

SBB-2089 High CSO Push-Pull CATV Amplifier

Abstract:

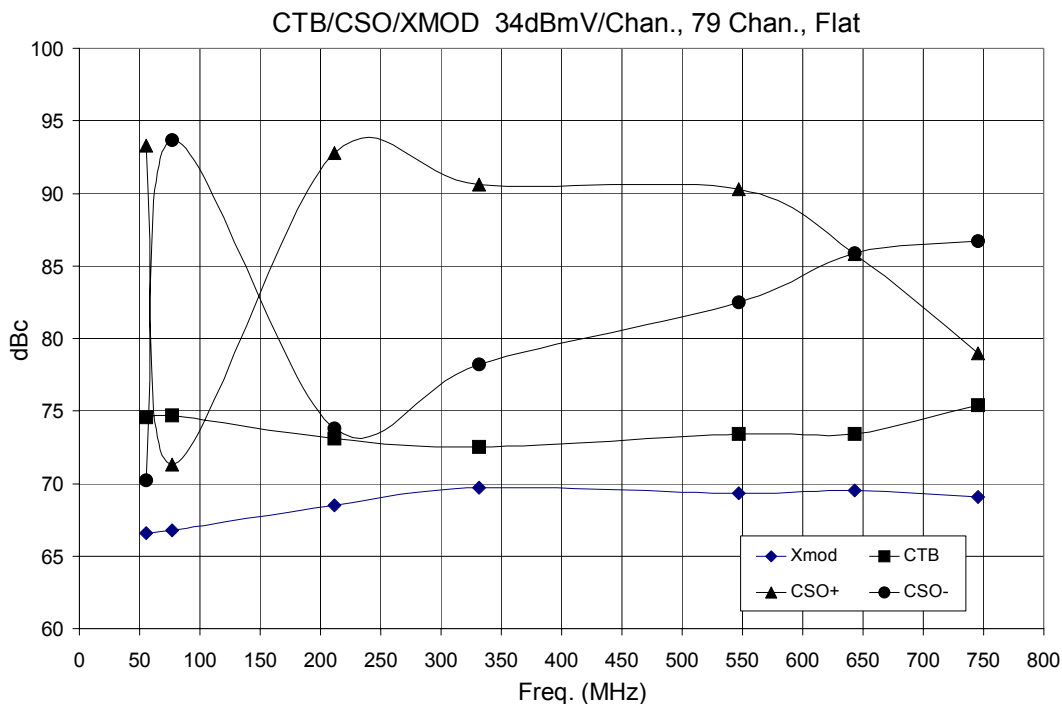
With the abundance of data and voice traffic being transmitted across standard cable and wireless pathways and the ever increasing linearity requirements of CATV amplifiers, there is a great need for amplification that optimizes gain, VSWR, efficiency and linearity. This application note demonstrates the use of two SBB-2089 amplifiers in a push-pull configuration to achieve excellent CSO/CTB/XMOD performance from 50-860 MHz.

Introduction:

Inherent in push-pull amplifiers is the distinct cancellation of second order harmonics and intermodulation products. The low cost of RFMD amplifiers, coupled with their excellent linearity, makes them an easy choice for use in high linearity CATV applications. Table 1 contains a summary of performance of the SBB-2089 push-pull amplifier. Figures 2 and 3 illustrate the push-pull application circuit schematic and PCB layout. All measurements in this application note were taken in a 75 Ohm system.

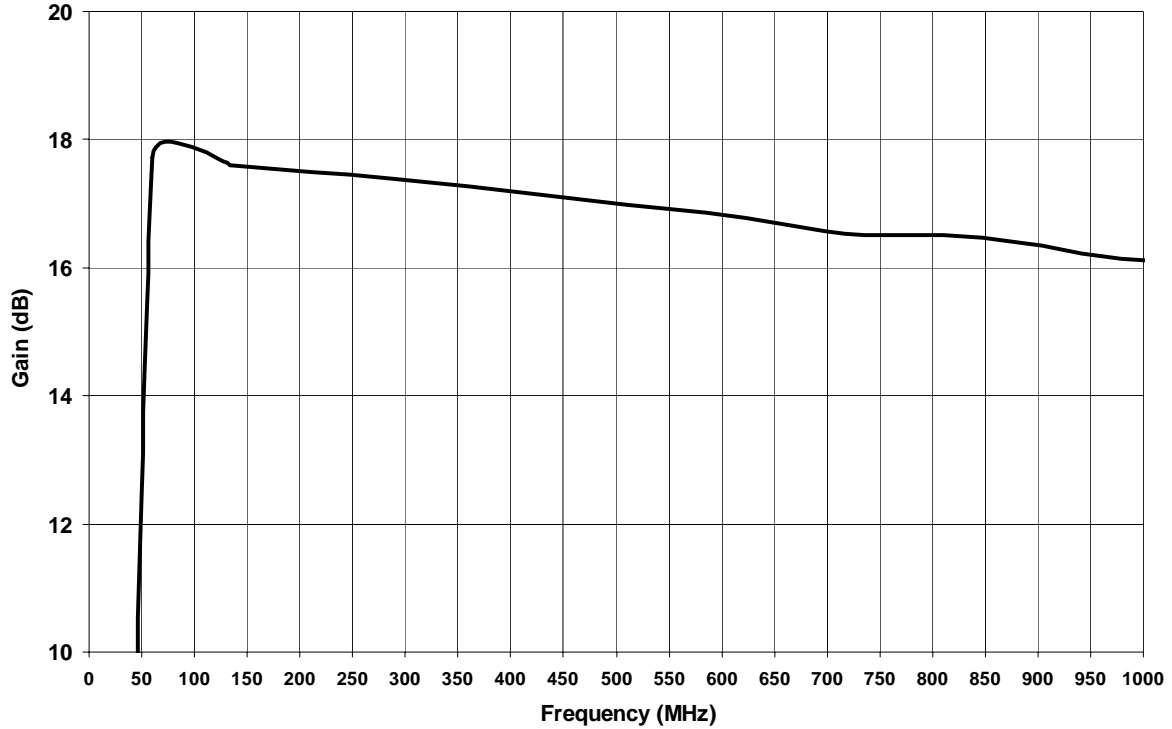
Symbol	Parameter	Freq.(MHz)	Min.	Typ.	Units
G	Small Signal Gain	50		17.8	dB
		500		17.0	
		870		16.4	
		1000		16.2	
IRL	Input Return Loss	500 100-870	15.0	24.0	dB
ORL	Output Return Loss	500 100-870	16.0	16.0	dB
CSO	Worst Case Over Band, 79 Ch., Flat, +34dBmV			70	dBc
CTB	Worst Case Over Band, 79 Ch., Flat, +34dBmV			73	dBc
XMOD	Worst Case Over Band, 79 Ch., Flat, +34dBmV			67	dBc

Table 1: Typical RF Performance: $V_s=5V$, $I_D=180mA$ @ $T_L=+25^\circ C$, Push-Pull Config.

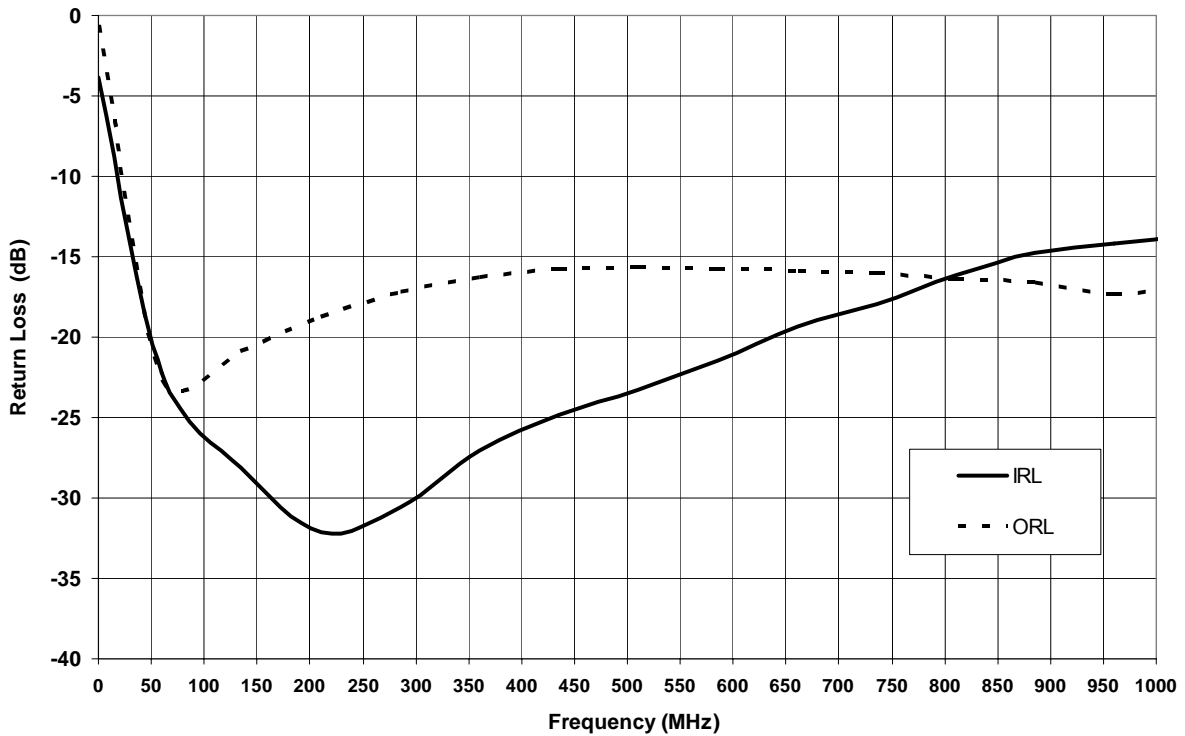


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Gain vs. Frequency



Return Loss (dB) vs. Frequency



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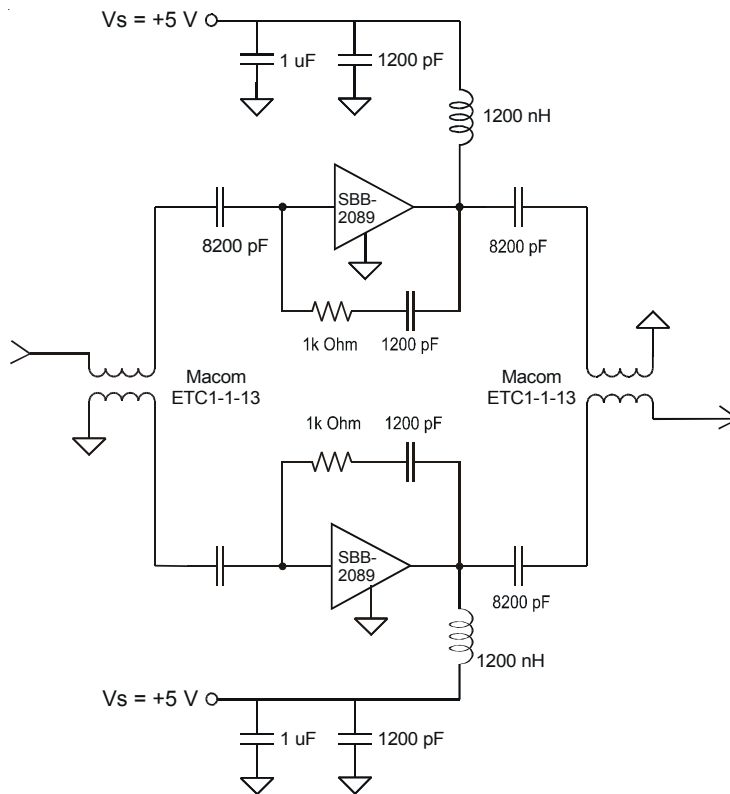


Figure 2: SBB-2089 Push-Pull Schematic

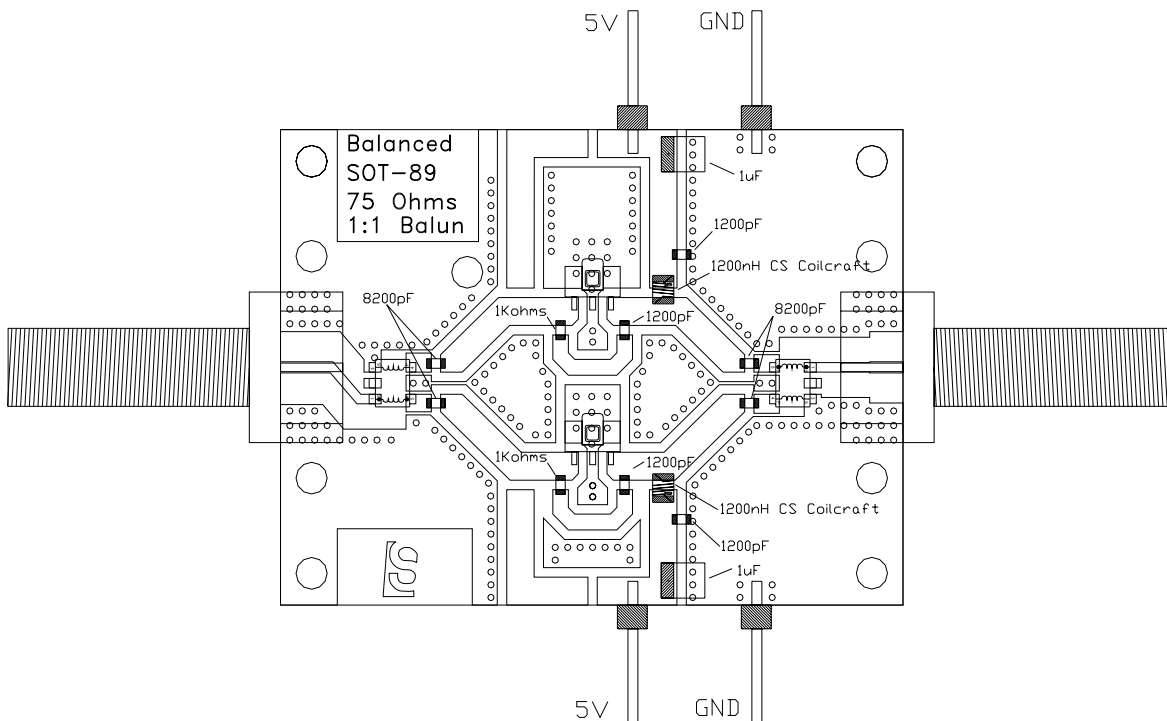


Figure 3: SBB-2089 Push-Pull PCB Layout