# 6. Familiarization of DSP Hardware

**AIM**

To familiarize DSP hardware, Code Composer Studio and testing of C program for controlling LEDs through switches.

**DEVICES AND SOFTWARE NEEDED**

VSK TMS 320C 6748 KIT, CCS 3.3

**KIT FAMILIARIZATION**

The VSK-6747 is a standalone development platform that enables users to evaluate and develop applications for the DSP processor.

**Hardware Overview**

The VSK comes with a full complement of on board devices that suit a wide variety of Application environments.

Key features include:

- A Texas Instruments TMS320C6747 device with a DSP floating point processor and processor operating up to
- 300 MHz
- 64 Megabytes SDRAM
- SPI Boot EEPROM
- TLV320AIC3106 Stereo Codec
- RS-232 Interface
- On chip real time clock
- Configurable boot load options
- 8 user LEDs/8 position user DIP switch
- Single voltage power supply (+5V)
- Expansion connectors for SPI/GPIO termination.
- Embedded JTAG Emulation
- 14 Pin TI JTAG/20 Pin JTAG Interfaces

**VSK – 6748 Module**

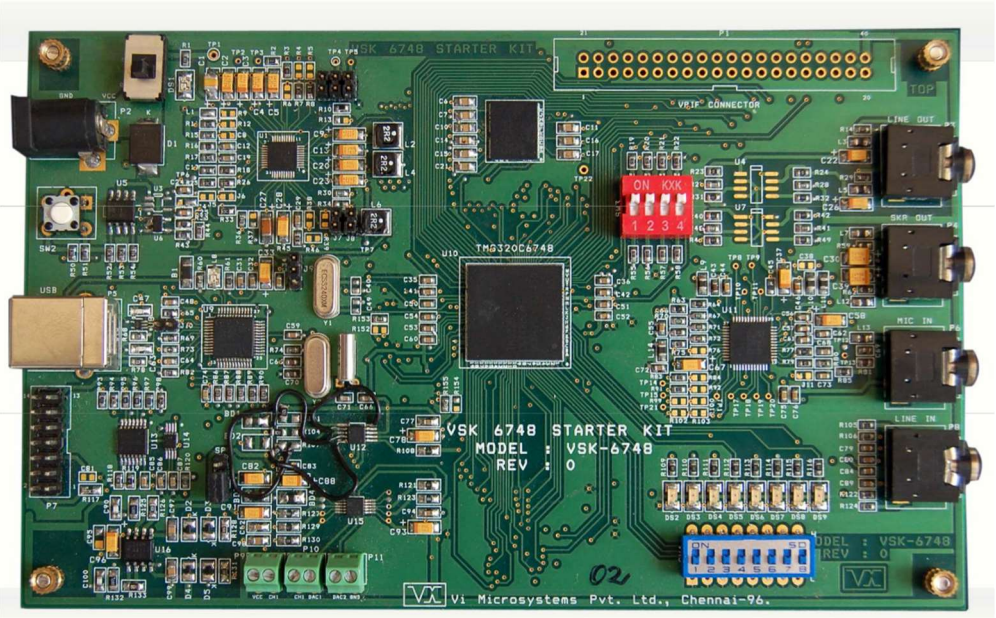


Fig: 1- VSK-6748 Module

**Functional Overview of the VSK-6748**

The TMS320C6748 on the VSK interfaces to on-board peripherals through the 16- bit wide multiplexed EMIF interface pins. The SDRAM memory is connected to its own dedicated 16 bit wide bus.

An on-board AIC3106 codec allows the DSP to transmit and receive analog audio Signals. The I2C bus is used for the codec control interface, while the McASP controls the audio stream. Signal interfacing is done through 3.5mm audio jacks that correspond to microphone input, headphone output, line input, and line output. The VSK includes 8 user LEDs, a 8 position user DIP switch, and on chip real time clock.

An included +5V external power supply is used to power the board. On-board switching voltage regulators provide the CPU core voltage, +3.3V, +1.8V for peripheral interfacing. The board is held in reset by the on-board power controller until these supplies are within operating specifications. Code Composer Studio communicates with the VSK through an embedded emulator or via the TI 14 pin JTAG connectors.

## Basic Operation

The VSK is designed to work with TI's Code Composer Studio IDE. Code Composer communicates with the board through an on board JTAG emulator. To start, follow the instructions in the Quick Start Guide to install Code Composer. This process will install all of the necessary development tools, documentation and drivers.

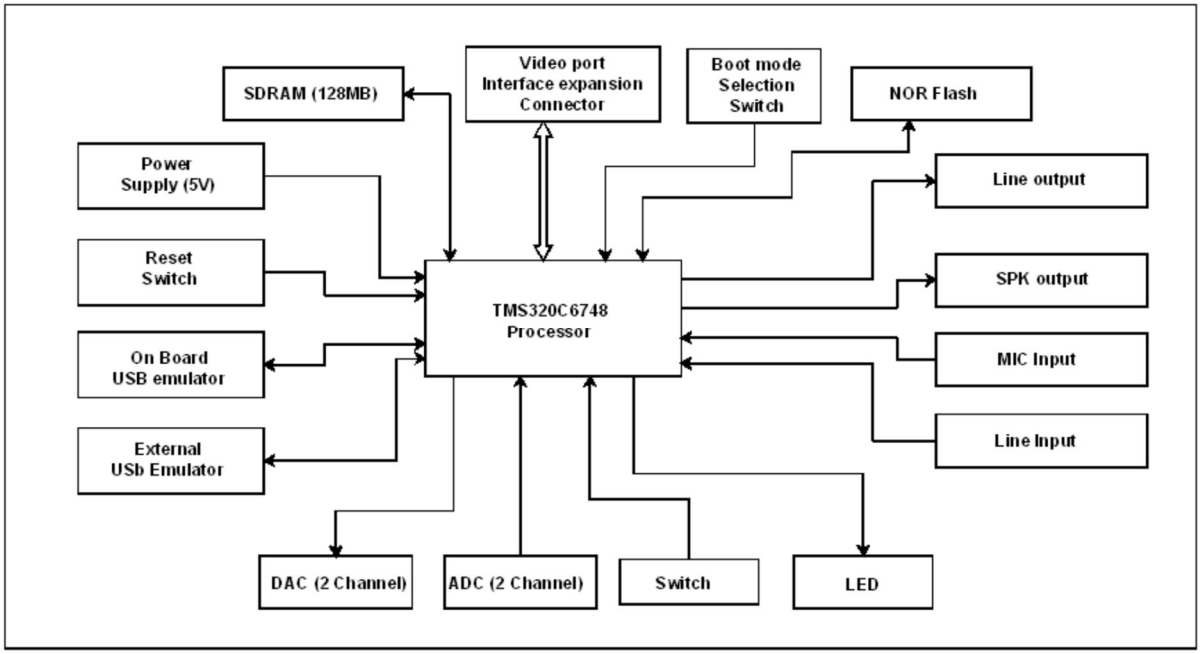


Fig 2 : Block of VSK - 6748

**Software**

Code Composer Studio ™ software is an integrated development environment (IDE) that supports TI's microcontroller (MCU) and embedded processor portfolios. Code Composer Studio software comprises a suite of tools used to develop and debug embedded applications. The software includes an optimizing C/C++ compiler, source code editor, project build environment, debugger, profiler and many other features. The intuitive IDE provides a single-user interface that takes you through each step of the application development flow. Familiar tools and interfaces let you get started faster than ever before. Code Composer Studio software combines the advantages of the Eclipse software framework with advanced embedded-debug capabilities from TI resulting in a compelling feature-rich development environment for embedded developers.

**Result**