7 DCN/ECN THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR REVISION DESCRIPTION DATE HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY Initial Release equivalent to CWRU BP2B BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN. See Note 1, DCN 101 101 See Note 2, DCN 101 101 107 See Note 3, DCN 107 5 See Note 4, DCN 101 101 See Note 5, DCN 107 107 Note 0, Rev. 1 Biopotential Module ~ 2-channel (BP2) See Note 6, DCN 121 121 1. Initial Release See Note 7, DCN 151 151 Note 1, Rev. 2 2. Moved rail holdup capacitor (C3 and C5) to the front end of the current sense resistor. 3. Added a bypass capacitor (C17) to the network sense negative rail of the LDO (U9). 4. Replaced positive network rail LDO (U3) with a stepdown DC/DC converter. 5. Added high side rail switch (Q2) to control the AVDD and n3V3 power supplies for the Biopotential Amplifier circuit. Pg1 Revision History 6. Added control signal (AVDD ctrl) from Microcontroller (U11) for high side rail switch. Pg2 Biopotential Amplifier System Pg3 BP2 Microcontroller 7. Removed some zero ohm resistors: R12; R13; R19; R30; R37. Pg4 Network Interface Note 2 Rev. 3 Pg5 Analog/Digital Peripheral System 8. Changed n3V3 control from switched AVDD to Microcontroller (U11) pin 38, I/O Port C3. Pg6 BP2 Modular and Test Header **DIGITAL SIGNALS** ANALOG SIGNALS 9. Removed zero ohm resistors from shut down input of U12, pin 5. ¬□ high level true ← reversing polarity variable amplitude analog signal □ low level true fixed polarity variable amplitude analog signal 10. Changed C33 package size from 0603 to 0402. _____ pulse width modulated ---- fixed polarity constant amplitude analog signal MM biopotential signal 11. Changed part numbers of several resistors and capacitors for for manufacture and supplier conformity. MIXED SIGNALS ANALOG CURRENT FLOW or 12. Changed Resistors R1 - R10 from 0.0ohm to Do Not Populate (DNP). 「☐ FESCAN bus power and data signal **DIGITAL SIGNAL DIRECTION** bidirectional
unidirectional
unidirectional 13. Changed C26 from 2.2uF to 1.0uF to prevent transients on the positive analog rail when the AVDD power supply is turned on. 14. Changed C28, C30 and C31 from 10uF to 1.0uF to prevent transients on the negative analog BIOPOTENTIAL MODULE rail when the n3V3 power supply is turned on. POWER CONDITIONING SYSTEMS TISSUE 15. Added SBI part numbers to all components. **PROCESSING** INTERFACE -22 3V3 Note 4, Rev. 5 NETWORK POWER 16. Changed Manufacturer and Supplier part numbers for C1 and C6 from GRM2165C2A101JA1D to UCONTROLLER BIOPOTENTIA POWER GRM155R71C104KA88D and 490-1599-6-ND to 490-3261-6-ND. AMPLTETER -23 n3V3 -42 DIGITAL POWER 17. Remove Power-up reset circuit C18, R26, and U10. Request from CWRU, report "BP2B Skywire PERIPHERALS Tissue Power Control - Engineering Report 160520 Rev B.docx" -24 1V65 -1/-2 -43 ANALOG HEADERS REFERENC 18. Change value of C3 and C5 from 47uF to 22uF. PERIPHERALS Note 5. Rev 06 -11 19. Changed Manufacturer and Supplier part numbers for C2, C14, C15, C28, C30 and C31 from Murata NETWORK DATA NON-TISSUE Electronics Corp GRM188R71E105KA12D (Digi-Key 490-5307) to TDK Corp CGA3E1X7R1C105K080AC INTERFACES ENCLOSURE = AMPLIFIER (Digi-Key 445-12539). 20. Changed Manufacturer and Supplier part numbers for C37, C43, C45, C46, C47, C48 and C54 from Murata Electronics Corp GRM155R71C154KA12D (Digi-Key 490-5307) to Samsung Corp CL05B154KO5NNNC (Digi-Key 490-5955) Note 6, Rev 07 21. Changed Manufacturer and Supplier part numbers for C40 and C51 from Johanson Dielectric Inc. 500X14W103MV4T to Johanson Dielectric Inc. 500X14W221MV4T (Digi-Key 500X14W221MV4T-ND). 22. Added R57 1M ohm resistor and R58 1M ohm resistor. R57 (Page 5) is hand-soldered across pins 4 and 5 of U12. R58 (Page 3) is hand-soldered across the gate and source of Q2. APPROVALS DATE SYNAPSE ENG: T. Crish 10-25-2022 DSN: K. Kowalski 10-25-2022 PROJECT REVISION: DOCUMENT REVISION:* CHK: T. Crish REFERENCE DOCUMENTS Biopotential (BP2) Module Schematic ASSY DWG: * 51-2003-01 FAR DWG: + SHEET 1 PCR DWG· + FILE NAME 7 4 2









