

2022-03-17 BQ796xx Setup and Test

Thursday, 17 March 2022 12:13 PM

Setting up BQ79600 and BQ79656 EVMs to pick up where Shakeeb left off on BMM development and troubleshooting.

Doing toolchain set up and install on Duo's Alienware laptop.

Checking software and docs from TI secure resources.

<https://www.ti.com/lit/ug/sluuc36/sluuc36.pdf>

Public "BQ79616-Q1 and BQ75614-Q1 GUI User's Guide" is newer version than secure draft version. Dec 2020 public vs Dec 2019 secure

BQAutoEval-1.0.4 setup-win_7.4.2.exe	Application	9,977 KB	No	11,665 KB	15%	25/09/2020 4:14 AM
install_image_BQAutoEval.zip	Compressed (zipped) Folder	24,829 KB	No	24,829 KB	0%	17/05/2021 6:04 PM

GUI secure

BQAutoEval-1.0.4 setup-win_7.4.2.exe	Application	9,977 KB	No	11,665 KB	15%	25/09/2020 4:14 AM
install_image_BQAutoEval.zip	Compressed (zipped) Folder	24,829 KB	No	24,829 KB	0%	17/05/2021 6:04 PM

GUI public <https://www.ti.com/lit/zip/slv810>

Large slow install. Needs to also download and install GUI Composer Runtime.

Note, do not need to touch USB2ANY firmware as Shakeeb has already done updating.

BQ79600EVM Quick Start Guide

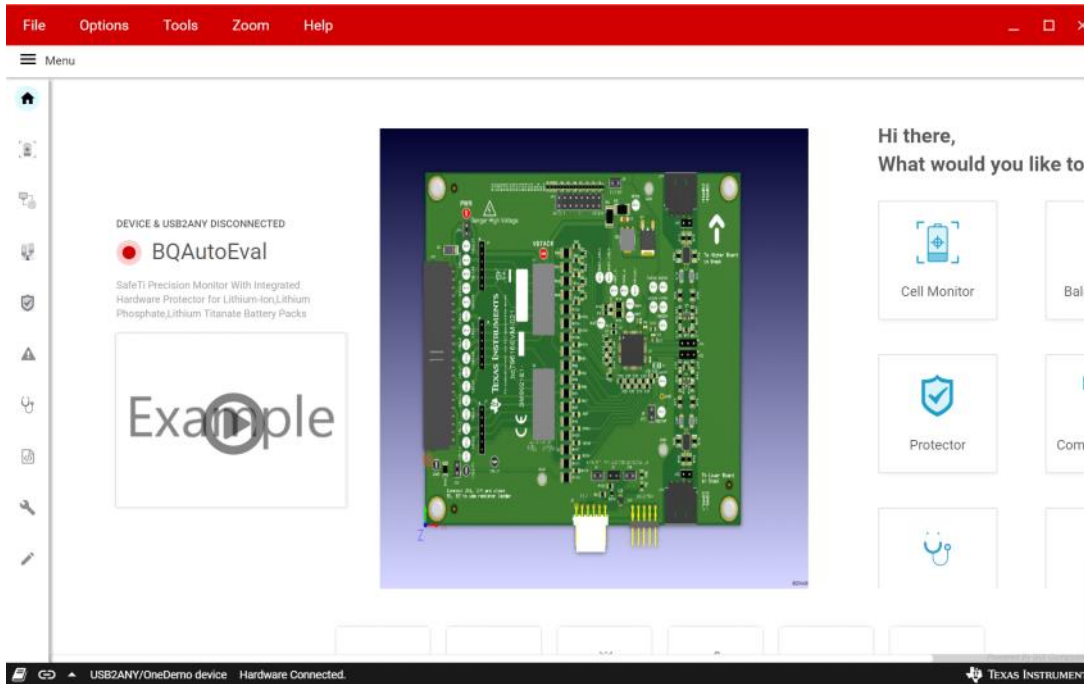
www.ti.com

Table 13. Connections Between BQ79600EVM High Side and BQ79616EVM Low Side

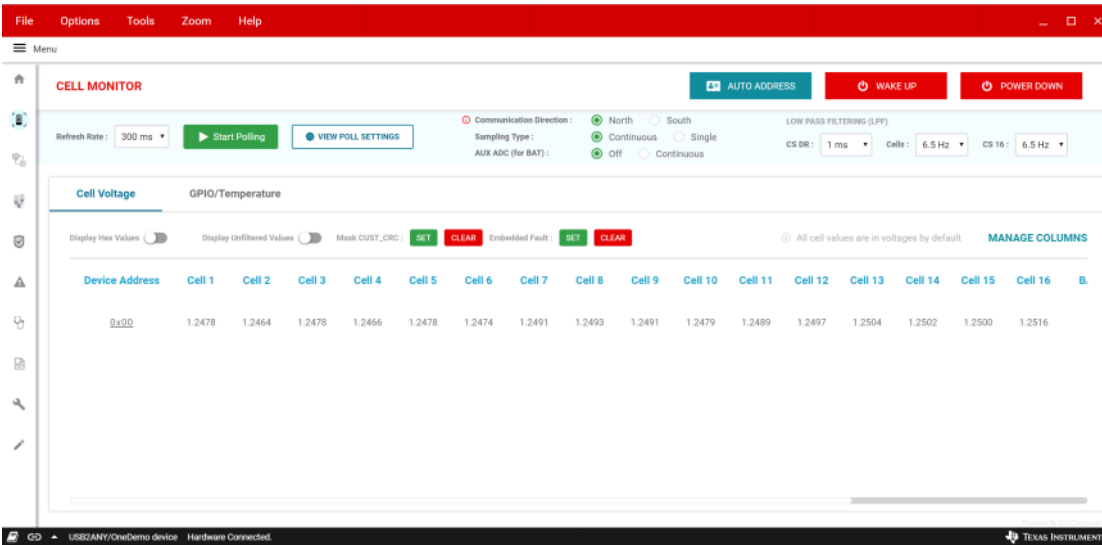
Connection Name	BQ79600EVM High Side	BQ79616EVM Low Side
COMH_N to COML_N	J15 pin 4	J10 pin 1
COMH_P to COML_P	J15 pin 3	J10 pin 2

BQ79656 EVM connected as recommended in GUI user guide 20V across GND and Vstack test points.

GUI displays not connected.



Does show USB2ANY is connected

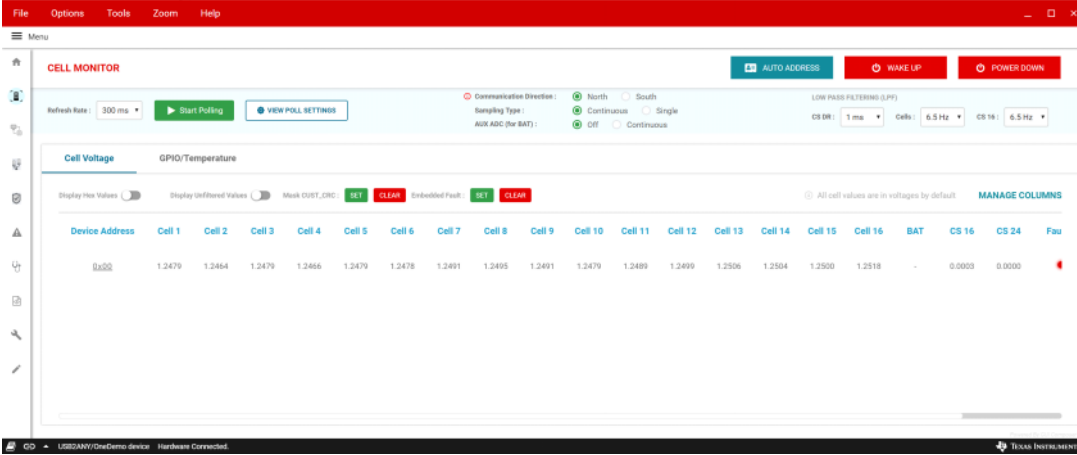


To get connection need to go to Cell Monitor, then click:

1. Wake up
2. Auto Address
3. Start Polling

Connected BMM to BQ79656 EVM.

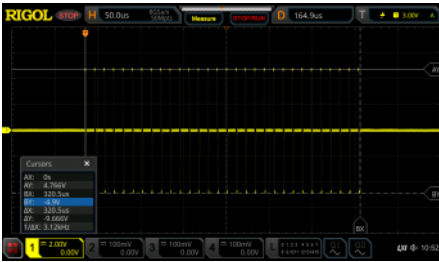
Wake up works but address not getting assigned?



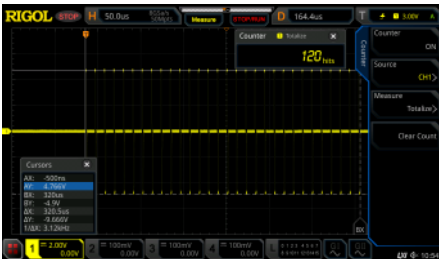
Also noted, does not respond to power down, LED on EVM goes out but stays on for BMM

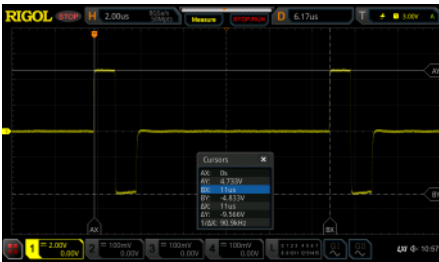
USB2ANY connection seems to fail when connected via USB-C Hub? Disconnected, waited and reconnected. Seems to work again.

Capturing waveform on BQ79656 COMH, Probed differentially with HVP-70.



320us wakeup pulsing period length





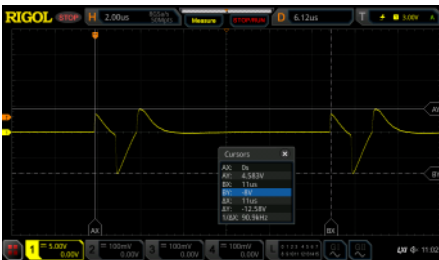
11uS between pulse edges



1uS half pulse

320/11=29.0909 +1 so 30 pulses for wakeup

Plugged BQ79656 EVM COMH to BMM COML



BQ79656 EVM COMH header pins

Severely distorted waveforms

Probing BQ79656 EVM J19 COMMH (pre filter/isolation)

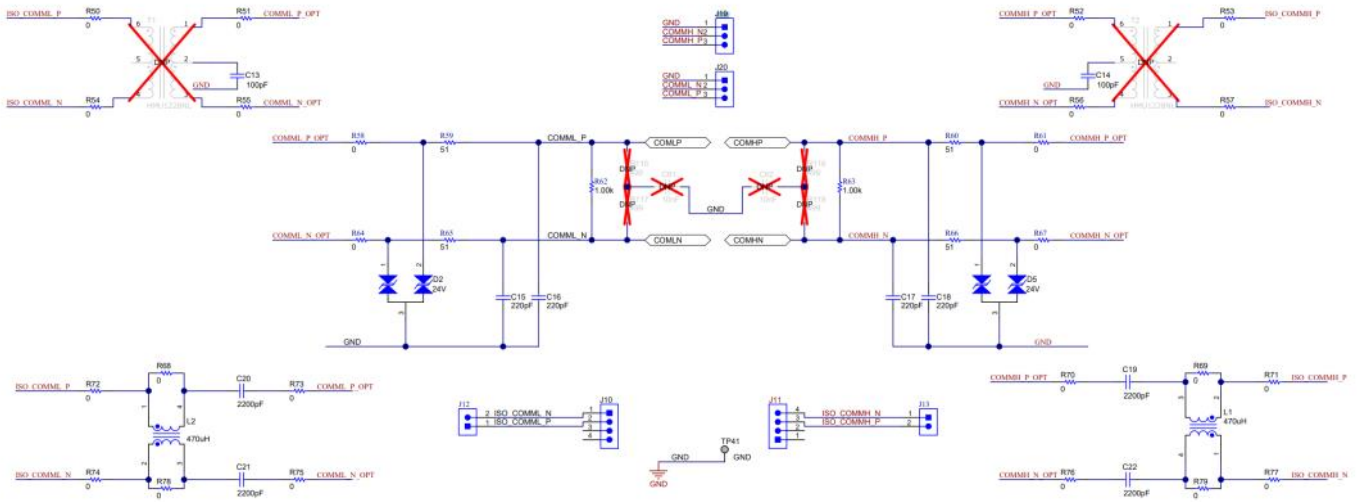
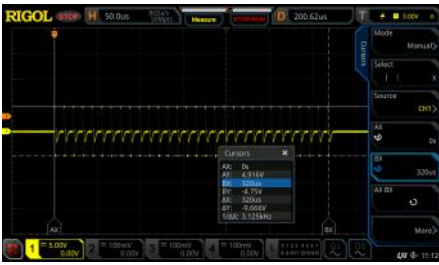
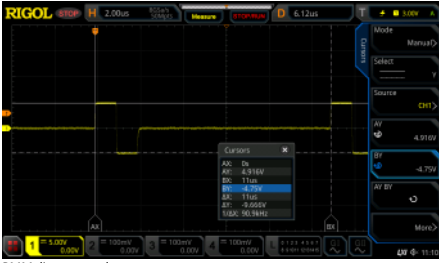


Figure 9-5. BQ79656EVM Schematic Part 4





Connected to BMM



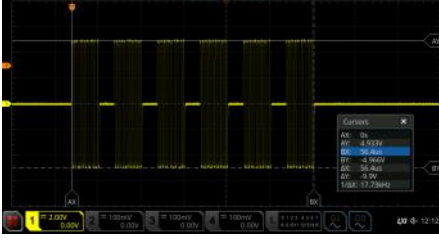
BMM disconnected.

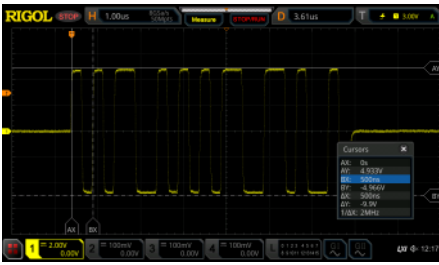


Power down signal



Auto Address. Back to probing at COMH header (113)





Polling (300ms)

File Options Tools Zoom Help

CELL MONITOR

Refresh Rate: 300 ms Stop Polling VIEW POLL SETTINGS

Communication Direction: North South
 Sampling Type: Continuous Single
 AUX ADC (for BAT): Off Continuous

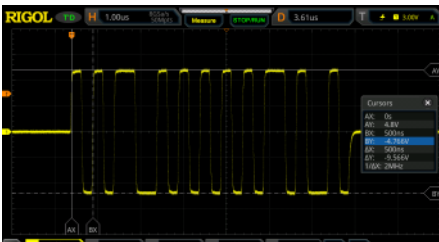
LOW PASS FILTERING (LPF)
 CS DR: 1 ms Cells: 6.5 Hz CS 16: 6.5 Hz

Cell Voltage GPIO/Temperature

Display Hex Values Display Unfiltered Values Mask CUST_CRC Embedded Fault

Device Address	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6	Cell 7	Cell 8	Cell 9	Cell 10	Cell 11	Cell 12	Cell 13	Cell 14	Cell 15	Cell 16	BA
0x00	1.2491	1.2476	1.2491	1.2478	1.2491	1.2487	1.2502	1.2506	1.2502	1.2491	1.2500	1.2510	1.2518	1.2516	1.2512	1.2529	-

USB2ANV/OneDemo device Hardware Connected. TEXAS INSTRUMENTS



Changing to BQ79600 EVM.
 Connected BQ79600 EVM COMH (J15) to BQ79656 EVM COML (J10)
 Seems to work

File Options Tools Zoom Help

Menu

CELL MONITOR

AUTO ADDRESS WAKE UP POWER DOWN

Refresh Rate: 300 ms Stop Polling VIEW POLL SETTINGS

Communication Direction: North South
 Sampling Type: Continuous Single
 AUX ADC (for BAT): Off Continuous

LOW PASS FILTERING (LPF)
 CS DR: 1 ms Cells: 6.5 Hz CS 16: 6.5 Hz

Cell Voltage GPIO/Temperature

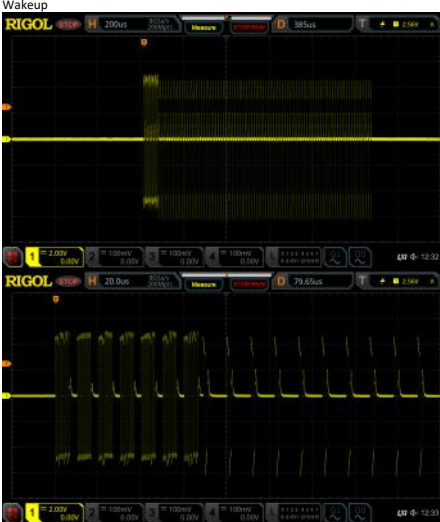
Display Hex Values Display Unfiltered Values Mask CUST_CRC: SET CLEAR Embedded Fault: SET CLEAR

All cell values are in voltages by default [MANAGE COLUMNS](#)

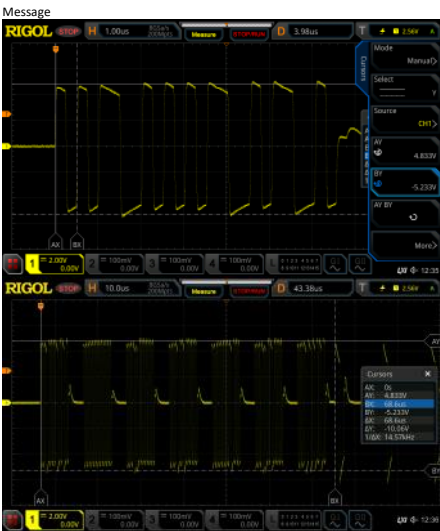
Device Address	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6	Cell 7	Cell 8	Cell 9	Cell 10	Cell 11	Cell 12	Cell 13	Cell 14	Cell 15	Cell 16	BA
Stack 1	1.2485	1.2472	1.2485	1.2474	1.2485	1.2483	1.2499	1.2500	1.2497	1.2485	1.2495	1.2504	1.2512	1.2510	1.2506	1.2523	-

USB2ANY/OneDemo device Hardware Connected. Powered By 303 Computer TEXAS INSTRUMENTS

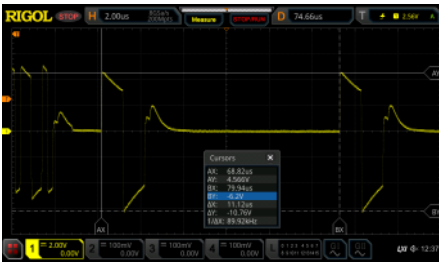
No connection, BQ79656 disconnected. Probing J17 COMH.



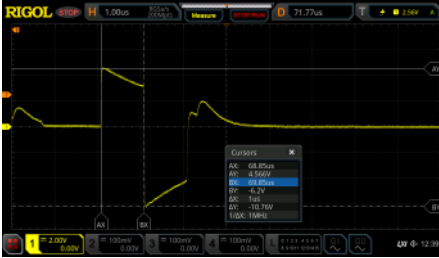
Message follow by tone?



Tone



11us between pulses



Reset and trying wakeup again



990us

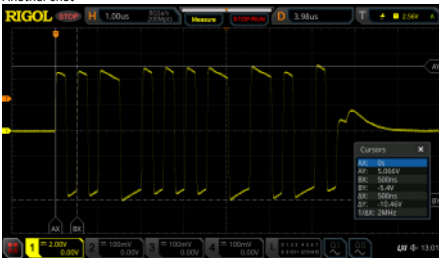
990/11=90

BQ79600 does a different wakeup?

Power Down

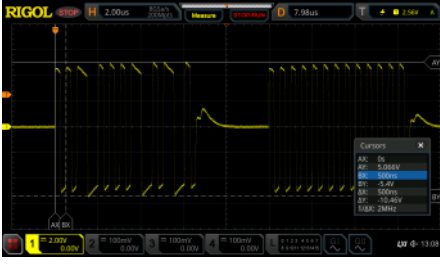
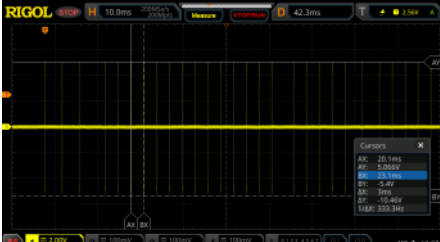


Another shot



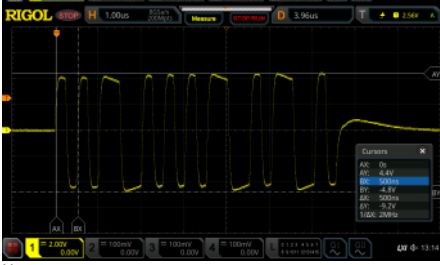
Need to send a wakeup before power off. Can't send repeated power although button is not greyed out in GUI.

Auto Address

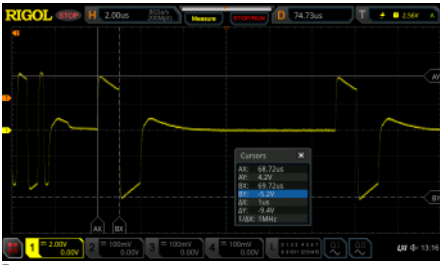


Now with BQ79656 EVM plugged in. Still probing BQ79600 J17 (COMH header)

Wake up



Message



Tone

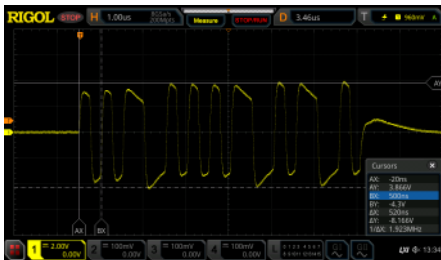
Auto Address



BQ79600EVM + BQ79656EVM, Probing BQ79656EVM J20 (COML after filter/isolation) Wake up



Changed probing setup to use thin probes on differential probe



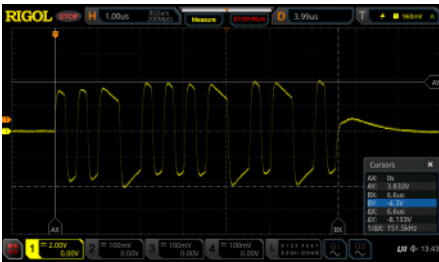
Message



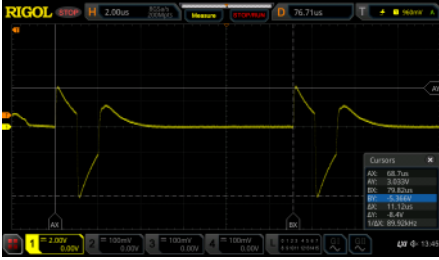
Tone

Probing directly on BQ79656 pins on BQ79656EVM



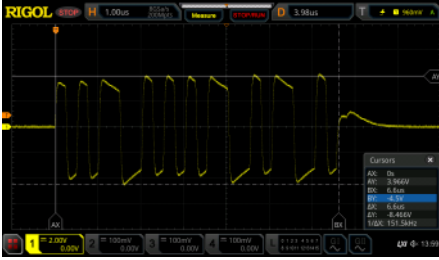


Message

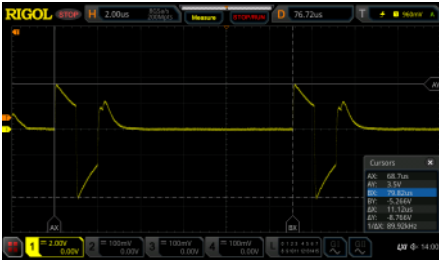


Tone

BQ79600EVM to Custom BMM BQ79656, Probing IC pins



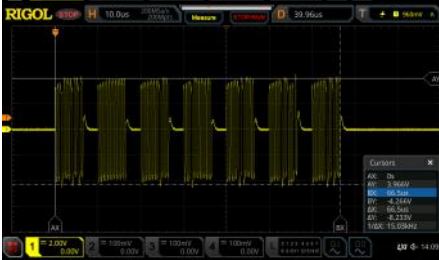
Tone

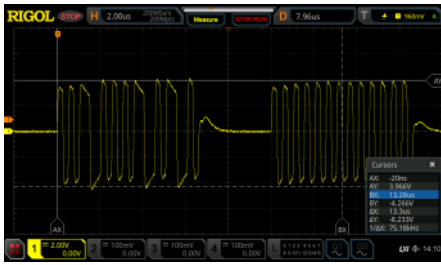


Message

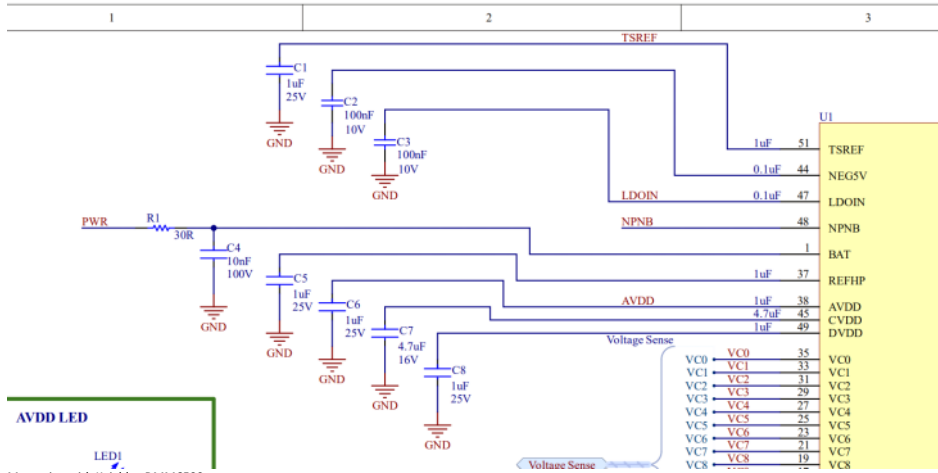
Probing at Custom BMM C46 and C47 pads

Auto Address





Check voltages?

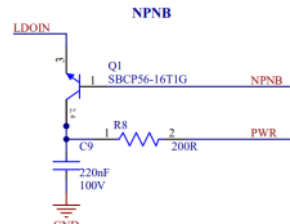


AVDD LED

LED1

Measuring with Keighley DMM6500

- C1 (TSREF) 2.55 mV
- C2 (NEG5V) -4.753 V
- C3 (LDOIN) 6.011 V
- C4 (BAT) 19.990 V
- C5 (REFHP) 4.994 V
- C6 (AVDD) 5.042 V
- C7 (CVDD) 5.042 V
- C8 (DVDD) 1.8095 V



- R8 (PWR) 19.996 V
- Q1 Collector 17.070 V
- Q1 Base (NPNB) 6.650 V

Checking Rail Stability.

Added in test points to PCB. Wire on isolation transformer T2

CH1 Trigger, CH2 monitor and probe power rail.

Auto address message sent

Probing passive probe on 1x. (Rigol PVP2350)



C7 (CVDD)

Try checking common mode signals?