

**Product Specification**  
**R1005300L**

Si Reverse, low current, 5 – 100MHz, 30.8dB typ. Gain @ 100MHz, 140mA max. @ 24VDC



**FEATURES**

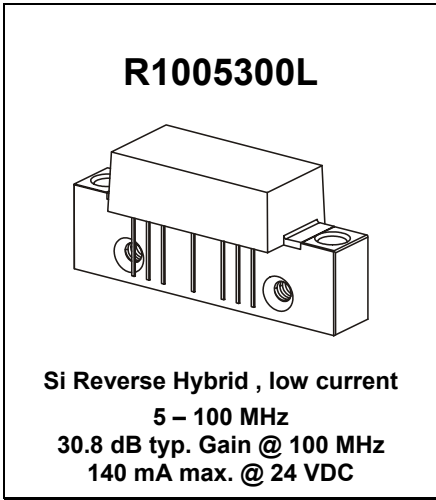
- Excellent linearity
- Superior return loss performance
- Extremely low distortion
- Optimal reliability
- Low noise
- Unconditionally stable under all terminations

**APPLICATION**

- 5 to 100 MHz CATV amplifier for reverse channel systems

**DESCRIPTION**

- Hybrid reverse amplifier employing silicon dice



**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134)

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V <sub>i</sub>	RF input voltage (single tone)	-	65	dBmV
V <sub>ov</sub>	DC supply over-voltage (5 minutes)	-	30	V
T <sub>stg</sub>	storage temperature	- 40	+ 100	°C
T <sub>mb</sub>	operating mounting base temperature	- 30	+ 100	°C

**CHARACTERISTICS**

Table 1: S-Parameter, Noise Figure, DC Current; V<sub>B</sub> = 24V; T<sub>mb</sub> = 30°C; Z<sub>S</sub> = Z<sub>L</sub> = 75 Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G <sub>p</sub>	power gain	f = 5 MHz	30.0	30.5	30.8	dB
		f = 100 MHz	29.8	30.8	-	dB
SL	slope <sup>1)</sup>	f = 5 to 100 MHz	-0.2	0.3	0.5	dB
FL	flatness of frequency response	f = 5 to 100 MHz	-		± 0.3	dB
S <sub>11</sub>	input return loss	f = 5 to 100 MHz	20.0		-	dB
S <sub>22</sub>	output return loss	f = 5 to 100 MHz	20.0		-	dB
F	noise figure	f = 100 MHz	-	2.3	3.0	dB
I <sub>tot</sub>	total current consumption (DC)		130.0	133.0	140.0	mA

Notes:

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

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**CHARACTERISTICS**

Table 2: Distortion data 5 – 100 MHz;  $V_B = 24V$ ;  $T_{mb} = 30^{\circ}C$ ;  $Z_S = Z_L = 75 \Omega$

SYMBOL	PARAMETER	CONDITION	MIN.	TYP.	MAX.	UNIT
CTB	composite triple beat	7 ch. flat; $V_o = 50 \text{ dBmV}^{(1)}$	-		- 64	dBc
		12 ch. flat; $V_o = 50 \text{ dBmV}^{(2)}$	-		- 61	dBc
XMOD	cross modulation	7 ch. flat; $V_o = 50 \text{ dBmV}^{(1)}$	-		- 55	dB
		12 ch. flat; $V_o = 50 \text{ dBmV}^{(2)}$	-		- 51	dB
CSO	composite second order distortion	7 ch. flat; $V_o = 50 \text{ dBmV}^{(1)}$	-		- 68	dBc
		12 ch. flat; $V_o = 50 \text{ dBmV}^{(2)}$	-		- 68	dBc
$d_2$	second order distortion	<sup>3)</sup>			- 70	dBc
STB	third order distortion	<sup>4)</sup>			- 66	dBc

Notes:

- 1) 7 channels, US frequency raster: T7 – T13 (7.0 to 43.0 MHz), +50 dBmV flat output level.
- 2) 12 channels, US frequency raster: T7 – T13 (7.0 to 43.0 MHz), 2 – 6 (55.25 to 83.25 MHz), +50 dBmV flat output level.
- 3)  $f_1 = 7 \text{ MHz}$ ;  $V_1 = 50 \text{ dBmV}$ ;  $f_2 = 25 \text{ MHz}$ ;  $V_2 = 50 \text{ dBmV}$ ;  $f_{TEST} = f_1 + f_2 = 32 \text{ MHz}$ .
- 4)  $f_1 = 13 \text{ MHz}$ ;  $V_1 = 50 \text{ dBmV}$ ;  $f_2 = 25 \text{ MHz}$ ;  $V_2 = V_1$ ;  $f_3 = 7 \text{ MHz}$ ;  $V_3 = V_1$ ;  
 $f_{TEST} = f_1 + f_2 - f_3 = 31 \text{ MHz}$ .

**Composite Second Order (CSO)**

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

**Composite Triple Beat (CTB)**

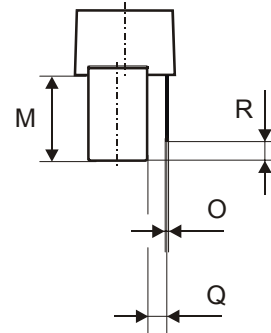
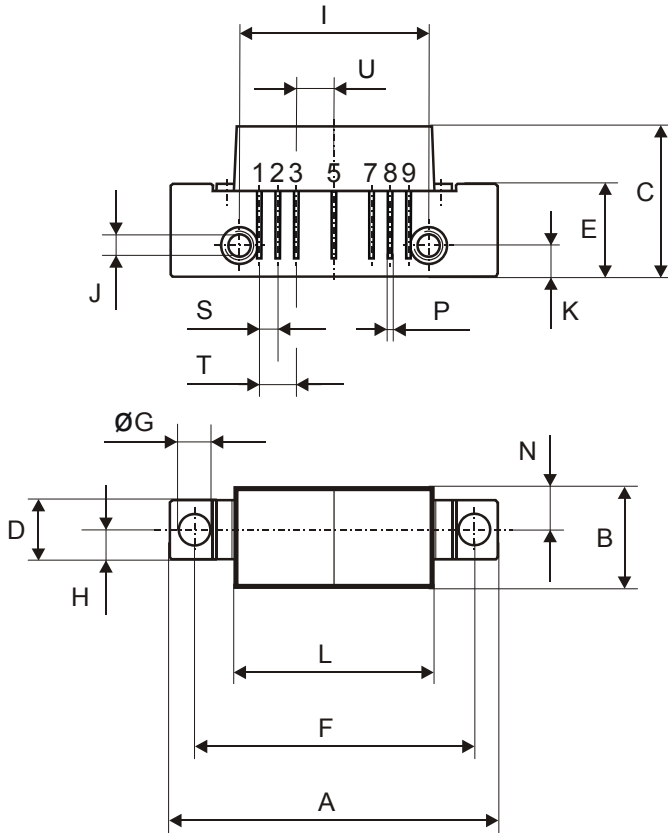
The CTB parameter is defined by the NCTA.

**Cross Modulation (XMOD)**

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

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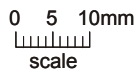


All Dimensions in mm:

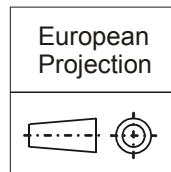
	nominal	min	max
A	44,6 ± 0,2	44,4	44,8
B	13,6 ± 0,2	13,4	13,8
C	20,4 ± 0,5	19,9	20,9
D	8 ± 0,15	7,85	8,15
E	12,6 ± 0,15	12,45	12,75
F	38,1 ± 0,2	37,9	38,3
G	4 <sup>+0,2 / -0,05</sup>	3,95	4,2
H	4 ± 0,2	3,8	4,2
I	25,4 ± 0,2	25,2	25,6
J	UNC 6-32	-	-
K	4,2 ± 0,2	4,0	4,4
L	27,2 ± 0,2	27,0	27,4
M	11,6 ± 0,5	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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**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective Product Specification	This data sheet contains target or goal specifications for product development.
Preliminary Product Specification	This data sheet contains preliminary data; supplementary data may be published later.
Product Specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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How to contact us:



Premier Devices Germany GmbH

Loeffelholzstrasse 20, D-90441 Nuernberg, Germany  
Phone: +49 (0) 911 9411 233, FAX: +49 (0) 911 9411 198,  
Email: [sales.germany@premierdevices.com](mailto:sales.germany@premierdevices.com), Internet: <http://www.premierdevices.de/>