QPA9831

GaAs/GaN Push Pull Hybrid 45MHz to 1218MHz

Product Overview

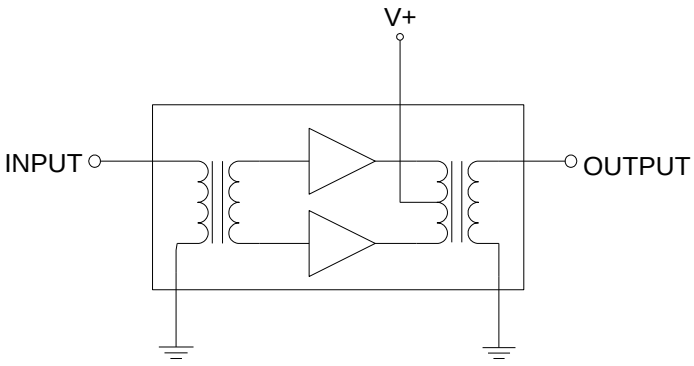
The QPA9831 is a Hybrid Push Pull amplifier module. The part employs GaAs MESFET, GaAs pHEMT and GaN HEMT die. QPA9831 is designed to operate from 45MHz to 1218MHz. It provides excellent linearity and superior return loss performance with low noise. The product is packaged in SOT-115J and uses the latest GaN technology for the output stage.

Package: SOT-115J

Key Features

- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- 23 dB min. Gain at 1218MHz
- 270mA max. at 24VDC

Functional Block Diagram



Applications

- 45 – 1218 MHz CATV Amplifier Systems
- DOCSIS 3.1 Applications

Ordering Information

Part No.	Description
QPA9831	Box with 50 pieces

Absolute Maximum Ratings

Parameter	Rating
RF Input Voltage (single Tone)	75 dBmV
DC Supply Over-Voltage (5 minutes)	30 V
Storage Temperature	−40 to +100 °C
Operating Mounting Base Temperature	−30 to +100 °C

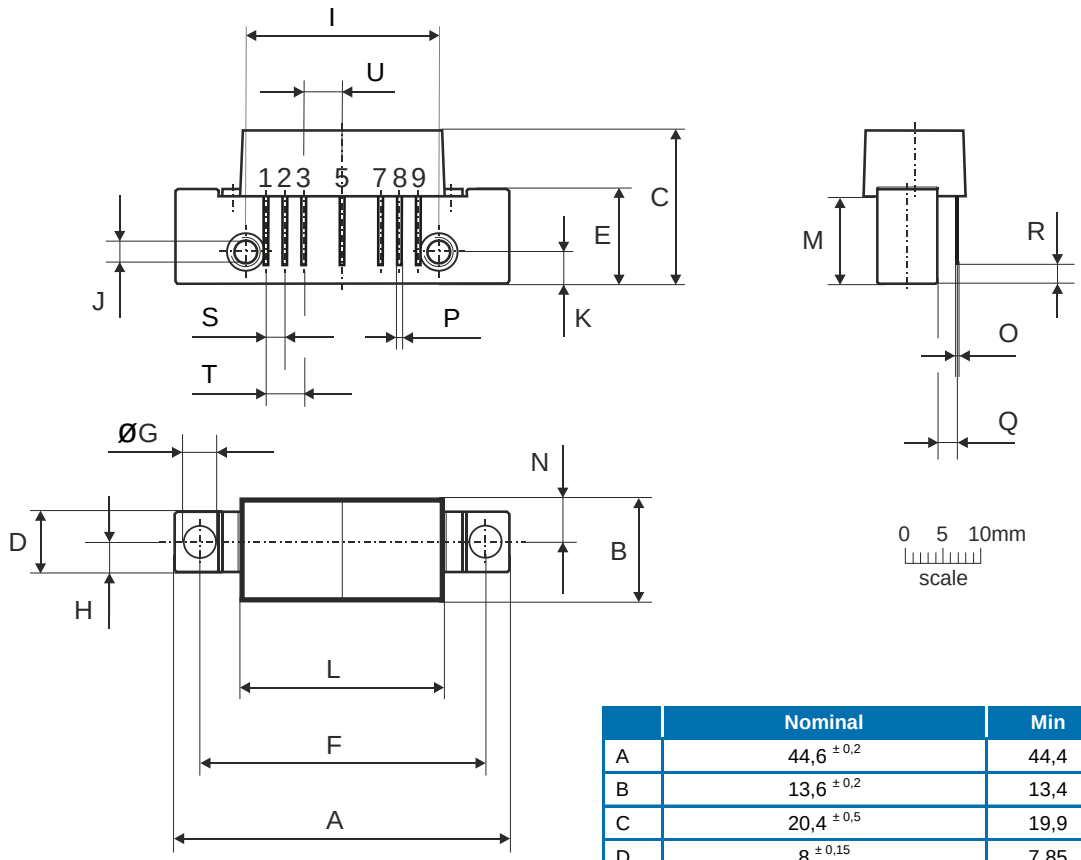
Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability.

Electrical Specifications

Parameter	Test conditions: V+=24V, T_{MB}=30°C, Z_S=Z_L=75Ω	Min	Typ	Max	Units
Operating Frequency Range		45		1218	MHz
Power Gain	f = 45 MHz	21.0	21.6	23.0	dB
	f = 1218 MHz	23.0	23.7	24.5	dB
Gain Slope	f = 45 MHz to 1218 MHz	1.0	2.0	2.5	dB
Gain Flatness	f = 45 MHz to 1218 MHz			0.8	dB
Input Return Loss	f = 45 MHz to 320 MHz	20			dB
	f = 320 MHz to 640 MHz	19			dB
	f = 640 MHz to 870 MHz	18			dB
	f = 870 MHz to 1003 MHz	17			dB
	f = 1003 MHz to 1218 MHz	16			dB
Output Return Loss	f = 45 MHz to 320 MHz	20			dB
	f = 320 MHz to 640 MHz	19			dB
	f = 640 MHz to 870 MHz	18			dB
	f = 870 MHz to 1003 MHz	17			dB
	f = 1003 MHz to 1218 MHz	16			dB
IDC			260	270	mA
Noise Figure	f = 45 MHz to 1218 MHz		5.0	5.5	dB
CTB	V_0 = 45 dBmV flat, 79 analog channels plus 111 digital channels (-6dB offset) [2][3], TCP[4] = 65.3dBmV		-72	-68	dBc
XMOD			-64	-60	dBc
CSO			-80	-73	dBc
CIN		66	70		dB

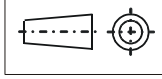
Notes:
1. The slope is defined as the difference between the gain at the start frequency and the gain at the stop frequency.
2. 79 analog channels, NTSC frequency raster: 55.25MHz to 547.25MHz, +45.0dBmV flat, plus 111 digital channels J.83/B, -6dB offset relative to the equivalent analog carrier.
3. Composite Triple Beat (CTB) - The CTB parameter is defined by ANSI/SCTE 6.
   Composite Second Order (CSO) - The CSO parameter (both sum and difference products) is defined by ANSI/SCTE 6.
   Cross Modulation (XMOD) - the XMOD parameter is defined by ANSI/SCTE 58, 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).
4. Total Composite Power

Package Drawing (Dimensions im mm)



Notes:

European Projection



	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:

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

Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	2	JEDEC JS-001
ESD – Charged Device Model (CDM)	C2b	JEDEC JS-002

Caution!
ESD-Sensitive Device

RoHS Compliance

This part is compliant with 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) as amended by Directive 2015/863/EU.

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

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