

Title: **Probe-Scope: Overview**

Variant: **Standard Config**

Asm: **ASP0100**

Number: **SCH0100**

Rev: **v1.0.0**

Date: **7/21/2019**

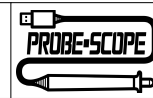
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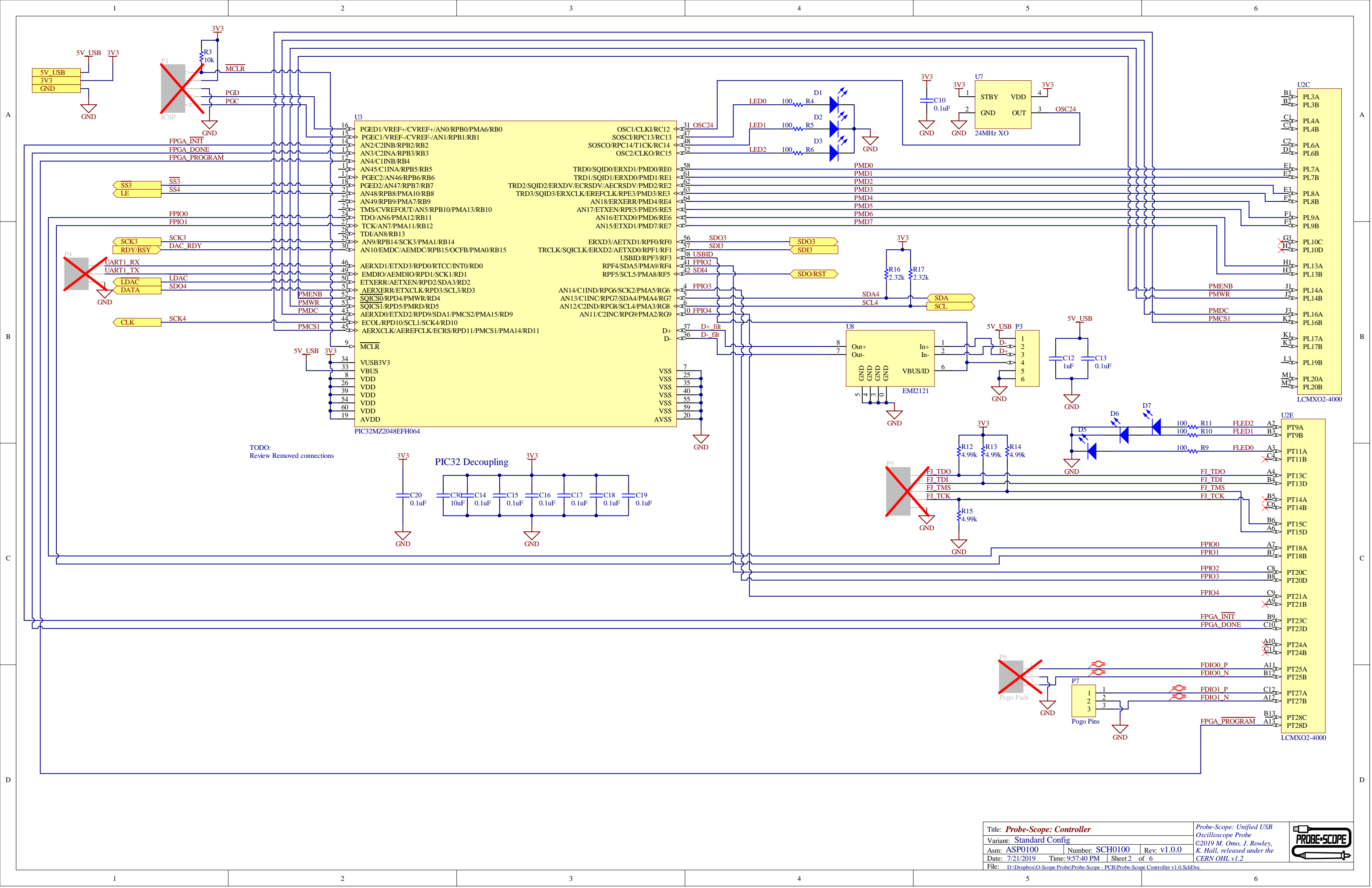
Sheet **1** of **6**

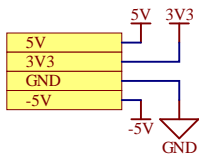
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Probe-Scope: Unified USB  
Oscilloscope Probe

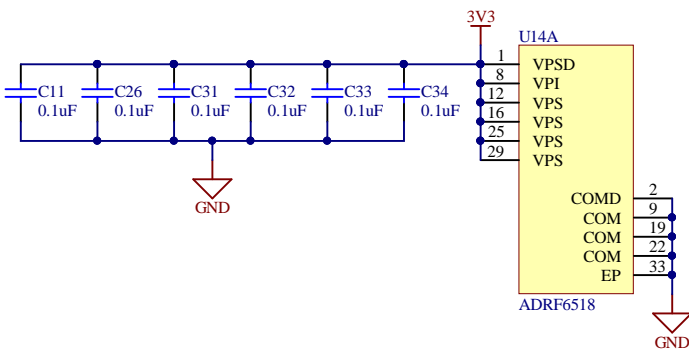
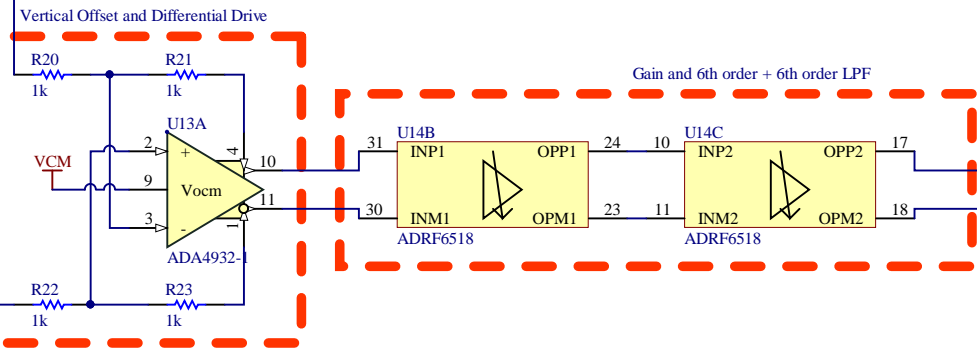
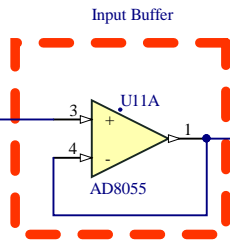
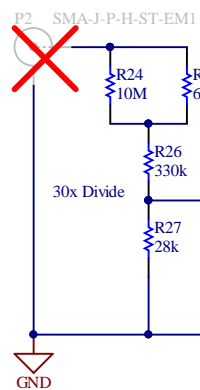
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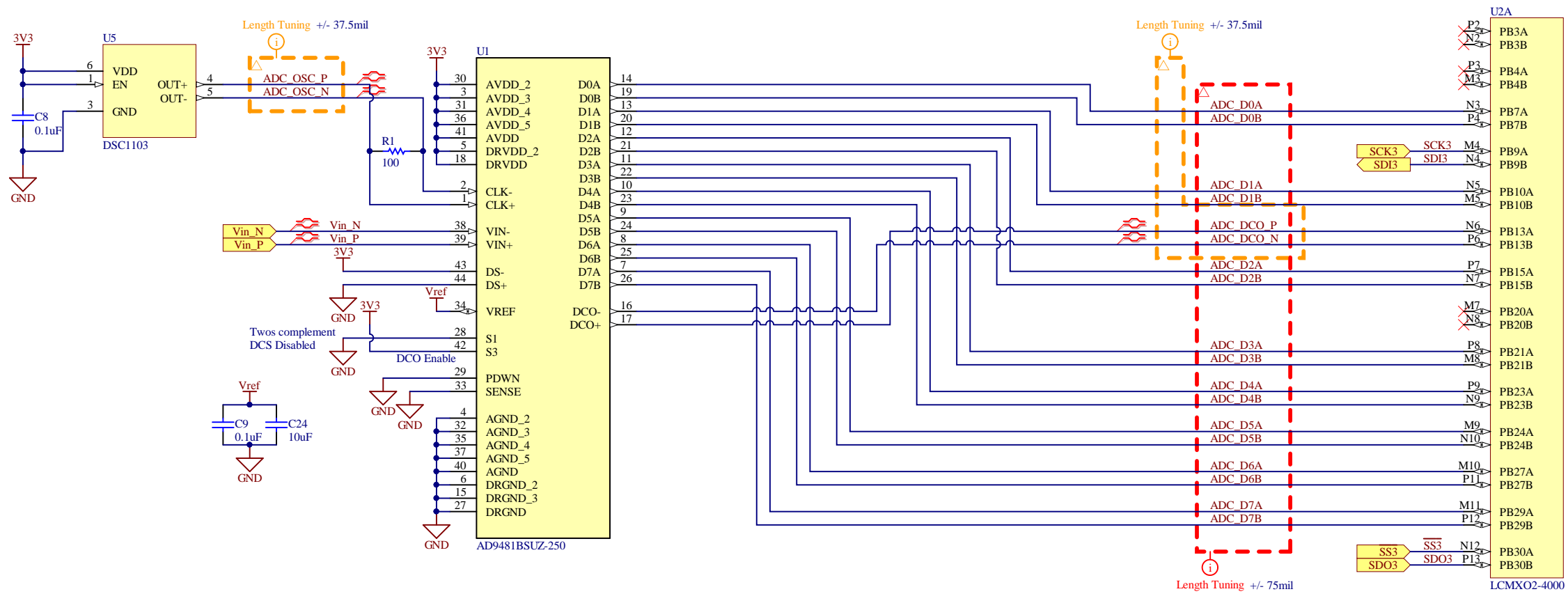


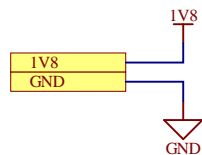




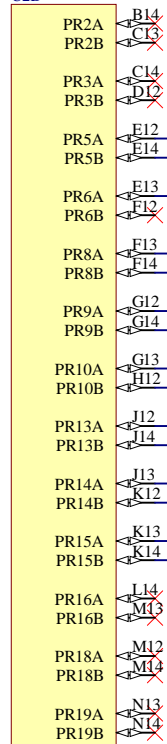
Probe cable will be soldered directly except for prototype



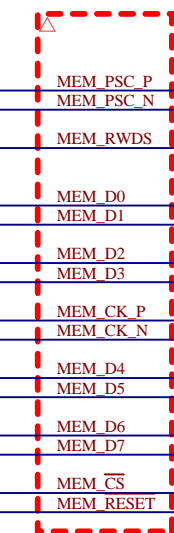




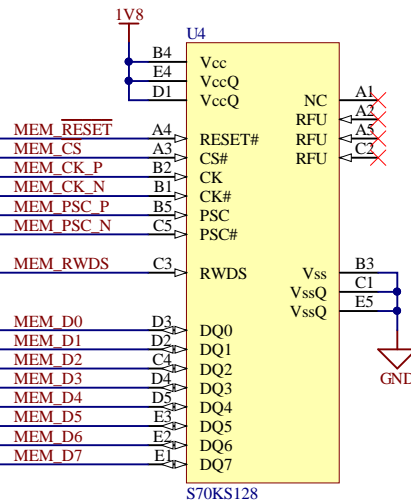
U2D



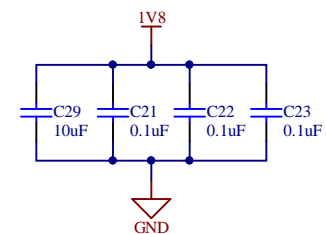
LCMX02-4000



Length Tuning +/- 75mil



S70KS128

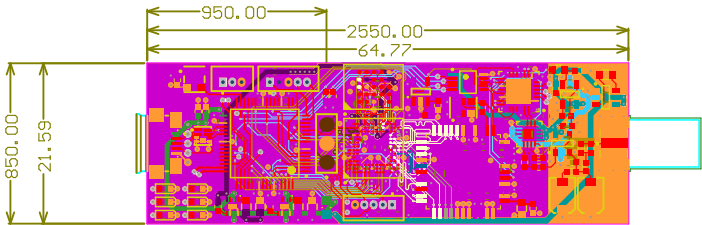
Title: **Probe-Scope: RAM**Variant: **Standard Config**Asm: **ASP0100**Number: **SCH0100**Rev: **v1.0.0**Date: **7/21/2019**Time: **9:57:40 PM**Sheet **5** of **6**File: **D:\Dropbox\O-Scope Probe\Probe-Scope - PCB\Probe-Scope RAM v1.0.SchDoc**

Probe-Scope: Unified USB  
Oscilloscope Probe  
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- 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. ENIG surface finish
  - 6. Silkscreen with white epoxy
  - 7. Holes with zero diameter pads are unplated
  - 8. TXT drill file is normal through holes
  - 9. TX1 drill file is blind microvias from Top to Layer 2 (G1)
  - 10. TX2 drill file is blind microvias from Top to Layer 3 (G2)
  - 11. All tented vias to be filled with epoxy and plated over

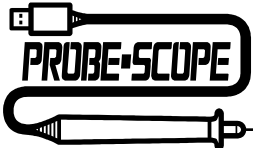


Top Overlay

Top Layer  
Signal Layer 1  
Signal Layer 2  
Ground Plane  
Power Layer  
Bottom Layer

Bottom Overlay

Board Outline



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FILE PATH: D:\Dropbox\O-Scope Probe\Probe-Scope - PCB\Probe-Scope v1.0.PcbDoc

ENGINEER:  
J. Rowley, M. Omo

PCB DESIGNER:  
Kempton

DATE:  
7/21/2019

SHEET SIZE:  
LETTER

TITLE:  
Probe-Scope

PART NO.:  
ASP0100

DWG NO:  
CAD0100

REV:  
v1.0

SCALE:  
1:1



# 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
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C26, C31, C32, C33, C34, C35, C36, C38, C40, C41, C42, C43, C44, C45, C46, C47, C48, C50, C51, C52, C54, C55, C56, C58, C59, C60, C64, C65, C66	Samsung Electro-Mechanics	CL05B104KQ5NNNC	51	Digikey	1276-1511-1-ND	Capacitor, Ceramic, 0.1uF, 6.3V, 10% Tol, 125C, X7R, 0402, SMD	0402(1005)	6.3V
C12	Murata Electronics	GCM155C71A105KE38D	1	Digikey	490-13409-1-ND	Capacitor, Ceramic, 1uF, 10V, 10% Tol, 125C, X7S, 0402, SMD	0402(1005)	10V
C24, C25, C27, C28, C29, C30, C37, C39, C49, C53, C57, C61, C62, C63, C67, C68, C70, C72, C73	Samsung Electro-Mechanics	CL10A106MA8NRNC	19	Digikey	1276-1869-1-ND	Capacitor, Ceramic, 10uF, 25V, 20% Tol, 85C, X5R, 0603, SMD	0603(1608)	25V
C69, C71	Samsung Electro-Mechanics	CL05B561KB5NNNC	2	Digikey	1276-1577-1-ND	Capacitor, Electrolytic, 560p, 50V, 10% Tol, 0402, SMD	0402(1005)	Cap
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
L1, L2	Taiyo Yuden	MCKK1608T1R0MN	2	Digikey	587-5973-1-ND	Inductor, Shielded, 1u, 1.3A, 0.123 Ohms, 0603, SMD	0603(1608)	Inductor
L3	TDK	MMZ2012Y121B	1	Digikey	445-2196-1-ND	Inductor, Ferrite Bead, 0.8A, 120 Ohm at 100MHz, Effective from 80MHz To 400MHz, Y Material, 0805, SMD	0805(2012)	Ferrite Bead Y
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
P7	Prec-Dip	811-SS-003-30-002101	1	DigiKey	1212-1561-ND		POGO_PIN S_3	Pogo Pins
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
R2, R3, R7	Stackpole Electronics	RMCF0402FT10K0	3	Digikey	RMCF0402FT10K0CT-ND	Resistor, Thick Film, 10k Ohms, 0.0625W, 1% Tol, 100V, 0402, SMD	0402(1005)	0.1% 25ppm
R8	Panasonic	ERJ-3EKF1692V	1	Digikey	P16.9KHCT-ND	Resistor, Thick Film, 16.9k Ohms, 0.1W, 1% Tol, 0603, SMD	0603(1608)	Res1
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





# BILL OF MATERIALS

Probe-Scope: Unified USB Oscilloscope Probe

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R16, R17	Stackpole Electronics	RMCF0402FT2K32	2	Digikey	RMCF0402FT2K32CT-ND	Resistor, Thick Film, 2.32k Ohms, 0.0625W, 1% Tol, 2.32 kOhms $\pm$ 1% 0.063W, 1/16W Chip Resistor 0402 (1005 Metric) Automotive AEC-Q200 Thick Film, 0402, SMD	0402(1005)	Res1
R18, R19, R20, R21, R22, R23	Yageo	RC0402FR-071KL	6	Digikey	311-1.00KLRCT-ND	Resistor, Thick Film, 1k Ohms, 0.063W, 1% Tol, 1kOhm, 1%, 1/16W, Thick Film, 0402, SMD	0402(1005)	1k
R24	Vishay Dale	CRCW040210M0FKEDC	1	Digikey	541-4068-1-ND	Resistor, Thick Film, 10M Ohms, 0.063W, 1% Tol, 0402, SMD	0402(1005)	Res1
R25	Vishay Dale	CRCW0402680KJNED	1	Digikey	541-680KJCT-ND	Resistor, Thick Film, 680k Ohms, 0.063W, 1% Tol, 0402, SMD	0402(1005)	Res1
R26	Vishay Dale	CRCW0402330KFKEDHP	1	Digikey	541-330KYCT-ND	Resistor, Thick Film, 330k Ohms, 0.2W, 1% Tol, 0402, SMD	0402(1005)	Res1
R27, R28	Vishay Dale	CRCW040228K0FKED	2	Digikey	541-28.0KLCT-ND	Resistor, Thick Film, 28k Ohms, 0.063W, 1% Tol, 0402, SMD	0402(1005)	Res1
U1	Analog Devices Inc.	AD9481BSUZ-250	1	DigiKey	AD9481BSUZ-250-ND		QFP80P1200X1200X120-44N	AD9481BSUZ-250
U2	Lattice Semiconductor	LCMXO2-4000HC-4MG132C	1	DigiKey	220-1458-ND		132_Ball_csBGA_MachXO2	LCMXO2-4000
U3	Microchip Technology	PIC32MZ2048EFH064-I/PT	1	DigiKey	PIC32MZ2048EFH064-I/PT-ND		TSQFP50P1200X1200X120-64L	PIC32MZ2048EFH064
U4	Cypress	S70KS1281DPBHV020	1	DigiKey	2015-S70KS1281DPBHV020-ND		Cypress-VAA024	S70KS128
U5	Microchip Technology	DSC1103CI3-250.0000	1	Mouser	579-1103CI32500000		MCHP_H5A	DSC1103
U6	Microchip	MIC23050-SYML-TR	1	Digikey	576-3351-1-ND		MCP_8_MLF	MIC23050_3V
U7	Microchip	DSC6011J11A-024.0000	1	Digikey	DSC6011J11A-024.0000-ND	IC, Oscillator, 24MHz XO (Standard) CMOD 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	MIC23050-GYML-TR	1	Digikey	576-2974-1-ND		MCP_8_MLF	MIC23050_1V8
U10, U12	Microchip	MCP6H01T-E/OT	2	Digikey	MCP6H01T-E/OTCT-ND	IC, Op Amp, 3.5V to 16V, SOT-23-5, SMD	SOT23-5	MCP6H01
U11	Analog Devices Inc.	AD8055ARTZ-REEL7	1	DigiKey	AD8055ARTZ-REEL7CT-ND		SOT95P280X145-5L	AD8055
U13	Analog Devices Inc.	ADA4932-1YCPZ-R7	1	DigiKey	ADA4932-1YCPZ-R7CT-ND		QFN50P300X300X80_HS-17L	ADA4932-1
U14	Analog Devices Inc.	ADRF6518ACPZ-R7	1	DigiKey	ADRF6518ACPZ-R7TR-ND		QFN50P500X500X80_HS-33L	ADRF6518
U15	Microchip Technology	MCP4728T-E/UN	1	DigiKey	MCP4728T-E/UNCT-ND		MSOP-10	MCP4728
U16	Texas Instruments	LM2664M6X/NOPB	1	DigiKey	LM2664M6X/NOPBCT-ND		SOT95P280X145-6N	LM2664