DIYBMS v4 CELL MONITORING MODULE VERSION 4.40 CHIP RESISTOR - SURFACE MOUNT 3.30HMS ±1% 3/4W 2010 ROHS, FOR LITHIUM VOLTAGE RANGES (18650 etc.) 0 - 4.2V 3 in series with 3 in parallel gives 3.30 Ohm equivalent resistance 9 resistors provide 9*0.75W=6.75W of power disipation. Balance current (at 3.3ohm): 1.27A at 4.2V and 5.35W power 1.21A at 4.0V and 4.84W power 1.13A at 3.75V and 4.26W power ENABLE PA7 has a higher current output than other pins 1KOHMS VCC VCC Diodes Incorporated VOLTAGE REFERENCES 1.25V ±0.5% D1 20PPM/°C VREF M AZ432ANTR-E1 C1 . 100nF 1uF (ENABLE) AREF/PA0 GND VCC Red R3 PA1 6.8K PA2 RXDO PA3 ADC3=Output voltage 1.25V for input of 4.398V (max) D3 2.2KOHMS PA4 PA5 2.7K ATTINY841 PA6 ATtiny841-SSU DUMP_LOAD_ENABLE 10KOHMS PA7 ENABLE source XTAL1/PBC Q1 GND XTAL2/PB1 A03400A GND 5 DUMP_LOAD_ENABLE PB2 GND MOSFET N TRENCH 30V 5.7A RESET/PB3 1.5V @ 250UA 26.5 @ 5.7A 10V SOT-23-3L ROHS Y1 8MHZ Ceramic Resonator 10KOHMS VCC 8Mhz used in CKDIV8 mode to power on at 1Mhz, code then swaps to GND 2Mhz using clock prescaler 4 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER EL3H7-G Series U1 2200HMS EL3H7(B)(TA)-G External temp sensor PA5 (ADC5) shared with MISO, snap off PCB GND ___ TX1 Internal temp sensor 1 TX Connector VCC R19 NTC THERMISTORS 10KOHMS ±1% 3950K 0805 ROHS GND CMFB103F3950FANT 2 EXTTEMP1 VCC CMFB103F3950FANT 1 _ Ext Temp Sensor SCK> 2 REMOTE1 2 _ RX1 R20 1 Ext Temp Sensor MOSI 1 _ RX Connector 10KOHMS AVR-ISP-SCK. RST R21 10KOHMS GND +GND GND GND PWR_FLAG POWER1 \rightarrow Battery SMBJ5.0A GND Stuart Pittaway UNIDIRECTIONAL 5V TVS F1 Sheet: / PWR_FLAG File: ModuleV440.sch mSMD150 Title: DIYBMS cell monitoring module Date: 2021-03-03 mSMD150, 8V MAX, FUSE HOLD @ 1.5AMP, TRIP 3A Size: A4 Rev: 4.4 KiCad E.D.A. kicad (5.1.5)-3 ld: 1/1