



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

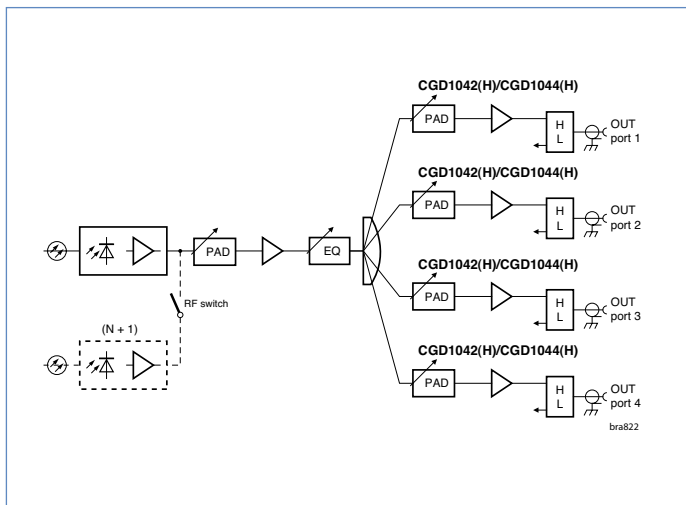
New push-pulls, currently under development, will combine with the power doublers to service almost all modern HFC applications. The push-pull CGY1041 will deliver a gain of 21 dB, the CGY1043 a gain of 23 dB, the CGY1047 a gain of 27 dB.

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 ⁽¹⁾	-70 ⁽¹⁾	-75 ⁽²⁾	-75 ⁽²⁾
Composite 2 nd order distortion (dB)	typ.	-75 ⁽¹⁾	-75 ⁽¹⁾	-76 ⁽²⁾	-76 ⁽²⁾
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

⁽¹⁾ 79 analog channels, 13.9 dB extrapolated tilt up to 1 GHz, $V_{out} = 56.9$ dBmV @ 1GHz

⁽²⁾ 79 analog channels + 75 digital channels (-6dB offset, 18 dB extrapolated tilt up to 1 GHz, $V_{out} = 59$ dBmV @ 1GHz



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

