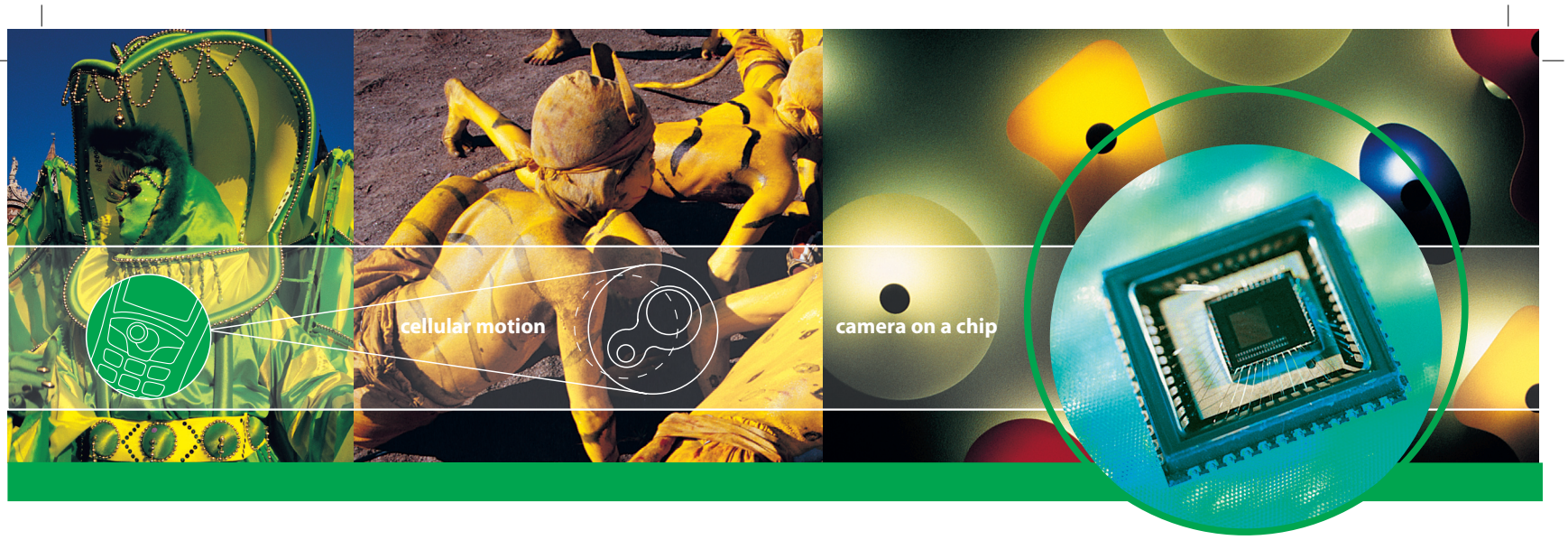


CoderCam™ Imager TC5747

miniature digital camera module

A high-performance VGA sensor for mobile devices

TransChip's second-generation VGA resolution camera-on-a-chip enables the capturing and processing of high quality images over wireless devices. A novel approach to camera integration has allowed simplification of camera phone system complexity and size. Digital effects and zoom capabilities add to the exciting experience of quality photography… from a mobile phone.

System on chip design

TransChip's CoderCam™ Imager integrates an image sensor, image processing, JPEG codec core and display graphics on a single chip. The TC5747 generates VGA resolution images for still capture, and can be resized to any other smaller format, while retaining the true quality of the original image.

Rich colors

The imager design supports a wide dynamic range typically required in wireless applications. The resulting images benefit from richer colors and textures that enhance the user experience and encourage more frequent camera usage.

Automatic Adaptation

Advanced image processing ensures picture perfect images with excellent color even in settings with problematic lighting such as dark rooms, flickering fluorescents, harsh daylight and dusk.

Embedded Micro-Controller

TransChip's sophisticated digital image processing algorithms use dedicated hardware and an embedded, programmable micro-controller. The micro-controller enables new features and third party software upgrades to be implemented without requiring complex hardware upgrades.

Image Compression: JPEG Codec

The camera-on-a-chip includes real-time JPEG compression with programmable compression tables, as well as JPEG decoding. 'On chip' compressed frame memory enables stills output and a high-speed serial interface supports motion JPEG output for high quality movie clips. The camera's VGA resolution offers a PC-compatible image that turns your mobile phone into a truly pocket-sized digital still camera.

16-bit Host Interface

TransChip's interface delivers image data directly to the baseband processor. The process does not require complex conversions, via additional back-end chips, to adapt the data for output. Captured images can be instantly sent on the 16bit bus to the handset memory.

Direct LCD interface

Scaling and direct interface to the device's LCD screen provides a true preview of the captured scene. The on-screen display of icons and messages integrates the video display with the graphical user interface.

Easy Integration

The TC5747 interfaces are optimized to allow a seamless connection with the mobile phone host processor and LCD, simplifying the imaging system design and significantly reducing time-to-market.

TransChip

CoderCam™ - delivering complete shrinkwrap feature-rich camera solutions for any mobile device

true colors — r g b realtime capturing — color processing — motion video — streaming compression

CoderCam™ Imager TC5747

Miniature VGA Camera Module

Key Features

- VGA format sensor with 1/4" optics
- Programmable image processor core
- Real-time JPEG encoder/decoder with programmable compression ratio
- 64KB compressed frames SRAM
- Low power design including power efficient sleep mode
- Seamless interface to host and LCD screen
- 2X and 4X digital zoom
- Vertical and horizontal inversion
- Auto flicker detection and correction
- Resize to target display size
- Programmable color matrices and Gamma correction
- Auto exposure and auto white balance
- Enhanced dynamic range
- On screen display (OSD) of icons and messages.
- Digital effects and frame overlay
- Thumbnails and portrait images
- Video output formats: 10 -bit raw data or YUV 422 or display-ready RGB 444, 565, 666 or 888 formats.
- 60º diagonal field of view
- 54-pin connector
- Module size: 9mm x 7.9mm
- Module height: 5.3mm

Interface options

- 16/18 bit direct interface to LCD with no glue logic
- 16-bit bi-directional host interface
- 8-bit camera interface
- Bi-directional high-speed serial interface
- I^2C-compatible control interface

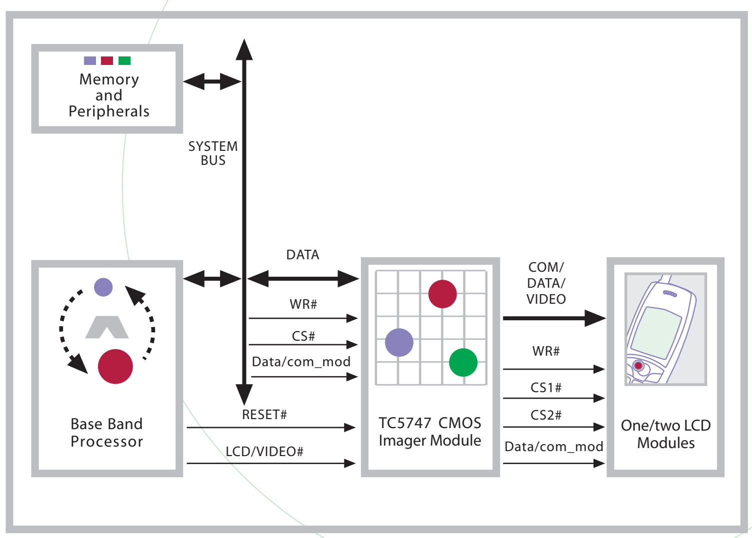
Module Package

- Miniature camera module with flex-cable or board-to-board connector
- Two-element lenses
- F/2.8 lens elements

Specifications

- VGA resolution: 640x480
- Programmable frame rate
  VGA: 1-20 fps, QVGA: 1-30 fps
- Clock frequency: on-chip PLL supports input clock speed of 3.6-32MHz
- Single power supply: 2.8V (± 10%)
- Power consumption targets:
  Capture VGA @ 15 fps: 85mW
  Preview QVGA @15 fps: 35mW
  Sleep mode: below 10µA
- 10-bit ADC
- Sensitivity: 4V/Lux-sec
- Operating temperature: -10º C to +60º C

Block Diagram



Studio Diana Churges | Rev: September 2003

TransChip

www.transchip.com