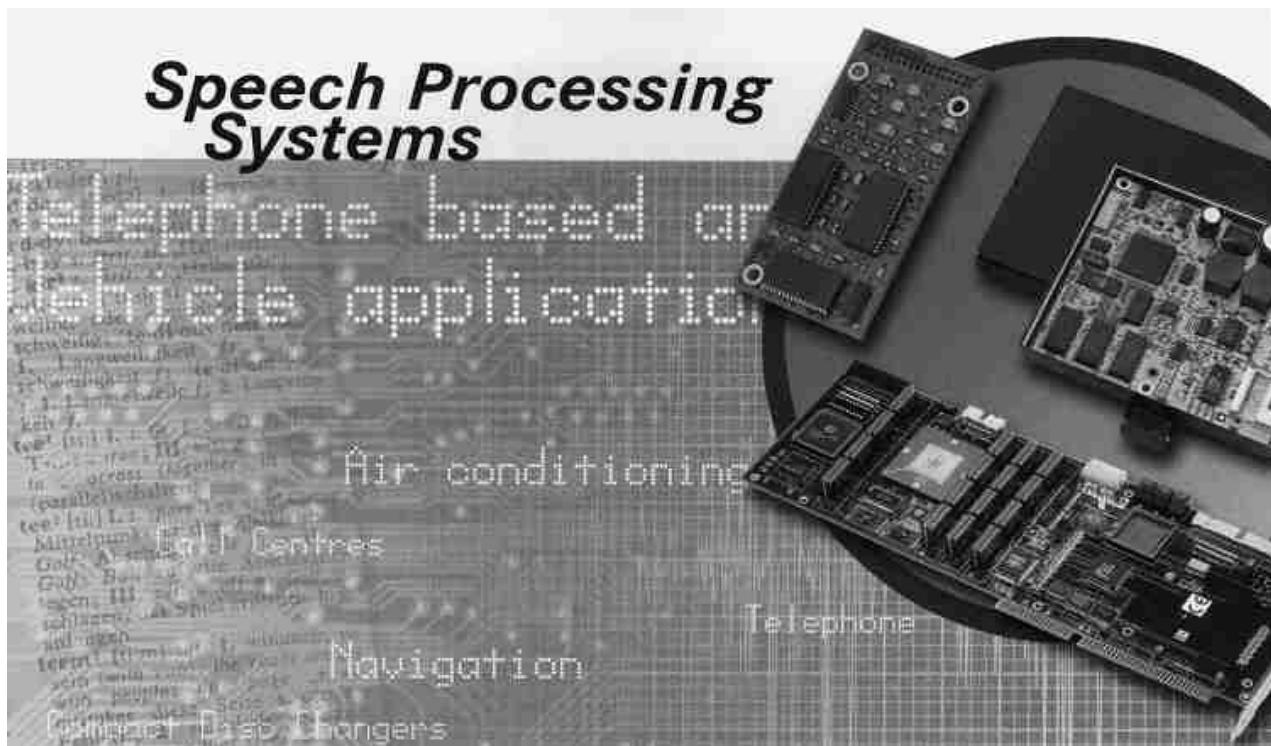


Carkit CAN

Bluetooth



Product description Carkit CAN_BT_0001

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1 Abstract

1.1 Revision index

1.2 Aplicable dokumente

1.3 Abbreviations

1.4 Purpose of the document

Short description of the Carkit CAN.

2 Functions

2.1 General

The Carkit CAN is a wireless handsfree carkit based on Bluetooth technology. It transfers audio and control signals to and from a corresponding Bluetooth Audio gateway (mobile with Bluetooth capability).

The Carkit CAN has following functions:

- Noise reduction
- Echo cancellation
- Speaker independent and speaker dependent voice recognition for command and control (e.g. "dial number")
- Connection to the mobile phone via Bluetooth or via cradle
- Connected to the CAN-bus of the car

2.2 Bluetooth – How it works

Bluetooth operates in the 2.4 GHz ISM (Industrial Scientific Medicine) band at 2.4 GHz. A frequency hop transceiver is applied to combat interference and fading. Modulation is GFSK (Gaussian Frequency Shift Keying) with a BT=0.5. The Modulation index is 0.32. A binary one is represented by a positive frequency deviation, and a binary zero is represented by a negative frequency deviation. The symbol rate is 1 Ms/s.

For full duplex transmission, a Time-Division Duplex (TDD) scheme is used. On the channel, information is exchanged through packets. Each packet is transmitted on a different hop frequency. A packet nominally covers a single slot, but can be extended to cover up to five slots. The Bluetooth protocol uses a combination of circuit and packet switching. Slots can be reserved for synchronous packets. Bluetooth can support an asynchronous data channel, up to three simultaneous synchronous voice channels, or a channel which simultaneously supports asynchronous data and synchronous voice. Each voice channel supports a 64 kb/s synchronous (voice) channel in each direction. The asynchronous channel can support maximal 723.2 kb/s asymmetric (and still up to 57.6 kb/s in the return direction), or 433.9 kb/s symmetric.

3 Hardware description

The Hardware consists of the following main blocks:

- DSP TDA7590 "Salieri"
 - Main processor
 - Application software

- Noise reduction and echo cancellation
- Voice recognition
- Bluetooth-Stack
- A/D and D/A conversion with the internal codec (audio in/ out)
- Internal SRAM
- Memory
 - NOR-Flash
 - NAND-Flash
- Bluetooth
 - Infineon PMB8761
 - Rf-connector (FAKRA type)
- CAN interface
 - Transceiver TJA1054
 - Microcontroller (see below)
- Microcontroller ST7
 - Wake up
 - Diagnostics
 - CAN
- Power supply block
- System connector