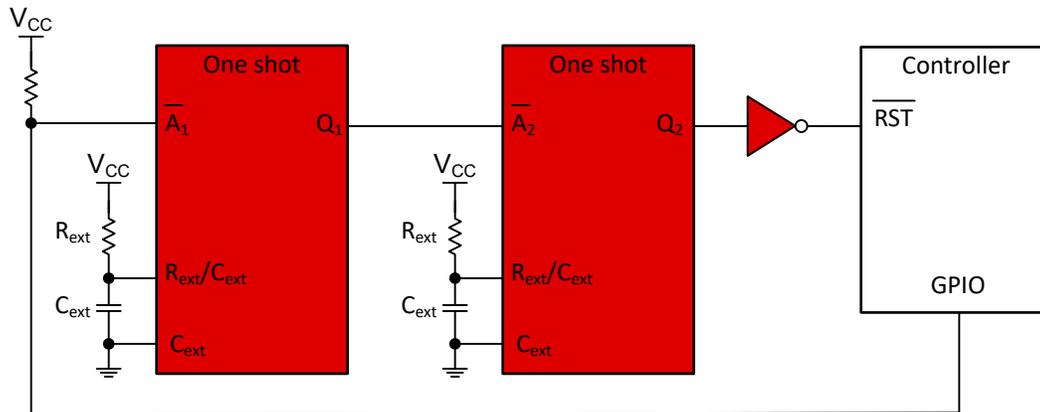


Detect and Reset an Unresponsive Controller



System controllers that are critical to system operation can use a monostable multivibrator pair to detect if the system has become unresponsive and reset the system. By sending a pulse every few milliseconds to a multivibrator pair, a reset pulse is sent if the signal stays at a constant high or low.



Example System Diagram With Pull-up Resistor and Falling-edge Trigger

Design Considerations

- The first monostable multivibrator must be retriggerable
- The output pulse length of the multivibrator must be longer than the period of the keep-alive signal. The pulse length of a multivibrator is $T=kRC$. The recommended configuration is a 100-k Ω resistor and a 0.1- μ F capacitor, for a pulse length of around 10 ms.
- Either falling-edge or rising-edge trigger configurations can be used for this application. See the datasheet of your selected multivibrator for details.
- A pull-up or pull-down resistor is required to hold the input at a valid state during reset. The recommended value for this resistor is 10 k Ω .
- [\[FAQ\] \[H\] Monostable Multivibrators - Top Questions Answered](#)
- [\[FAQ\] How does a slow or floating input affect a CMOS device?](#)
- Ask a question on our [E2E™ forum](#)

Recommended Parts

Part Number	Automotive Qualified	V _{CC} Range	Function	Features
SN74LVC1G123		1.65 V–5.5 V	Single channel multivibrator	Retriggerable, Schmitt-trigger inputs
SN74LV123A	✓	2 V–5.5 V	Dual channel multivibrator	Retriggerable, Inverted output, Schmitt-trigger inputs
SN74LV123A-Q1				
CD74HC4538		2 V–6 V	Dual channel multivibrator	Retriggerable, Inverted output
CD74HC4538-Q1	✓			
SN74AHC1G04		2 V — 5.5 V	Single channel inverting buffer	
SN74AHC1G04-Q1	✓			

For more devices, browse through the [online parametric tool](#) where you can sort by desired voltage, channel numbers, and other features.

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