Renesas RX62T (JTAG) Mass ISP Programming

Application Note

DC04036

NanoPlex™ general description

NanoPlex NPS-06-01-04A Universal Relay ISP-Channel Multiplier allows the expansion of the number of channels of ISP-Programming tools, while also offering galvanic isolation. The total number of switched signals is 28. NanoPlex is used on PCBAs production lines, in ATE-controlled ISP programming. Thanks to its ultra-small size (only 51.0- x 66.5-mm), this NanoPlex model takes easly place in Test Fixtures. Designed for piggyback mounting, NanoPlex is universal and compatible with all types of ISP Programming tools.

Recommended Readings - Further Documentation

Before starting, please study the following essential papers:

- *NanoPlex NPS-06-01-04A Data Sheet*
- *NanoPlex NPS-06-01-04A Flexibility Application Note*

'NanoPlex NPS-06-01-04A Flexibility Application Note' clearly describes NanoPlex **modularity** and how to deploy **multiple units** in order to create high-density ISP Programming Multipliers with an **unlimited number of channels**.

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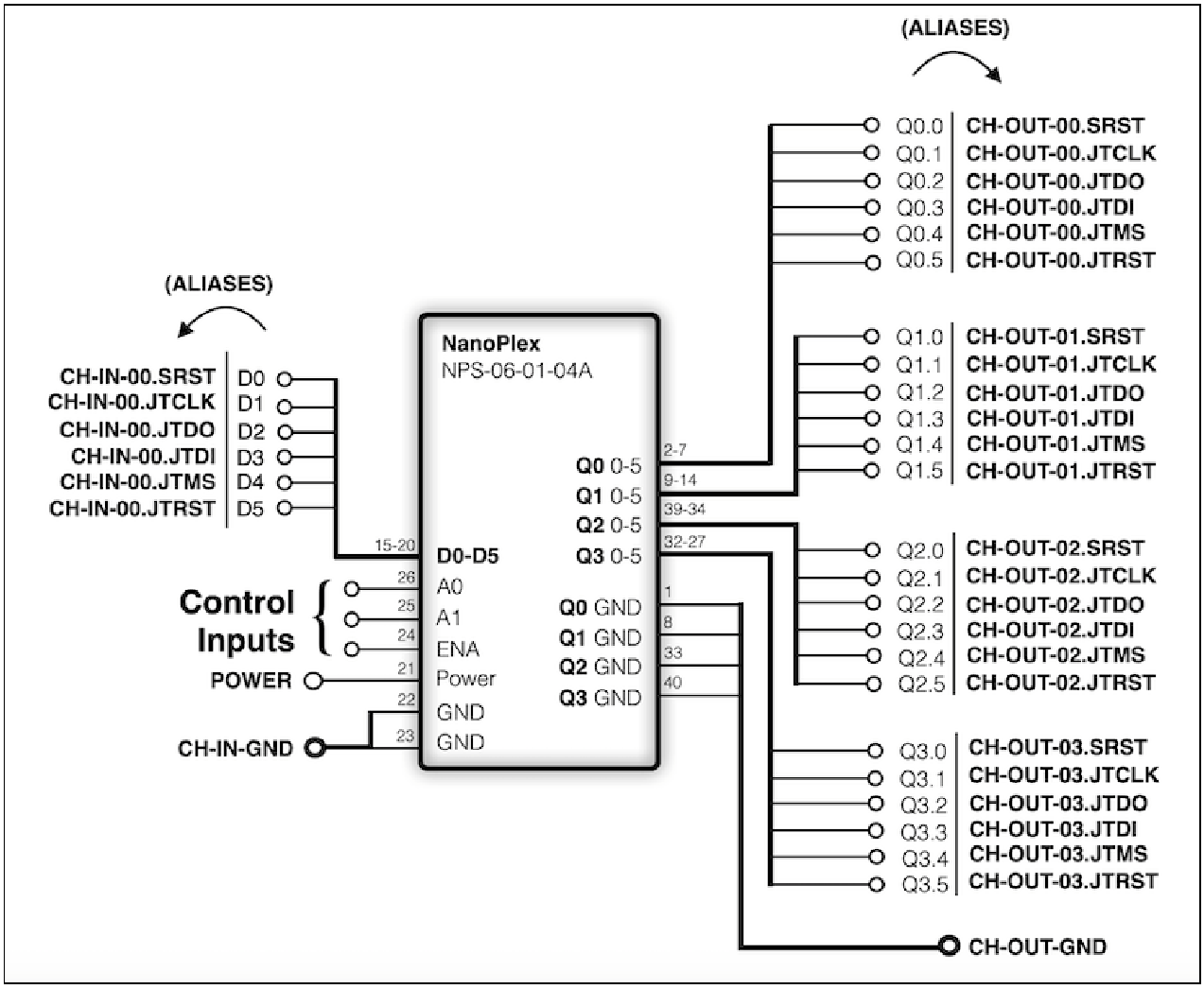
Signals required for ISP Programming are:

- SRST
- JTCLK
- JTDO
- JTDI
- JTMS
- JTRST

The most convenient way to ISP program multiple instances of this device through NanoPlex is using this model in **1x4 operating mode**. 1 NanoPlex input channel is multiplied to 4 separated, galvanic isolated output channels.

On the following mode examples diagram, NanoPlex signal names are assigned with aliases (texts are in **bold**).



Truth table

(the symbol ► stands for “connected to”)

ENA	A1	A0	CH-IN-	00.SRST ►	00.JTCLK ►	00.JTDO ►	00.JTDI ►	00.JTMS ►	00.JTRST ►
1	0	0	CH-OUT-	00.SRST	00.JTCLK	00.JTD0	00.JTDI	00.JTMS	00.JTRST
1	0	1	CH-OUT-	01.SRST	01.JTCLK	01.JTD0	01.JTDI	01.JTMS	01.JTRST
1	1	0	CH-OUT-	02.SRST	02.JTCLK	02.JTD0	02.JTDI	02.JTMS	02.JTRST
1	1	1	CH-OUT-	03.SRST	03.JTCLK	03.JTD0	03.JTDI	03.JTMS	03.JTRST
0	X	X	CH-OUT-	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z

Operating sequence

```
ENA = 1

A1-A0 = "00"

     CH-IN-00.SRST  ▶ CH-OUT-00.SRST
     CH-IN-00.JTCLK ▶ CH-OUT-00.JTCLK
     CH-IN-00.JTDO  ▶ CH-OUT-00.JTDO
     CH-IN-00.JTDI  ▶ CH-OUT-00.JTDI
     CH-IN-00.JTMS  ▶ CH-OUT-00.JTMS
     CH-IN-00.JTRST ▶ CH-OUT-00.JTRST

A1-A0 = "01"

     CH-IN-00.SRST  ▶ CH-OUT-01.SRST
     CH-IN-00.JTCLK ▶ CH-OUT-01.JTCLK
     CH-IN-00.JTDO  ▶ CH-OUT-01.JTDO
     CH-IN-00.JTDI  ▶ CH-OUT-01.JTDI
     CH-IN-00.JTMS  ▶ CH-OUT-01.JTMS
     CH-IN-00.JTRST ▶ CH-OUT-01.JTRST

A1-A0 = "10"

     CH-IN-00.SRST  ▶ CH-OUT-02.SRST
     CH-IN-00.JTCLK ▶ CH-OUT-02.JTCLK
     CH-IN-00.JTDO  ▶ CH-OUT-02.JTDO
     CH-IN-00.JTDI  ▶ CH-OUT-02.JTDI
     CH-IN-00.JTMS  ▶ CH-OUT-02.JTMS
     CH-IN-00.JTRST ▶ CH-OUT-02.JTRST

A1-A0 = "11"

     CH-IN-00.SRST  ▶ CH-OUT-03.SRST
     CH-IN-00.JTCLK ▶ CH-OUT-03.JTCLK
     CH-IN-00.JTDO  ▶ CH-OUT-03.JTDO
     CH-IN-00.JTDI  ▶ CH-OUT-03.JTDI
     CH-IN-00.JTMS  ▶ CH-OUT-03.JTMS
     CH-IN-00.JTRST ▶ CH-OUT-03.JTRST
```

Connector pinout (aliases signals, top view)

Pin	Signal
01	CH-OUT-GND
02	CH-OUT-00.SRST
03	CH-OUT-00.JTCLK
04	CH-OUT-00.JTDO
05	CH-OUT-00.JTDI
06	CH-OUT-00.JTMS
07	CH-OUT-00.JTRST
08	CH-OUT-GND
09	CH-OUT-01.SRST
10	CH-OUT-01.JTCLK
11	CH-OUT-01.JTDO
12	CH-OUT-01.JTDI
13	CH-OUT-01.JTMS
14	CH-OUT-01.JTRST
15	CH-IN-00.SRST
16	CH-IN-00.JTCLK
17	CH-IN-00.JTDO
18	CH-IN-00.JTDI
19	CH-IN-00.JTMS
20	CH-IN-00.JTRST

Signal	Pin
CH-OUT-GND	40
CH-OUT-02.SRST	39
CH-OUT-02.JTCLK	38
CH-OUT-02.JTDO	37
CH-OUT-02.JTDI	36
CH-OUT-02.JTMS	35
CH-OUT-02.JTRST	34
CH-OUT-GND	33
CH-OUT-03.SRST	32
CH-OUT-03.JTCLK	31
CH-OUT-03.JTDO	30
CH-OUT-03.JTDI	29
CH-OUT-03.JTMS	28
CH-OUT-03.JTRST	27
A0	26
A1	25
ENA	24
GND (*)	23
GND (*)	22
Power	21

(*) GND at pins 22/23 is used for both Power GND and CH-IN-GND.

Using multiple NanoPlex NPS-06-01-04A units

NanoPlex NPS-06-01-04A product is modular by design. Several units can be deployed in order to set-up a very large, limitless channel-multiplier. The advantage of using more units is a faster and less expensive substitution.

Please read *'NanoPlex NPS-06-01-04A Flexibility Application Note'* to discover how to set-up a switching system with the **number of channels as high as your application requires**.

About Manta Systems

Manta Systems is a high-tech company, global leader in high-density signal switching for In-System Programming (ISP) and Testing Systems. The company targets the electronic boards assembly market, where a high number of connections is required. Manta Systems flagship product is NanoPlex™, a series of Channels Multipliers for In-System Programming (ISP) and Testing instruments. NanoPlex is the **world's first universal tool** providing end-user with the possibility of having compact, easy-to-use, professional, reliable In-System Programming (ISP) and Testing Channel Multiplication functionality.

Warranty

All Manta Systems products are covered by a **three-year warranty** against defects and workmanship from the purchase date. The warranty only covers products when properly installed and used.

Orders

All NanoPlex™ Series products are generally **off-the-shelf**.
Shipping is within **24 hours** from order reception.
Free shipping & 30-day money back guarantee.

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