

# Independent Voltage Source

V

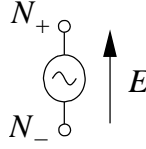


Figure 1: Independent Voltage Source Element.

*Form:*

VnameN+N-[[DC] [DCvalue] [AC[ACmagnitude[ACphase]]] [DISTOF1[F1magnitude[F1phase]]]  
[DISTOF2[F2magnitude[F2phase]]]]

N+ is the positive voltage source node.

N- is the negative voltage source node.

DC is the optional keyword for the dc value of the source.

DCvalue is the dc voltage value of the source.(Units: V; Optional; Default: 0; Symbol:  $V_{DC}$ )

AC is the keyword for the ac value of the source.

ACmagnitude is the ac magnitude of the source used during ac analysis. That is, it is the peak ac voltage so that the ac signal is  $ACmagnitude \sin(\omega t + ACphase)$ . ACmagnitude is ignored for other types of analyses. (Units: V; Optional; Default: 1; Symbol:  $V_{AC}$ )

ACphase is the ac phase of the source. It is used only in ac analysis.  
(Units: Degrees; Optional; Default: 0; Symbol:  $\phi_{AC}$ )

DISTOF1 is the distortion keyword for distortion component 1 which has frequency F1.

F1magnitude is the magnitude of the distortion component at F1. See .DISTOF1 keyword above.  
(Units: V; Optional; Default: 1; Symbol:  $V_{F1}$ )

F1phase is the phase of the distortion component at F1. See .DISTOF1 keyword above.  
(Units: Degrees; Optional; Default: 0; Symbol:  $\phi_{F1}$ )

DISTOF2 is the distortion keyword for distortion component 2 which has frequency F2.

F2magnitude is the magnitude of the distortion component at F2. See .DISTOF2 keyword above.  
(Units: V; Optional; Default: 1; Symbol:  $V_{F2}$ )

F2phase is the phase of the distortion component at F2. See .DISTOF2 keyword above.  
(Units: Degrees; Optional; Default: 0; Symbol:  $\phi_{F2}$ )

**Sinusoidal:**

SIN( V<sub>O</sub> V<sub>A</sub> [F ] [T<sub>D</sub> ] [θ ] )

*Parameters:*

*Example:*

V SIGNAL 20 5 SIN(0.1 0.8 2 1 0.3)

*Description:*

Name	Description	Units	Default
$V_O$	voltage offset	V	REQUIRED
$V_A$	voltage amplitude	V	REQUIRED
$F$	frequency	Hz	1/TSTOP
$T_D$	time delay	s	0
$\Theta$	damping factor	1/s	0
$\phi$	phase	degree	0

The sinusoidal transient waveform is defined by

$$v = \begin{cases} V_0 & t \leq T_D \\ V_0 + V_1 e^{-[(t - T_D)\Theta]} \sin 2\pi[F(t - T_D) + \phi/360] & t > T_D \end{cases} \quad (1)$$

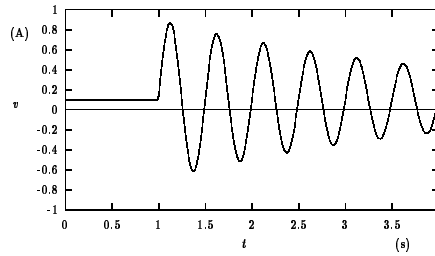


Figure 2: Voltage source transient sine waveform for SIN(0.1 0.8 2 1 0.3)

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*Notes:*

The actual element in TRANSIM is the **vsources** element. See TRANSIM element **vsources** for full documentation.

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*Credits:*

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