

The timing diagram illustrates the propagation of a carry signal through a 4-bit ripple-carry adder. The horizontal axis represents time in units of 2.5 ns, ranging from 0.0 to 20.0. The vertical axis represents the signal level, with a dashed line indicating the initial low state.

- Carry-in (Blue):** A constant high signal starting at 0.0 ns, labeled with a '0' at the input of the first full adder.
- Sum (Orange):** The output of the first full adder. It transitions from low to high at 5.0 ns (labeled '5') and from high to low at 10.0 ns (labeled '8').
- Carry-out (Green):** The carry signal from the first full adder. It transitions from low to high at 5.0 ns and back to low at 15.0 ns.
- Sum (Red):** The output of the second full adder. It transitions from low to high at 10.0 ns and back to low at 11.0 ns.
- Carry-out (Purple):** The carry signal from the second full adder. It transitions from low to high at 11.0 ns and back to low at 12.0 ns.
- Carry-in (Brown):** A constant high signal starting at 0.0 ns, labeled with a '3' at the input of the third full adder.

The diagram shows the sequential propagation of the carry signal from the least significant bit (bit 0) through the intermediate bits (bit 1 and bit 2) towards the most significant bit (bit 3). The carry signal from the second full adder is shown as a narrow pulse between 11.0 ns and 12.0 ns.

0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20