Answer on Question #69498, Physics / Electric Circuits

Explain the construction and working of a differential amplifier type EVM.

Answer:

A differential amplifier is a type of electronic amplifier that amplifies the difference between two input voltages but suppresses any voltage common to the two input:

$$V_{out} = A(V_{in}^{+} - V_{in}^{-})$$

where A is the fain of the amplifier, V_{in}^{+}, V_{in}^{-} are input voltages.

The EVM is made of the high-speed operational amplifier, a number of passive components, and various features and footprints. The board measures 4.5 inches in length by 2.5 inches in width. Initially, this board is populated for a single-ended input amplifier. The outputs (V_{0+} and V_{0-}) can be tested differentially or single ended. Gain is set to one and can be changed by changing the ratios of the feedback and gain resistors. Each input is terminated with a $50\ \Omega$ resistor to provide correct line-impedance matching.

EVM features include:

- Voltage supply operation range: $5 - V\ to\ \pm 15 - V$ operation
- Single and differential input and output capability
- Nominal 50-W input and output termination resistors. They can be configured according to the application requirement.
- Input and output transformer footprints for changing single-ended signals to differential signals