Terawins, Inc.

Datasheet
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T582D
Portable Surveillance Processor

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Revisions Note

Revisions	Description of changes	Date	Note
0.83	First draft internal release	Oct 18, 2013	
1.0	T582D first official release	Nov 29, 2013	

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1. Introduction

1.1. Features

- **16-bit RISC CPU up to 120Mhz with MMU**
  - System control
  - Support 16-bit instruction set for smaller code footprint
- **Built-in 88K-byte SRAM**
- **Built-in hardwired JPEG, Motion-JPEG encoder**
  - Up to 720x480 30 fps on-the-fly
  - Support embedding time-stamp from RTC to JPEG
- **Built-in hardwired JPEG, Motion-JPEG decoder**
  - Up to 720x480 30 fps
- **Built-in Real-Time Clock (RTC)**
- **Built-in simple motion detection mechanism**
  - Support either through digital input or CVBS input
- **Audio storage data format**
  - Support 16/32-kbps ADPCM / μ-law / a-law

Audio/Video Input Source

- **Digital CCIR656/601 for CMOS module**
- **CVBS input**
  - Support up to 3 multiplexed CVBS channels in NTSC/PAL
- **Audio Analog to Digital Convertor (ADC)**
  - Sigma-Delta single channel ADC
  - Support 16/32-kbps ADPCM / μ-law / a-law

Panel Controller/Interface

- **i80**
  - Vsync mode and command mode
- **TTL**
  - RGB666/888 with TCON
  - DPWMfor DC-DC/LED
- **sRGB**
  - normal and interlace mode
- **On Screen Display(OSD)**
  - Support 1/2/4/8 bits/pixel
  - 8K-word OSD2 memory
  - Supports text or bitmap modes
  - Subpixel type support for Smart Font Rendering
  - Supports character blinking and overlay functions
  - Fully programmable character mapping
  - Supports alpha blending & Zoom-in/Zoom-out function
  - Built-in 114+ fonts (12 x18, 16 x24 each)
  - Pattern-Filled background
  - Optional fonts stored in off-chip serial ROM
  - Supports free run OSD mode
- **SPI Flash Based On Screen Display Engine**
  - Support bitmap background images on SPI NOR flash, and having various transition effects. Also support Terawins Bitmap Compression(TWBC) to save storage space 50%
  - Support Sprite layer for animation icon
  - Standard RGBA 8888 index color palette with two lookup tables
- **Resolution up-to 800x600 and full screen OSD**

Audio Output Interface

- **Audio Digital-to-Analog Convertor**
  - Sigma-Delta single channel DAC

On-chip Peripherals

- **SD/MMC**
  - SD card supports up to 32GB SDHC
- **SPI NOR flash controller**
  - Support eXecution-In-Place (XIP)
- **2-wired serial bus interface(I2C)**
  - Master and Slave modes
- **GPIO**
  - Support interrupt mode
- **UART x2**
  - Two standard UART ports, one has hardware flow control
- **Watchdog**
- **SAR**
  - up to 3 input channels (depends on models)
  - For keypad, temperature/battery measurement, etc.

■ **IR controller**
- Support hardware NEC/RC5/Sony IR decoder

Power & Packages

■ **System (Power) Management Unit**
- Dynamic Clock frequency adjustment to save power consumption
- Operation, Suspend, Shutdown mode

■ **Package Type and Voltage**
- LQFP 128 pins
- Voltage : 3.3V/1.8V
- Internal LDO for core power 1.8V

1.2. General Description

The T582 is a highly integrated all-in-one Portable Surveillance Processor that provides major cost saving solution for various product lines in surveillance market. T582 has built-in real-time MJPEG encoder through either digital or analog inputs, and save to SD card storage with optimized FAT support for robust and reliable storage, and live view on panel while recording to SD card. MJPEG decoder is supported for playback. Motion detection is also supported by the chip for surveillance usage. Various user input interface for UI, and flexible auxiliary interfaces, like UART, GPIOs, for controlling other peripherals. T582 could direct support most typed of analog and digital panels with refine and adjustable image quality. T582 builds in Terawins high quality video processor engine and is easy to make the video/image quality better.

1.3. Applications

1. Car digital video recorder with real-view monitor
2. Video door phone monitor
3. Portable baby monitor
4. Personal digital video recorder