

# RFRP3120

5MHz to 300MHz 35dB Reverse Hybrid  
(Low Current)

The RFRP3120 is a hybrid reverse amplifier. The part employs a silicon die. It has extremely low distortion and superior return loss performance. The part also provides optimal reliability with low noise and is well suited for 5MHz to 300MHz CATV amplifiers for reverse channel systems.



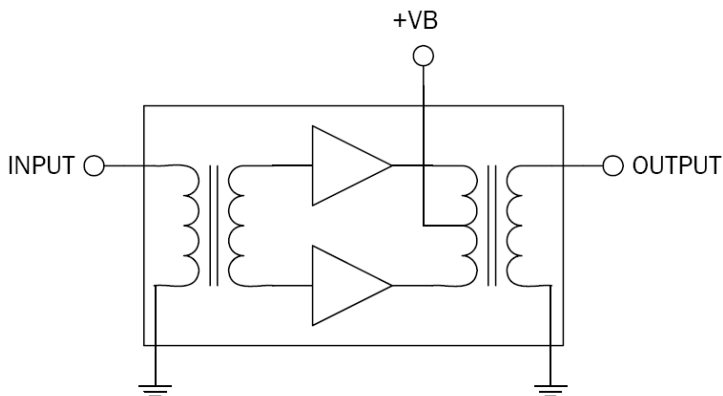
Package: SOT-115J

## Features

- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- 35.8dB Typical Gain at 300MHz
- 160mA Max. at 24V<sub>DC</sub>

## Applications

- Broadband/CATV
- 5MHz to 300MHz CATV Amplifier For Reverse Channel Systems



Functional Block Diagram

## Ordering Information

RFRP3120                      Box with 50 pieces

## Absolute Maximum Ratings

| Parameter                           | Rating      | Unit |
|-------------------------------------|-------------|------|
| RF Input Voltage (single tone)      | 65          | dBmV |
| DC Supply Over-Voltage (5 minutes)  | 30          | V    |
| Storage Temperature                 | -40 to +100 | °C   |
| Operating Mounting Base Temperature | -30 to +100 | °C   |



Caution! ESD sensitive device.



RoHS (Restriction of Hazardous Substances): Compliant per EU Directive 2011/65/EU.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

## Nominal Operating Parameters

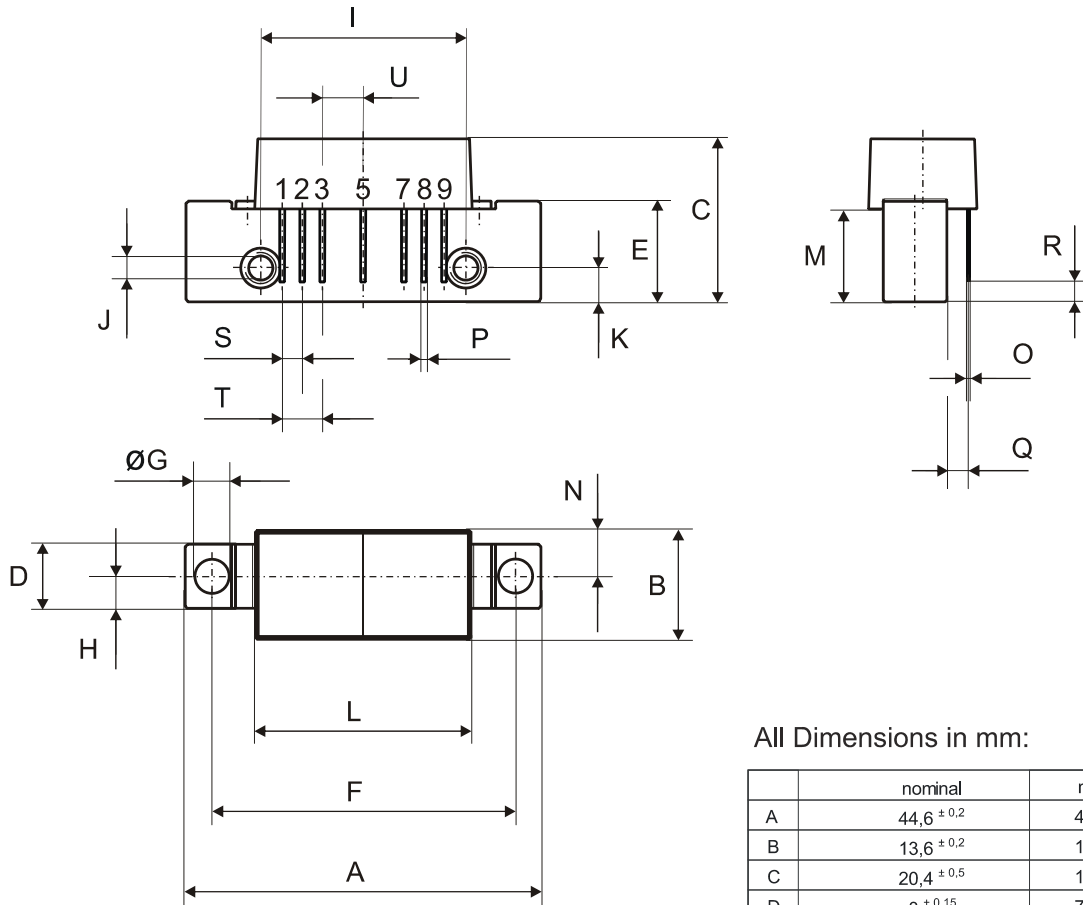
| Parameter                             | Specification |       |           | Unit | Condition  |
|---------------------------------------|---------------|-------|-----------|------|--|
|                                       | Min           | Typ   | Max       |      |  |
| <b>General Performance</b>            |               |       |           |      | <b><math>V_B = 24V</math>; <math>T_{MB} = 30^\circ C</math>; <math>Z_S = Z_L = 75\Omega</math></b> |
| Operating Frequency Range             | 5             |       | 300       | MHz  |  |
| Power Gain                            | 34.5          | 35.2  | 35.5      | dB   | $f = 5\text{MHz}$  |
|                                       | 34.3          | 35.8  |           | dB   | $f = 300\text{MHz}$  |
| Slope <sup>[1]</sup>                  | -0.2          | 0.6   | 1.2       | dB   | $f = 5\text{MHz}$ to 300MHz  |
| Flatness of Frequency Response        |               |       | $\pm 0.4$ | dB   | $f = 5\text{MHz}$ to 300MHz  |
| Input Return Loss                     | -20           |       |           | dB   | $f = 5\text{MHz}$ to 250MHz  |
| Input Return Loss                     | -16           |       |           | dB   | $f = 250\text{MHz}$ to 300MHz  |
| Output Return Loss                    | -20           |       |           | dB   | $f = 5\text{MHz}$ to 250MHz  |
| Output Return Loss                    | -16           |       |           | dB   | $f = 250\text{MHz}$ to 300MHz  |
| Noise Figure                          |               | 5.1   | 5.5       | dB   | $f = 300\text{MHz}$  |
| Total Current Consumption (DC)        | 150.0         | 158.0 | 160.0     | mA   |  |
| <b>Distortion data 5MHz to 300MHz</b> |               |       |           |      | <b><math>V_B = 24V</math>; <math>T_{MB} = 30^\circ C</math>; <math>Z_S = Z_L = 75\Omega</math></b> |
| CTB                                   |               |       | -70       | dBc  | 7 ch. flat; $V_O = 50\text{dBmV}$ <sup>[2]</sup>   |
|                                       |               | -62   | -60       | dBc  | 42 ch. flat; $V_O = 44\text{dBmV}$ <sup>[3]</sup>  |
| XMOD                                  |               |       | -63       | dBc  | 7 ch. flat; $V_O = 50\text{dBmV}$ <sup>[2]</sup>   |
|                                       |               | -60   | -57       | dBc  | 42 ch. flat; $V_O = 44\text{dBmV}$ <sup>[3]</sup>  |
| CSO                                   |               |       | -75       | dBc  | 7 ch. flat; $V_O = 50\text{dBmV}$ <sup>[2]</sup>   |
|                                       |               | -70   | -62       | dBc  | 42 ch. flat; $V_O = 44\text{dBmV}$ <sup>[3]</sup>  |

### Notes:

- The slope is defined as the difference between the gain at the start frequency and the gain at the stop frequency.
- 7 channels, NTSC frequency raster: T7-T13 (7.0MHz to 43MHz), +50dBmV flat output level.
- 42 channels, NTSC frequency raster: T7-T13 (7.0MHz to 43MHz), 2-6 (55.25MHz to 83.25MHz), A-W / 7-13 (121.25MHz to 295.25MHz), +44dBmV flat output level.

Composite Second Order (CSO) - The CSO parameter (both sum and difference products) is defined by the NCTA. Composite Triple Beat (CTB) - The CTB parameter is defined by the NCTA. Cross Modulation (XMOD) - Cross modulation (XMOD) is measured at baseband (selective voltmeter method), referenced to 100% modulation of the carrier being tested.

Package Outline and Pin Out

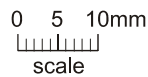


All Dimensions in mm:

|   | nominal        | min   | max   |
|---|----------------|-------|-------|
| A | 44,6 ± 0,2     | 44,4  | 44,8  |
| B | 13,6 ± 0,2     | 13,4  | 13,8  |
| C | 20,4 ± 0,5     | 19,9  | 20,9  |
| D | 8 ± 0,15       | 7,85  | 8,15  |
| E | 12,6 ± 0,15    | 12,45 | 12,75 |
| F | 38,1 ± 0,2     | 37,9  | 38,3  |
| G | 4 +0,2 / -0,05 | 3,95  | 4,2   |
| H | 4 ± 0,2        | 3,8   | 4,2   |
| I | 25,4 ± 0,2     | 25,2  | 25,6  |
| J | UNC 6-32       | -     | -     |
| K | 4,2 ± 0,2      | 4,0   | 4,4   |
| L | 27,2 ± 0,2     | 27,0  | 27,4  |
| M | 11,6 ± 0,5     | 11,1  | 12,1  |
| N | 5,8 ± 0,4      | 5,4   | 6,2   |
| O | 0,25 ± 0,02    | 0,23  | 0,27  |
| P | 0,45 ± 0,03    | 0,42  | 0,48  |
| Q | 2,54 ± 0,3     | 2,24  | 2,84  |
| R | 2,54 ± 0,5     | 2,04  | 3,04  |
| S | 2,54 ± 0,25    | 2,29  | 2,79  |
| T | 5,08 ± 0,25    | 4,83  | 5,33  |
| U | 5,08 ± 0,25    | 4,83  | 5,33  |

Pinning:

|  | 1     | 2   | 3   | 4   | 5 | 6 | 7 | 8 | 9      |
|--|-------|-----|-----|-----|---|---|---|---|--------|
|  | INPUT | GND | GND | +VB |   |   |   |   | OUTPUT |



Notes:

