

Title: **Probe-Scope Digital Test: RAM**

Variant: **Standard Configuration**

Asm: ASP0020

Number: SCH0020

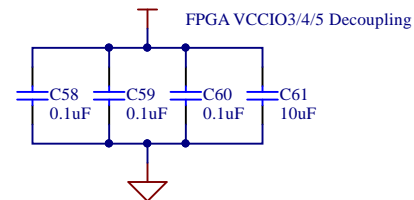
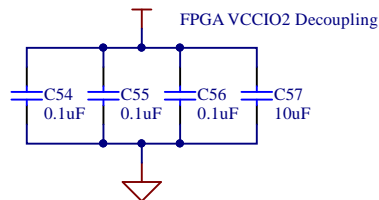
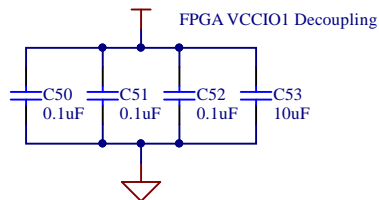
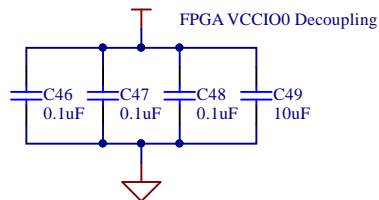
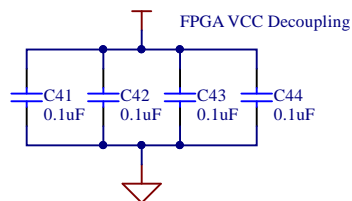
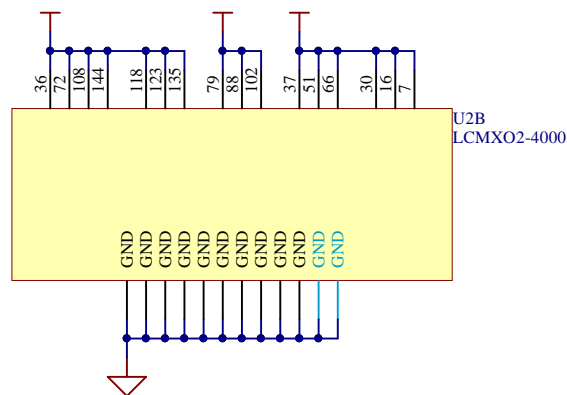
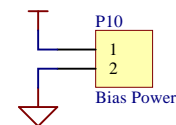
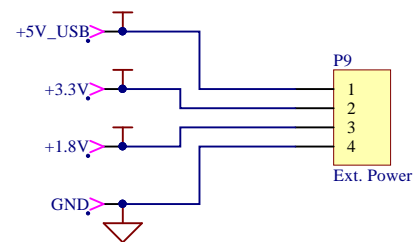
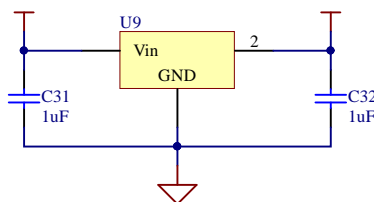
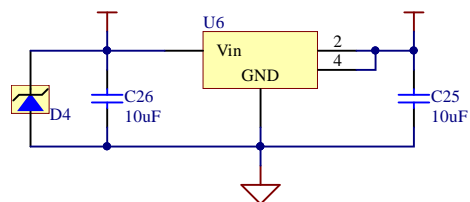
Rev: v1.0.0

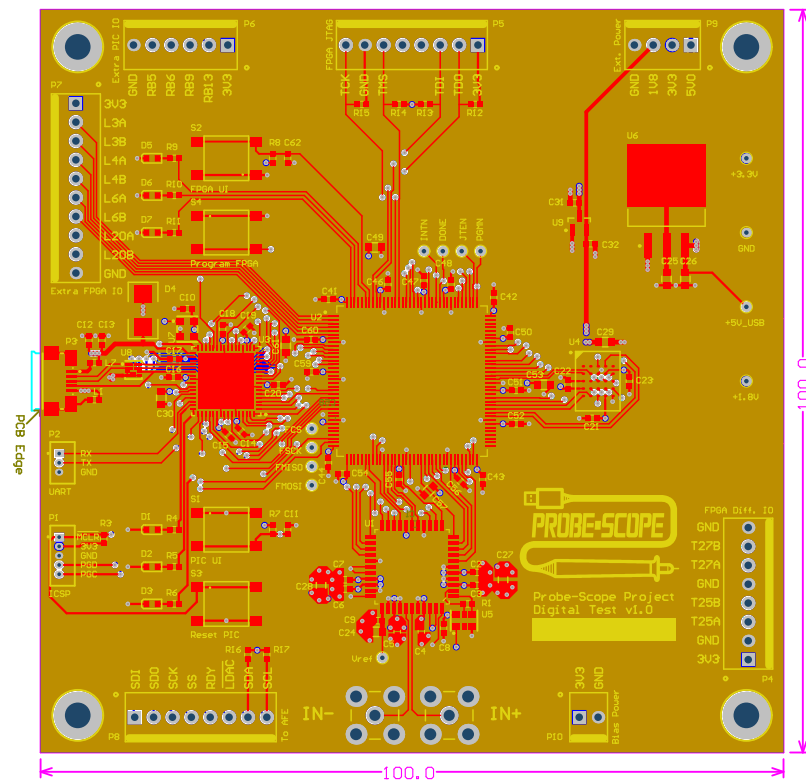
Date: 6/21/2019 Time: 9:45:39 PM Sheet 3 of 4

File: D:\Dropbox\O-Scope Probe\Digital Test - PCB\PSDT RAM v1.0.0.SchDoc

Probe-Scope: Unified USB  
Oscilloscope Probe  
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K. Hall, released under the  
CERN OHL v1.2





**Notes:**

1. Base material is 0.062 thick FR4
2. Foils to finish at 1oz
3. All hole sizes are after plating
4. Soldermask with L.P.I, Color is Green
5. Soldercoat after soldermask
6. Silkscreen with white epoxy
7. Holes with zero diameter pads are unplated

Top Overlay

Top Layer

Signal Layer 1

Signal Layer 2

Bottom Layer

Bottom Overlay

Board Outline



Unified USB Oscilloscope Probe  
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FILE PATH: D:\Dropbox\O-Scope Probe\Digital Test - PCB\PS Digital Test v1.0.PcbDoc

ENGINEER:  
J. Rowley, M. Omo

PCB DESIGNER:  
J. Rowley

DATE:  
6/21/2019

SHEET SIZE:  
LETTER

TITLE:  
Probe-Scope ADC/Digital  
Section Test

PART NO.:  
ASP0020

DWG NO.:  
CAD0020

REV:  
v1.0

SCALE:  
NONE



# BILL OF MATERIALS

Probe-Scope: Unified USB Oscilloscope Probe

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Designator	MANF	MANF_PN	Quantity	VENDOR	VENDOR_PN	P&V Description	Footprint	Comment
+1.8V, +3.3V, +5V_USB, DONE, FCS, FMISO, FMOSI, FSCK, GND, INTN, JTEN, PGMN, Vref	Keystone Electronics	1998-3	13	Digikey	1998-3K-ND	Connector, Test Point, 1 Positions, Male, Small, 0.27" Straight Pin, 0.02" dia	TESTPOINT024	TP
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C41, C42, C43, C44, C46, C47, C48, C50, C51, C52, C54, C55, C56, C58, C59, C60, C62	Samsung Electro-Mechanics	CL05B104KQ5NNNC	39	Digikey	1276-1511-1-ND	Capacitor, Ceramic, 0.1uF, 6.3V, 10% Tol, 125C, X7R, 0402, SMD	0402(1005)	6.3V
C12, C31, C32	Murata Electronics	GCM155C71A105KE38D	3	Digikey	490-13409-1-ND	Capacitor, Ceramic, 1uF, 10V, 10% Tol, 125C, X7S, 0402, SMD	0402(1005)	10V
C24, C25, C26, C27, C28, C29, C30, C49, C53, C57, C61	Samsung Electro-Mechanics	CL10A106MA8NRNC	11	Digikey	1276-1869-1-ND	Capacitor, Ceramic, 10uF, 25V, 20% Tol, 85C, X5R, 0603, SMD	0603(1608)	25V
D1, D2, D3, D5, D6, D7	OSRAM	LG L29K-F2J1-24	6	Digikey	475-1193-1-ND	LED, 1.7V, 0.02A, Green, 570nm, diffused, 0603, SMD	0603(1608)LED	Green
D4	Littelfuse	SMBJ6.5A	1	Digikey	SMBJ6.5ALFCT-ND	Diode, Transzorb, 6.5V, 53.6A, 600W, V breakdoen min 7.22V, Voltage Clamping Max 11.2V, Unidirectional Zener Clamp, TVS, Circuit Protection, SMB, SMD	SMB NP	6.5V
IN+, IN-	TE Connectivity	5-1814832-1	2	Digikey	A97594-ND	Connector, SMA, 1 Positions, Female, Vertical. 50 Ohm. 3 GHz.	TE SMA Stright	SMA
L1, L7	Murata	BLM15PX331SN1D	2	Digikey	490-11022-1-ND	Inductor, Ferrite Bead, 1.2A, 330 Ohm at 100MHz, 0402, SMD	0402(1005)	Ferrite Bead
P1	Molex	53047-0510	1	Digikey	WM1734-ND	Connector, PicoBlade, 5 Positions, Male, 0.049" Spacing, 1A, 125V, Vert, Through Hole, Locking, Tin	MOLEX PICOBLADE 5 POS	ICSP
P2	Molex	53047-0310	1	Digikey	WM1732-ND	Connector, PicoBlade, 3 Positions, Male, 0.049" Spacing, 1A, 125V, Vert, Through Hole, Locking, Tin	MOLEX PICOBLADE 3 POS	UART
P3	Amphenol FCI	10118192-0002LF	1	Digikey	609-5379-1-ND	Connector, USB, 5 Positions, Female, 0.026" Spacing, 1.8A, 100V, USB - micro B USB 2.0 Receptacle Connector 5 Position Surface Mount, Right Angle, Without Flange, SMD	USB Micro B ZX62	Micro USB



# BILL OF MATERIALS

Probe-Scope: Unified USB Oscilloscope Probe

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P4, P5, P8	Molex	22-11-2082	3	Digikey	WM2706-ND	Connector, Header, 0.1", 8 Positions, Male, 0.1" Spacing, 4A, 250V, Vertical, 0.24" Long, 0.125" Tail, 15u" Select Gold, Polarized, Locking Ramp	0.1HDR1X 8P	FPGA Diff. IO, FPGA JTAG, To AFE
P6	Molex	22-11-2062	1	Digikey	WM2704-ND	Connector, Header, 0.1", 6 Positions, Male, 0.1" Spacing, 4A, 250V, 0.24" Long, 0.125" Tail, 15u" Select Gold, Polarized, Locking Ramp, Vertical	0.1HDR1X 6P	Extra PIC IO
P7	Molex	22-11-2102	1	Digikey	WM2708-ND	Connector, Header, 0.1", 10 Positions, Male, 0.1" Spacing, 4A, 250V, Vertical, 0.24" Long, 0.125" Tail, 15u" Select Gold, Polarized, Locking Ramp	0.1HDR1X 10P	Extra FPGA IO
P9	Molex	22-11-2042	1	Digikey	WM2702-ND	Connector, Header, 0.1", 4 Positions, Male, 0.1" Spacing, 4A, 250V, 0.24" Long, 0.125" Tail, 15u" Select Gold, Polarized, Locking Ramp, Vert	0.1HDR1X 4P	Ext. Power
P10	Molex	22-11-2022	1	Digikey	WM2700-ND	Connector, Header, 0.1", 2 Positions, Male, 0.1" Spacing, 4A, 250V, 0.24" Long, 0.125" Tail, 15u Select Gold, Polarized, Locking Ramp	0.1HDR1X 2P	Bias Power
R1, R4, R5, R6, R9, R10, R11	Yageo	RC0402FR-07100RL	7	Digikey	311-100LRCT-ND	Resistor, Thick Film, 100 Ohms, 0.0625W, 1% Tol, 100V, 0402, SMD	0402(1005)	Res1
R3, R7, R8	Stackpole Electronics	RMCF0402FT10K0	3	Digikey	RMCF0402FT10K0CT-ND	Resistor, Thick Film, 10k Ohms, 0.0625W, 1% Tol, 100V, 0402, SMD	0402(1005)	0.1% 25ppm
R12, R13, R14, R15	Yageo	RC0402FR-074K99L	4	Digikey	311-4.99KLRCT-ND	Resistor, Thick Film, 4.99k Ohms, 0.063W, 1% Tol, RES SMD 4.99K OHM 1% 1/16W 0402, 0402, SMD	0402(1005)	Res1
R16, R17	Stackpole Electronics	RMCF0402FT2K32	2	Digikey	RMCF0402FT2K32CT-ND	Resistor, Thick Film, 2.32k Ohms, 0.0625W, 1% Tol, 2.32 kOhms ±1% 0.063W, 1/16W Chip Resistor 0402 (1005 Metric) Automotive AEC-Q200 Thick Film, 0402, SMD	0402(1005)	Res1
S1, S2, S3, S4	C&K Components	PTS645SK50SMTR92 LFS	4	Digikey	CKN9087CT-ND	Switch, Tactile, Top Actuated, 0.05A, 260 grams, No Pegs, No ESD, 6x6mm, SMD	PTS645 SMT	PIC UI, FPGA UI, Reset PIC, Program FPGA
U1	Analog Devices Inc.	AD9481BSUZ-250	1	DigiKey	AD9481BSUZ-250-ND		QFP80P12 00X1200X1 20-44N	AD9481BSUZ-250
U2	Lattice Semiconductor Corporation	LCMXO2-4000HC-4TG144C	1	DigiKey	220-1460-ND		UL_TQFP1 44	LCMXO2-4000
U3	Microchip Technology	PIC32MZ2048EFH064-I/PT	1	DigiKey	PIC32MZ2048EFH064-I/PT-ND		QFN50P90 0X900-64N	PIC32MZ2048EFH064
U4	Cypress	S70KS1281DPBHV020	1	DigiKey	2015-S70KS1281DPBHV020-ND		Cypress-VAA024	S70KS128
U5	Microchip Technology	DSC1103CI3-250.0000	1	Mouser	579-1103CI32500000		MCHP_H5 A	DSC1103
U6	ST Microelectronics	LD1086D2M33TR	1	Digikey	497-1223-1-ND	IC, Voltage Regulator, 3.3V, 1.5A max Iout, 30V Max Vin, DPAK-3, SMD	D2PAK TO263-4N	LD1086D2M33TR
U7	Microchip	DSC6011JI1A-024.0000	1	Digikey	DSC6011JI1A-024.0000-ND	IC, Oscillator, 24MHz XO (Standard) CMOS Oscillator, 1.71-3.63V, Standby (Power Down), 4-SMD, SMD	DSC60xxC	24MHz XO
U8	On Semiconductor	EMI2121MTTAG	1	Digikey	EMI2121MTTAGOSCT-ND	IC, Channel Protector, USB Common-Mode Filter and ESD Protection, WDFN-8, SMD	EMI2121	EMI2121
U9	Microchip	MCP1703T-1802E/CB	1	Digikey	MCP1703T-1802E/CBCT-ND	IC, Voltage Regulator, 1.8Vout, 2.7-16Vin, 200mA, -40°C ~ 125°C, SOT-23, SMD	SOT23-12-3TOP	1.8V