BROADBAND LOW NOISE AMPLIFIER FOR SOFTWARE RADIO APPLICATION

BY
IRINEL CASIAN-BOTEZ

Abstract. This paper describes the design of a broadband low noise amplifier (LNA) for the frequency range from 800 MHz to 2 GHz, using Gummel-Poon BJT (GBJT) with a current-gain bandwidth product, f_T, of 9 GHz. The passive components were implemented with microstrips.

Key Words: Broadband Low Noise Amplifier; Gummel-Poon BJT; Microstrips.

A DIFFERENT METOD TO STUDY THE BEHAVIOR OF THE POWER CONVERTORS MODELING

BY
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Abstract. A method of small-signal time response analysis based on the state-space equations of the switching converters is described. The method is based on using the Mathcad tool to evaluate the converter time response at the input line voltage variations and duty cycle variations. Then a graphical comparison is made between the time variation response of the state vector (the output voltage and the inductor current of the converter) using Orcad tool and the same plots using Mathcad. The differences between plots are smaller meaning that the "state-space averaged model" method introduces small errors. The methodology is illustrated on the three basic DC-DC converters: buck, boost, and buck-boost converters. We consider all converters to be operating in continuous conduction mode (CCM).

Key Words: Converter; Model; Analysis; Simulation.

MICROCONTROLLER-BASED APPLICATION SYSTEMS

BY
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Abstract. The paper describes the hardware structure of a serial infrared communication system consisting of an application system equipped with microcontroller AT89C51 and an IRDA interface. This structure basically includes a serial infrared Endec that encodes and decodes the data sent and received, using return to zero invert encoding, and an infrared transceiver module IRDA used for semi-duplex communications, which consists of a LED and an infrared photodiode. The command program performs data packing in IRDA frames at transmission and, respectively, data unpacking at reception.

Key Words: Serial Infrared Communications; Serial Infrared Endec; Return to Zero Invert; Infrared Transceiver Module IRDA.