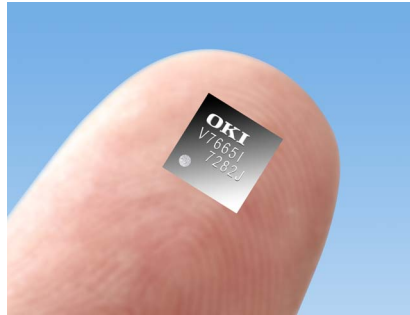


## OkI Semiconductor develops the world's smallest video decoder

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Guaranteed operation at -40°C to +85°C, compact package, single power supply, and low power consumption



ML86V76651 (W-CSP)

OkI Semiconductor has developed the ML86V7665, the world's smallest video decoder and lowest-power consumption LSI, to support three TV signal formats (NTSC, PAL, and SECAM) (Note 1). The compact dimensions of the LSI—the world's smallest, based on our figures—is achieved by using a single power supply (1.8 V) and an ultracompact 3.8 x 3.7 mm W-CSP (Note 2), which is 60% smaller than conventional mold packages. This LSI is guaranteed to operate across a temperature range of -40°C to +85°C, well beyond the requirements for typical household applications. The new LSI will help reduce the number of parts required for and reduce the size of PCBs used in security camera systems and vehicle-mounted camera systems, as well as reduce costs. To meet various design requirements, the ML86V76651 is available in the widely used 36-pin WQFN and 48-pin TQFP packages, as well as the ultracompact 36-pin W-CSP.

Sample shipments are scheduled for June 2009 and a full-scale product launch is scheduled for September 2009.

### Development background

Demand for safety and security is growing worldwide. An increasingly wide range of buildings and shops is being equipped with systems to enhance security, while vehicles are being equipped with camera systems to prevent traffic accidents. Demand for surveillance video systems is soaring. These systems must often fit into tight spaces, increasing demand for compact video decoders operating from a single compact power supply.

The ML86V76651 was developed to meet these needs. This video decoder LSI supports all three standard world TV signal formats and operates across a range of temperatures much harsher than those encountered

in average households. The compact package runs from a single power supply, and offers low power consumption.

## Features

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### **Supports the world's three standard TV signal formats**

Supports NTSC, PAL, and SECAM for compatibility with image devices worldwide.

### **Supports three pixel frequencies**

Supports three pixel frequencies (Note 4): NTSC square pixel (12.272727 MHz) (Note 3), PAL square pixel (14.75 MHz) (Note 3), and the ITU-R BT.601 (13.5 MHz) international standard.

### **Ultracompact dimensions and a single power supply**

Available in the ultracompact 36-pin W-CSP (3.8 x 3.7 mm) and the widely-used 36-pin WQFN (6 x 6 mm) and 48-pin TQFP (7 x 7 mm) configurations. Runs from a single power supply (1.8 V).

### **Reliability across the full range of potential in-vehicle temperatures**

Guaranteed to operate across a range of temperatures from -40°C to +85°C for adaptability to outdoor security systems and vehicle-mounted systems as well as TV systems.

### **Stable operation even with analog terrestrial signals in poor signal environments**

Making the most of our experience with vehicle-mounted TVs, this system achieves high synchronization stability to provide stable images even in poor signal environments (e.g., areas with weak signals) (Note 5).

## Future developments

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Oki Semiconductor will continue to expand its lineup of image processing LSIs for security systems and vehicle-mounted camera system markets, including multi-channel video decoders.

## Sales plan

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### **Product name**

ML86V76651

### **Sample shipment**

June 2009

### **Evaluation board (rental)**

September 2009

### **Evaluation board (for sale)**

September 2009 (100,000 yen, excluding tax, with software for PC control)

### **Product launch**

September 2009

## Overview/features

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- Supported video systems: NTSC, PAL, and SECAM
- Number of input analog video signals: Two inputs for composite video signals (Note 6) (built-in video switch)
- AD converter: One built-in 10-bit ADC circuit
- Pixel frequency [sampling frequency]  
NTSC (ITU-R BT.601): 13.5 MHz [27 MHz]  
NTSC (Square Pixel): 12.272727 MHz [24.545454 MHz]  
PAL/SECAM (ITU-R BT.601): 13.5 MHz [27 MHz]  
PAL/SECAM (Square Pixel): 14.75 MHz [29.5 MHz]
- Output data format  
ITU-R BT.656-4  
YCbCr 4:2:2 8-bit multiple + synchronizing signal
- Y/C separation: Two-dimensional Y/C separation filter
- Operating temperature range: -40°C to +85°C
- Supply voltage: I/O 1.8 V/3.3 V, Core 1.8 V, Analog 1.8 V, PLL 1.8 V  
(1.8-V single power supply (3.3 V may be applied for I/O power))
- Package: 36-pin W-CSP (3.8 x 3.7 mm), 36-pin WQFN (6 x 6 mm), and 48-pin TQFP (7 x 7 mm)

## Glossary

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- Note 1: TV signal formats  
NTSC: Analog TV signal format used primarily in North America, Japan, Korea, and Taiwan  
PAL: Analog TV signal format used primarily in Europe and the PRC.  
SECAM: Analog TV signal format used primarily in France and in Northern Europe
- Note 2: W-CSP (Wafer-level Chip Size Package)  
The technique of packaging an integrated circuit at the wafer level, resulting in an LSI package having almost the same dimensions as the chip.
- Note 3: Square pixels  
The preferred pixel shape for image processing. Requires no conversion of horizontal to vertical ratios for display on an LCD panel or PC monitor. Sampling a video signal at a square pixel frequency results in square image data, eliminating the need to convert horizontal to vertical ratios.
- Note 4: Pixel frequency  
Frequency at which pixels are sampled when a video signal is converted into a digital signal. If an NTSC signal is sampled at a pixel frequency of 13.5 MHz, the data obtained will have 858 pixels per horizontal line (effective pixels: 720). The frequency of 13.5 MHz is a common pixel frequency specified by the ITU-R BT.601 international standard. However, to allow display on an LCD panel or PC monitor, the horizontal to vertical ratio must be converted to obtain square pixels. The resulting image may otherwise be compressed vertically or laterally—for example, like squeezing a circle into an oval. As

mentioned in Note 3, square pixels are preferred for image processing, since no horizontal to vertical ratio conversion is needed to display the image data on an LCD panel or PC monitor. If an NTSC signal is sampled at a square pixel frequency, the data obtained will have 780 pixels per horizontal line (effective pixels: 640).

- Note 5: Poor signal environment

An environment in which analog terrestrial signals are weak due to the distance from a signal tower or due to obstructions such as mountains, resulting in noisy images.

- Note 6: Composite video signal

A composite of the brightness signal (Y) and the color signal (C). This system is used in TV broadcasting and widely used in video systems.

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