Independent Voltage Source V

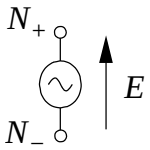

Figure 1: Independent Voltage Source Element.

Form:

`V`*name* N_+ 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:ϕ_{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: ϕ_{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: ϕ_{F2})

Single-Frequency FM:

`SFFM(`V_O V_A F_C μ F_S`)`

Parameters:

Example:

```
VSIGNAL 8 0 SFFM(0.2 0.7 4 0.9 1)
```

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
Θ	damping factor	1/s	0
ϕ	phase	degree	0

The single frequency frequency modulated transient response is described by

$$v = V_O + V_A \sin\left(2\pi\, F_C t + \mu \sin\left(2\pi F_S t\right)\right) \tag{1}$$

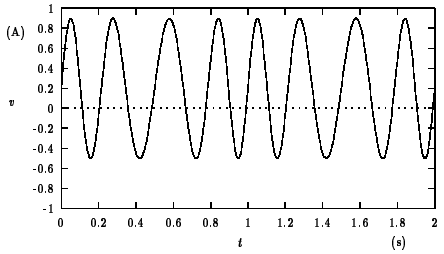

Figure 2: Voltage source single frequency frequency modulation (`SFFM`) waveform for `SFFM(0.2 0.7 4 0.9 1)` .

Notes:
The actual element in TRANSIM is the `vsffm` element. See TRANSIM element `vsffm` for full documentation.

Credits:

Name	Affiliation	Date	Logo
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