



## NXP high-gain power doublers CGD104x

# Upgrade to sustainable 1 GHz CATV networks

NXP offers a choice of standard and high-output power doublers for 1 GHz CATV applications. These high performance GaAs devices make it easy for cable operators to extend their services to include HDTV, VoIP and digital simulcasting.

### Key features

- ▶ Excellent linearity, stability, and reliability
- ▶ High power gain
- ▶ Extremely low noise
- ▶ Silicon Nitride passivity
- ▶ GaAs HFET dies for high-end applications
- ▶ High-output power versions (CGD104xH)

### Key benefits

- ▶ Simple upgrade to 1 GHz capable networks
- ▶ Optimized heat management
- ▶ Excellent temperature resistance
- ▶ Low total cost of ownership
- ▶ High ESD levels
- ▶ High power-stress capability
- ▶ Highly automated assembly

### Key applications

- ▶ Hybrid Fiber Coax (HFC) applications
- ▶ Line extenders
- ▶ Trunk amplifiers
- ▶ Fiber deep-optical-node (N+0/1/2)

NXP's latest CGD104x range of power doublers have been designed for 1 GHz 'sustainable networks'. These high performance GaAs devices provide extended bandwidth and higher data rates, giving you the increased network capacity to deliver high-end services like HDTV, VoIP and digital simulcasting.

The CGD1042 and CGD1044 are ideal for use in line extenders and trunk amplifiers, while their high-output variants (CGD1042H and CGD1044H) are primarily designed for use in fiber deep-optical-node applications (N+0/1/2), delivering the highest output power on the market today.

Designed for durability and offering superior ruggedness, these 1 GHz solutions offer an extended temperature range, high power overstress capabilities and high ESD levels. The result is low cost of ownership.

Using a GaAs HFET die process delivers high gain and high performance, along with lower current and better CTB and CSO ratings. The GaAs die is then inserted in a unique HVQFN package that is mounted on thermo vias which manage heat transfer to the heat sink. Temperature-control circuitry keeps the module's high performance stable over a wide range of temperatures. Assembly is also fully automated, requiring almost no human intervention, so manufacturing costs are kept to a minimum while repeatability remains very high.

### Upcoming push-pull products

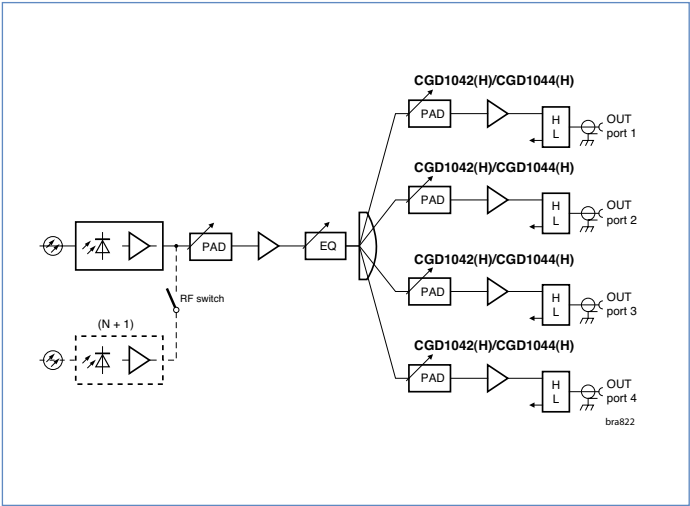
New push-pulls, currently under development, will combine with the power doublers to service almost all modern HFC applications. The push-pull CGY1041 will deliver a gain of 21 dB, the CGY1043 a gain of 23 dB, the CGY1047 a gain of 27 dB.

### Quick reference data

| Parameters                                      |       | CGD1042            | CGD1044            | CGD1042H           | CGD1044H           |
|-------------------------------------------------|-------|--------------------|--------------------|--------------------|--------------------|
| Power gain (dB)                                 | typ.  | 23                 | 25                 | 23                 | 25                 |
| Slope cable equivalent (dB)                     | typ.  | 2                  | 2                  | 1,5                | 1                  |
| Composite triple beat (dB)                      | typ.  | -70 <sup>(1)</sup> | -70 <sup>(1)</sup> | -75 <sup>(2)</sup> | -75 <sup>(2)</sup> |
| Composite 2 <sup>nd</sup> order distortion (dB) | typ.  | -75 <sup>(1)</sup> | -75 <sup>(1)</sup> | -76 <sup>(2)</sup> | -76 <sup>(2)</sup> |
| Noise (@ fmax) (dB)                             | max.  | 5                  | 5                  | 6                  | 6                  |
| Total current consumption (mA)                  | typ.  | 450                | 450                | 450                | 450                |
| Frequency range (MHz)                           | range | 40 - 1000          | 40 - 1000          | 40 - 1000          | 40 - 1000          |

<sup>(1)</sup> 79 analog channels, 13.9 dB extrapolated tilt up to 1 GHz, V<sub>out</sub> = 56.9 dBmV @ 1GHz

<sup>(2)</sup> 79 analog channels + 75 digital channels (-6dB offset, 18 dB extrapolated tilt up to 1 GHz, V<sub>out</sub> = 59 dBmV @ 1GHz



An optical node with multiple out-ports using the CGD1042(H) and CGD1044(H)]

