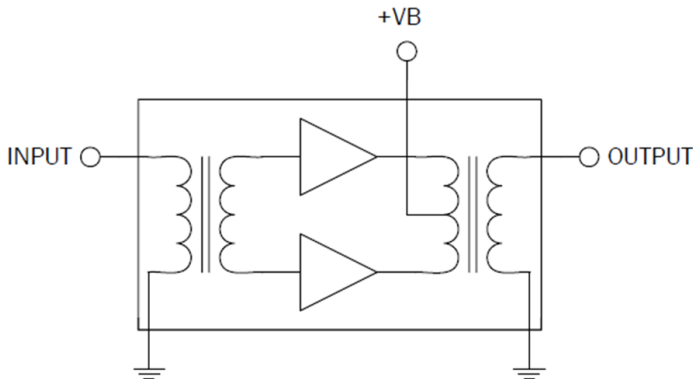


R1005300L

30dB Reverse Hybrid
5MHz to 100MHz (Low Current)

The R1005300L 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 100MHz 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
- 30.3dB Typical Gain at 100MHz
- 140mA Max. at 24VDC

Applications

- 5MHz to 100MHz CATV Amplifier For Reverse Channel Systems

Ordering Information

R1005300L 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 | | |
| General Performance | | | | | V+ = 24V; T_{MB} = 30°C; Z_S = Z_L = 75Ω |
| Power Gain | 29.5 | 30.0 | 30.5 | dB | f = 5MHz |
| | 29.3 | 30.3 | | dB | f = 100MHz |
| Slope ⁽¹⁾ | -0.2 | 0.3 | 0.5 | dB | f = 5MHz to 100MHz |
| Flatness of Frequency Response | | | ±0.3 | dB | f = 5MHz to 100MHz (peak to valley) |
| Input Return Loss | -20 | | | dB | f = 5MHz to 100MHz |
| Output Return Loss | -20 | | | dB | |
| Noise Figure | | 4.2 | 4.4 | dB | f = 100MHz |
| Total Current Consumption (DC) | 125.0 | 130 | 140.0 | mA | |
| Distortion Data 5MHz to 100MHz | | | | | V+ = 24V; T_{MB} = 30°C; Z_S = Z_L = 75Ω |
| CTB | | | -64 | dBc | 7 ch flat; V ₀ = 50dBmV ^[2] |
| | | | -61 | dBc | 12 ch flat; V ₀ = 50dBmV ^[3] |
| XMOD | | | -55 | dBc | 7 ch flat; V ₀ = 50dBmV ^[2] |
| | | | -51 | dBc | 12 ch flat; V ₀ = 50dBmV ^[3] |
| CSO | | | -68 | dBc | 7 ch flat; V ₀ = 50dBmV ^[2] |
| | | | -68 | dBc | 12 ch flat; V ₀ = 50dBmV ^[3] |

1. The slope is defined as the difference between the gain at the start frequency and the gain at the stop frequency.

2. 7 channels, NTSC frequency raster: T7 - T13 (7.0MHz to 43MHz), +50dBmV flat output level.

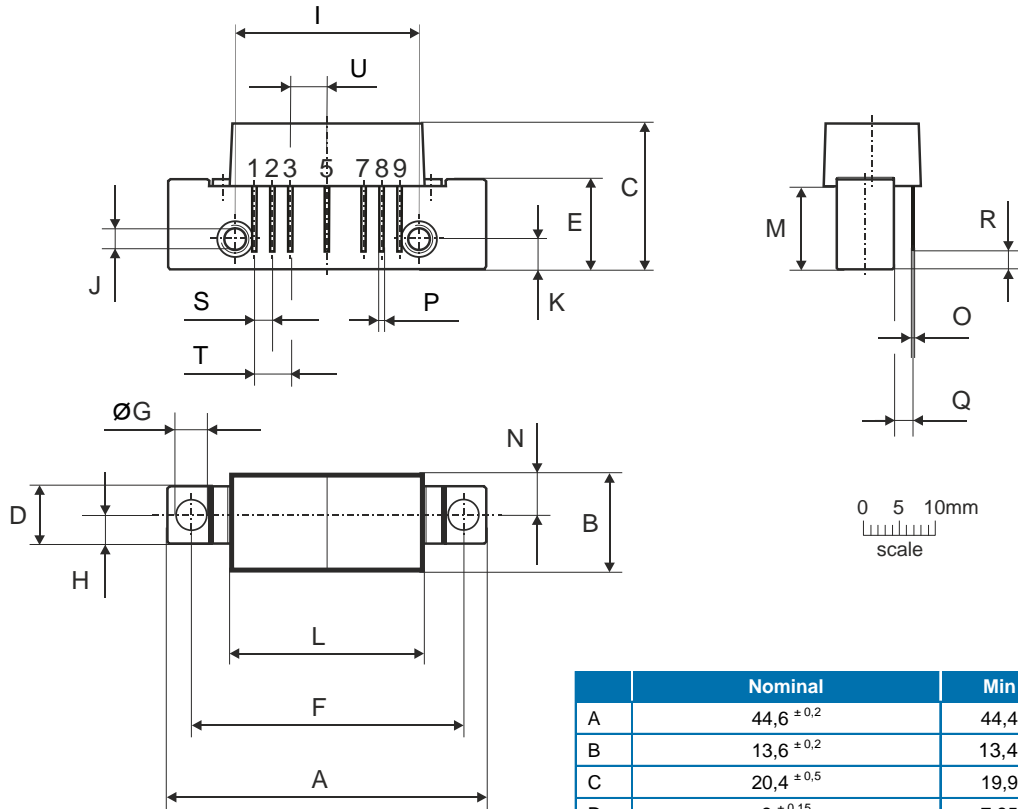
3. 12 channels, NTSC frequency raster: T7 - T13 (7.0MHz to 43MHz), 2 - 6 (55.25MHz to 83.25MHz), +50dBmV flat output level.

Composite Second Order (CSO) - The CSO parameter (both sum and difference products) is defined by the NCTA.

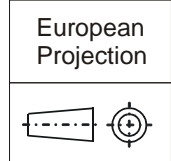
Composite Triple Beat (CTB) - The CTB parameter is defined by the NCTA.

Cross Modulation (XMOD) - Cross modulation (XMOD) is measured at baseband (selective voltmeter method), referenced to 100% modulation of the carrier being tested.

Package Drawing (Dimensions in millimeters)



Notes:



Pinning:

| Pin | Name |
|-----|--------|
| 1 | Input |
| 2-3 | GND |
| 4 | |
| 5 | +VB |
| 6 | |
| 7-8 | GND |
| 9 | Output |

| | 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 |