



NATIONAL OPTICAL  
ASTRONOMY  
OBSERVATORY

MAJOR INSTRUMENTATION GROUP,  
950 N. Cherry Ave.  
P. O. Box 26732  
Tucson, Arizona 85726-6732  
(520) 318-8000 FAX: (520) 318-8303

**MONSOON**  
**Bill of Materials**  
**Clock and Bias Board**  
**CCD TYPE SN017 - SN025**

**Dwg No.: MNSN-EL-04-4008-017 Rev: A2**  
**Next Assembly: MNSN-EL-10-0300-017**

## Revision Table

Part List  
CLOCK BIAS CCD Type  
SN017-SN025DWG #: MNSN-EL-04-4008-017  
4/25/2007

LTR	DESCRIPTION	ECR	DATE	BY	APPRVD
-1	change part number F1-F6, jtag connector key	ECO-MNSN-0101	13-Aug-04	dms	pcm/pjs
-2	add the tbd tab and all parts that go there		5-Apr-05	dms	mhunten
-3	component value changes	ECO-MNSN-0103	14-Apr-05	dms	pcm/pjs
A	replace through hole osc, chg fuses low profile, item 58 change	ECO-MNSN-0112	14-Dec-05	dms	pjs/mhunten
A1	tbd value Item 34 not installed per eco mnsn-0103 correct spreadsheet		1-May-06	dms	
A2	value changes for increased clock voltages & faster rise time	ECO-MNSN-0116	21-Jun-06	DMS	

NOTES

Bill of Materials  
CCD 8 CH ACQUISITION BOARD  
SN010 - SN029

Dwg #: MNSN-EL-04-4002-010  
4/25/2007

1. Components shall only be crossed to equivalent or improved performance parts. Leaded or lead free parts can be used so long as compatible with vendor processes.
2. All components are listed in the Materials tab, TBDValue tab is for configuration purposes only.
3. If two or more part numbers are shown any of the parts are acceptable.

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
1	8	<a href="#">OA_FBIAS</a>	U93, U94, U102, U103, U193, U194, U196, U198		LT1357CS8	Linear Technology		IC, Op Amp 25MHz, 600V/us
2	32	<a href="#">OA_VCLK</a>	U43, U44, U45, U46, U47, U48, U49, U50, U55, U56, U57, U58, U59, U60, U61, U62, U66, U67, U68, U69, U70, U71, U72, U73, U79, U80, U81, U82, U83, U84, U85, U86		LT1357CS8	Linear Technology		IC, Op Amp 25MHz, 600V/us
3	1	<a href="#">OPEN</a>	R688		NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
4	1	<a href="#">OPEN</a>	R693		NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
5	12	<a href="#">TBD1</a>	R36, R37, R44, R45, R81, R88, R316, R318, R346, R353, R387, R396	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
6	16	<a href="#">TBD10</a>	R113, R118, R122, R127, R139, R145, R152, R158, R167, R174, R181, R188, R196, R202, R208, R214,	5.76K	RC0603FR-075K76L	Yageo	311-5.76KHRCT-ND	Resistor, RC0603 5.76K 1/10W 1%
7	16	<a href="#">TBD10A</a>	R434, R440, R446, R452, R462, R468, R474, R480, R490, R496, R502, R508, R519, R525, R531, R537,	5.76K	RC0805FR-075K76L	Yageo	311-5.76KCRCT-ND	Resistor, RC0805 5.76K 1/8W 1%
8	32	<a href="#">TBD11</a>	C160, C167, C174, C182, C188, C194, C199, C206, C230, C239, C245, C254, C260, C269, C275, C285, C292, C302, C317, C322, C337, C347, C353, C361, C367, C375, C381, C390, C394, C403	TBD	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
9	32	<a href="#">TBD12</a>	C161, C166, C173, C179, C187, C192, C200, C205, C229, C236, C244, C251, C259, C266, C274, C281, C293, C298, C307, C313, C323, C328, C338, C343, C352, C358, C366, C372, C380, C386, C395, C400	TBD	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
10	32	<a href="#">TBD13</a>	R115, R120, R124, R129, R141, R148, R155, R161, R171, R177, R184, R190, R199, R205, R211, R218, R435, R441, R447, R453, R463, R469, R475, R481, R491, R497, R503, R509, R520, R526, R532, R538	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
11	32	<a href="#">TBD14</a>	C721, C725, C730, C733, C737, C741, C745, C748, C769, C772, C776, C779, C783, C786, C790, C793, C813, C817, C821, C825, C829, C833, C836, C841, C856, C861, C866, C868, C873, C877, C879, C880	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
12	32	<a href="#">TBD15</a>	R117, R126, R131, R142, R144, R147, R150, R151, R154, R157, R160, R163, R169, R170, R173, R176, R178, R180, R183, R185, R187, R191, R193, R198, R201, R204, R207, R210, R213, R216, R217, R219	2.21K	RC0603FR-072K21L	Yageo	311-2.21KHRCT-ND	Resistor, 0603 2.21K 1/10W 1%
13	32	<a href="#">TBD16</a>	R114, R116, R119, R121, R123, R125, R128, R130, R140, R143, R146, R149, R153, R156, R159, R162, R168, R172, R175, R179, R182, R186, R189, R192, R197, R200, R203, R206, R209, R212, R215, R220	10.7K	RC0603FR-0710K7L	Yageo	311-10.7KHRCT-ND	Resistor, 0603 10.7K 1/10W 1%

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
14	32	<a href="#">TBD17</a>	C171, C184, C197, C210, C234, C235, C242, C249, C250, C257, C264, C265, C272, C279, C280, C287, C297, C305, C312, C320, C327, C335, C342, C350, C357, C364, C371, C378, C385, C392, C399, C406,	2.0pF	C0603C209C5GACTU	Kemet	399-1047-1-ND	Cap, Cerc 2.0pF 50V +/- .25pF COG/ NPO 0603
15	32	<a href="#">TBD18</a>	R237, R239, R240, R243, R245, R246, R249, R251, R252, R255, R257, R258, R567, R569, R571, R573, R575, R577, R579, R581, R583, R585, R587, R589, R592, R594, R596, R598, R600, R603, R605, R607	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 1% 1/10 Watt
16	32	<a href="#">TBD19</a>	R236, R238, R241, R242, R244, R247, R248, R250, R253, R254, R256, R259, R566, R568, R570, R572, R574, R576, R578, R580, R582, R584, R586, R588, R591, R593, R595, R597, R599, R602, R604, R606	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCCTR-ND	Resistor, 0805 10.0K 1% 1/10 Watt
17	12	<a href="#">TBD1A</a>	R10, R19, R52, R53, R61, R94, R321, R322, R329, R330, R360, R405	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
18	12	<a href="#">TBD1B</a>	R28, R62, R70, R71, R100, R106, R337, R338, R368, R376, R413, R421	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
19	12	<a href="#">TBD2</a>	R1, R4, R35, R43, R80, R87, R345, R352, R385, R386, R394, R395	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
20	8	<a href="#">TBD20</a>	R229, R234, R271, R277, R558, R562, R637, R644	499	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 499 1% 1/8 Watt 0805
21	8	<a href="#">TBD21</a>	R227, R231, R267, R273, R560, R564, R641, R647	0	ERJ-6GEY0R00V	Panasonic	P0.0ATR-ND	Resistor, 0 ohm 5% 1/10 Watt 0805
22	8	<a href="#">TBD22</a>	C454, C460, C465, C469, C906, C910, C929, C933	22pF	ECJ-2VC1H220J	Panasonic	PCC220CNCT-ND	Cap, Cerc 0805 22pF 50V 5% NPO
23	8	<a href="#">TBD23</a>	R228, R232, R268, R274, R559, R563, R640, R646	499	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 499 1% 1/8 Watt 0805
24	8	<a href="#">TBD24</a>	C436, C441, C466, C470, C881, C885, C928, C932	2.0pF	C0603C209C5GACTU	Kemet	399-1047-1-ND	Cap, Cerc 2.0pF 50V +/- .25pF COG/ NPO 0603
25	8	<a href="#">TBD25</a>	R230, R233, R270, R276, R557, R561, R638, R643	4.99K	9C08052A4991FKHFT	Yageo	311-4.99KCCT-ND	Resistor, 4.99K 1% 1/8 Watt 0805
26	2	<a href="#">TBD26</a>	R290, R666	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0603
27	2	<a href="#">TBD27</a>	R297, R679	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0603
28	2	<a href="#">TBD28</a>	R195, R514	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
29	2	<a href="#">TBD29</a>	R194, R513	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
30	12	<a href="#">TBD2A</a>	R8, R9, R17, R18, R51, R93, R320, R328, R359, R367, R403, R404	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
31	12	<a href="#">TBD2B</a>	R26, R27, R60, R69, R99, R105, R336, R375, R411, R412, R419, R420	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
32	12	<a href="#">TBD3</a>	R2, R5, R38, R46, R82, R89, R347, R354, R388, R389, R397, R398	49.9K	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 49.9K ohm 1% 1/10 Watt 0805
33	2	<a href="#">TBD30</a>	R221, R545	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
34	8	<a href="#">TBD31</a>	R285, R287, R288, R656, R658, R660, R661, R665	OPEN	NOT INSTALLED	n/a	N/A	Resistor, 0805
35	2	<a href="#">TBD32</a>	R284, R655	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
36	2	<a href="#">TBD32A</a>	R286, R657	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
37	2	<a href="#">TBD32B</a>	R289, R659	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
38	2	<a href="#">TBD32C</a>	R663, R664	0				
39	12	<a href="#">TBD3A</a>	R11, R12, R20, R21, R54, R95, R323, R331, R361, R369, R406, R407	49.9K	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 49.9K ohm 1% 1/10 Watt 0805
40	12	<a href="#">TBD3B</a>	R29, R30, R63, R72, R101, R107, R339, R377, R414, R415, R422, R423	49.9K	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 49.9K ohm 1% 1/10 Watt 0805
41	12	<a href="#">TBD4</a>	C5, C14, C56, C66, C109, C118, C572, C582, C626, C635, C673, C681	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
42	12	<a href="#">TBD4A</a>	C22, C23, C34, C35, C76, C127, C531, C545, C592, C602, C644, C689	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
43	12	<a href="#">TBD4B</a>	C46, C47, C86, C96, C137, C146, C559, C612, C653, C662, C697, C707	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
44	12	<a href="#">TBD5</a>	R3, R7, R41, R48, R84, R92, R348, R358, R390, R392, R399, R401	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
45	12	<a href="#">TBD5A</a>	R14, R15, R23, R24, R56, R98, R325, R333, R362, R363, R373, R408	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
46	12	<a href="#">TBD5B</a>	R31, R34, R64, R73, R102, R108, R341, R370, R380, R382, R416, R424	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
47	12	<a href="#">TBD6</a>	R6, R40, R42, R47, R86, R91, R349, R350, R355, R357, R393, R402	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
48	12	<a href="#">TBD6A</a>	R16, R25, R55, R59, R65, R97, R324, R334, R364, R366, R371, R409	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
49	12	<a href="#">TBD6B</a>	R32, R66, R74, R76, R104, R110, R340, R374, R379, R381, R417, R426	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
50	12	<a href="#">TBD7</a>	R39, R49, R50, R83, R85, R90, R317, R319, R351, R356, R391, R400	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
51	12	<a href="#">TBD7A</a>	R13, R22, R57, R58, R68, R96, R326, R327, R332, R335, R365, R410	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
52	12	<a href="#">TBD7B</a>	R33, R67, R75, R77, R103, R109, R342, R343, R372, R378, R418, R425	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
53	12	<a href="#">TBD8</a>	C58, C68, C111, C120, C158, C178, C511, C522, C574, C584, C628, C637	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
54	12	<a href="#">TBD8A</a>	C25, C37, C78, C88, C129, C130, C534, C535, C548, C549, C594, C646	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
55	12	<a href="#">TBD8B</a>	C49, C98, C139, C148, C215, C226, C562, C563, C604, C614, C655, C664	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
56	12	<a href="#">TBD9</a>	C59, C69, C112, C121, C162, C180, C512, C523, C575, C585, C629, C638	1uF	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
57	12	<a href="#">TBD9A</a>	C26, C38, C79, C89, C131, C201, C536, C537, C550, C551, C595, C647	1uF	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
58	12	<a href="#">TBD9B</a>	C50, C99, C140, C150, C216, C227, C564, C565, C605 C616, C656, C665	1uF	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
59	1	<a href="#">TBDCR1</a>	C899	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
60	1	<a href="#">TBDCR10A</a>	C867	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
61	1	<a href="#">TBDCR10B</a>	C418	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
62	1	<a href="#">TBDCR10C</a>	C878	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
63	2	<a href="#">TBDCR11</a>	C1045, C1046	TBD	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
64	1	<a href="#">TBDCR12</a>	U100		MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
65	1	<a href="#">TBDCR12A</a>	U92		ADR420BR	Analog Devices	ADR420BR-ND	IC, Voltage reference, ultra precision, low noise
66	1	<a href="#">TBDCR1A</a>	C865	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
67	1	<a href="#">TBDCR1B</a>	C421	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
68	1	<a href="#">TBDCR1C</a>	C875	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
69	1	<a href="#">TBDCR2</a>	R608	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
70	1	<a href="#">TBDCR2A</a>	R550	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
71	1	<a href="#">TBDCR2B</a>	R223	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
72	1	<a href="#">TBDCR2C</a>	R555	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
73	1	<a href="#">TBDCR3</a>	U195		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
74	1	<a href="#">TBDCR3A</a>	U191		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
75	1	<a href="#">TBDCR3B</a>	U91		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
76	1	<a href="#">TBDCR3C</a>	U192		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
77	1	<a href="#">TBDCR4</a>	R610	4.64K	RC0805FR-074K64L	Yageo	311-4.64KCRCT-ND	Resistor, 0805 4.64K 1% 1/8 Watt
78	1	<a href="#">TBDCR4A</a>	R549	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
79	1	<a href="#">TBDCR4B</a>	R224	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
80	1	<a href="#">TBDCR4C</a>	R554	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
81	1	<a href="#">TBDCR5</a>	C900	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
82	1	<a href="#">TBDCR5A</a>	C863	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
83	1	<a href="#">TBDCR5B</a>	C424	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
84	1	<a href="#">TBDCR5C</a>	C870	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
85	1	<a href="#">TBDCR6</a>	C898	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
86	1	<a href="#">TBDCR6A</a>	C858	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
87	1	<a href="#">TBDCR6B</a>	C427	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
88	1	<a href="#">TBDCR6C</a>	C869	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
89	1	<a href="#">TBDCR7</a>	R609	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 0805 100 0.1% 25ppm 1/10 Watt
90	1	<a href="#">TBDCR7A</a>	R547	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 0805 100 0.1% 25ppm 1/10 Watt
91	1	<a href="#">TBDCR7B</a>	R226	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 0805 100 0.1% 25ppm 1/10 Watt
92	1	<a href="#">TBDCR7C</a>	R552	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 0805 100 0.1% 25ppm 1/10 Watt
93	1	<a href="#">TBDCR8A</a>	R548	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
94	1	<a href="#">TBDCR8B</a>	R225	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
95	1	<a href="#">TBDCR8C</a>	R553	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
96	1	<a href="#">TBDCR9A</a>	R551	0	RC1206JR-070RL	Yageo	311-0.0ERTR-ND	Resistor, 1206 5% 1/4 Watt
97	1	<a href="#">TBDCR9B</a>	R222	0	RC1206JR-070RL	Yageo	311-0.0ERTR-ND	Resistor, 1206 5% 1/4 Watt
98	1	<a href="#">TBDCR9C</a>	R556	0	RC1206JR-070RL	Yageo	311-0.0ERTR-ND	Resistor, 1206 5% 1/4 Watt
99	1	<a href="#">TBDDR1</a>	C290	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
100	1	<a href="#">TBDDR2</a>	R164	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
101	1	<a href="#">TBDDR3</a>	U52		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
102	1	<a href="#">TBDDR4</a>	R137	3.01K	9C08052A3011FKHFT	Yageo	311-3.01KCCT-ND	Resistor, 3.01K 1% 1/8 Watt 0805
103	1	<a href="#">TBDDR5</a>	C221	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
104	1	<a href="#">TBDDR6</a>	C705	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
105	1	<a href="#">TBDDR7</a>	R455	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
106	1	<a href="#">TBDDR8</a>	C1048	OPEN	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
107	1	<a href="#">TBDDR9</a>	U169		MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
108	1	<a href="#">TBDFR1</a>	C620	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
109	1	<a href="#">TBDFR10</a>	C668	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
110	1	<a href="#">TBDFR2</a>	R429	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
111	1	<a href="#">TBDFR3</a>	U151		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
112	1	<a href="#">TBDFR4</a>	R384	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
113	1	<a href="#">TBDFR5</a>	C618	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
114	1	<a href="#">TBDFR6</a>	C619	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
115	1	<a href="#">TBDFR7</a>	R383	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
116	1	<a href="#">TBDFR8</a>	R344	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
117	1	<a href="#">TBDFR9</a>	R428	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
118	1	<a href="#">TBDR01</a>	C217	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
119	1	<a href="#">TBDR010</a>	U168		ADR420BR	Analog Devices	ADR420BR-ND	IC, Voltage reference, ultra precision, low noise
120	1	<a href="#">TBDR011</a>	R132	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
121	1	<a href="#">TBDR012</a>	C212	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
122	1	<a href="#">TBDR02</a>	R133	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
123	1	<a href="#">TBDR03</a>	U51		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
124	1	<a href="#">TBDR04</a>	R134	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
125	1	<a href="#">TBDR05</a>	C218	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
126	1	<a href="#">TBDR06</a>	C220	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
127	1	<a href="#">TBDR07</a>	R135	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
128	1	<a href="#">TBDR08</a>	R136	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
129	1	<a href="#">TBDR09</a>	C1047	OPEN	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
130	1	<a href="#">TBDR11</a>	C154	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
131	1	<a href="#">TBDR112</a>	C102	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
132	1	<a href="#">TBDR12</a>	R79	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
133	1	<a href="#">TBDR13</a>	U31		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
134	1	<a href="#">TBDR14</a>	R112	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
135	1	<a href="#">TBDR15</a>	C152	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
136	1	<a href="#">TBDR16</a>	C153	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
137	1	<a href="#">TBDR17</a>	R427	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
138	1	<a href="#">TBDR18</a>	R111	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
139	1	<a href="#">TBDR19</a>	R78	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
140	6	<a href="#">TBDRN1</a>	RN1, RN2, RN3, RN4, RN5, RN6	OPEN	NOT INSTALLED	N/A	N/A	Resistor, network bussed 8 resistors (not installed)
141	6	<a href="#">TBDRN2</a>	R485, R543, R565, R618, R649, R671	10K	766163103G	CTS	766-163-R10K-ND	Resistor network, 8 isolated 10.0K 5% SO16NB
142	12	<a href="#">TBD33</a>	U6, U21, U22, U24, U33, U35, U123, U127, U142, U144, U153, U155		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
143	12	<a href="#">TBD33A</a>	U9, U10, U13, U14, U26, U37, U131, U132, U135, U136, U146, U157		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
144	12	<a href="#">TBD33B</a>	U17, U18, U28, U30, U39, U41, U139, U140, U148, U150, U159, U161		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp



ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
1	1		REFERENCE	MNSN-EL-04-1008 Rev A			PCB BLANK, MONSOON Clock and Bias Board
2	7		JP1, JP2, JP3, JP4, ,JP5, JP6, JP9	4-103185-0	Amp/ Tyco	A26513-ND	Jumper, header strip 3 x 1 .1 center .025 sq posts (break to size)
3	2		J1, J4	064176	ERNI	N/A	Con, right angle female cPCI 110 pin J1, J4 position
4	1		J3	064784	ERNI		Con, right angle female cPCI 95 pins J3 position
5	2		J2, J5	064785	ERNI	n/a	Con, right angle female cPCI 110 pin J2, J5 position
6	1		J6	4-103325-0	Amp/ Tyco	A26516-ND	Header, right angle 8 position single row (break to size)
7	2		JP10, JP11	4-103185-0	Amp/ Tyco	A26513-ND	Jumper, header strip 2 x 1 .1 center .025 sq posts (break to size)
8	2		P1, P2	903-373J-51A	Amphenol Corp	ARF1243-ND	Con, SMB 50 ohm PCB receptacles
9	40	2.0pF	C171, C184, C197, C210, C234, C235, C242, C249, C250, C257, C264, C265, C272, C279, C280, C287, C297, C305, C312, C320, C327, C335, C342, C350, C357, C364, C371, C378, C385, C392, C399, C406, C436, C441, C466, C470, C881, C885, C928, C932	C0603C209C5GACTU	Kemet	399-1047-1-ND	Cap, Cerc 2.0pF 50V +- .25pF COG/ NPO 0603
10	64	0.01uF	C163, C168, C176, C181, C189, C195, C202, C207, C231, C232, C237, C240, C246, C247, C252, C255, C261, C262, C267, C270, C276, C277, C282, C284, C294, C295, C299, C300, C303, C309, C310, C314, C315, C318, C324, C325, C329, C330, C333, C339, C340, C344, C345, C348, C354, C355, C359, C362, C368, C369, C373, C376, C382, C383, C387, C389, C396, C397, C401, C404, C413, C416, C420, C428	ECJ-1VB1H103K	Panasonic	PCC1784CT-ND	Cap, Cerc 0603 0.01uF 50V 10% X7R
11	26	0.1uF	C101, C151, C152, C214, C218, C221, C223, C288, C478, C482, C483, C489, C493, C494, C617, C618, C667, C700, C702, C708, C957, C961, C962, C989, C993, C994	GRM188R71H104KA93D	Murata Electronic	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
12	8	10pF	C480, C481, C491, C492, C959, C960, C991, C992	ECJ-1VC1H100D	Panasonic	PCC100CVCT-ND	Cap, Cerc 0603 10pF 50V +- .5pF NPO
13							
14	88	0.01uF	C4, C13, C19, C20, C24, C31, C32, C36, C43, C44, C48, C54, C57, C64, C67, C74, C77, C84, C87, C94, C97, C107, C110, C116, C119, C125, C128, C135, C138, C144, C147, C157, C175, C193, C211, C225, C433, C435, C438, C439, C455, C461, C463, C468, C510, C519, C528, C532, C533, C542, C546, C547, C556, C560, C561, C570, C573, C580, C583, C590, C593, C600, C603, C610, C613, C624, C627, C633, C636, C642, C645, C651, C654, C660, C663, C672, C680, C687, C696, C706, C883, C884, C887, C888, C908, C912, C930, C934	ECJ-2VB1H103K	Panasonic	PCC103BCT-ND	Cap, Cerc 0805 0.01uF 50V 10% X7R
15	8	22pF	C454, C460, C465, C469, C906, C910, C929, C933	ECJ-2VC1H220J	Panasonic	PCC220CNCT-ND	Cap, Cerc 0805 22pF 50V 5% NPO

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
16	50	1uF	C26, C38, C50, C59, C69, C79, C89, C99, C112, C121, C131, C140, C150, C162, C180, C201, C216, C227, C429, C450, C512, C523, C536, C537, C550, C551, C564, C565, C575, C585, C595, C605, C616, C629, C638, C647, C656, C665, C698, C703, C709, C751, C754, C920, C922, C924, C926, C927, C953, C1000	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
17	347	0.1uF	C1, C2, C6, C7, C8, C9, C10, C12, C15, C16, C25, C27, C28, C37, C39, C40, C49, C51, C52, C58, C60, C61, C62, C68, C70, C71, C72, C78, C80, C81, C82, C88, C90, C91, C92, C98, C103, C104, C105, C111, C113, C114, C120, C122, C123, C129, C130, C132, C133, C139, C141, C142, C148, C155, C158, C165, C178, C185, C204, C215, C219, C226, C407, C411, C412, C414, C422, C424, C426, C430, C437, C445, C446, C447, C448, C451, C458, C459, C471, C472, C473, C474, C475, C476, C487, C488, C500, C504, C505, C506, C508, C509, C511, C513, C514, C515, C516, C517, C520, C521, C522, C524, C525, C526, C534, C535, C538, C539, C540, C548, C549, C552, C553, C554, C562, C563, C566, C567, C568, C574, C576, C577, C578, C584, C586, C587, C588, C594, C596, C597, C598, C604, C606, C607, C608, C614, C621, C622, C628, C630, C631, C637, C639, C640, C646, C648, C649, C655, C657, C658, C664, C669, C670, C674, C677, C683, C688, C693, C710, C711, C712, C713, C714, C715, C716, C717, C718, C721, C722, C725, C729, C730, C733, C737, C738, C741, C744, C745, C748, C750, C753, C757, C758, C759, C760, C761, C762, C763, C764, C765, C768, C769, C772, C775, C776, C779, C782, C783, C786, C789, C790, C793, C795, C796, C798, C799, C801, C802, C803, C805, C806, C807, C808, C809, C812, C813, C817, C820, C821, C825, C828, C829, C833, C836, C837, C841, C843, C844, C846, C847, C848, C850, C851, C852, C853, C854, C856, C860, C861, C863, C864, C866, C868, C870, C871, C873, C874, C877, C879, C880, C889, C890, C891, C892, C897, C900, C901, C903, C905, C914, C916, C917, C919, C921, C923, C925, C936, C937, C938, C939, C940, C941, C942, C943, C944, C946, C947, C949, C951, C954, C956, C967, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C980, C981, C982, C983, C984, C985, C987, C988, C998, C999, C1001, C1002, C1003, C1004, C1005, C1006, C1007, C1008, C1009, C1010, C1011, C1012, C1013, C1014, C1015, C1016, C1017, C1018, C1019, C1020, C1021, C1022, C1023, C1024, C1025, C1026, C1027, C1028, C1029, C1030, C1031, C1032, C1033, C1034, C1035, C1036, C1037, C1038, C1039, C1040, C1041, C1042, C1043, C1044	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
18	36	.47uF	C5, C14, C22, C23, C34, C35, C46, C47, C56, C66, C76, C86, C96, C109, C118, C127, C137, C146, C531, C545, C559, C572, C582, C592, C602, C612, C626, C635, C644, C653, C662, C673, C681, C689, C697, C707	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
19	72	4.7uF	C154, C217, C290, C421, C620, C675, C676, C679, C682, C684, C685, C690, C691, C692, C695, C719, C720, C723, C724, C726, C727, C728, C731, C732, C734, C735, C736, C739, C740, C742, C743, C746, C747, C766, C767, C770, C771, C773, C774, C777, C778, C780, C781, C784, C785, C787, C788, C791, C792, C810, C811, C814, C815, C816, C818, C819, C822, C823, C824, C826, C827, C830, C831, C832, C834, C835, C838, C839, C840, C865, C875, C899	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5R
20	2	22uF	C855, C857	ECJ-4YB1A226M	Panasonic	PCC2228CT-ND	Cap, Cerc 1210 22uF 10V 20%
21	7	47uF	C408, C409, C498, C499, C501, C502, C503	ECS-T1AD476R	Panasonic	PCS2476CT-ND	Cap, Tant 47uF 10V 20% SMT7343
22	68	4.7uF	C100, C102, C149, C153, C212, C213, C220, C224, C289, C418, C419, C425, C427, C431, C449, C452, C477, C479, C484, C490, C495, C615, C619, C666, C668, C699, C701, C705, C749, C752, C755, C756, C794, C797, C800, C804, C842, C845, C849, C858, C859, C862, C867, C869, C872, C876, C878, C893, C894, C895, C896, C898, C902, C904, C915, C918, C945, C948, C950, C952, C955, C958, C963, C966, C968, C986, C990, C995	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
23	4	22uF	C410, C442, C443, C444	ECS-T1ED226R	Panasonic	PCS5226CT-ND	Cap, Tant 22uF 25V 20% SMT7343
24	152	1.0uF	C3, C11, C17, C18, C21, C29, C30, C33, C41, C42, C45, C53, C55, C63, C65, C73, C75, C83, C85, C93, C95, C106, C108, C115, C117, C124, C126, C134, C136, C143, C145, C156, C159, C164, C169, C170, C172, C177, C183, C186, C190, C191, C196, C198, C203, C208, C209, C222, C228, C233, C238, C241, C243, C248, C253, C256, C258, C263, C268, C271, C273, C278, C283, C286, C291, C296, C301, C304, C306, C311, C316, C319, C321, C326, C331, C334, C336, C341, C346, C349, C351, C356, C360, C363, C365, C370, C374, C377, C379, C384, C388, C391, C393, C398, C402, C405, C415, C417, C423, C432, C434, C440, C453, C456, C457, C462, C464, C467, C507, C518, C527, C529, C530, C541, C543, C544, C555, C557, C558, C569, C571, C579, C581, C589, C591, C599, C601, C609, C611, C623, C625, C632, C634, C641, C643, C650, C652, C659, C661, C671, C678, C686, C694, C704, C882, C886, C907, C909, C911, C913, C931, C935	ECS-T1VY105R	Panasonic	P11332CT-ND	Cap, Tant 1.0uF 35V 20% SMT3216
25	1		SW1	EP12SD1ABE	ITT Cannon	CKN4008-ND	Switch, SPDT momentary push button right angle
26	17	10	R263, R264, R278, R279, R295, R302, R303, R305, R312, R619, R650, R651, R674, R675, R686, R691, R692	742C163 100 J	CTS	742C163100JCT-ND	Resistor, Concave chip Array 8 iso 10 ohm 5% 1/16 W
27	6	OPEN	RN1, RN2, RN3, RN4, RN5, RN6	NOT INSTALLED	N/A	N/A	Resistor, network bussed 8 resistors (not installed)
28	6	10K	R485, R543, R565, R618, R649, R671	766163103G	CTS	766-163-R10K-ND	Resistor network, 8 isolated 10.0K 5% SO16NB
29	8	2.0K	R291, R292, R298, R299, R667, R668, R680, R681	ERJ-3EKF2001V	Panasonic	P2.00KHCT-ND	Resistor, 0603 2.0K 1/16W 1%
30	3	0	R222, R551, R556	RC1206JR-070RL	Yageo	311-0.0ERTR-ND	Resistor, 1206 5% 1/4 Watt

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
31	32	10.7K	R114, R116, R119, R121, R123, R125, R128, R130, R140, R143, R146, R149, R153, R156, R159, R162, R168, R172, R175, R179, R182, R186, R189, R192, R197, R200, R203, R206, R209, R212, R215, R220	RC0603FR-0710K7L	Yageo	311-10.7KHRCT-ND	Resistor, 0603 10.7K 1/10W 1%
32	32	2.21K	R117, R126, R131, R142, R144, R147, R150, R151, R154, R157, R160, R163, R169, R170, R173, R176, R178, R180, R183, R185, R187, R191, R193, R198, R201, R204, R207, R210, R213, R216, R217, R219	RC0603FR-072K21L	Yageo	311-2.21KHRCT-ND	Resistor, 0603 2.21K 1% 1/10W
33	8	1.00K	R79, R133, R164, R223, R429, R550, R555, R608	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 0805 1.0K 0.1% 25 ppm 1/10 W
34	65	1.0K	R430, R431, R432, R433, R436, R437, R438, R439, R442, R443, R444, R445, R448, R449, R450, R451, R458, R459, R460, R461, R464, R465, R466, R467, R470, R471, R472, R473, R476, R477, R478, R479, R486, R487, R488, RR89, R492, R493, R494, R495, R498, R499, R500, R501, R504, R505, R506, R507, R515, R516, R517, R518, R521, R522, R523, R524, R527, R528, R529, R530, R533, R534, R535, R536, R709	ERJ-3EKF1001V	Panasonic	P1.00KHCT-ND	Resistor, 0603 1.0K 1% 1/16W
35	8	100	R111, R136, R226, R344, R455, R547, R552, R609	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 0805 100 0.1% 25ppm 1/10 W
36	16	499	R228, R229, R232, R234, R268, R271, R274, R277, R558, R559, R562, R563, R637, R640, R644, R646	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 0805 499 1% 1/8 W
37	29	1.0K	R194, R195, R221, R265, R306, R510, R511, R512, R513, R514, R539, R540, R541, R542, R544, R545, R546, R590, R601, R611, R617, R620, R622, R662, R672, R676, R677, R678, R684	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 0805 1.0K 1% 1/10 W
38	117	10.0K	R6, R13, R16, R22, R25, R32, R33, R39, R40, R42, R47, R49, R50, R55, R57, R58, R59, R65, R66, R67, R68, R74, R75, R76, R77, R83, R85, R86, R90, R91, R96, R97, R103, R104, R109, R110, R236, R238, R241, R242, R244, R247, R248, R250, R253, R254, R256, R259, R284, R286, R289, R304, R308, R309, R310, R311, R317, R319, R324, R326, R327, R332, R334, R335, R340, R342, R343, R349, R350, R351, R355, R356, R357, R364, R365, R366, R371, R372, R374, R378, R379, R381, R391, R393, R400, R402, R409, R410, R417, R418, R425, R426, R566, R568, R570, R572, R574, R576, R578, R580, R582, R584, R586, R588, R591, R593, R595, R597, R599, R602, R604, R606, R655, R657, R659, R685, R689	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 0805 10.0K 1% 1/10 W
39	36	1.02K	R1, R4, R8, R9, R17, R18, R26, R27, R35, R43, R51, R60, R69, R80, R87, R93, R99, R105, R320, R328, R336, R345, R352, R359, R367, R375, R385, R386, R394, R395, R403, R404, R411, R412, R419, R420	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 0805 1.02K 1% 1/10 W
40	71	10	R10, R19, R28, R36, R37, R44, R45, R52, R53, R61, R62, R70, R71, R81, R88, R94, R100, R106, R115, R120, R124, R129, R141, R148, R155, R161, R171, R177, R184, R190, R199, R205, R211, R218, R282, R296, R316, R318, R321, R322, R329, R330, R337, R338, R346, R353, R360, R368, R376, R387, R396, R405, R413, R421, R435, R441, R447, R453, R463, R469, R475, R481, R491, R497, R503, R509, R520, R526, R532, R538, R694	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 0805 10 1% 1/10 W

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
41	3	15	R307, R313, R673	ERJ-6ENF15R0V	Panasonic	P15.0CCT-ND	Resistor, 0805 15.0 1% 1/10 W
42	16	5.76K	R113, R118, R122, R127, R139, R145, R152, R158, R167, R174, R181, R188, R196, R202, R208, R214,	RC0603FR-075K76L	Yageo	311-5.76KHRCT-ND	Resistor, 0603 5.76K 1/10W .1% 25 PPM Resistor, 0603 5.76K 1/10W 1%
43	8	4.99K	R230, R233, R270, R276, R557, R561, R638, R643	9C08052A4991FKHFT	Yageo	311-4.99KCCT-ND	Resistor, 0805 4.99K 1% 1/8 W
44	1	2.74K	R690	ERJ-6ENF2741V	Panasonic	P2.74KCCT-ND	Resistor, 0805 2.74K 1% 1/10 W
45	1	301	R281	ERJ-6ENF3010V	Panasonic	P301CCT-ND	Resistor, 0805 301 1% 1/10 W
46	2	4.75K	R280, R283	ERJ-6ENF4751V	Panasonic	P4.75KCCT-ND	Resistor, 0805 4.75K 1% 1/10 W
47		499	SEE ITEM 36				
48	36	49.9K	R2, R5, R11, R12, R20, R21, R29, R30, R38, R46, R54, R63, R72, R82, R89, R95, R101, R107, R323, R331, R339, R347, R354, R361, R369, R377, R388, R389, R397, R398, R406, R407, R414, R415, R422, R423	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 0805 49.9K ohm 1% 1/10 W
49	16	49.9	R235, R260, R261, R262, R266, R269, R272, R275, R612, R613, R614, R615, R639, R642, R645, R648	ERJ-6ENF49R9V	Panasonic	P49.9CCT-ND	Resistor, 0805 49.9 1% 1/10 W
50	29	0	R138, R165, R227, R231, R267, R273, R454, R456, R482, R484, R560, R564, R621, R623, R625, R627, R628, R630, R631, R632, R634, R636, R641, R647, R652, R653, R663, R664, R687	ERJ-6GEYOR00V	Panasonic	P0.0ATR-ND	Resistor, 0805 0 ohm 5% 1/10 Watt
51	3	10	R78, R132, R428	P1206E10R0BB	Vishay		Resistor, 1206 10 0.1% 25 ppm 1/3 W
52	6	SHORT	L1, L2, L3, L4, L5, L6	wire 18-20 awg			wire short across pads
53	36		U4, U7, U8, U11, U12, U15, U16, U19, U20, U23, U25, U27, U29, U32, U34, U36, U38, U40, U120, U125, U129, U130, U133, U134, U137, U138, U141, U143, U145, U147, U149, U152, U154, U156, U158, U160	INA118UB	Burr Brown	{PN Digikey}	IC, Precision low pwr instrumentation amplifier
54	19		U1, U2, U3, U5, U121, U122, U124, U126, U128, U162, U163, U170, U171, U176, U177, U182, U183, U188, U197	MAX313LESE cross DG412CY	Maxim	{PN Digikey}	IC, quad +3V Analog Switch
55	2		U100, U169	MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor
56	1		U199	AD7814ART	Analog Devices		IC, 10 bit digital temp sensor
57	16	5.76K	R434, R440, R446, R452, R462, R468, R474, R480, R490, R496, R502, R508, R519, R525, R531, R537,	RR1220P-5761-B-M-T5 RC0805FR-075K76L	Sumsumu Yageo	RRT2P5.76KBCT-ND 311-5.76KCRCT-	Resistor, 0805 5.76K 1/8W .1% 25PPM Resistor, 0805 5.76K 1/8W 1%
58	9		U53, U63, U64, U105, U106, U107, U108, U109, U111	MAS9187AUA1 AD8802ARU	Micro Analog Sys Analog Devices		IC, 12 channel, 8 bit trimDAC's with pwr shutdown
59	4		U113, U117, U201, U202	AD9709AST	Analog Devices	{PN Digikey}	IC, D/A Converter 8 bit, 125 MSPS Dual TxDAC+
60	1		U110	DS2401	Dallas	DS2401-ND	IC, Silicon serial number
61	2		U90, U189	LT1227CS8	Linear Technology	LT1227CS8-ND	IC, 140M Hz Video current feedback amplifier
62	17		U74, U75, U76, U77, U87, U88, U89, U95, U96, U97, U98, U99, U101, U104, U112, U114, U115	MAX1270BCAI	Maxim		IC, multirange, 8 ch serial 12-bit ADC
63	4		U42, U54, U65, U78	MAX306EWI	Maxim	{PN Digikey}	IC, Precision, 16 CH high performance CMOS Analog Multiplexer
64	16		U164, U165, U166, U167, U172, U173, U174, U175, U178, U179, U180, U181, U184, U185, U186, U187	MAX4653ESE	Maxim	{PN Digikey}	IC, low Voltage 4 ohm, quad SPST CMOS Analog Switches
65	45		U6, U9, U10, U13, U14, U17, U18, U21, U22, U24, U26, U28, U30, U31, U33, U35, U37, U39, U41, U51, U52, U91, U123, U127, U131, U132, U135, U136, U139, U140, U142, U144, U146, U148, U150, U151, U153, U155, U157, U159, U161, U191, U192, U195, U205	OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
66	1		U204	TPS75218QPWP	TI	{PN Digikey}	IC, Voltage regulator, 2A low dropout, fast transient
67	2		U190, U203	TPS75233QPWP	TI	296-2682-5-ND	IC, Voltage regulator, 2A low dropout, fast transient
68	1		U200	XC18V02VQ44I	Xilinx		IC, Configuration Prom w/ in sys programming 2M capacity
69	2		U118, U119	XCR3384XL-7-PQ208C	Xilinx		IC, 256 macrocell CPLD
70	1		U116	XCV300E-6PQ240C	Xilinx		IC, FPGA Virtex 1.8V
71	4	2A	F1, F2, F3, F4	429 002	Littelfuse	F1238CT-ND	Fuse, very fast acting 429 2.0A 1206
72	2		D3, D4	SMCJ5.0CA-13	Diodes, Inc.	SMCJ5.0CADICT-ND	Diode, TVS 1500W SMC 5V Bi-directional
73	2		D2, D5	SML-LXT0805IW-TR	Lumex	67-1552-1-ND	LED, Thin 635nm Red Diff 0805 SMD
74	1		D1	SSF-LXH4RAID	Lumex	67-1303-ND	LED, T-1 Red right angle mount
75	9	GND	TP1, TP2, TP3, TP4, TP7, TP10, TP34, TP49, TP50	TP-105-xx-00	Components Corp		Test point, black .1 center wire form loop
76	4		TP5, TP6, TP9, TP11	TP-105-xx-02	Components Corp		Test point, red .1 center wire form loop
77	44		TP8, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP30, TP31, TP32, TP33, TP35, TP36, TP37, TP38, TP39, TP40, TP41, TP42, TP43, TP44, TP45, TP46, TP47, TP48, TP51, TP52, TP53, TP54, TP55, TP56, TP57	TP-105-XX-04	Components Corp		Test point, yellow .1 center wire form loop
78	40	OA_VCLK OA_FBIA S	U43, U44, U45, U46, U47, U48, U49, U50, U55, U56, U57, U58, U59, U60, U61, U62, U66, U67, U68, U69, U70, U71, U72, U73, U79, U80, U81, U82, U83, U84, U85, U86, U93, U94, U102, U103, U193, U194, U196, U198	LT1357CS8	Linear Technology		IC, Op Amp 25MHz, 600V/us
79	1		Y1	CB3LV-3C-40M0000	CTS	CTX280LVCT-ND	Oscillator, low voltage 40.0 MHz +-50ppm 7x5mm
80	1		JP7	wire 18-20 awg			SEE ASSEMBLY DRAWING
81	1		JP8	wire 18-20 awg			SEE ASSEMBLY DRAWING
82	4	OPEN	R290, R297, R666, R679	NOT INSTALLED	{MFR}	N/A	Resistor, 0603
83	112	OPEN	R3, R7, R14, R15, R23, R24, R31, R34, R41, R48, R56, R64, R73, R84, R92, R98, R102, R108, R112, R134, R135, R166, R224, R225, R237, R239, R240, R243, R245, R246, R249, R251, R252, R255, R257, R258, R285, R287, R288, R314, R315, R325, R333, R341  R348, R358, R362, R363, R370, R373, R380, R382, R383, R384, R390, R392, R399, R401, R408, R416, R424, R427, R457, R483, R548, R549, R553, R554, R567, R569,  R571, R573, R575, R577, R579, R581, R583, R585, R587, R589, R592, R594, R596, R598, R600, R603, R605, R607, R616, R624, R626, R629, R633, R635, R654, R656, R658, R660, R661, R665, R688, R693, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
84	76	TBD	C160, C161, C166, C167, C173, C174, C179, C182, C187, C188, C192, C194, C199, C200, C205, C206, C229, C230, C236, C239, C244, C245, C251, C254, C259, C260, C266, C269, C274, C275, C281, C285, C292, C293, C298, C302, C307, C308, C313. C317, C322, C323, C328, C332, C337, C338, C343, C347, C352, C353, C358, C361, C366, C367, C372, C375, C380, C381, C386, C390, C394, C395, C400, C403, C485, C486, C496, C497, C964, C965, C996, C997, C1045, C1046, C1047, C1048	<b>NOT INSTALLED</b>	TBD		Cap, Cerc 0603 TBD
85	1	4.64K	R610	RC0805FR-074K64L	Yageo	311-4.64KCRCT-ND	Resistor, 0805 4.64K 1% 1/8 Watt
86	12	0	R293, R294, R300, R301, R669, R670, R682, R683, R705, R706, R707, R708	9C06031A0R00JLHFT	Yageo	311-0.0GCT-ND	Resistor, 0 ohm 1/16W 5% 0603
87	1	9.09K	R710	9C06031A9091FKHFT	Yageo	311-9.09KHCT-ND	Resistor, 9.09K 1/10W 1% 0603
88	2	5A	F5, F6	429 005	Littelfuse	F1275CT-ND	Fuse, very fast acting 429 5.0A 1206
89	2	TBD12A TBDR010	U92, U168	ADR420BR	Analog Devices	ADR420BR-ND	IC, Voltage reference, ultra precision, low noise
90	1	3.01K	R137	9C08052A3011FKHFT	Yageo	311-3.01KCCT-ND	Resistor, 3.01K 1% 1/8 Watt 0805

Part Number	MFR	Description	Package Markings	COMMENTS
CB3LV-3C-40M0000	CTS	Oscillator, low voltage 40.0 MHz +-50ppm 7x5mm	09-CB3 40M00000	
SMCJ5.0CA-13	Diodes, Inc.	Diode, TVS 1500W SMC 5V Bi-directional	BDE	
429 002	Littelfuse	Fuse, very fast acting 429 2.0A 1206	FN	
429 005	Littelfuse	Fuse, very fast acting 429 5.0A 1206	FT	
TPS75218QPWP	TI	IC, Voltage regulator, 1.8V 2A low dropout, fast transient	PT75218 33T DF8J	
TPS75233QPWP	TI	IC, Voltage regulator, 3.3V 2A low dropout, fast transient	PT75233 39T EL2H	
XC18V02VQ44I	Xilinx	IC, Configuration Prom w/ in sys programming 2M capacity	XC1802VQ44AEN0345	
XCR3384XL-7-PQ208C	Xilinx	IC, 256 macrocell CPLD	XCR3384XL PQ208AMN0301 7C	0301 is the date code
XCV300E-6PQ240C	Xilinx	IC, FPGA Virtex 1.8V	XCV300E PQ240AMS0101 6C	0101 is the date code