

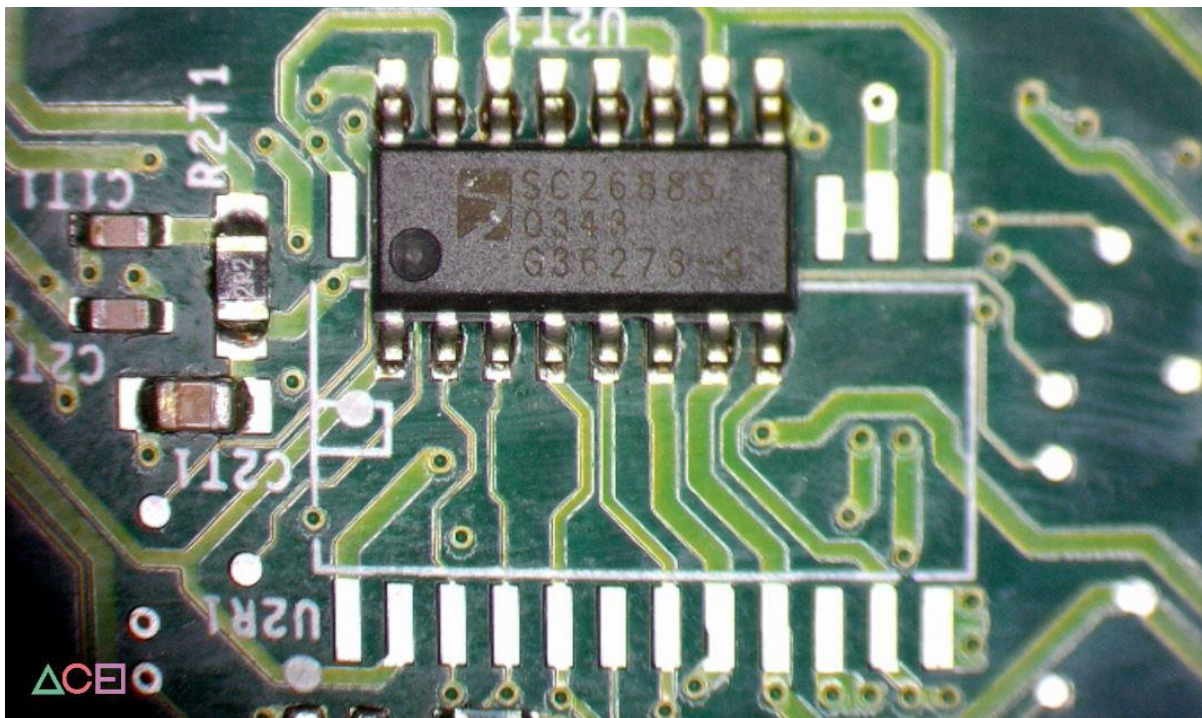
21/06/23

XBOX V1.2 – V1.4 1.45V PIII TUALATIN V_CPUCORE PIII VOLTAGE ADJUSTMENT

This document will show you and explain how to adjust the V_CPUCORE voltage for the PIII Tualatin CPU upgrade for the Original Xbox for motherboard revisions V1.2 to V1.4. Please be aware that you may damage your console if done incorrectly and I take no responsibility whatsoever if you happen to.

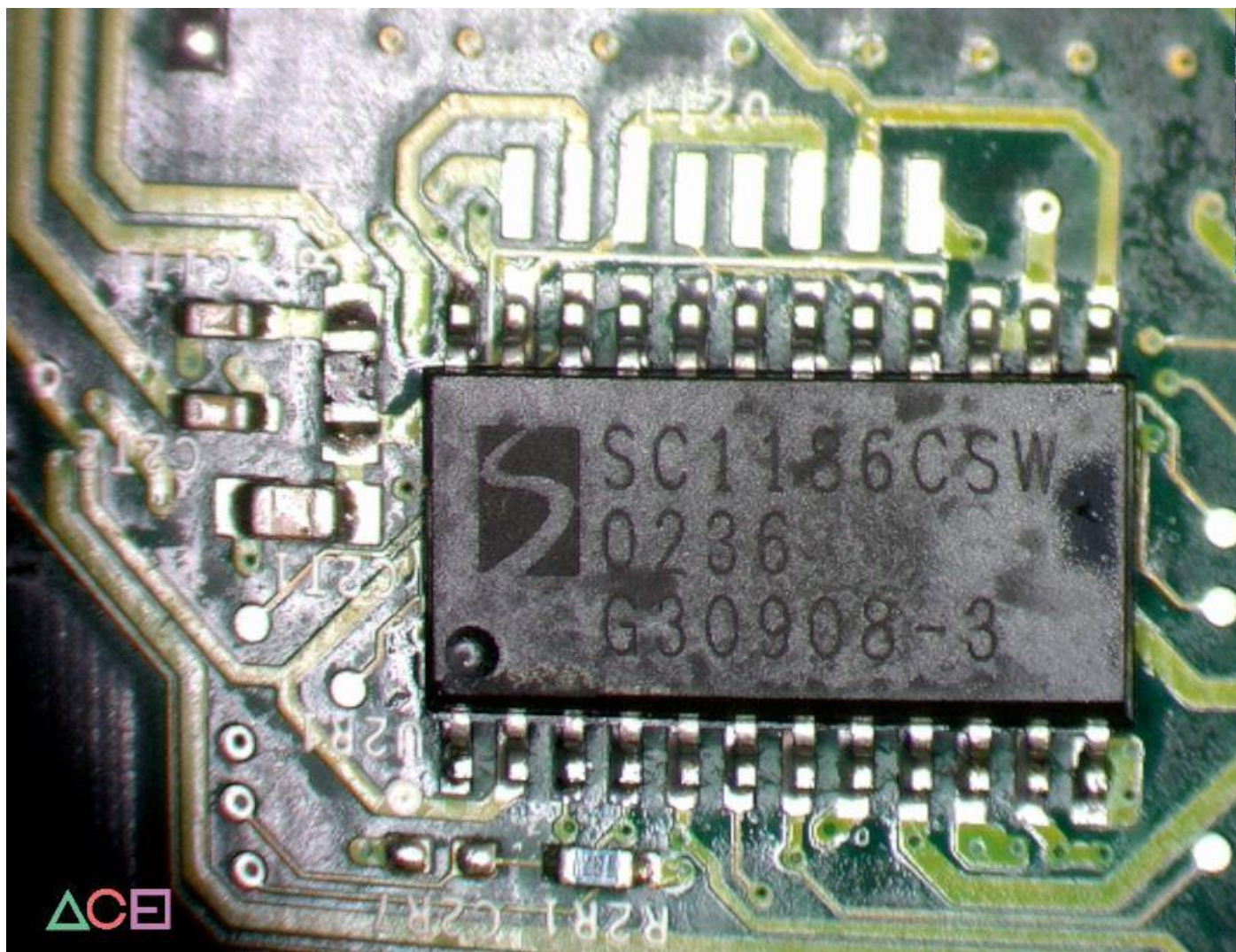
Firstly you need to check what DC/DC voltage convertor is installed on your xbox. There are 2 revisions, SC2688 (U2T1) and SC1186 (U2R1). Here is a picture of the area and it populated with the SC2688.

V1.2 and V1.3 may have either IC installed from factory. If you already have SC1186 installed you can skip to STEP 3.



U2T1 is the smaller package and you can see in the above picture U2R1 is for a larger package(SOP24). Essentially you need to remove U2T1/SC2688 and populate U2R1 with the SC1186 package. The SC1186 are available on the usual platforms for purchase at the time of writing this and they are also available to harvest on the V1.0 and V1.1 boards.

Below is a picture of the SC1186 installed on a V1.4 Xbox.



Once you have removed U2T1 and populated U2R1, there are a few more resistor modifications that need to be carried out.

STEP 1: R2E9 needs to be removed and replaced with a 75ohm 0603 resistor, it is populated with an 357ohm by default with the SC2688. This will be already populated with an 75ohm resistor if your V1.2 or V1.3 already has the SC1186.

STEP 2: R2E7 needs to be populated with an 100ohm 0603 resistor as it is unpopulated by default with the SC2688. This will be already populated with an 75ohm resistor if your V1.2 or V1.3 already has the SC1186 installed.

STEP 3: R2E3 and R2E4 need to be populated with 0ohm 0603 resistors. This is the VID setting for V1.45 to the core. Populating R2E3 and R2E4 will set the VID V_CPUCORE at V1.45. You can adjust it as desired. I recommend using the PIII default core voltage of V1.45 though. Change it at your own risk! Below is the VID table for the SC1186.

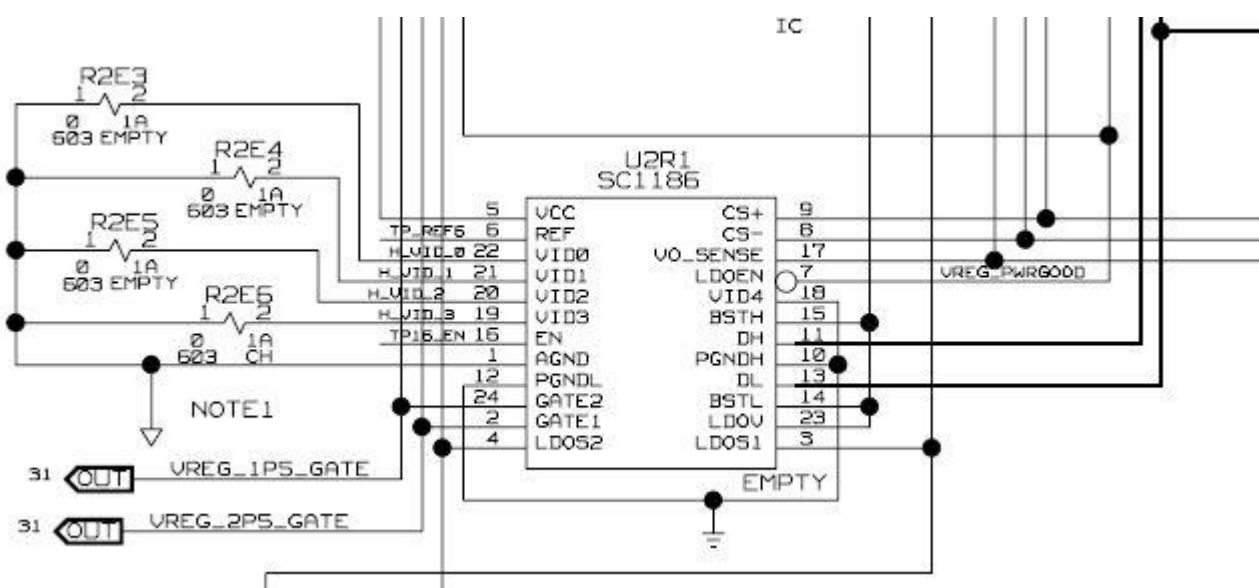
POWER MANAGEMENT
Applications Information - Output Voltage Table

Unless specified: 4.75V < VCC < 5.25V; GND = PGND = 0V; VOSENSE = V_O; 0mV < (CS+ - CS-) < 60mV; = 0°C < T_j < 85°C

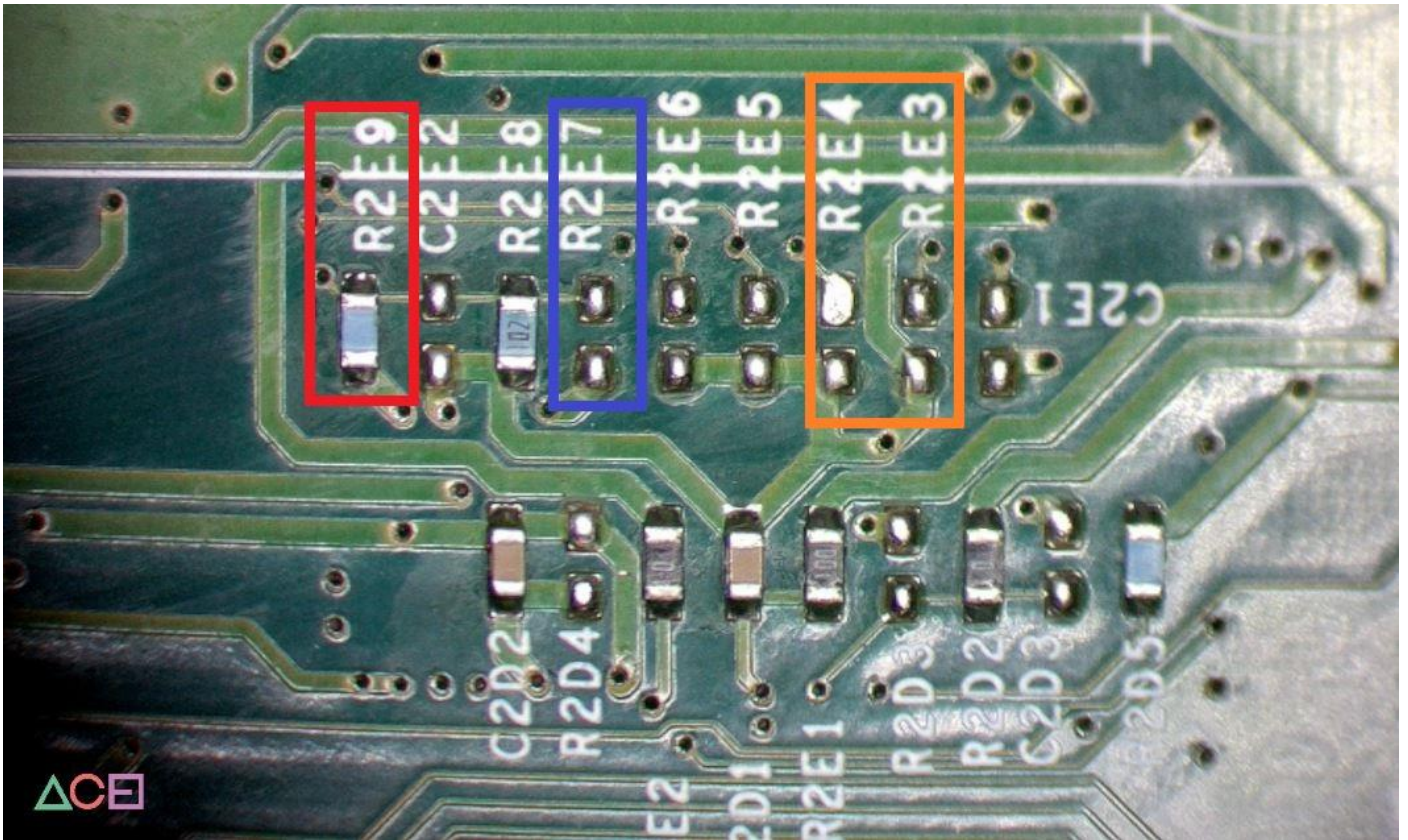
Parameter	Conditions	Vid 43210	Min	Typ	Max	Units
Output Voltage ⁽¹⁾	I _O = 2A in Application circuit (Figure 1)	01111	1.277	1.300	1.323	V
		01110	1.326	1.350	1.374	
		01101	1.375	1.400	1.425	
		01100	1.424	1.450	1.476	
		01011	1.478	1.500	1.523	
		01010	1.527	1.550	1.573	
		01001	1.576	1.600	1.624	

0 = populated with a 0ohm resistor 1 = open line – no population

Below is the pinout/pad locations for the VID adjustments



These adjustments should give you V1.45 at R1E1 going to the CPU CORE



CREDITS: #ACE (myself) and #Andr0 (AndrZero) #WaCKeDMaN probably chimed in too!