PORTABELLABZ

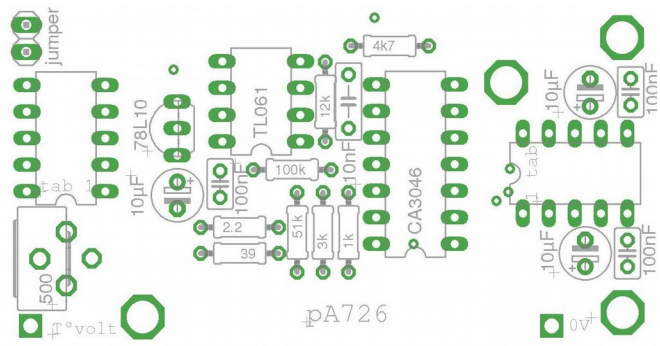
The pA726 is a CA3046-based analog exponential converter with thermal oven compensation as featured in various analog oscillator circuits with great stability and accurate tracking.
Thanks to the connections layout matching the (in)famous µA726 (UA726) pinout, it can be used as a direct drop-in replacement for this rare and expensive part.
It was designed with the Buchla 208r rev2 clone in mind and can be mounted to the solder side of boards 6 and 7 with 2 IC sockets (with round pins, if 10 pin ones can't be found, shorten 16 pin ones) : one on the pA726, one on the 208r board. Alongside to being solid and stable this mounting makes the board easy to remove if service is needed. A cable tie can be used to fasten it.

The pA726 PCB features two emplacements to connect the former µA726 pins : the vertical one for board 6 (near the 78L10) and the horizontal one for board 7, both are connected in parallel and only one at a time can be used.
The pA726 works with +/-12V or +/-15V (see the BOM below) and can replace the µA726 in any other circuit, for a new build or for repair, and can be mounted to component leads (to match a round µA726 emplacement).
The 4 mounting holes can be used to mount it to standoffs, chassis etc...

The pA726 needs a ground connection. The N/C pin 7 of the µA726 emplacement can be used, there's a connection to this pin on the pA726 PCB but an extra connection between the former µA726 pin 7's pad and ground must be added on the board which will receive the pA726, otherwise the circuit won't work.

On the 208 PCBs pin 2 is connected to ground and a bridge can be done between pins 2 and 7 to achieve the ground connection (pin 2 is not permanently wired to 0V in case the pA726 in used in a circuit with different layout).

BOM



CA3046 (or UL1111, CA3146, CA3086...)
TL061 (or TL071, TL081)
78L10

Capacitors
1 x 10nF film (ceramic works as well)
3 x 100nF ceramic
3 x 10µF electrolytic

Resistors
2.2R – 39R – 1k – 3k - 4k7 – 12k (+/-15V) or 10k (+/-12V) – 51k – 100k
500R trimpot

2 pin 2,54mm header + jumper

Build notes
- In the 208r mount horizontally capacitors and jumper (bend the 2 pin header).
- Use a 12k resistor if the supply is +/-15V or a 10k resistor if +/-12V.

Calibration procedure
Ensure the module is turned off and cold, if it was used soon before, let it cool down for at least 20 minutes to avoid remaining heat inside the CA3046 and have it at room temperature.
Remove the jumper.
Turn on the module and measure the voltage at the T° volt pad located near the trimpot. This is the temperature voltage at room temperature.
Turn off the module and plug in the jumper.
Turn on the module and let it warm up during 10 minutes. Measure the voltage at the T° volt pad again and adjust the trimpot until the voltage is 60mV below the voltage measured at room temperature. The voltage should be about 0.63V.