

ABSTRACT**A RAIL - TO - RAIL LOW VOLTAGE
OPERATIONAL TRANSCONDUCTANCE AMPLIFIER**

A CMOS operational transconductance amplifier (OTA) having an input voltage vs output current relationship that is linear for an input voltage range extending from one power supply rail to another power supply rail. The input transconducting CMOS transistors operate in the non-saturation region with a feedback loop for precisely holding the drain to source voltage constant. A pair of complementary circuits, each having an OTA designated OTAN having n-MOS input transistors, and an OTA designated OTAP having p-MOS input transistors, in conjunction with n-MOS transistor and p-MOS transistor current mirrors, are connected in parallel to implement a single ended OTAP having rail-to-rail voltage input and push-pull current output. Two of these pairs, with complementary input transistors, are used with their outputs paralleled to provide a differential input rail-to-rail OTA. The basic OTA circuit provided is capable of operating at a supply voltage larger than two times the MOS transistor threshold voltage V_T . When the supply voltage is 2V and the MOS transistor threshold voltage is 0.7V, the output current deviation from perfect linearity is less than 0.2% over the rail-to-rail input voltage range.

(Fig.2 is to be published.)