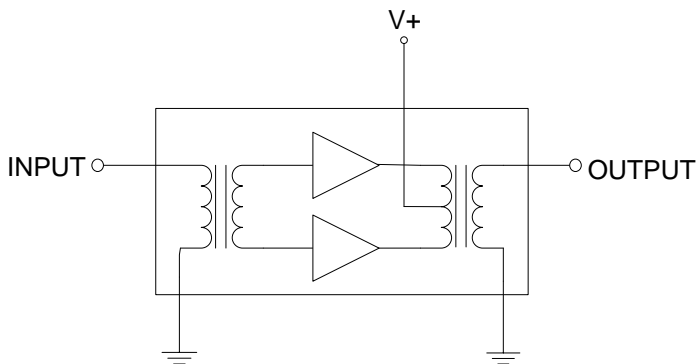


RFPD3210

GaAs/GaN Power Doubler Hybrid
45MHz to 1218MHz

The RFPD3210 is a Hybrid Power Doubler amplifier module. The part employs GaAs pHEMT die and GaN HEMT die, has high output capability, and operates from 45MHz to 1218MHz. It provides excellent linearity and superior return loss performance with low noise and optimal reliability.



Ordering Information

RFPD3210 Box with 50 pieces

Absolute Maximum Ratings

| Parameter | Rating | Unit |
|-------------------------------------|-------------|------|
| 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 |



Package: SOT-115J

Features

- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- Extremely High Output Capability
- 22.5dB Min. Gain at 1218MHz
- 480mA Max. at 24V_{DC}

Applications

- 45MHz to 1218MHz CATV Amplifier Systems



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 | | |
| General Performance | | | | | V+ = 24V; T_{MB} = 30°C; Z_S = Z_L = 75Ω |
| Power Gain | 21.3 | 21.8 | 22.3 | dB | f = 45MHz |
| | 22.5 | 22.8 | 24.0 | dB | f = 1218MHz |
| Slope ^[1] | 0.5 | 1.0 | 2.0 | dB | f = 45MHz to 1218MHz |
| Flatness of Frequency Response | | | 0.8 | dB | f = 45MHz to 1218MHz |
| Input Return Loss | 20 | | | dB | f = 45MHz to 320MHz |
| | 19 | | | dB | f = 320MHz to 640MHz |
| | 18 | | | dB | f = 640MHz to 870MHz |
| | 18 | | | dB | f = 870MHz to 1000MHz |
| | 17 | | | dB | f = 1000MHz to 1218MHz |
| Output Return Loss | 20 | | | dB | f = 45MHz to 320MHz |
| | 19 | | | dB | f = 320MHz to 640MHz |
| | 18 | | | dB | f = 640MHz to 870MHz |
| | 18 | | | dB | f = 870MHz to 1000MHz |
| | 17 | | | dB | f = 1000MHz to 1218MHz |
| Noise Figure | | 3.0 | 4.0 | dB | f = 50MHz to 1218MHz |
| Total Current Consumption (DC) | | 470 | 480 | mA | |
| Distortion Data 40MHz to 550MHz | | | | | V+ = 24V; T_{MB} = 30°C; Z_S = Z_L = 75Ω |
| CTB | | -73 | -68 | dBc | V _O = 62dBmV at 1000MHz, 18dB extrapolated tilt, 79 analog channels plus 75 digital channels (-6dB offset) ^{[2][4]} |
| XMOD | | -68 | -63 | dBc | |
| CSO | | -76 | -70 | dBc | |
| CIN | 55 | 57 | | dB | |
| Distortion Data 40MHz to 550MHz | | | | | V+ = 24V; T_{MB} = 30°C; Z_S = Z_L = 75Ω |
| CTB | | -78 | | dBc | V _O = 62dBmV at 1218MHz, 22dB extrapolated tilt, 79 analog channels plus 111 digital channels (-6dB offset) ^{[3][4]} |
| XMOD | | -77 | | dBc | |
| CSO | | -80 | | dBc | |
| CIN | | 58 | | dB | |

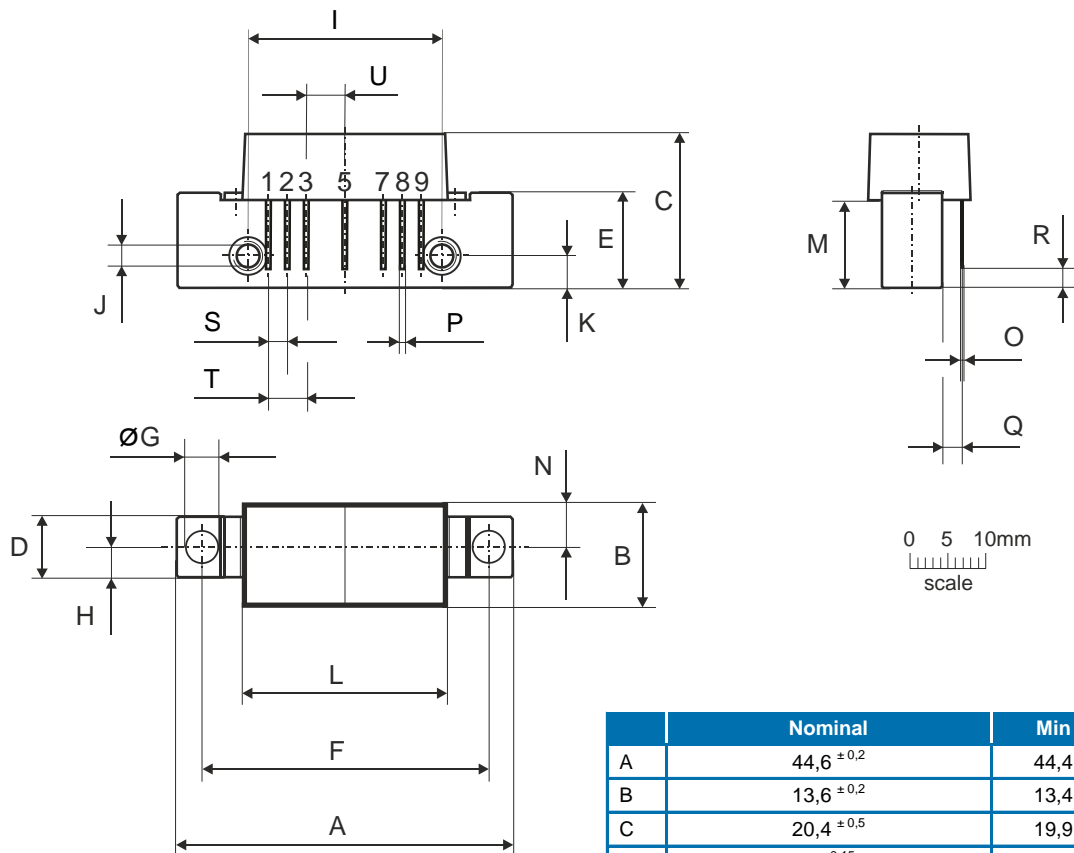
1. The slope is defined as the difference between the gain at the start frequency and the gain at the stop frequency.

2. 79 analog channels, NTSC frequency raster: 55.25MHz to 547.25MHz, +44dBmV to +53.4dBmV tilted output level, plus 75 digital channels, -6dB offset relative to the equivalent analog carrier.

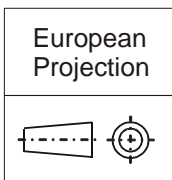
3. 79 analog channels, NTSC frequency raster: 55.25MHz to 547.25MHz, +40dBmV to +49.4dBmV tilted output level, plus 111 digital channels, -6dB offset relative to the equivalent analog carrier.

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 ±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 |

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