

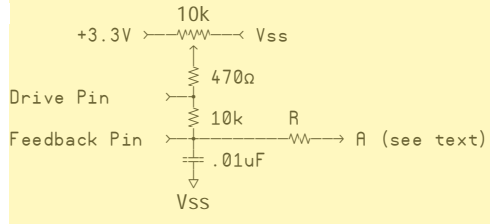
```

{{
*****
* Sigma Delta Driver          v1 *
* Author: Beau Schwabe       *
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*****

```

History: Version 1 - 04-09-2013) initial concept

Schematic:



Theory:

Note: A key feature with this sigma-delta ADC is that the drive pin is set to an input shortly after the sample period. A Typical configuration usually has the drive pin always set as an output and driven either HIGH or LOW and the external analog input is connected to a node I have labeled as "A". That method creates more of a voltage overshoot as the ADC tries to search introducing unnecessary noise. By placing the analog input on the drive pin, the analog signal is blocked from the feedback pin during the sample period. When the drive pin becomes an input the analog signal is then allowed to charge or discharge the capacitor. In this way you minimize antenna effects caused by long distances from the analog source that would normally interfere during a sample period.

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CON

```

_CLKMODE = XTAL1 + PLL16X
_XINFREQ = 5_000_000

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Drive = 1           'sigma-delta feedback
Feedback = 0        'sigma-delta input

```

OBJ

```

PST          : "Parallax Serial Terminal"

```

VAR

```

long Sample

```

PUB start

```

PST.Start(19200{<- Baud})

```

```

cognew(@PASM, @Sample)

```

```

repeat
  PST.dec(Sample)
  PST.Char(13{<- Return character})

```

DAT

```

PASM          orq      dira, _Drive           'Set Drive pin to an input
ADC_Start    mov      ADC_sample,#0          'Clear ADC_Sample
              mov      Counter,samples       'Set number of iterations
ADC_loop     test     _FB, ina wz            'Read ADC feedback pin ; set Z flag
              muxz    outa, _Drive           'Preset drive pin to opposite state of feedback pin
              or      dira, _Drive           'Set Drive pin to an output
              andn   dira, _Drive           'Set Drive pin to an input
              if_z   add      ADC_sample, #1  'Increment ADC
              djnz   Counter, #ADC_loop     'next iteration
              wr long ADC_sample,par        'write ADC_sample back to Spin variable "sample"
              jmp    #ADC_Start             'read next ADC sample

ADC_sample   long     0
Counter      long     0

samples      long     1000                  'Range ; Adjust this to suit the output range that you need
                                                ' i.e. For measuring voltage, a value of 3300 might be
                                                ' convenient to display the result in mV

_FB          long     |<Feedback
_Drive       long     |<Drive

```

DAT

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