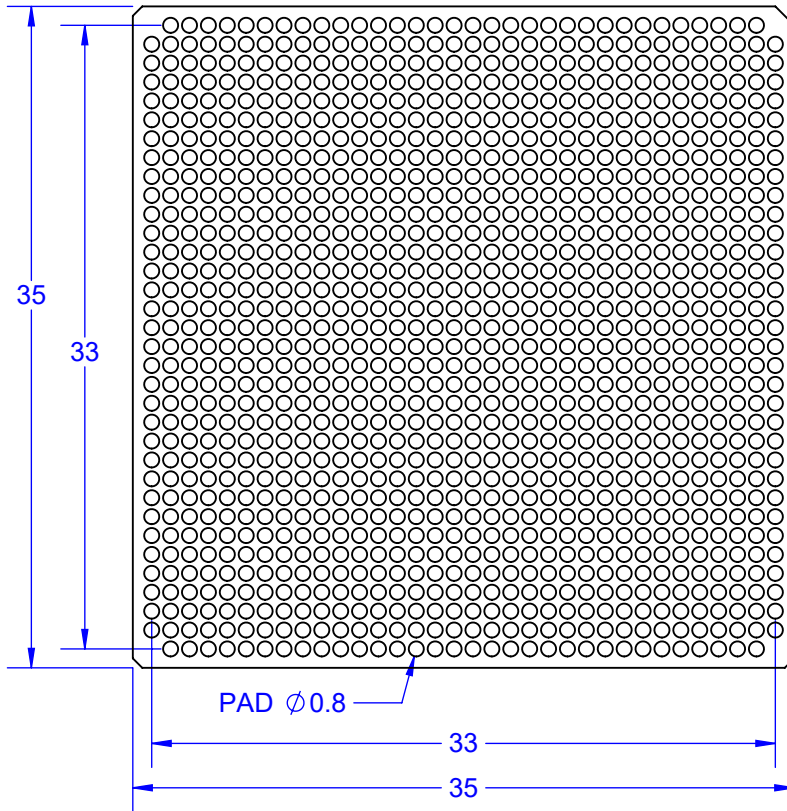
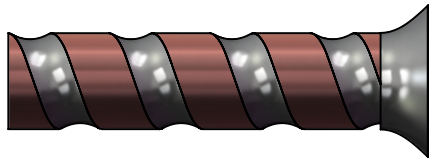


BOTTOM VIEW

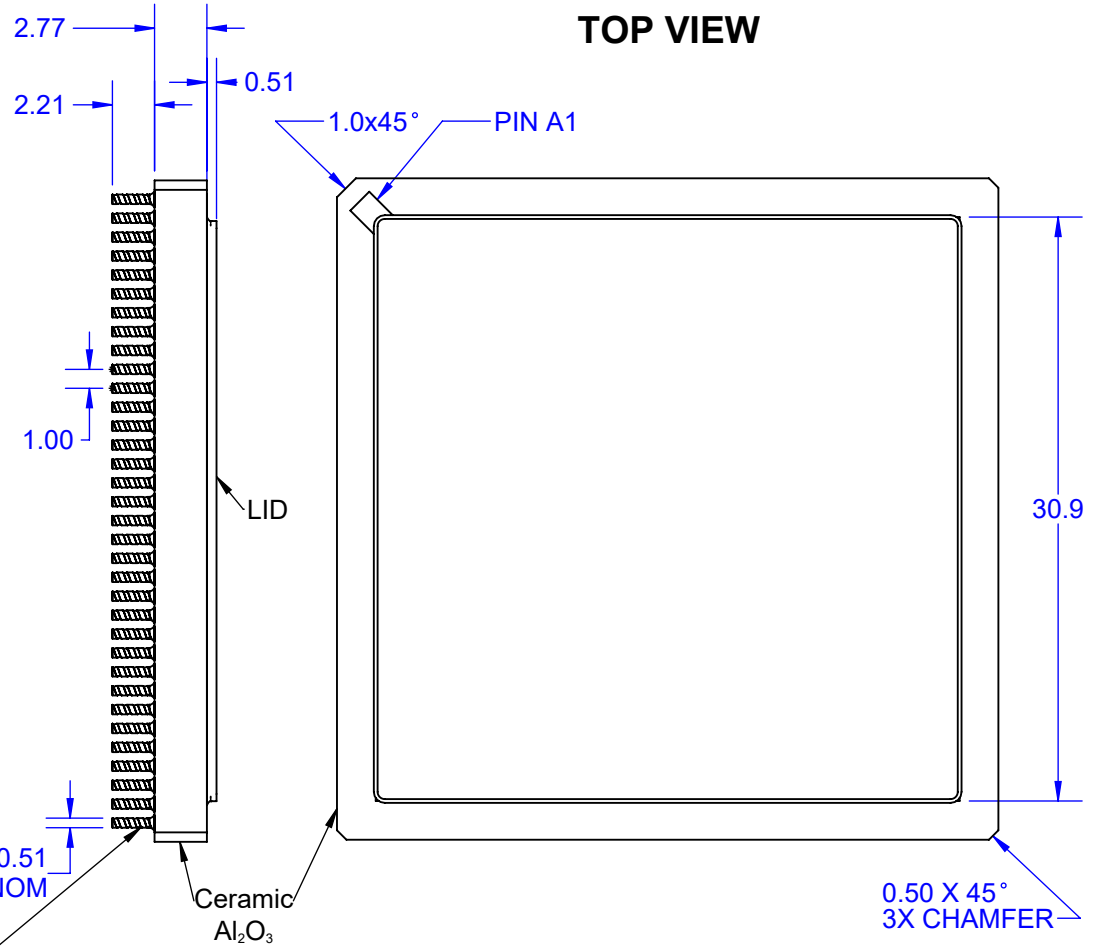
33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1
34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2



**Pb80/Sn20
Cu RIBBON
COLUMNS**



TOP VIEW



Notes: (Unless Otherwise Specified).

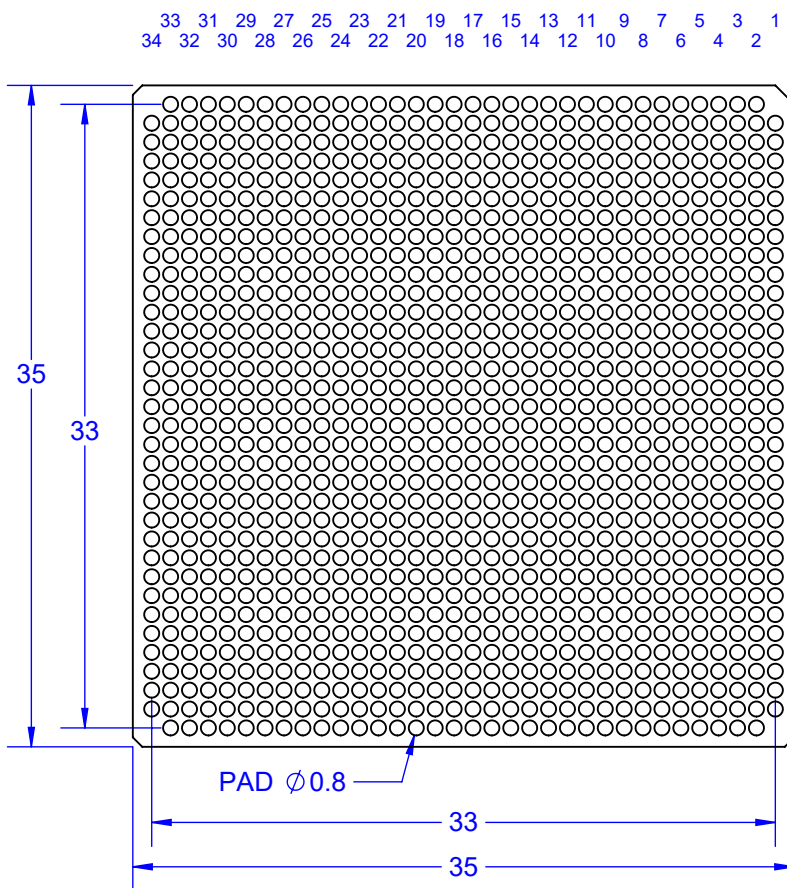
- 1) DIMENSIONS ARE IN mm.
- 2) SHOWN WITH Pb80/Sn20 COLUMNS.
- 3) PART NUMBER CCGA1152T1.0-DC346D.

PART NUMBER OPTIONS

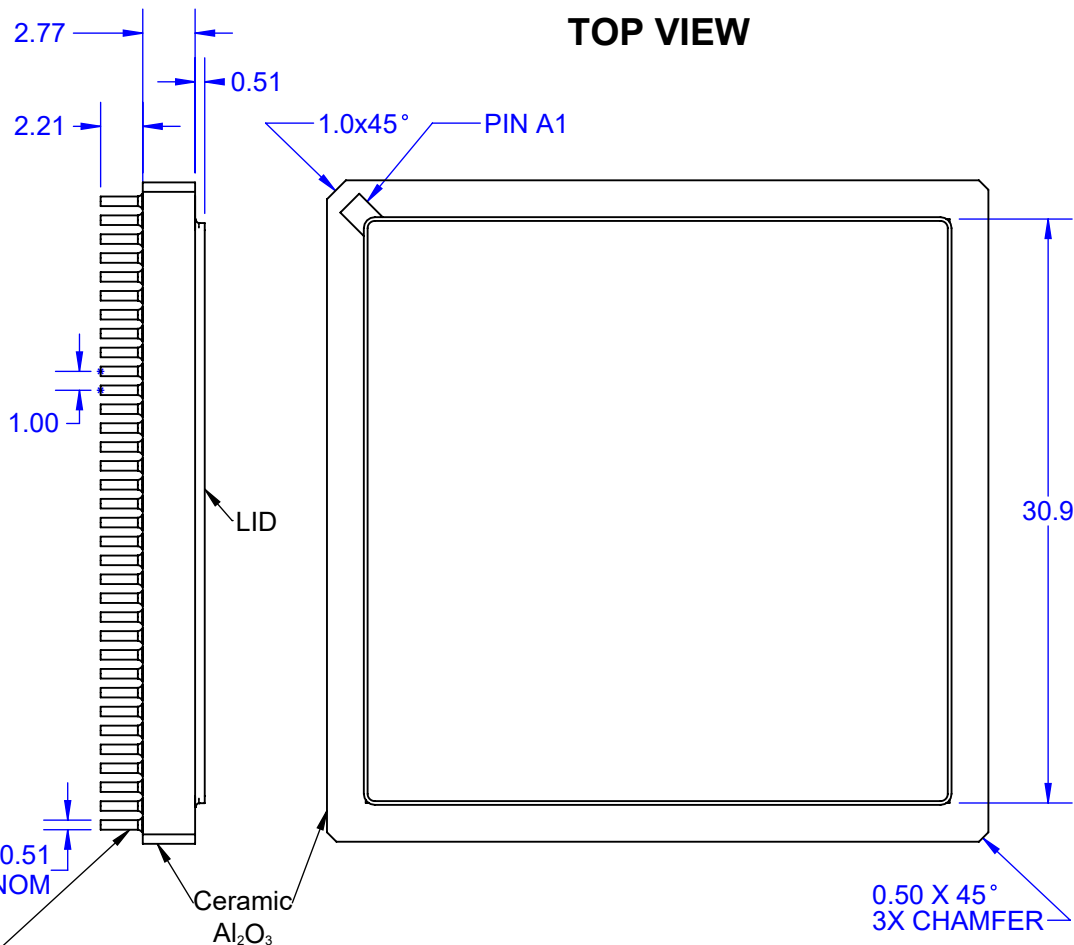
PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1152T1.0-DC346D	YES	Pb80/Sn20 Cu RIBBON
CCGA1152T1.0A-DC346D	YES	Pb90/Sn10
CCGA1152T1.0M-DC346D	YES	Micro-Coil
CLGA1152T1.0-DC346D	YES	NONE

APPROVALS	DATE	TopLine®			
DRAWN T.Au	01/28/16				
ENG M. Hart	01/28/16	TITLE CCGA1152T1.0-DC346D DUMMY COLUMN GRID ARRAY			
MFG		SCALE	SIZE	DRAWING NO.	REV
QA		2.5:1	A	160150	A
CUST		DO NOT SCALE DRAWING			SHEET 1 OF 10
REVISED					

BOTTOM VIEW



TOP VIEW



**Pb90/Sn10
WIRE COLUMNS**



- Notes: (Unless Otherwise Specified).
 1) DIMENSIONS ARE IN mm.
 2) SHOWN WITH Pb90/Sn10 COLUMNS.
 3) PART NUMBER CCGA1152T1.0A-DC346D.

PART NUMBER OPTIONS

PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1152T1.0-DC346D	YES	Pb80/Sn20 Cu RIBBON
CCGA1152T1.0A-DC346D	YES	Pb90/Sn10
CCGA1152T1.0M-DC346D	YES	Micro-Coil
CLGA1152T1.0-DC346D	YES	NONE

TopLine®

TITLE CCGA1152T1.0-DC346D
DUMMY COLUMN GRID ARRAY

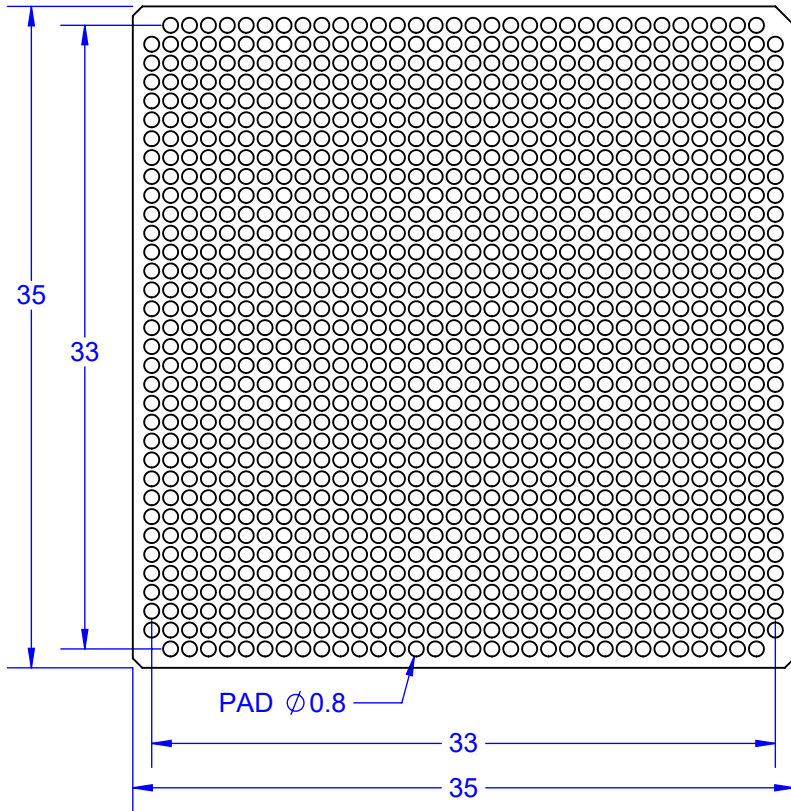
SCALE 2.5:1	SIZE A	DRAWING NO. 160150	REV A
----------------	-----------	-----------------------	----------

DO NOT SCALE DRAWING

SHEET 2 OF 10

BOTTOM VIEW

33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1
34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2

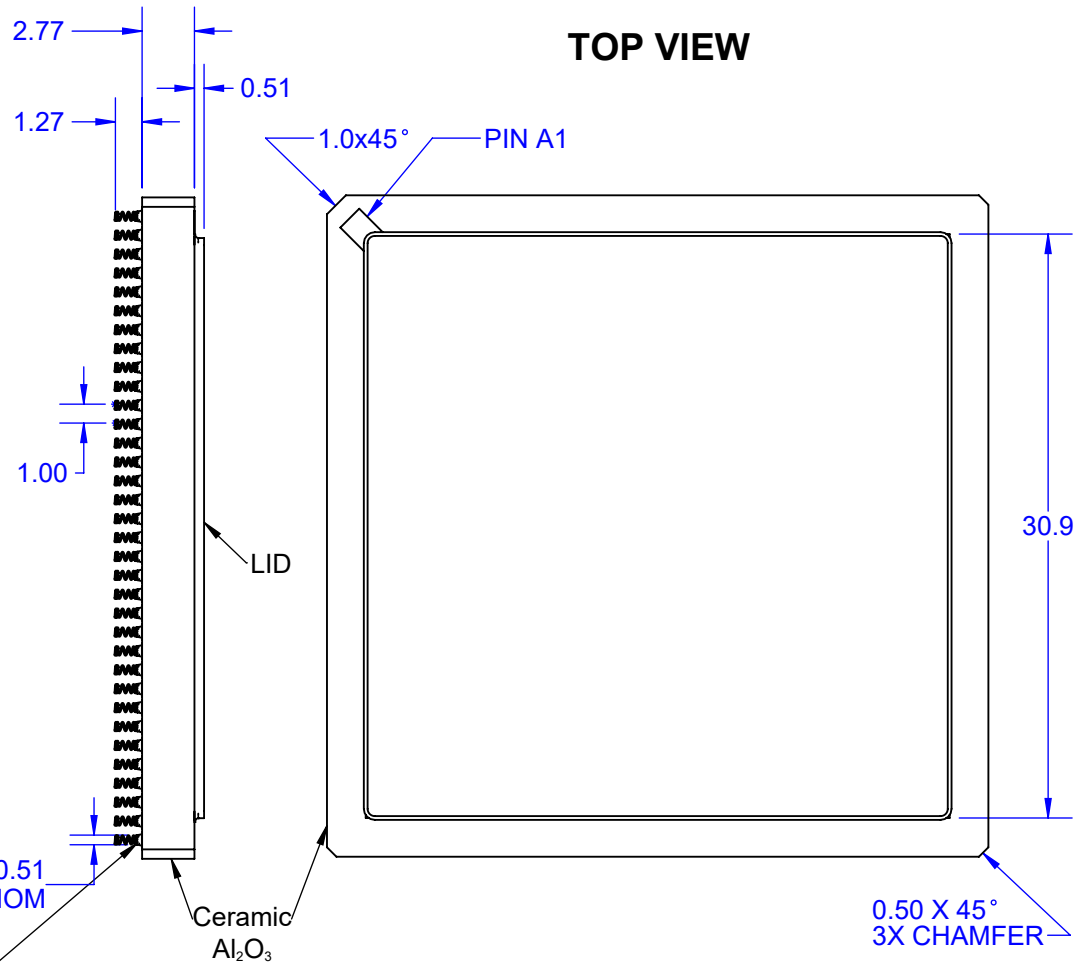


MICRO-COIL SPRING



PART NUMBER OPTIONS		
PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1152T1.0-DC346D	YES	Pb80/Sn20 Cu RIBBON
CCGA1152T1.0A-DC346D	YES	Pb90/Sn10
CCGA1152T1.0M-DC346D	YES	Micro-Coil
CLGA1152T1.0-DC346D	YES	NONE

TOP VIEW

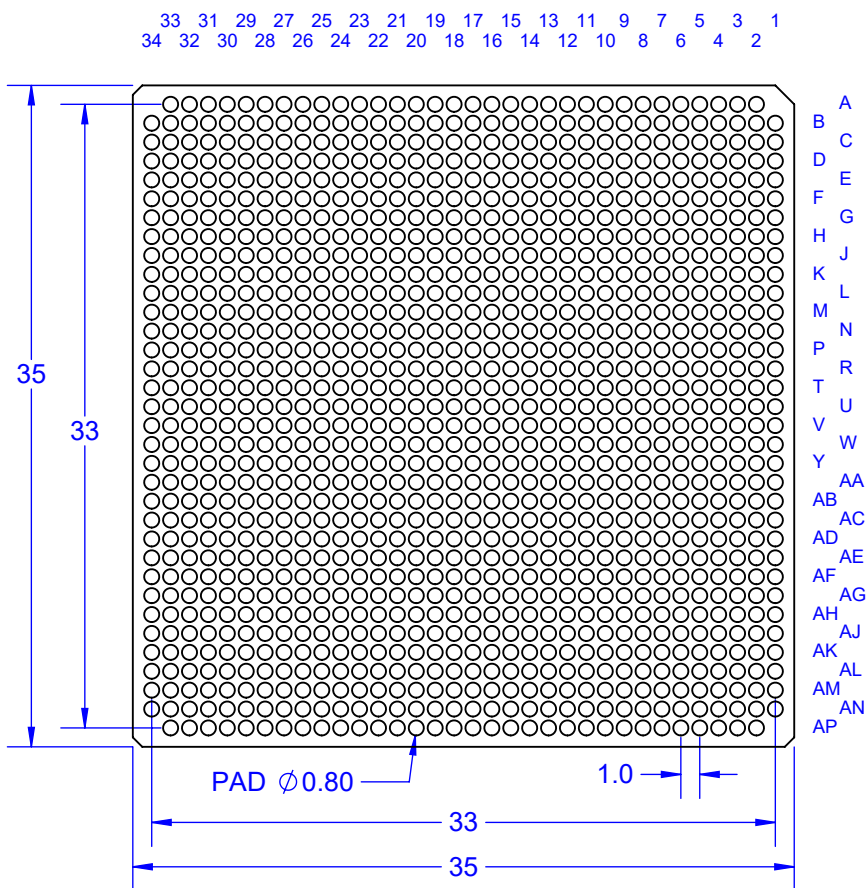


- Notes: (Unless Otherwise Specified).
 1) DIMENSIONS ARE IN mm.
 2) SHOWN WITH Micro-Coil Springs.
 3) PART NUMBER CCGA1152T1.0M-DC346D.

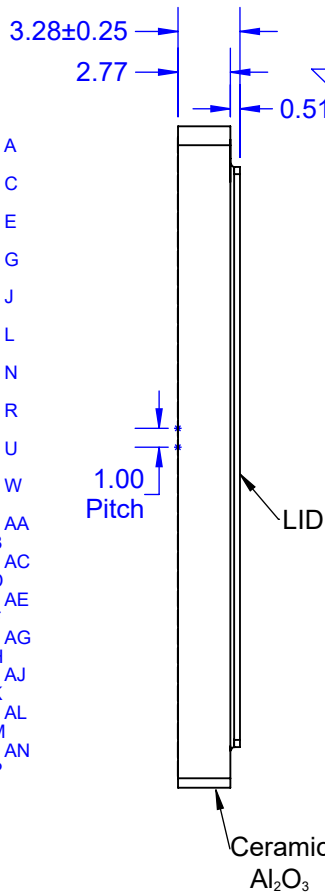


TITLE CCGA1152T1.0-DC346D DUMMY COLUMN GRID ARRAY			
SCALE 2.5:1	SIZE A	DRAWING NO. 160150	REV A
DO NOT SCALE DRAWING		SHEET 3 OF 10	

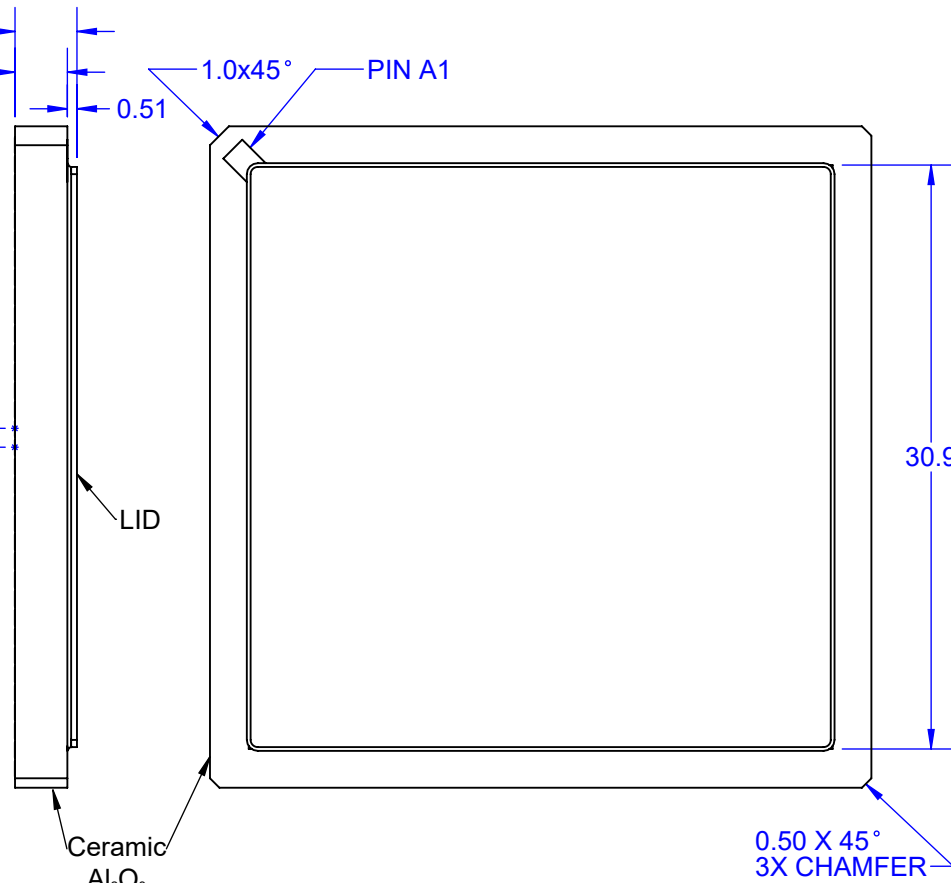
BOTTOM VIEW



SIDE VIEW



TOP VIEW



NOTES:

1. PLATING TOP
ELECTROLESS Ni 3.20~8.89 μm (125~350 micro-inch).
ELECTROLESS Au 2.50 μm Min (100 micro-inch).
2. PLATING BOTTOM
ELECTROLESS Ni 3.20~8.89 μm (125~350 micro-inch).
ELECTROLESS Au 0.25μm Max (10 micro-inch).

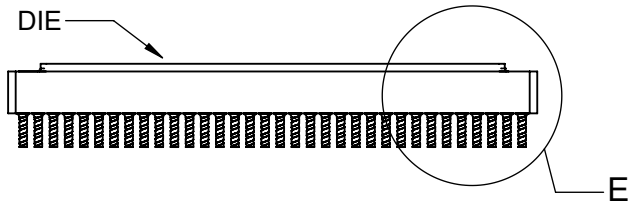
Notes: (Unless Otherwise Specified).

- 1) DIMENSIONS ARE IN mm.
- 2) SHOWN WITHOUT COLUMNS.
- 3) SHOWN WITH LID COVER ATTACHED.
- 4) PART NUMBER CLGA1152T1.0-DC346D.

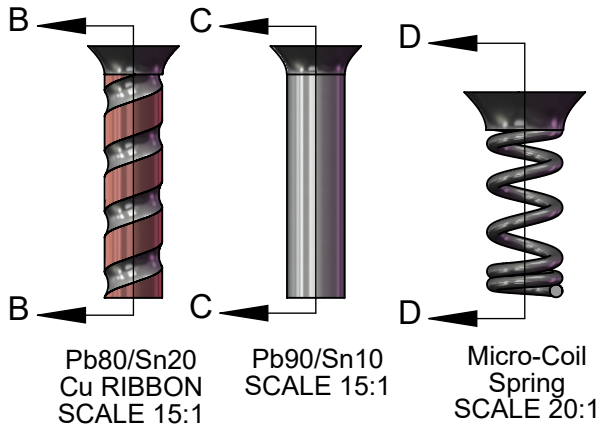
PART NUMBER OPTIONS		
PART NUMBER	DUMMY DIE	SOLDER PIN
CLGA1152T1.0-DC346D	YES	NONE

APPROVALS	DATE	TopLine®			
DRAWN T.Au	01/28/16				
ENG M. Hart	01/28/16	TITLE CCGA1152T1.0-DC346D DUMMY COLUMN GRID ARRAY			
MFG		SCALE 2.5:1	SIZE A	DRAWING NO. 160150	REV A
QA		DO NOT SCALE DRAWING			SHEET 4 OF 10
CUST					
REVISED					

SOLDER PIN OPTIONS



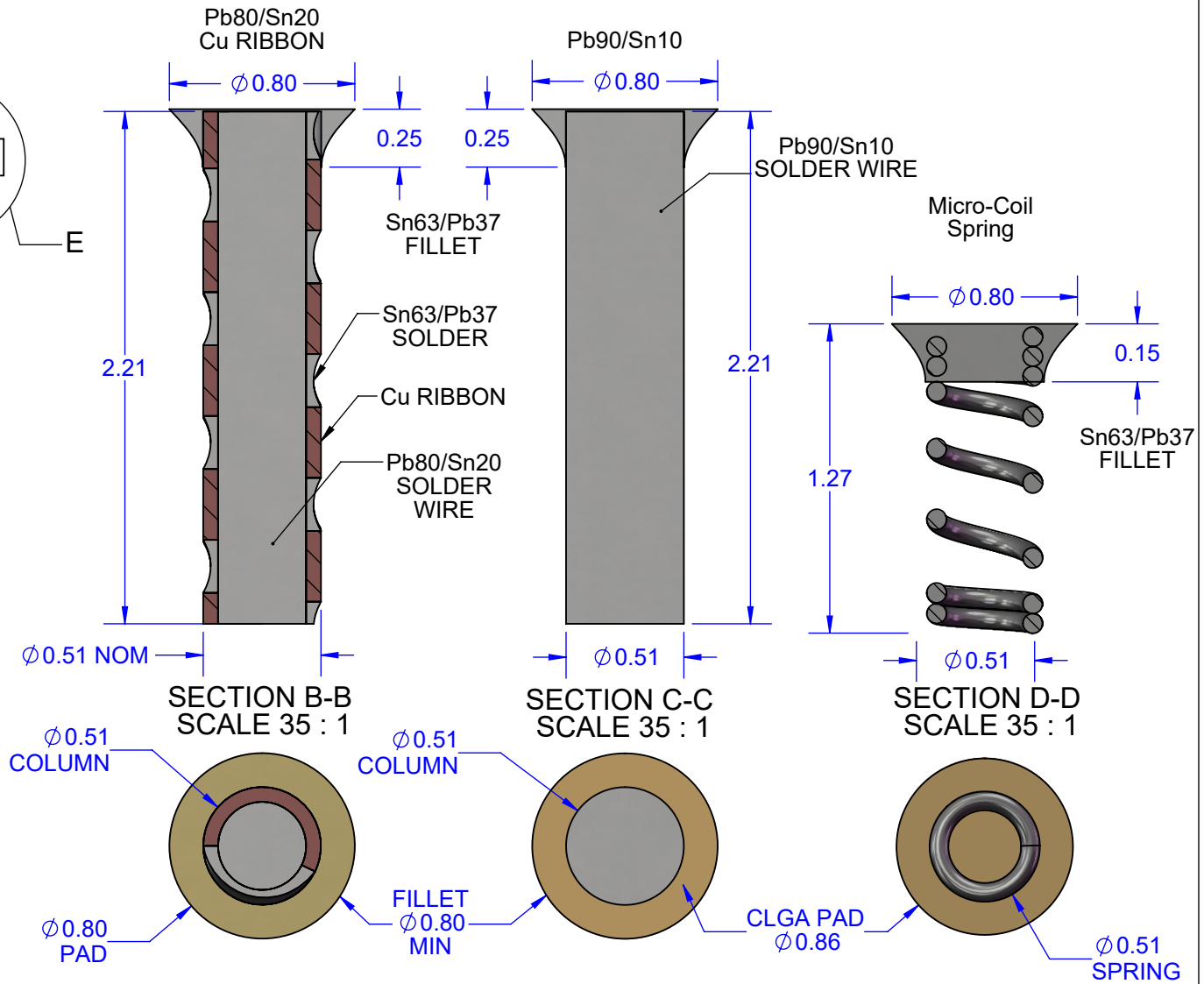
DETAIL E
SCALE 6 : 1



Pb80/Sn20
Cu RIBBON
SCALE 15:1

Pb90/Sn10
SCALE 15:1

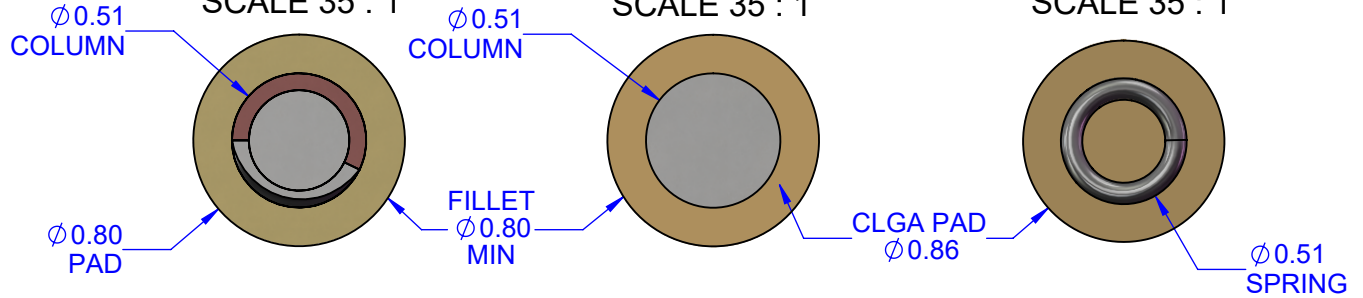
Micro-Coil
Spring
SCALE 20:1



SECTION B-B
SCALE 35 : 1

SECTION C-C
SCALE 35 : 1

SECTION D-D
SCALE 35 : 1



PART NUMBER OPTIONS		
PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1152T1.0-DC346D	YES	Pb80/Sn20 Cu RIBBON
CCGA1152T1.0A-DC346D	YES	Pb90/Sn10
CCGA1152T1.0M-DC346D	YES	Micro-Coil
CLGA1152T1.0-DC346D	YES	NONE

TopLine®

TITLE CCGA1152T1.0-DC346D
DUMMY COLUMN GRID ARRAY

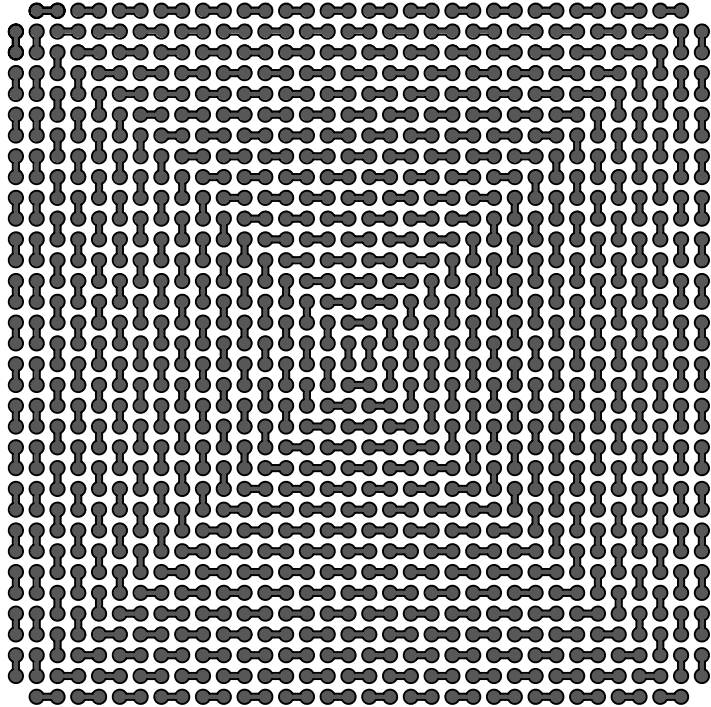
SCALE 2:1	SIZE A	DRAWING NO. 160150	REV A
--------------	-----------	-----------------------	----------

DO NOT SCALE DRAWING SHEET 5 OF 10

DAISY CHAIN PATTERN

COLUMN (BALL) VIEW

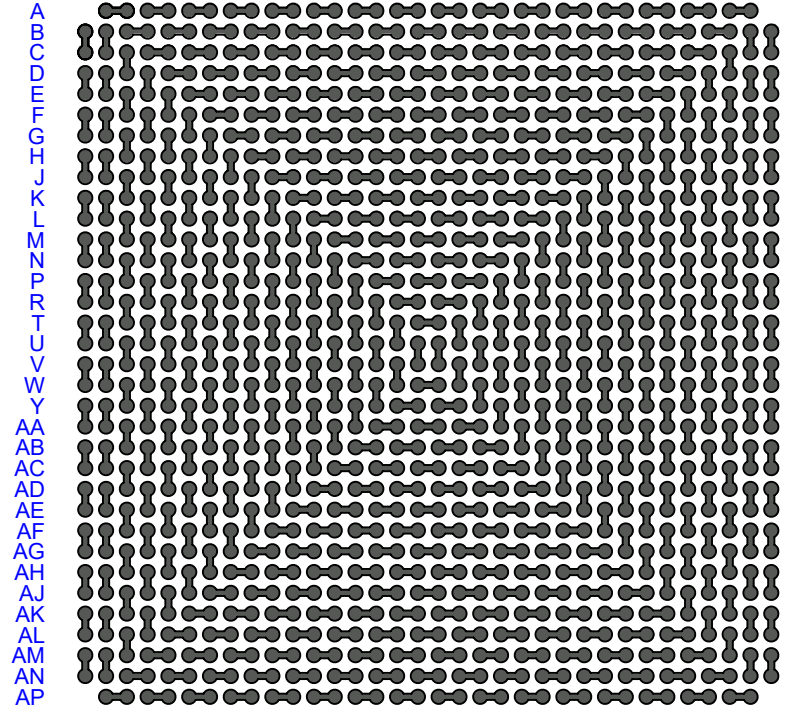
34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2
 33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1



A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
T
U
V
W
Y
AA
AB
AC
AD
AE
AF
AG
AH
AJ
AK
AL
AM
AN
AP

BOTTOM X-RAY VIEWED FROM TOP

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34
 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33



A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
T
U
V
W
Y
AA
AB
AC
AD
AE
AF
AG
AH
AJ
AK
AL
AM
AN
AP

TopLine®

TITLE CCGA1152T1.0-DC346D
 DUMMY COLUMN GRID ARRAY

SCALE 2.75:1	SIZE A	DRAWING NO. 160150	REV A
-----------------	-----------	-----------------------	----------

DO NOT SCALE DRAWING

SHEET 6 OF 10

NET LIST DAISY CHAIN CONNECTION TABLE (1/2)

function: SIGNAL

LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.
A2	AA11	AB18	AC26	AD33	AF6	AG13	AH20	AJ27	AK34	AM8	AN15	AP24	B29	D1	E5
A3	AB11	AB19	AD26	AE33	AG6	AG14	AH21	AJ28	AL34	AM9	AN16	AP25	B30	E1	F5
A4	AA13	AB20	AC28	AD34	AF8	AG15	AH22	AJ30	AL3	AM10	AN17	AP26	B31	D2	E6
A5	AB13	AB21	AD28	AE34	AG8	AG16	AH23	AK30	AM3	AM11	AN18	AP27	B32	E2	E7
A6	AA15	AB23	AC30	AE3	AF10	AG17	AH24	AJ32	AL5	AM12	AN19	AP28	B33	D4	E8
A7	AA16	AC23	AD30	AF3	AF11	AG18	AH25	AK32	AL6	AM13	AN20	AP29	C33	E4	E9
A8	AA17	AB25	AC32	AE5	AF12	AG19	AH26	AK1	AL7	AM14	AN21	AP30	B34	D5	E10
A9	AA18	AC25	AD32	AF5	AF13	AG20	AH27	AL1	AL8	AM15	AN22	AP31	C34	D6	E11
A10	AA19	AB27	AD1	AE7	AF14	AG21	AH29	AK2	AL9	AM16	AN23	AP32	C3	D7	E12
A11	AA20	AC27	AE1	AF7	AF15	AG22	AJ29	AL2	AL10	AM17	AN24	AP33	D3	D8	E13
A12	AA22	AB29	AD2	AE9	AF16	AG23	AH31	AK4	AL11	AM18	AN25	B1	C4	D9	E14
A13	AB22	AC29	AE2	AF9	AF17	AG24	AJ31	AL4	AL12	AM19	AN26	C1	C5	D10	E15
A14	AA24	AB31	AD4	AE11	AF18	AG25	AH33	AK6	AL13	AM20	AN27	B2	C6	D11	E16
A15	AB24	AC31	AE4	AE12	AF19	AG26	AJ33	AK7	AL14	AM21	AN28	C2	C7	D12	E17
A16	AA26	AB33	AD6	AE13	AF20	AG28	AH34	AK8	AL15	AM22	AN29	B3	C8	D13	E18
A17	AB26	AC33	AE6	AE14	AF21	AH28	AJ34	AK9	AL16	AM23	AN30	B4	C9	D14	E19
A18	AA28	AB34	AD8	AE15	AF22	AG30	AJ3	AK10	AL17	AM24	AN31	B5	C10	D15	E20
A19	AB28	AC34	AE8	AE16	AF23	AH30	AK3	AK11	AL18	AM25	AN32	B6	C11	D16	E21
A20	AA30	AC3	AD10	AE17	AF24	AG32	AJ5	AK12	AL19	AM26	AP2	B7	C12	D17	E22
A21	AB30	AD3	AE10	AE18	AF25	AH32	AK5	AK13	AL20	AM27	AP3	B8	C13	D18	E23
A22	AA32	AC5	AD12	AE19	AF27	AH1	AJ7	AK14	AL21	AM28	AP4	B9	C14	D19	E24
A23	AB32	AD5	AD13	AE20	AG27	AJ1	AJ8	AK15	AL22	AM29	AP5	B10	C15	D20	E25
A24	AB1	AC7	AD14	AE21	AF29	AH2	AJ9	AK16	AL23	AM30	AP6	B11	C16	D21	E26
A25	AC1	AD7	AD15	AE22	AG29	AJ2	AJ10	AK17	AL24	AM31	AP7	B12	C17	D22	E27
A26	AB2	AC9	AD16	AE23	AF31	AH4	AJ11	AK18	AL25	AM33	AP8	B13	C18	D23	E28
A27	AC2	AD9	AD17	AE24	AG31	AJ4	AJ12	AK19	AL26	AN33	AP9	B14	C19	D24	E29
A28	AB4	AC11	AD18	AE26	AF33	AH6	AJ13	AK20	AL27	AM34	AP10	B15	C20	D25	E30
A29	AC4	AD11	AD19	AF26	AG33	AJ6	AJ14	AK21	AL28	AN34	AP11	B16	C21	D26	F30
A30	AB6	AC13	AD20	AE28	AF34	AH8	AJ15	AK22	AL29	AN3	AP12	B17	C22	D27	E32
A31	AC6	AC14	AD21	AF28	AG34	AH9	AJ16	AK23	AL30	AN4	AP13	B18	C23	D28	F32
A32	AB8	AC15	AD22	AE30	AG3	AH10	AJ17	AK24	AL32	AN5	AP14	B19	C24	D29	F1
A33	AC8	AC16	AD23	AF30	AH3	AH11	AJ18	AK25	AM32	AN6	AP15	B20	C25	D30	G1
AA3	AB10	AC17	AD25	AE32	AG5	AH12	AJ19	AK26	AM1	AN7	AP16	B21	C26	D31	F2
AB3	AC10	AC18	AE25	AF32	AH5	AH13	AJ20	AK27	AN1	AN8	AP17	B22	C27	E31	G2
AA5	AB12	AC19	AD27	AF1	AG7	AH14	AJ21	AK28	AM2	AN9	AP18	B23	C28	D33	F4
AB5	AC12	AC20	AE27	AG1	AH7	AH15	AJ22	AK29	AN2	AN10	AP19	B24	C29	E33	G4
AA7	AB14	AC21	AD29	AF2	AG9	AH16	AJ23	AK31	AM4	AN11	AP20	B25	C30	D34	F6
AB7	AC15	AC22	AE29	AG2	AG10	AH17	AJ24	AL31	AM5	AN12	AP21	B26	C31	E34	G6
AA9	AB16	AC24	AD31	AF4	AG11	AH18	AJ25	AK33	AM6	AN13	AP22	B27	C32	E3	F7
AB9	AB17	AD24	AE31	AG4	AG12	AH19	AJ26	AL33	AM7	AN14	AP23	B28	D32	F3	F8

NET LIST CONTINUED NEXT PAGE



TITLE CCGA1152T1.0-DC346D
DUMMY COLUMN GRID ARRAY

SCALE NONE	SIZE A	DRAWING NO. 160150	REV A
---------------	-----------	-----------------------	----------

DO NOT SCALE DRAWING

SHEET 7 OF 10

NET LIST DAISY CHAIN CONNECTION TABLE (2/2)

function: SIGNAL

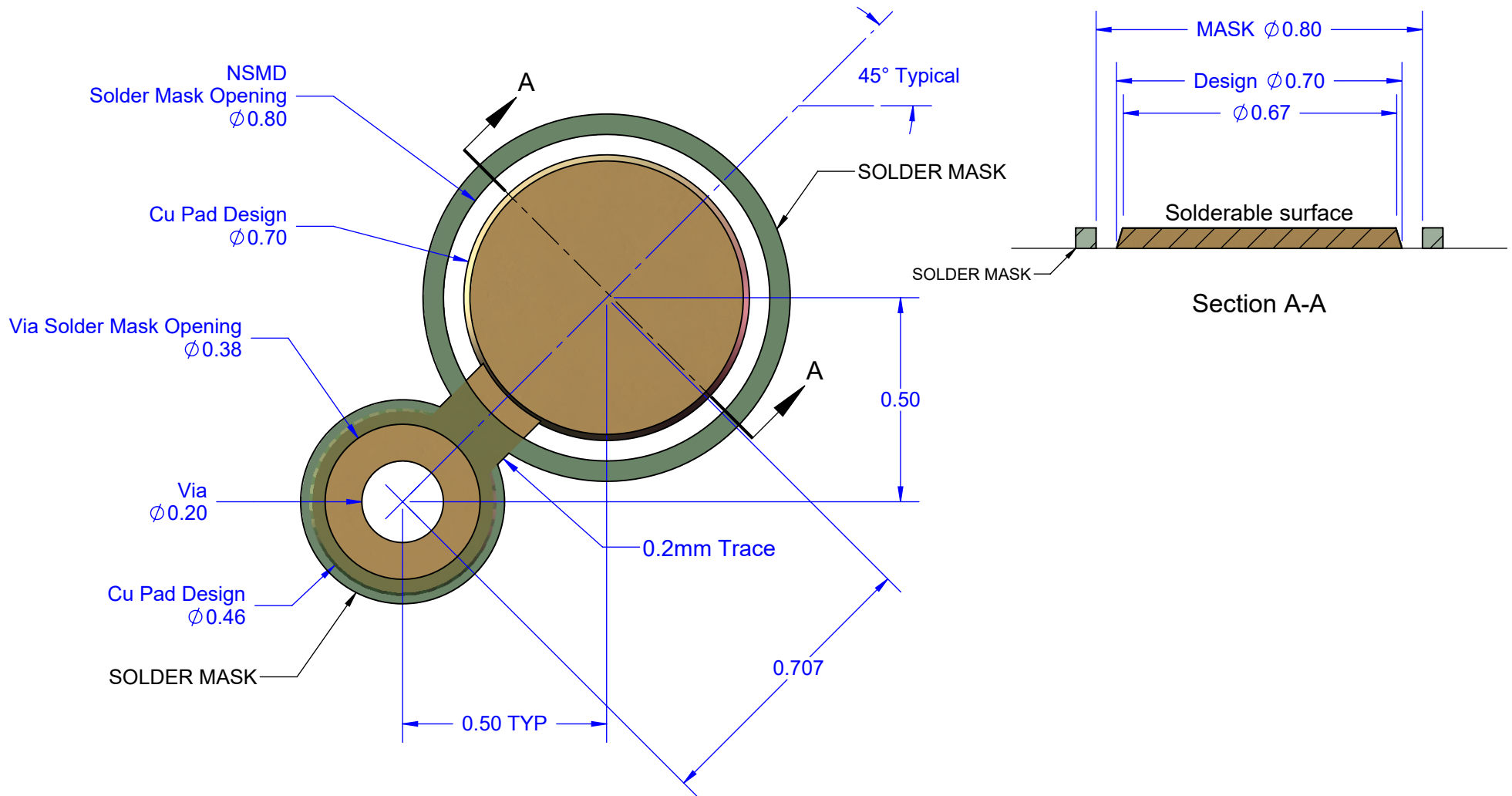
LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.	LGA No.
F9	G14	H19	J24	K29	M1	N5	P10	R15	T19	U24	V31	Y4		
F10	G15	H20	J25	L29	N1	P5	R10	T15	U19	V24	W31	AA4		
F11	G16	H21	J26	K31	M2	N7	P12	R16	T21	U26	V33	Y6		
F12	G17	H22	K26	L31	N2	P7	R12	R17	U21	V26	W33	AA6		
F13	G18	H23	J28	K33	M4	N9	P14	R18	T23	U28	V34	Y8		
F14	G19	H24	K28	L33	N4	P9	R14	R19	U23	V28	W34	AA8		
F15	G20	H25	J30	K34	M6	N11	P15	R20	T25	U30	W3	Y10		
F16	G21	H26	K30	L34	N6	P11	P16	T20	U25	V30	Y3	AA10		
F17	G22	H27	J32	L3	M8	N13	P17	R22	T27	U32	W5	Y12		
F18	G23	H27	K32	M3	N8	P13	P18	T22	U27	V32	Y5	AA12		
F19	G24	H29	K1	L5	M10	N14	P19	R24	T29	V1	W7	Y14		
F20	G25	J29	L1	M5	N10	N15	P20	T24	U29	W1	Y7	AA14		
F21	G26	H31	K2	L7	M12	N16	P21	R26	T31	V2	W9	Y16		
F22	G27	J31	L2	M7	N12	N17	R21	T26	U31	W2	Y9	Y17		
F23	G28	H33	K4	L9	M13	N18	P23	R28	T33	V4	W11	Y18		
F24	H28	J33	L4	M9	M14	N19	R23	T28	U33	W4	Y11	Y19		
F25	G30	H34	K6	L11	M15	N20	P25	R30	T34	V6	W13	Y21		
F26	H30	J34	L6	M11	M16	N21	R25	T30	U34	W6	Y13	AA21		
F27	G32	J3	K8	L12	M17	N22	P27	R32	U3	V8	W15	Y23		
F28	H32	K3	L8	L13	M18	P22	R27	T32	V3	W8	Y15	AA23		
F29	H1	J5	K10	L14	M19	N24	P29	T1	U5	V10	W17	Y25		
G29	J1	K5	L10	L15	M20	P24	R29	U1	V5	W10	W18	AA25		
F31	H2	J7	K11	L16	M21	N26	P31	T2	U7	V12	W20	Y27		
G31	J2	K7	K12	L17	M22	P26	R31	U2	V7	W12	Y20	AA27		
F33	H4	J9	K13	L18	M23	N28	P33	T4	U9	V14	W22	Y29		
G33	J4	K9	K14	L19	N23	P28	R33	U4	V9	W14	Y22	AA29		
F34	H6	J10	K15	L20	M25	N30	P34	T6	U11	V16	W24	Y31		
G34	J6	J11	K16	L21	N25	P30	R34	U6	V11	W16	Y24	AA31		
G3	H8	J12	K17	L22	M27	N32	R3	T8	U13	V19	W26	Y33		
H3	J8	J13	K18	L23	N27	P32	T3	U8	V13	W19	Y26	AA33		
G5	H9	J14	K19	L24	M29	P1	R5	T10	U15	V21	W28	Y34		
H5	H10	J15	K20	M24	N29	R1	T5	U10	V15	W21	Y28	AA34		
G7	H11	J16	K21	L26	M31	P2	R7	T12	U17	V23	W30			
H7	H12	J17	K22	M26	N31	R2	T7	U12	V17	W23	Y30			
G8	H13	J18	K23	L28	M33	P4	R9	T14	U18	V25	W32		S/R	NC
G9	H14	J19	K24	M28	N33	R4	T9	U14	V18	W25	Y32		D/A	NC
G10	H15	J20	K25	L30	M34	P6	R11	T16	U20	V27	Y1			
G11	H16	J21	L25	M30	N34	R6	T11	U16	V20	W27	AA1			
G12	H17	J22	K27	L32	N3	P8	R13	T17	U22	V29	Y2			
G13	H18	J23	L27	M32	P3	R8	T13	T18	V22	W29	AA2			



TITLE			
CCGA1152T1.0-DC346D DUMMY COLUMN GRID ARRAY			
SCALE	SIZE	DRAWING NO.	REV
NONE	A	160150	A
DO NOT SCALE DRAWING			SHEET 8 OF 10

PCB PAD DESIGN RULES CCGA PITCH 1.0MM

Cu PAD SIDE VIEW



NOTES:

1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED.
2. SOLDERABLE SURFACE $\phi 0.67$ IS THE FUNCTIONAL SURFACE OF Cu PAD.
3. $\phi 0.70$ IS THE DESIGN DIMENSION OF Cu PAD.
4. PCB BOARD DIMENSIONS ARE PRESENTED ONLY AS A GUIDELINE.
DESIGNERS SHOULD USE THEIR OWN EXPERIENCE WHEN DESIGNING PCB.

TopLine®

TITLE CCGA1152T1.0-DC346D
DUMMY COLUMN GRID ARRAY

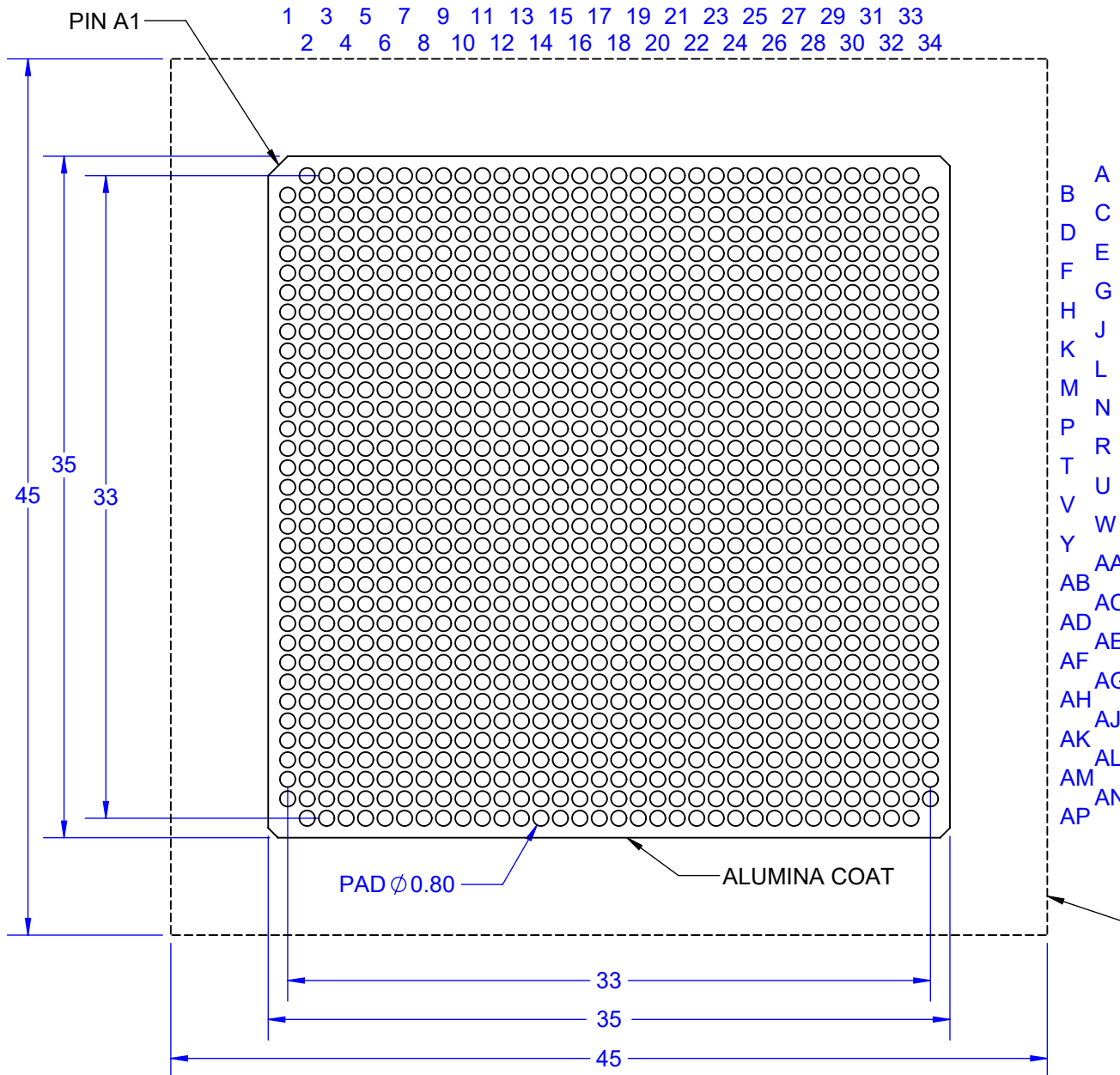
SCALE	SIZE	DRAWING NO.	REV
70:1	A	160150	A

DO NOT SCALE DRAWING

SHEET 9 OF 10

PCB LAND ARRAY

SHOWN WITHOUT DAISY CHAIN



SOLDER PASTE STENCIL	
Thickness	190~203µm 7.5~8.0 mil
Aperture	1:1

SOLDER PASTE VOLUME	
Nominal	0.06mm ³ 4000 mils ³
Maximum	0.078mm ³ 5000 mils ³
Minimum	0.031mm ³ 2000 mils ³

SOLDER PASTE	
Sn63/Pb37 90% solder by weight 50% solids by volume Type T3 Particle Size Flux ROL0 No Clean Paste (optional)	

CLEARANCE 5.0 MIN
ADJACENT COMPONENTS

- NOTES:
1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED.
 2. SOLDERABLE SURFACE Ø0.67 IS THE FUNCTIONAL SURFACE OF Cu PAD.
 3. Ø0.70 IS THE DESIGN DIMENSION OF Cu PAD.
 4. PCB BOARD DIMENSIONS ARE PRESENTED ONLY AS A GUIDELINE. DESIGNERS SHOULD USE THEIR OWN EXPERIENCE WHEN DESIGNING PCB.

TopLine®

TITLE CCGA1152T1.0-DC346D DUMMY COLUMN GRID ARRAY			
SCALE 3:1	SIZE A	DRAWING NO. 160150	REV A
DO NOT SCALE DRAWING		SHEET 10 OF 10	