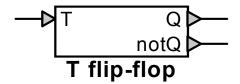
Flip-flop: T unclocked



Flip-flop: T unclocked	
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1 Description

This device is an implementation of an unclocked T flip-flop without override controls. For a version with the override controls, use the device "T unclocked full".

1.1 Pins

This device has three pins:

pin	type	description
Т	input	T input
Q	output Q output	
notQ	output	notQ output

1.2 Parameters

The initial value of Q must be defined because the device is either holding or toggling at t=0.

The value of the $stepped_mode$ flag determines whether the device operates in stepped or ramped mode. In stepped mode (the default for ideal logical signals), the outputs are represented as stepped signals, where changes in value are observed as vertical steps at the time they occur. In ramped mode, the value transitions of the outputs are seen as ramps between t- Δt and t.

parameter description

Q_ini	initial value of Q
stepped_mode	=1 to indicate stepped mode (default)
	=0 to indicate ramped mode

1.3 Input

The input pin may be connected to any control signal.

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Numerical input values are automatically interpreted as logical values by this device, as follows:

input converted logical value logical value representation

,	•	,
value > 0	true	1
value ≤ 0	false	0

1.4 Output

The outputs are Q and its logical inverse notQ. Their representation as stepped or ramped signals is determined by the value given to the parameter $stepped_mode$.

The numerical representation of the output logical values is:

output logical value output numerical value

true	1
false	0

1.5 Representation

The implementation of the model can be inspected by opening the device's subcircuit.

The model applies the following logic for determining its state:

rule sequence	action	output
if T>0	toggling	Q(t) = not Q(t-dt)
else	holding	Q(t) = Q(t-dt)
endif		
if at t=0	use Q_ini	Q(0) = Q_ini

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