

Date

December 27, 2018

Released

Ku-band PLL LNB

External Reference Model

RF Frequency: 10.95 to 12.75 GHz

Model No. NJR2935E series

| Model No. | RF Frequency | Local Frequency | IF Frequency |
|------------------------|--------------------|-----------------|------------------|
| NJR2934E series | 12.2 to 12.75 GHz | 11.25 GHz | 950 to 1,500 MHz |
| NJR2935E series | 11.7 to 12.2 GHz | 10.75 GHz | 950 to 1,450 MHz |
| NJR2936E series | 12.25 to 12.75 GHz | 11.3 GHz | 950 to 1,450 MHz |
| NJR2937E series | 10.95 to 11.7 GHz | 10.0 GHz | 950 to 1,700 MHz |
| NJR2939E series | 11.2 to 11.7 GHz | 10.25 GHz | 950 to 1,450 MHz |

IF Interface Connector: F-type / N-type, Female Connector

Local Reference Type: External Reference

Input Interface: Waveguide, WR-75

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Microwave Division

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New Japan Radio Co., Ltd.
Microwave Division

Title:

Datasheet of NJR2935E

Reference No.:
DS-R2935E

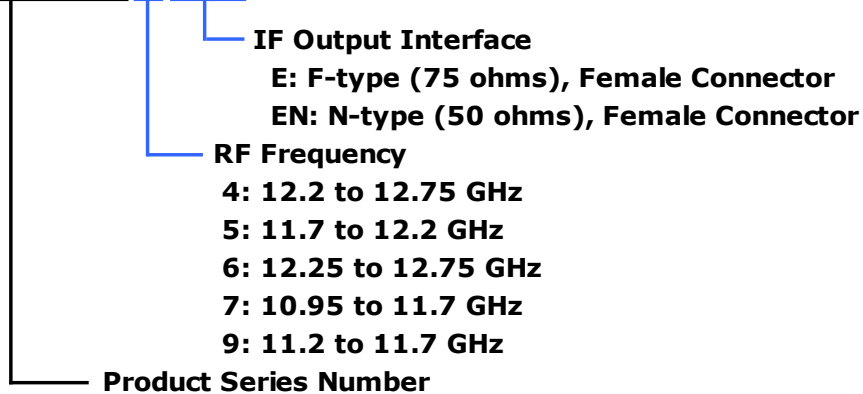
Rev.:
09E

Sheet:
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Model Number

- Numbering System

N J R 2 9 3 5 E N



- Line-up

| Model No. | RF Frequency | Local Frequency | IF Frequency | Local Stability [-40 to +60 °C] | IF Connector |
|------------------|--------------------|-----------------|------------------|---------------------------------|--------------|
| NJR2937E | 10.95 to 11.70GHz | 10.00 GHz | 950 to 1,700 MHz | Depends on External Reference | F-type |
| NJR2937EN | | | | | N-type |
| NJR2939E | 11.20 to 11.70 GHz | 10.25 GHz | 950 to 1,450 MHz | | F-type |
| NJR2939EN | | | | | N-type |
| NJR2935E | 11.70 to 12.20 GHz | 10.75 GHz | 950 to 1,500 MHz | | F-type |
| NJR2935EN | | | | | N-type |
| NJR2934E | 12.20 to 12.75 GHz | 11.25 GHz | 950 to 1,500 MHz | | F-type |
| NJR2934EN | | | | | N-type |
| NJR2936E | 12.25 to 12.75 GHz | 11.30 GHz | 950 to 1,450 MHz | | F-type |
| NJR2936EN | | | | | N-type |

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1. Scope

This specification details the requirements for the low noise and block downconverter intended for the satellite data communication downlink application in the Ku-Band.

This LNB has a combined 3-stage HEMT Amplifier and Block Down Converter with a Phase Locked Local, which is constituted with a S-Band VCO, Multiplier, Loop Filter and Crystal Oscillator providing high stability and low phase noise.

All specifications shall apply throughout the full range of the specified environmental conditions unless otherwise specified.

2. Electrical Specifications

| # | Items | Specifications |
|---------------------|---|--|
| 2.1. | Absolute Maximum Rating | |
| | [RF Input Power] | -10 dBm (@ CW) |
| | [Supply Voltage] | +28 V DC |
| 2.2. | Input RF Frequency Range | |
| | <Model No. NJR2934> | 12.2 to 12.75 GHz |
| | <Model No. NJR2935> | 11.7 to 12.2 GHz |
| | <Model No. NJR2936> | 12.25 to 12.75 GHz |
| | <Model No. NJR2937> | 10.95 to 11.7 GHz |
| <Model No. NJR2939> | 11.2 to 11.7 GHz | |
| 2.3. | Input V.S.W.R. | 2.5 : 1 typ. |
| 2.4. | Noise figure @ +25 °C | 0.8 dB typ. 1 dB max. |
| 2.5. | Output IF Frequency Range | |
| | <Model No. NJR2934> | 950 to 1,500 MHz |
| | <Model No. NJR2935> | 950 to 1,450 MHz |
| | <Model No. NJR2936> | 950 to 1,450 MHz |
| | <Model No. NJR2937> | 950 to 1,700 MHz |
| <Model No. NJR2939> | 950 to 1,450 MHz | |
| 2.6. | Conversion Gain @ +25 °C | 55 dB min. 60 dB typ. |
| 2.7. | Conversion Gain Variation @ +25 °C | 2 dB max. in any 50 MHz segment over the frequency band. |
| 2.8. | Output Power @ 1dB G.C.P. (P1dB) | 0 dBm min. |
| 2.9. | Intermodulation Products (3rd order Intermodulation rejection with two RF input carriers separated by 10 MHz, -10 dBm IF Output Power) | 45 dBm min. |
| 2.10. | Local Oscillator Leakage Levels | -25 dBm max. at the IF Output Connector. -60 dBm max. at the RF Input Flange. |

* Above Specifications are subject to change without notice.

| # | Items | Specifications |
|-------|---|---|
| 2.11. | Local Oscillator Frequency | |
| | <Model No. NJR2934> | 11.25 GHz nom. |
| | <Model No. NJR2935> | 10.75 GHz nom. |
| | <Model No. NJR2936> | 11.3 GHz nom. |
| | <Model No. NJR2937> | 10 GHz nom. |
| | <Model No. NJR2939> | 10.25 GHz nom. |
| 2.12. | L.O. Phase Noise (SSB) | -75 dBc/Hz at 100 Hz -80 dBc/Hz at 1 kHz -85 dBc/Hz at 10 kHz -95 dBc/Hz at 100 kHz *Depend on Phase Noise of the External Reference. |
| 2.13. | Requirement for External Reference [Input Port] IF Output Connector (Combine reference with IF Signal) [Frequency] 10 MHz nom. (Sine-wave) [Input Power] -10 to 0 dBm @ IF Output connector [Phase Noise] -135 dBc/Hz max. at 100 Hz -143 dBc/Hz max. at 1 kHz -145 dBc/Hz max. at 10 kHz (Input Condition) | |
| 2.14. | Spurious | a) -140 dBm max. at input, Fixed frequency spur, unrelated to test CW signal. (Measured at specified IF band: 950 to 1,450 MHz, 1,500 MHz to 1,700 MHz) b) -50 dBc max. with test CW signal -10 dBm IF output (Measured at specified IF band: 950 to 1,450 MHz, 1,500, or 1,700 MHz) |
| 2.15. | Image Rejection | 45 dB min. |
| 2.16. | Output V.S.W.R. | 2.3 : 1 max. |
| 2.17. | Input Voltage | +12 to +24 VDC |
| 2.18. | Current Drain | 250 mA max. |

* Above Specifications are subject to change without notice.

3. Mechanical Specifications

| # | Items | Specifications |
|------|------------------------|--|
| 3.1. | Input Waveguide Flange | Waveguide, WR-75 (with Grooved) |
| 3.2. | IF Interface Connector | |
| | <F-type Model> | F-type female connector, 75 ohms |
| | <N-type Model> | N-type female connector, 50 ohms |
| 3.3. | Dimension & Housing | 100.5 mm (L) x 40 mm (W) x 40 mm (H) [3.96" (L) x 1.57" (W) x 1.57" (H)] |
| 3.4. | Weight | 260 g [0.57 lbs] |

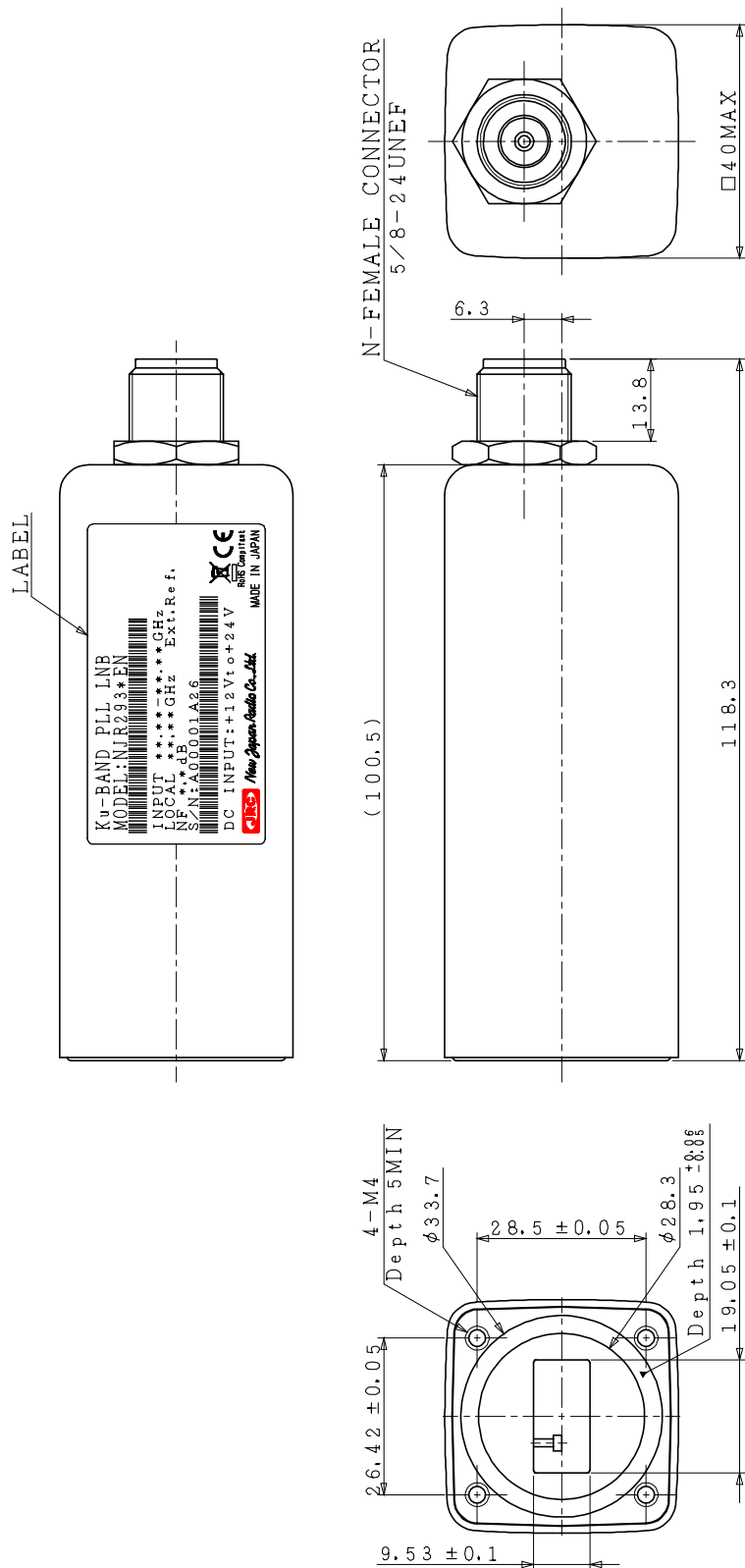
4. Environmental Specifications

| # | Items | Specifications |
|------|---|---|
| 4.1. | Temperature Range (ambient) | |
| | [Operating] | -40 to +60 °C |
| | [Storage] | -40 to +80 °C |
| 4.2. | Humidity | 0 to 100 % RH |
| 4.3. | Altitude | 10,000 feet (3,048m) |
| 4.4. | Vibration | 5 G [49.03 m/s ²] (3 axis, 50 Hz) |
| 4.5. | Shock | 15 G [147.1 m/s ²] (3 axis) |
| 4.6. | Waterproof / Dustproof (IP Code) | IP 67 |
| 4.7. | Regulations | EU Directive (CE Marking) EMC (2014/30/EC) RoHS (2011/65/EU) Safety: EN60950-1 |
| 4.8. | Comply with RoHS (Restricting the use of Hazardous Substances) directives | |

* Above Specifications are subject to change without notice.

5. Outline Drawing

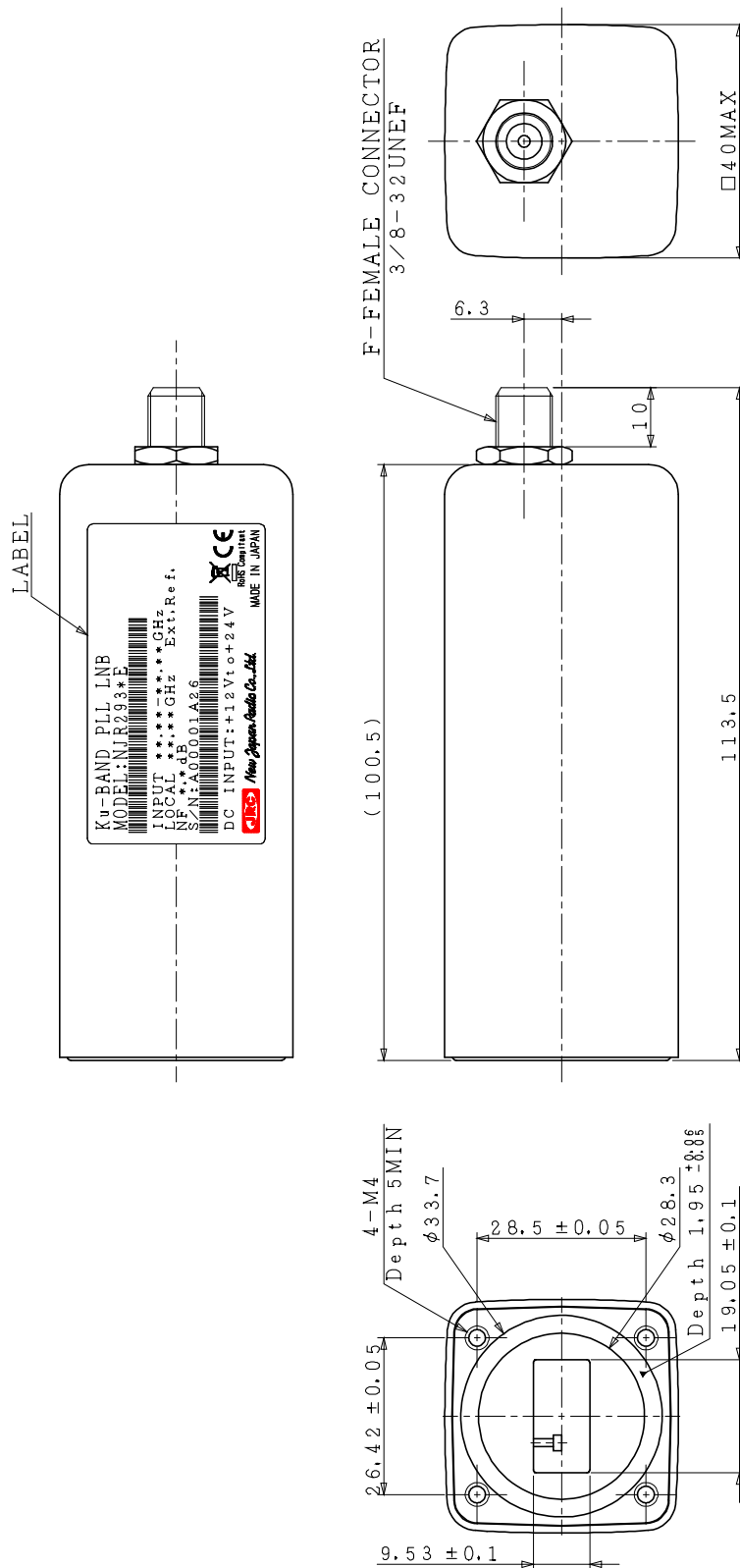
5.1. F-type Model



UNIT: mm
Tolerance ±0.5

* Above Specifications are subject to change without notice.

5.2. N-type Model

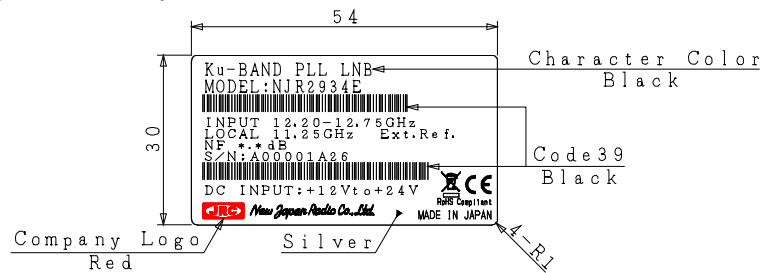


UNIT: mm
Tolerance ±0.5

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6. Label

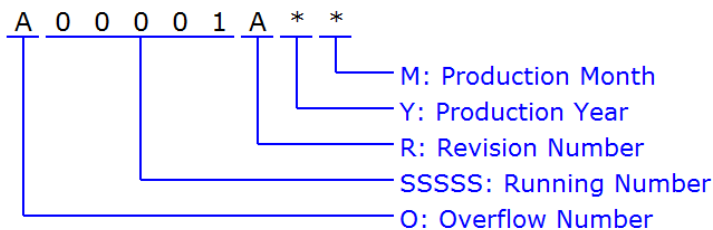
6.1. Label Outline (e.g. NJR2934E)



UNIT: mm

6.2. Definitions

Serial Number (OSSSSSRYM) - ALPHANUMERIC (9 characters)



O: Overflow Number - ALPHABET (1 character)

"A" to "Z", e.g.: A99999 ⇒ B00001

SSSSS: Running Number - NUMBER (5 digits)

"00001" to "99999"

R: Revision Number - ALPHABET (1 character)

"A" to "Z"

Y: Production Year - NUMBER (1 digit)

Calendar Number, e.g.: 2009: 9, 2010: 0, 2011: 1, 2012: 2 ····

M: Production Month - ALPHANUMERIC (1 character)

"1" to "9", "X" as October, "Y" as November, "Z" as December

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 - * Power Generator Control Equipment (nuclear, steam, hydraulic)
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