

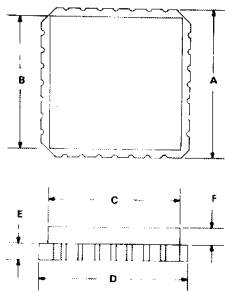
# CONSUMER MICROCIRCUITS LTD

**FX202 is an Obsolete Product  
- For Information Only -**

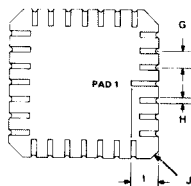
## PRODUCT INFORMATION

**PUBLICATION - D/FX '03-K/1 JANUARY 1982**

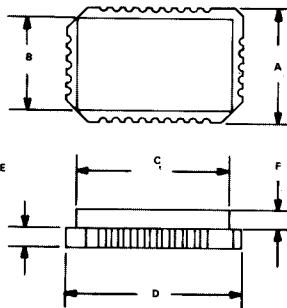
WORKING TEMPERATURE RANGE: -30°C to + 85°C  
STORAGE TEMPERATURE RANGE: -55°C to + 125°C



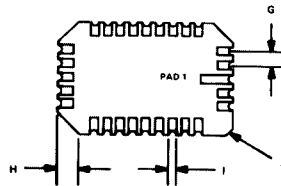
	Inches	m.m.
A	0.45	11.4
B	0.41	10.4
C	0.41	10.4
D	0.45	11.4
E	0.08	1.5
F	0.05	1.5
G	0.05	1.3
H	0.02	1.3
I	0.1	2.54
J	IDENT	



WORKING TEMPERATURE RANGE: -30°C to + 85°C  
STORAGE TEMPERATURE RANGE: -55°C to + 125°C



	Inches	m.m.
A	0.35	8.9
B	0.3	7.6
C	0.5	12.7
D	0.35	14.0
E	0.08	1.5
F	0.08	1.5
G	0.05	1.3
H	0.02	0.5
I	0.1	2.54
J	IDENT	



**FX102-K  
FX202C-K  
FX202Z-K  
FX103-K  
FX313-K  
FX403-K  
FX503C-K  
FX503Z-K**

## FEATURES

- \* SMALL PHYSICAL SIZE
- \* C SUFFIX DEVICES TUNED TO CCIR TONESET
- \* Z SUFFIX DEVICES TUNED TO ZVEI TONESET
- \* WIDE TEMPERATURE RANGE
- \* HERMETICALLY SEALED PACKAGE
- \* LOW POWER CMOS PROCESS

## GENERAL DESCRIPTION

### FX003 PRODUCTS PACKAGED IN LEADLESS CHIP CARRIERS.

Products from the FX'03 range are available packaged in leadless chip carriers. This form of packaging can result in a greatly increased packing density.

The ceramic leadless chip carrier provides a high level of package hermeticity and wide operating and storage temperature ranges.

## DESCRIPTION

The circuit function and electrical specification of leadless chip carrier products are identical to the dual-in-line product information with the following exceptions:

- a) The FX003 tone decoder comprises two discrete LSI chips which are each packaged in a chip carrier. Both packages are required for a complete tone decoder, and are available to decode the CCIR or the ZVEI range of signalling tones. The product codes for a CCIR decoder are an FX102-K together with an FX202QC-K and for a ZVEI device are FX102-K and FX202QZ-K. The interconnection and external components of the two chip carriers are given in diagram 2.

The supply current taken by the FX102 and FX202 combined is typically 1200 $\mu$ A at 5 volts supply.

- b) All chip carrier products are specified for operation over supply voltage range 4.5V to 6V.

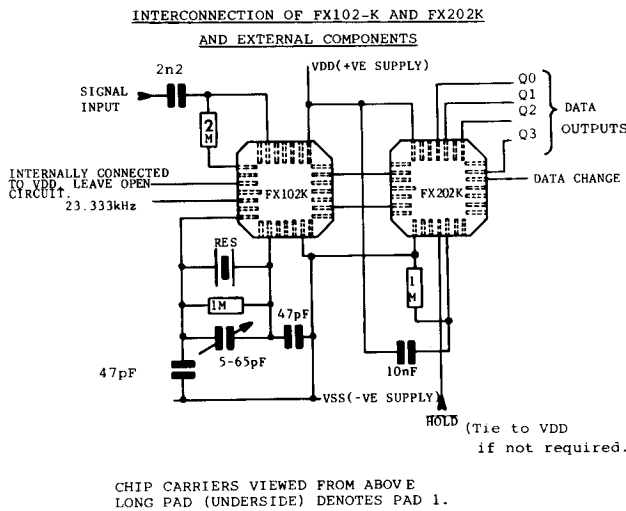


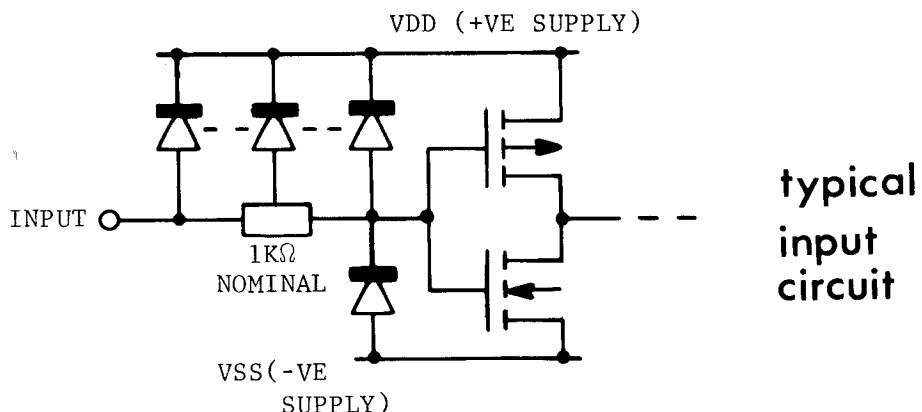
FIG. 2

### Methods of Attachment.

Leadless chip carriers may be attached by reflow soldering techniques. A typical reflow temperature would be 210°C and the molten solder tends to align the chip carrier over the solder pads on the substrate. The ideal substrate material is ceramic because it has a coefficient of linear expansion very closely matched to that of the carrier. Epoxy glass printed circuit boards can be used but the unmatched expansion coefficients lead to strain on the solder joints during cooling.

### Handling Considerations.

Care should be taken when handling any CMOS product to minimise the possibility of the static electrical discharge into the input pins.



During storage the devices should be protected from static charges by packaging in conductive foam or storage in metal trays.

## PIN DATA

PAD	FX102-K	FX202QC-K FX202QZ-K	FX103-K	FX313-K	FX403-K	FX503C-K FX503Z-K
1	N/C	N/C	Data Chng.I/P	VDD (+)	Data Chng.I/P	Tone O/P
2	23.333kHz I/P	N/C	PUR I/P	D0 I/P	PUR I/P	TP O/P
3	N/C	93.333kHz I/P	Vss (-)	D1 I/P	Vss (-)	O/P Bias I/P
4	Osc. Bias	N/C	Alert R/S I/P	D2 I/P	Audio R/S I/P	N/C
5	N/C	Vss(-)	Dec.Abort I/P	D3 I/P	Decode I/P	Enable I/P
6	Osc. I/P	N/C	Preamble I/P	Data Chng.I/P	TP. mode I/P	N/C
7	N/C	N/C	Alert O/P	23.333kHz I/P	Audio O/P	N/C
8	N/C	Hold I/P	23.333kHz I/P	PUR I/P	23.333kHz I/P	Data Chng.I/P
9	N/C	PUR I/P	Qp O/P	Load En. I/P	Inc.Add. I/P	Auto R I/P
10	Vss (-)	N/C	Q1 O/P	Display I/P	Load O/P	N/C
11	N/C	N/C	Q2 O/P	New Data O/P	Q0 O/P	N/C
12	N/C	N/C	Q3 O/P	B Invalid I/P	Q1 O/P	N/C
13	93.333kHz O/P	N/C	Q4 O/P	Overflow O/P	Q2 O/P	N/C
14	N/C	N/C	Q5 O/P	Vss (-)	Q3 O/P	XTC/QTC I/P
15	N/C	N/C	D10 I/P	Digit 1 O/P	Dp0 I/P	Vss (-)
16	N/C	Data Chng.O/P	D11 I/P	Digit 2 O/P	Dp1 I/P	N/C
17	Logic sig.O/P	Q3 O/P	D12 I/P	Digit 3 O/P	Dp2 I/P	D0 I/P
18	N/C	N/C	D13 I/P	Digit 4 O/P	Dp3 I/P	D1 I/P
19	Vdd (+)	Q2 O/P	Group '0' I/P	Digit 5 O/P	Tx Relay O/P	D2 I/P
20	N/C	N/C	A.C.I. I/P	Digit 6 O/P	Tx Enable I/P	D3 I/P
21	N/C	Q1 O/P	Mute O/P	Digit 7 O/P	Mute O/P	N/C
22	N/C	Q0 O/P	Mute R/S I/P	Segment g O/P	Mute R/S I/P	N/C
23	N/C	N/C	Vdd (+)	Segment f O/P	Vdd (+)	N/C
24	Signal I/P	N/C	Data Flag O/P	Segment e O/P	Data Flag O/P	Character I/P
25	N/C	Vdd (+)	D0 I/P	Segment d O/P	D0 I/P	N/C
26	Signal Bias	N/C	D1 I/P	Segment c O/P	D1 I/P	Clock I/P
27	N/C	Logic sig.I/P	D2 I/P	Segment b O/P	D2 I/P	Clock O/P
28	Internal Vdd	N/C	D3 I/P	Segment a O/P	D3 I/P	Vdd (+)



**CML Microcircuits**

COMMUNICATION SEMICONDUCTORS

## CML Product Data

In the process of creating a more global image, the three standard product semiconductor companies of CML Microsystems Plc (*Consumer Microcircuits Limited (UK)*, *MX-COM, Inc (USA)* and *CML Microcircuits (Singapore) Pte Ltd*) have undergone name changes and, whilst maintaining their separate new names (*CML Microcircuits (UK) Ltd*, *CML Microcircuits (USA) Inc* and *CML Microcircuits (Singapore) Pte Ltd*), now operate under the single title **CML Microcircuits**.

These companies are all 100% owned operating companies of the CML Microsystems Plc Group and these changes are purely changes of name and do not change any underlying legal entities and hence will have no effect on any agreements or contacts currently in force.

### CML Microcircuits Product Prefix Codes

Until the latter part of 1996, the differentiator between products manufactured and sold from MXCOM, Inc. and Consumer Microcircuits Limited were denoted by the prefixes MX and FX respectively. These products use the same silicon etc. and today still carry the same prefixes. In the latter part of 1996, both companies adopted the common prefix: CMX.

This notification is relevant product information to which it is attached.

Company contact information is as below:



**CML Microcircuits  
(UK) Ltd**

COMMUNICATION SEMICONDUCTORS

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



**CML Microcircuits  
(USA) Inc.**

COMMUNICATION SEMICONDUCTORS

4800 Bethania Station Road,  
Winston-Salem, NC 27105, USA  
Tel: +1 336 744 5050,  
0800 638 5577  
Fax: +1 336 744 5054  
us.sales@cmlmicro.com  
www.cmlmicro.com



**CML Microcircuits  
(Singapore) Pte Ltd**

COMMUNICATION SEMICONDUCTORS

No 2 Kallang Pudding Road, 09-05/  
06 Mactech Industrial Building,  
Singapore 349307  
Tel: +65 7450426  
Fax: +65 7452917  
sg.sales@cmlmicro.com  
www.cmlmicro.com