



NATIONAL OPTICAL  
ASTRONOMY  
OBSERVATORY

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**MONSOON  
PARTS LIST  
Clock and Bias Board  
NEWFIRM**

**Dwg No.: MNSN-EL-04-4008-003 Rev: 3  
Next Assembly: MNSN-EL-10-0300-003**

Revision Table

Bill of Materials  
 Clock Bias Board NEWFIRM  
 SN003 - SN005

DWG #: MNSN-EL-04-4008-003  
 4/12/2007

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-0102	19-Apr-05	dms	jpg/pjs

NOTES

Bill of Materials  
CCD 8 CH ACQUISITION BOARD  
SN010 - SN029

Dwg #: MNSN-EL-04-4002-010  
4/12/2007

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	6	<a href="#">TBD1</a>	R37, R44, R81, R316, R353, R396	1	9C08052A1R00FGHFT	Yageo	311-1.00CCT-ND	Resistor, 1.0 ohm 1% 1/8W 0805
5A	6	<a href="#">TBD1-1</a>	R36, R45, R88, R318, R346, R387	1	9C08052A1R00FGHFT	Yageo	311-1.00CCT-ND	Resistor, 1.0 ohm 1% 1/8W 0805
6	8	<a href="#">TBD1A</a>	R10, R19, R52, R61, R94, R321, R322, R360	1	9C08052A1R00FGHFT	Yageo	311-1.00CCT-ND	Resistor, 1.0 ohm 1% 1/8W 0805
6A	4	<a href="#">TBD1A-1</a>	R53, R329, R330, R405	1	9C08052A1R00FGHFT	Yageo	311-1.00CCT-ND	Resistor, 1.0 ohm 1% 1/8W 0805
7	10	<a href="#">TBD1B</a>	R28, R70, R71, R106, R337, R338, R368, R376, R413, R421	1	9C08052A1R00FGHFT	Yageo	311-1.00CCT-ND	Resistor, 1.0 ohm 1% 1/8W 0805
7A	2	<a href="#">TBD1B-1</a>	R62, R100	1	9C08052A1R00FGHFT	Yageo	311-1.00CCT-ND	Resistor, 1.0 ohm 1% 1/8W 0805
8	16	<a href="#">TBD10</a>	R113, R118, R122, R127, R139, R145, R152, R158, R167, R174, R181, R188, R196, R202, R208, R214,	OPEN	NOT INSTALLED	N/A	N/A	Resistor, RC0603 OPEN
9	16	<a href="#">TBD10A</a>	R434, R440, R446, R452, R462, R468, R474, R480, R490, R496, R502, R508, R519, R525, R531, R537,	OPEN	NOT INSTALLED	N/A	N/A	Resistor, RC0805 OPEN
10	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
11	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
12	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

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
13	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
14	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	10K	9C06031A1002FKHFT	Yageo	311-10.0KHCT-ND	Resistor, 10.0K 1/10W 1% 0603
15	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	49.9K	9C06031A4992FKHFT	Yageo	311-49.9KHCT-ND	Resistor, 49.9K 1/10W 1% 0603
16	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
17	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	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 1% 1/10 Watt 0805
18	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	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
19	6	<a href="#">TBD2</a>	R4, R35, R80, R345, R394, R395	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
19A	6	<a href="#">TBD2-1</a>	R1, R43, R87, R352, R385, R386	102	9C08052A1020FKHFT	Yageo	311-102CCT-ND	Resistor, 102 1% 1/8W 0805
30	8	<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
30A	4	<a href="#">TBD2A-1</a>	R51, R328, R367, R403	102	9C08052A1020FKHFT	Yageo	311-102CCT-ND	Resistor, 102 1% 1/8W 0805
31	10	<a href="#">TBD2B</a>	R26, R27, R69, R105, R336, R375, R411, R412, R419, R420	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
31A	2	<a href="#">TBD2B-1</a>	R60, R99	102	9C08052A1020FKHFT	Yageo	311-102CCT-ND	Resistor, 102 1% 1/8W 0805

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
20	8	<a href="#">TBD20</a>	R229, R234, R271, R277, R558, R562, R637, R644	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
21	8	<a href="#">TBD21</a>	R227, R231, R267, R273, R560, R564, R641, R647	0	ERJ-6GEY0R00V	Panasonic	PO.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	6	<a href="#">TBD24</a>	C436, C441, C466, C881, C885, C928	56pF	VJ0603A560JXACW1B C	BC Components	BC1233CT-ND	Cap, Cerc 0603 56pF 50V +-5% NPO
24A	2	<a href="#">TBD24-1</a>	C470, C932	10pF	ECJ-1VC1H100D	Panasonic	PCC100CVCT-ND	Cap, Cerc 0603 10pF 50V +-5pF NPO
25	8	<a href="#">TBD25</a>	R230, R233, R270, R276, R557, R561, R638, R643	7.5K	9C08052A7501FKHFT	Yageo	311-7.50KCCT-ND	Resistor, 7.5K 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
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
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
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 OPEN
35	2	<a href="#">TBD32</a>	R284, R655	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
36	2	<a href="#">TBD32A</a>	R286, R657	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
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				
41	10	<a href="#">TBD4</a>	C5, C14, C56, C66, C118, C582, C626, C635, C673, C681	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
41A	2	<a href="#">TBD4-1</a>	C109, C572	0.1uF	12065C104KAT?A	AVX	478-1556-1-ND	Cap, Cerc 1206 0.1uF 50V +-10% X7R
42	10	<a href="#">TBD4A</a>	C22, C23, C35, C76, C127, C531, C545, C592, C602, C689	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
42A	2	<a href="#">TBD4A-1</a>	C34, C644	0.1uF	12065C104KAT?A	AVX	478-1556-1-ND	Cap, Cerc 1206 0.1uF 50V +-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

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
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	11	<a href="#">TBD8</a>	C58, C68, C111, C120, C178, C511, C522, C574, C584, C628, C637	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
53a	1	<a href="#">TBD8-1</a>	C158	0.01uF				
54	11	<a href="#">TBD8A</a>	C25, 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
54a	1	<a href="#">TBD8A-1</a>	C37	0.01uF				
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	OPEN	NOT INSTALLED	N/A	N/A	Cap, Cerc 0805 open
57	12	<a href="#">TBD9A</a>	C26, C38, C79, C89, C131, C201, C536, C537, C550, C551, C595, C647	OPEN	NOT INSTALLED	N/A	N/A	Cap, Cerc 0805 open
58	12	<a href="#">TBD9B</a>	C50, C99, C140, C150, C216, C227, C564, C565, C605, C616, C656, C665	OPEN	NOT INSTALLED	N/A	N/A	Cap, Cerc 0805 open
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
65	1	<a href="#">TBDCR12A</a>	U92		MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor
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

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
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	3.01K	9C08052A3011FKHFT	Yageo	311-3.01KCCT-ND	Resistor, 3.01K 1% 1/8 Watt 0805
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, 100 0.1% 25ppm 1/10 Watt 0805
90	1	<a href="#">TBDCR7A</a>	R547	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
91	1	<a href="#">TBDCR7B</a>	R226	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
92	1	<a href="#">TBDCR7C</a>	R552	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
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	10	P1206E10ROBB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
97	1	<a href="#">TBDCR9B</a>	R222	10	P1206E10ROBB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
98	1	<a href="#">TBDCR9C</a>	R556	10	P1206E10ROBB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
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



ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
103	1	<a href="#">TBDDR5</a>	C221	0.1uF	GRM188R71H104KA93I	Murata Electronic	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
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	GRM188R71H104KA93I	Murata Electronic	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	P1206E10ROBB	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	P1206E10ROBB	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	GRM188R71H104KA93I	Murata Electronic	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	GRM188R71H104KA93I	Murata Electronic	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	P1206E10ROBB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
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	22	766 16 3 220G SP	CTS		Resistor network, 8 isolated 22 2% 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 -			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	32	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	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 Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
12	10	10pF	C470, C480, C481, C491, C492, C932, C959, C960, C991, C992	ECJ-1VC1H100D	Panasonic	PCC100CVCT-ND	Cap, Cerc 0603 10pF 50V +- .5pF NPO
13	6	56pF	C436, C441, C466, C881, C885, C928	VJ0603A560JXACW1BC	BC Components	BC1233CT-ND	Cap, Cerc 0603 56pF 50V +-5% NPO
14	90	0.01uF	C4, C13, C19, C20, C24, C31, C32, C36, C37, C43, C44, C48, C54, C57, C64, C67, C74, C77, C84, C87, C94, C97, C107, C110, C116, C119, C125, C128, C135, C138, C144, C147, C157, C158, 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, C704, C882, 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
16	15	1uF	C429, C450, C698, C703, C920, C922, C924, C926, C927, C953, C1000, C1049, C1050, C1052, C1053	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
			C1, C2, C6, C7, C8, C9, C10, C12, C15, C16, C25, C27, C28, 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,				

Item	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
17	349	0.1uF	C130, C132, C133, C139, C141, C142, C148, C155, 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, C1051, C1054	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
18	32	.47uF	C5, C14, C22, C23, C35, C46, C47, C56, C66, C76, C86, C96, C118, C127, C137, C146, C531, C545, C559, C582, C592, C602, C612, C626, C635, C653, C662, C673, C681, C689, C697, C707	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
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	6	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,	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Tant 4.7uF 25V 20% SMT7343

Item	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
22	68	4.7uF	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	PT1322CT-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	22	R485, R543, R565, R618, R649, R671	766 16 3 220G SP	CTS		Resistor network, 8 isolated 22 2% SO16NB
29	8	2.0K	R291, R292, R298, R299, R667, R668, R680, R681	ERJ-3EKF2001V	Panasonic	P2.00KHCT-ND	Resistor, 2.0K 1/16W 1% 0603
30	6	4.99K	R285, R287, R288, R656, R658, R660	RC0805FR-074K99L	Yageo	311-4.99KCRCT-ND	Resistor, 4.99K 1/8W 1% 0805
31	32	49.9K	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	9C06031A4992FKHFT	Yageo	311-49.9KHCT-ND	Resistor, 49.9K 1/10W 1% 0603
32	32	10.0K	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	9C06031A1002FKHFT	Yageo	311-10.0KHCT-ND	Resistor, 10.0K 1/10W 1% 0603
33	8	1.00K	R79, R133, R164, R223, R429, R550, R555, R608	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
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, 1.0K 1/16W 1% 0603
35	8	100	R111, R136, R226, R344, R455, R547, R552, R609	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
36	6		R284, R286, R289, R655, R657, R659 <b>(NOT INSTALLED)</b>	LM4040CIM3-10.0	National Semi	LM4040CIM3-10.OCT-ND	IC, precision micro power reference diode

Item	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
37	37	1.0K	R194, R195, R221, R229, R234, R265, R271, R277, R306, R510, R511, R512, R513, R514, R539, R540, R541, R542, R544, R545, R546, R558, R562, R590, R601, R611, R617, R620, R622, R637, R644, R662, R672, R676, R677, R678, R684	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
38	79	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, 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, R685, R689	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
39	24	1.02K	R4, R8, R9, R17, R18, R26, R27, R35, R69, R80, R93, R105, R320, R336, R345, R359, R375, R394, R395, R404, R411, R412, R419, R420	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
40	59	10	R115, R120, R124, R129, R141, R148, R155, R161, R171, R177, R184, R190, R199, R205, R211, R218, R282, R296, R435, R441, R447, R453, R463, R469, R475, R481, R491, R497, R503, R509, R520, R526, R532, R538, R694	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
41	3	15	R307, R313, R673	ERJ-6ENF15R0V	Panasonic	P15.0CCT-ND	Resistor, 15.0 1% 1/10 Watt 0805
42	34	22.1	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, R663, R664	ERJ-6ENF22R1V	Panasonic	P22.1CCT-ND	Resistor, 0805 1/8W 1% 22.1 ohm
43	8	7.5K	R230, R233, R270, R276, R557, R561, R638, R643	9C08052A7501FKHFT	Yageo	311-7.50KCCT-ND	Resistor, 7.5K 1% 1/8 Watt 0805
44	1	2.74K	R690	ERJ-6ENF2741V	Panasonic	P2.74KCCT-ND	Resistor, 2.74K 1% 1/10 Watt 0805
45	1	301	R281	ERJ-6ENF3010V	Panasonic	P301CCT-ND	Resistor, 301 1% 1/10 Watt 0805
46	2	4.75K	R280, R283	ERJ-6ENF4751V	Panasonic	P4.75KCCT-ND	Resistor, 4.75K 1% 1/10 Watt 0805
47	8	499	R228, R232, R268, R274, R559, R563, R640, R646	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 499 1% 1/8 Watt 0805
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, 49.9K ohm 1% 1/10 Watt 0805
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, 49.9 1% 1/10 Watt 0805
50	27	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, R687	ERJ-6GEYOR00V	Panasonic	P0.0ATR-ND	Resistor, 0 ohm 5% 1/10 Watt 0805
51	6	10	R78, R132, R222, R428, R551, R556	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
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

Item	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
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		U92, U100, U169	MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor
56	1		U199	AD7814ART	Analog Devices		IC, 10 bit digital temp sensor
57	3		U53, U63, U64	MAS9187AUA1	Micro Analog Systems		IC, 12 channel, 8 bit trimDAC's with pwr shutdown
58	6		U105, U106, U107, U108, U109, U111	AD8802ARU AD8802ARUZ MAS9187AUA1	Analog Devices Micro Analog Systems	AD8802ARU-ND	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
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	R451 002	Littelfuse	F1145CT-ND	Fuse, fast acting 2A nano SMF
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_FBIAS	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	EP13 00 HS ET TS 40.000M	Ecliptek		Oscillator, half size 40.0Mhz with tri state
80	1		JP7	wire 18-20 awg			SEE ASSEMBLY DRAWING
81	1		JP8	wire 18-20 awg			SEE ASSEMBLY DRAWING
82	20	OPEN	R113, R118, R122, R127, R139, R145, R152, R158, R167, R174, R181, R188, R196, R202, R208, R214, R290, R297, R666, R679	NOT INSTALLED	{MFR}	N/A	Resistor, 0603

Item	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
83	122	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, R314, R315, R325, R333, R341 R348, R358, R362, R363, R370, R373, R380, R382, R383, R384, R390, R392, R399, R401, R408, R416, R424, R427, R434, R440, R446, R452, R457, R462, R468, R474, R480, R483, R490, R496, R502, R508, R519, R525, R531, R537, 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, R661, R665, R688, R693, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
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	NOT INSTALLED	TBD		Cap, Cerc 0603 TBD
85	0.13		(Y1)	714-93-120-31-007	Mill Max		Jack pins, fit .040 dia hole .018 dia pin (break to size)
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	R451 005	Littelfuse	F1149CT-ND	Fuse, fast acting 5A nano SMF
89	2	TBDR010	U168	ADR420BR	Analog Devices	ADR420BR-ND	IC, Voltage reference, ultra precision, low noise
90	g	3.01K	R137, R610	9C08052A3011FKHFT	Yageo	311-3.01KCCT-ND	Resistor, 3.01K 1% 1/8 Watt 0805
91	39	open	C26, C38, C50, C59, C69, C79, C89, C99, C112, C121, C131, C140, C150, C162, C180, C201, C216, C227, C512, C523, C536, C537, C550, C551, C564, C565, C575, C585, C595, C605, C616, C629, C638, C647, C656, C665, C709, C751, R10, R19, R28, R36, R37, R44, R45, R52, R53, R61, R62, R70, R71, R81, R88, R94, R100, R106, R316, R318, R321, R322, R329, R330, R337, R338, R346, R353, R360, R368, R376, R387, R396, R405, R413, R421	NOT INSTALLED	N/A	N/A	Cap, open 0805
92	36	1	R10, R19, R28, R36, R37, R44, R45, R52, R53, R61, R62, R70, R71, R81, R88, R94, R100, R106, R316, R318, R321, R322, R329, R330, R337, R338, R346, R353, R360, R368, R376, R387, R396, R405, R413, R421	9C08052A1R00FGHFT	Yageo	311-1.00CCT-ND	Resistor, 1.0 ohm 1% 1/8W 0805
93	12	102	R1, R43, R51, R60, R87, R99, R328, R352, R367, R385, R386,	9C08052A1020FKHFT	Yageo	311-102CCT-ND	Resistor, 102 1% 1/8W 0805
94	6	56pF	C436, C441, C466, C881, C885, C928	VJ0603A560JXACW1BC	BC Components	BC1233CT-ND	Cap, Cerc 0603 56pF 50V +-5% NPO
95	4	0.1uF	C34, C109, C572, C644	12065C104KAT?A	AVX	478-1556-1-ND	Cap, Cerc 1206 0.1uF 50V +-10% X7R
96	1		U206 (NOT INSTALLED)	REF196GS	Analog Devices	REF196GS-ND	IC, Precision micro power Vref 3.3V
97	1	4.7uF	C1055	ECJ-GVB1A475M	Panasonic	PCC2407CT-ND	Cap, Cerc 0805 4.7uF 50V +-10% X7R



Part Number	MFR	Description	Package Markings	COMMENTS