28PINS - SCHEMATIC

Micro USB

16U2
ATMEGA16U2-AU

3V3 LDO
TL1963A-33DCQR

Power Selection

328P
ATMEGA328P-PU

JP2
ICSP1
JP3
JP1
ICSP

POWER
POWER PADS

DIP SOCKET
28-DIP SOCKET
SCKT FOR U1

MOUNTING HOLES

POWER LED

USER LED
SN74AHC1G09DBVR

IOH
HDR FEMALE 1x10 2.54mm

AD
HDR FEMALE 1x6 2.54mm

IOL
HDR FEMALE 1X8 2.54mm

FIDUCIALS
FID1 FID2 FID3 FID4

RESET (16U2)
SN74AHC1G09DBVR

RESET (328P)
SN74AHC1G09DBVR

USER BUTTON
SN74AHC1G09DBVR

Title
Size A2
Number
Revision
Date: 9.28.2025
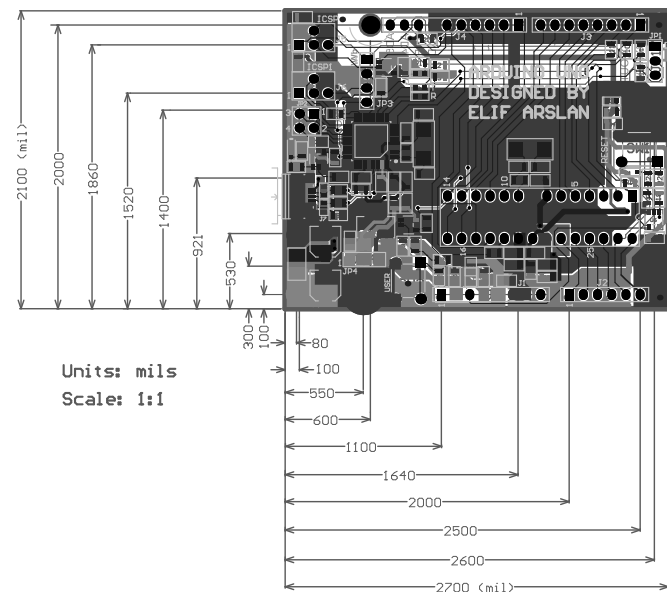File: D:\altium\...\28Pins_Project_V111.SchDoc
Drawn By:
Sheet of

Files
※ .GTO - Top Overlay
※ .GTP - Top Paste
※ .GTS - Top Solder
※ .GTL - L1 (Positive)
※ .GBL - L2 (Positive)
※ .GBS - Bottom Solder
※ .GBO - Bottom Overlay
※ .GM6 - Mechanical Drawing
※ .GM7 - Manufacturing Notes
※ .GM9 - License
※ .GM8 - Board Outline

Mechanical Drawing
of 28Pins V1I1

Assembly TOP of 28Pins V1I1
[No Variations]

Units: mils
Scale: 1:1

Board info
Minimum Track: 200um
Minimum Gap: 200um
Minimum Through Hole VIA: 0.6mm(pad) / 0.3mm (drill). Drilling: L1-L2

1. FINISHED PANEL THICKNESS IS NOT CRITICAL: TO BE APPROXIMATELY 1.6mm

2. BOARD FINISH: Au/ELECTROLESS Ni; 0.05-0.12um GOLD; 3-6um NICKEL

3. SOLDER RESIST: APPLY TO BOTH SIDES COLOUR - BLUE

4. COMPONENT IDENT: COLOUR TO BE WHITE

5. PANELIZE THE BOARD (4 PCS PER PANEL). PLACE FIDUCIALS ON THE PANEL STRIPS AS FOLLOWS:
   - FIDUCIAL PARAMETER 1-1.5MM, SOLDER MASK OPENING AT LEAST 1MM GREATER THAN FIDUCIAL
   - MINIMUM 4MM DISTANCE FROM THE PANEL EDGE
   - 3 FIDUCIALS SHOULD LIE ON TWO LINES THAT INTERSECT AT A RIGHT ANGLE
   - PLACE ONE FIDUCIAL INTO EACH PANEL CORNER (FOUR ON THE TOP LAYER)

Comment	Description	Designator	Footprint	LibRef	Quantity
100u / 10V	CAP ALUM 100UF 20% 10V SMD	C1, C2	C_ALU_C_SIZE	Tantal Capacitor	2
10uF / 16V	CERAMIC CAPACITOR, 10UF, 16V, X5R, 20%, 0805, FULL REEL; Product Range:C Series; Capacitance:10 F; Capacitance Tolerance: 20%; Dielectric Characteristic:X5R; Voltage Rating:16V; Ceramic Capacitor Case:0805 [2012 Metric]; MSL:- ;RoHS Compliant: Yes	C3, C12, C13, C19, C21, C22, C34	Capacitor 0805	C2012X5R1C106M125 AC	7
100nF	100 nF Capacitor	C4, C5, C6, C8, C11, C14, C15, C16, C17, C20, C23, C24, C26, C28, C29, C30, C31, C32, C33	Capacitor 0805	CAP 0805 100nF	19
1uF / 25V	CAP CER 1UF 25V X5R 0805	C7	Capacitor 0805	C2012X5R1E105K125 AA	1
18pF	Cap Ceramic 18pF 50V C0G 5% SMD 0805 125C Paper T/R	C9, C10, C25, C27	Capacitor 0805	C0805C180J5GACTU	4
Green	LED GREEN DIFFUSED 0603 SMD	D1	LED_0603	LGL29K-G2J1-24-Z	1
Orange	LED Orange Diffused 0603 SMD	D2, D3, D4	LED_0603	LOL29K-H2K1-24-Z	3
BAT54HT1G	Diode Schottky 30V 200mA SOD323	D5, D6	SOD323	BAT54HT1G	2
MPZ2012S601AT000	0805 600Ω ±25% DCR<0.1Ω 2A	FB1, FB2, FB3	Capacitor 0805	MPZ2012S601AT000	3
HDR FEMALE 1X8 2.54mm	2.54mm (0.1") Pitch SIL Vertical PC Tail Socket Assembly, selective gold + tin, 8 contacts	J1, J3	HDR FEMALE 1x8 2.54mm	M20-7820842	2
HDR FEMALE 1x6 2.54mm	2.54mm (0.1") Pitch SIL Vertical PC Tail Socket Assembly, tin, 6 contacts	J2	HDR FEMALE 1x6 2.54mm - duplicate - duplicate	M20-7820646	1
HDR FEMALE 1x10 2.54mm	2.54mm (0.1") Pitch SIL Vertical PC Tail Socket Assembly, tin, 10 contacts	J4	Hdr_Female_1x10_2.5 4mm	M20-7821046	1
HDR 2x3	03+03 DIL Vert Pin Hdr	J5, J6	HDR_2x3_2.54mm	M20-9720345	2
10118193-0001LF	CONN USB MICRO B RECPT SMT R/A	J7	10118193	MICRO USB	1
HDR_1x3	Conn Unshrouded Header HDR 3 POS 2.54mm Solder ST Top Entry Thru-Hole BergStik®Automotive Bulk	JP1, JP4	Hdr_1x3_2.54mm	68000-103HLF	2
HDR 2x2	Conn Unshrouded Header HDR 4 POS 2.54mm Solder ST Top Entry Thru-Hole BergStik®Bulk	JP2	HDR_2x2_2.54mm	Header - 68602-204HLF	1
HDR 1x4	HDR 4 POS 2.54mm Solder ST Thru-Hole Bag Conn Unshrouded Header	JP3	HDR_1x4 2.54mm	68001-204HLF	1
2u2 / 2A	FIXED IND 2.2UH 2A 80 MOHM SMD	L1	C1210_IND	INDUCTOR	1
LINK	CONN JUMPER SHORTING .100" GOLD	LINK1, LINK2, LINK3		LINK	3
10k	Res Thick Film 0805 10KOhm 1% 0.125W(1/8W) +/- 100ppm/°C Epoxy Pad SMD T/R	R1, R4, R14, R18, R19, R20, R21	R0805	Res SMD 10KOhm RC0805FR-0710KL	7
560R	RES SMD 560 OHM 1% 1/8W 0805	R2, R3, R15, R17, R22	R0805	RC0805FR-07560RL	5
22R	Res Thick Film 0805 22 Ohm 1% 0.125W(1/8W) ±100ppm/°C Pad SMD T/R	R5, R6, R7, R13, R23, R24, R25	R0805	Res SMD 22 Ohm	7
0R	RES SMD 0.0 OHM JUMPER 1/8W 0805	R8, R26, R27, R28	R0805	RC0805JR-070RL	4
1M	Res Thick Film 0805 1MOhm 1% 0.125W(1/8W) ±100ppm/°C Pad SMD T/R	R9, R16	R0805	RC0805FR-071ML	2
1k	RES SMD 1KOHM 1% 1/8W 0805	R10, R11, R12	R0805	Res SMD 1KOhm	3
28-DIP Socket	CONN IC DIP SOCKET 28 POS TIN	SCKT FOR U1	28_DIP_7.62mm_SOC KET	4828-3004-CP	1
1825910-6	Switch Tactile SPST-NO 0.05A 24V	SW1, SW2	1825910-6	Button	2
ATMEGA328P-PU	ATMEGA328P-PU; 8 bit Microcontroller AVR 20MHz 1; 32kb Flash; 2kb RAM; I2C SPI 2	U1	DIP28	ATMEGA328P-PU	1
ATMEGA16U2-AU	8-bit AVR MCU, 16 KB, 512 Bytes, 16 MHz, 2.7 to 5.5V, TQFP-32, RoHS	U2	TQFP32	ATMEGA16U2-AU	1
TL1963A-33DCQR	IC REG LDO 3.3V 1.5A SOT223-6	U3	DCQ (R-PDSO-G6)	3.3V REG	1
SN74AHC1G09DBVR	IC GATE AND 1 CH 2-INP SOT-23-5	U4, U5, U6, U7	DBV_SOT_23_5	AND Gate	4
ABM7-16.000MHZ-D2Y-T	Crystal 16MHz ±20ppm (Tol) ±30ppm (Stability) 18pF FUND 50Ohm 2-Pin Mini-CSMD T/R	Y1, Y2	APM7_v1_1_BIG	ABM7-16.000MHZ-D2Y-T	2
CG0603MLC-05E	VARISTOR 0603	Z1, Z2	R0603	CG0603MLC-05E	2