

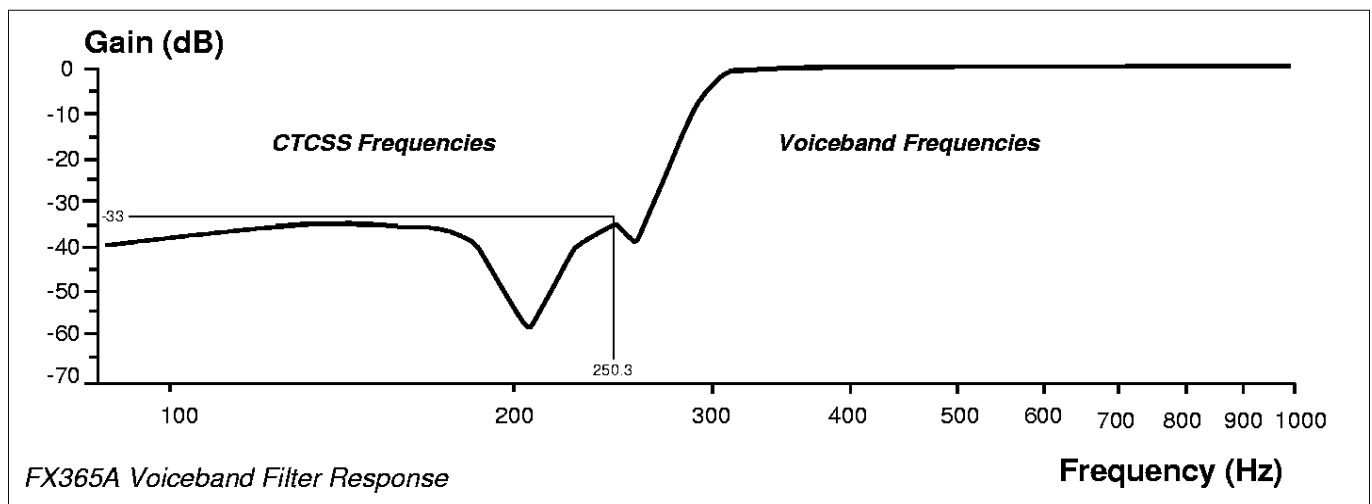


FX365A CTCSS Encoder/Decoder

Publication No. D/365A/F/2 Feb 1992
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 μ 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 | 69.3 | 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 ₀ | D ₁ | D ₂ | D ₃ | D ₄ | D ₅ |
|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 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: | FX365A J | -40 $^{\circ}C$ to +85 $^{\circ}C$ (cerdip) |
| | FX365A DW/LG/LS | -40 $^{\circ}C$ to +85 $^{\circ}C$ (plastic) |
| Storage temperature range: | FX365A J | -55 $^{\circ}C$ to +125 $^{\circ}C$ (cerdip) |
| | FX365A DW/LG/LS | -40 $^{\circ}C$ to +85 $^{\circ}C$ (plastic) |

Operating Limits

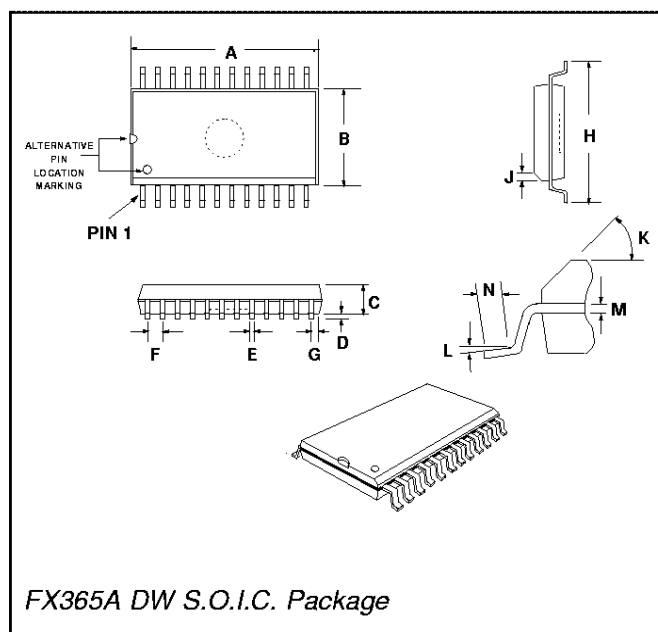
All device characteristics are measured under the following conditions unless otherwise specified:

$V_{DD} = 5.0V$. $T_{AMB} = 25^{\circ}C$. 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 |
|-----------------------------------|----------|------|-------|-------|----------|
| Static Values | | | | | |
| 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 |
| Audio Filter | | | | | |
| 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 | - | Ω |
| 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

| | |
|------------------|---|
| FX365A DW | 24-pin surface mount S.O.I.C. |
| FX365A J | 24-pin cerdip DIL |
| FX365A LG | 24-pin quad plastic encapsulated bent and cropped |
| FX365A LS | 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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