Chrontel

CH7026 TV/VGA Encoder

Features

- TV encoder targets for handheld device, surveillance camera and automobile market.

- Supports multiple output formats such as analog TV (NTSC and PAL), VGA and HDTV (480p,576p,720p, 1080i). Sync signals can be provided in separated or composite manner.

- Three on-chip 10-bit high speed DACs providing flexible output capabilities such as single, double or triple CVBS outputs, YPbPr output, RGB output and simultaneous CVBS and S-video output.

- 90/180/270 degree image rotation and vertical or horizontal flip.

- 16-Mbit SDRAM is used as a frame buffer for frame rate conversion.

- Flexible up and down scaling.

- Programmable 24-bit/18-bit/16-bit/15-bit/12-bit/8-bit digital input interface supports various RGB (RGB888, RGB666, RGB565 and etc), YCbCr (4:4:4 YCbCr, ITU656) and 2x or 3x multiplexed input. CPU interface is also supported.

- Supports flexible input resolution up to 800x800 and 1024x680.

- Pixel by pixel brightness, contrast, hue and saturation adjustment for each output is supported. (For RGB output, only brightness and contrast adjustment is supported).

- Pixel by pixel horizontal position adjustment and line by line vertical position adjustment.

- Supports CGMS-A for analog TV and HDTV

- TV/Monitor connection detection capability. DAC can be switched off based on detection result.

- Programmable power management.

- Flexible pixel clock frequency from graphics controller is supported. (2.3MHz –120MHz)

- Flexible input clock from crystal or oscillator is supported. (2.3MHz – 64MHz)

- Supports slave input clock mode only.

- Fully programmable through serial port.

- IO and SPC/SPD voltage supported is from 1.2V to 3.3V.

- Offered in BGA or QFP package.

Note: the above feature list is subject to change without notice. Please contact Chrontel for more information and current updates.
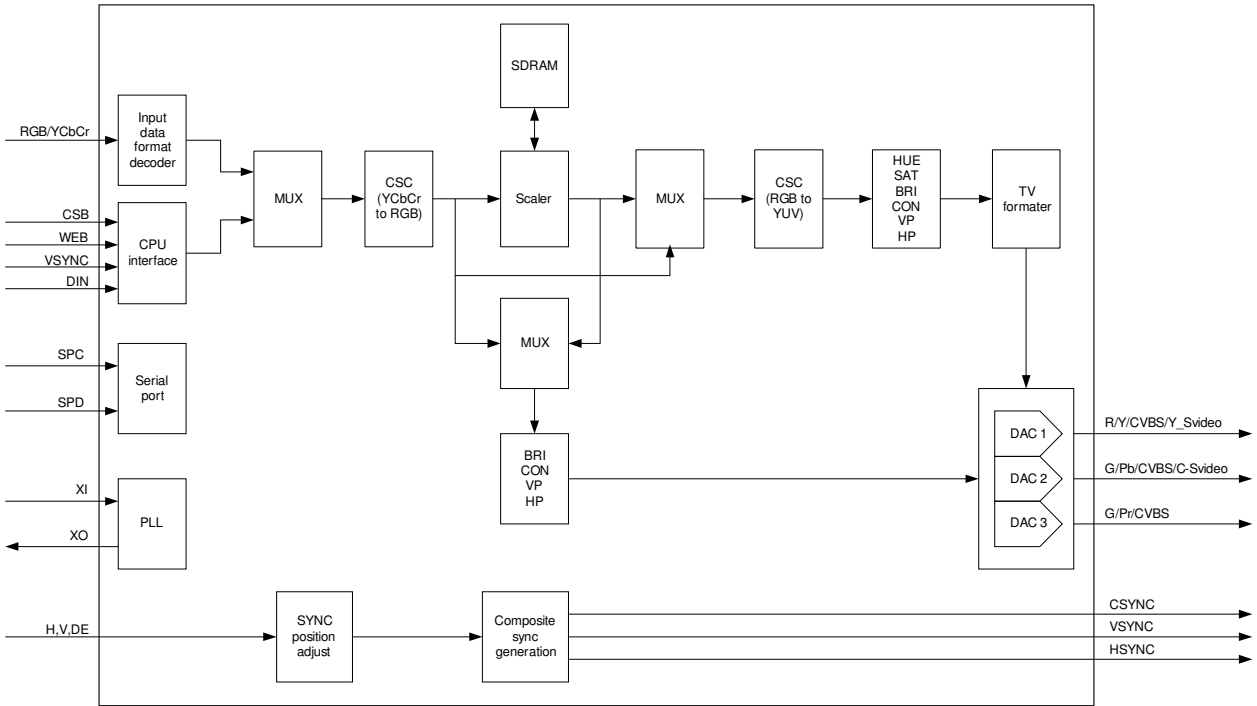
General Description

The CH7026 is a semiconductor device targeting for handheld market, surveillance camera and automobile multimedia system. This device accepts digital video signals through its 24-bit input bus and generates NTSC, PAL, VGA or HDTV (480p, 576p, 720p and 1080i) video signal by its 10-bit DACs. In addition, CH7026 has an embedded 16-Mbit SDRAM to support the CPU interface.

CH7026 has incorporated an advanced technology that can perform real-time video rotations and frame rate conversions for incoming video stream. These complicated tasks are achieved by storing video data to the internal SDRAM and applying scaling process if required. CH7026 provides great flexibility for accepting different video data formats including RGB and YCbCr (e.g. RGB565, RGB 666, RGB 888, ITU 656).

The CH7026 is available in BGA or QFP package.

Figure 1: CH7026 block diagram

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CH7026

1.0 Pin-out

1.1 Package Diagram

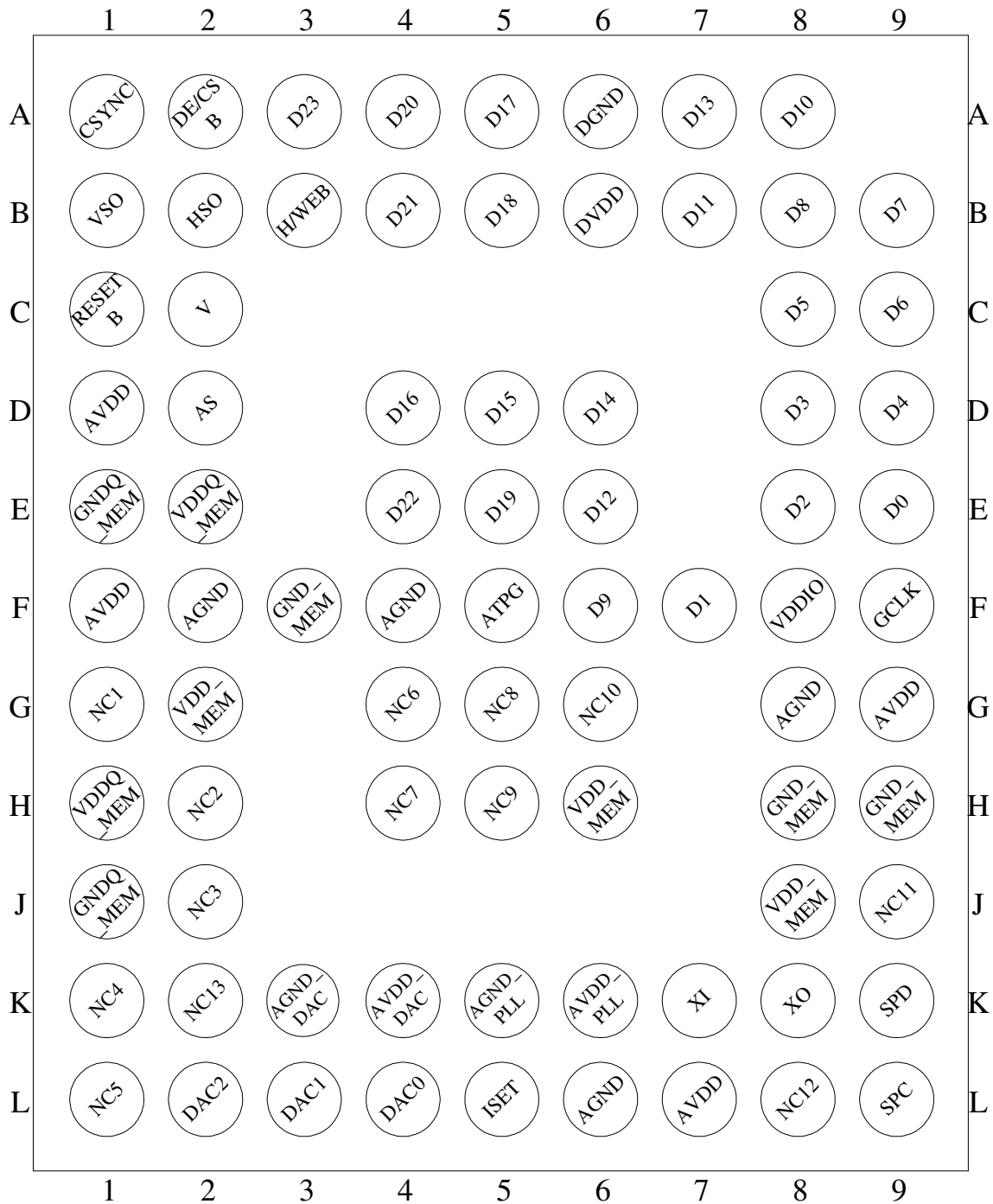#### 1.1.1 The 80-pin BGA Package Diagram

Figure 2: 80-pin BGA package
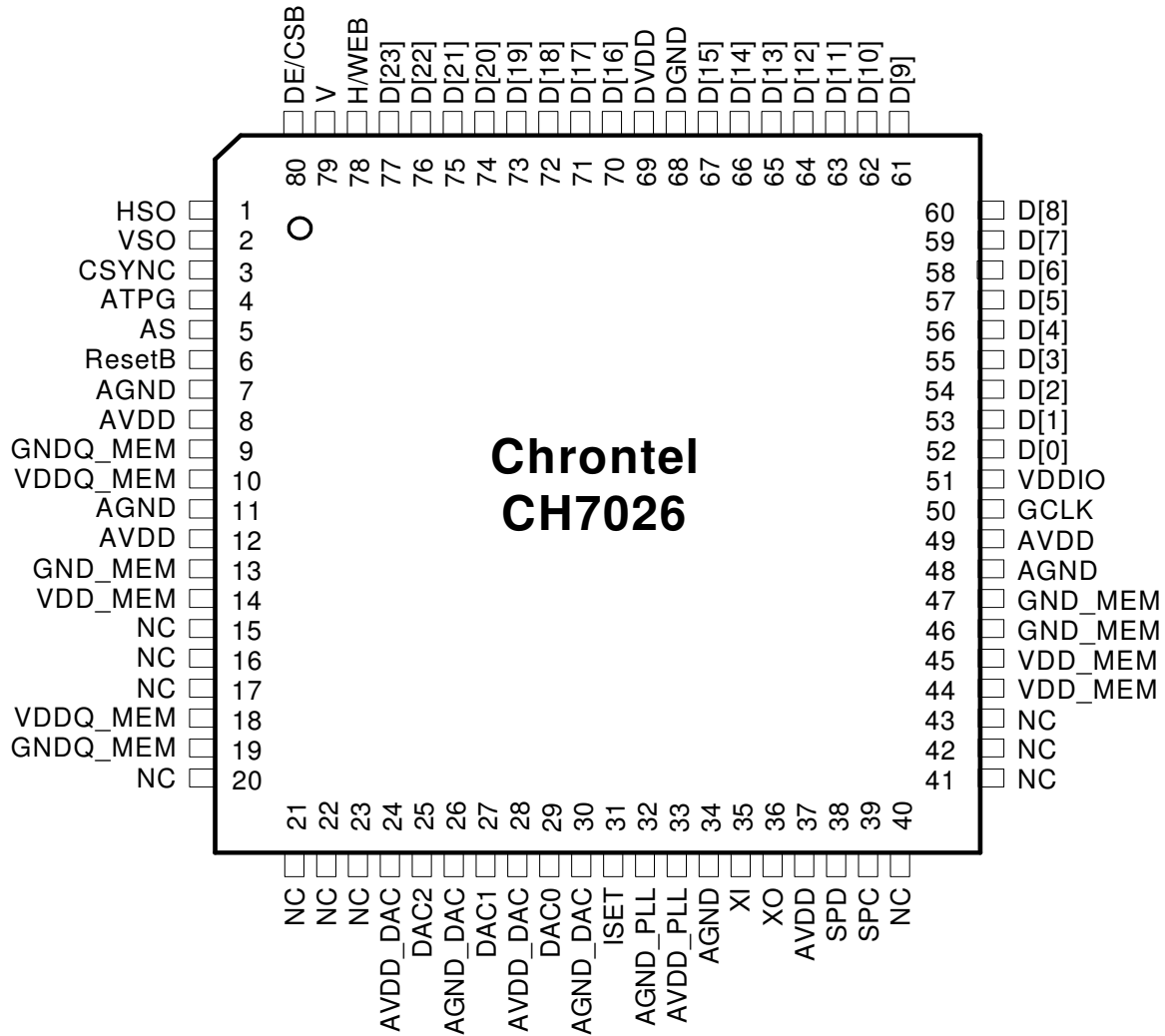
1.1.2   The 80-pin LQFP Package Diagram
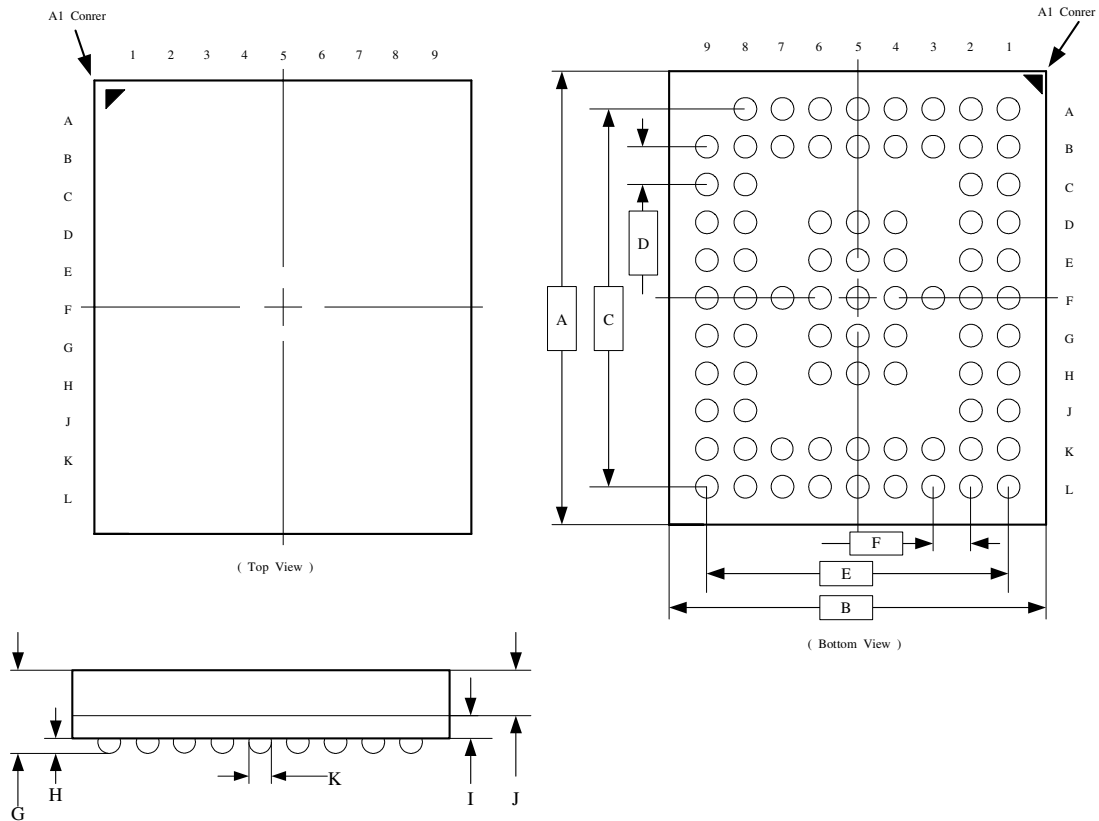

Figure 3: 80-pin LQFP package

2.0   Package Dimensions

Figure 4: 80 Pin BGA Package

Table of Dimensions

No. of Leads		SYMBOL										
80 (5 X 6 mm)		**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Milli-meters	**Min**	6.00	5.00	5.00	0.50	4.00	0.50		0.22	0.30	0.60	0.30
	Max							1.20	0.30			

Notes:

1. All dimensions conform to JEDEC standard MO-216.
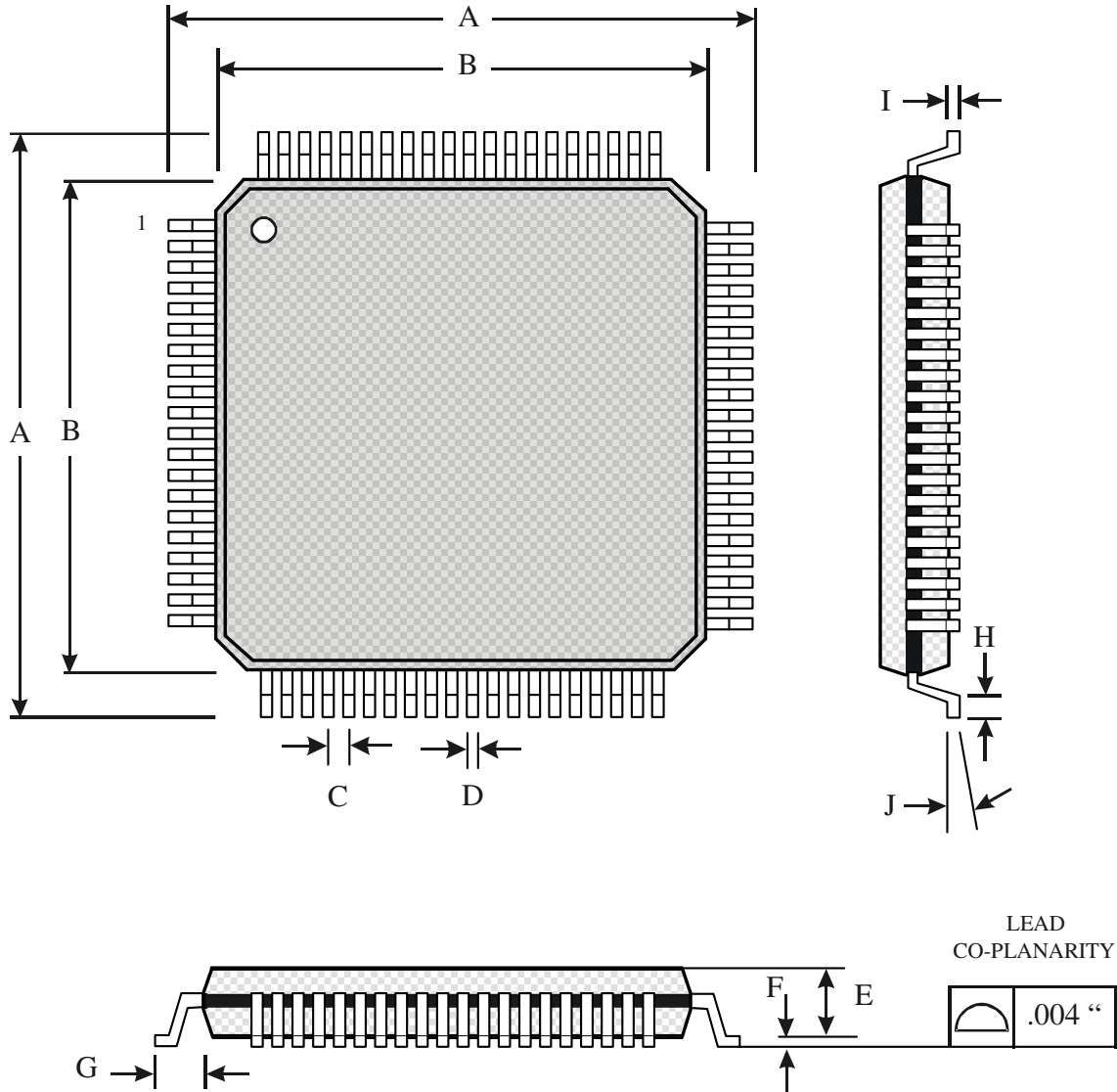
Figure 5: 80 Pin LQFP Package

Table of Dimensions

No. of Leads		SYMBOL									
80 (10 X 10 mm)		A	B	C	D	E	F	G	H	I	J
Milli-meters	MIN	11.90	9.90	0.40	0.13	1.35	0.05	1.00	0.45	0.09	0°
	MAX	12.10	10.10		0.23	1.45	0.15		0.75	0.20	7°

Notes:
1. Conforms to JEDEC standard JESD-30 MS-026D.
2. Dimension B: Top Package body size may be smaller than bottom package size by as much as 0.15 mm.
3. Dimension B does not include allowable mold protrusions up to 0.25 mm per side.

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ORDERING INFORMATION			
Part Number	**Package Type**	**Copy Protection**	**Operating Temperature Range**
CH7026B-GF	80TFBGA, Lead-free	None	Commercial : -20 to 70°C
CH7026B-GFI	80TFBGA, Lead-free	None	Industrial : -40 to 85°C
CH7026B-TF	80LQFP, Lead-free	None	Commercial : -20 to 70°C
CH7026B-TFI	80LQFP, Lead-free	None	Industrial : -40 to 85°C

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