Universal Tap Tempo Control Chip MV-52

DATASHEET

Universal Tap Tempo Control Chip MV-52 by Molten Voltage allows you to connect a sophisticated, compact, and highly accurate Tap Tempo controller to your circuit with a minimum of external components, as shown in Diagram A. It has proven accuracy of greater than 1/1000th of a second.

Diagram A

* Place C1 as close as possible to Pin 1 and Pin 8

+5 Volts DC ~ Pin 1   Pin 8 ~ Ground
On-Off Output ~ Pin 2   Pin 7 ~ Binary Mode Input 1
Pulse Output ~ Pin 3   Pin 6 ~ Binary Mode Input 2
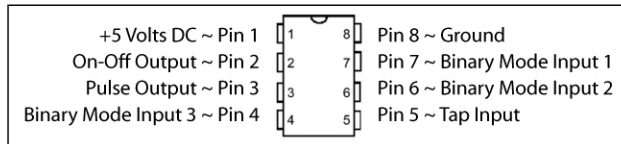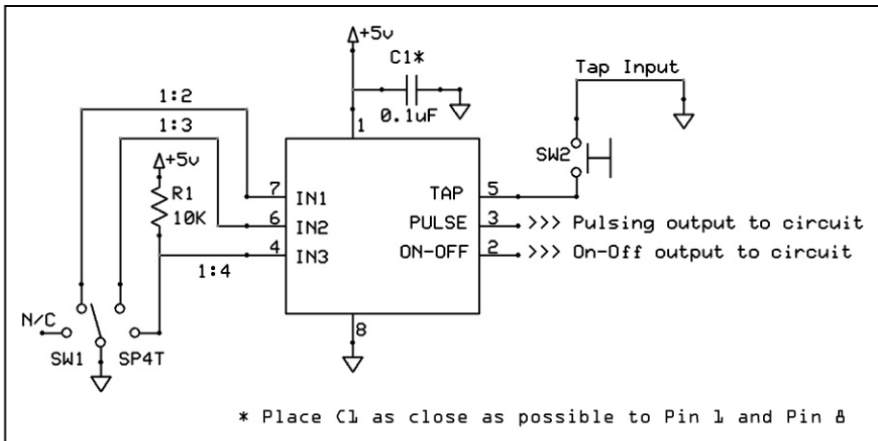Binary Mode Input 3 ~ Pin 4   Pin 5 ~ Tap Input

Diagram B

Mode 1:1 ~ Real Time
Mode 1:2 ~ Double Time
Mode 1:3 ~ Triplets
Mode 1:4 ~ Quadruple Time

The tap input can be scaled on the fly by connecting one of three pins to ground. Scaling options are 1:1 (no pins connected); 1:2 (Pin 7 held low); 1:3 (Pin 6 held low); and 1:4 (Pin 4 held low). *See* Diagram B.

The Universal Tap Tempo Control Chip (MV-52) was designed primarily to provide precision tap input timing control for chips and circuits that incorporate pulse-activated triggers/external clock inputs.

After powering on, the chip outputs a 60 beats per minute (bpm) tempo in Real Time. Users change the output tempo by pressing a normally open switch twice. The time between presses determines the Real Time output tempo. The tempo is then scaled by selecting one of four modes which is accomplished by grounding a particular pin. Switching modes seamlessly scales the tempo "on the fly".

The chip outputs a 53 µS pulse from Pin 3. The time between the pulses matches the time between tap inputs in Real Time. The chip simultaneously turns Pin 2 on and off in time with the tap inputs. The duration of the "on" cycle and "off" cycle are each equal to the time between taps, so a full on/off cycle actually takes twice as long as the tap tempo input in Real Time. If a squarewave output is desired, use the Pin 2 output in 1:2 mode for realtime and 1:4 mode for double time. Pin 2 always resets by going high after a new tempo is input.

The first tap can be held down any length of time. If it is held down more than 4.2 seconds, the chip will time out and the original tempo will be restored when the button is released. This is because the maximum tap interval is 4.2 seconds in real time. If more than 4.2 seconds elapse between the first and second tap presses, the chip will time out and the original tempo will be restored.

The second tap can also be held down any length of time. As soon as the second tap is released, playback begins. What this means is users can tap in a tempo then hold down the second tap, releasing it on the downbeat so they are right on time. Also, because playback always starts right after the second tap is released, users can keep tapping as much as they like, as long as it is an even number of taps, until they get the tempo they like.

The two outputs can be simultaneously connected to two separate circuits, and can sink or source 25mA each.

SPECIFICATIONS

Supply Voltage ~ 2.0-5.5 Volts DC [5 volts recommended]
Maximum Output Current ~ 25mA [each pin]
Internal Oscillator Speed ~ 4 Mhz ± .08

Minimum Tempo ~ 342 bpm in Real Time (.175 seconds)
~ 1,363 bpm in 1:4 Mode (.044 seconds)
Maximum Tempo ~ 15 bpm in Real Time (4.19 seconds)

For technical support, please email
Service@Molten Voltage.com

Refer to Molten Voltage Application Note 1 for Tap Tempo Sequencer Ideas

RoHS Compliant