A design of a 50 Ω impedance matched two-to-four level converter GaAs IC for two-electrode semiconductor optical amplifier modulators is presented. Eye diagrams with good eye openings and 0.33 V spacing between adjacent logic levels are demonstrated for input bit rates up to 4 Gb/s. A novel differential super buffer output driver is applied and output reflection coefficients |S22| of less than -12 dB for frequencies less than 10 GHz are obtained.