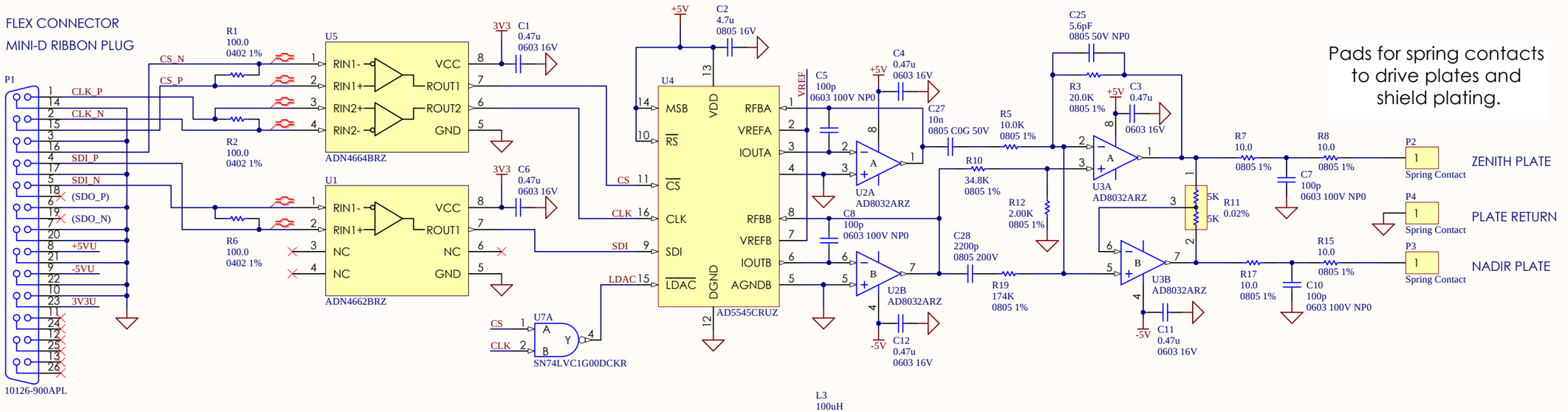
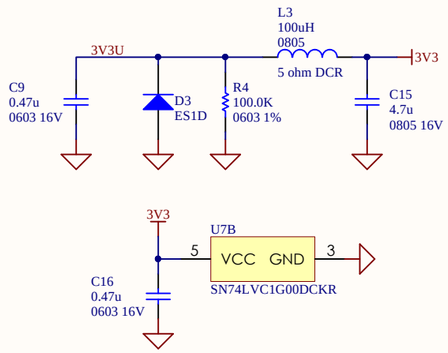
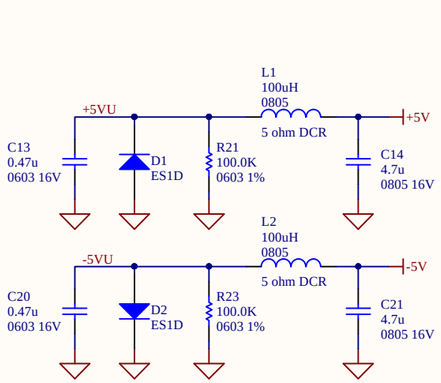
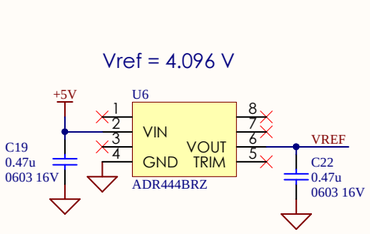
REVISION HISTORY														
LTR	DESCRIPTION	CLASS	DWN	CHK	STRUCT	MATL	THRM CONT			ENGR	DSGN SUPV	DATA MGT	RELEASE DATE
A	INITIAL RELEASE	E	SEE PRODUCT DATA MANAGEMENT SYSTEM (PDMS) FOR APPROVAL SIGNATURES AND DATES										









NOTES

1. Zero offset of height measurement is 19.5mm *k, where k = common-mode voltage / differential voltage

2. Resistor values shown give k in the range - 0.025 to +0.025, with a differential drive level of 0.5 of max. This gives a zero offset span of +/- 0.5 mm.

3. Reducing the differential drive level to 0.05 of max gives a zero offset span of +/- 5mm, with a proportional reduction in S/N.

THE TECHNICAL DATA IN THIS DOCUMENT IS CONTROLLED UNDER THE U.S. EXPORT REGULATIONS, RELEASE TO FOREIGN PERSONS MAY REQUIRE AN EXPORT AUTHORIZATION.

NEXT ASSEMBLY	TMT
NEXT ASSEMBLY	USED ON
APPLICATION	

MATERIAL:

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

LINEAR TOLERANCES:

.XX ± .03
.XXX ± .010

ANGULAR TOLERANCES: ± 0.5°

MACHINE FINISH

DO NOT SCALE DRAWING
INTERPRET DWG PER ASME Y14.100

CONTRACT NO

APPD	DATE
DWN	
CHK	
STRUCT	
MATL	
THRM CONT	
ENGR	
DSGN SUPV	

SEE PDMS FOR APPROVAL SIGNATURES AND DATES

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CA 91109

EDGE SENSOR DRIVE BOARD SCHEMATIC DIAGRAM

SIZE	CAGE CODE		REV
B	23835	10369688	A

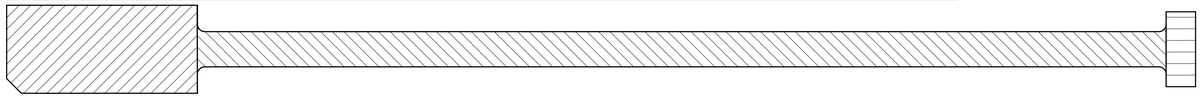
SCALE: 1/1	UNCLASSIFIED	SHEET 1 OF 1

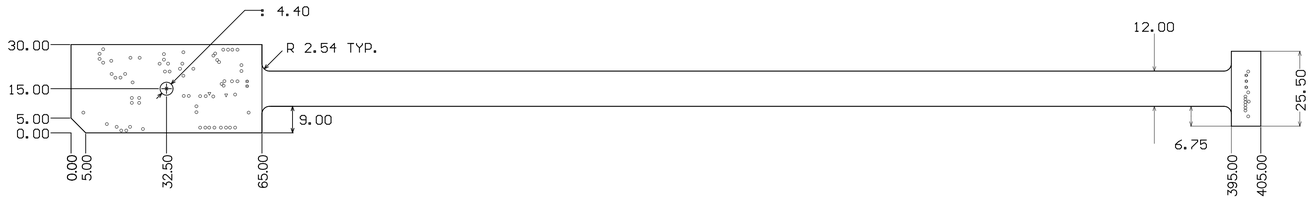
REV 11/2010

REVISION HISTORY

LTR	ZONE	DESCRIPTION	CLASS	DWN	CHK	STRUCT	MATL	THRM CONT	ENGR	DSGN SUPV	DATA MGT	RELEASE DATE
A		INITIAL RELEASE	E	SEE PRODUCT DATA MANAGEMENT SYSTEM (PDMS) FOR APPROVAL SIGNATURES AND DATES								

Layer	Name	Material	Thickness	Constant	Rigid Stack	Flex Stack	Rigid Stack 2
1	Flex Coverlay Top	Polyimide/Adhesive	0.051mm	3.5			
2	Top Overlay						
3	Top Solder	Solder Resist	0.010mm	3.5			
4	Component Side	Copper	0.036mm				
5	Dielectric 1	FR-4	0.381mm	4.8			
6	Ground Plane	Copper	0.036mm				
7	Dielectric 11	FR-4	0.226mm	4.2			
8	Flex Shield Top	Copper	0.018mm				
9	Dielectric 6	Polyimide	0.051mm	3.5			
10	Dielectric 10	Adhesive	0.041mm	4.2			
11	Diff Pair	Copper	0.018mm				
12	Dielectric 9	Polyimide	0.076mm	3.5			
13	Flex Shield Bot	Copper	0.018mm				
14	Dielectric 12	FR-4	0.226mm	4.2			
15	Power Plane	Copper	0.036mm				
16	Dielectric 4	FR-4	0.381mm	4.2			
17	Solder Side	Copper	0.036mm				
18	Bottom Solder	Solder Resist	0.010mm	3.5			
19	Bottom Overlay						
20	Flex Coverlay Bot	Polyimide/Adhesive	0.051mm	3.5			





Symbol	Hit Count	Finished Hole Size	Plated	Hole Type
○	1	94.49mil (2.400mm)	PTH	Round
▽	2	20.00mil (0.508mm)	PTH	Round
□	5	28.00mil (0.711mm)	PTH	Round
◌	76	15.00mil (0.381mm)	PTH	Round
	84 Total			

LAYER MECHANICAL/DIMENSIONS (GM12)

LAYER DRILL DRAWING (GD1)

P2 EDGE SENSOR – SENSE BOARD
10369692-102 REV A
JPL D.P. 03/16/2015

20. BOW AND TWIST OF RIGID SECTIONS SHALL NOT EXCEED 0.75% WHEN MEASURED DIAGONALLY.
19. ALL UNDIMENSIONED HOLES SHALL BE LOCATED WITHIN 0.12 RADIUS OF THE POSITION INDICATED BY THE MASTER PATTERN ARTWORK.
18. ALL COPPER FEATURE SIZES OF THE FINISHED PRINTED WIRING FLEXPRINT SHALL BE WITHIN ±10% OF THE SIZE INDICATED BY THE MASTER PATTERN ARTWORK.
17. REGISTRATION OF ALL PRINTED WIRING ELEMENTS AFTER LAMINATION SHALL BE WITHIN 0.076 mm OF THE TRUE POSITION.
16. PAIRED TRACES IN FLEX AREA ARE TO HAVE 100 OHMS ±10% DIFFERENTIAL IMPEDANCE. TRACE WIDTH AND SPACE MAY BE ADJUSTED TO OBTAIN THIS.
15. ELECTRICAL TEST: CONTINUITY SHORT AND OPEN TESTING ON ALL AVAILABLE EXPOSED TERMINAL PADS USING IPC-D-356A NETLIST DATA. CONTINUITY TEST SHALL BE AT 5 OHMS MAX. SHORTS TESTING SHALL BE PERFORMED AT 200V. MINIMUM ISOLATION OF 100M OHMS.
14. LEGEND OVER SOLDER MASK ON BOTH SIDES OF PWB USING HYSOL M-SERIES/CATALYST 20/A WHITE EPOXY INK. LEGEND MARKING SHALL NOT BE NEARER THAN .005 INCH TO ANY PAD. CHARACTER HEIGHT SHALL BE .030 INCH MINIMUM.
13. AFTER APPLICATION OF SOLDER MASK, PLATE ALL EXPOSED COPPER WITH ENIG PER IPC-6013.
12. APPLY SOLDER MASK, ITEM 7, TO TOP AND BOTTOM OVER BARE COPPER, COMPONENT PADS TO BE FREE FROM BLEEDING OR MISREGISTRATION.
11. FABRICATE AND INSPECT PRINTED WIRING BOARD PER IPC-6013B, CLASS 2, TYPE 4.
10. FOIL LAMINATION MAY BE APPLIED AS AN ALTERNATE COSTRUCTION ON OUTER LAYERS.
△9 MATERIAL: NON-SUPPORTED ADHESIVE FILM (THICKNESS AND QUANTITY AS REQUIRED) PER IPC-4203/18-0000MX
△8 MATERIAL: NON-SUPPORTED POLYIMIDE FILM, ADHESIVE ONE SIDE PER IPC-4203/1-E1E1M1/0
△7 MATERIAL: 1 OZ COPPER CLAD, SINGLE SIDED, .002 IN. THICK POLYIMIDE LAMINATE PER IPC-4204/11-E1E2Z CU-W7-HS/0
△6 MATERIAL: 1 OZ COPPER CLAD, DOUBLE SIDED, .003 IN. THICK POLYIMIDE LAMINATE PER IPC-4204/11-E1E3Z CU-W7-HS/HS
△5 MATERIAL: 0.135 mm THICK EPOXY/WOVEN GLASS PREPEG PER IPC-4101/P 26-E2116 TW RE VC
△4 MATERIAL: 1 OZ COPPER CLAD, DOUBLE SIDED, 0.38 mm THICK EPOXY/WOVEN GLASS LAMINATE PER IPC-4101/L 26-0380-C1/C1
3. THIS IS A REDUCED DIMENSION DRAWING. ADDITIONAL DIMENSIONS NEEDED TO DEFINE THE TRUE PROFILES OF THIS PART SHALL BE OBTAINED FROM THE MASTER CAD MODEL DATABASE NAMED 10369692-A.ZIP. DIMENSIONS AND TOLERANCES SHALL BE INTERPRETED PER ASME Y14.5M.
2. THIS DOCUMENT AND RELATED ARTWORK ARE COMPUTER GENERATED. ALL MODIFICATIONS ARE TO BE PERFORMED TO THE ORIGINAL DATABASE ON FILE IN SECTION 383.
1. THE FINISHED PRINTED WIRING BOARD SHALL MEET THE REQUIREMENTS OF IPC-A-600-X (LATEST REVISION).

NOTES: UNLESS OTHERWISE SPECIFIED

QTY REQD	ITEM NO	REF DES	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	SPECIFICATION	MATERIAL OR NOTE	ZONE
AR	8			SERIES M. CATALYST 20/A	INK, WHITE EPOXY		△14	
AR	7			LPI, SM P41	SOLDERMASK, PROBIMER 52	IPC-SM-840 CL A	△12	
AR	6				ACRYLIC ADHESIVE FILM NON-SUPPORTED		△9	
AR	5				POLYIMIDE FILM ACRYLIC ADHESIVE ONE SIDE		△8	
AR	4				POLYIMIDE FILM CU CLAD 1/2 OZ.		△7	
AR	3				POLYIMIDE FILM CU CLAD 1/2 OZ. / 1/2 OZ.		△6	
AR	2				GLASS BASE EPOXY RESIN PREPREG, B-STAGE		△5	
AR	1				GLASS BASE EPOXY RESIN CU CLAD 1 OZ / 1 OZ		△4	

PARTS LIST

THIS DOCUMENT HAS BEEN REVIEWED AND DETERMINED NOT TO CONTAIN EXPORT CONTROLLED TECHNICAL DATA.

NEXT ASSEMBLY | USED ON: TMT

APPLICATION

MATERIAL: MATERIAL PER SPECIFICATION

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS

LINEAR TOLERANCES:

0 to 6	±0.1
OVER 6 to 30	±0.2
OVER 30 to 120	±0.3
OVER 120 to 315	±0.5
OVER 315 to 1000	±0.8

ANGULAR TOLERANCES: ±0.5°

MACHINE FINISH ✓

DO NOT SCALE DRAWING

INTERPRET DWG PER ASME Y14.100M

CONTRACT NO

APPD DATE

DWN | CHK | STRUCT | MATL | THRM CONT | ENGR | DSGN SUPV

SEE PDMS FOR APPROVAL SIGNATURES AND DATES

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CA 91109

EDGE SENSOR – DRIVE BOARD
RIGID-FLEX PWB FABRICATION

SIZE	CAGE CODE		REV
D	23835	10369689	A

SCALE: 1/1 | UNCLASSIFIED | SHEET 1 OF 1

REV 01/2013

DBASE NAME: ANSI_D-SH1/A5

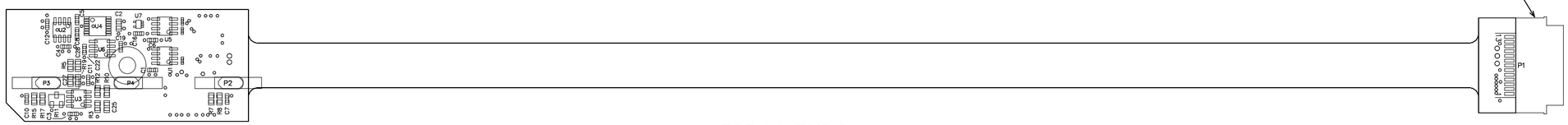
REVISION HISTORY

LTR	DESCRIPTION		DWN	CHK	STRUCT	MATL	THRM CONT			ENGR	DSGN SUPV	DATA MGT	RELEASE DATE
A	INITIAL RELEASE	CLASS E	SEE PRODUCT DATA MANAGEMENT SYSTEM (PDMS) FOR APPROVAL SIGNATURES AND DATES										

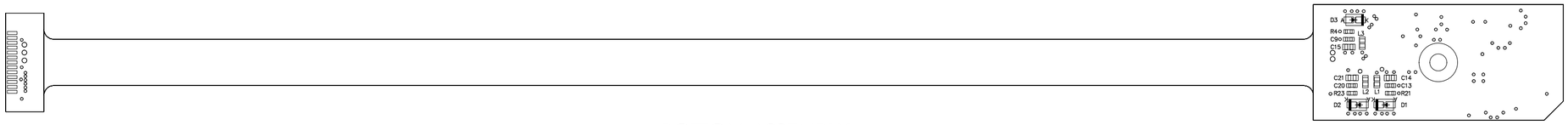
NOTES: UNLESS OTHERWISE SPECIFIED

1. WORKMANSHIP STANDARDS AND ACCEPTABILITY REQUIREMENTS SHALL MEET IPC-A-610 (LATEST VERSION)
2. THIS DOCUMENT AND RELATED ARTWORK ARE COMPUTER GENERATED. CHANGES ARE TO BE PERFORMED ON THE ORIGINAL DATABASE IN SECTION 383.
3. SOLDER COMPONENTS USING LEAD FREE SOLDER, ITEM 3.
4. MARK OR INK STAMP DASH NUMBER, REVISION LETTER AND SERIAL NUMBER USING INK, ITEM 2. CHARACTERS TO BE 50mil HIGH MINIMUM.
5. FOR ELECTRONIC PARTS LIST SEE PL10369690.
6. FOR SCHEMATIC DIAGRAM SEE JPL DRAWING 10369688.
7. THIS PRINTED WIRING BOARD ASSEMBLY CONSISTS OF ONLY SMT TECHNOLOGY.

P1 IS A STRADDLE MOUNT CONNECTOR WITH PINS ON TOP AND BOTTOM LAYERS



TOP ASSEMBLY



BOTTOM ASSEMBLY

SEE SEPARATE PARTS LIST

QTY REQD	ITEM NO	REF DES	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	SPECIFICATION	MATERIAL OR NOTE
AR	3			Sn96.5/Ag3.0/ Cu0.5	SOLDER	J-STD-005A	3
AR	2			SERIES M CATALYST 20A	INK, WHITE EPOXY		4
1	1			10369689	PRINTED WIRING BOARD		REV A

PARTS LIST

THIS DOCUMENT HAS BEEN REVIEWED AND DETERMINED NOT TO CONTAIN EXPORT CONTROLLED TECHNICAL DATA.

NEXT ASSEMBLY	USED ON
APPLICATION	TMT

MATERIAL: MATERIAL PER SPECIFICATION

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

LINEAR TOLERANCES: .XX .03 .XXX .010

ANGULAR TOLERANCES: 0.5

MACHINE FINISH

DO NOT SCALE DRAWING

INTERPRET DWG PER ASME Y14.100

CONTRACT NO

APPD DATE

DWN	SEE PDMS FOR APPROVAL SIGNATURES AND DATES
CHK	
STRUCT	
MATL	
THRM CONT	
ENGR	
DSGN SUPV	

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CA 91109

EDGE SENSOR DRIVE BOARD PWA ASSEMBLY

SIZE	CAGE CODE		REV
C	23835	10369690	B

SCALE: 1/1	UNCLASSIFIED	SHEET 1 OF 1

REV 01/2013

DBASE NAME: ANSI_C-SH1/A5

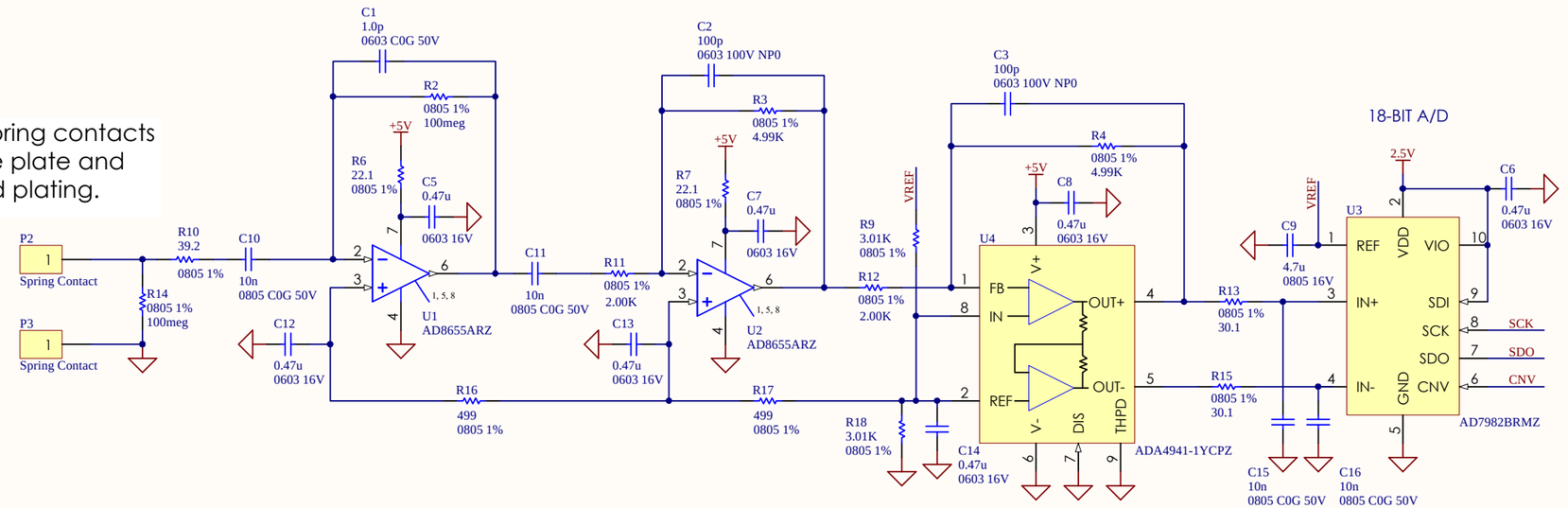
PL10369690-A **P2 Edge Sensor - Drive Board**
Source Data From: sensor_drive_v3.PrjPCB
Project: sensor_drive_v3.PrjPCB
Report Date: 3/18/2015 10:15:54 AM
Print Date: 3/27/15 11:26:10 AM

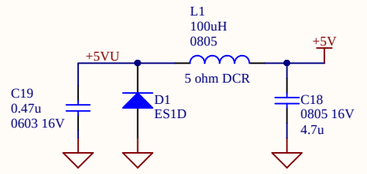
Item	Quantity	Designator	Description	Footprint	Manufacturer	ManufacturerPN	Supplier	SupplierPN
1.	1	C28	CAP 2200PF 200V CERAMIC X7R 0805	CAPCP2012X09N	Panasonic	ECJ-2VB2D222K	Digikey	PCC1999CT-ND
2.	12	C1, C3, C4, C6, C9, C11, C12, C13, C16, C19, C20, C22	CAP CER .47UF 16V X7R 0603	CAPCP1608X09N	Murata	GCM188R71C474KA55D	Digikey	490-4775-1-ND
3.	1	C27	CAP CER 10000PF 50V 5% C0G 0805	CAPCP2012X09N	Murata	GRM2195C1H103JA01D	Digikey	490-1642-1-ND
4.	4	C5, C7, C8, C10	CAP CER 100PF 100V 5% C0G 0603	CAPCP1608X09N	Murata	GRM1885C2A101JA01D	Digikey	490-1351-1-ND
5.	4	C2, C14, C15, C21	CAP CER 4.7UF 16V X5R 0805	CAPCP2012X14N	Murata	GRM21BR61C475KA88L	Digikey	490-3338-1-ND
6.	1	C25	CAP CER 5.6PF 50V NP0 0805	CAPCP2012X09N	AVX	08055A5R6CAT2A	Digikey	478-1301-1-ND
7.	1	P1	CONN MINI-D RIBBON PLUG 26POS STRADDLE MOUNT	10126-900AP	3M	10126-900APL	Digikey	3M15560-ND
8.	3	D1, D2, D3	DIODE ULTRA FAST 1A 200V SMA	DO-214AC	Vishay	ES1D-E3/61T	Digikey	ES1D-E3/61TGICT-ND
9.	2	U2, U3	IC AMP 16V R-R OUT 8SOIC	SOIC8	Analog Devices	AD8032ARZ	Digikey	AD8032ARZ-ND
10.	1	U4	IC DAC 16BIT SER DUAL 16TSSOP	RU-16_N	Analog Devices	AD5545CRUZ	Digikey	AD5545CRUZ-ND
11.	1	U7	IC QUAD 2-IN NAND GATE 14-TSSOP	SOT353	TI	SN74LVC1G00DCKR	Digikey	296-9846-1-ND
12.	1	U1	IC RCVR DIFF LVDS 1CH 8SOIC	R-8_N	Analog Devices	ADN4662BRZ	Digikey	ADN4662BRZ-ND
13.	1	U5	IC RCVR DIFF LVDS 2CH 8SOIC	R-8_N	Analog Devices	ADN4664BRZ	Digikey	ADN4664BRZ-ND
14.	1	U6	IC VREF LDO XFET 4.096V 8-SOIC	ADI-R-8_N	Analog Devices	ADR444BRZ	Digikey	ADR444BRZ-ND
15.	3	L1, L2, L3	INDUCTOR 100UH 40MA 20% 0805	INDC2012N	TDK	GLCR2012T101M-HC	Digikey	445-3630-1-ND
16.	4	R7, R8, R15, R17	RES 10.0 OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF10R0V	Digikey	P10.0CCT-ND
17.	1	R5	RES 10.0K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF1002V	Digikey	P10.0KCCT-ND
18.	3	R4, R21, R23	RES 100K OHM 1/10W 1% 0603 SMD	RESC1608N	Yageo	RC0603FR-07100KL	Digikey	311-100KHRCT-ND
19.	1	R19	RES 174K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF1743V	Digikey	P174KCCT-ND
20.	1	R12	RES 2.00K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF2001V	Digikey	P2.00KCCT-ND
21.	1	R3	RES 20.0K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF2002V	Digikey	P20.0KCCT-ND
22.	1	R10	RES 34.8K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF3482V	Digikey	P34.8KCCT-ND
23.	1	R11	RES NET 5K OHM 2 RES 1610	DSMZ	Vishay	Y4485V0002QT9R	Digikey	Y4485-5K/5KBCT-ND
24.	3	R1, R2, R6	RES SMD 100 OHM 1% 1/16W 0402	RESC1005N	Yageo	RC0402FR-07100RL	Digikey	311-100LRCT-ND
25.	3	P2, P3, P4	Spring Contact	SPRING_CONTACT	Tyco	9-146285-0-02	Digikey	A32700-02-ND

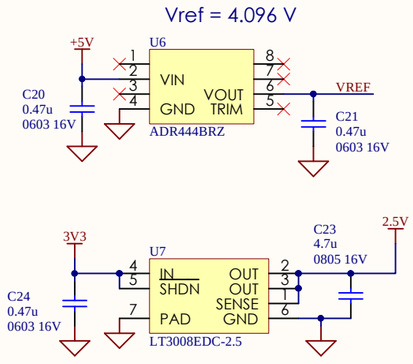
Total

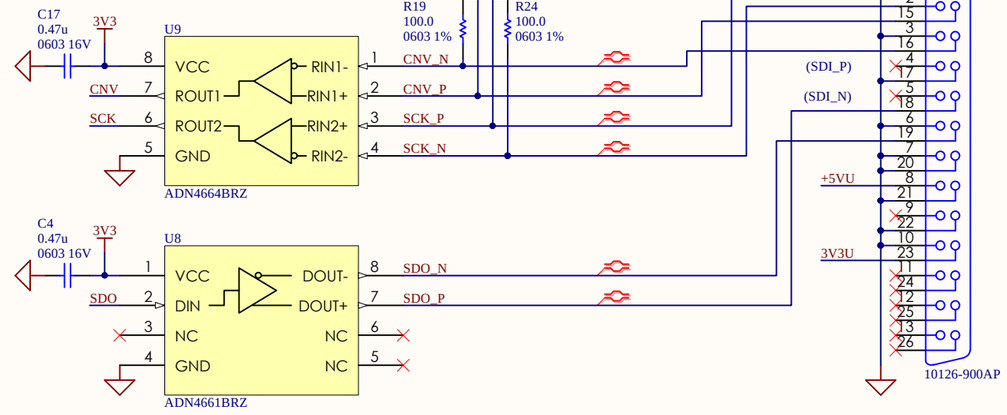
REVISION HISTORY														
LTR	DESCRIPTION	CLASS	DWN	CHK	STRUCT	MATL	THRM CONT			ENGR	DSGN SUPV	DATA MGT	RELEASE DATE
A	INITIAL RELEASE	E	SEE PRODUCT DATA MANAGEMENT SYSTEM (PDMS) FOR APPROVAL SIGNATURES AND DATES										

Pads for spring contacts to sense plate and shield plating.









THIS DOCUMENT HAS BEEN REVIEWED AND DETERMINED NOT TO CONTAIN EXPORT CONTROLLED TECHNICAL DATA.

10369692	TMT
NEXT ASSEMBLY	USED ON
APPLICATION	

MATERIAL:

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

LINEAR TOLERANCES:

.XX ± .03
.XXX ± .010

ANGULAR TOLERANCES: ± 0.5°

MACHINE FINISH

DO NOT SCALE DRAWING
INTERPRET DWG PER ASME Y14.100

CONTRACT NO

APPD	DATE
DWN	
CHK	
STRUCT	
MATL	
THRM CONT	
ENGR	
DSGN SUPV	

SEE PDMS FOR APPROVAL SIGNATURES AND DATES

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CA 91109

EDGE SENSOR SENSE BOARD SCHEMATIC DIAGRAM

SIZE	CAGE CODE		REV
B	23835	10369691	A

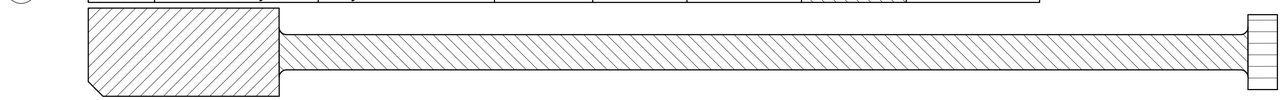
SCALE: 1/1 | UNCLASSIFIED | SHEET 1 OF 1

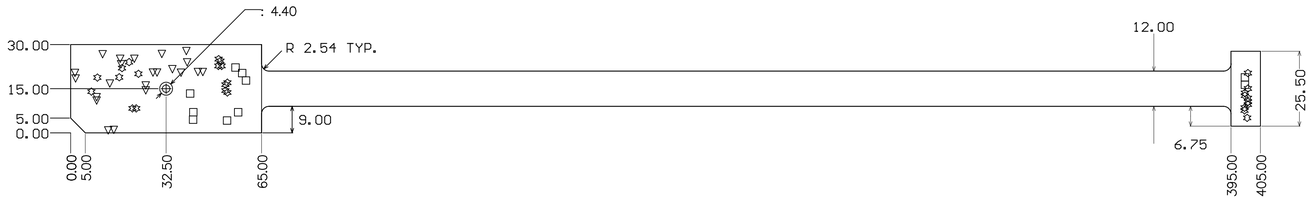
REV 11/2010

REVISION HISTORY

LTR	ZONE	DESCRIPTION	DWN	CHK	STRUCT	MATL	THRM CONT	ENGR	DSGN SUPV	DATA MGT	RELEASE DATE
A		INITIAL RELEASE — CLASS E — SEE PRODUCT DATA MANAGEMENT SYSTEM (PDMS) FOR APPROVAL SIGNATURES AND DATES									

Layer	Name	Material	Thickness	Constant	Rigid Stack	Flex Stack	Rigid Stack 2
1	Flex Coverlay Top	Polyimide/Adhesive	0.051mm	3.5			
2	Top Overlay						
3	Top Solder	Solder Resist	0.010mm	3.5			
4	Component Side	Copper	0.036mm				
5	Dielectric 1	FR-4	0.381mm	4.8			
6	Ground Plane	Copper	0.036mm				
7	Dielectric 11	FR-4	0.226mm	4.2			
8	Flex Shield Top	Copper	0.018mm				
9	Dielectric 6	Polyimide	0.051mm	3.78			
10	Dielectric 10	Adhesive	0.041mm	3.78			
11	Diff Pair	Copper	0.018mm				
12	Dielectric 9	Polyimide	0.076mm	3.5			
13	Flex Shield Bot	Copper	0.018mm				
14	Dielectric 12	FR-4	0.226mm	4.2			
15	Power Plane	Copper	0.036mm				
16	Dielectric 4	FR-4	0.381mm	4.2			
17	Solder Side	Copper	0.036mm				
18	Bottom Solder	Solder Resist	0.010mm	3.5			
19	Bottom Overlay						
20	Flex Coverlay Bot	Polyimide/Adhesive	0.051mm	3.5			





Symbol	Hit Count	Finished Hole Size	Plated	Hole Type
○	1	2.400mm (94.49mil)	PTH	Round
□	10	0.711mm (28.00mil)	PTH	Round
▽	22	0.508mm (20.00mil)	PTH	Round
☼	26	0.381mm (15.00mil)	PTH	Round
	59 Total			

LAYER MECHANICAL/DIMENSIONS (GM12)

LAYER DRILL DRAWING (GD1)

P2 EDGE SENSOR – SENSE BOARD
10369692-102 REV A
JPL D.P. 03/16/2015

20. BOW AND TWIST OF RIGID SECTIONS SHALL NOT EXCEED 0.75% WHEN MEASURED DIAGONALLY.
19. ALL UNDIMENSIONED HOLES SHALL BE LOCATED WITHIN 0.12 RADIUS OF THE POSITION INDICATED BY THE MASTER PATTERN ARTWORK.
18. ALL COPPER FEATURE SIZES OF THE FINISHED PRINTED WIRING FLEXPRINT SHALL BE WITHIN ±10% OF THE SIZE INDICATED BY THE MASTER PATTERN ARTWORK.
17. REGISTRATION OF ALL PRINTED WIRING ELEMENTS AFTER LAMINATION SHALL BE WITHIN 0.076 mm OF THE TRUE POSITION.
16. PAIRED TRACES IN FLEX AREA ARE TO HAVE 100 OHMS ±10% DIFFERENTIAL IMPEDANCE. TRACE WIDTH AND SPACE MAY BE ADJUSTED TO OBTAIN THIS.
15. ELECTRICAL TEST: CONTINUITY SHORT AND OPEN TESTING ON ALL AVAILABLE EXPOSED TERMINAL PADS USING IPC-D-356A NETLIST DATA. CONTINUITY TEST SHALL BE AT 5 OHMS MAX. SHORTS TESTING SHALL BE PERFORMED AT 200V. MINIMUM ISOLATION OF 100M OHMS.
14. LEGEND OVER SOLDER MASK ON BOTH SIDES OF PWB USING HYSOL M-SERIES/CATALYST 20/A WHITE EPOXY INK. LEGEND MARKING SHALL NOT BE NEARER THAN .005 INCH TO ANY PAD. CHARACTER HEIGHT SHALL BE .030 INCH MINIMUM.
13. AFTER APPLICATION OF SOLDER MASK, PLATE ALL EXPOSED COPPER WITH ENIG PER IPC-6013.
12. APPLY SOLDER MASK, ITEM 7, TO TOP AND BOTTOM OVER BARE COPPER, COMPONENT PADS TO BE FREE FROM BLEEDING OR MISREGISTRATION.
11. FABRICATE AND INSPECT PRINTED WIRING BOARD PER IPC-6013B, CLASS 2, TYPE 4.
10. FOIL LAMINATION MAY BE APPLIED AS AN ALTERNATE COSTRUCTION ON OUTER LAYERS.
△9 MATERIAL: NON-SUPPORTED ADHESIVE FILM (THICKNESS AND QUANTITY AS REQUIRED) PER IPC-4203/18-0000MX
△8 MATERIAL: NON-SUPPORTED POLYIMIDE FILM, ADHESIVE ONE SIDE PER IPC-4203/1-E1E1M1/0
△7 MATERIAL: 1 OZ COPPER CLAD, SINGLE SIDED, .002 IN. THICK POLYIMIDE LAMINATE PER IPC-4204/11-E1E2Z CU-W7-HS/0
△6 MATERIAL: 1 OZ COPPER CLAD, DOUBLE SIDED, .003 IN. THICK POLYIMIDE LAMINATE PER IPC-4204/11-E1E3Z CU-W7-HS/HS
△5 MATERIAL: 0.135 mm THICK EPOXY/WOVEN GLASS PREPEG PER IPC-4101/P 26-E2116 TW RE VC
△4 MATERIAL: 1 OZ COPPER CLAD, DOUBLE SIDED, 0.38 mm THICK EPOXY/WOVEN GLASS LAMINATE PER IPC-4101/L 26-0380-C1/C1
3. THIS IS A REDUCED DIMENSION DRAWING. ADDITIONAL DIMENSIONS NEEDED TO DEFINE THE TRUE PROFILES OF THIS PART SHALL BE OBTAINED FROM THE MASTER CAD MODEL DATABASE NAMED 10369692-A.ZIP. DIMENSIONS AND TOLERANCES SHALL BE INTERPRETED PER ASME Y14.5M.
2. THIS DOCUMENT AND RELATED ARTWORK ARE COMPUTER GENERATED. ALL MODIFICATIONS ARE TO BE PERFORMED TO THE ORIGINAL DATABASE ON FILE IN SECTION 383.
1. THE FINISHED PRINTED WIRING BOARD SHALL MEET THE REQUIREMENTS OF IPC-A-600-X (LATEST REVISION).

NOTES: UNLESS OTHERWISE SPECIFIED

		ITEM NO	REF DES	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	SPECIFICATION	MATERIAL OR NOTE	ZONE
	AR	8			SERIES M. CATALYST 20/A	INK, WHITE EPOXY		△14	
	AR	7			LPI, SM P41	SOLDERMASK, PROBIMER 52	IPC-SM-840 CL A	△12	
	AR	6				ACRYLIC ADHESIVE FILM NON-SUPPORTED		△9	
	AR	5				POLYIMIDE FILM ACRYLIC ADHESIVE ONE SIDE		△8	
	AR	4				POLYIMIDE FILM CU CLAD 1/2 OZ.		△7	
	AR	3				POLYIMIDE FILM CU CLAD 1/2 OZ. / 1/2 OZ.		△6	
	AR	2				GLASS BASE EPOXY RESIN PREPREG, B-STAGE		△5	
	AR	1				GLASS BASE EPOXY RESIN CU CLAD 1 OZ / 1 OZ		△4	

QTY REQD

PARTS LIST

THIS DOCUMENT HAS BEEN REVIEWED AND DETERMINED NOT TO CONTAIN EXPORT CONTROLLED TECHNICAL DATA.

TMT | NEXT ASSEMBLY | USED ON | APPLICATION

MATERIAL: MATERIAL PER SPECIFICATION

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS

LINEAR TOLERANCES:

0 to 6	±0.1
OVER 6 to 30	±0.2
OVER 30 to 120	±0.3
OVER 120 to 315	±0.5
OVER 315 to 1000	±0.8

ANGULAR TOLERANCES: ±0.5°

MACHINE FINISH √

DO NOT SCALE DRAWING

INTERPRET DWG PER ASME Y14.100M

CONTRACT NO

APPD DATE

DWN | CHK | STRUCT | MATL | THRM CONT | ENGR | DSGN SUPV

SEE PDMS FOR APPROVAL SIGNATURES AND DATES

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CA 91109

EDGE SENSOR – SENSE BOARD
RIGID-FLEX PWB FABRICATION

SIZE	CAGE CODE		REV
D	23835	10369692	A

SCALE: 1/1 | UNCLASSIFIED | SHEET 1 OF 1

REV 01/2013

DBASE NAME: ANSI_D-SH1/A5

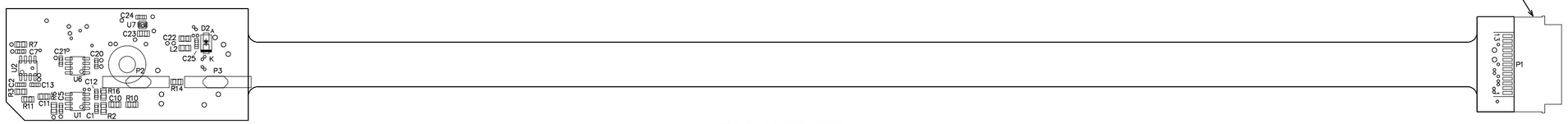
REVISION HISTORY

LTR	DESCRIPTION		DWN	CHK	STRUCT	MATL	THRM CONT			ENGR	DSGN SUPV	DATA MGT	RELEASE DATE
A	INITIAL RELEASE	CLASS E	SEE PRODUCT DATA MANAGEMENT SYSTEM (PDMS) FOR APPROVAL SIGNATURES AND DATES										

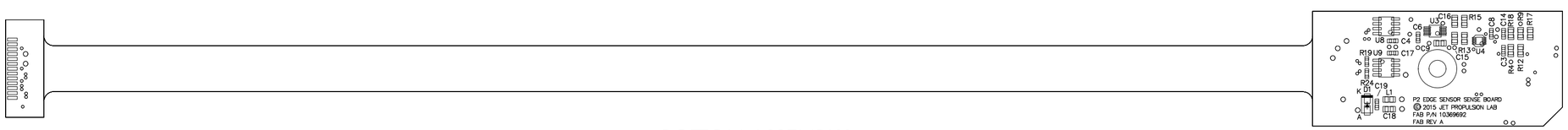
NOTES: UNLESS OTHERWISE SPECIFIED

1. WORKMANSHIP STANDARDS AND ACCEPTABILITY REQUIREMENTS SHALL MEET IPC-A-610 (LATEST VERSION)
2. THIS DOCUMENT AND RELATED ARTWORK ARE COMPUTER GENERATED. CHANGES ARE TO BE PERFORMED ON THE ORIGINAL DATABASE IN SECTION 383.
3. SOLDER COMPONENTS USING LEAD FREE SOLDER, ITEM 3.
4. MARK OR INK STAMP DASH NUMBER, REVISION LETTER AND SERIAL NUMBER USING INK, ITEM 2. CHARACTERS TO BE 50mil HIGH MINIMUM.
5. FOR ELECTRONIC PARTS LIST SEE PL10369693.
6. FOR SCHEMATIC DIAGRAM SEE JPL DRAWING 10369691.
7. THIS PRINTED WIRING BOARD ASSEMBLY CONSISTS OF ONLY SMT TECHNOLOGY.

P1 IS A STRADDLE MOUNT CONNECTOR WITH PINS ON TOP AND BOTTOM LAYERS



TOP ASSEMBLY



BOTTOM ASSEMBLY

SEE SEPARATE PARTS LIST

QTY REQD	ITEM NO	REF DES	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	SPECIFICATION	MATERIAL OR NOTE
AR	3				LEAD-FREE SOLDER Sn96.5/Ag3.0/Cu0.5	J-STD-005A	3
AR	2			SERIES M CATALYST 20A	INK, WHITE EPOXY		4
1	1			10369692	PRINTED WIRING BOARD		REV A

PARTS LIST

THIS DOCUMENT HAS BEEN REVIEWED AND DETERMINED NOT TO CONTAIN EXPORT CONTROLLED TECHNICAL DATA.

NEXT ASSEMBLY	USED ON
APPLICATION	TMT

MATERIAL: MATERIAL PER SPECIFICATION

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

LINEAR TOLERANCES: .XX .03 .XXX .010

ANGULAR TOLERANCES: 0.5

MACHINE FINISH

DO NOT SCALE DRAWING

INTERPRET DWG PER ASME Y14.100

CONTRACT NO

APPD DATE

DWN	SEE PDMS FOR APPROVAL SIGNATURES AND DATES
CHK	
STRUCT	
MATL	
THRM CONT	
ENGR	
DSGN SUPV	

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CA 91109

EDGE SENSOR SENSE BOARD PWA ASSEMBLY

SIZE	CAGE CODE		REV
C	23835	10369693	B
SCALE: 1/1	UNCLASSIFIED	SHEET 1 OF 1	

REV 01/2013

DBASE NAME: ANSI_C-SH1/A5

PL10369693-A **Edge Sensor - Sense Board**
Source Data From: sensor_sense_v3.PrjPCB
Project: sensor_sense_v3.PrjPCB
Report Date: 3/12/2015 9:56:14 AM
Print Date: 3/27/15 11:31:47 AM

Item	Quantity	Designator	Description	Footprint	Manufacturer	ManufacturerPN	Supplier	SupplierPN
1.	14	C4, C5, C6, C7, C8, C12, C13, C14, C17, C19, C20, C21, C24, C25	CAP CER .47UF 16V X7R 0603	CAPCP1608X09N	Murata	GCM188R71C474KA55D	Digikey	490-4775-1-ND
2.	1	C1	CAP CER 1.0PF 50V C0G 0603	CAPCP1608X09N	TDK	C1608C0G1H010B	Digikey	445-5008-1-ND
3.	4	C10, C11, C15, C16	CAP CER 10000PF 50V 5% C0G 0805	CAPCP2012X09N	Murata	GRM2195C1H103JA01D	Digikey	490-1642-1-ND
4.	2	C2, C3	CAP CER 100PF 100V 5% C0G 0603	CAPCP1608X09N	Murata	GRM1885C2A101JA01D	Digikey	490-1351-1-ND
5.	4	C9, C18, C22, C23	CAP CER 4.7UF 16V X5R 0805	CAPCP2012X14N	Murata	GRM21BR61C475KA88L	Digikey	490-3338-1-ND
6.	1	P1	CONN MINI-D RIBBON PLUG 26POS STRADDLE MOUNT	10126-900AP	3M	10126-900APL	Digikey	3M15560-ND
7.	2	D1, D2	DIODE ULTRA FAST 1A 200V SMA	DO-214AC	Vishay	ES1D-E3/61T	Digikey	ES1D-E3/61TGICT-ND
8.	1	U3	IC ADC 18BIT 1MSPS 10-MSOP	MSOP-10_N	Analog Devices	AD7982BRMZ	Digikey	AD7982BRMZ-ND
9.	1	U4	IC AMP DIFF ADC DVR 18BIT	LFCSP-8	Analog Devices	ADA4941-1YCPZ-R7	Digikey	ADA4941-1YCPZ-R7CT-ND
10.	1	U8	IC DRIVER DIFF LVDS 1CH 8SOIC	R-8_N	Analog Devices	ADN4661BRZ	Digikey	ADN4661BRZ-ND
11.	2	U1, U2	IC OPAMP R-R 50MHZ 8-SOIC	SOIC8	Analog Devices	AD8655ARZ	Digikey	AD8655ARZ-ND
12.	1	U9	IC RCVR DIFF LVDS 2CH 8SOIC	R-8_N	Analog Devices	ADN4664BRZ	Digikey	ADN4664BRZ-ND
13.	1	U7	IC REG LDO 2.5V 20MA 6-DFN	LT-DC6-6_V	LT	LT3008EDC-2.5#TRMPBF	Digikey	LT3008EDC-2.5#TRMPBFCT-ND
14.	1	U6	IC VREF LDO XFET 4.096V 8-SOIC	SOIC8	Analog Devices	ADR444BRZ	Digikey	ADR444BRZ-ND
15.	2	L1, L2	INDUCTOR 100UH 40MA 20% 0805	INDC2012N	TDK	GLCR2012T101M-HC	Digikey	445-3630-1-ND
16.	2	R2, R14	RES 100M OHM 1/8W 5% 0805 TF	RESC2012N	Stackpole	HMC0805JT100M	Digikey	HMC0805JT100MCT-ND
17.	2	R11, R12	RES 2.00K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF2001V	Digikey	P2.00KCCT-ND
18.	2	R6, R7	RES 22.1 OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF22R1V	Digikey	P22.1CCT-ND
19.	2	R9, R18	RES 3.01K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF3011V	Digikey	P3.01KCCT-ND
20.	2	R13, R15	RES 30.1 OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF30R1V	Digikey	P30.1CCT-ND
21.	1	R10	RES 39.2 OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF39R2V	Digikey	P39.2CCT-ND
22.	2	R3, R4	RES 4.99K OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF4991V	Digikey	P4.99KCCT-ND
23.	2	R16, R17	RES 499 OHM 1/8W 1% 0805 SMD	RESC2012N	Panasonic	ERJ-6ENF4990V	Digikey	P499CCT-ND
24.	2	R19, R24	RES SMD 100 OHM 1% 1/10W 0603	RESC1608N	Yageo	RC0603FR-07100L	Digikey	311-100HRCT-ND
25.	2	P2, P3	Spring Contact	SPRING_CONTACT	Tyco	9-146285-0-02	Digikey	A32700-02-ND

Total