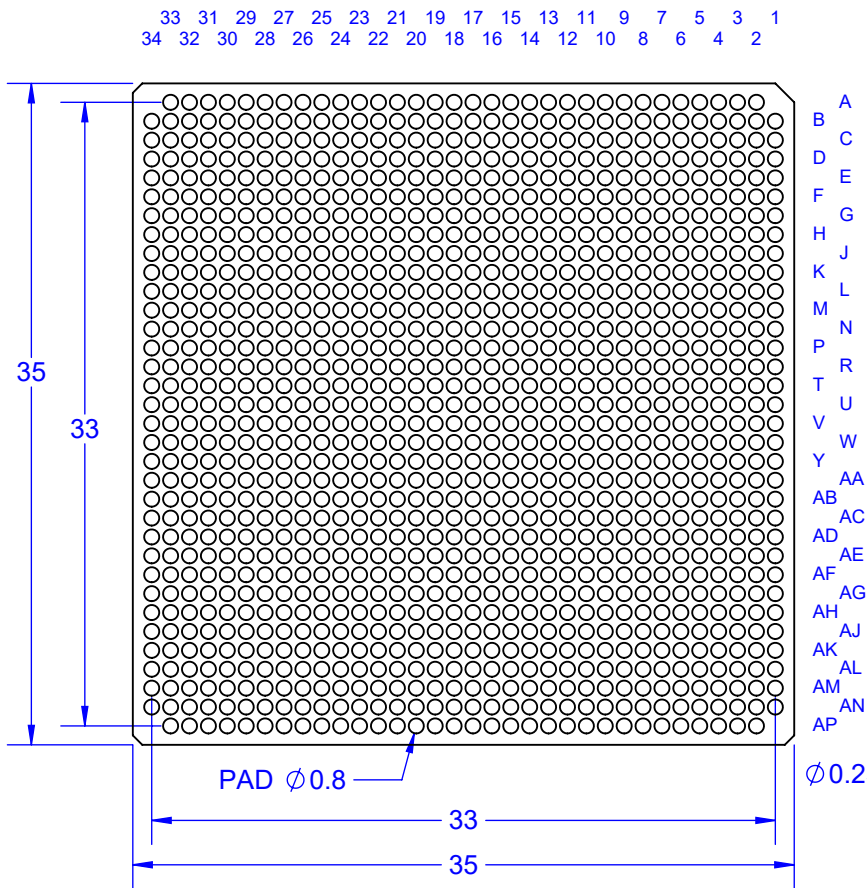
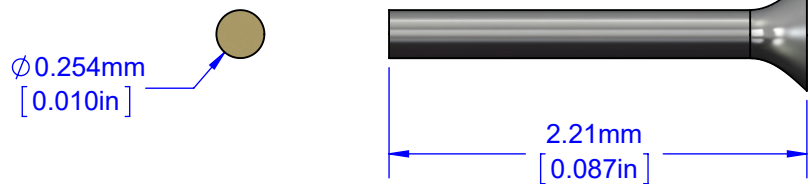
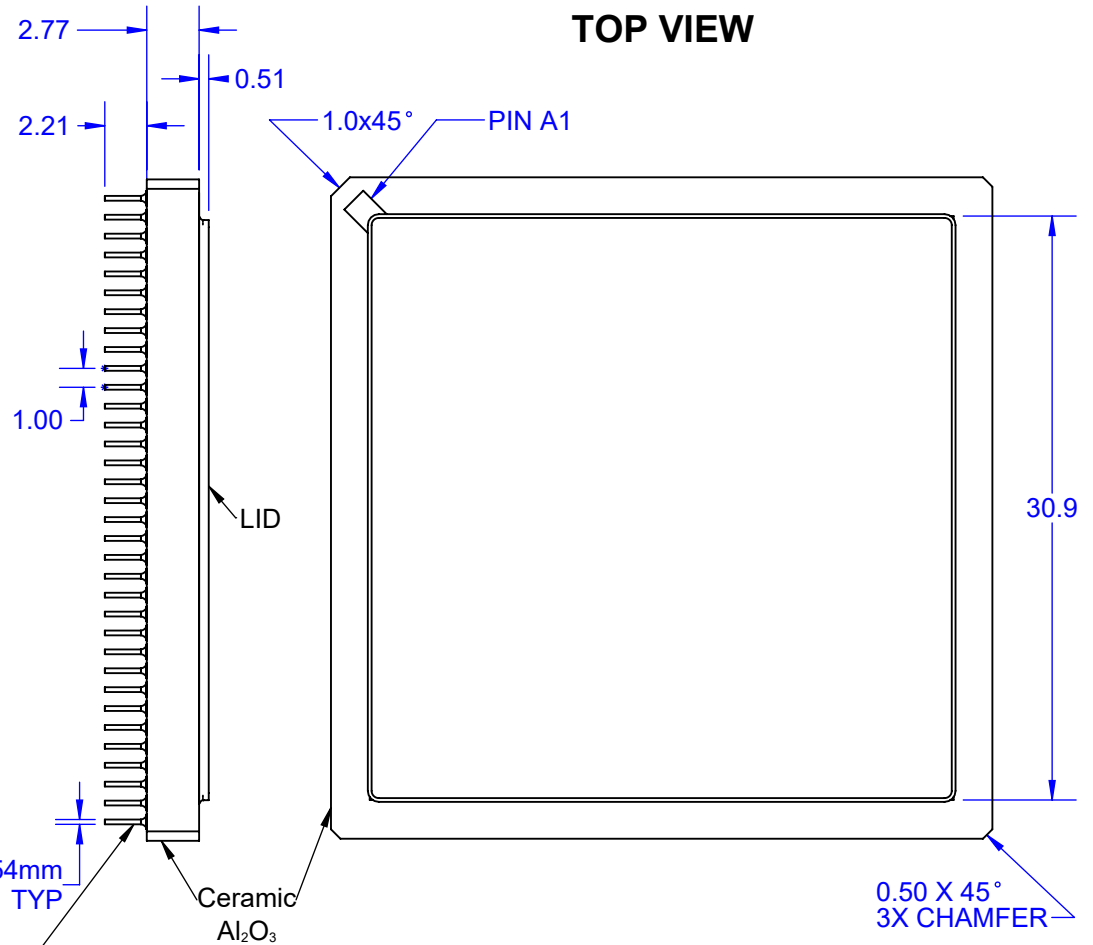


### BOTTOM VIEW



### TOP VIEW

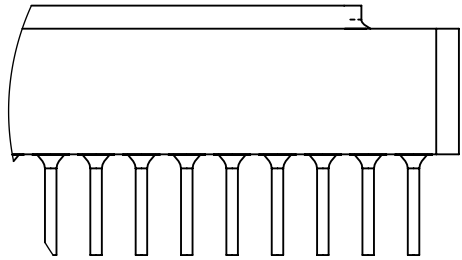
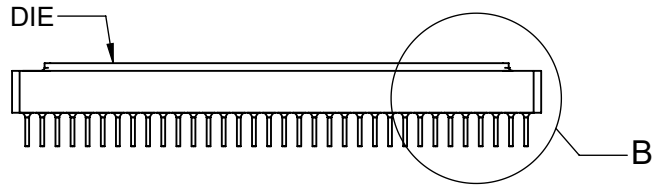


**OFHC-101  
COPPER COLUMNS  
ELECTROPLATED Sn60/Pb40**

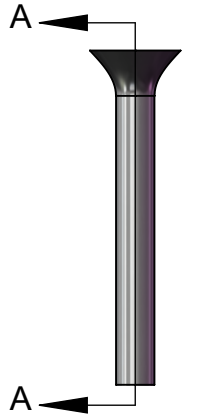
Notes: (Unless Otherwise Specified).  
1) DIMENSIONS mm [INCH].

|             |          |   |      |             |              |
|-------------|----------|---|------|-------------|--------------|
| APPROVALS   | DATE     | <b>TopLine®</b>   |      |             |              |
| DRAWN T. Au | 06/09/17 |   |      |             |              |
| ENG M. Hart | 06/09/17 | TITLE CCGA1152T1.0C10-DC346D<br>DUMMY COLUMN GRID ARRAY |      |             |              |
| MFG         |          | SCALE   | SIZE | DRAWING NO. | REV          |
| QA          |          | 2.5:1   | A    | 160156      | A            |
| CUST        |          | DO NOT SCALE DRAWING                                    |      |             | SHEET 1 OF 8 |
| REVISED     |          |   |      |             |              |

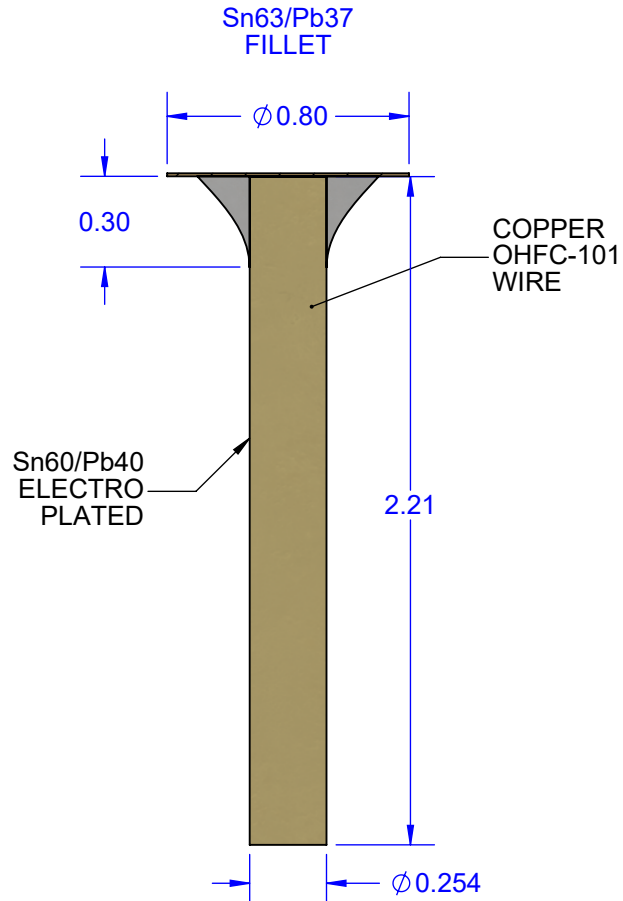
# SOLDER PIN



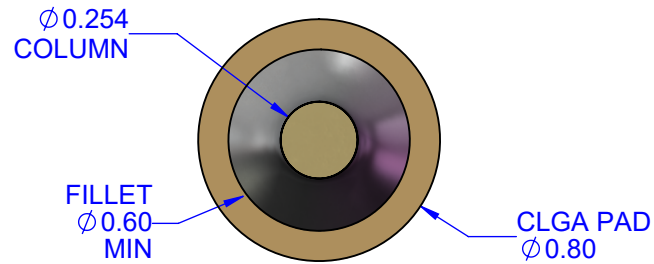
DETAIL B  
SCALE 6 : 1



SCALE 20:1



SECTION A-A  
SCALE 40 : 1

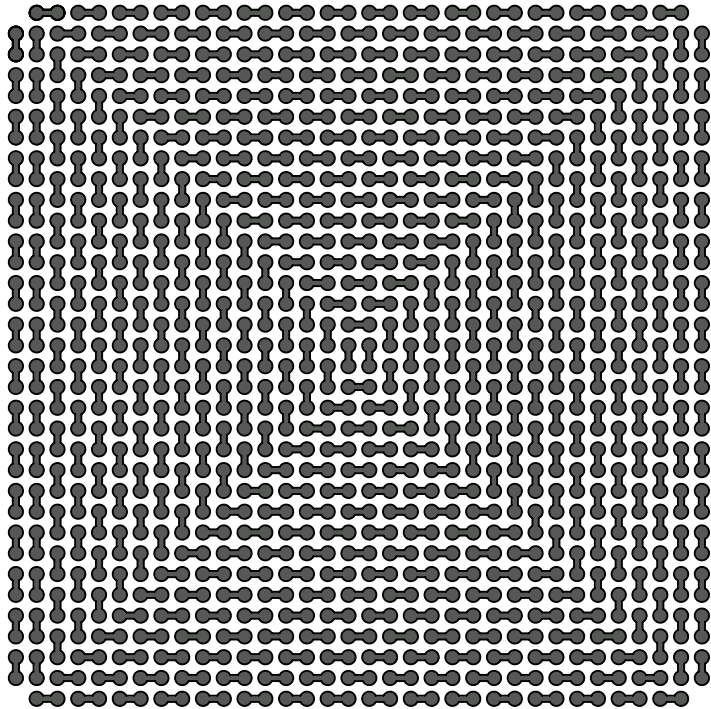


|   |           |                       |              |
|---|-----------|-----------------------|--------------|
| <b>TopLine®</b>   |           |                       |              |
| TITLE CCGA1152T1.0C10-DC346D<br>DUMMY COLUMN GRID ARRAY |           |                       |              |
| SCALE<br>2:1  | SIZE<br>A | DRAWING NO.<br>160156 | REV<br>A     |
| DO NOT SCALE DRAWING                                    |           |                       | SHEET 2 OF 8 |

# DAISY CHAIN PATTERN

## COLUMN VIEW

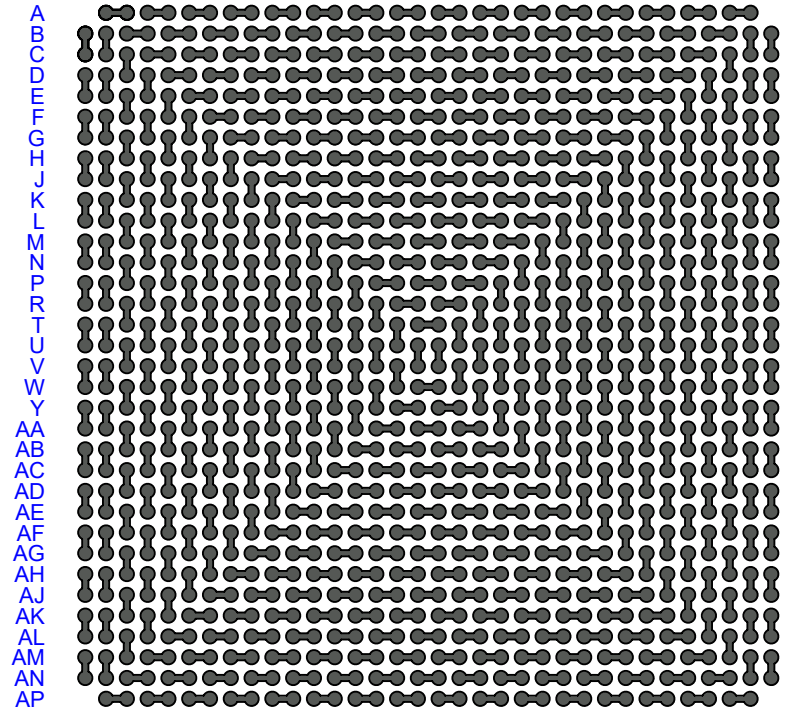
34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2  
 33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1



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  
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W  
Y  
AA  
AB  
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AE  
AF  
AG  
AH  
AJ  
AK  
AL  
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AN  
AP

**TopLine®**

TITLE CCGA1152T1.0C10-DC346D  
 DUMMY COLUMN GRID ARRAY

|                 |           |                       |          |
|-----------------|-----------|-----------------------|----------|
| SCALE<br>2.75:1 | SIZE<br>A | DRAWING NO.<br>160156 | REV<br>A |
|-----------------|-----------|-----------------------|----------|

DO NOT SCALE DRAWING

SHEET 3 OF 8

## 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

|   |           |                       |              |
|---|-----------|-----------------------|--------------|
| <b>TopLine®</b>   |           |                       |              |
| TITLE CCGA1152T1.0C10-DC346D<br>DUMMY COLUMN GRID ARRAY |           |                       |              |
| SCALE<br>NONE   | SIZE<br>A | DRAWING NO.<br>160156 | REV<br>A     |
| DO NOT SCALE DRAWING                                    |           |                       | SHEET 4 OF 8 |

## 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. |    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| 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     | J27     | 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     |         |         |    |



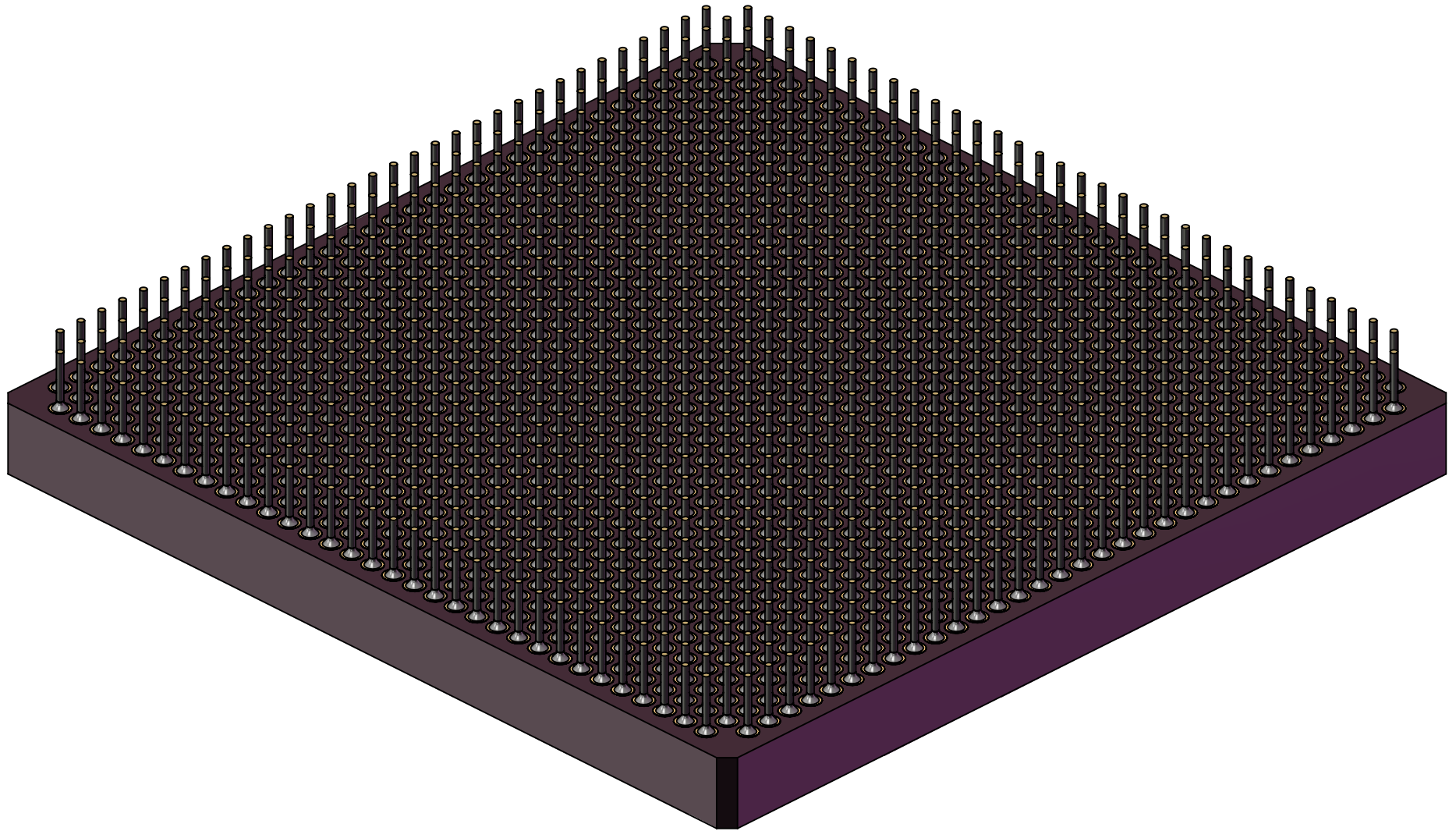
TITLE CCGA1152T1.0C10-DC346D  
DUMMY COLUMN GRID ARRAY

|               |           |                       |          |
|---------------|-----------|-----------------------|----------|
| SCALE<br>NONE | SIZE<br>A | DRAWING NO.<br>160156 | REV<br>A |
|---------------|-----------|-----------------------|----------|

DO NOT SCALE DRAWING

SHEET 5 OF 8

# MODEL COLUMN VIEW



**TopLine®**

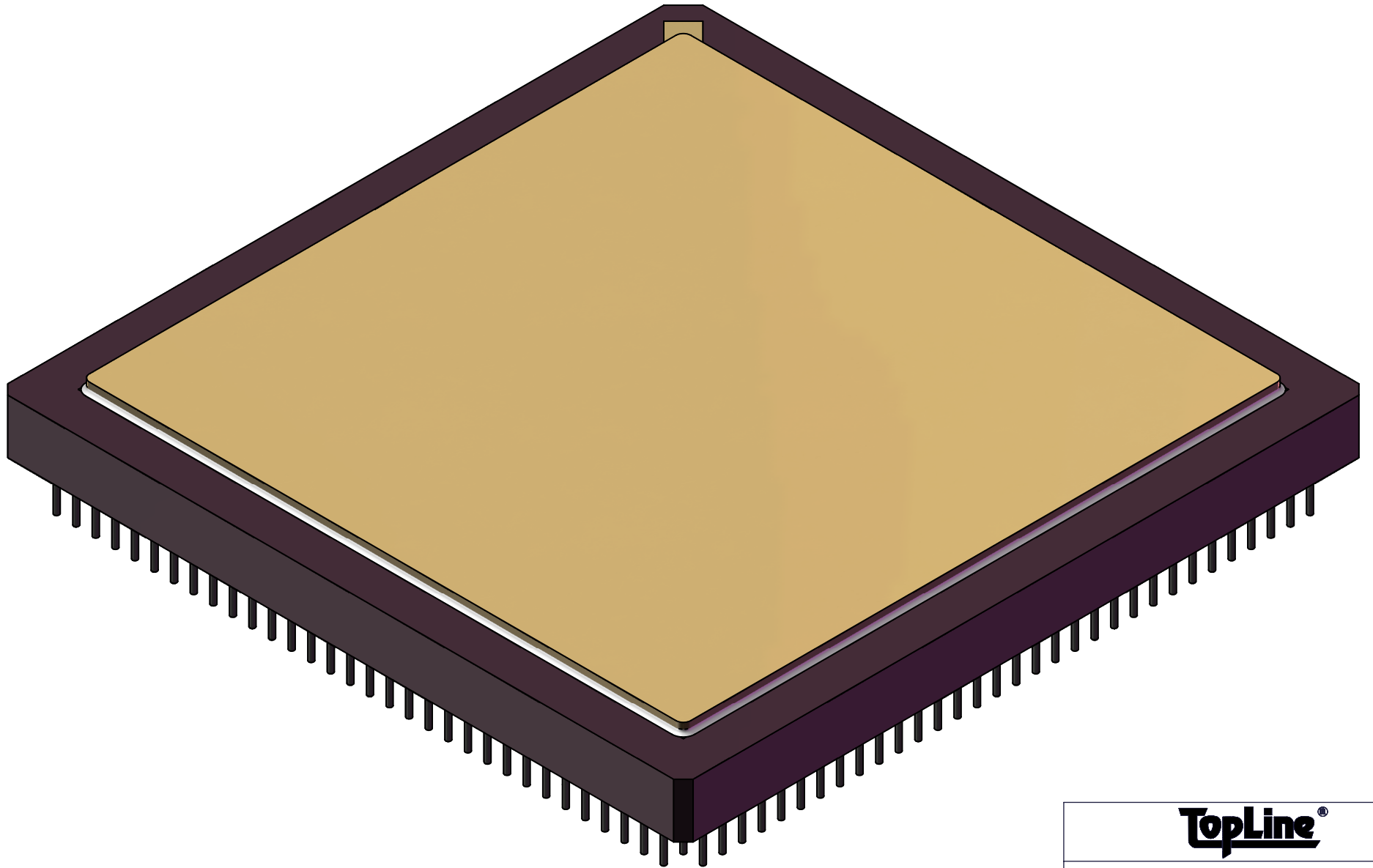
TITLE CCGA1152T1.0C10-DC346D  
DUMMY COLUMN GRID ARRAY

| SCALE | SIZE | DRAWING NO. | REV |
|-------|------|-------------|-----|
| 5:1   | A    | 160156      | A   |

DO NOT SCALE DRAWING

SHEET 6 OF 8

MODEL  
TOP VIEW



**TopLine**<sup>®</sup>

TITLE CCGA1152T1.0C10-DC346D  
DUMMY COLUMN GRID ARRAY

|              |           |                       |          |
|--------------|-----------|-----------------------|----------|
| SCALE<br>5:1 | SIZE<br>A | DRAWING NO.<br>160156 | REV<br>A |
|--------------|-----------|-----------------------|----------|

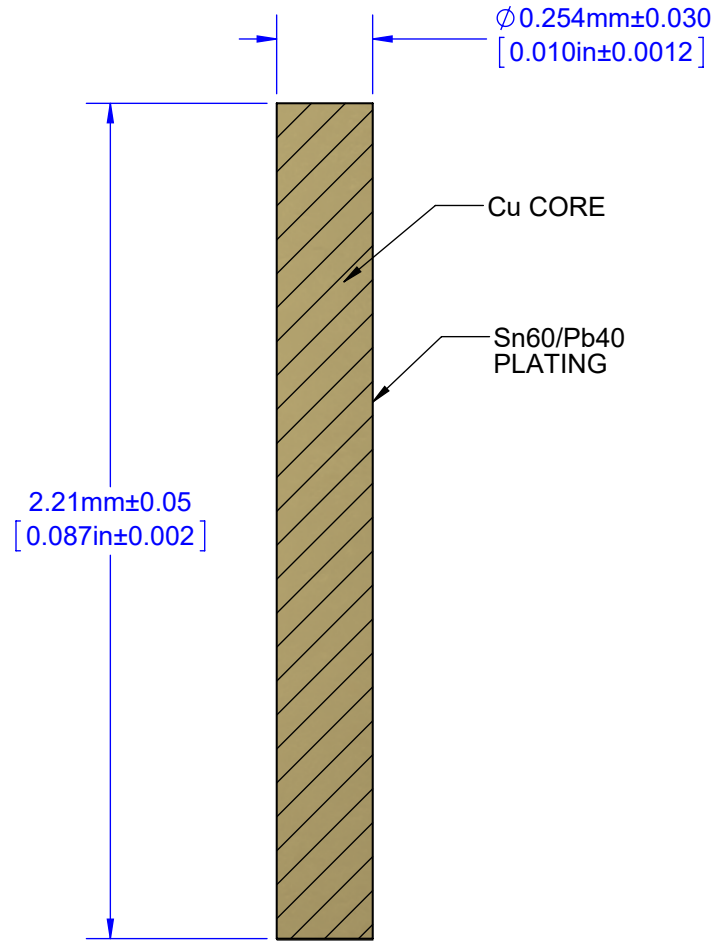
DO NOT SCALE DRAWING

SHEET 7 OF 8

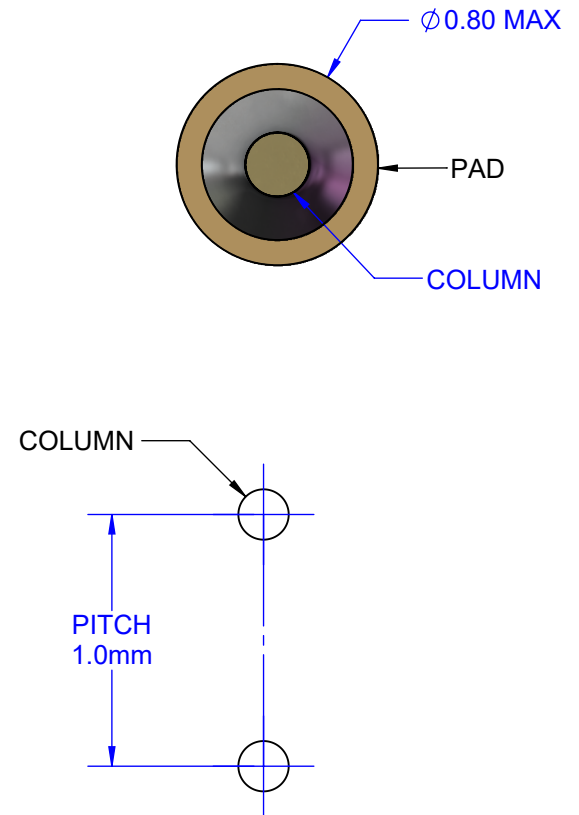
### EXTERIOR VIEW



### SECTION VIEW



### CCGA - LAND PAD



### END VIEW

- NOTES:
1. DIMENSIONS IN mm [INCHES].
  2. MATERIAL: Cu COPPER OFHC ANNEALED.
  3. PLATING: Sn60/Pb40 3.0~5.0 $\mu\text{m}$  [100~200 MICRO-INCH].

|  |           |                       |              |
|--|-----------|-----------------------|--------------|
| <b>TopLine<sup>®</sup></b>                 |           |                       |              |
| TITLE<br>CU101P10x87<br>CCGA COPPER COLUMN |           |                       |              |
| SCALE<br>50:1                              | SIZE<br>A | DRAWING NO.<br>160156 | REV<br>A     |
| DO NOT SCALE DRAWING                       |           |                       | SHEET 8 OF 8 |