Table function voltage source device
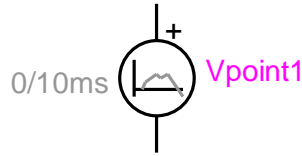
0/10ms [symbol] Vpoint1

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1   Available versions

The "V point-by-point" device accepts only 1-phase signals.

1.1 Parameters

The following parameters are required:

- ❑ t_{start} start time, if $t < t_{start}$ the source is a short-circuit.
- ❑ t_{stop} stop time, if $t > t_{stop}$ the source is a short-circuit. The stop time must be greater than the start time.

The "Source characteristic points" allow entering the piecewise-linear source voltage function of time. The data rules are:

- Only positive time-points are allowed.
- Time-points can be entered in any order.
- Two voltage-points for the same time-point are allowed.
- The (0,0) pair is implicit if no data is entered for t=0.
- The entered function will automatically repeat until t_{stop}, with its period equal to the maximum time-point.

A change of segment occurs when the simulation time t is greater or equal to the segment time-point. The precision of the waveform is related to the simulation integration time-step Δt. An example of entered characteristic data is shown in Figure 1. The corresponding simulation for $t_{start} = 2ms$ and $t_{stop} = 100ms$ is shown in Figure 2.
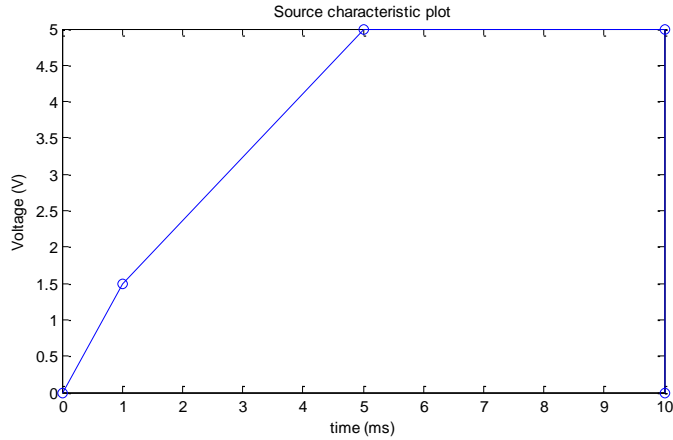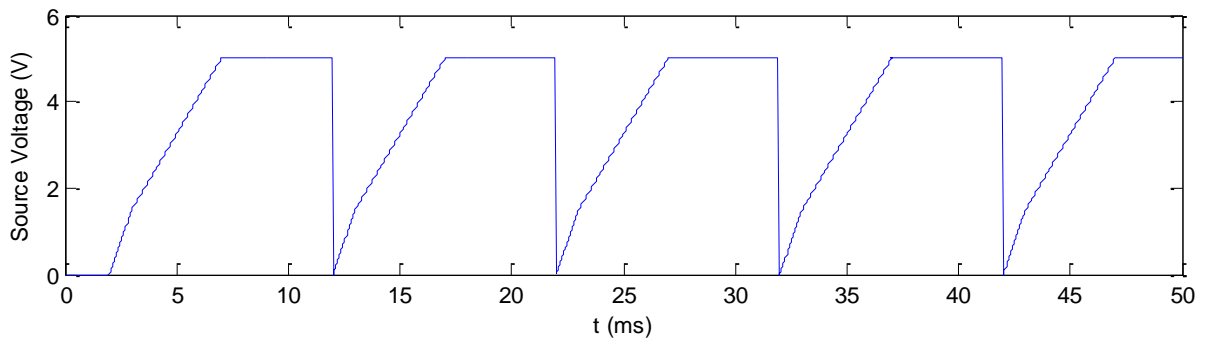
Figure 1 Sample source characteristic data

Figure 2 Simulated waveform for the source characteristic data of Figure 2

A file input method is also selectable as an option.

1.1.1 Netlist format

```
_Vpoint;Vpoint1;2;2;s1,s2,
2ms,100ms,4,1ms,1,?v,
1 1.5
5 5
10 5
10 0
```

Field	Description
_Vpoint	Part name
Vpoint1	Instance name, any name.
2	Total number of pins
2	Number of pins given in this data section
s1	Signal name connected to k-pin (positive), any name
s2	Signal name connected to m-pin, any name
t_{start}	Start time
t_{stop}	Stop time
N	Number of data points
tunit	Time units
vunit	Voltage units
?v	Request for voltage scope, sent to scope group vb (branch voltages), optional

?i	Request for current scope, sent to scope group ivs (voltage source currents), optional
?p	Request for power scope, sent to scope group p (branch power), optional
t and v data	Time and Voltage data points are saved in the ModelData device attribute.
File name	ModelData contains a file name when N=0. The file must provide Time and Current data points (two columns of free format data).

The comma separated parameters of this device are saved in the device attribute ParamsA. The time and voltage data is saved in the ModelData attribute.

It is allowed to delete the m-pin to create an implicit ground.

2   Steady-state model

The steady-state model of this device is a short-circuit.

3   Frequency Scan model

The frequency scan model of this device is a short-circuit.

4   Time-domain model

The device is represented by the piecewise-linear function described in the source characteristic section. The source is active (not a short-circuit) for $t_{start} \leq t \leq t_{stop}$.