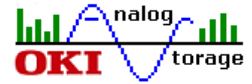**OKI** Semiconductor

ML2516

Preliminary

Analog Storage Speech Recording LSI

This version does no more include ML2517 since a full data sheet is available now.

GENERAL DESCRIPTION

ML2516 utilises analog storage of speech and sound effects into Flash memory cells. The term "analog" refers to a method that involves the charging of Flash cells with an analog voltage level corresponding to the input waveform at a given sampling point. Therefore, the value of one sample is stored in a single cell or bit. Though we are talking about entirely different methods, compared with digital storage, analog storage, requires only about 1/8th of memory.

The ML2516 incorporates over 2 million cells. A sampling frequency of 4.0kHz provided, 8.7 minutes recording and playback time are available. The recorder operate under serial MCU control.

An internal oscillation circuit is included in that the device does not need a master clock. Alternatively, an external clock can be applied.
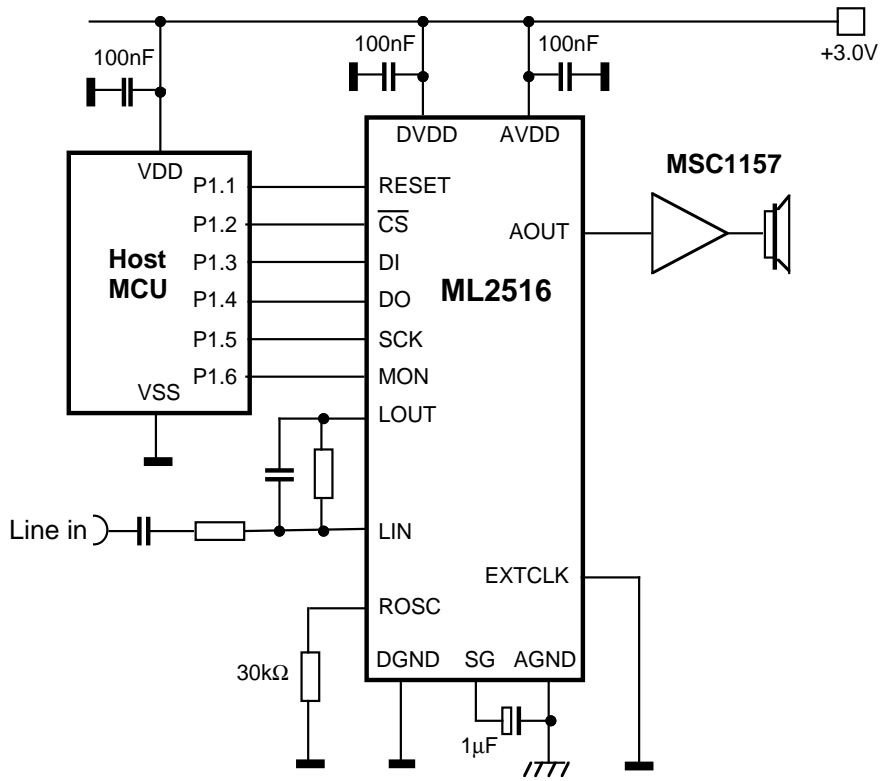
Typical applications are for cellular phones, answering machines and voice memos.

TARGET FEATURES

- Internal 2 megacell analog storage Flash
      10000 (min.) erase/write cycles
      10 years (min.) data retention
      Write/read accuracy approx. 8-bit (10mV reference level)
- Storage of digital data possible (target)
- Two OpAmps for microphone and line input
- Serial MCU control
- Sampling frequencies: 4.0, 5.3 and 6.4kHz
  (development target is to include 8kHz sampling)
- Sequential and direct recording modes
  (in direct mode recording is made in selectable memory areas)
- Recording times:
      ca. 5.4 minutes   (@6.4kHz)
      ca. 6.6 minutes   (@5.3kHz)
      ca. 8.7 minutes   (@4.0kHz)
- Internal LPF (-40dB/oct.)
- Internal generation of oscillation
- External clock frequency range: 1.0 ~ 8.192MHz
- Power supply voltage: +2.7 ~ 3.3V
- Maximum current: 45mA (when recording)
- Operating temperature: -10 ~ +70°C (development target is -40 ~ +85°C)
- Packages:
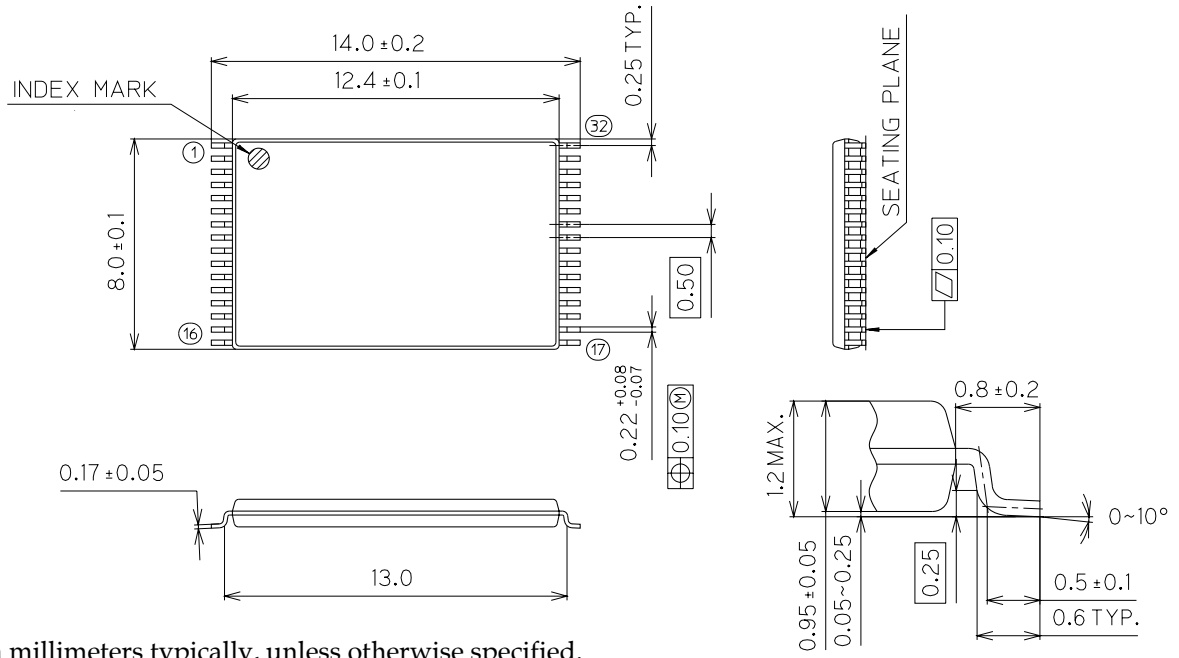   ML2516: 32-pin TSOP1 (TSOPI32-P-814-0.50-1K)
- Order number: ML2516TA

For reference, a 4 megacell device, designated the ML2517, is in development as well.

TYPICAL APPLICATION CIRCUIT

PACKAGE DIMENSIONS

TSOPI32-P-814-0.50-1K

INDEX MARK

14.0 ±0.2

12.4 ±0.1

0.25 TYP.

8.0 ±0.1

SEATING PLANE

0.10

0.50

0.22 +0.08 -0.07

⊕ 0.10 Ⓜ

0.17 ±0.05

13.0

1.2 MAX.

0.8 ±0.2

0~10°

0.95 ±0.05

0.05~0.25

0.25

0.5 ±0.1

0.6 TYP.

Unit in millimeters typically, unless otherwise specified.