

Product Features

- 2-Way Splitter
- Small size (3X3 mm)
- QFN SMD Type package
- Higher productivity
- Lower manufacturing cost
- -63dBc CSO 135 Channels @ +15dBmV/ch
- -73dBc CTB 135 Channels @ +15dBmV/ch
- -65dBc XMD 135 Channels @ +15dBmV/ch
- 4 dB Typical Noise Figure
- 75 ohm input and outputs

Applications

- Multi Tuner Set-Top Boxes
- Home Gateways
- FTTx (G-PON, GE-PON)



Package Type : QFN 3X3

Description

AD211 is designed as low cost Active Divider for many applications including FTTH, CATV System.

This MMIC is based on Gallium Arsenide Enhancement Mode pHEMT which shows low current draw and very low noise.

The data in this spec sheet is valid only for 75ohm application.

Electrical Specifications

| PARAMETER | UNIT | MIN | TYP | MAX | Typ | |
|------------------------|---|-----------|------|-----|-----|-----|
| Frequency | MHz | 30 ~ 1000 | | | - | |
| Gain | dB | 7 | 8 | - | 8 | |
| Gain Flatness | dB | - | 0.7 | 1 | 1 | |
| Input Return Loss | dB | - | -14 | - | -9 | |
| Output Return Loss | dB | - | -12 | - | -11 | |
| IN&OUT Port Isolation | dB | - | -26 | - | -25 | |
| OUT&OUT Port Isolation | dB | - | -35 | - | -35 | |
| Output IP3 | dBm | 27 | 30 | - | 30 | |
| 1dB Compression Point | dBm | 14 | 16.5 | - | 14 | |
| Noise Figure | dB | - | 4 | 6 | 3.5 | |
| CSO | 50 ~ 870MHz 135 channel@ Input Power +15dBmV/ch | dBc | - | -63 | -60 | -57 |
| CTB | | dBc | - | -73 | -65 | -73 |
| XMOD | | dBc | - | -65 | -60 | -65 |
| DC Current | mA | - | 90 | - | 90 | |
| Supply Voltage | V | 5 | | | 3.3 | |

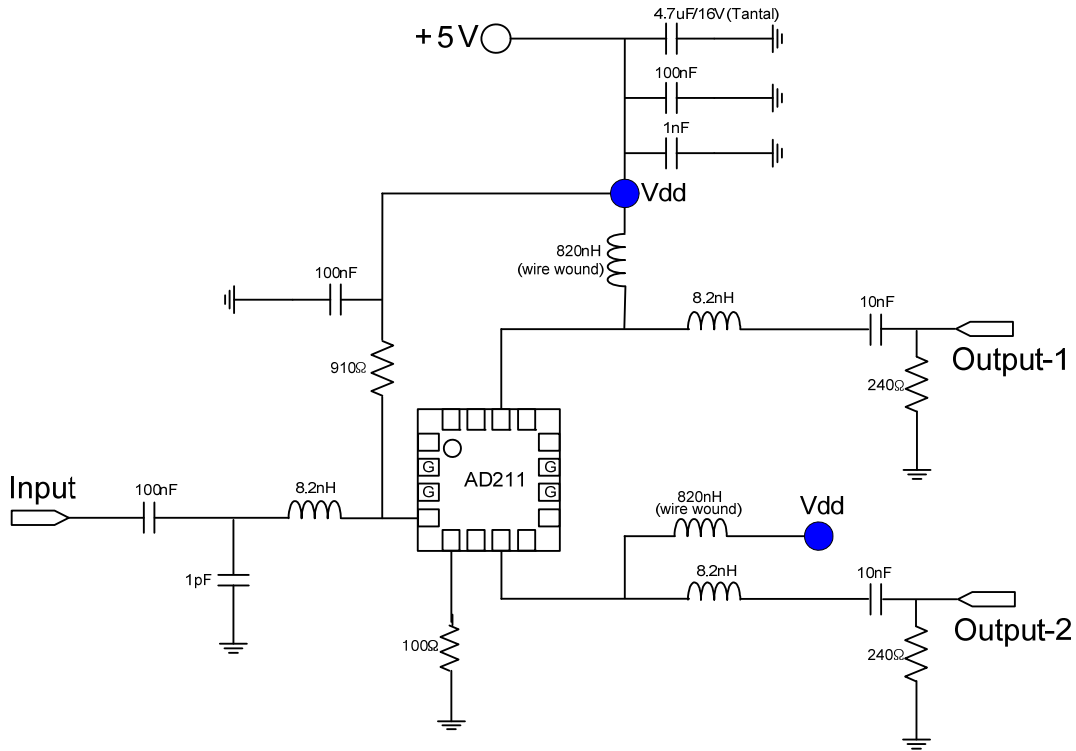
Note

1. Test conditions unless otherwise noted. Test Freq = 500MHz, T=25°C, Vdd=5V, 75Ω system
2. OIP3 measured with 2 tones at an output power of +0dBm/tone separated by 1MHz, Test Freq = 500MHz

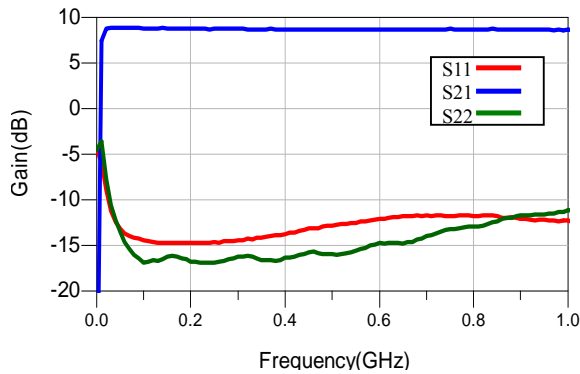
Absolute Maximum Ratings

| PARAMETER | UNIT | MIN | TYP | MAX | CONDITION |
|-----------------------|------|-----|-----|-----|-----------|
| Device Voltage | VDC | - | 5 | 6 | - |
| Operating Temperature | °C | -40 | - | 85 | - |
| Storage Temperature | °C | -40 | - | 150 | - |

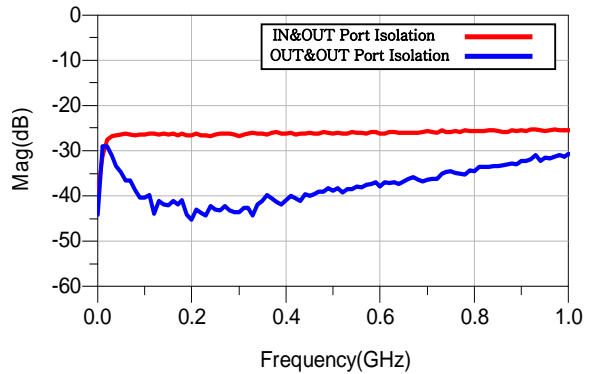
Application Circuit @ 30 ~ 1000MHz, 5V, 75ohm System



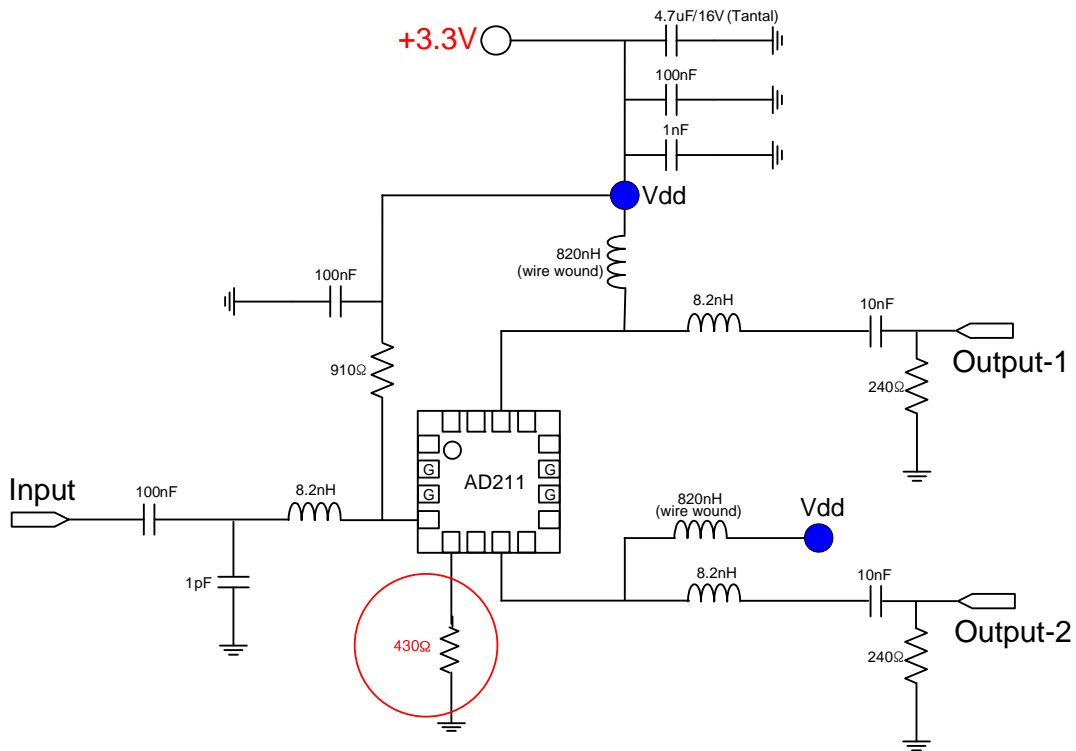
S-Parameter



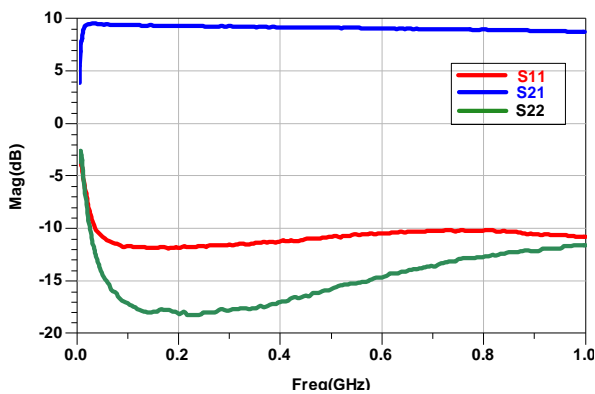
Isolation



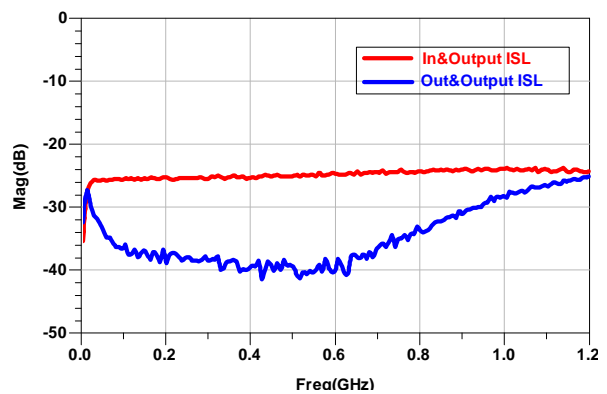
Application Circuit @ 30 ~ 1000MHz, +3.3V, 75ohm System



S-Parameter



Isolation



Multi-Tone Test : 135CH_FLAT@Input Power +15dBmV/Ch

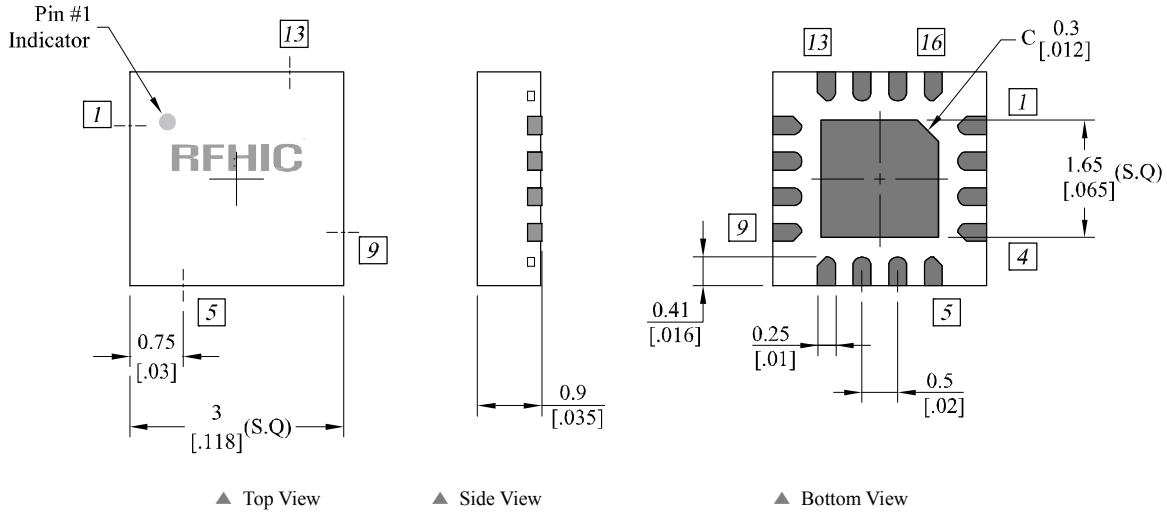
| | | Level : Input +15dBmV | | | | Tilt : 135CH | | | | |
|--------|------|-----------------------|---------|-------|---------|--------------|---------|---------|---------|---------|
| FRQ | XMOD | CTB RAW | CTB COR | N-FLR | CSU RAW | CSU COR | CSU FRQ | CSL RAW | CSL COR | CSL FRQ |
| 55.25 | 65.1 | 74.4 | 74.8 | 84.3 | 82.6 | 86.9 | 56 | 72.4 | 72.8 | 53.99 |
| 77.25 | 65.5 | 74.9 | 75.4 | 84.6 | 73.7 | 74.1 | 77.99 | 83.9 | 88.3 | 76.57 |
| 109.25 | 65.4 | 74 | 74.4 | 84.8 | 83.3 | 87.6 | 109.99 | 72.9 | 73.2 | 108 |
| 211.25 | 65.4 | 72.6 | 72.9 | 84 | 79.6 | 81.8 | 212.5 | 70.5 | 70.7 | 209.99 |
| 331.25 | 65.4 | 72.5 | 72.9 | 83 | 74 | 74.6 | 332.5 | 67.9 | 68.1 | 329.99 |
| 445.25 | 65.7 | 72.6 | 73.1 | 82.8 | 72.4 | 72.7 | 446.49 | 67.5 | 67.7 | 443.99 |
| 547.25 | 66.1 | 72.8 | 73.3 | 82.3 | 68.8 | 69 | 548.49 | 67.2 | 67.4 | 545.99 |
| 637.25 | 66.4 | 72.6 | 73.2 | 81.9 | 67.2 | 67.3 | 638.49 | 68.4 | 68.6 | 635.99 |
| 745.25 | 66.9 | 73.3 | 74 | 81.8 | 65.7 | 65.8 | 746.48 | 72.4 | 72.9 | 743.98 |
| 859.25 | 66.5 | 73.5 | 74.5 | 80.3 | 63.5 | 63.6 | 860.49 | 75.9 | 78.1 | 858.49 |
| Min | 65.1 | 72.5 | 72.9 | 80.3 | 63.5 | 63.6 | 56 | 67.2 | 67.4 | 53.99 |
| Max | 66.9 | 74.9 | 75.4 | 84.8 | 83.3 | 87.6 | 860.49 | 83.9 | 88.3 | 858.49 |

Multi-Tone Test : 135CH_FLAT@Input Power +15dBmV/Ch, Vdd = +3.3V

| | | Level : Input +15dBmV | | | | Tilt : 135CH_FLAT | | | | |
|--------|------|-----------------------|---------|-------|---------|-------------------|---------|---------|---------|---------|
| FRQ | XMOD | CTB RAW | CTB COR | N-FLR | CSU RAW | CSU COR | CSU FRQ | CSL RAW | CSL COR | CSL FRQ |
| 55.25 | 71.6 | 78.3 | 81.3 | 81.1 | 76.1 | 77.7 | 55.99 | 64.8 | 64.9 | 53.99 |
| 77.25 | 72.4 | 77 | 78.9 | 81.6 | 65 | 65 | 77.99 | 81.3 | 85.7 | 75.9 |
| 109.25 | 71.8 | 78.2 | 80.4 | 82.4 | 77.1 | 78.8 | 109.99 | 65.7 | 65.7 | 107.99 |
| 211.25 | 72.3 | 77.9 | 79.8 | 82.2 | 71.3 | 71.7 | 212.5 | 66.8 | 66.9 | 209.99 |
| 331.25 | 73.8 | 77.1 | 79.6 | 80.7 | 66.6 | 66.7 | 332.49 | 64.9 | 65 | 329.99 |
| 445.25 | 74.6 | 77.6 | 79.8 | 81.6 | 64.2 | 64.2 | 446.49 | 65.3 | 65.4 | 443.99 |
| 547.25 | 74.9 | 76.3 | 78.5 | 80.2 | 62.2 | 62.2 | 548.5 | 64.4 | 64.5 | 545.98 |
| 637.25 | 75.4 | 76.3 | 78.9 | 79.7 | 61.8 | 61.8 | 638.49 | 66.4 | 66.6 | 635.98 |
| 745.25 | 79.4 | 75.8 | 78.4 | 79.2 | 59.5 | 59.5 | 746.49 | 69.4 | 69.8 | 743.99 |
| 859.25 | 90.2 | 75.5 | 79.8 | 77.3 | 57.5 | 57.5 | 860.49 | 70.2 | 71.2 | 858.49 |
| Min | 71.6 | 75.5 | 78.4 | 77.3 | 57.5 | 57.5 | 55.99 | 64.4 | 64.5 | 53.99 |
| Max | 90.2 | 78.3 | 81.3 | 82.4 | 77.1 | 78.8 | 860.49 | 81.3 | 85.7 | 858.49 |

Package Dimensions (Type: QFN3x3)

* Unit: mm[inch] | Tolerance: ± 0.2 [.008]



| Pin Description | | | | | | | |
|-----------------|----------|--------|----------------|--------|----------|--------|----------|
| Pin No | Function | Pin No | Function | Pin No | Function | Pin No | Function |
| 1 | NC | 5 | Input Matching | 9 | NC | 13 | NC |
| 2 | GND | 6 | NC | 10 | GND | 14 | Output-2 |
| 3 | GND | 7 | Output-1 | 11 | GND | 15 | NC |
| 4 | Input | 8 | NC | 12 | NC | 16 | NC |

*** Mounting Configuration Notes**

1. Ground / thermal via holes are critical for the proper performance of this device.
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. Mounting screws can be added near the part to fasten the board to a heatsink. Ensure that the ground / thermal via hole region contacts the heatsink.
4. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink.
5. RF trace width depends upon the PCB material and construction.
6. Use 1 oz. Copper minimum.

Revision History

| Part Number | Release Date | Version | Modification | Data Sheet Status |
|-------------|--------------|---------|------------------------------------|-------------------|
| AD211 | 2013.01.08 | 1.3 | Change by a new dimension form | - |
| AD211 | 2012.09.10 | 1.2 | Change by a new document form | - |
| AD211 | 2012.02.06 | 1.1 | 3.3V Application Circuit was added | - |

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