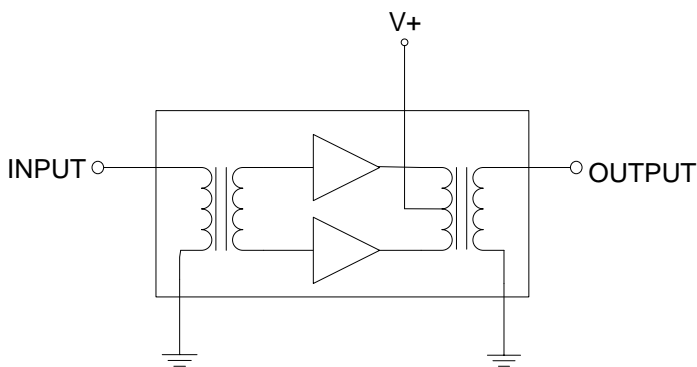


# RFPD3890

27dB Power Doubler Hybrid  
40MHz to 1003MHz

The RFPD3890 is a hybrid power doubler amplifier module. The part employs GaAs MESFET, GaAs pHEMT and GaN HEMT die, has high output capability, and is operated from 40MHz to 1003MHz. It provides excellent linearity and superior return loss performance with low noise and optimal reliability.



Package: SOT-115J

## Features

- Low Current
- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- High Output Capability
- 27.0dB Min. Gain at 1003MHz
- 385mA Max. at 24V<sub>DC</sub>

## Applications

- 40MHz to 1003MHz CATV Amplifier Systems

## Ordering Information

RFPD3890                      Box with 50 Pieces

## Absolute Maximum Ratings

Parameter	Rating	Unit
RF Input Voltage (single tone)	70	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_+ = 24V</math>; <math>T_{MB} = 30^\circ C</math>; <math>Z_S = Z_L = 75\Omega</math></b>
Power Gain	25.5	26.0	26.5	dB	$f = 50MHz$
	27.0	27.5	28.0	dB	$f = 1003MHz$
Slope <sup>[1]</sup>	0.5	1.5	2.0	dB	$f = 40MHz$ to $1003MHz$
Flatness of Frequency Response			0.8	dB	$f = 40MHz$ to $1003MHz$
Input Return Loss	20			dB	$f = 40MHz$ to $320MHz$
	18			dB	$f = 320MHz$ to $640MHz$
	17			dB	$f = 640MHz$ to $870MHz$
	15			dB	$f = 870MHz$ to $1003MHz$
Output Return Loss	20			dB	$f = 40MHz$ to $320MHz$
	19			dB	$f = 320MHz$ to $640MHz$
	18			dB	$f = 640MHz$ to $870MHz$
	16			dB	$f = 870MHz$ to $1003MHz$
Noise Figure		5.0	5.5	dB	$f = 50MHz$ to $1003MHz$
Total Current Consumption (DC)		370.0	385.0	mA	
<b>Distortion Data 40MHz to 550MHz</b>					<b><math>V_+ = 24V</math>; <math>T_{MB} = 30^\circ C</math>; <math>Z_S = Z_L = 75\Omega</math></b>
CTB		-73	-68	dBc	$V_O = 56.4dBmV$ at $1000MHz$ , $13.4dB$ extrapolated tilt, $79$ analog channels plus $75$ digital channels ( $-6dB$ offset) <sup>[2], [4]</sup>
XMOD		-67	-62	dBc	
CSO		-70	-65	dBc	
CIN	57	62		dB	
CTB		-69		dBc	$V_O = 52.0dBmV$ at $547.25MHz$ , $7dB$ tilt, $79$ analog channels <sup>[3], [4]</sup>
XMOD		-63		dBc	
CSO		-75		dBc	

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

2.  $79$  analog channels, NTSC frequency raster:  $55.25MHz$  to  $547.25MHz$ ,  $+43dBmV$  to  $+50dBmV$  tilted output level, plus  $75$  digital channels,  $-6dB$  offset relative to the equivalent analog carrier.

3.  $79$  analog channels, NTSC frequency raster:  $55.25MHz$  to  $547.25MHz$ ,  $+45dBmV$  to  $+52dBmV$  tilted output level

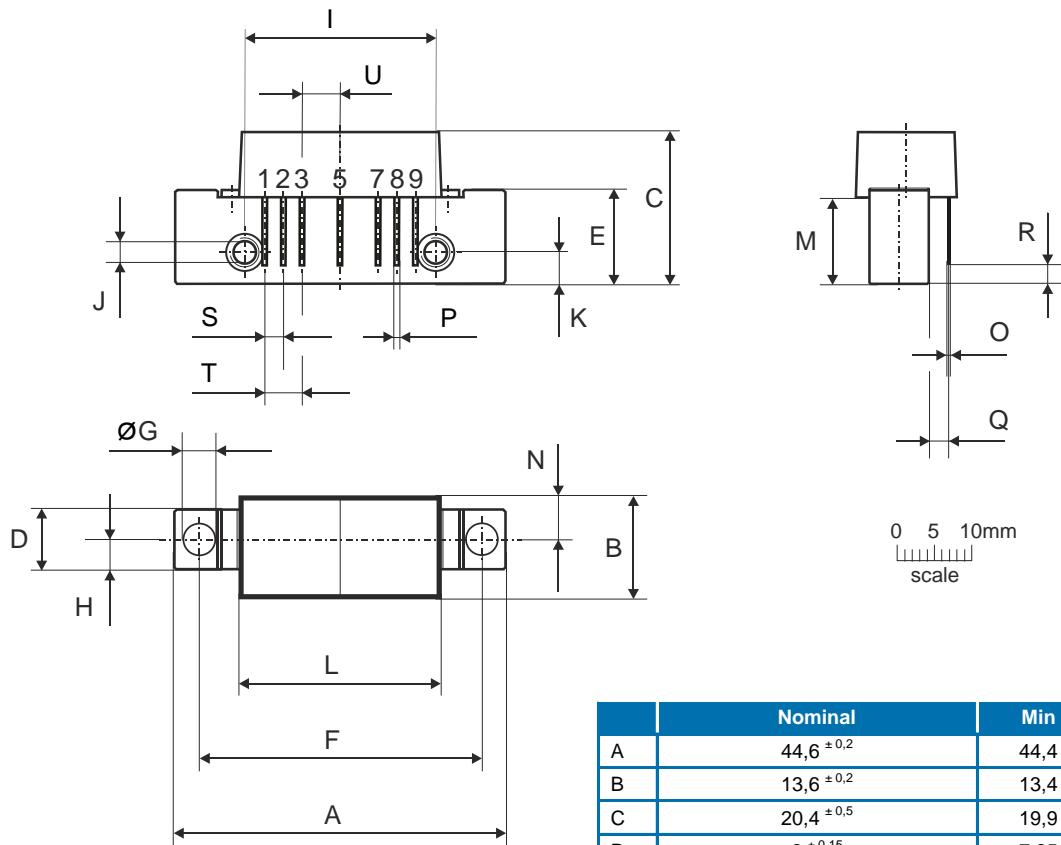
4. Composite Second Order (CSO) - The CSO parameter (both sum and difference products) is defined by the NCTA.

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

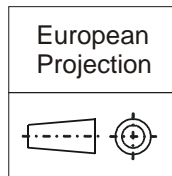
Cross Modulation (XMOD) - Cross modulation (XMOD) is measured at baseband (selective voltmeter method), referenced to  $100\%$  modulation of the carrier being tested.

Carrier to Intermodulation Noise (CIN) - The CIN parameter is defined by ANSI/SCTE 17 (Test procedure for carrier to noise).

Package Drawing (Dimensions in millimeters)



Notes:



Pinning:

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

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

# Mouser Electronics

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