

**GENERAL DESCRIPTION**

The ML87V2107, which comprises a 7M bit frame memory, noise reduction filter, and memory controller, can achieve frame recursive noise reduction and frame synchronization of video signals. The noise reduction is performed by making three correlations (those of frames, fields, and lines) and more effectively performed by suppressing the afterimage resulted from 3D noise reduction. The ML87V2107 is capable of automatic setting of optimum noise reduction by measuring the noise of input video data.

The ML87V2107 has a noise reduction function with the 3-line 2DLPF method on the memory input side, and also has a function to reduce residual noise resulted from 3-D noise reduction and block and mosquito noise caused by video image compressed according to MPEG. The ML87V2107, which is provided with the frame synchronization function, can output Sync. Signals in fully asynchronous mode.

**FEATURES**

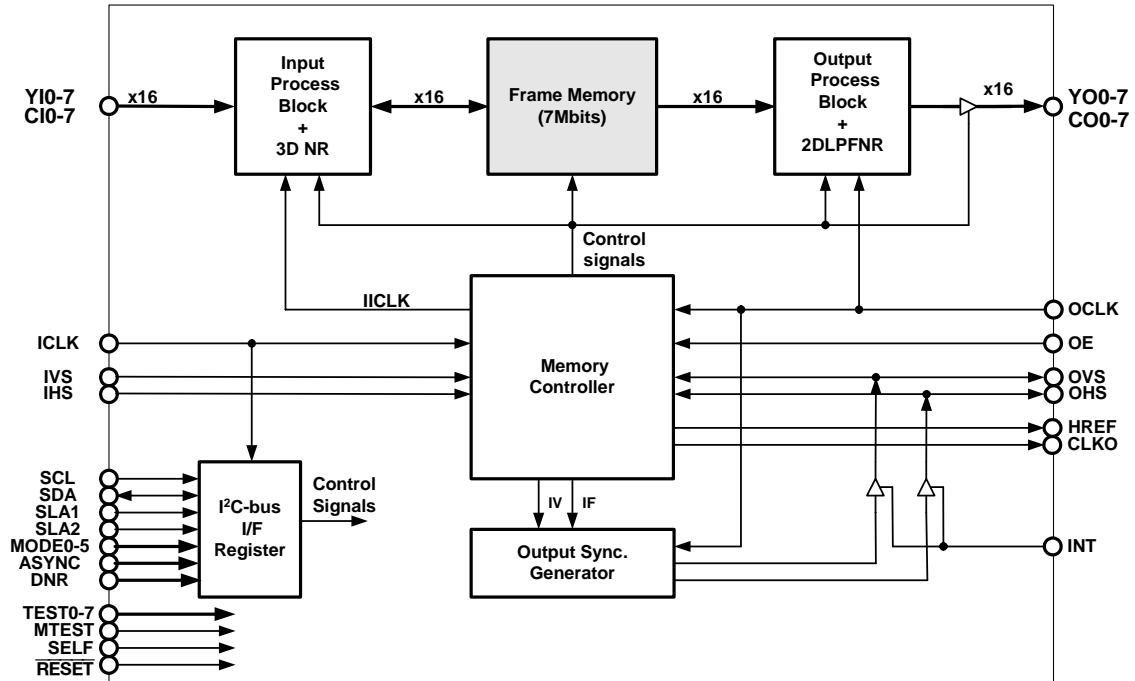
- Built-in memory:
  - Frame memory (4:2:2 data equivalent) × 1 unit
- Maximum input operating frequencies (16 bit/8 bit ITU-R BT.656):
  - 14.75/29.5 MHz
- Maximum output operating frequencies (16 bit/8 bit ITU-R BT.656):
  - 14.75/29.5 MHz
- Power supply voltage:
  - 3.3 V ± 0.3 V
- Input data format (YCbCr 4:2:2):
 

YCbCr (8 bit (Y) + 8 bit (CbCr) + Sync.):	16-bit mode
YCbCr (8 bit (YCbCr) + Sync.):	8-bit mode
ITU-R BT.656 (8 bit (YCbCr)):	ITU-R BT.656 mode
- Output data format (YcbCr 4:2:2):
 

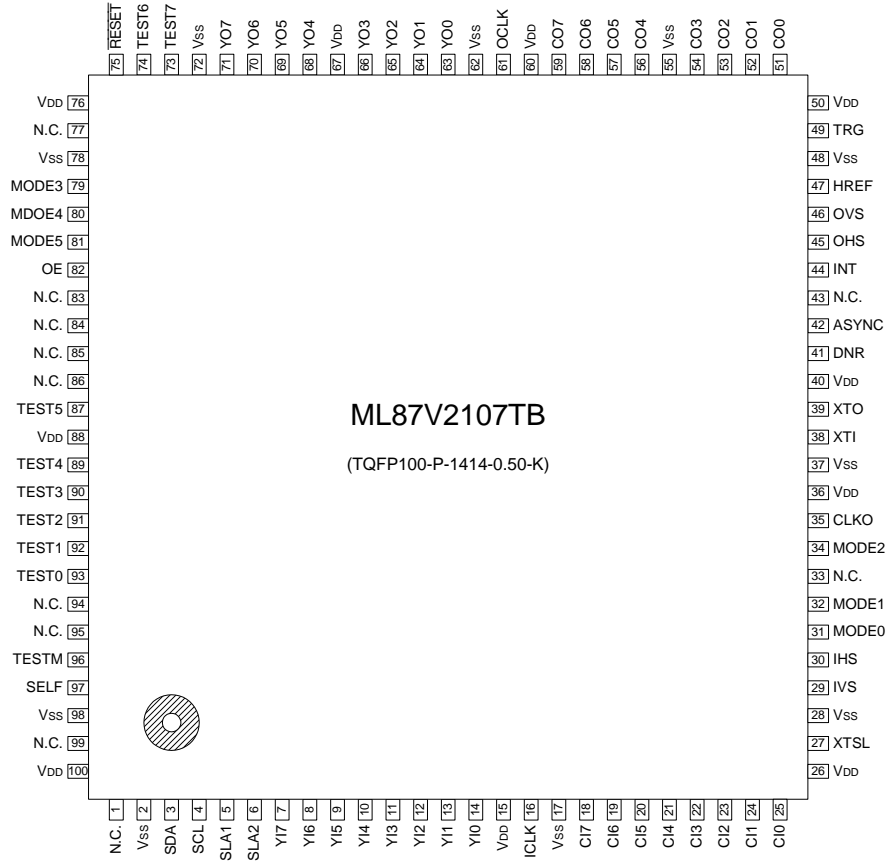
YCbCr (8 bit (Y) + 8 bit (CbCr) + Sync.):	16-bit mode
YCbCr (8 bit (YCbCr) + Sync.):	8-bit mode
ITU-R BT.656 (8 bit (YCbCr)):	ITU-R BT.656 mode
- Serial bus:
  - I<sup>2</sup>C-bus interface: (Standard mode: 100 kbps/Fast mode: 400 kbps)
- Internal memory controller:
  - Input: Compatible with 625/50 Hz 2:1, 525/60 Hz 2:1
  - Output: Compatible with 625/50 Hz 2:1, 525/60 Hz 2:1
  - Compatible horizontal effective pixels: 640 pixels (525-line mode only), 720 pixels and 768 pixels

- Sync. signal generator function:  
625/50Hz 2:1 and 525/60Hz 2:1 sync. signal generation possible  
Number of valid horizontal pixels that are supported: 640 pixels (525-line mode only), 720 pixels and 768 pixels  
Synchronization can be selected between input vertical synchronization and complete asynchronization (for the frame synchronization function).
- Frame recursive type (3D) noise reduction function:  
Noise subtraction type using frame recursive type noise detection  
Auto setting noise reduction is possible (input data noise detection feedback)
- 2DLPF method noise reduction function:  
Luminance: 3 lines x 5 pixels  
Chrominance: 3 lines x 3 pixels
- Frame synchronization function:  
Overtaking compensation function  
Input/output delay difference of 4H (minimum) to frame +4H (maximum)
- Frozen picture output function:  
Selectable between frame frozen pictures and field frozen pictures
- Package:  
100 pin TQFP (TQFP100-P-1414-0.50-K)

**BLOCK DIAGRAM**



**PIN CONFIGURATION (TOP VIEW)**

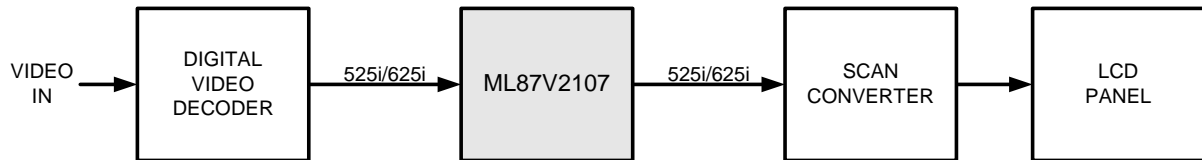


**APPLICATION USAGE EXAMPLES**

○ Usage Example 1: FPD-TV

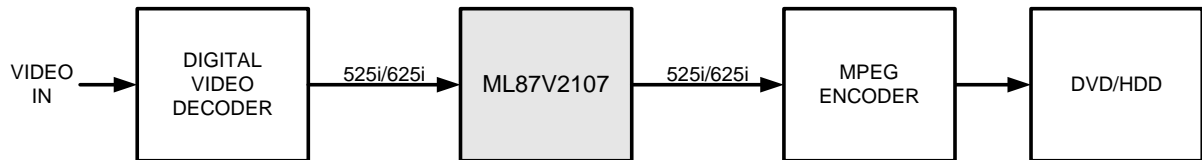
Function used: 3DNR + 2DNR

※ The reduction of MPEG noise is possible by 2DNR.



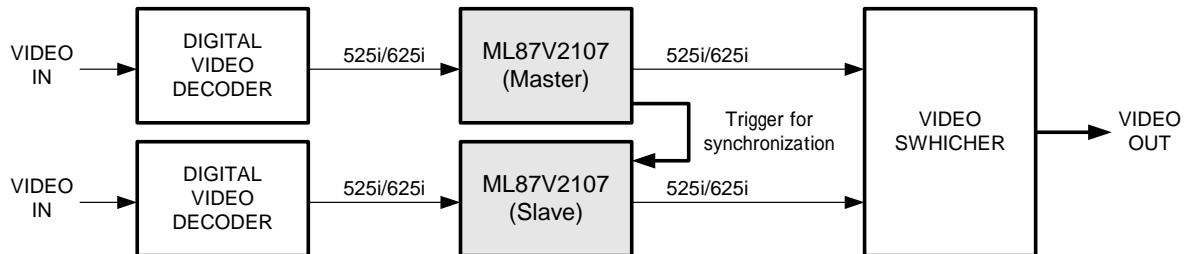
○ Usage Example 2: Digital recorder and PC capture

Function used: 3DNR + frame synchronization function (master mode)



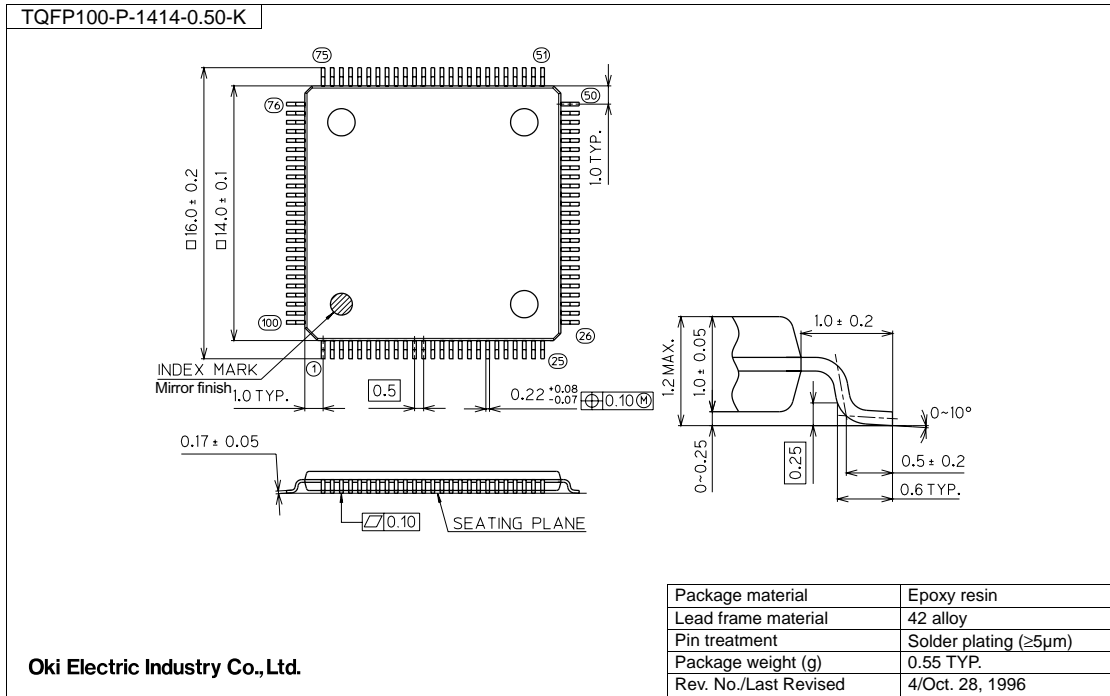
○ Usage Example 3: Video switcher (for multi-channel synchronization)

Function used: 3DNR + frame synchronization function (master/slave mode)



**PACKAGE DIMENSIONS**

(Unit: mm)



**Notes for Mounting the Surface Mount Type Package**

The surface mount type packages are very susceptible to heat in reflow mounting and humidity absorbed in storage. Therefore, before you perform reflow mounting, contact Oki's responsible sales person for the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

**REVISION HISTORY**

Document No.	Date	Page		Description
		Previous Edition	Current Edition	
PEDL87V2107DIGEST-01	Feb. 14, 2005	–	–	Preliminary edition 1

NOTICE

1. The information contained herein can change without notice owing to product and/or technical improvements. Before using the product, please make sure that the information being referred to is up-to-date.
2. The outline of action and examples for application circuits described herein have been chosen as an explanation for the standard action and performance of the product. When planning to use the product, please ensure that the external conditions are reflected in the actual circuit, assembly, and program designs.
3. When designing your product, please use our product below the specified maximum ratings and within the specified operating ranges including, but not limited to, operating voltage, power dissipation, and operating temperature.
4. Oki assumes no responsibility or liability whatsoever for any failure or unusual or unexpected operation resulting from misuse, neglect, improper installation, repair, alteration or accident, improper handling, or unusual physical or electrical stress including, but not limited to, exposure to parameters beyond the specified maximum ratings or operation outside the specified operating range.
5. Neither indemnity against nor license of a third party's industrial and intellectual property right, etc. is granted by us in connection with the use of the product and/or the information and drawings contained herein. No responsibility is assumed by us for any infringement of a third party's right which may result from the use thereof.
6. The products listed in this document are intended for use in general electronics equipment for commercial applications (e.g., office automation, communication equipment, measurement equipment, consumer electronics, etc.). These products are not, unless specifically authorized by Oki, authorized for use in any system or application that requires special or enhanced quality and reliability characteristics nor in any system or application where the failure of such system or application may result in the loss or damage of property, or death or injury to humans.  
Such applications include, but are not limited to, traffic and automotive equipment, safety devices, aerospace equipment, nuclear power control, medical equipment, and life-support systems.
7. Certain products in this document may need government approval before they can be exported to particular countries. The purchaser assumes the responsibility of determining the legality of export of these products and will take appropriate and necessary steps at their own expense for these.
8. No part of the contents contained herein may be reprinted or reproduced without our prior permission.

Copyright 2005 Oki Electric Industry Co., Ltd.