

FEATURES

- **TV encoder**
 - VGA controller and MPEG digital encoder inputs
 - NTSC and PAL output
- **S-Video and composite video output**
 - S-Video luminance and chrominance
 - Composite video
- **Macrovision® copy protection (CL-GD1053)**
 - Macrovision® Revision 7
 - Programmable parameters
 - Enables DVD movie and DSS satellite content to be played through graphics device
- **Two-wire serial host interface**
 - Read/write access to all register resources
 - Up to 1 Mbit/sec.
- **Dynamic adaptive flicker filter processing**
 - Five tap filter
 - Text mode improves legibility
 - Graphics mode for minimum flicker
 - Movie mode for smooth picture
 - Four filter levels:
 - Two 5-tap filters
 - One 3-tap filter
 - One combination tap filter
- **Internal color bar generator**
 - 100% amplitude, 100% saturation EIA colors (NTSC)
- **WSS support for NTSC and PAL**

Digital NTSC/PAL Encoder with Flicker-Filter Preprocessor

CL-GD1052: without Macrovision®

CL-GD1053: with Macrovision® Rev. 7

OVERVIEW

The CL-GD1052/GD1053 is a digital television encoder that accepts video from a VGA controller, MPEG decoder, or DSS satellite and produces NTSC or PAL video. The CL-GD1052/GD1053 can simultaneously produce composite video and S-Video (separate luminance and chrominance).

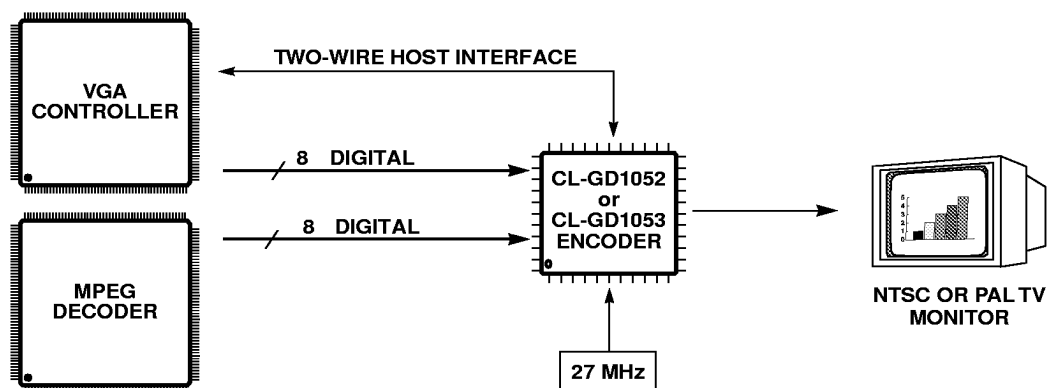
The CL-GD1053 supports Macrovision copy protection Revision 7. This industry-standard anti-copy method allows DVD- and DSS-based video to display on a TV while simultaneously defeating attempts to make a usable video tape copy.

The CL-GD1052/GD1053 incorporates a two-wire serial host interface that provides read/write access to all programmable registers. This interface operates internally at 27 MHz, allowing a relatively high data transfer rate.

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System Block Diagram



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FEATURES (cont.)

- **Localization software support**
- **Video window**
 - Allows video within video
 - Programmable position and size
- **Scaling**
 - Horizontal upscaling and downscaling
 - Vertical downscaling
 - Input formats from 320 × 400 to 800 × 600
 - Scales to NTSC or PAL
- **Closed caption insertion (NTSC)**
 - Line 21 and/or 284
- **Power down by software or PDN pin**
- **Interrupt request output**
 - Closed caption line 21
 - Closed caption line 284
 - Every video field
- **Cost-effective 44-pin PLCC package**

OVERVIEW (cont.)

The CL-GD1052/GD1053 incorporates an intelligent adaptive flicker-filter processor. This processor dynamically selects one of four filters based on the local two-dimensional picture content. This allows more flicker filtering in picture areas where it is useful, while minimizing the loss in resolution in areas where filtering is not necessary. Also included is a text mode that improves legibility, and a movie mode that provides a more pleasing blended picture on the TV screen.

A programmable video window allows two video streams to be displayed simultaneously. The size and position of the window can be programmed into internal registers in the CL-GD1052/GD1053.

The CL-GD1052/GD1053 accepts a number of input formats (from 320 × 400 up to 800 × 600) and scales them to interlaced NTSC or PAL.

Software Support

- **BIOS support**
 - Autodetection of TV or monitor
 - VGA Compatibility modes to 800 × 600
 - PC97 compliant (entertainment PC97)
- **OS support**
 - Windows® 95, Windows 97
 - NT 4.0, 5.0
- **TV-Out tab on display properties**
 - Centering
 - NTSC/PAL
 - Test pattern
 - Filter selection
 - TV-display adjustments (luminance)

TV Standards

Standard	Device Support	BIOS ^a Support
NTSC-M	✓	✓
PAL-B, G	✓	—
PAL-H	✓	—
PAL-I	✓	—
PAL-N (Argentina)	✓	—
PAL-N (non-Argentina)	✓	—
PAL-D	✓	—
PAL-M	✓	—
NTSC-N	No	No
SECAM	No	No

^a Initial product offering.

Typical VGA Display Formats

Input Format	Active Pixels	DOT_CLKX2	Scaled Output Size	Vertical Scaling	Horizontal Scaling
Interlaced NTSC	$720 \times 480/2$	27.000	$720 \times 480/2$	5/5	1.00000
Interlaced PAL	$720 \times 576/2$	27.000	$720 \times 576/2$	5/5	1.00000
Non-interlaced NTSC	320×400	24.924	$580 \times 400/2$	5/5	1.81250
	360×400	27.692	$580 \times 400/2$	5/5	1.61111
	400×600	41.236	$640 \times 428/2$	5/7	1.60000
	512×768	64.800	$640 \times 426/2$	5/9	1.25000
	640×350	44.308	$508 \times 350/2$	5/5	0.79375
	640×400	44.308	$580 \times 400/2$	5/5	0.90625
	640×480	44.308	$692 \times 480/2$	5/5	1.08125
	640×480	54.982	$580 \times 400/2$	5/6	0.90625
	720×400	49.090	$580 \times 400/2$	5/5	0.80556
	800×600	77.538	$640 \times 482/2$	5/7	0.80000
Non-interlaced PAL	320×400	24.750	$502 \times 400/2$	5/5	1.56875
	360×400	27.500	$502 \times 400/2$	5/5	1.39444
	400×600	35.100	$588 \times 500/2$	5/6	1.47000
	512×768	57.600	$580 \times 480/2$	5/8	1.13281
	640×350	44.000	$440 \times 350/2$	5/5	0.68750
	640×400	44.000	$502 \times 400/2$	5/5	0.78438
	640×480	44.000	$580 \times 480/2$	5/5	0.90625
	720×400	49.000	$502 \times 400/2$	5/5	0.69722
	800×600	66.000	$588 \times 500/2$	5/6	0.73500