

# LM98620

## 10-bit 70 MSPS 6 Channel Imaging Signal Processor with LVDS Output

### General Description

The LM98620 is a fully integrated, 10-Bit, 70 MSPS signal processing solution for high performance digital color copiers, scanners, and other image processing applications. High-speed signal throughput is achieved with an innovative six channel architecture utilizing Correlated Double Sampling (CDS), or Sample and Hold (SH) type sampling. 1x or 2x gain settings are available in the CDS/SH input stage. Each channel has a dedicated 1x to 10x (8 bit) PGA that allows accurate gain adjustment of each channel. The Digital White Level auto calibration loop can automatically set the PGA value to achieve a selected white target level. Each channel also has a  $\pm 4$  bit coarse and  $\pm 10$ -bit fine analog offset correction DAC that allows offset correction before the sample-and-hold amplifier. These correction values can be controlled by an automated Digital Black Level correction loop. The PGA and offset DACs for each channel are programmed independently allowing unique values of gain and offset for each of the six channels. A 2-to-1 multiplexing scheme routes the signals to three 70MHz high performance ADCs. The fully differential processing channels achieve exceptional noise immunity, having a very low noise floor of -68.5dB. The 10-bit analog-to-digital converters have excellent dynamic performance making the LM98620 transparent in the image reproduction chain.

### Features

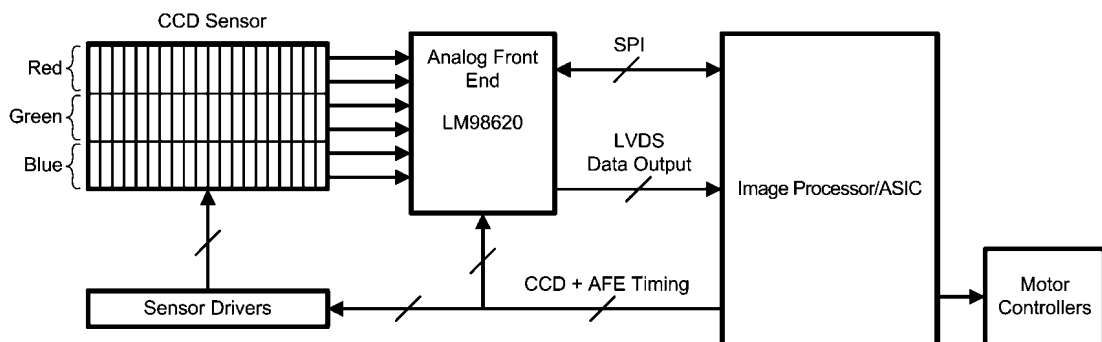
- 3.3V Single Supply Operation
- CDS or S/H Processing
- 35 MHz Channel Rate
- Enhanced ESD Protection on Timing, Control and LVDS Pins

- Low Power CMOS Design
- 12 pin to 16 pin (selectable) LVDS serialized data output
- 4-Wire Serial interface
- 2 Channel Symmetrical Architecture
- Independent Gain and Offset Correction for each Channel
- Digital Black Level Calibration for each Channel
- Digital White Level Calibration for each Channel
- Programmable Input Clamp

### Key Specifications

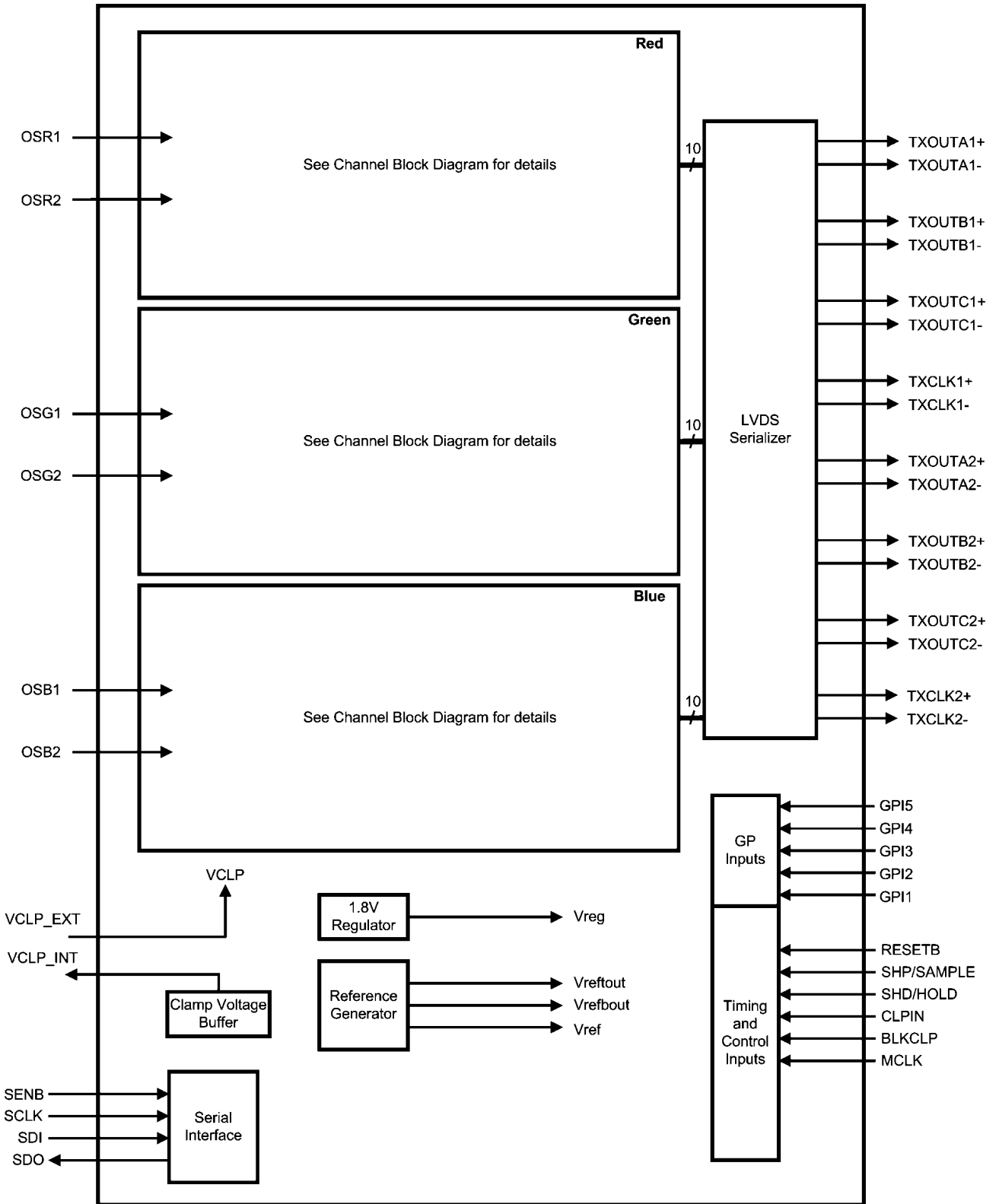
- Maximum Input Level 1.2 Vp-p (CDS gain = 1.0)  
0.58 Vp-p (CDS gain = 2.0)
- Input Sample Rate 5 to 35 MSPS - 6ch mode  
10 to 35 MSPS - 3ch mode
- PGA Gain Range 1x to 10x (0 to 20 dB)
- CDS/SH Gain Settings 1x or 2.1x
- Total Channel Gain 1x to 21x (0 to 26 dB)
- PGA Gain Resolution 8 bits - Analog
- ADC Resolution 10 bits
- ADC Sampling Rate 10 to 70 MSPS
- SNR 68.5 dB (Gain = 1x)
- Offset DAC Range  $\pm 111$  mV or  $\pm 59.5$  mV- FDAC  
 $\pm 281$  mV - CDAC
- Offset DAC Resolution  $\pm 10$  bits - FDAC  
 $\pm 4$  bits - CDAC
- Supply voltage 3.0V to 3.6V
- Power Dissipation 1.02 W (typical)

### System Block Diagram



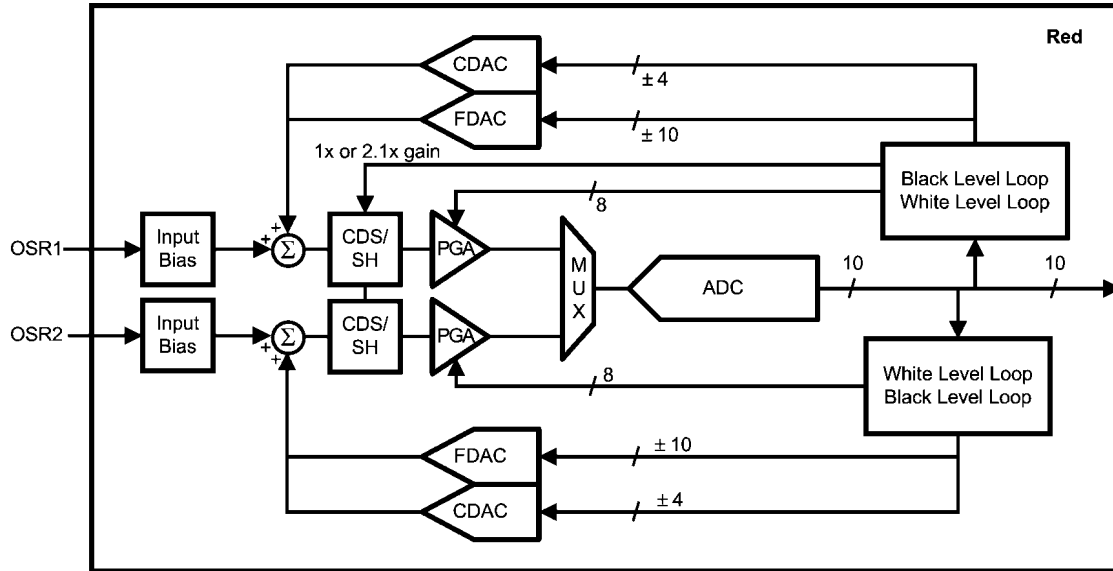
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# Chip Block Diagram



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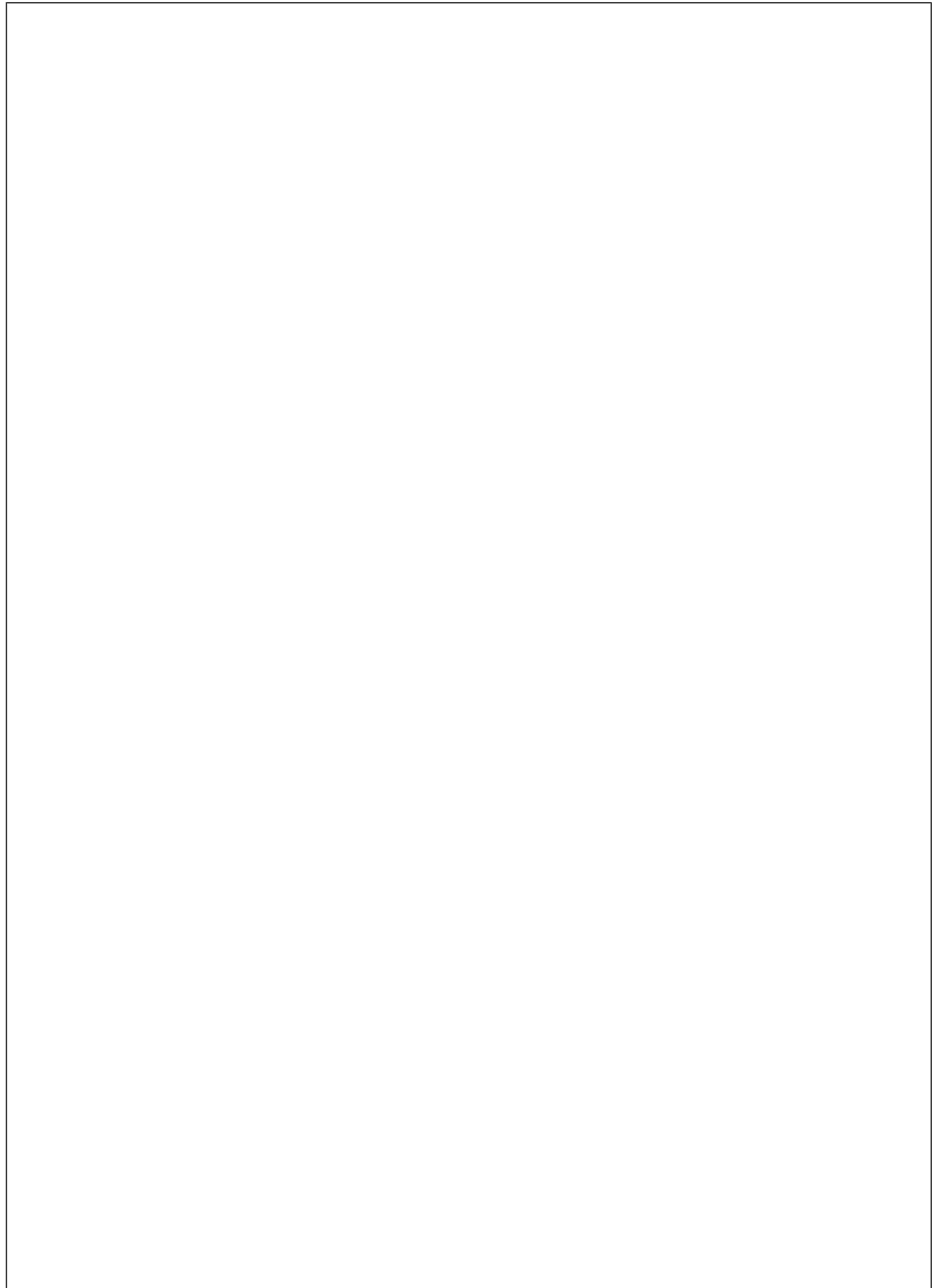
### Channel Block Diagram



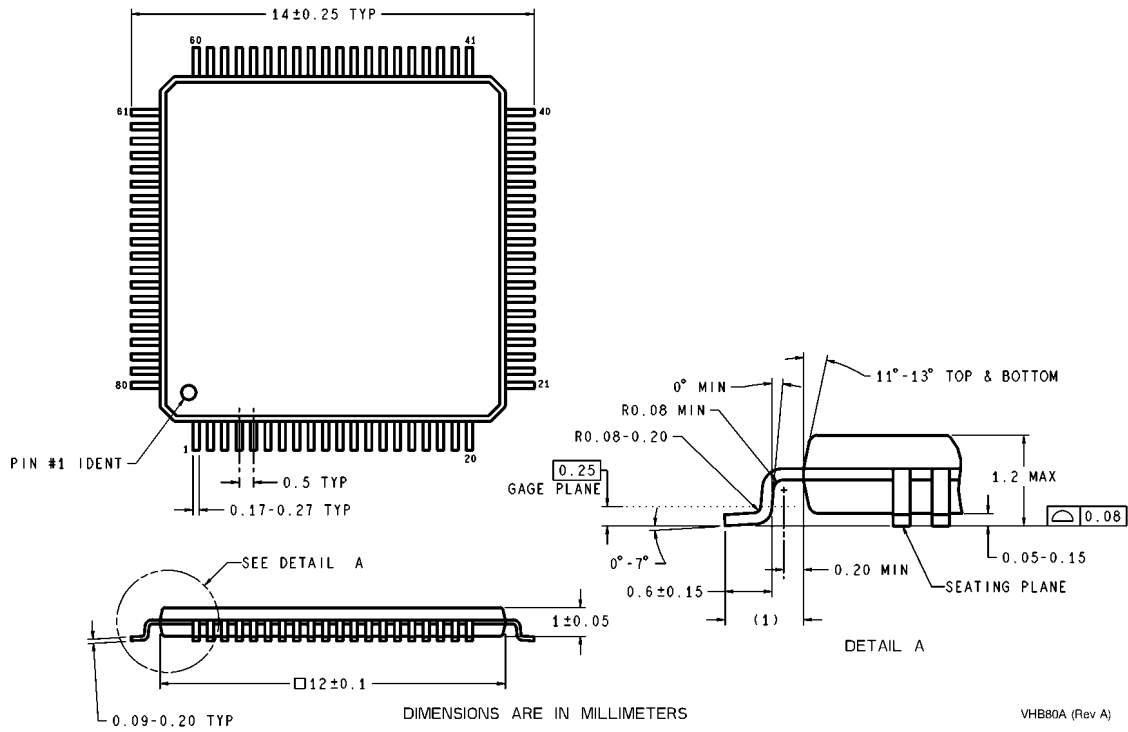
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### Ordering Information

Commercial Temperature Range	NS Package
LM98620VHB	80-Pin TQFP



**Physical Dimensions** inches (millimeters) unless otherwise noted



**80-Lead TQFP**  
**NS Package Number VHB80A**

## Notes

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LVDS	<a href="http://www.national.com/lvds">www.national.com/lvds</a>	Reference Designs	<a href="http://www.national.com/refdesigns">www.national.com/refdesigns</a>
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Switching Regulators	<a href="http://www.national.com/switchers">www.national.com/switchers</a>		
LDOs	<a href="http://www.national.com/ldo">www.national.com/ldo</a>		
LED Lighting	<a href="http://www.national.com/led">www.national.com/led</a>		
PowerWise	<a href="http://www.national.com/powerwise">www.national.com/powerwise</a>		
Serial Digital Interface (SDI)	<a href="http://www.national.com/sdi">www.national.com/sdi</a>		
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