

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

Send any inquiries to <http://www.renesas.com/inquiry>.

The Renesas logo, featuring the word "RENESAS" in a bold, sans-serif font with a stylized square symbol to the left.

Notice

1. All information included in this document is current as of the date this document is issued. Such information, however, is subject to change without any prior notice. Before purchasing or using any Renesas Electronics products listed herein, please confirm the latest product information with a Renesas Electronics sales office. Also, please pay regular and careful attention to additional and different information to be disclosed by Renesas Electronics such as that disclosed through our website.
2. Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Renesas Electronics products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
3. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part.
4. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.
5. When exporting the products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations. You should not use Renesas Electronics products or the technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations.
6. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.
7. Renesas Electronics products are classified according to the following three quality grades: “Standard”, “High Quality”, and “Specific”. The recommended applications for each Renesas Electronics product depends on the product’s quality grade, as indicated below. You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application categorized as “Specific” without the prior written consent of Renesas Electronics. Further, you may not use any Renesas Electronics product for any application for which it is not intended without the prior written consent of Renesas Electronics. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for an application categorized as “Specific” or for which the product is not intended where you have failed to obtain the prior written consent of Renesas Electronics. The quality grade of each Renesas Electronics product is “Standard” unless otherwise expressly specified in a Renesas Electronics data sheets or data books, etc.
 - “Standard”: Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots.
 - “High Quality”: Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; safety equipment; and medical equipment not specifically designed for life support.
 - “Specific”: Aircraft; aerospace equipment; submersible repeaters; nuclear reactor control systems; medical equipment or systems for life support (e.g. artificial life support devices or systems), surgical implantations, or healthcare intervention (e.g. excision, etc.), and any other applications or purposes that pose a direct threat to human life.
8. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or system manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. This document may not be reproduced or duplicated, in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.

(Note 1) “Renesas Electronics” as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.

(Note 2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

M3T-FLX-144NSD

Converter Board for Connecting FLX160 to 144-pin 0.5-mm-pitch LQFP

User's Manual

Notes regarding these materials

1. This document is provided for reference purposes only so that Renesas customers may select the appropriate Renesas products for their use. Renesas neither makes warranties or representations with respect to the accuracy or completeness of the information contained in this document nor grants any license to any intellectual property rights or any other rights of Renesas or any third party with respect to the information in this document.
2. Renesas shall have no liability for damages or infringement of any intellectual property or other rights arising out of the use of any information in this document, including, but not limited to, product data, diagrams, charts, programs, algorithms, and application circuit examples.
3. You should not use the products or the technology described in this document for the purpose of military applications such as the development of weapons of mass destruction or for the purpose of any other military use. When exporting the products or technology described herein, you should follow the applicable export control laws and regulations, and procedures required by such laws and regulations.
4. All information included in this document such as product data, diagrams, charts, programs, algorithms, and application circuit examples, is current as of the date this document is issued. Such information, however, is subject to change without any prior notice. Before purchasing or using any Renesas products listed in this document, please confirm the latest product information with a Renesas sales office. Also, please pay regular and careful attention to additional and different information to be disclosed by Renesas such as that disclosed through our website. (<http://www.renesas.com>)
5. Renesas has used reasonable care in compiling the information included in this document, but Renesas assumes no liability whatsoever for any damages incurred as a result of errors or omissions in the information included in this document.
6. When using or otherwise relying on the information in this document, you should evaluate the information in light of the total system before deciding about the applicability of such information to the intended application. Renesas makes no representations, warranties or guaranties regarding the suitability of its products for any particular application and specifically disclaims any liability arising out of the application and use of the information in this document or Renesas products.
7. With the exception of products specified by Renesas as suitable for automobile applications, Renesas products are not designed, manufactured or tested for applications or otherwise in systems the failure or malfunction of which may cause a direct threat to human life or create a risk of human injury or which require especially high quality and reliability such as safety systems, or equipment or systems for transportation and traffic, healthcare, combustion control, aerospace and aeronautics, nuclear power, or undersea communication transmission. If you are considering the use of our products for such purposes, please contact a Renesas sales office beforehand. Renesas shall have no liability for damages arising out of the uses set forth above.
8. Notwithstanding the preceding paragraph, you should not use Renesas products for the purposes listed below:
 - (1) artificial life support devices or systems
 - (2) surgical implantations
 - (3) healthcare intervention (e.g., excision, administration of medication, etc.)
 - (4) any other purposes that pose a direct threat to human life

Renesas shall have no liability for damages arising out of the uses set forth in the above and purchasers who elect to use Renesas products in any of the foregoing applications shall indemnify and hold harmless Renesas Technology Corp., its affiliated companies and their officers, directors, and employees against any and all damages arising out of such applications.
9. You should use the products described herein within the range specified by Renesas, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas shall have no liability for malfunctions or damages arising out of the use of Renesas products beyond such specified ranges.
10. Although Renesas endeavors to improve the quality and reliability of its products, IC products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Please be sure to implement safety measures to guard against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other applicable measures. Among others, since the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or system manufactured by you.
11. In case Renesas products listed in this document are detached from the products to which the Renesas products are attached or affixed, the risk of accident such as swallowing by infants and small children is very high. You should implement safety measures so that Renesas products may not be easily detached from your products. Renesas shall have no liability for damages arising out of such detachment.
12. This document may not be reproduced or duplicated, in any form, in whole or in part, without prior written approval from Renesas.
13. Please contact a Renesas sales office if you have any questions regarding the information contained in this document, Renesas semiconductor products, or if you have any other inquiries.



CAUTION

If the requirements shown in the "CAUTION" sentences are ignored, the equipment may cause personal injury or damage to the products.

Renesas Tools Homepage <http://www.renesas.com/en/tools>

1. Outline

The M3T-FLX-144NSD is a converter board for connecting the 160-core flexible cable FLX160 to a foot pattern for 144-pin 0.5-mm-pitch LQFP (144P6Q-A).

2. Package Components (See Figure 1)

- (1) M3T-FLX-144NSD converter board..... x1
- (2) YQPACK144SD (made by Tokyo Eletech Corporation) x1
- (3) NQPACK144SD-ND (made by Tokyo Eletech Corporation) x1
- (4) YQ-GUIDE's x4
- (5) M3T-FLX-144NSD User's Manual (This manual)

3. Specifications

Table 1 Specifications

Applicable package	144P6Q-A (144-pin 0.5-mm-pitch LQFP)
Insertion/removal iterations of connector	50 times guaranteed

4. Usage (See Figure 2)

The M3T-FLX-144NSD can be used for debugging and board-mounted evaluation in common by mounting the NQPACK144SD-ND on the user system.

- (1) For debugging
Mount the NQPACK144SD-ND on the foot pattern of the user system and attach the YQPACK144SD on it. And connect the probe of the emulation pod to the upper connector of the M3T-FLX-144NSD. Then connect the YQPACK144SD and the M3T-FLX-144NSD.
- (2) For onboard evaluation
Mount an MCU with on-chip flash memory or one-time PROM and the HQPACK144SD (separately available) in that order on the NQPACK144SD-ND on the user system.

Before using the M3T-FLX-144NSD, be sure to read "7. Precautions" on page 4.

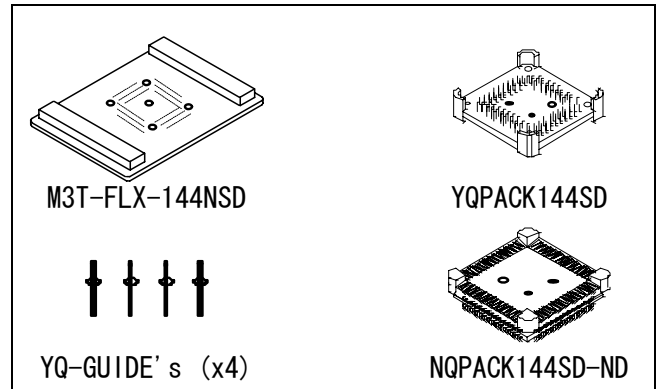


Figure 1 Package components of the M3T-FLX-144NSD

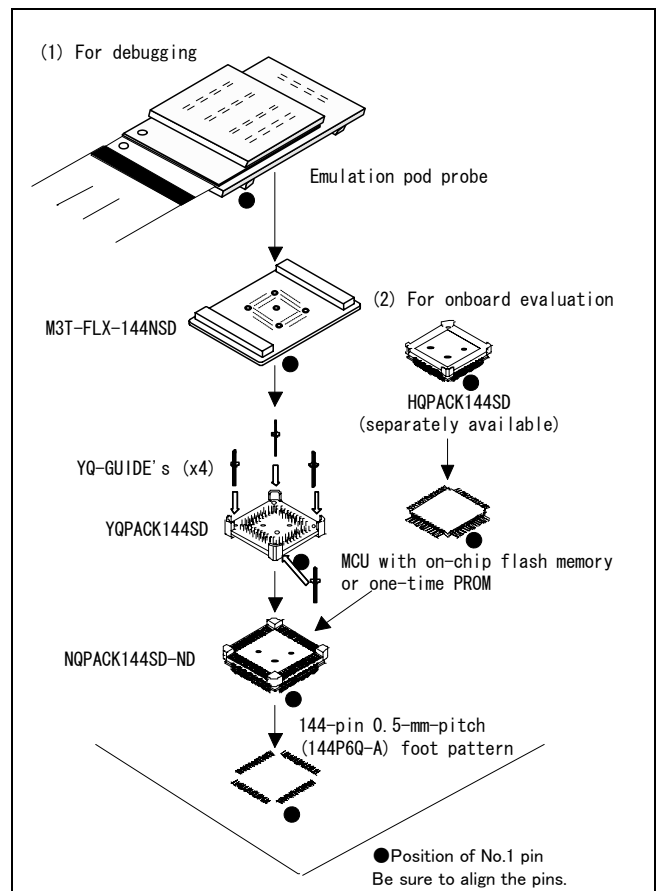


Figure 2 Usage of the M3T-FLX-144NSD

5. Connection Procedure (See Figure 3)

The procedure for connecting the M3T-FLX-144NSD is shown below.

- (1) Mount the NQPACK144SD-ND on the user system.
- (2) Attach the YQPACK144SD on the NQPACK144SD-ND.
- (3) Secure the four corners of the YQPACK144SD with the YQ-GUIDE's.

- Do not use the screws included with the YQPACK144SD.
- Do NOT use the screwdriver included with the NQPACK144SD-ND that is used only for the HQPACK144SD. It is not for the YQ-GUIDE's.

- (4) Attach the probe of the emulation pod to the M3T-FLX-144NSD.
- (5) Connect M3T-FLX-144NSD to the emulator probe.

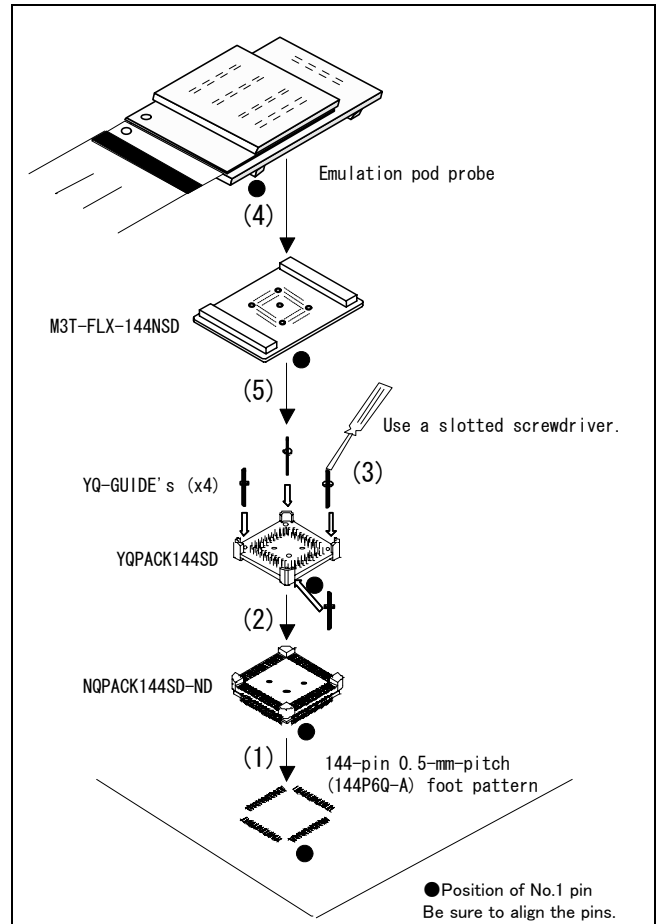


Figure 3 Connection procedure of the M3T-FLX-144NSD

6. External Dimensions and a Sample Foot Pattern

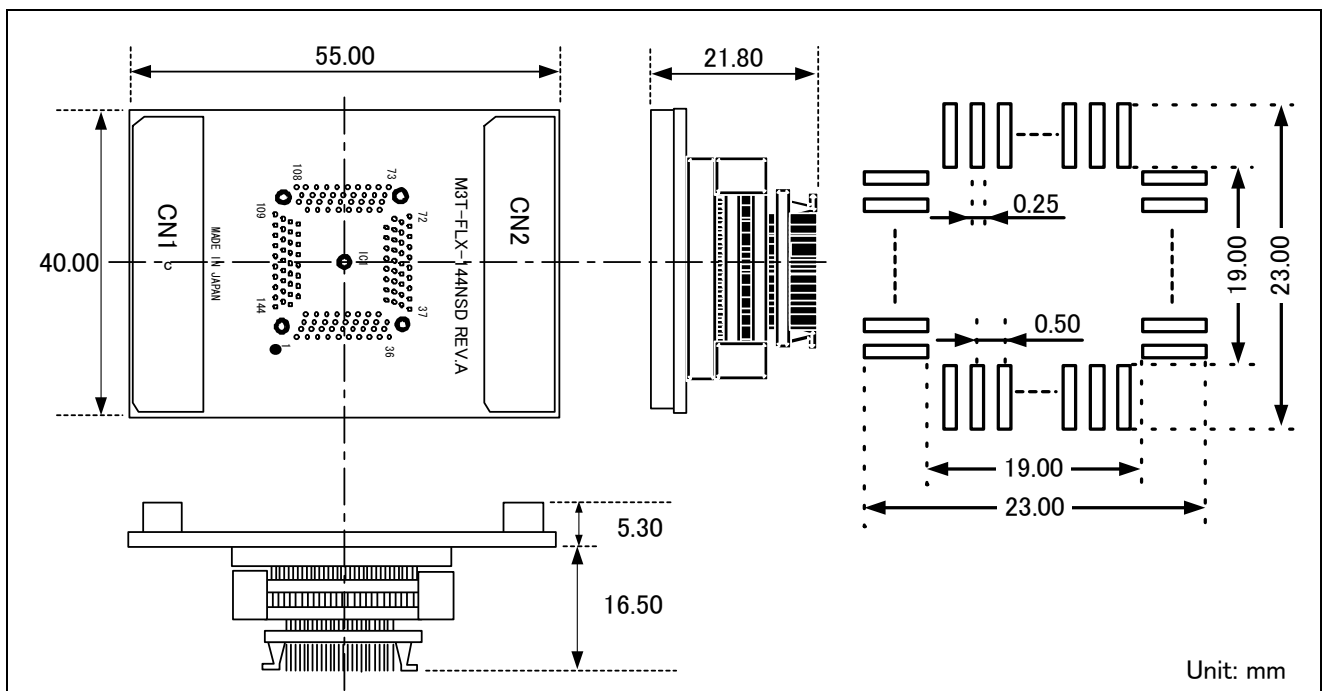


Figure 4 External dimensions and a sample foot pattern of the M3T-FLX-144NSD

7. Precautions

⚠ CAUTION

Caution to Be Taken for This Product:



- When connecting the YQPACK144SD, be sure to use the included YQ-GUIDE's.
- Do NOT use the screws included with the YQPACK144SD for connecting the YQPACK144SD.

IMPORTANT

Notes on This Product:

- We cannot accept any request for repair.
- For purchasing the NQPACK144SD-ND, YQPACK144SD, HQPACK144SD, contact the following:
Tokyo Eletech Corporation http://www.tetc.co.jp/e_tet.htm
- For inquiries about the product or the contents of this manual, contact your local distributor.
Renesas Tools Homepage <http://www.renesas.com/en/tools>

* NQPACK, YQPACK, YQSOCKET, YQ-GUIDE, HQPACK, TQPACK and TQSOCKET are trademarks of Tokyo Eletech Corporation

8. Correspondence of Connectors CN1 and CN2

Table 2 Correspondence of the connectors

CN1	IC1	CN1	IC1	CN2	IC1	CN2	IC1
CN1-01a	—	CN1-01b	18	CN2-01a	—	CN2-01b	19
CN1-02a	17	CN1-02b	16	CN2-02a	20	CN2-02b	21
CN1-03a	15	CN1-03b	14	CN2-03a	22	CN2-03b	23
CN1-04a	13	CN1-04b	12	CN2-04a	24	CN2-04b	25
CN1-05a	11	CN1-05b	10	CN2-05a	26	CN2-05b	27
CN1-06a	9	CN1-06b	8	CN2-06a	28	CN2-06b	29
CN1-07a	7	CN1-07b	6	CN2-07a	30	CN2-07b	31
CN1-08a	5	CN1-08b	4	CN2-08a	32	CN2-08b	33
CN1-09a	3	CN1-09b	2	CN2-09a	34	CN2-09b	35
CN1-10a	1	CN1-10b	—	CN2-10a	36	CN2-10b	—
CN1-11a	—	CN1-11b	144	CN2-11a	—	CN2-11b	37
CN1-12a	143	CN1-12b	142	CN2-12a	38	CN2-12b	39
CN1-13a	141	CN1-13b	140	CN2-13a	40	CN2-13b	41
CN1-14a	139	CN1-14b	138	CN2-14a	42	CN2-14b	43
CN1-15a	137	CN1-15b	136	CN2-15a	44	CN2-15b	45
CN1-16a	135	CN1-16b	134	CN2-16a	46	CN2-16b	47
CN1-17a	133	CN1-17b	132	CN2-17a	48	CN2-17b	49
CN1-18a	131	CN1-18b	130	CN2-18a	50	CN2-18b	51
CN1-19a	129	CN1-19b	128	CN2-19a	52	CN2-19b	53
CN1-20a	127	CN1-20b	—	CN2-20a	54	CN2-20b	—
CN1-21a	—	CN1-21b	126	CN2-21a	—	CN2-21b	55
CN1-22a	125	CN1-22b	124	CN2-22a	56	CN2-22b	57
CN1-23a	123	CN1-23b	122	CN2-23a	58	CN2-23b	59
CN1-24a	121	CN1-24b	120	CN2-24a	60	CN2-24b	61
CN1-25a	119	CN1-25b	118	CN2-25a	62	CN2-25b	63
CN1-26a	117	CN1-26b	116	CN2-26a	64	CN2-26b	65
CN1-27a	115	CN1-27b	114	CN2-27a	66	CN2-27b	67
CN1-28a	113	CN1-28b	112	CN2-28a	68	CN2-28b	69
CN1-29a	111	CN1-29b	110	CN2-29a	70	CN2-29b	71
CN1-30a	109	CN1-30b	—	CN2-30a	72	CN2-30b	—
CN1-31a	—	CN1-31b	108	CN2-31a	—	CN2-31b	73
CN1-32a	107	CN1-32b	106	CN2-32a	74	CN2-32b	75
CN1-33a	105	CN1-33b	104	CN2-33a	76	CN2-33b	77
CN1-34a	103	CN1-34b	102	CN2-34a	78	CN2-34b	79
CN1-35a	101	CN1-35b	100	CN2-35a	80	CN2-35b	81
CN1-36a	99	CN1-36b	98	CN2-36a	82	CN2-36b	83
CN1-37a	97	CN1-37b	96	CN2-37a	84	CN2-37b	85
CN1-38a	95	CN1-38b	94	CN2-38a	86	CN2-38b	87
CN1-39a	93	CN1-39b	92	CN2-39a	88	CN2-39b	89
CN1-40a	91	CN1-40b	—	CN2-40a	90	CN2-40b	—

(NC: No connection)