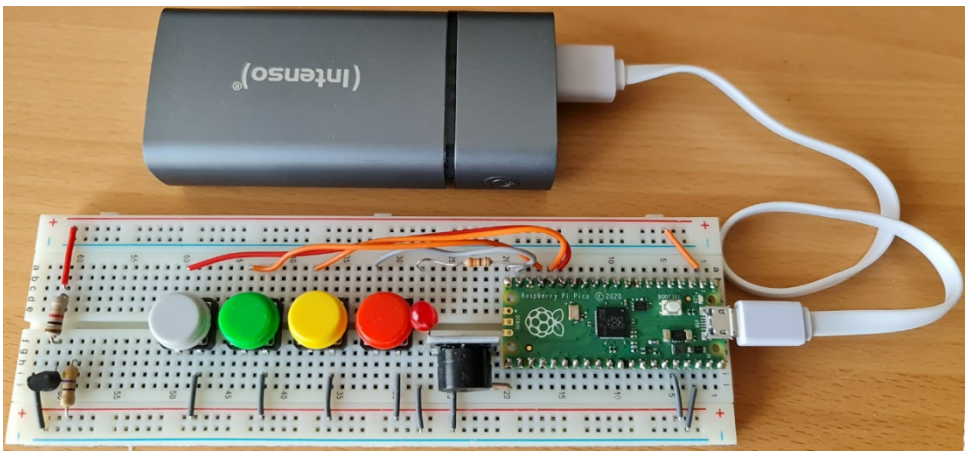
Pi Pico and the power bank

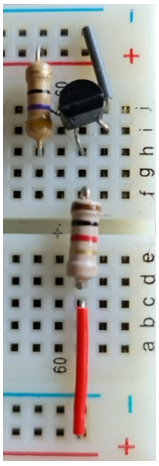
For my „beep“ project, to be independent from a PC, I had chosen an Intenso PM5200 power bank, because I wanted something small and inexpensive. This power bank has the advantage of being able to deliver power even while it is itself being charged, but like most power banks it shuts down power delivery when it thinks there is no consumer connected. Now, the Pi Pico needs so little current that it is not detected as a consumer.

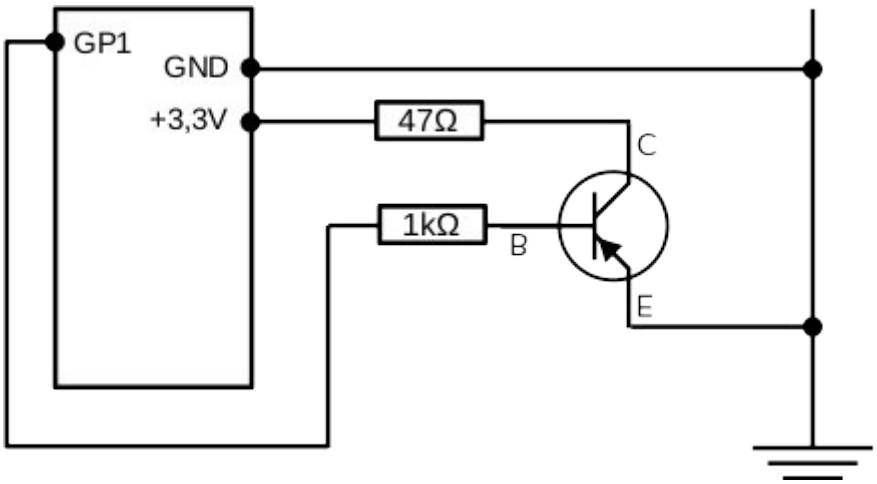
Therefore, if we have a project that should be used independently of the PC, stay alive and wait for user input, we need to produce a current of about 100mW in regular intervals (dependent on your power bank model).

For this, as suggested in several internet sites, I used a transistor that is triggered on its gate by one of the Raspberry Pi Pico ports. In this way we can control through software when we want the current to flow. How much current we get depends on the small resistor on the collector (see below). In my tests with this setup 90 Ohms did not result in enough current, but 47 Ohms was okay.

I placed this circuit on the far side of the breadboard, to leave enough space for the real project. The pictures below show the complete setup and an enlarged view of the transistor circuit. I believe it does not matter much which transistor is being used. I used a many years old BC380 that I found in my drawer and that apparently still works.







Now, to get a periodic current (my tests showed that a current of 1 second every 20 seconds is enough to keep the power bank alive), I put some code in the button reader thread:

```
puls = Pin(1, Pin.OUT)                    # Port GP01 is at Pin #02
def button_reader_thread():
    global button1_pressed
    global button2_pressed
    global button3_pressed
    global button4_pressed
    global shutdown
    counter = 0
    threshold = 2000                      # 10ms * 2000 = 20 seconds
    while not shutdown:
        # test all 4 buttons
        if button1.value() == 1:
            button1_pressed = True
        if button2.value() == 1:
            button2_pressed = True
        if button3.value() == 1:
            button3_pressed = True
        if button4.value() == 1:
            button4_pressed = True
        sleep_ms(10)
        # now lets do something else with this thread:
        # use up some power to avoid power bank switching off
        counter += 1
        if counter == threshold:          # time to suck some power
            puls.value(1)
        elif counter == threshold + 100:  # duration 100*10ms = 1 second
            puls.value(0)
            counter = 0
```