

**Product Specification**  
**R3005300L**

Si Reverse, low current, 5 – 300MHz, 30.0dB typ. Gain @ 300MHz, 160mA max. @ 24VDC



**FEATURES**

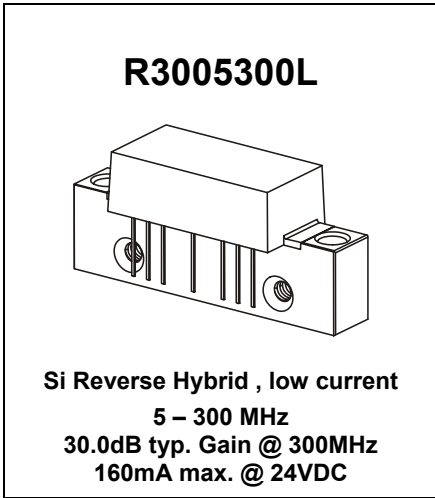
- Excellent linearity
- Superior return loss performance
- Extremely low distortion
- Optimal reliability
- Low noise
- Unconditionally stable under all terminations

**APPLICATION**

- 5 to 300 MHz CATV amplifier for reverse channel systems

**DESCRIPTION**

- Hybrid reverse amplifier employing silicon die



**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)	-	50	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	29.4	30.0	30.6	dB
		f = 300 MHz	29.1	30.0	31.1	dB
SL	Slope <sup>1)</sup>	f = 5 to 300 MHz	-0.3	0.0	0.5	dB
FL	flatness of frequency response	f = 5 to 300 MHz	-0.3		0.3	dB
S <sub>11</sub>	Input return loss	f = 5 to 200 MHz	20.0		-	dB
		f = 200 to 300 MHz	16.0		-	dB
S <sub>22</sub>	output return loss	f = 5 to 200 MHz	20.0		-	dB
		f = 200 to 300 MHz	16.0		-	dB
S <sub>12</sub>	reverse isolation	f = 5 to 300 MHz	-		-40.0	dB
F	Noise figure	f = 5 to 300 MHz	-		6.3	dB
I <sub>tot</sub>	total current consumption (DC)			145.0	160.0	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 – 300 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; $V_o = 50 \text{ dBmV}$ <sup>1)</sup> 22 ch. flat; $V_o = 50 \text{ dBmV}$ <sup>4)</sup>	-		- 74 - 60	dBc
XMOD	cross modulation	7 ch. flat; $V_o = 50 \text{ dBmV}$ <sup>1)</sup> 22 ch. flat; $V_o = 50 \text{ dBmV}$ <sup>4)</sup>	-		- 66 - 53	dB
CSO	composite second order distortion	7 ch. flat; $V_o = 50 \text{ dBmV}$ <sup>1)</sup> 22 ch. flat; $V_o = 50 \text{ dBmV}$ <sup>4)</sup>	-		- 72 - 68	dBc
$d_2$	second order distortion	<sup>2)</sup>			- 70	dBc
$V_o$	output voltage	$D_{im} = -60 \text{ dB}$ <sup>3)</sup>	62.0		-	dBmV

Notes:

- 1) 7 channels, US frequency raster: T7 – T13 (7.0 to 43.0 MHz), +50 dBmV flat output level.
- 2)  $f_1 = 83.25 \text{ MHz}$ ;  $V_1 = 50 \text{ dBmV}$ ;  $f_2 = 109.25 \text{ MHz}$ ;  $V_2 = 50 \text{ dBmV}$ ;  $f_{TEST} = f_1 + f_2 = 192.5 \text{ MHz}$ .
- 3)  $f_1 = 187.25 \text{ MHz}$ ;  $V_1 = 50 \text{ dBmV}$ ;  $f_2 = 194.25 \text{ MHz}$ ;  $V_2 = V_1 - 6\text{dB}$ ;  $f_3 = 196.25 \text{ MHz}$ ;  $V_3 = V_1 - 6\text{dB}$ ;  
 $f_{TEST} = f_1 + f_2 - f_3 = 185.25 \text{ MHz}$ , according to DIN45004B.
- 4) 22 channels, NTSC frequency raster: T7 – T13 plus 2-6 (55.25 to 83.25 MHz) and A - 7 (121.25 - 175.25 MHz), +50 dBmV flat output level.

**Composite Second Order (CSO)**

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

**Composite Triple Beat (CTB)**

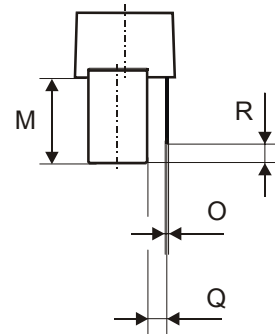
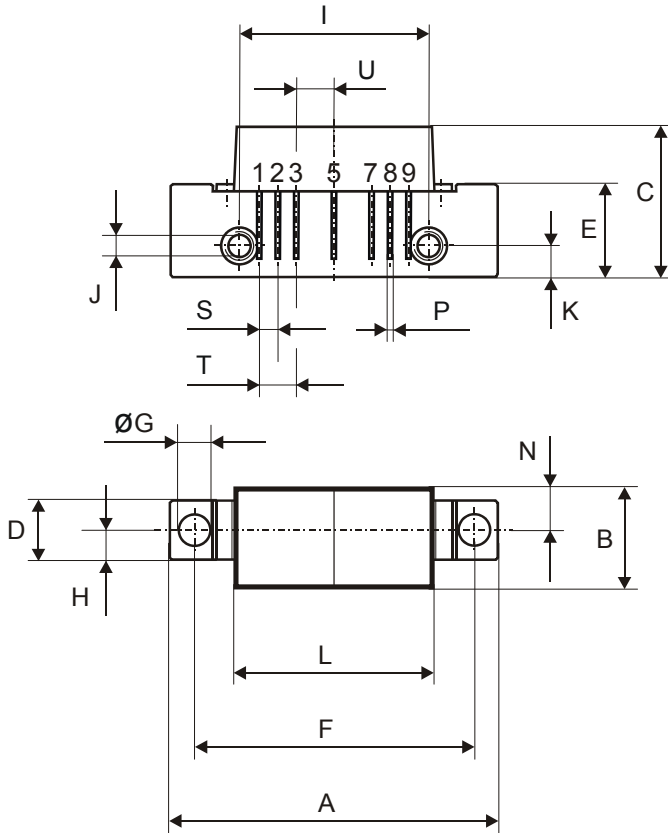
The CTB parameter is defined by the NCTA.

**Cross Modulation (XMOD)**

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

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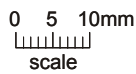


All Dimensions in mm:

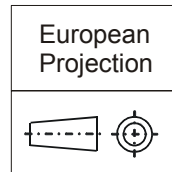
	nominal	min	max
A	44,6 ± 0,2	44,4	44,8
B	13,6 ± 0,2	13,4	13,8
C	20,4 ± 0,5	19,9	20,9
D	8 ± 0,15	7,85	8,15
E	12,6 ± 0,15	12,45	12,75
F	38,1 ± 0,2	37,9	38,3
G	4 <sup>+0,2 / -0,05</sup>	3,95	4,2
H	4 ± 0,2	3,8	4,2
I	25,4 ± 0,2	25,2	25,6
J	UNC 6-32	-	-
K	4,2 ± 0,2	4,0	4,4
L	27,2 ± 0,2	27,0	27,4
M	11,6 ± 0,5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