

CMX639 Consumer and Commercial CVSD 'Digital-Voice' Codec

Secure Communications with Continuously Variable-Slope Delta Modulation

A low-power and robust, full-duplex single-chip voice security product for military, consumer and commercial communication systems

CVSD

Applications

Robust and Versatile Voice Communications

- Voice Scrambler Options for Radio
- Spread Spectrum Wireless
- Cordless Telephones
- Voice Recording and Storage
- Time Domain Scrambling
- Delay Lines
- Military and Surveillance Comms
- Multiplex Systems
- Short Range (Bluetooth-type) Comms
- Radio Headsets
- Baby Monitors
- Telephone PDAs
- Voice Annunciators

The **CMX639** is a **C**ontinuously **V**ariable **S**lope **D**elta Modulation full-duplex CODEC for use in consumer and commercial digital voice communication systems.

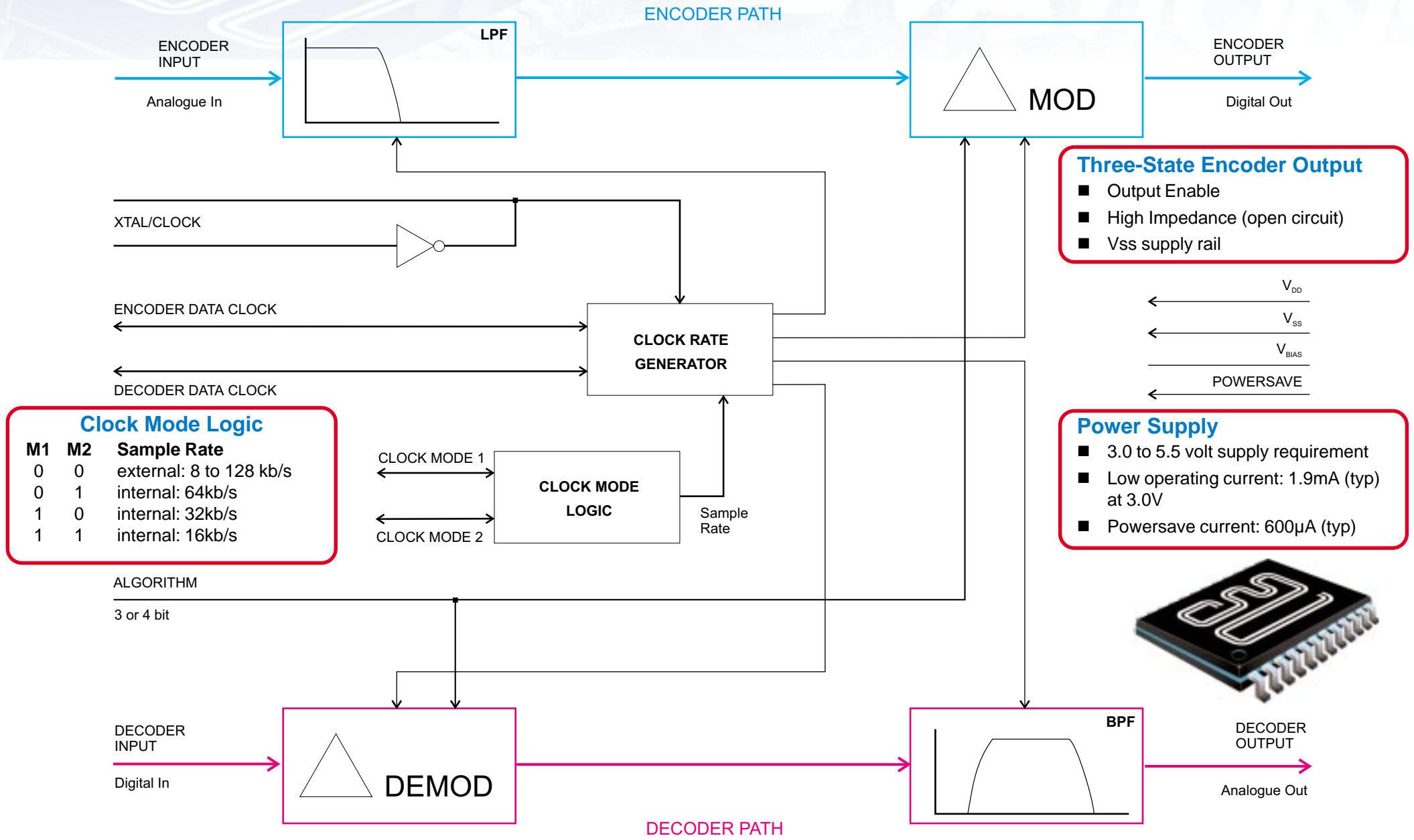
With its robust and selectable coding algorithms, low cost, very low power, and small size, the **CMX639** is ideal for use in a wide variety of digital voice applications. Its total-integration codec simplifies design and eliminates the costs, complexity and risk of external filters and software algorithms.

Data and sampling clock rates in the range 8kbps to 128kbps are supported both via external clock signals or internally generated, programmable clocks. Internal data/sampling clocks are derived from an on-chip reference oscillator that uses an external clock crystal. The internal data/sampling clock signal is provided as an output to synchronise external circuits, if desired. Multiplexer applications are supported by a three-state/high impedance enable feature at the encoder's output.

Operating in a range of 2.7V to 5.5V the **CMX639** is available in three package styles: 24-pin TSSOP, 16-pin SOIC and 22-pin PDIP.



CMX639 Schematic Functions



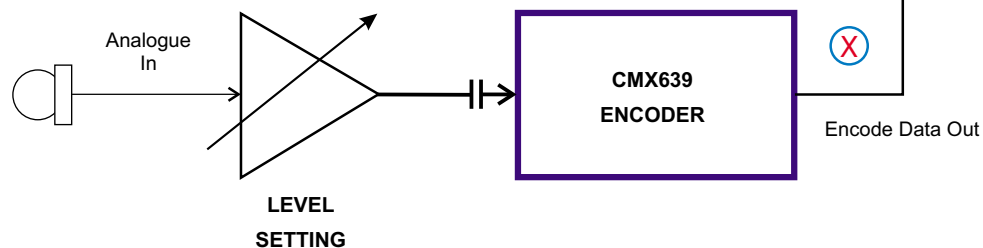
Overall

- Tx and Rx Algorithm Settings are common
- Tx and Rx Clock rates are common
- CMX639 parameters measured at point X

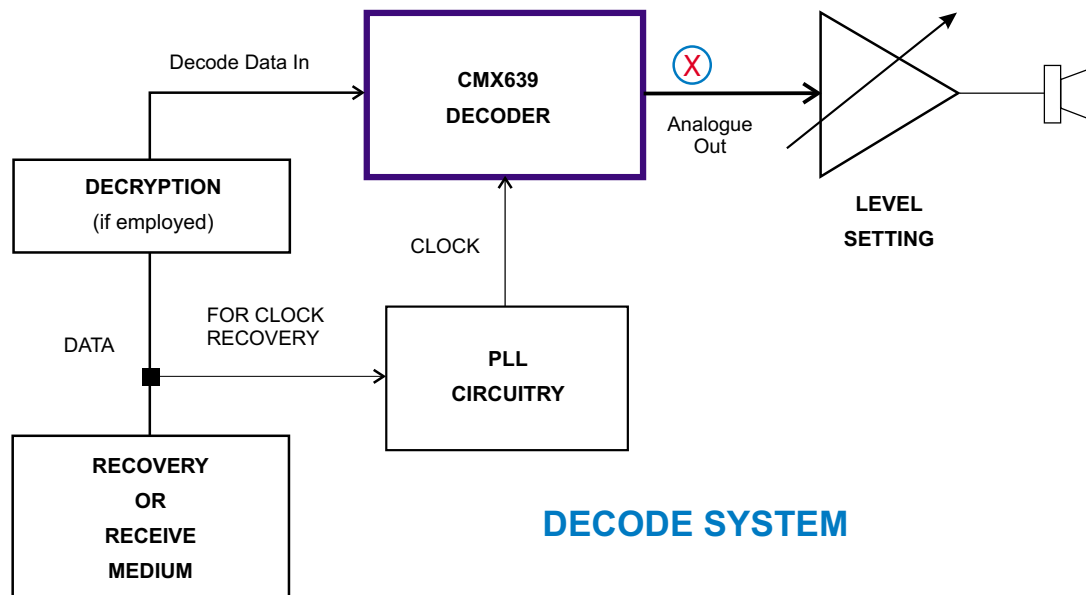
Further Security

- may be added to the system by employing data encryption/decryption circuitry as shown.

ENCODE SYSTEM



DECODE SYSTEM



Over Air Sync

- Decode clock to be synchronised with Tx (Encode) clock
- to ensure accurate and stable decoding, any system using the CMX639 should embed some method of synchronisation in the transmission or institute a PLL circuit to recover the clock from the received data.

The CMX639 is a Full-Duplex Device

CMX639 Features

- Single-Chip Full Duplex CVSD Codec
- Analogue Input and Output Filters
- Programmable Sampling Clocks - with external and internal selection
- Internal Clocks Programmable to 16/32/64 kb/s
- Clocks Available as Outputs
- 3 and 4 Bit Compand Algorithm

The CML Advantage

- **Lowest Cost CVSD Solution for Multiple Applications**
- **Compact Single-Chip Encoder/Decoder** - including simple interface and control with input LPF, output BPF and clock circuitry
- **CVSD Provides Robust Coding for Wireless Links** - accuracy during fading and noise bursts; superior to PCM/ADPCM
- **Suitable for use with Analogue RAM** - an implementation of inexpensive ARAM (SpeechRAM) devices
- **Simple Interface** - compatible with μ C and non- μ C systems
- **Simple Design** - for proprietary and non-proprietary designs i.e. Short range comms (Bluetooth-type)
- **Low-Power Operation with Powersave** - ideal for battery powered products

Requirements	
Operation at 3.0V	1.9mA
Operation at 5.0V	2.7mA
Powersave (3 - 5 V)	600 μ A

Packages		-40° to +85°C
CMX639D4	16-pin plastic SOIC	
CMX639E2	24-pin plastic TSSOP	
CMX639P6	22-pin plastic DIL	

Information

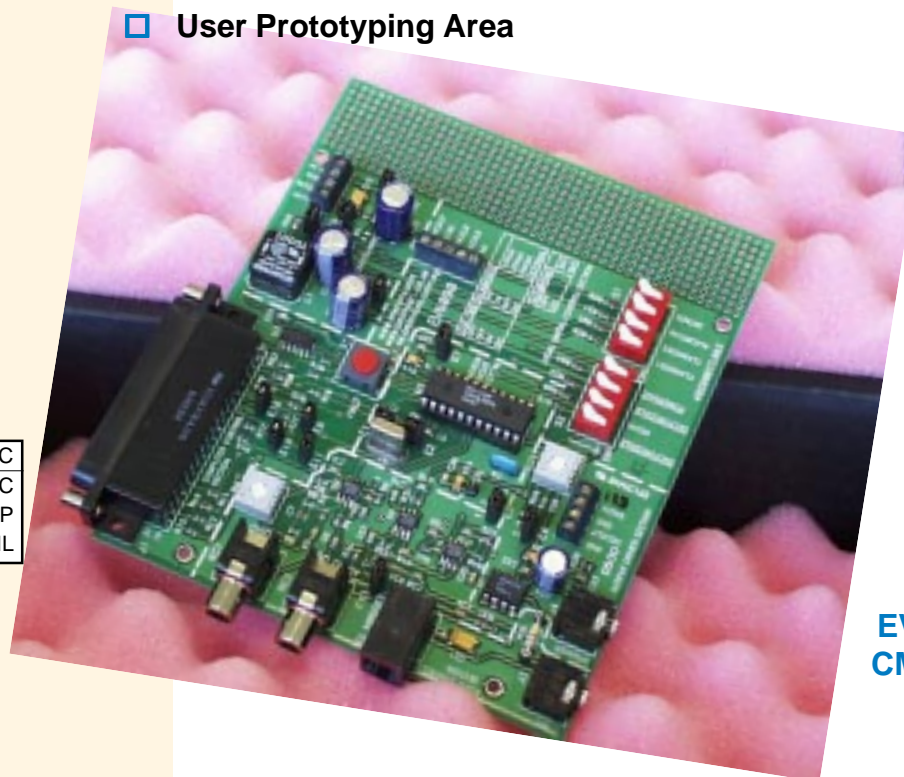
www.cmlmicro.co.uk/products/two_way_radio/CMX639.htm



Oval Park, Langford, MALDON, Essex CM9 6WG, England Tel: +44 (0)1621 875500 Fax: +44 (0)1621 875600 sales@cmlmicro.co.uk www.cmlmicro.co.uk

Evaluation (EV6090)

- Selectable Sample Clock Rates
- Signal Path Investigation via 'Jumper' Connectors
- On-Board Peripheral (Input/Output) Circuitry with Telephone Handset Connections
- CMX639P6 Device on Board
- 2.7 to 5.0 Supply Requirement
- User Prototyping Area



**EV6090 EvKit for
CMX639**