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# LM98519

## 10-bit 65 MSPS 6 Channel Imaging Signal Processor

### General Description

The LM98519 is a fully integrated, high performance 10-Bit, 65 MSPS signal processing solution for 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 65MHz high performance ADCs. The fully differential processing channels achieve exceptional noise immunity, having a very low noise floor of -68dB. The 10-bit analog-to-digital converters have excellent dynamic performance making the LM98519 transparent in the image reproduction chain.

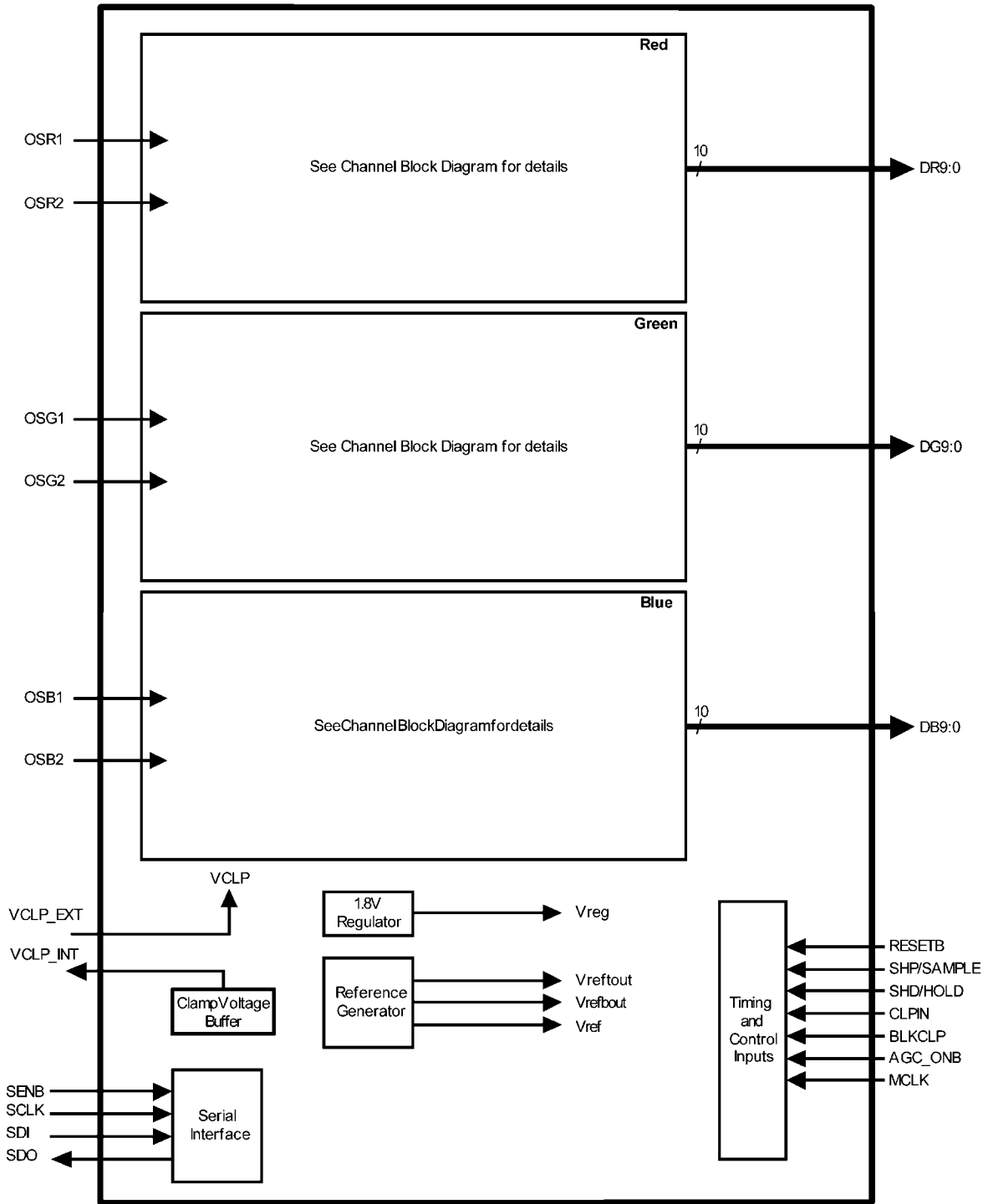
### Features

- 3.3V Single Supply Operation
- CDS or S/H Processing with Negative Input Signal Polarity
- 32.5 MHz Channel Rate
- Enhanced ESD Protection on Timing and Control Pins
- Low Power CMOS Design
- 4-Wire Serial interface
- 2 Channel Symmetrical Architecture
- Independent Gain & Offset Correction for each Channel
- Digital Black Level Calibration for each Channel
- Digital White Level Calibration for each Channel
- Programmable Input Clamp

### Key Specifications

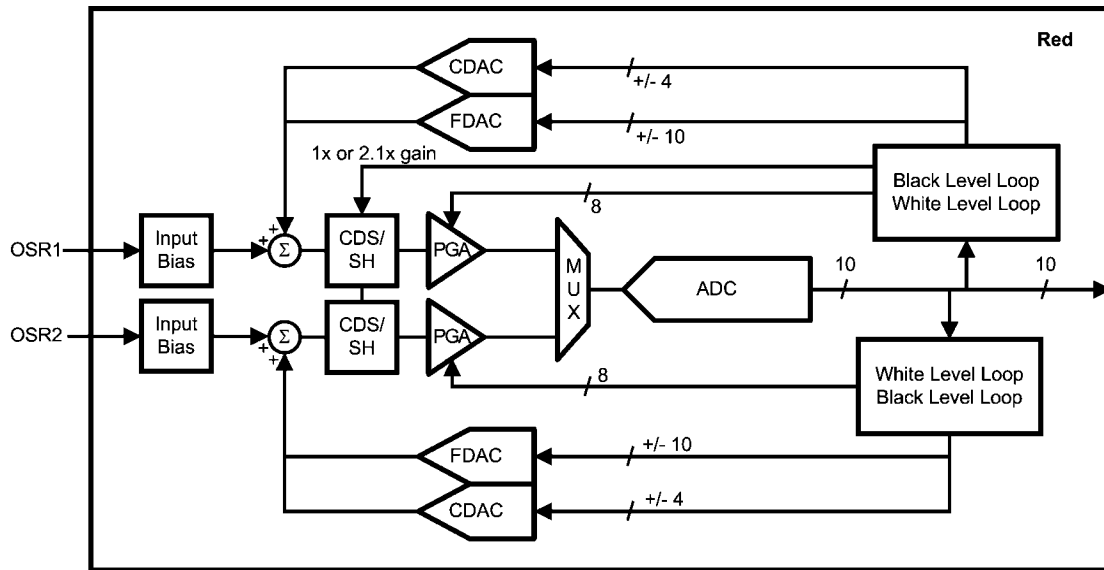
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|-------------------------|------------------------------------|
| ■ Maximum Input Level   | 1.19 Vp-p (CDS gain = 1.0)         |
| ■                       | 0.58 Vp-p (CDS gain = 2.1)         |
| ■ Input Sample Rate     | 5 to 32.5 MSPS - 6ch mode          |
| ■                       | 10 to 32.5 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 20x (0 to 26 dB)             |
| ■ PGA Gain Resolution   | 8 bits - Analog                    |
| ■ ADC Resolution        | 10 bits                            |
| ■ ADC Sampling Rate     | 10 to 65 MSPS                      |
| ■ SNR                   | 68 dB (Gain = 1x)                  |
| ■ Offset DAC Range      | $\pm 111$ mV or $\pm 60$ mV - FDAC |
| ■                       | $\pm 277$ mV - CDAC                |
| ■ Offset DAC Resolution | $\pm 10$ bits - FDAC               |
| ■                       | $\pm 4$ bits - CDAC                |
| ■ Supply voltage        | 3.0V to 3.6V                       |
| ■ Power Dissipation     | 1.04 W (typical)                   |

# Chip Block Diagram



30032201

## Channel Block Diagram

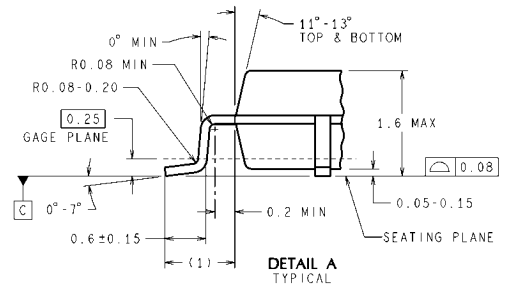
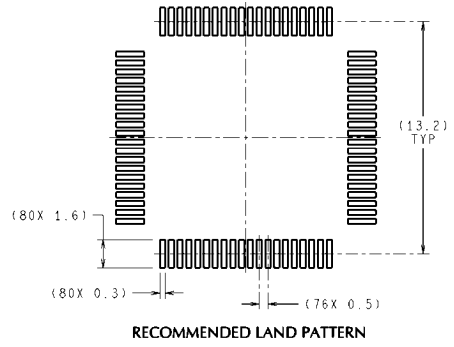
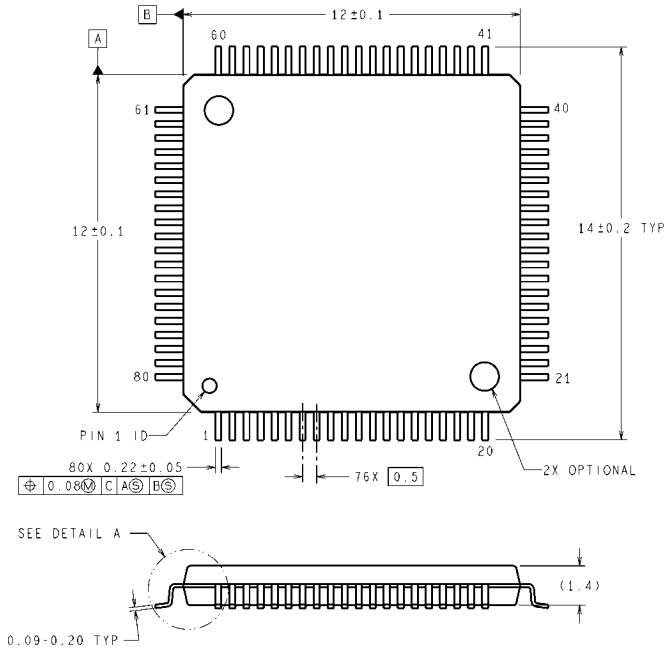


30032202

## Ordering Information

Commercial Temperature Range	NS Package
LM98519VHB	80-Pin TQFP

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



DIMENSIONS ARE IN MILLIMETERS  
DIMENSIONS IN ( ) FOR REFERENCE ONLY

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

VHG80A (Rev E)

# Notes

LM98519

## Notes

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Interface	<a href="http://www.national.com/interface">www.national.com/interface</a>	Quality and Reliability	<a href="http://www.national.com/quality">www.national.com/quality</a>
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>
Power Management	<a href="http://www.national.com/power">www.national.com/power</a>	Feedback	<a href="http://www.national.com/feedback">www.national.com/feedback</a>
Switching Regulators	<a href="http://www.national.com/switchers">www.national.com/switchers</a>		
LDOs	<a href="http://www.national.com/lido">www.national.com/lido</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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