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).

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.

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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

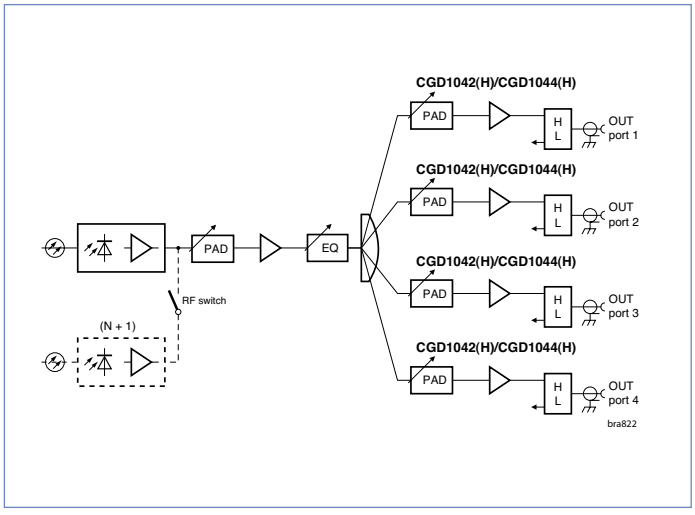
New push-pulls, currently under development, will combine with the power doublers to service almost all modern HFC applications. The push-pull CGY1041 will deliver a gain of 21 dB, the CGY1043 a gain of 23 dB.

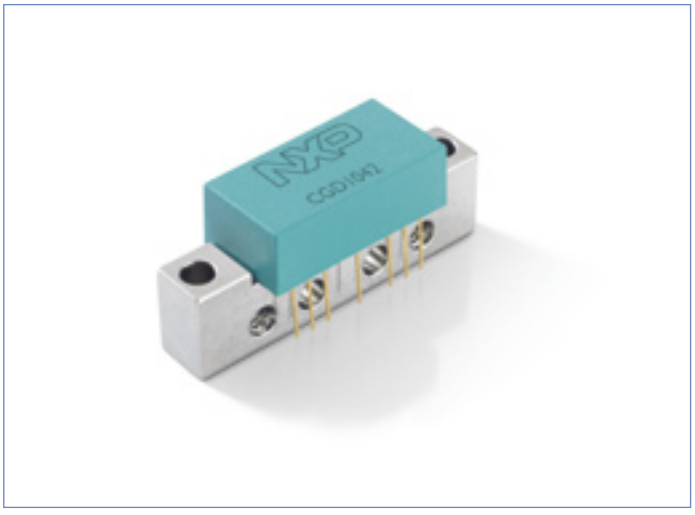
Quick reference data

Parameters	CGD1042		CGD1044		CGD1042H		CGD1044H	
	min	max	min	max	min	max	min	max
Power gain (dB)	20.5	22.5	22.5	24.5	20.5	22.5	22.5	24.5
Slope cable equivalent (dB)	1.5	2.5	1.5	2.5	0	1	0	1
Composite triple beat (dB)		-70 [1]		-70 [1]		-60 [2]		-60 [2]
Composite 2nd order distortion (dB)		-70 [1]		-70 [1]		-60 [2]		-60 [2]
Noise (@ fmax) (dB)		5		5		5		5
Total current consumption (mA)		465		465		465		465
Frequency range (MHz)	40 to 1000		40 to 1000		40 to 1000		40 to 1000	

[1] 79 analog channels, 13.9 dB extrapolated tilt up to 1 GHz, V_{out} = 55.9 dBmV

[2] 79 analog channels, 13.9 dB extrapolated tilt up to 1 GHz, V_{out} = 58.9 dBmV





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

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Date of release: March 2007
Document order number: 9397 750 15928
Printed in the Netherlands