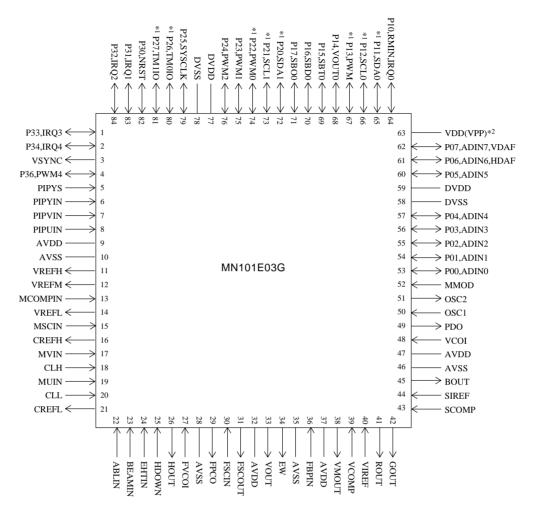
■ MN101E03G

Туре	MN101E03G [ES (Engineering sample available)]		
ROM (×16-bit)	128 K		
RAM (×16-bit)	4 K		
Package	QFP084-P-1818E *Lead-free		
Minimum Instruction Execution Time	100 ns (at 3.135 V to 3.465 V, normal-mode)		
Interrupts	External (7 lines) Internal (13 lines): Timer \times 4, A/D \times 1, RESET \times 1, OSD \times 1, Serial \times 2, $I^2C \times 1$, Caption \times 1, Remote control \times 1, HSYNC \times 1, VSYNC \times 1		
Timer Counter	8-bit timer × 4 Watchdog timer: Time-out period is selectable.		
Serial Interface	I ² C × 1: for multimaster mode, bus line (output) has 2 systems Sync serial / UART × 1		
Caption/Teletext Decoder	• Built-in sync separator × 1		
I/O Pins I/O	35 • Common use		
A/D Inputs	10-bit × 8-ch. (with S/H)		
PWM	8-bit \times 6-ch.		
Special Ports	Remote control reception		
CRTC	1-layer display (graphics, characters, splits)		
Notes	Remote control input discriminant circuit built-in, build-in NTSC video signal processing circuit, built-in 3-line comb filter		

Pin Assignment



QFP084-P-1818E *Lead-free

- *1: 5V dielectric Nch open drain output pin
- *2: Mask ROM=VDD, Flash Memory built-in type=VPP

Support Tool

In-circuit Emulator	PX-PAC101E02-4W9J	
Flash Memory Built-in Type	Туре	MN101EF03G [ES (Engineering Sample) available]
	ROM (× 8-bit)	128 K
	RAM (× 8-bit)	4 K
	Minimum instruction execution time	100 ns
	Package	QFP084-P-1818E *Lead-free

Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) An export permit needs to be obtained from the competent authorities of the Japanese Government if any of the products or technologies described in this book and controlled under the "Foreign Exchange and Foreign Trade Law" is to be exported or taken out of Japan.
- (2) The technical information described in this book is limited to showing representative characteristics and applied circuits examples of the products. It neither warrants non-infringement of intellectual property right or any other rights owned by our company or a third party, nor grants any license.
- (3) We are not liable for the infringement of rights owned by a third party arising out of the use of the product or technologies as described in this book.
- (4) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).

 Consult our sales staff in advance for information on the following applications:
 - Special applications (such as for airplanes, aerospace, automobiles, traffic control
 equipment, combustion equipment, life support systems and safety devices) in
 which exceptional quality and reliability are required, or if the failure or malfunction
 of the products may directly jeopardize life or harm the human body.
 - Any applications other than the standard applications intended.
- (5) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (6) When designing your equipment, comply with the guaranteed values, in particular those of maximum rating, the range of operating power supply voltage, and heat radiation characteristics. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 - Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (7) When using products for which moisture-proof packaging is required, observe the conditions (including shelf life and amount of time let standing of unsealed items) agreed upon when specification sheets are individually exchanged.
- (8) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of Matsushita Electric Industrial Co., Ltd.

If you have any inquiries or questions about this book or our semiconductor products, please contact one of our sales offices listed on the back or semiconductor company's sales department.

Windows is a registered trademark of Microsoft Corporation. MS-DOS is a registered trademark of Microsoft Corporation. Sun and Solaris are registered trademarks of Sun Microsystems, Inc. PC-9801 is a registered trademark of NEC. PC/AT is a registered trademark of International Business Machines Corporation. TRON is an abbreviation of "The Real-time Operating system Nucleus." ITRON is an abbreviation of "Industrial TRON." μ ITRON is an abbreviation of "Micro Industrial TRON." TRON, ITRON, and μ ITRON do not refer to any specific product or products. Other company names and product names are registered trademarks.