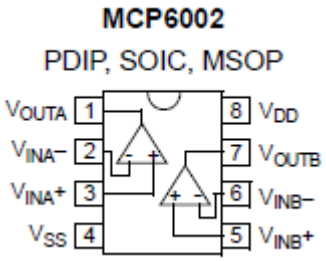
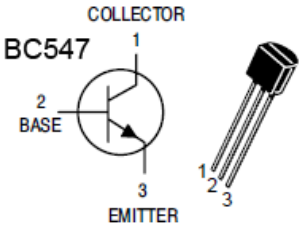
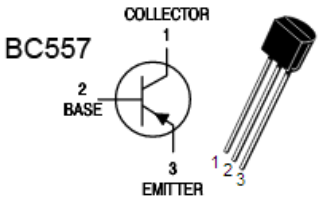
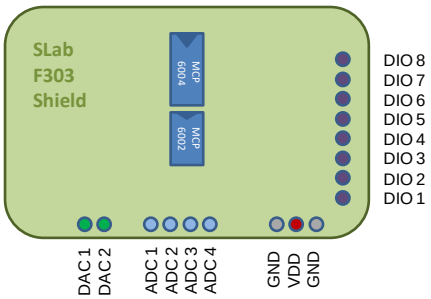
SLab Cheat Sheet v1.0

28/10/2017









Color	Digit	Multiplier	Tolerance (%)
Black	0	10^0 (1)	
Brown	1	10^1	1
Red	2	10^2	2
Orange	3	10^3	
Yellow	4	10^4	
Green	5	10^5	0.5
Blue	6	10^6	0.25
Violet	7	10^7	0.1
Grey	8	10^8	
White	9	10^9	
Gold		10^{-1}	5
Silver		10^{-2}	10
(none)			20

Main Module

import slab

Management Commands
- help([topic])
- setVerbose(level)
- connect([portName])
- disconnect()
- softReset()
- printBoardInfo()
- wait(time)
- pause(message)
- setPlotReturnData(value)

File Commands
- save(filename,data)
- load(filename)
- setFilePrefix([prefix])
- setCalPrefix([prefix])

Basic DC Commands
- setVoltage(channel,value)
- readVoltage(ch1 [,ch2])
- rCurrent(rvalue,ch1 [,ch2])
- dcPrint()
- dcLive(n [,wt,°single])

Ratiometric Commands
- writeDAC(channel,value)
- readADC(channel)

Global DC Commands
- setDCreadings(number)
- zero()

Generic Plot Commands
- plot11(x,y [,title,xt,yt,°logx,°logy])
- plot1n(x,ylist [,title,xt,yt,labels ,location,°logx,°logy])
- plotnn(xlist,ylist [,title,xt,yt,labels ,location,°logx,°logy])

Sweep DC Commands
- dcSweep(ndac,v1,v2 [,vi,wt])
- dcSweepPlot(ndac,v1,v2 [,vi,na,wt,°RD])
- realtimePlot([nadc,wt,n,°RD])

Transient Commads
- setSampleTime(time)
- setTransientStorage(samples [,na])
  - *Alias* tranStore(samples [,na])
- transientAsync()
- transientTriggered(level [,mode ,timeout])
- stepResponse(v1,v2 [,tinit])

Transient Plot Commands
- tranAsyncPlot([ºRD])
- tranTriggeredPlot(level [,mode ,timeout,ºRD])
- stepPlot(v1,v2 [,tinit,ºRD])

Wave Commands
- waveSquare(v1,v2,np *)
- waveTriangle(v1,v2,np *)
- waveSawtooth(v1,v2,np *)
- waveSine(v1,v2,np *)
- waveCosine(v1,v2 *)
- wavePulse(v1,v2,np,n1 *)
- waveNoise(vm,vstd,n *)
- waveRandom(v1,v2,n *)
  * : [,ºreturnList,ºsecond]
- loadWavetable(list [,ºsecond])
- setWaveFrequency(freq)
- waveResponse([npre,tinit,ºdual])
- wavePlot([npre,tinit,ºdual,ºRD])
- singleWaveResponse([ch,npre,tinit])
- singleWavePlot([channel,npre,tinit,ºRD])
- wavePlay([n,tinit,ºdual])

Vector Utility Commands
- highPeak(vector)
- lowPeak(vector)
- peak2peak(vector)
- halfRange(vector)
- mean(vector)
- rms(vector)
- std(vector)

Digital I/O Commands
- dioMode(line [,mode])
- dioWrite(line,ºvalue)
- dioRead(line)

Calibration Commands
- setVdd(value [,persistent])
- setVref(value [,persistent])
- manualCalibrateDAC1() *Alias cal1()*
- adcCalibrate() *Alias cal2()*
- dacCalibrate() *Alias cal3()*
- checkCalibration() *Alias cal4()*

Internal Variables
- vdd, vref, sampleTime, linux

DC Module

import slab_dc as dc

Two terminal I-V plots
- curveVI(v1,v2 [,vi,r,wt,ºRD])
- curveVIref(v1,v2 [,vi,r,wt,ºRD])
- curveVIbridge(v1m,v2m, [,vi,r,wt,ºRD])

Voltage I/O plots
- curveVV(v1,v2 [,vi,wt,ºadc2,ºRD])
- curveVVref(v1,v2 [,vi,wt,ºadc3,ºRD])
- curveVVbridge(vp,vn [,vi,vmin,wt,ºRD])
- hystVVcurve(v1,v2 [vi,wt,ºRD])

Current Output Transfer plots
- transferCurveVI(v1,v2 [,vi,wt,ro,ºRD])
- transferCurveII(v1,v2 [,vi,r1,r2,wt,ºRD])

Device curves
- vDeviceCurve(vi1,vi2,vii,vo1,vo2 [,voi,ro,wt])
- iDeviceCurve(vi1,vi2,vii,vo1,vo2 [,voi,ri,ro,wt])

AC Module

import slab_ac as ac

Frequency Response Commands
- sineGain(v1,v2,freq [,channel, npre,maxfs])
- sineGainAll(v1,v2,freq [,npre,maxfs])
- freqResponse(v1,v2,fvector [,channel ,npre,maxfs])
- freqResponseAll(v1,v2,fvector [,npre,maxfs])

Frequency Plot Commands
- plotBode(fvector,gvector [,labels,ºlinear])
- bodeResponse(v1,v2,fmin,fmax [,ppd, channel,npre,maxfs,ºRD])

Utility Functions
- logRange(start [,end,ndec,ppd])
- f2w(value)
- w2f(value)
- magPhase(value)
- mag(value)
- phase(value)

Meas Module

import slab_meas as meas

Time Analysis Commands

period(vector [,time,ts,mode])
tcross(vector,value [,mode,time,ts])

Global Analysis Commands

analyze(data)

FFT Module

import slab_fft as fft

ftransform(signal [,time,ts])
distortion(v1,v2,freq [,ºshow])

EZ Module

from slab_ez import *

Connects automatically at import time

Management Commands

help([topic])
connect()

DC Commands

readVoltage(ch1 [,ch2])
setVoltage(channel,value)
dcPrint()
zero()
liveVoltage()
sweepPlot([v1,v2,vi])
ioCurve()
bridgeCurve()
trendPlot([n])

Transient Commands

sineResponse(vmin,vmax,f)
triangleResponse(vmin,vmax,f)
squareResponse(v1,v2,f)
sineBridgeResponse(vmax,f)

Legend:

[ ] : Optional parameters
º : Digital value (True or False)
ºRD : ºreturnData