

To our customers,

---

## Old Company Name in Catalogs and Other Documents

---

On April 1<sup>st</sup>, 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 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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

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

## 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-F160-80NRA

Converter Board for Connecting FLX160 to 80-pin 0.8-mm-pitch QFP/LQFP

## User's Manual

### Keep safety first in your circuit designs!

- Renesas Technology Corporation and Renesas Solutions Corporation put the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

### Notes regarding these materials

- These materials are intended as a reference to assist our customers in the selection of the Renesas Technology product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Renesas Technology Corporation, Renesas Solutions Corporation or a third party.
- Renesas Technology Corporation and Renesas Solutions Corporation assume no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.
- All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Renesas Technology Corporation and Renesas Solutions Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact Renesas Technology Corporation, Renesas Solutions Corporation or an authorized Renesas Technology product distributor for the latest product information before purchasing a product listed herein. The information described here may contain technical inaccuracies or typographical errors. Renesas Technology Corporation and Renesas Solutions Corporation assume no responsibility for any damage, liability, or other loss rising from these inaccuracies or errors. Please also pay attention to information published by Renesas Technology Corporation and Renesas Solutions Corporation by various means, including the Renesas home page (<http://www.renesas.com>).
- When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Renesas Technology Corporation and Renesas Solutions Corporation assume no responsibility for any damage, liability or other loss resulting from the information contained herein.
- Renesas Technology semiconductors are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact Renesas Technology Corporation, Renesas Solutions Corporation or an authorized Renesas Technology product distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
- The prior written approval of Renesas Technology Corporation and Renesas Solutions Corporation is necessary to reprint or reproduce in whole or in part these materials.
- If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination. Any diversion or reexport contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
- Please contact Renesas Technology Corporation or Renesas Solutions Corporation for further details on these materials or the products contained therein.

### Precautions to be taken when using this product

- This product is a development supporting unit for use in your program development and evaluation stages. In mass-producing your program you have finished developing, be sure to make a judgment on your own risk that it can be put to practical use by performing integration test, evaluation, or some experiment else.
- In no event shall Renesas Solutions Corporation be liable for any consequence arising from the use of this product.
- Renesas Solutions Corporation strives to renovate or provide a workaround for product malfunction at some charge or without charge. However, this does not necessarily mean that Renesas Solutions Corporation guarantees the renovation or the provision under any circumstances.
- This product has been developed by assuming its use for program development and evaluation in laboratories. Therefore, it does not fall under the application of Electrical Appliance and Material Safety Law and protection against electromagnetic interference when used in Japan.



### 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-F160-80NRA is a converter board for connecting the 160-core flexible cable FLX160 to a foot pattern for 80-pin 0.8-mm-pitch QFP (80P6N-A) and LQFP (80P6U-A).

# 2. Package Components (See Figure 1)

- (1) M3T-F160-80NRA converter board..... 1 pc.
- (2) NQPACK080RA (made by Tokyo Eletech Corporation)..... 1 pc.
- (3) YQPACK080RA (made by Tokyo Eletech Corporation)..... 1 pc.
- (4) YQSOCKET080RAF (made by Tokyo Eletech Corporation)..... 1 pc.
- Pre-mounted on the converter board M3T-F160-80NRA
- (5) YQ-GUIDE'S (made by Tokyo Eletech Corporation) .....4 pcs.
- (6) M3T-F160-80NRA User's Manual (This manual)

# 3. Specifications

Table 1 Specifications

Applicable package	80P6N-A, 80P6U-A (80-pin 0.8-mm-pitch QFP/LQFP)
Insertion/removal iterations of connector	50 times guaranteed

# 4. Usage (See Figure 2)

The M3T-F160-80NRA can be used for debugging and board-mounted evaluation in common by mounting the NQPACK080RA on the user system.

- (1) For debugging  
Mount the NQPACK080RA on the foot pattern of the user system and attach the YQPACK080RA on it. And connect the probe of the emulation pod to the upper connector of the M3T-F160-80NRA. Then connect the YQPACK080RA and the M3T-F160-80NRA.
- (2) For onboard evaluation  
Mount an MCU with on-chip flash memory or one-time PROM and the HQPACK080RA168 (separately available) or HQPACK080RA160 (separately available) in that order on the NQPACK080RA on the user system.

Before using the M3T-F160-80NRA, be sure to read "6. Precautions" on page 3.

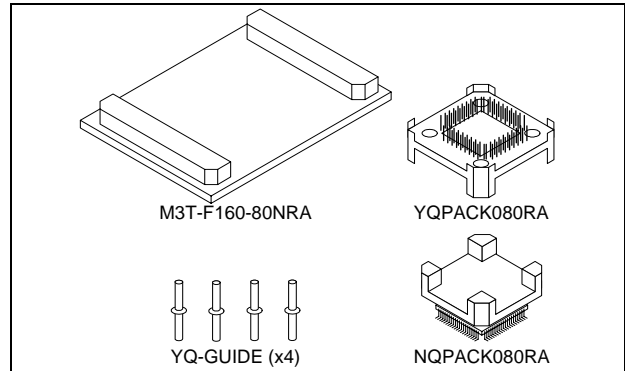


Figure 1 Package components of the M3T-F160-80NRA

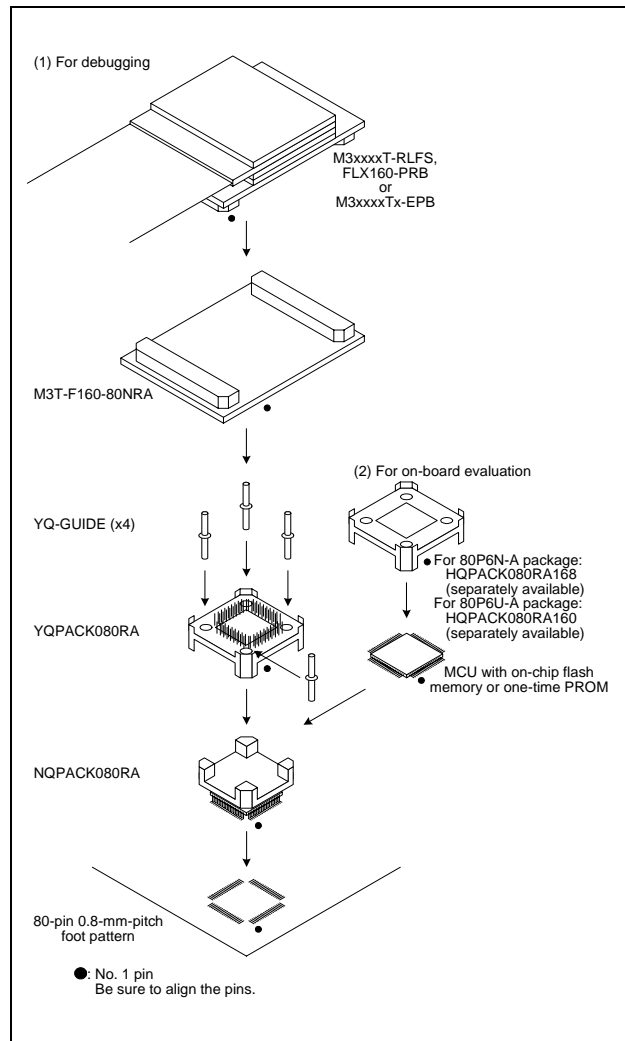


Figure 2 Usage of the M3T-F160-80NRA

## 5. External Dimensions and a Sample Foot Pattern

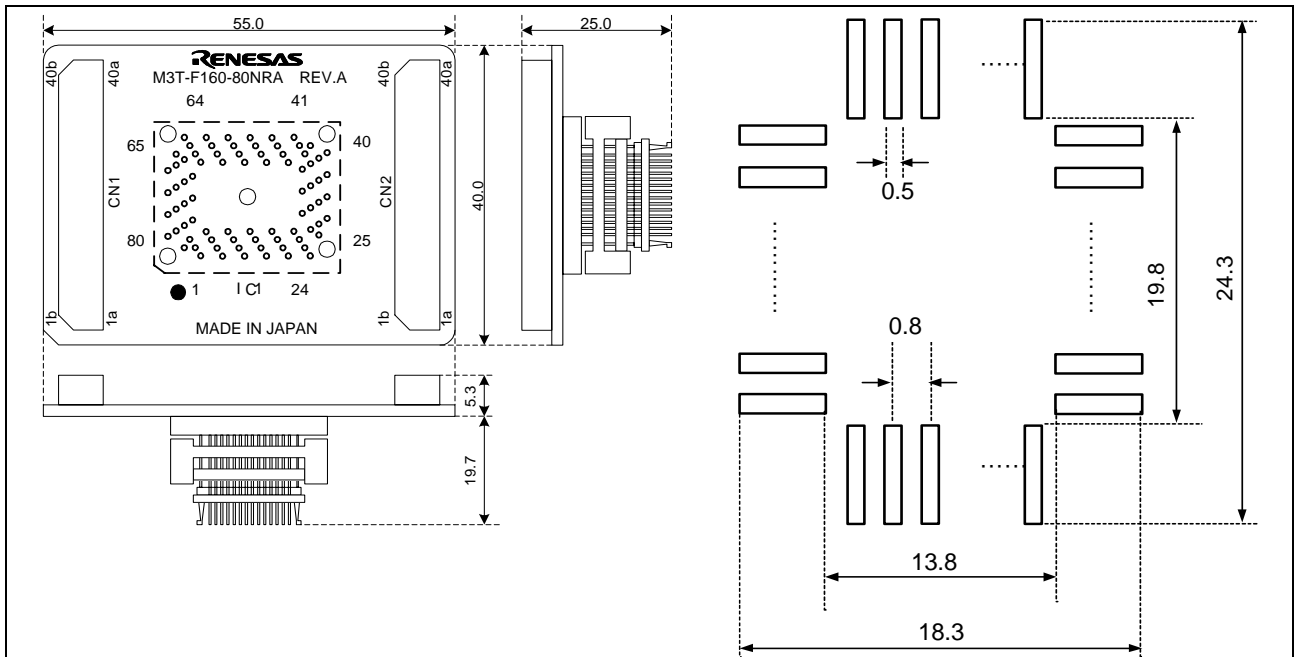


Figure 3 External dimensions and a sample foot pattern of the M3T-F160-80NRA

## 6. Precautions

### ⚠ CAUTION

#### Caution to Be Taken for This Product:



- When connecting the YQPACK080RA, be sure to use the included YQ-GUIDE's.
- Do NOT use the screws included with the YQPACK080RA for connecting the YQPACK080RA.

### IMPORTANT

#### Notes on This Product:

- We cannot accept any request for repair.
- For purchasing the NQPACK080RA, YQPACK080RA, HQPACK080RA168 and HQPACK080RA160, contact the following:
 

Tokyo Eletech Corporation	<a href="http://www.tetc.co.jp/e_tet.htm">http://www.tetc.co.jp/e_tet.htm</a>
<del>Daimaru Kogyo Ltd.</del>	<del><a href="http://www.daimarukogyo.co.jp/">http://www.daimarukogyo.co.jp/</a></del>
- For inquiries about the product or the contents of this manual, contact your local distributor.
 

Renesas Tools Homepage	<a href="http://www.renesas.com/en/tools">http://www.renesas.com/en/tools</a>
------------------------	---

## 7. Correspondence of Connectors CN1 and CN2

Table 2 Correspondence of the connectors

CN1	IC1	CN1	IC1	CN2	IC1	CN2	IC1
1a	-	1b	8	1a	-	1b	9
2a	7	2b	6	2a	10	2b	11
3a	5	3b	-	3a	12	3b	13
4a	-	4b	-	4a	14	4b	15
5a	-	5b	-	5a	16	5b	17
6a	-	6b	-	6a	18	6b	19
7a	4	7b	3	7a	20	7b	21
8a	2	8b	1	8a	22	8b	23
9a	-	9b	-	9a	24	9b	-
10a	-	10b	-	10a	-	10b	-
11a	-	11b	-	11a	-	11b	-
12a	-	12b	80	12a	-	12b	-
13a	79	13b	78	13a	-	13b	-
14a	77	14b	76	14a	25	14b	26
15a	75	15b	74	15a	27	15b	28
16a	73	16b	72	16a	29	16b	30
17a	71	17b	-	17a	-	17b	-
18a	-	18b	-	18a	-	18b	-
19a	-	19b	-	19a	31	19b	32
20a	-	20b	-	20a	33	20b	-
21a	-	21b	-	21a	-	21b	34
22a	-	22b	-	22a	-	22b	-
23a	-	23b	70	23a	-	23b	-
24a	69	24b	68	24a	-	24b	-
25a	67	25b	-	25a	35	25b	36
26a	-	26b	-	26a	37	26b	38
27a	-	27b	-	27a	-	27b	-
28a	66	28b	65	28a	-	28b	39
29a	-	29b	-	29a	40	29b	-
30a	-	30b	-	30a	-	30b	-
31a	-	31b	-	31a	-	31b	-
32a	-	32b	64	32a	-	32b	-
33a	63	33b	62	33a	-	33b	-
34a	61	34b	60	34a	41	34b	42
35a	59	35b	58	35a	43	35b	44
36a	57	36b	56	36a	45	36b	46
37a	55	37b	54	37a	47	37b	48
38a	53	38b	52	38a	-	38b	-
39a	51	39b	50	39a	-	39b	-
40a	49	40b	-	40a	-	40b	-

("-": No connection)