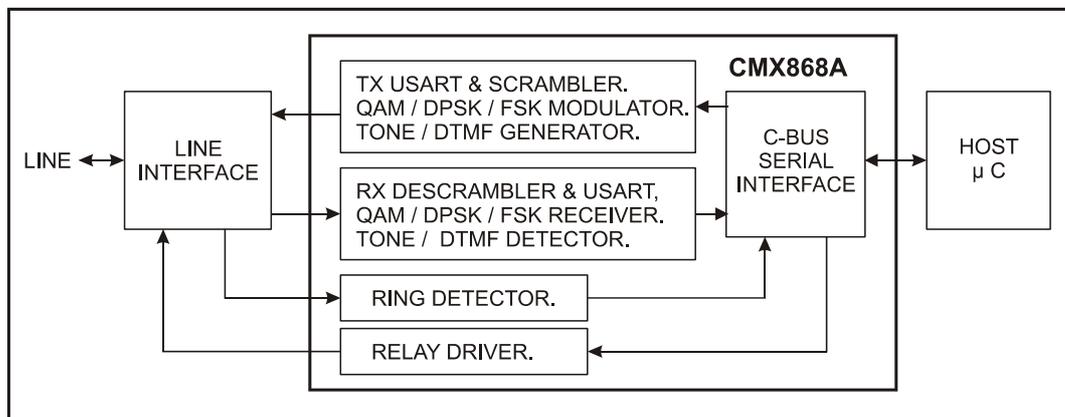


Features

- V.22 bis 2400/2400 bps QAM
- V.22, Bell 212A 1200/1200 or 600/600 bps DPSK
- V.23 1200/75, 1200/1200, 75, 1200 bps FSK
- Bell 202 1200/150, 1200/1200, 150, 1200 bps FSK
- V.21 or Bell 103 300/300 bps FSK
- DTMF/Tones Transmit and Receive
- 'Powersave' Standby Mode

Applications

- Telephone Telemetry Systems
- Remote Utility Meter Reading
- Security Systems
- Industrial Control Systems
- Electronic Cash Terminals
- Pay-Phones
- Set-Top Boxes



Brief Description

The CMX868A is a multi-standard modem for use in telephone based information and telemetry systems.

Control of the device is via a simple high-speed serial bus, compatible with most types of μ Controller serial interface. The data transmitted and received by the modem is also transferred over the same serial bus. On-chip programmable Tx and Rx USARTs meeting the requirements of V.14 are provided for use with asynchronous data and allow unformatted synchronous data to be received or transmitted as 8-bit words.

A high-quality DTMF decoder with excellent immunity to falsing on voice and a standard DTMF encoder are included. Alternatively, these blocks can be used to transmit and detect user-specific, programmed single and dual-tone signals, call progress signals or modem calling and answering tones.

Flexible line driver and receive hybrid circuits are integrated on chip, requiring only passive external components to build a 2 or 4-wire line interface.

The device also features a hook switch relay drive output and a ring detector circuit which continues to function when the device is in the Powersave mode, providing an interrupt which can be used to wake up the host μ Controller when line voltage reversal or ringing is detected.

The CMX868A operates from a single 2.7 to 5.5V supply over a temperature range of -40°C to $+85^{\circ}\text{C}$ and is available in 24-pin TSSOP, SOIC and DIP packages.

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Product Description

The CMX868A is fully compatible with the CMX868 allowing customers to re-use existing software and hardware designs. The CMX868A is also compatible with the CMX86x range of modems that includes the CMX865, CMX867 and CMX869A. This product family forms an upgrade path that requires little re-development effort to migrate designs between members.

Product Enhancements

DTMF Decoder

The DTMF decoder performance has been improved to give greater compatibility with worldwide exchanges and the DTMF encoders supplied by other manufacturers. The dynamic range has been increased to improve the compatibility with normal transmission conditions particularly where long lines are encountered. The acceptable twist has been increased to cope with low-cost DAAs and longer lines. The algorithm has been extensively modified to provide a high immunity to voice signals that increases the number of viable target applications.

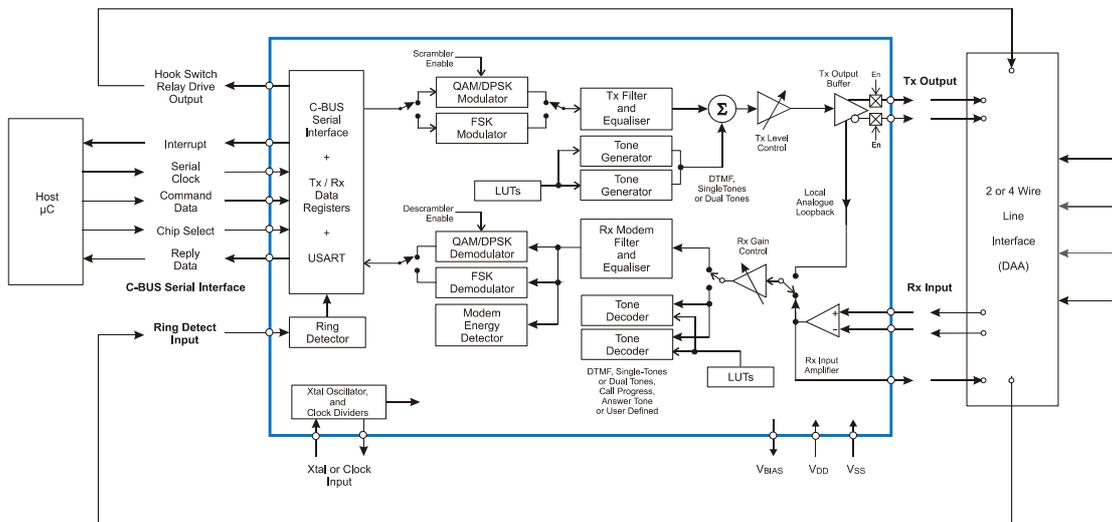
Hybrid

The hybrid function has been improved to increase rejection of transmitted signals and harmonics. This reduces the number of components in the DAA and simplifies the design of DC-coupled DAAs.

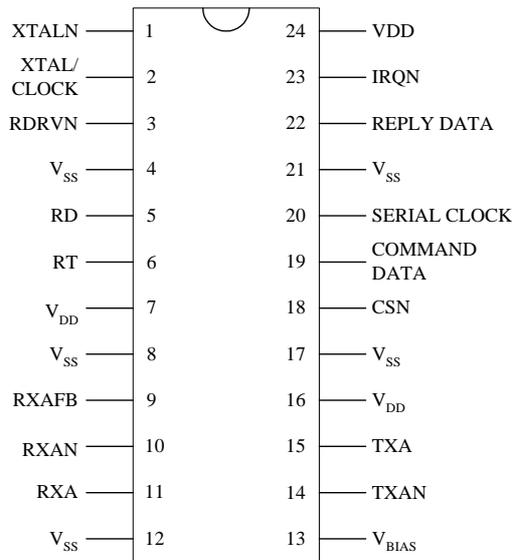
Transmit Output Tri-state Capability

The outputs of the CMX868A are independently tri-stateable allowing the line and, hence, the receiver to be biased, without terminating the line. Caller-ID signals flowing through a hookswitch bypass capacitor will see a high impedance termination which gives a better match to the receiver input. The method offers the possibility of improved S/N performance over other low-cost approaches.

Block Diagram



Pin Out



CMX868AD2/E2/P4

Signal List

CMX865 D2/E2/P4	Signal		Description
Pin No.	Name	Type	
1	XTALN	O/P	The output of the on-chip Xtal oscillator inverter.
2	XTAL/CLOCK	I/P	The input to the oscillator inverter from the Xtal circuit or external clock source.
3	RDRVN	O/P	Relay drive output, low resistance pull down to VSS when active and medium resistance pull-up to VDD when inactive.
4, 8, 12, 17, 21	V _{SS}	Power	The negative supply rail (ground).
5	RD	I/P	Schmitt trigger input to the Ring signal detector. Connect to VSS if Ring Detector not used.
6	RT	BI	Open drain output and Schmitt trigger input forming part of the Ring signal detector. Connect to VDD if Ring Detector not used.
7, 16, 24	VDD	Power	The positive supply rail. Levels and thresholds within the device are proportional to this voltage.
9	RXAFB	O/P	The output of the Rx Input Amplifier.
10	RXAN	I/P	The inverting input to the Rx Input Amplifier
11	RXA	I/P	The non-inverting input to the Rx Input Amplifier
13	VBIAS	O/P	Internally generated bias voltage of approximately VDD /2, except when the device is in 'Powersave' mode when VBIAS will discharge to VSS. Should be decoupled to VSS by a capacitor mounted close to the device pins.
14	TXAN	O/P	The inverted output of the Tx Output Buffer.

15	TXA	O/P	The non-inverted output of the Tx Output Buffer.
18	CSN	I/P	The C-BUS chip select input from the μ C.
19	COMMAND DATA	I/P	The C-BUS serial data input from the μ C.
20	SERIAL CLOCK	I/P	The C-BUS serial clock input from the μ C.
22	REPLY DATA	T/S	A 3-state C-BUS serial data output to the μ C. This output is high impedance when not sending data to the μ C.
23	IRQN	O/P	A 'wire-ORable' output for connection to a μ C Interrupt Request input. This output is pulled down to VSS when active and is high impedance when inactive. An external pull-up resistor is required i.e. R1 of Figure 2.

Notes:

I/P Input

T/S Tri-State

O/P Output

NC No Connection

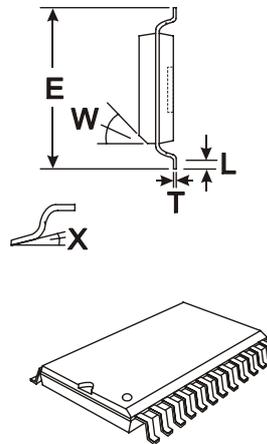
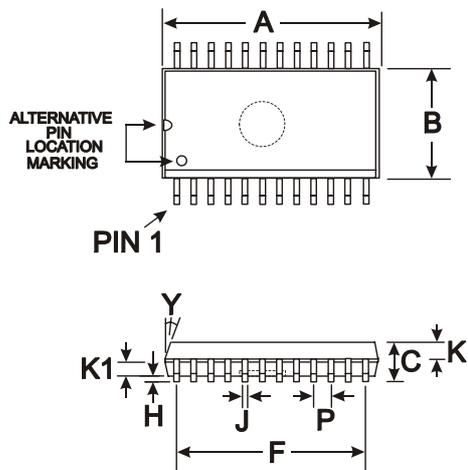
Bi Bi-directional

Design Resources

The CMX868A shares many of the Design Resources: such as Application Notes, FAQs, DAA designs and Source Code and Software Tools that have been developed for other members of the CML telecom family.

Visit the CML website or contact CML Technical Support for more details: www.cmlmicro.com

Packaging



DIM.	MIN.	TYP.	MAX.
* A	0.597 (15.16)	0.613 (15.57)	
* B	0.286 (7.26)	0.299 (7.59)	
C	0.093 (2.36)	0.105 (2.67)	
E	0.390 (9.90)	0.419 (10.64)	
F		0.550 (14.1)	
H	0.003 (0.08)	0.020 (0.51)	
J	0.013 (0.33)	0.020 (0.51)	
K		0.041 (1.04)	
K1		0.041 (1.04)	
L	0.016 (0.41)	0.050 (1.27)	
P		0.050 (1.27)	
T	0.009 (0.23)	0.0125 (0.32)	
W		45°	
X	0°		10°
Y		7°	

NOTE :

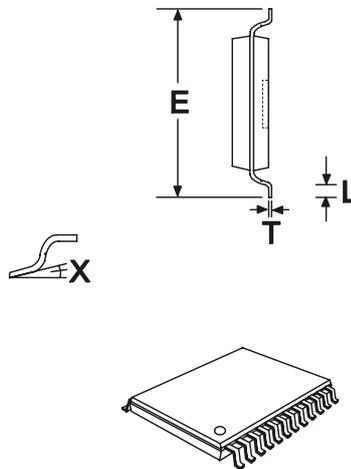
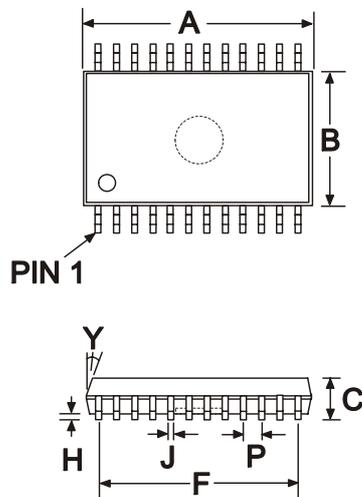
* A & B are reference datum's and do not include mold deflash or protrusions.

All dimensions in inches (mm.)

Angles are in degrees

Co-Planarity of leads within 0.004" (0.1mm)

24-pin SOIC (D2) Mechanical Outline: Order as part no. CMX868AD2



DIM.	MIN.	TYP.	MAX.
* A	7.70		7.90
* B	4.30		4.50
C			1.20
E	6.30		6.50
F		7.15	
H	0.05		0.15
J	0.17		0.30
L	0.45		0.75
P		0.65	
T	0.08		0.20
X	0°		8°
Y		12°	

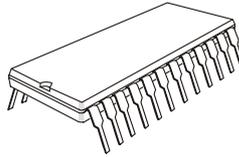
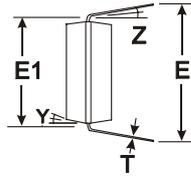
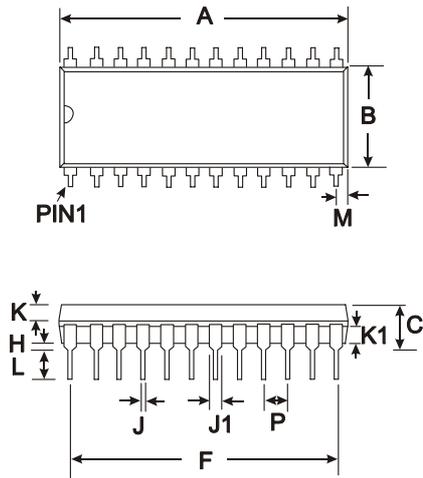
NOTE :

* A & B are reference data and do not include mold deflash or protrusions.

All dimensions in mm

Angles are in degrees

24-pin TSSOP (E2) Mechanical Outline: Order as part no. CMX868AE2



DIM.	MIN.	TYP.	MAX.
* A	1.200 (30.48)	1.270 (32.26)	
* B	0.500 (12.70)	0.555 (14.10)	
C	0.142(3.61)	0.220 (5.59)	
E	0.600 (15.24)	0.670 (17.02)	
E1	0.590 (14.99)	0.625 (15.88)	
F	1.10 (27.94)		
H	0.015 (0.38)	0.045 (1.14)	
J	0.015 (0.38)	0.023 (0.58)	
J1	0.040 (1.02)	0.065 (1.65)	
K	0.066 (1.68)	0.074 (1.88)	
K1	0.060 (1.52)	0.074 (1.88)	
L	0.121 (3.07)	0.160 (4.06)	
M	0.180 (4.58)		
P	0.100 (2.54)		
T	0.008 (0.20)	0.015 (0.38)	
Y		7°	
Z		4°	

NOTE :

* A & B are reference datum's and do not include mold deflash or protrusions.

All dimensions in inches (mm.)
Angles are in degrees

24-pin DIL (P4) Mechanical Outline: Order as part no. CMX868AP4

Handling precautions: This product includes input protection, however, precautions should be taken to prevent device damage from electro-static discharge. CML does not assume any responsibility for the use of any circuitry described. No IPR or circuit patent licences are implied. CML reserves the right at any time without notice to change the said circuitry and this product specification. CML has a policy of testing every product shipped using calibrated test equipment to ensure compliance with this product specification. Specific testing of all circuit parameters is not necessarily performed.

www.cmlmicro.com

For FAQs see: www.cmlmicro.com/products/faqs/

For a full data sheet listing see: www.cmlmicro.com/products/datasheets/download.htm

For detailed application notes: www.cmlmicro.com/products/applications/

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