare
 1852 West 11th Street, #348
 Tracy, CA 95376
 Tel: 1-209-832-4367
 Fax: 1-209-832-4732
 Toll Free: 1-800-27-CLARE

Canada
 Clare Canada Ltd.
 3425 Harvester Road, Suite 202
 Burlington, Ontario L7N 3N1
 Tel: 1-905-333-9066
 Fax: 1-905-333-1824

EUROPE

European Headquarters
 CP Clare nv
 Bampslaan 17
 B-3500 Hasselt (Belgium)
 Tel: 32-11-300868
 Fax: 32-11-300890

France
 Clare France Sales
 Lead Rep
 99 route de Versailles
 91160 Champlan
 France
 Tel: 33 1 69 79 93 50
 Fax: 33 1 69 79 93 59

Germany
 Clare Germany Sales
 ActiveComp Electronic GmbH
 Mitterstrasse 12
 85077 Manching
 Germany
 Tel: 49 8459 3214 10
 Fax: 49 8459 3214 29

Italy
 C.L.A.R.E.s.a.s.
 Via C. Colombo 10/A
 I-20066 Melzo (Milano)
 Tel: 39-02-95737160
 Fax: 39-02-95738829

Sweden
 Clare Sales
 Comptronic AB
 Box 167
 S-16329 Spånga
 Tel: 46-862-10370
 Fax: 46-862-10371

United Kingdom
 Clare UK Sales
 Marco Polo House
 Cook Way
 Bindon Road
 Taunton
 UK-Somerset TA2 6BG
 Tel: 44-1-823 352541
 Fax: 44-1-823 352797

ASIA PACIFIC

Asian Headquarters
 Clare
 Room N1016, Chia-Hsin, Bldg II,
 10F, No. 96, Sec. 2
 Chung Shan North Road
 Taipei, Taiwan R.O.C.
 Tel: 886-2-2523-6368
 Fax: 886-2-2523-6369

<http://www.clare.com>

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