

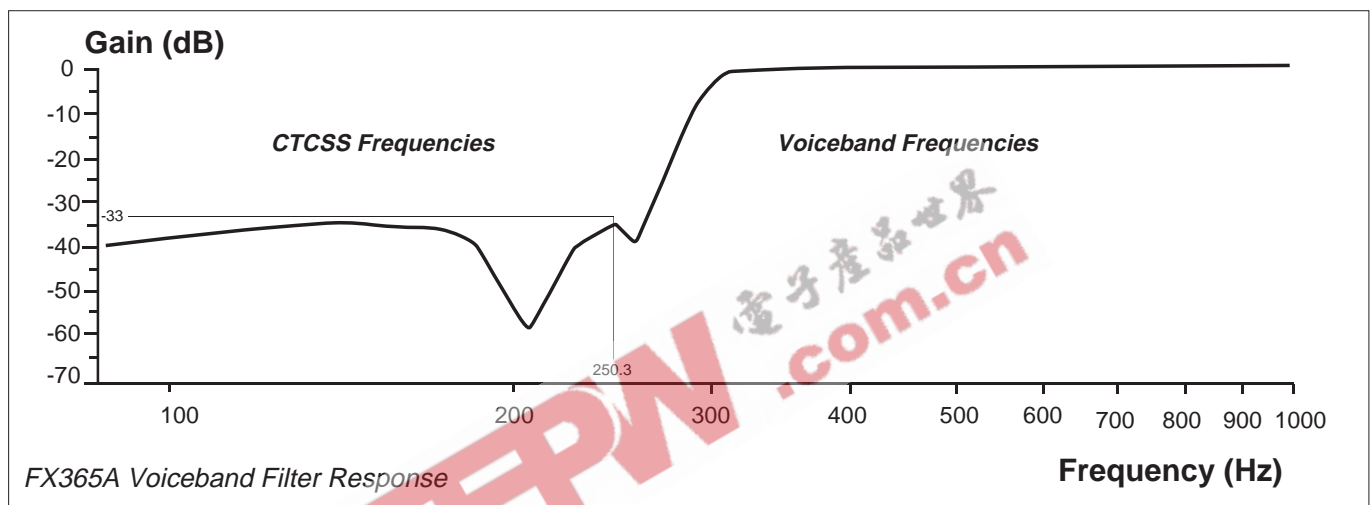


# FX365A CTCSS Encoder/Decoder

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Advance Information

## Features

- Improved Audio and Noise Performance
- 39 Programmable Sub-Audio Tones + NOTONE
- Sub-Audio Frequency Range 67.0Hz to 250.3Hz
- Reduced Current Requirement in Rx Monitoring Mode
- Pin and Function Compatible with FX365 Microcircuits
- High Voiceband/CTCSS Isolation



## Brief Description

The FX365A is a half-duplex  $\mu$ Processor controlled CTCSS Encoder and Decoder with integral voice-band filtering.

This device which is pin and function compatible with standard FX365 microcircuits is also available in a 24pin plastic Small Outline (S.O.I.C.) [365A DW] SMD package. The FX365A demonstrates improved voice-band noise performance and requires less supply current in the Rx monitoring mode.

The FX365A has the capability of encoding and decoding 39 separate sub-audio tones, 38 of which are detailed in the current FX365 Data Sheet, plus an additional tone of 69.3Hz.

This Data Sheet, which details the differences between the **FX365A** and the FX365 microcircuits, should be used with the current **FX365** Data Sheet.

## Programmable Sub-Audio Rx and Tx Frequencies (Hz)

67.0	<b>69.3</b>	71.9	74.4	77.0	79.7	82.5	85.4
88.5	91.5	94.8	97.4	100.0	103.5	107.2	110.9
114.8	118.8	123.0	127.3	131.8	136.5	141.3	146.2
151.4	156.7	162.2	167.9	173.8	179.9	186.2	192.8
203.5	210.7	218.1	225.7	233.6	241.8	250.3	NOTONE

FX365A Tx and Rx Sub-Audio Frequencies

## 69.3Hz Tone Generation

The additional sub-audio tone provided by the FX365A is 69.3Hz.

With reference to the FX365 Data Sheet – Table 3, the programming information is as follows:

Nominal Freq. (Hz)	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
69.3	1	0	0	1	1	1

# Specification

## Absolute Maximum Ratings

Exceeding the maximum rating can result in device damage. Operation of the device outside the operating limits is not implied.

Supply voltage		-0.3 to 7.0V
Input voltage at any pin (ref $V_{SS} = 0V$ )		-0.3 to ( $V_{DD} + 0.3V$ )
Sink/source current (supply pins)		+/- 30mA
(other pins)		+/- 20mA
Total device dissipation @ $T_{AMB} 25^{\circ}C$		800mW Max.
Derating		10mW/ $^{\circ}C$
Operating temperature range:	<b>FX365A J</b>	-40 $^{\circ}C$ to +85 $^{\circ}C$ (cerdip)
	<b>FX365A DW/LG/LS</b>	-40 $^{\circ}C$ to +85 $^{\circ}C$ (plastic)
Storage temperature range:	<b>FX365A J</b>	-55 $^{\circ}C$ to +125 $^{\circ}C$ (cerdip)
	<b>FX365A DW/LG/LS</b>	-40 $^{\circ}C$ to +85 $^{\circ}C$ (plastic)

## Operating Limits

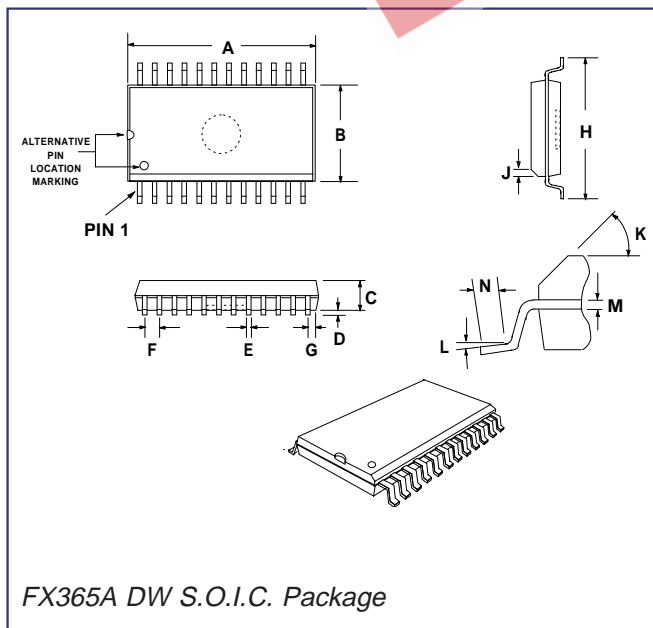
All device characteristics are measured under the following conditions unless otherwise specified:

$V_{DD} = 5.0V$ .  $T_{AMB} = 25^{\circ}C$ . Xtal/Clock  $f_0 = 1.0MHz$ . Audio level 0dB ref: = 300mV rms

Composite Signal Content = 1.0kHz tone at 0dB, Noise at -12dB (gaussian white noise band-limited to 6.0kHz), Programmed CTCSS tone at -20dB.

Characteristics	See Note	Min.	Typ.	Max.	Unit
<b>Static Values</b>					
Supply Voltage		4.5	5.0	5.5	V
Supply Current (Tx)		-	3.5	-	mA
(Rx)		-	3.5	-	mA
(Rx Monitor)	1	-	2.5	-	mA
<b>Audio Filter</b>					
Passband Frequencies		300		3000	Hz
Passband Gain at 1.0kHz		-	0	-	dB
w.r.t. 1.0kHz		-2.0	-	0.5	dB
Stopband Frequencies		-		250	Hz
Attenuation		33.0	36.0	-	dB
Output Noise (a.c. short circuit)	2	-	-54.0	-48.0	dB
SINAD	3	36.0	40.0	-	dB
Tx Output Impedance		-	2.0	-	$k\Omega$
Tx Output Amplitude		-	950	-	mVrms
Spurious Emissions		-	-	-48.0	dB

- Notes**
- 1 See FX365 Data Sheet Table 2.
  2. Measured in a 30kHz bandwidth.
  3. With an input level of 308mVrms at 1.0kHz, in a 30kHz bandwidth.



## Ordering Information

<b>FX365A DW</b>	24-pin surface mount S.O.I.C.
<b>FX365A J</b>	24-pin cerdip DIL
<b>FX365A LG</b>	24-pin quad plastic encapsulated bent and cropped
<b>FX365A LS</b>	24-lead plastic leaded chip carrier

DIMENSION	MIN	TYP	MAX
A	15.16		15.60
B	7.39		7.59
C	2.21		2.67
D		0.20	
E		0.40	
F		1.27	
G		0.66	
H	10.11		10.51
J		0.63	
K		45 $^{\circ}$	
L		5 $^{\circ}$	
M		0.25	
N		0.76	

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