



**THE DATASHEET OF  
ACU2109RS3P1**





**SKYWORKS®**



**| CATV Solutions**

# Enabling Information and Entertainment with Advanced Technologies

As an innovator of high performance analog semiconductors connecting people, places and things, Skyworks' wide-ranging solutions are addressing a number of growing markets including CATV where we are enabling the delivery of high speed data channels and content to subscribers around the world.

With the pace of technology developments continually changing the way consumers receive information and entertainment, we are supporting the ever increasing demand for data requirements, combining world-class performance with industry-leading reliability. We have the most comprehensive portfolio of wide bandwidth DOCSIS 3.1 and EuroDOCSIS 3.1 compliant ultra-linear RF amplifiers.



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# Featured Applications

## ***DOCSIS 3.1, 1.2 GHz HFC***

New DOCSIS 3.1 and 1218 MHz bandwidth Hybrid Fiber Coaxial (HFC) system deployments will mean higher data rates and more entertainment options than ever before for millions of users who access their content via fixed wired CATV networks. Skyworks' family of 1218 MHz CATV infrastructure amplifiers designed for these rugged and ultra-high performance applications are enabling the future of high-speed internet access by offering broader bandwidth, higher RF output power, and higher gain options.

## ***Deep Fiber Node + 0***

The best CATV HFC system architecture for achieving maximum data rates for consumers requires putting the fiber node as deep within the system as possible, minimizing service group size. The reduction in active system components after the node also offers reductions in overall power consumption and improvements in network reliability. Skyworks' family of super-high RF power output stage drivers and accompanying Push-pull intermediate stage drivers, are enabling these Deep Fiber / Node + 0 architectures with the highest efficiencies and maximum linear RF power—all at standard power supply voltages.

## ***1 GHz HFC***

Global upgrades from 550 and 870 MHz to 1000 MHz CATV HFC networks show no signs of stopping. Skyworks offers a complete suite of 12 V and 24 V CATV infrastructure amplifiers in both MMIC and Hybrid formats. These 1 GHz amplifiers are ideal for nodes, system amps, and line extenders, both as drop-in replacements for legacy devices as well as new designs where performance and cost effectiveness are key.

## ***870 MHz HFC***

Skyworks' 870 MHz CATV infrastructure amplifier products offer customers a decades-long legacy of reliability, performance, and value. Our portfolio of 12 V and 24 V amplifiers for 870 MHz CATV equipment upgrades enable cost-efficient CATV deployments.

## ***Headend and Remote PHY***

Performance demands for each channel in the CATV headend continue to increase. Skyworks' CATV infrastructure amplifiers targeting headend applications have stayed ahead of demanding linearity, bandwidth, and power requirements. Our 1218 MHz headend amplifiers include both fixed and variable gain options enabling the latest in headend systems, as well as future Remote PHY systems.

## ***FTTx***

Fiber to the home, curb, and premises—plus standard optical receiver modules for CATV fiber nodes—all require highly linear broadband RF amplifiers to enable the conversion from optical to RF. Skyworks' optical receiver products offer Automatic Gain Control (AGC) range, linearity, and integration for simplified receiver designs that require less tuning and higher line yields than discrete designs.

## ***Set-top and Cable Modems***

Our devices support the increasing requirements for today's set-top boxes. Skyworks' portfolio of Wi-Fi and LTE solutions enable multifunction set-top boxes and gateways supporting data-centric consumers. Solutions include 75 Ohm broadband LNAs and ultra-high linearity switches that feature ZigBee® RF4CE™ and Bluetooth® low energy connectivity.

# New and Featured Products by Applications

## | The Right Design Choice Starts Here

We invite you to review our CATV product offerings from our broad portfolio. Full product specifications are available starting on page 8 in the order shown on the table below.

**NEW** products (purple, bold) are continually being introduced at Skyworks. For the latest information, please visit the New Products section of our website at [www.skyworksinc.com](http://www.skyworksinc.com).

**Coming Soon** products (blue, bold) indicates products that will be available soon for purchase.

| Part Number          | Description  | Applications              |                        |             |             |                           |      |                            |
|----------------------|--|---------------------------|------------------------|-------------|-------------|---------------------------|------|----------------------------|
|                      |  | DOCSIS 3.1<br>1.2 GHz HFC | Deep Fiber<br>Node + 0 | 1.0 GHz HFC | 870 MHz HFC | Headend and<br>Remote PHY | FTTx | Set-top and<br>Cable Modem |
| <b>Amplifiers</b>    |  |                           |                        |             |             |                           |      |                            |
| <b>SKY65452-92LF</b> | 40 MHz to 1 GHz Broadband 75 Ω CATV Low Noise Amplifier                  |                           |                        |             |             |                           |      |                            |
| SKY65450-92LF        | 40 MHz to 1 GHz Broadband 75 Ω CATV Low Noise Amplifier with Bypass Mode |                           |                        |             |             |                           |      |                            |
| ACA0861A, B, C, D    | 750 / 860 MHz CATV Line Amplifier MMIC                                   |                           |                        |             |             |                           |      |                            |
| ACA0862B, D          | 1 GHz CATV Line Amplifier MMIC   |                           |                        |             |             |                           |      |                            |
| ACA1205              | 750 / 870 MHz CATV Line Amplifier MMIC                                   |                           |                        |             |             |                           |      |                            |
| ACA1206              | 1 GHz CATV Line Amplifier MMIC   |                           |                        |             |             |                           |      |                            |
| ACA1212              | 1.2 GHz, 12 dB Gain, SOIC  |                           |                        |             |             |                           |      |                            |
| ACA1216              | 1.2 GHz, 27 dB Gain, Power Doubler SOIC                                  |                           |                        |             |             |                           |      |                            |
| ACA1240              | 1.2 GHz, 35 dB Gain, Edge QAM, MMIC                                      |                           |                        |             |             |                           |      |                            |
| ACA2402              | 750 / 870 / 1000 MHz CATV Push-pull Line Amplifier SOIC                  |                           |                        |             |             |                           |      |                            |
| ACA2402E             | 750 / 870 MHz CATV Push-pull Line Amplifier SOIC                         |                           |                        |             |             |                           |      |                            |
| ACA2407              | 750 / 870 / 1000 MHz CATV Power Doubler Line Amplifier SOIC              |                           |                        |             |             |                           |      |                            |
| ACA2407E             | 750 / 870 MHz CATV Power Doubler Line Amplifier SOIC                     |                           |                        |             |             |                           |      |                            |
| ACA2420              | 1000 MHz High Output Power Doubler Line Amplifier SOIC                   |                           |                        |             |             |                           |      |                            |
| ACA2429              | 1.2 GHz, 25 dB Gain, High Output Power, GaN, SOIC                        |                           |                        |             |             |                           |      |                            |
| ACA2431              | 1.2 GHz, 28 dB Gain, High Output Power, GaN, SOIC                        |                           |                        |             |             |                           |      |                            |
| ACA2460              | 1.2 GHz, 28 dB Gain, CATV Push-pull Driver Amplifier                     |                           |                        |             |             |                           |      |                            |
| ACA2461              | 1.2 GHz, 25 dB Gain, CATV Push-pull Driver Amplifier                     |                           |                        |             |             |                           |      |                            |
| <b>ACA2778</b>       | 1 GHz, 34.5 dB Gain, CATV Hybrid   |                           |                        |             |             |                           |      |                            |
| ACA2786              | 1 GHz, 25 dB Gain, CATV Hybrid   |                           |                        |             |             |                           |      |                            |
| ACA2788              | 1 GHz, 28 dB Gain, CATV Hybrid   |                           |                        |             |             |                           |      |                            |
| ACA3748              | 870 MHz, 25 dB Gain, CATV Hybrid   |                           |                        |             |             |                           |      |                            |
| ACA3754              | 870 MHz, 28 dB Gain, CATV Hybrid   |                           |                        |             |             |                           |      |                            |
| <b>ACA4788</b>       | 1.2 GHz, 23 dB Gain, High Output Power CATV Hybrid                       |                           |                        |             |             |                           |      |                            |
| <b>ACA4789</b>       | 1.2 GHz, 25 dB Gain, High Output Power CATV Hybrid                       |                           |                        |             |             |                           |      |                            |
| ABA3100              | 1 GHz, 12 dB Gain, Balanced Low Noise Amplifier                          |                           |                        |             |             |                           |      |                            |
| ABA3101              | 1.2 GHz, 12 dB Gain, Balanced Low Noise Amplifier                        |                           |                        |             |             |                           |      |                            |
| ADA10000             | Single-ended Amplifier   |                           |                        |             |             |                           |      |                            |
| ADA10001             | Single-ended Amplifier   |                           |                        |             |             |                           |      |                            |
| ADA1200              | Single-ended Amplifier MMIC  |                           |                        |             |             |                           |      |                            |
| ARA05050             | Reverse Amplifier with Step Attenuator                                   |                           |                        |             |             |                           |      |                            |

| Part Number              | Description  | Applications              |                        |             |             |                           |      |                            |
|--------------------------|--|---------------------------|------------------------|-------------|-------------|---------------------------|------|----------------------------|
|                          |  | DOCSIS 3.1<br>1.2 GHz HFC | Deep Fiber<br>Node + 0 | 1.0 GHz HFC | 870 MHz HFC | Headend and<br>Remote PHY | FTTx | Set-top and<br>Cable Modem |
| <b>Amplifiers</b>        |  |                           |                        |             |             |                           |      |                            |
| ARA2004                  | Reverse Amplifier with Step Attenuator                   |                           |                        |             |             |                           |      |                            |
|                          | Programmable Gain Amplifier for DOCSIS 3.0 Upstream Path |                           |                        |             |             |                           |      |                            |
| ACA2604                  | Fiber-to-the-Home RF Amplifier                           |                           |                        |             |             |                           |      |                            |
| <b>Diodes</b>            |  |                           |                        |             |             |                           |      |                            |
| SMP1307 Series           | Attenuator Series Pair SOT-23                            |                           |                        |             |             |                           |      |                            |
| <b>Front-end Modules</b> |  |                           |                        |             |             |                           |      |                            |
| SE5012T                  | 5 GHz Front-end Module with Power Detector               |                           |                        |             |             |                           |      |                            |
| SE5516A                  | Dual Band 802.11a / g / n / ac Wireless LAN Front-end    |                           |                        |             |             |                           |      |                            |
| SE2438T                  | 2.4 GHz Smart Energy / ZigBee® Front-end Module          |                           |                        |             |             |                           |      |                            |
| SE2431L                  | 2.4 GHz ZigBee® / 802.15.4 Front-end Module              |                           |                        |             |             |                           |      |                            |
| SKY66109-11              | 2.4 GHz ZigBee® / Smart Energy Front-end Module          |                           |                        |             |             |                           |      |                            |
| SKY65366-11              | 400 MHz Transmit / Receive Front-end Module              |                           |                        |             |             |                           |      |                            |
| <b>Mixers</b>            |  |                           |                        |             |             |                           |      |                            |
| ACU2109                  | Wideband Tuner Upconverter                               |                           |                        |             |             |                           |      |                            |
| <b>Splitters</b>         |  |                           |                        |             |             |                           |      |                            |
| APS3625                  | Five-way Active Power Splitter                           |                           |                        |             |             |                           |      |                            |
| <b>Switches</b>          |  |                           |                        |             |             |                           |      |                            |
| SKY13548-385LF           | 5 to 1800 MHz Single Control SPDT 75 Ω Switch            |                           |                        |             |             |                           |      |                            |
| SKY13547-490LF           | 5 to 1800 MHz Ultra-high Linearity SPDT 75 Ω Switch      |                           |                        |             |             |                           |      |                            |

## Competitor Cross Reference

### Skyworks Part Number Competitive Part Number

#### 75 Ohm Gain Block Amplifiers for Hybrid Fiber Coaxial (HFC)

|          |           |
|----------|-----------|
| ABA3100  | CGB-1089Z |
| ABA3101  | RFC A8830 |
| ADA10000 | TAT7430B  |

#### 12V Line Amplifiers for HFC

|          |           |
|----------|-----------|
| ACA0862D | TAT8804   |
| ACA1206  | RFC A8818 |
| ACA1212  | QPB8808   |
| ACA1216  | QPB8808   |
| ACA1240  | RFAM3620  |

### Skyworks Part Number Competitive Part Number

#### 24V Line Amplifiers for HFC

|                |                      |
|----------------|----------------------|
| ACA2402        | RFCM3080             |
| ACA2460        | RFCM4363             |
| ACA2461        | RFCM4363             |
| ACA2407        | RFCM2680             |
| ACA2420        | RFCM2680             |
| ACA2429        | RFCM3316             |
| ACA2431        | RFCM3326             |
| <b>ACA2778</b> | S10040340            |
| ACA3748        | G8740250GTH          |
| ACA3754        | G8740270GTH          |
| ACA2786        | D10040250GTH         |
| ACA2788        | D10040270GTH         |
| <b>ACA4788</b> | RFPD3580 or RFPD3570 |
| <b>ACA4789</b> | RFPD3540             |

### Skyworks Part Number Competitive Part Number

#### Upstream Amplifiers for HFC

|          |         |
|----------|---------|
| ARA05050 | TAT3814 |
| ARA2017  | TAT3814 |

#### FTTx/RFoG RF Amplifiers for HFC

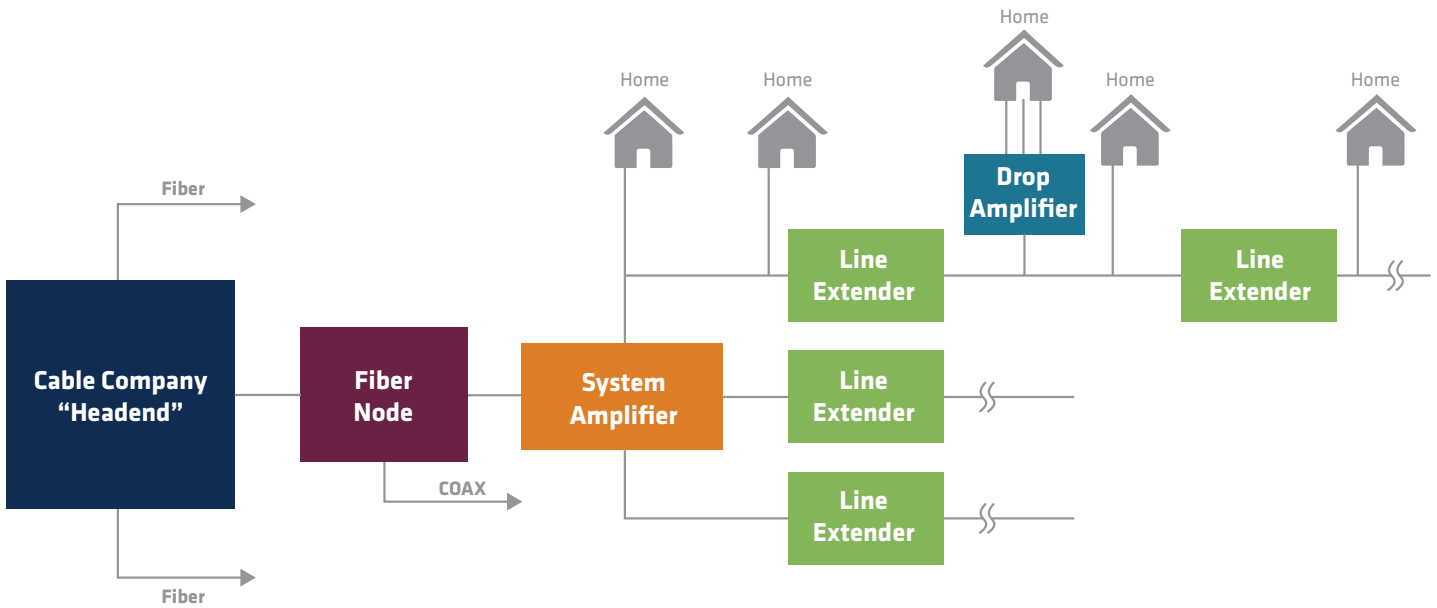
|         |         |
|---------|---------|
| ACA2604 | TAT6254 |
|---------|---------|

#### SPDT (SP2T) RF Switches

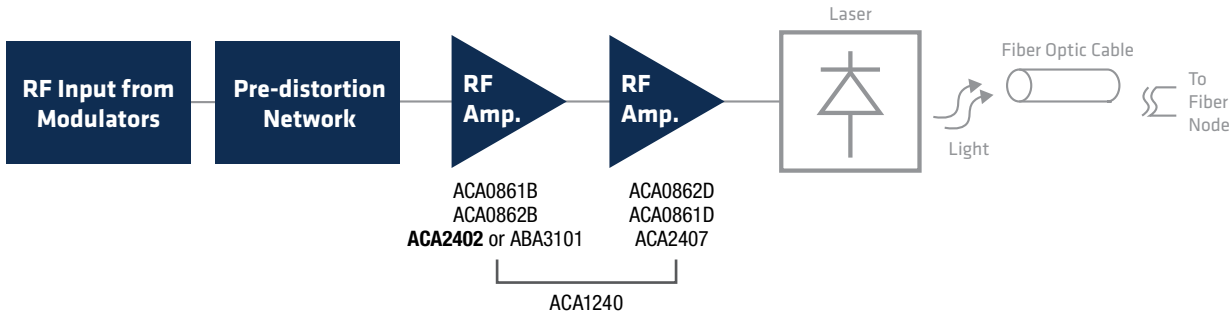
|                |          |
|----------------|----------|
| SKY13547-490LF | RFSW1012 |
|----------------|----------|

# Block Diagrams

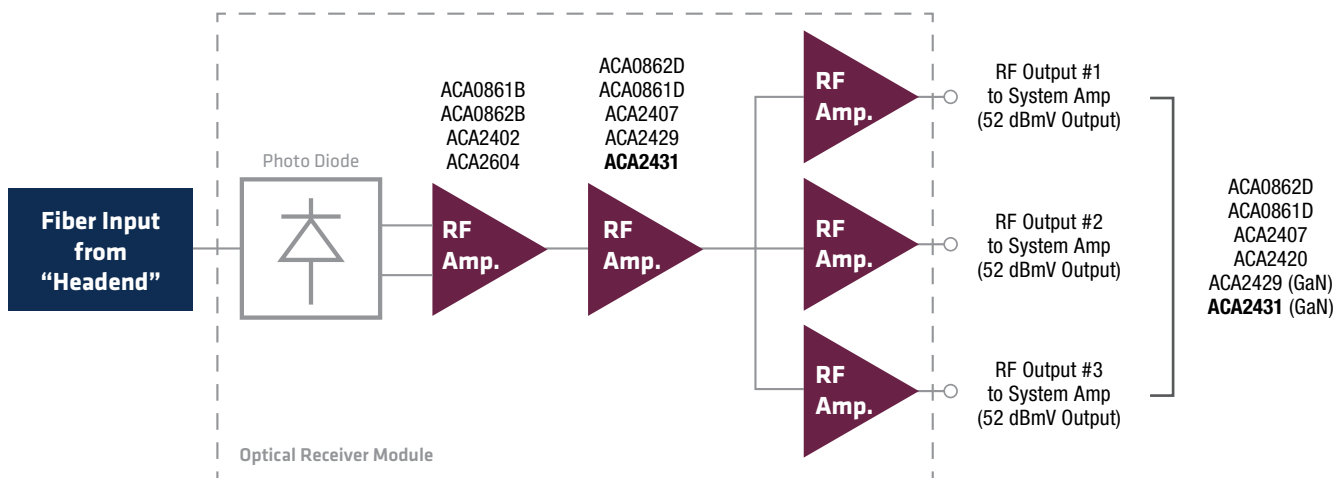
## Existing HFC System



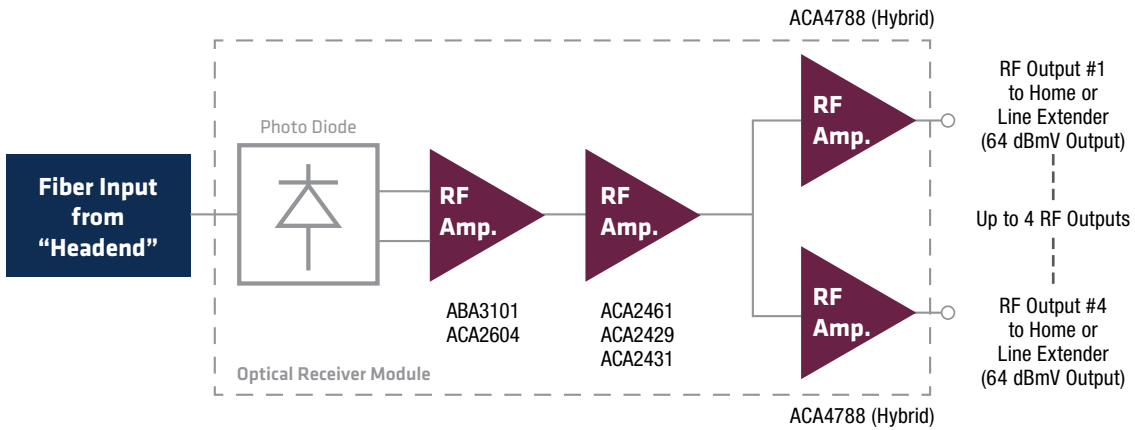
## Headend: Optical Transmitter



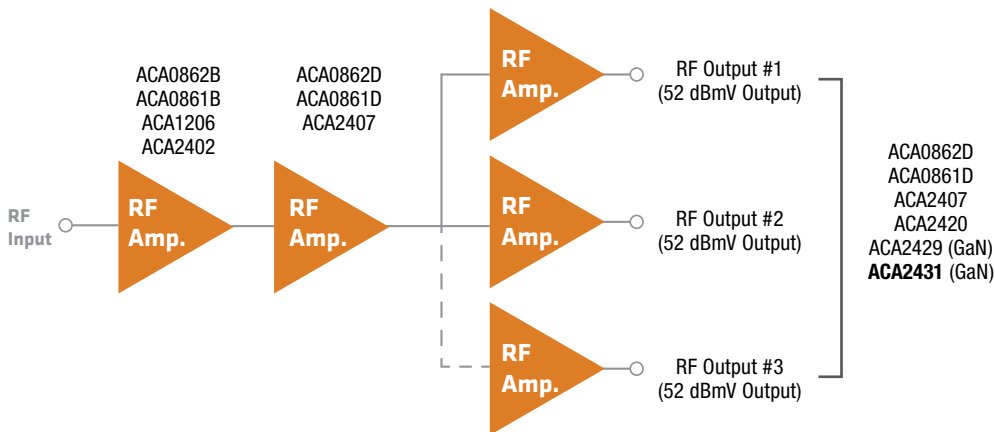
## Typical Fiber Node (up to 5,000 Homes per Node)



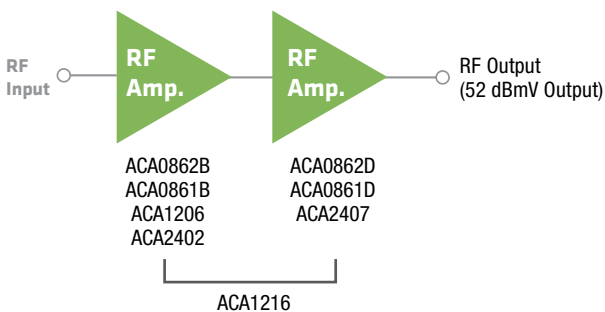
## Deep Fiber Node (up to 200 Homes per Node)



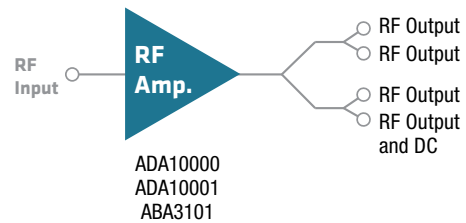
## Typical System or Trunk Amplifier



## Typical Line Extenders




## Drop Amplifier





# Product Specifications

Specification tables for products in this brochure are provided on the following pages. For a complete list of our newest products, please visit the New Products section of our website [www.skyworksinc.com](http://www.skyworksinc.com).

 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, please refer to Skyworks Definition of Green™ document number SQ04-0074.












## Amplifiers

### Broad Market Low Noise Amplifiers





| Part Number   | Frequency (GHz) | Gain Typ. (dB) | OIP3 (dBm) | OP <sub>1dB</sub> (dBm) | V <sub>DD</sub> (V) | Supply Current Typ. (mA) | Noise Figure (dB) | Package (mm)                    |
|---|-----------------|----------------|------------|-------------------------|---------------------|--------------------------|-------------------|---------------------------------|
|  SKY65452-92LF | 0.04–1.0        | 15             | 28.4       | –                       | –                   | 42                       | 2.9               | 6-pin SC-70<br>2.1 x 2.0 x 0.95 |
|  SKY65450-92LF | 0.04–1.0        | 15             | 28.4       | –                       | –                   | 42                       | 2.9               | 6-pin SC-70<br>2.1 x 2.0 x 0.95 |

### CATV Amplifiers

#### 12V Line Amplifiers for Hybrid Fiber Coaxial (HFC)

| Part Number  | Frequency (GHz) | Min. Gain (dB) | Max. Gain (dB) | CTB Typ. (dBc) | CSO Typ. (dBc) | XMOD Typ. (dBc) | Supply Current Typ. (mA)              | Noise Figure (dB) |
|--|-----------------|----------------|----------------|----------------|----------------|-----------------|---------------------------------------|-------------------|
|  ACA0861A | 0.75 / 0.86     | 11.4           | 12.4           | -65            | -70            | -59             | 180                                   | 3                 |
|  ACA0861B | 0.75 / 0.86     | 11.5           | 12.5           | -62            | -64            | -55             | 310                                   | 3                 |
|  ACA0861C | 0.75 / 0.86     | 11.5           | 12.5           | -71            | -73            | -67             | 260                                   | 3                 |
|  ACA0861D | 0.75 / 0.86     | 11.6           | 12.6           | -67            | -70            | -66             | 450                                   | 3                 |
|  ACA0862B | 1               | 10.7           | 11.7           | -70            | -68            | -65             | 395                                   | 4                 |
|  ACA0862D | 1               | 10.8           | 11.8           | -76            | -63            | -74             | 530                                   | 4                 |
|  ACA1205  | 0.75 / 0.87     | 14.5           | 15.5           | -65            | -70            | -59             | 180                                   | 2.5               |
|  ACA1206  | 1               | 13.7           | 14.7           | -74            | -72            | -70             | 195 @ R1 = 5.2 kΩ,<br>325 @ R1 = 2 kΩ | 3                 |
|  ACA1212  | 1.2             | 10.5           | 11.7           | -72            | -70            | -67             | 395                                   | 4                 |
|  ACA1216  | 1.2             | 26.5           | 28.5           | -78            | -70            | -66             | 725                                   | 4                 |
|  ACA1240  | 0.45 – 1.218    | 35 (Typ.)      |                | -65            | -65            | -60             | 480                                   | 4.5               |

#### 24V Line Amplifiers for Hybrid Fiber Coaxial (HFC)

| Part Number  | Frequency (GHz) | Description                  | Min. Gain (dB) | Max. Gain (dB) | CTB Typ. (dBc) | CSO Typ. (dBc) | XMOD Typ. (dBc) | Supply Current Typ. (mA) | Noise Figure (dB) |
|--|-----------------|------------------------------|----------------|----------------|----------------|----------------|-----------------|--------------------------|-------------------|
|  ACA2402  | 0.75 / 0.87 / 1 | Push-pull Line Amplifier     | 21.1           | 22.1           | -73            | -72            | -65             | 250                      | 3.5               |
|  ACA2402E | 0.75 / 0.87     | Push-pull Line Amplifier     | 21             | 22.5           | -66            | -62            | -60             | 250                      | 3.5               |
|  ACA2407  | 0.75 / 0.87 / 1 | Power Doubler Line Amplifier | 20.8           | 22.1           | -71            | -66            | -66             | 425                      | 4                 |
|  ACA2407E | 0.75 / 0.87     | Power Doubler Line Amplifier | 20.4           | 22.4           | -65            | -60            | -60             | 425                      | 4                 |

# Amplifiers

## CATV Amplifiers (Continued)

### 24V Line Amplifiers for Hybrid Fiber Coaxial (HFC)

| Part Number | Frequency (GHz) | Description                                    | Min. Gain (dB) | Max. Gain (dB) | CTB Typ. (dBc) | CSO Typ. (dBc) | XMOD Typ. (dBc) | Supply Current Typ. (mA) | Noise Figure (dB) |
|-------------|-----------------|--|----------------|----------------|----------------|----------------|-----------------|--------------------------|-------------------|
| ACA2420     | 1               | 24V, High Output, Power Doubler Line Amplifier | 20.8           | 22.3           | -78            | -71            | -64             | 520                      | 6.5               |
| ACA2429     | 1.218           | High Output GaN, Power Doubler                 | 24.5           | 26             | -78            | -66            | -65             | 430                      | 5                 |
| ACA2431     | 1.218           | High Output GaN, Power Doubler Amplifier       | 27             | 28.5           | -78            | -66            | -65             | 460                      | 5                 |
| ACA2460     | 1.218           | Push-pull Driver Amplifier                     | 27.5           | 28.5           | -68            | -67            | -60             | 290                      | –                 |
| ACA2461     | 1.218           | Push-pull Driver Amplifier                     | 25.9           | 27.5           | -68            | -67            | -60             | 290                      | 5                 |
| ACA2778     | 1               | Power Doubler Amplifier                        | 34             | 36             | -68            | -68            | -60             | 290                      | 5                 |
| ACA2786     | 1               | Power Doubler Hybrid Amplifier                 | 24             | 26             | -70            | -70            | -63             | 430                      | 7.5               |
| ACA2788     | 1               | Power Doubler Amplifier                        | 27             | 29             | -70            | -70            | -63             | 430                      | 3.5               |
| ACA3748     | 0.87            | Power Doubler Amplifier                        | 24             | 26             | -65            | -65            | -59             | 430                      | 5                 |
| ACA3754     | 0.87            | Power Doubler Amplifier                        | 27             | 29             | -65            | -65            | -59             | 430                      | 3.5               |
| ACA4788     | 1.2             | Power Doubler Amplifier                        | –              | –              | -76            | -80            | -70             | 765                      | 4                 |
| ACA4789     | 1.2             | Power Doubler Amplifier                        | –              | –              | -70            | -68            | -65             | 410                      | 4                 |

### 75 Ohm Gain Block Amplifiers for Hybrid Fiber Coaxial (HFC)

| Part Number | Description                  | Typ. Gain (dB) | CTB Typ. (dBc) | CSO Typ. (dBc)                                    | Supply Current Typ. (mA) | Supply Voltage (Vdc) | Noise Figure (dB) |
|-------------|------------------------------|----------------|----------------|---|--------------------------|----------------------|-------------------|
| ABA3100     | Balanced Low Noise Amplifier | 12             | -75            | -72   | 150                      | 5                    | 2.5               |
| ABA3101     | Balanced Low Noise Amplifier | 12.5           | -72            | -70   | 212                      | 8                    | 2.5               |
| ADA10000    | Single-ended Amplifier       | 15             | –              | –   | –                        | 8                    | 2                 |
| ADA10001    | Single-ended Amplifier       | 15             | –              | –   | –                        | 8                    | 2                 |
| ADA1200     | Single-ended Amplifier       | 12             | -75            | 57 (Channels 5 and 6)<br>-59 (all other channels) | 80                       | 5                    | 2.3               |

### Upstream Amplifiers for Hybrid Fiber Coaxial (HFC)

| Part Number | Description   | Typ. Attenuator Step Size (dB) | Typ. Attenuation Range (dB) | Frequency (MHz) | Output Power (dBmV) | Typ. Gain (dB) | Typ. Noise Figure (dB) |
|-------------|---|--------------------------------|-----------------------------|-----------------|---------------------|----------------|------------------------|
| ARA2004     | Reverse Amplifier with Step Attenuator                      | 1                              | 0 to 59                     | 5–100           | 60                  | 29.3           | 3                      |
| ARA2017     | Address-programmable Reverse Amplifier with Step Attenuator | 1                              | 0 to 58                     | 5–85            | 64                  | 36             | 2.5                    |
| ARA05050    | Reverse Amplifier with Step Attenuator                      | 2                              | 0 to 30                     | 5–100           | 58                  | 32             | 1.7                    |


### FTTx/RFoG RF Amplifiers for Hybrid Fiber Coaxial (HFC)

| Part Number | Description                    | Equivalent Input Noise (pA/rHz) | Typ. Gain (dB) | Gain Adjust Range (dB) | Typ. CTB (dBc) | Typ. CSO (dBc) | Input Impedance (Ohms) |
|-------------|--------------------------------|---------------------------------|----------------|------------------------|----------------|----------------|------------------------|
| ACA2604     | Fiber-to-the-Home RF Amplifier | 4.5                             | 24             | 22                     | -65            | -65            | 400                    |

# Diodes

## Attenuator PIN Diode


### Plastic Surface Mount (SMT) Attenuator PIN Diode

| Part Number  | Min. $V_B$<br>$I_R = 10$ A<br>(V) | Max. $C_T$<br>$V_R = 30$ V<br>(pF) | Typ. $V_F$<br>$I_F = 10$ mA<br>(V) | Typ. $R_S$<br>$I_F = 1$ mA<br>F = 100 MHz (Ohms) | Max. $R_S$<br>$I_F = 10$ mA<br>F = 100 MHz (Ohms) | $R_S$<br>$I_F = 100$ mA<br>F = 100 MHz (Ohms) | Typical Carrier<br>Lifetime<br>$I_F = 10$ mA (ns) |
|--|-----------------------------------|------------------------------------|------------------------------------|--|---|---|---|
|  SMP1307 Series | 200                               | 0.30                               | 0.85                               | 100  | 15  | 3.0   | 1500  |


# Front-end Modules

## Wi-Fi Connectivity





### 5 GHz Front-end Module

| Part Number   | Frequency (GHz) | 802.11 WLAN Standard | Antenna Ports | Architecture                               | Typ. Current @<br>$V_{CC} = 3.3$ V<br>(mA) | Typ. $P_{OUT}$<br>@ 3% EVM<br>(dBm) | Typ. Tx Gain (dB) | $V_{CC}$ (V) | Package (mm)              |
|---|-----------------|----------------------|---------------|--|--|-------------------------------------|-------------------|--------------|---------------------------|
|  SE5012T | 4.9–5.85        | a                    | 1             | 5 GHz Front-end Module with Power Detector | –  | 17<br>21                            | –                 | 3.3<br>5     | 16-pin QFN<br>3 x 3 x 0.6 |

### Dual-band Front-end Module

| Part Number   | Frequency (GHz)    | 802.11 WLAN Standard                                  | Antenna Ports | Architecture           | Typ. Current @<br>$V_{CC} = 3.3$ V<br>(mA) | Typ. $P_{OUT}$<br>@ 3% EVM<br>(dBm)  | Typ. Tx Gain (dB) | Package (mm)              |
|---|--------------------|---|---------------|------------------------|--|--|-------------------|---------------------------|
|  SE5516A | 2.4–2.5<br>4.9–5.9 | a<br>b<br>g<br>n (2G)<br>n (5G)<br>ac (2G)<br>ac (5G) | 1             | Wireless LAN Front-end | 220<br>205<br>185<br>–<br>–<br>155<br>190  | 16<br>21<br>18<br>18 (@ 3.0% EVM)<br>16 (@ 3.0% EVM)<br>16 (@ 1.8% EVM)<br>13 (@ 1.8% EVM) | 25–30             | 24-pin LGA<br>4 x 4 x 1.0 |

## Smart Energy–Connected Home and Automation 802.15.4, ISM and ZigBee®

| Part Number   | RF Frequency (MHz) | Typ. Rx Insertion Loss (dB) | Typ. Rx Gain (dB) | Typ. Rx NF (dB) | Tx Gain (dB) | Typ. Saturated Output Power (dBm) | Supply Voltage (V) | Package (mm)               |
|---|--------------------|-----------------------------|-------------------|-----------------|--------------|-----------------------------------|--------------------|----------------------------|
|  SE2431L     | 2400–2483          | 2                           | 12.5              | 2               | 23           | 24                                | 2.0–3.6            | 24-pin QFN<br>3 x 4 x 0.9  |
|  SE2438T     | 2400–2500          | 3.5                         | 12.3              | 2.7             | 16           | 16                                | 2.0–3.6            | 20-pin QFN<br>3 x 3 x 0.55 |
|  SKY66109-11 | 2400–2483          | –                           | 11.5              | 2               | 22           | 21                                | 2.0–3.6            | 20-pin MCM<br>3 x 4 x 0.9  |
|  SKY65366-11 | 400–500            | 0.4                         | 21                | 1.8             | 22           | 30.2                              | 2.0–3.6            | 28-pin MCM<br>6 x 6 x 1.05 |

# Mixers

## Upconverter for Set-top Box Applications

| Part Number | Description                | RF Frequency (MHz) | IF Frequency (MHz) | Typ. Phase Noise @ 10 kHz Offset (dBc/Hz) | Max. Phase Noise @ 10 kHz Offset (dBc/Hz) | Typ. Conversion Gain (dB) | Typ. Noise Figure (dB) | Typ. Power Consumption (mW) |
|-------------|----------------------------|--------------------|--------------------|---|---|---------------------------|------------------------|-----------------------------|
| ACU2109     | Wideband Tuner Upconverter | 50 to 860          | 900 to 1200        | -89                                       | -84                                       | 8                         | 6.5                    | 770                         |

# Splitters

## Active Splitters for Set-top Box Applications

| Part Number | Description                    | Typ. Gain (dB) | Typ. Noise Figure (dB) | Typ. CTB (dBc) | Typ. CSO (dBc) | Typ. XMOD (dBc) | Typ. Current Consumption (mA) | Package (mm)              |
|-------------|--------------------------------|----------------|------------------------|----------------|----------------|-----------------|-------------------------------|---------------------------|
| APS3625     | Five-way Active Power Splitter | 4              | 4.8                    | -70            | -60            | -67             | 130                           | 24-pin QFN<br>4 x 4 x 0.9 |

# Switches

## SPDT (SP2T) RF Switches

| Part Number    | Description (Absorptive/ Reflective) | Frequency (GHz) | Typ. IL (dB) | Typ. Isol. (dB) | Typ. IIP3 (dBm) | Typ. IP <sub>1</sub> (dBm) | Package (mm)               |
|----------------|--------------------------------------|-----------------|--------------|-----------------|-----------------|----------------------------|----------------------------|
| SKY13547-490LF | SPDT (R)                             | 0.005–1.8       | 0.2–0.35     | 50              | –               | 85                         | 12-pin QFN<br>2 x 2 x 0.55 |
| SKY13548-385LF | SPDT (R)                             | 0.005–1.8       | 0.4          | 27              | 57              | 33                         | 6-pin QFN<br>1 x 1 x 0.45  |

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