



Product Description

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 5 MHz to 100 MHz CATV amplifiers for reverse channel systems.

Features

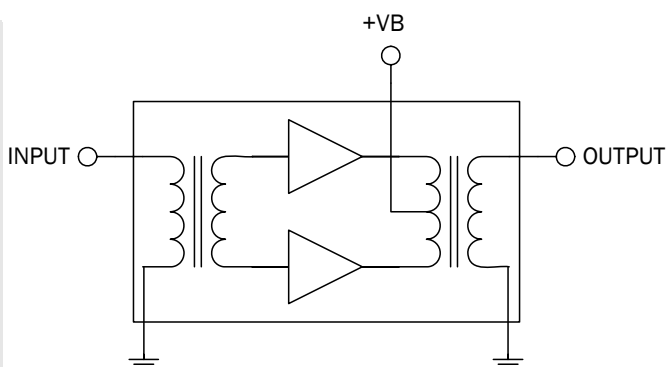
- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- 30.3dB Typ. Gain at 100MHz
- 140mA Max. at 24VDC

Applications

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

Optimum Technology Matching® Applied

- GaAs HBT
- GaAs MESFET
- InGaP HBT
- SiGe BiCMOS
- Si BiCMOS
- SiGe HBT
- GaAs pHEMT
- Si CMOS
- Si BJT
- GaN HEMT
- RF MEMS



Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					$V_B = 24V; T_{MB} = 30^\circ C; Z_S = Z_L = 75\Omega$
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
Input Return Loss	20.0			dB	f=5MHz to 100MHz
Output Return Loss	20.0			dB	f=5MHz to 100MHz
Noise Figure		2.3	3.0	dB	f=100MHz
Total Current Consumption (DC)	125.0	130.0	140.0	mA	

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

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.

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.

RoHS status based on EU Directive 2002/95/EC (at time of this document revision).

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Distortion data 5MHz to 100MHz					
CTB			-64	dBc	7 ch flat; $V_0=50\text{dBmV}^{[2]}$
			-61	dBc	12 ch flat; $V_0=50\text{dBmV}^{[3]}$
XMOD			-55	dB	7 ch flat; $V_0=50\text{dBmV}^{[2]}$
			-51	dB	12 ch flat; $V_0=50\text{dBmV}^{[3]}$
CSO			-68	dBc	7 ch flat; $V_0=50\text{dBmV}^{[2]}$
			-68	dBc	12 ch flat; $V_0=50\text{dBmV}^{[3]}$
d_2			-70	dBc	[4]
STB			-66	dB	[5]

2. 7 channels, US frequency raster: T7-T13(7.0MHz to 43.0MHz), +50dBmV flat output level.

3. 12 channels, US frequency raster: T7-T13 (7.0MHz to 43.0MHz), 2-6 (55.25MHz to 83.25MHz), +50dBmV flat output level.

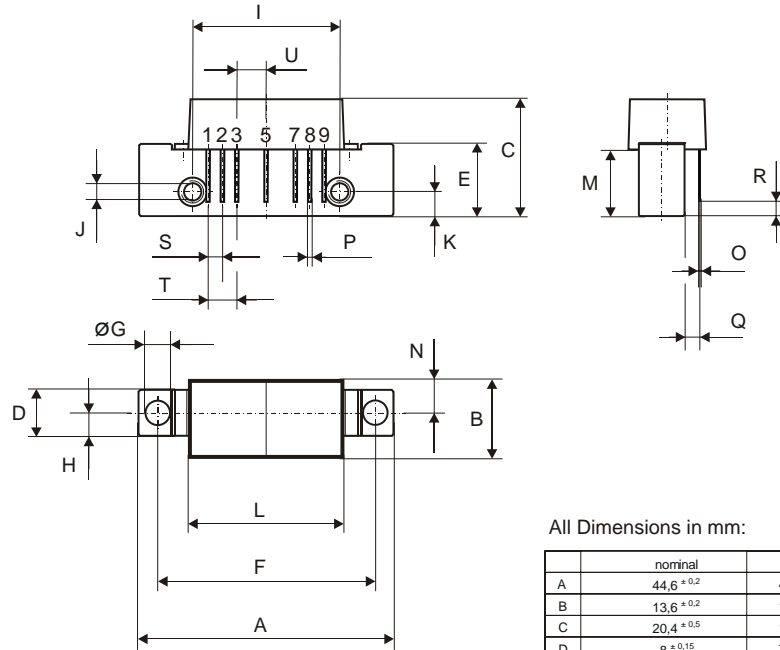
4. $f_1=7\text{MHz}$; $V_1=50\text{dBmV}$; $f_2=25\text{MHz}$; $V_2=50\text{dBmV}$; $f_{\text{TEST}}=f_1+f_2=32\text{MHz}$.

4. $f_1=13\text{MHz}$; $V_1=50\text{dBmV}$; $f_2=25\text{MHz}$; $V_2=V_1$; $f_3=7\text{MHz}$; $V_3=V_1$; $f_{\text{TEST}}=f_1+f_2-f_3=31\text{MHz}$.

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.

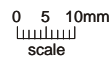


All Dimensions in mm:

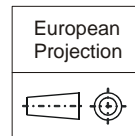
	nominal	min	max
A	44,6 ^{+0,2}	44,4	44,8
B	13,6 ^{+0,2}	13,4	13,8
C	20,4 ^{+0,5}	19,9	20,9
D	8 ^{+0,15}	7,85	8,15
E	12,6 ^{+0,15}	12,45	12,75
F	38,1 ^{+0,2}	37,9	38,3
G	4 ^{+0,2/-0,05}	3,95	4,2
H	4 ^{+0,2}	3,8	4,2
I	25,4 ^{+0,2}	25,2	25,6
J	UNC 6-32	-	-
K	4,2 ^{+0,2}	4,0	4,4
L	27,2 ^{+0,2}	27,0	27,4
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									
GND									
GND									
OUTPUT									



Notes:



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