

1.0 Decoder Section

Following the filter section in the MT8870D is a decoder employing digital counting techniques to determine the frequencies of the incoming tones. A complex algorithm is then used to validate DTMF in the presence of speech and noise. EST output will go high to indicate a valid DTMF detection.

2.0 Steering Circuit

Before registration of a decoded tone pair, the MT8870D checks for a valid signal duration. The check is performed by an external RC time constant driven by EST and is known as the guard time circuit. Provided signal condition is maintained (EST remains high) for the guard time and V_c (voltage of capacitor C) reaches the threshold (V_{TST}) at St/GT input, the steering logic will then register the tone pair, latching its corresponding 4-bit code into the output latch. Finally, after a short delay for the output latch to settle, the delayed steering output flag STD goes high, signaling that the received DTMF 4-bit code is ready for the external micro-controller. And STD pin will go low after the valid DTMF signal disappears as validated by the algorithm.

3.0 Power Down

The MT8870D provides a power down mode to minimize power consumption. A logic high applied to PWDN pin stops the crystal oscillator and the function of the analog filters by shutting down the operational amplifiers. In the event that PWDN pin is set high when a valid DTMF tone pair is present, STD will not go low immediately. This is due to the fact that the typical analog circuitry power down time is 30 ms and could be as long as a second depending on the power supply decoupling arrangement. When PWDN is set high, DTMF signal in the filters could still appear for sometime and hence STD will go low only after the valid DTMF disappears as validated by the algorithm. In other words, STD will not go low at the same time when PWDN is activated.

4.0 PWDN and STD

For applications that require STD to go low immediately when PWDN is high, the following external arrangement could be used. STD1 will go low when PWDN goes high.

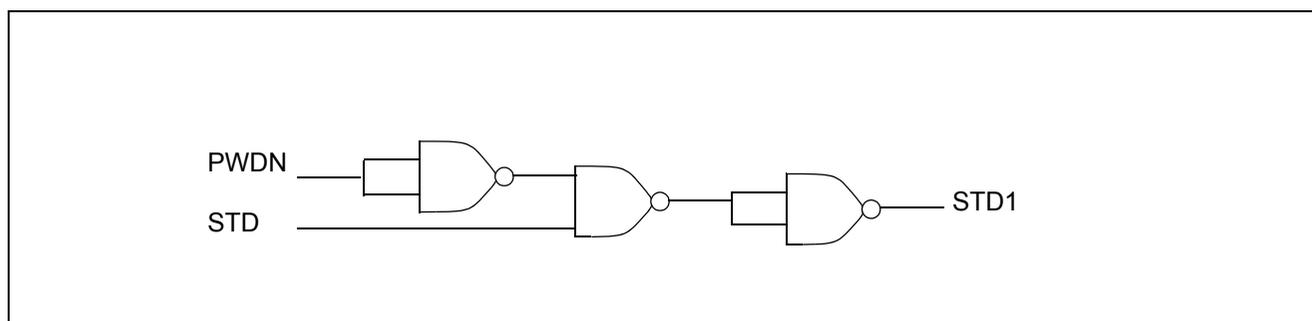


Figure 1 - Power Down and Delayed Steering Output (STD) Detail



**For more information about all Zarlink products
visit our Web Site at
www.zarlink.com**

Information relating to products and services furnished herein by Zarlink Semiconductor Inc. or its subsidiaries (collectively "Zarlink") is believed to be reliable. However, Zarlink assumes no liability for errors that may appear in this publication, or for liability otherwise arising from the application or use of any such information, product or service or for any infringement of patents or other intellectual property rights owned by third parties which may result from such application or use. Neither the supply of such information or purchase of product or service conveys any license, either express or implied, under patents or other intellectual property rights owned by Zarlink or licensed from third parties by Zarlink, whatsoever. Purchasers of products are also hereby notified that the use of product in certain ways or in combination with Zarlink, or non-Zarlink furnished goods or services may infringe patents or other intellectual property rights owned by Zarlink.

This publication is issued to provide information only and (unless agreed by Zarlink in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. The products, their specifications, services and other information appearing in this publication are subject to change by Zarlink without notice. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. Manufacturing does not necessarily include testing of all functions or parameters. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to Zarlink's conditions of sale which are available on request.

Purchase of Zarlink's I²C components conveys a licence under the Philips I²C Patent rights to use these components in and I²C System, provided that the system conforms to the I²C Standard Specification as defined by Philips.

Zarlink, ZL and the Zarlink Semiconductor logo are trademarks of Zarlink Semiconductor Inc.

Copyright Zarlink Semiconductor Inc. All Rights Reserved.

TECHNICAL DOCUMENTATION - NOT FOR RESALE
