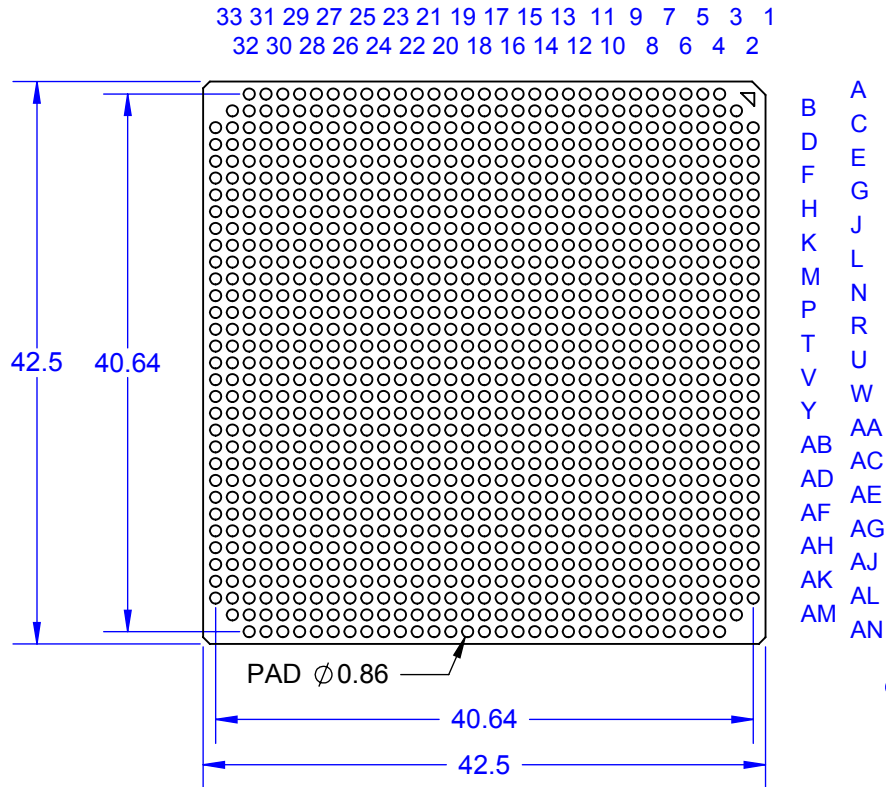
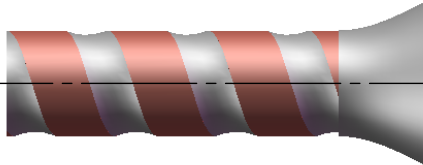


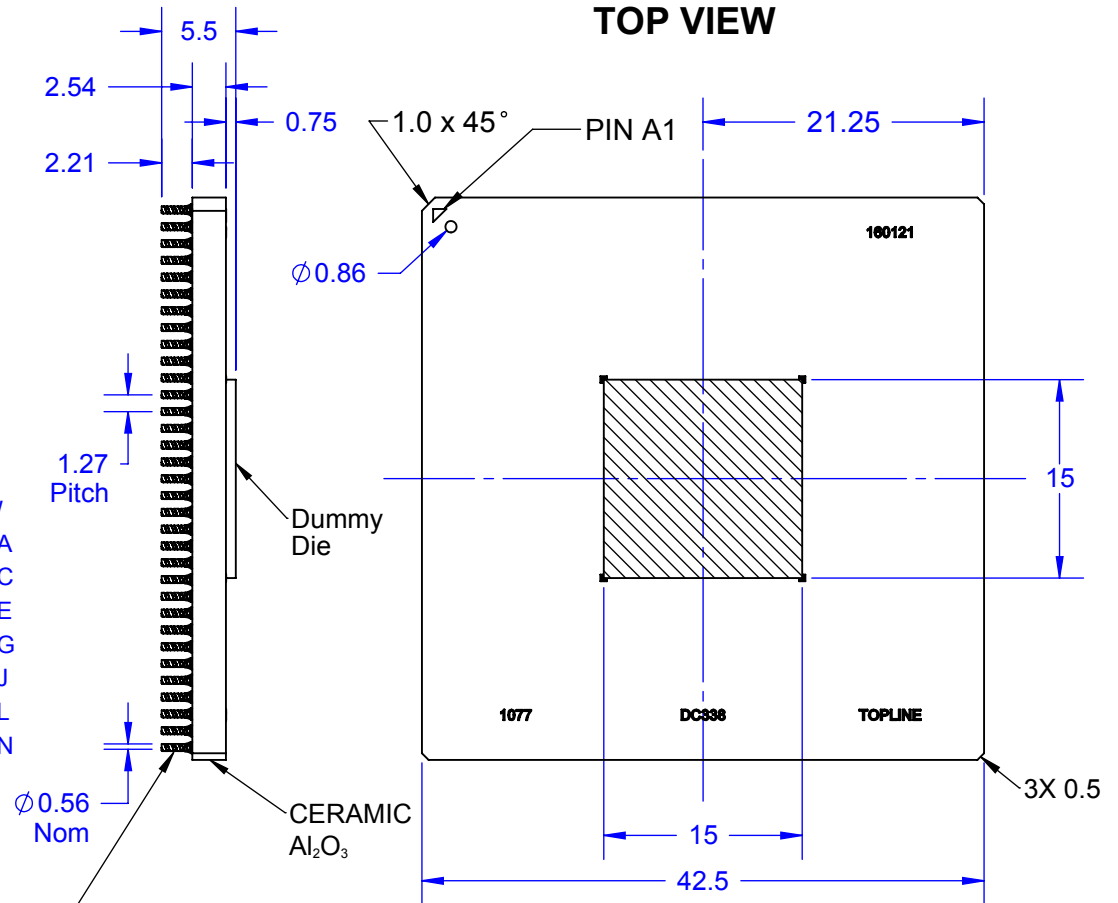
BOTTOM VIEW



Pb80/Sn20
Cu RIBBON
COLUMNS



TOP VIEW




Notes: (Unless Otherwise Specified)

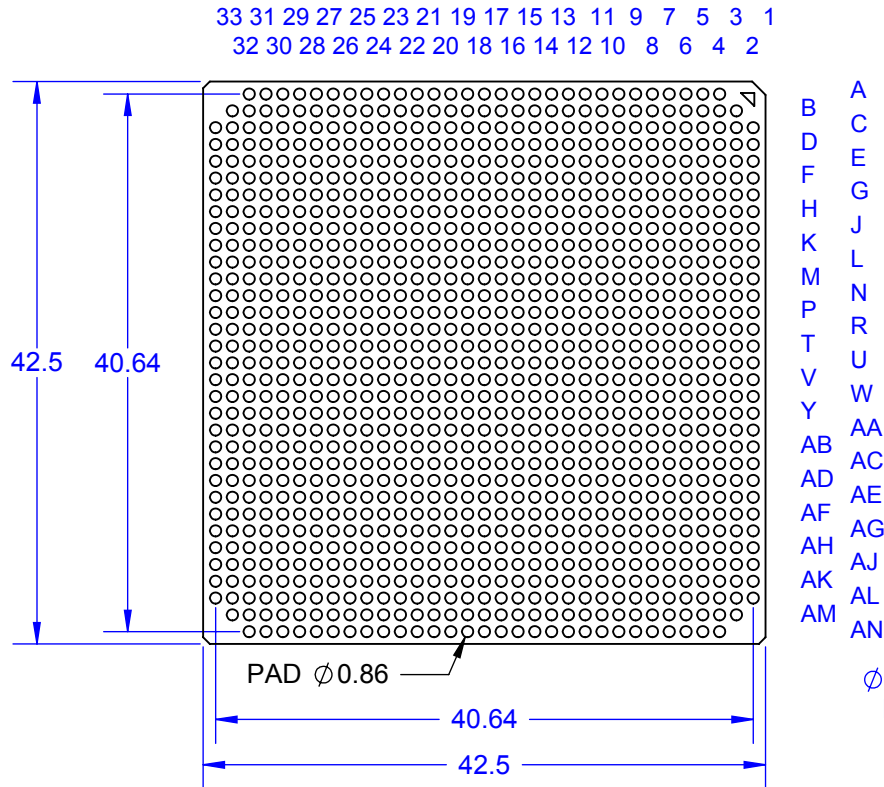
- 1) DIMENSION ARE IN mm.
- 2) SHOWN WITH Pb80/Sn20 Cu RIBBON COLUMNS.
- 3) 1077 ACTIVE COLUMNS.
- 4) PART NUMBER CCGA1077T1.27-DC338F.

PART NUMBER OPTIONS

PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1077T1.27-DC338F	YES	Pb80/Sn20 Cu RIBBON
CCGA1077T1.27A-DC338F	YES	Pb90/Sn10
CCGA1077T1.27M-DC338F	YES	Micro-Coil
CLGA1077T1.27-DC338F	YES	NONE
CLGA1077T1.27-DC338	NO	NONE

APPROVALS	DATE				
DRAWN T.Au	09/19/14				
ENG M. Hart	09/19/14	TITLE CCGA1077T1.27-DC338 DUMMY COLUMN GRID ARRAY			
MFG		SCALE 1.75:1	SIZE A	DRAWING NO. 160120	REV A
QA		DO NOT SCALE DRAWING			SHEET 1 OF 12
CUST					
REVISED					

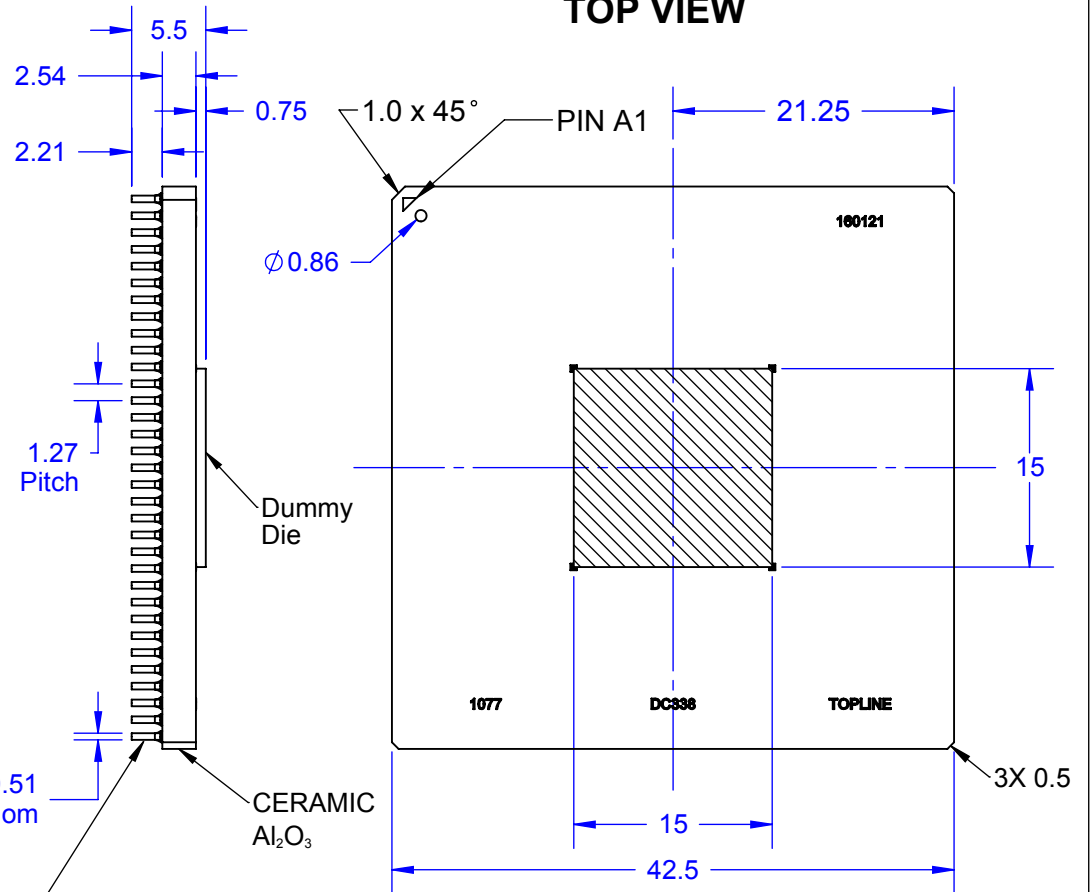
BOTTOM VIEW



Pb90/Sn10
WIRE COLUMNS



TOP VIEW




Notes: (Unless Otherwise Specified)

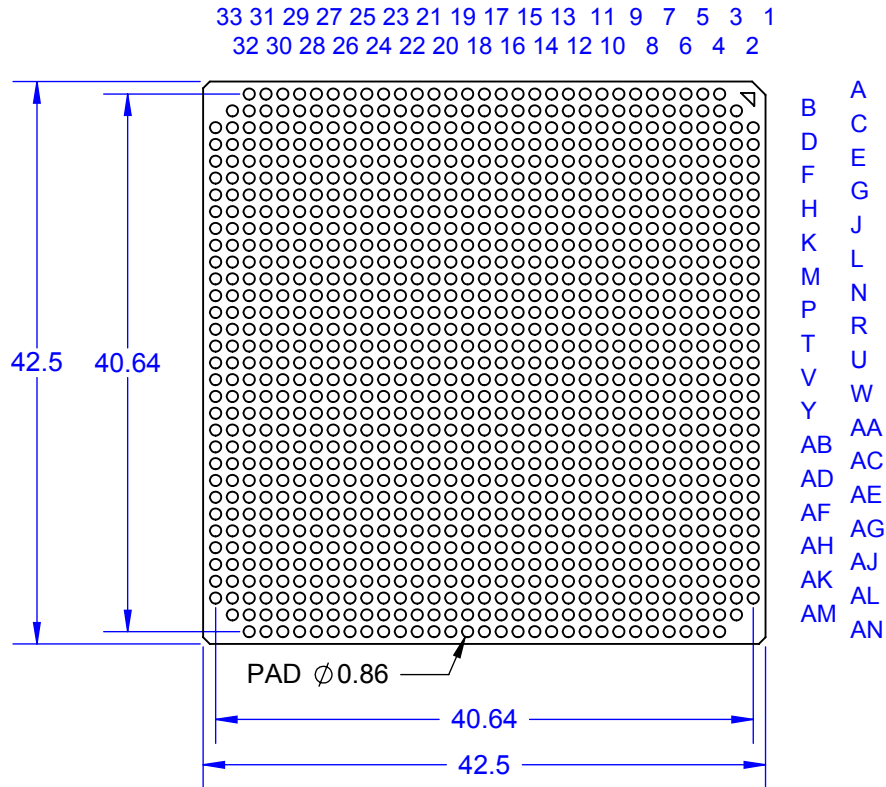
- 1) DIMENSION ARE IN mm.
- 2) SHOWN WITH Pb90/Sn10 WIRE COLUMNS.
- 3) 1077 ACTIVE COLUMNS.
- 4) PART NUMBER CCGA1077T1.27A-DC338F.

PART NUMBER OPTIONS

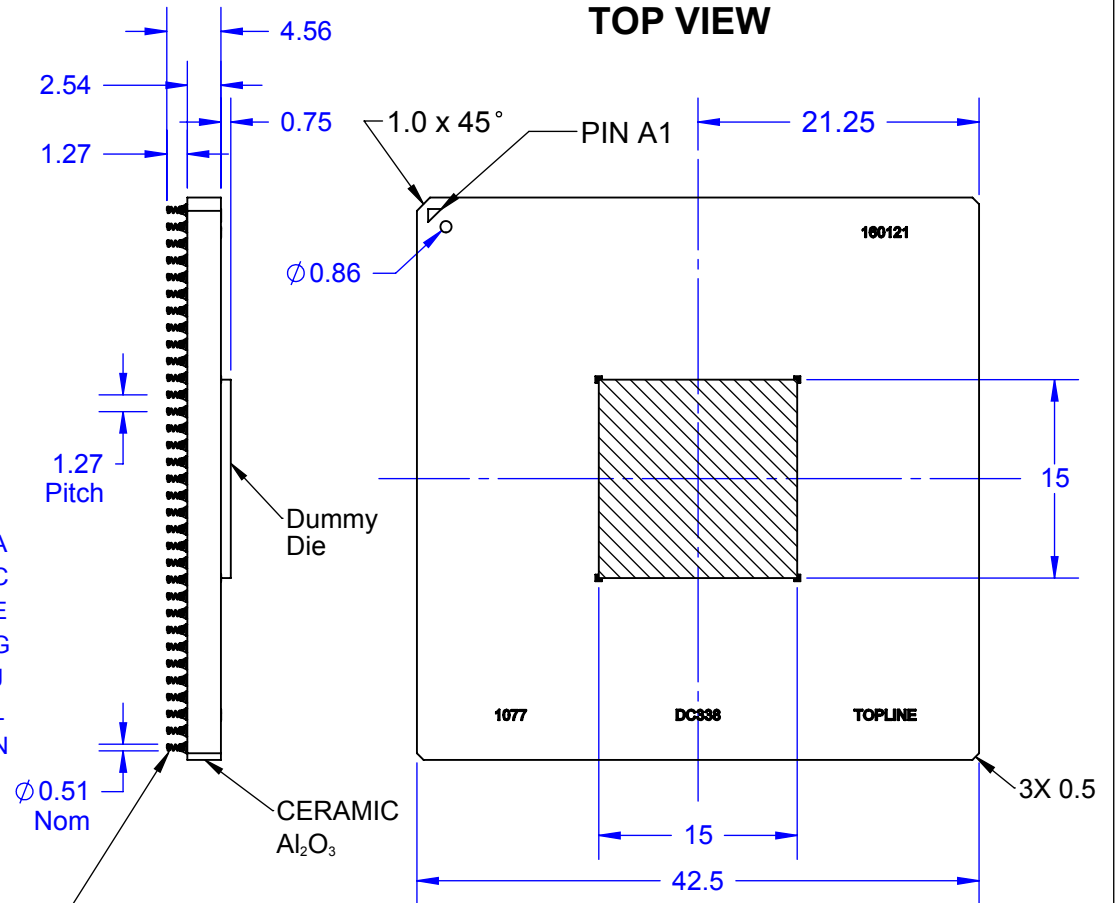
PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1077T1.27-DC338F	YES	Pb80/Sn20 Cu RIBBON
CCGA1077T1.27A-DC338F	YES	Pb90/Sn10
CCGA1077T1.27M-DC338F	YES	Micro-Coil
CLGA1077T1.27-DC338F	YES	NONE
CLGA1077T1.27-DC338	NO	NONE

APPROVALS	DATE				
DRAWN T.Au	09/19/14				
ENG M. Hart	09/19/14	TITLE CCGA1077T1.27-DC338 DUMMY COLUMN GRID ARRAY			
MFG		SCALE 1.75:1	SIZE A	DRAWING NO. 160120	REV A
QA					
CUST					
REVISED		DO NOT SCALE DRAWING			SHEET 2 OF 12

BOTTOM VIEW



TOP VIEW



Notes: (Unless Otherwise Specified)

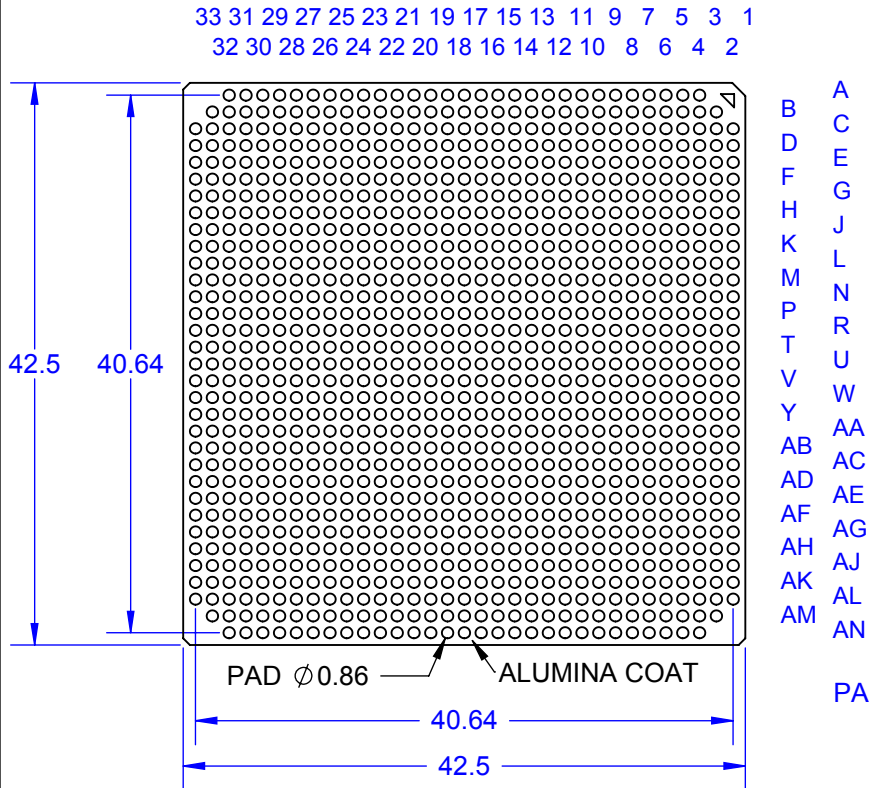
- 1) DIMENSION ARE IN mm.
- 2) SHOWN WITH MICRO-COIL SPRING.
- 3) 1077 ACTIVE COLUMNS.
- 4) PART NUMBER CCGA1077T1.27M-DC338F.

PART NUMBER OPTIONS

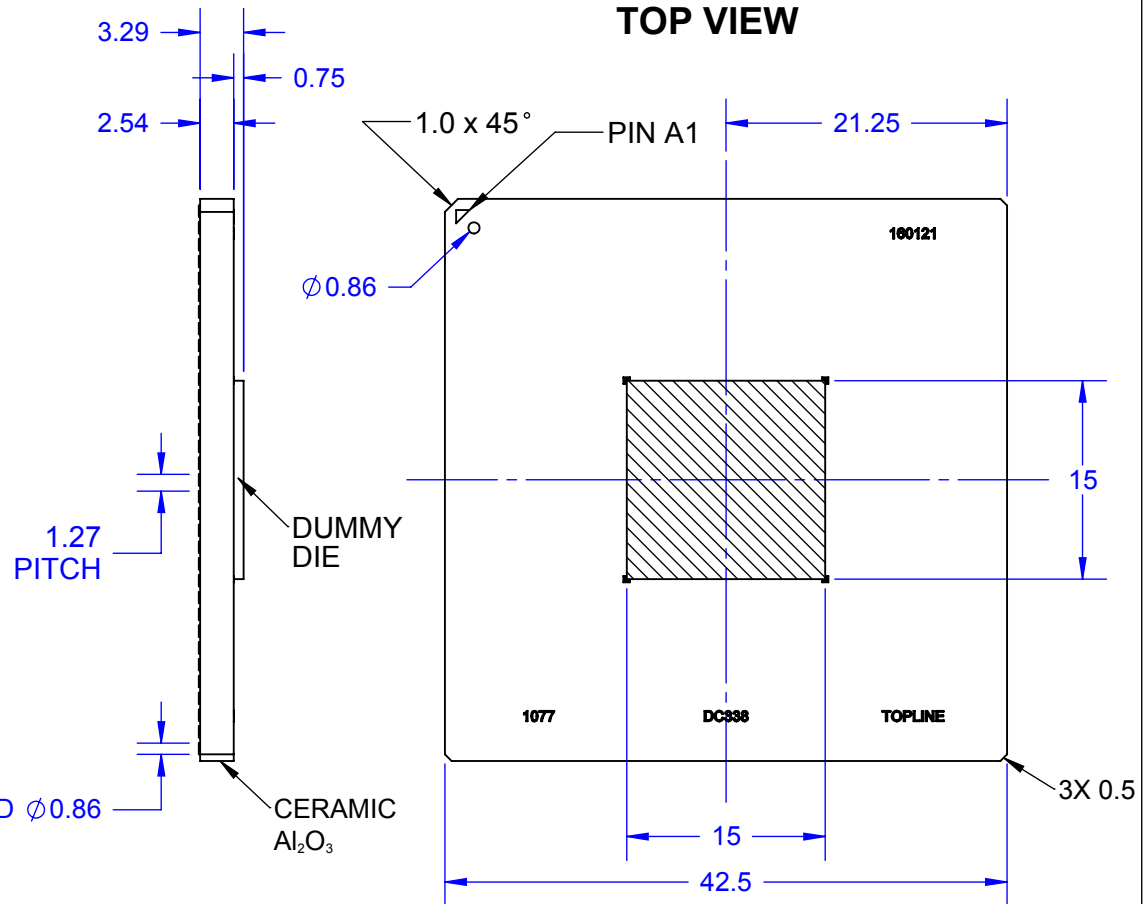
PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1077T1.27-DC338F	YES	Pb80/Sn20 Cu RIBBON
CCGA1077T1.27A-DC338F	YES	Pb90/Sn10
CCGA1077T1.27M-DC338F	YES	Micro-Coil
CLGA1077T1.27-DC338F	YES	NONE
CLGA1077T1.27-DC338	NO	NONE

APPROVALS	DATE				
DRAWN T. Au	09/19/14				
ENG M. Hart	09/19/14	TITLE CCGA1077T1.27-DC338 DUMMY COLUMN GRID ARRAY			
MFG		SCALE 1.75:1	SIZE A	DRAWING NO. 160120	REV A
QA		DO NOT SCALE DRAWING			SHEET 3 OF 12
CUST					
REVISED					

BOTTOM VIEW



TOP VIEW



NOTES:

1. PLATING TOP AND BOTTOM
ELECTROLESS Ni 3.2~8.89 μm (125~350 micro-inch)
ELECTROLESS Au 0.25 μm (10 micro-inch) MAX

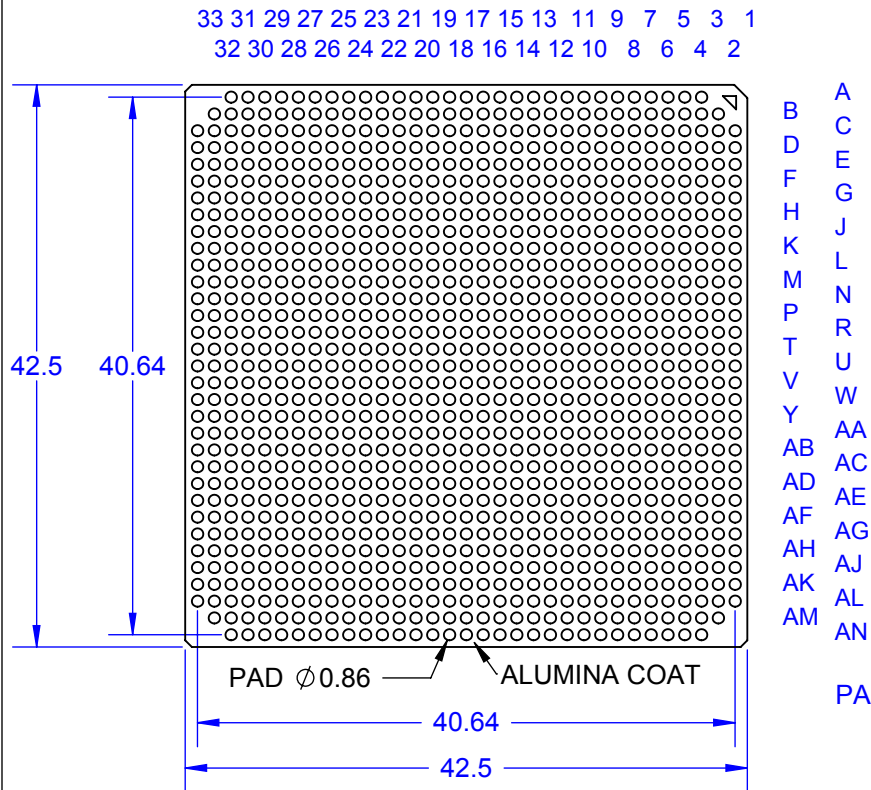
Notes: (Unless Otherwise Specified)

- 1) DIMENSION ARE IN mm.
- 2) CLGA SHOWN WITHOUT COLUMNS.
- 3) SHOWN WITHOUT HEAT SINK.
- 4) 1077 ACTIVE PADS.
- 5) PART NUMBER CLGA1077T1.27-DC338F.

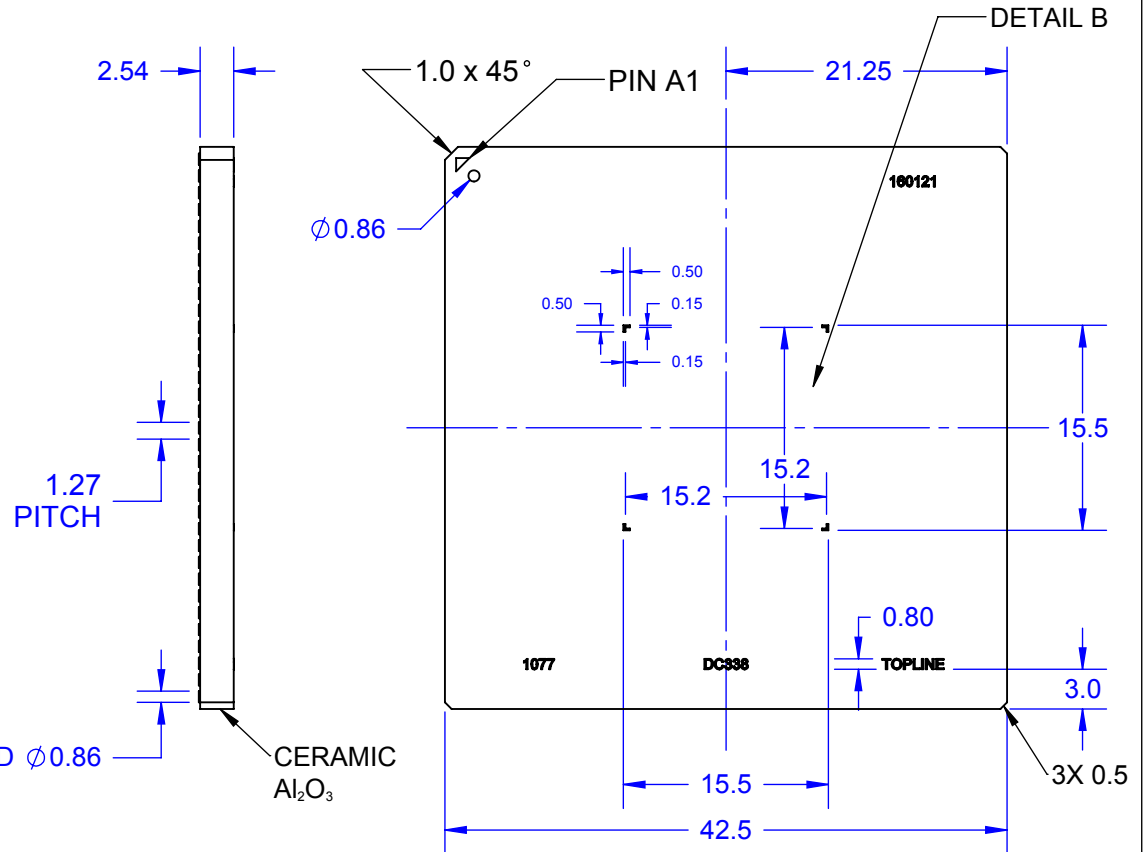
PART NUMBER OPTIONS			
PART NUMBER	DUMMY DIE	SOLDER PIN	HEAT SINK
CLGA1077T1.27-DC338F	YES	NONE	NONE

APPROVALS	DATE	TopLine®			
DRAWN T.Au	09/19/14				
ENG M. Hart	09/19/14	TITLE CCGA1077T1.27-DC338 DUMMY COLUMN GRID ARRAY			
MFG		SCALE 1.75:1	SIZE A	DRAWING NO. 160120	REV A
QA					
CUST					
REVISED		DO NOT SCALE DRAWING			SHEET 4 OF 12

BOTTOM VIEW



TOP VIEW



NOTES:

1. PLATING TOP AND BOTTOM
ELECTROLESS Ni 3.2~8.89 μ m (125~350 micro-inch)
ELECTROLESS Au 0.25 μ m (10 micro-inch) MAX

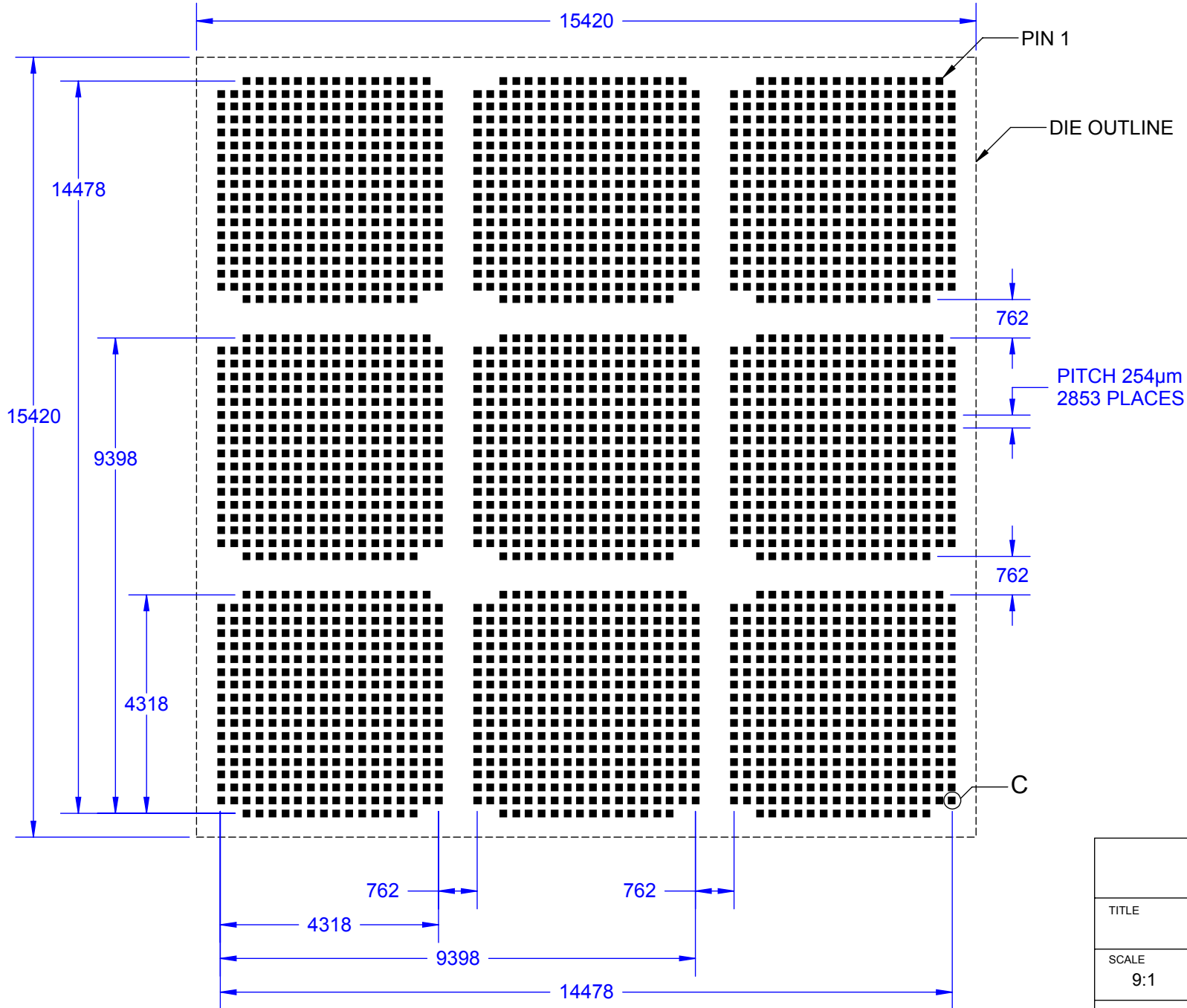
Notes: (Unless Otherwise Specified)

- 1) DIMENSION ARE IN mm.
- 2) CLGA SHOWN WITHOUT COLUMNS.
- 3) SHOWN WITHOUT HEAT SINK.
- 4) SHOWN WITHOUT DUMMY DIE.
- 5) 1077 ACTIVE PADS.
- 6) PART NUMBER CLGA1077T1.27-DC338.

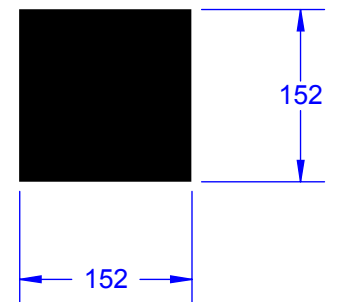
PART NUMBER OPTIONS			
PART NUMBER	DUMMY DIE	SOLDER PIN	HEAT SINK
CLGA1077T1.27-DC338	NO	NONE	NONE

APPROVALS	DATE				
DRAWN T.Au	09/19/14				
ENG M. Hart	09/19/14	TITLE CCGA1077T1.27-DC338 DUMMY COLUMN GRID ARRAY			
MFG		SCALE	SIZE	DRAWING NO.	REV
QA		1.75:1	A	160120	A
CUST		DO NOT SCALE DRAWING			SHEET 5 OF 12
REVISED					

DETAIL B PCB DIE PADS (TOP) Micron (μm)

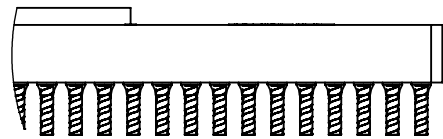
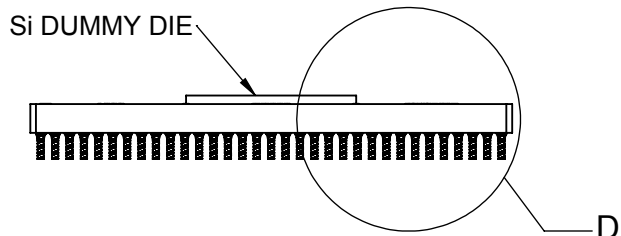


DETAIL C PAD SIZE

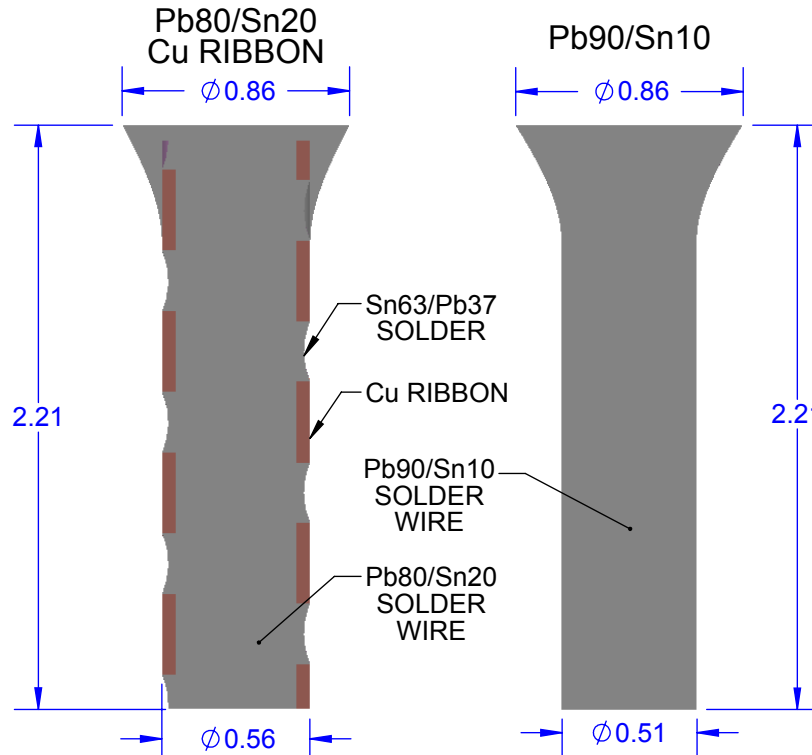


TopLine®			
TITLE		FLIP CHIP DIE PAD 15 x 15mm	
SCALE	SIZE	DRAWING NO.	REV
9:1	A	160120	A
DO NOT SCALE DRAWING			SHEET 6 OF 12

SOLDER PIN OPTIONS

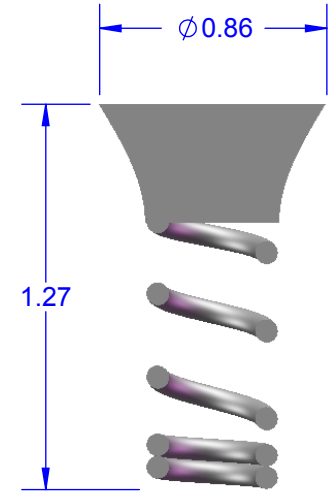


DETAIL D
SCALE 3 : 1

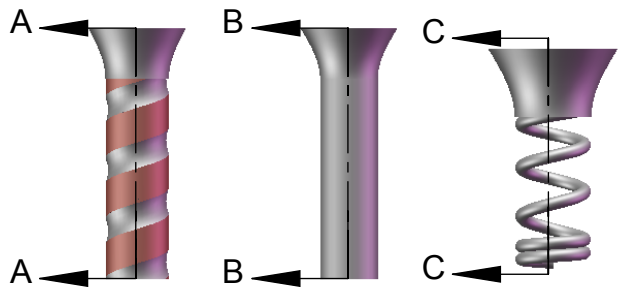
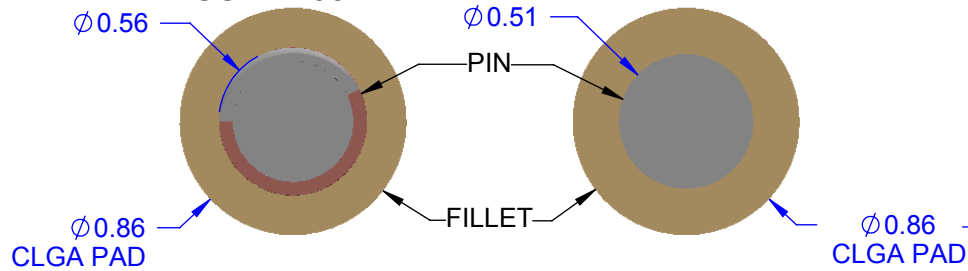


SECTION A-A
SCALE 35 : 1

SECTION B-B
SCALE 35 : 1



SECTION C-C
SCALE 35 : 1



Pb80/Sn20
Cu RIBBON
SCALE 15:1

Pb90/Sn10
SCALE 15:1

Micro-Coil
Spring
SCALE 20:1

PART NUMBER OPTIONS

PART NUMBER	DUMMY DIE	SOLDER PIN
CCGA1077T1.27-DC338F	YES	Pb80/Sn20 Cu RIBBON
CCGA1077T1.27A-DC338F	YES	Pb90/Sn10
CCGA1077T1.27M-DC338F	YES	Micro-Coil
CLGA1077T1.27-DC338F	YES	NONE
CLGA1077T1.27-DC338	NO	NONE

TopLine[®]

TITLE CCGA1077T1.27-DC338
DUMMY COLUMN GRID ARRAY

SCALE 1.75:1	SIZE A	DRAWING NO. 160120	REV A
-----------------	-----------	-----------------------	----------

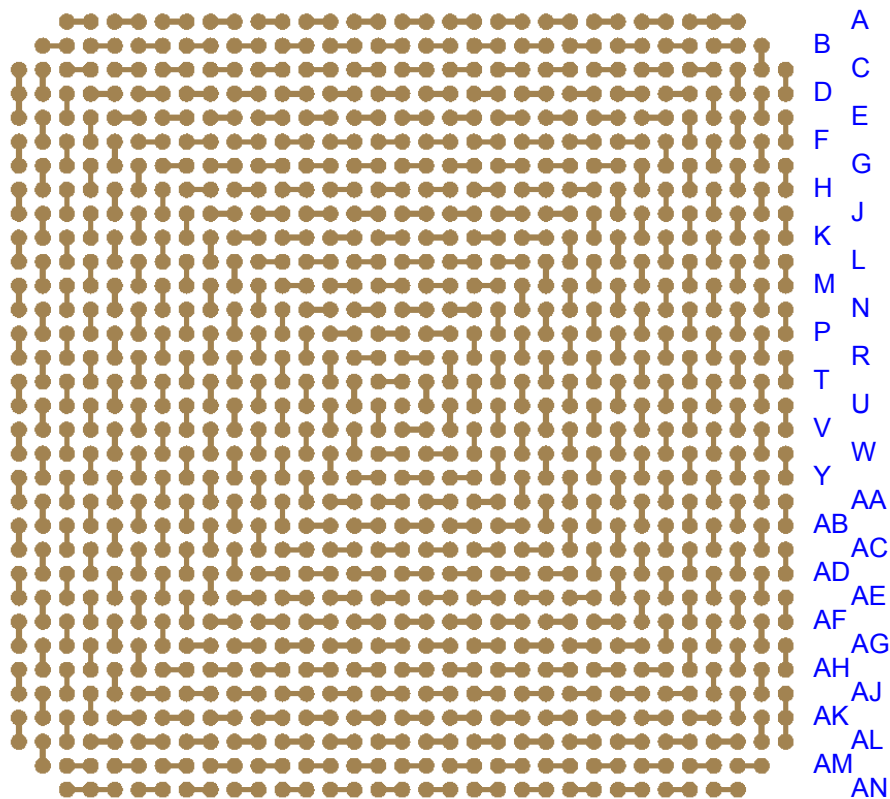
DO NOT SCALE DRAWING

SHEET 7 OF 12

DAISY CHAIN PATTERN

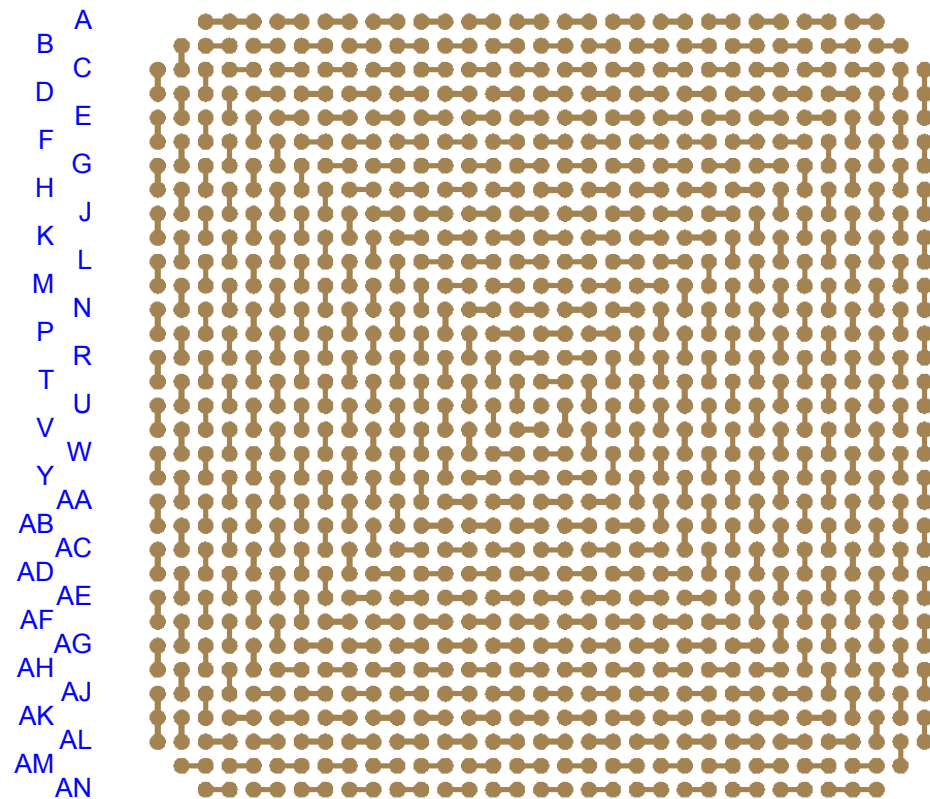
COLUMN (BALL) VIEW

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



BOTTOM X-RAY VIEWED FROM TOP

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



TopLine®

TITLE CCGA1077T1.27-DC338
 DUMMY COLUMN GRID ARRAY

SCALE 2.75:1	SIZE A	DRAWING NO. 160120	REV A
-----------------	-----------	-----------------------	----------

DO NOT SCALE DRAWING

SHEET 8 OF 12

DAISY CHAIN NETLIST

DC PAIR	
A3	A4
A4	A5
A6	A7
A8	A9
A10	A11
A12	A13
A14	A15
A16	A17
A18	A19
A20	A21
A22	A23
A24	A25
A26	A27
A28	A29
A30	A31
B2	C2
B3	B4
B5	B6
B7	B8
B9	B10
B11	B12
B13	B14
B15	B16
B17	B18
B19	B20
B21	B22
B23	B24
B25	B26
B27	B28
B29	B30
B31	B32

DC PAIR	
C1	D1
C3	D3
C4	C5
C6	C7
C8	C9
C10	C11
C12	C13
C14	C15
C16	C17
C18	C19
C20	C21
C22	C23
C24	C25
C26	C27
C28	C29
C30	C31
C32	D32
C33	D33
D2	E2
D4	E4
D5	D6
D7	D8
D9	D10
D11	D12
D13	D14
D15	D16
D17	D18
D19	D20
D21	D22
D23	D24
D25	D26
D27	D28
D29	D30
D31	E31
D33	D33

DC PAIR	
E1	F1
E3	F3
E5	F5
E6	E7
E8	E9
E10	E11
E12	E13
E14	E15
E16	E17
E18	E19
E20	E21
E22	E23
E24	E25
E26	E27
E28	E29
E30	F30
E32	F32
F2	G2
F4	G4
F6	G6
F7	F8
F9	F10
F11	F12
F13	F14
F15	F16
F17	F18
F19	F20
F21	F22
F23	F24
F25	F26
F27	F28
F29	G29
F31	G31
F33	G33

DC PAIR	
G1	H1
G3	H3
G5	H5
G7	H7
G8	G9
G10	G11
G12	G13
G14	G15
G16	G17
G18	G19
G20	G21
G22	G23
G24	G25
G26	G27
G28	H28
G30	H30
G32	H32
H2	J2
H4	J4
H6	J6
H8	J8
H9	H10
H11	H12
H13	H14
H15	H16
H17	H18
H19	H20
H21	H22
H23	H24
H25	H26
H27	J27
H29	J29
H31	J31
H33	J33

DC PAIR	
J1	K1
J3	K3
J5	K5
J7	K7
J9	K9
J10	J11
J12	J13
J14	J15
J16	J17
J18	J19
J20	J21
J22	J23
J24	J25
J26	K26
J28	K28
J30	K30
J32	K32
K2	L2
K4	L4
K6	L6
K8	L8
K10	L10
K11	K12
K13	K14
K15	K16
K17	K18
K19	K20
K21	K22
K23	K24
K25	L25
K27	L27
K29	L29
K31	L31
K33	L33

DC PAIR	
L1	M1
L3	M3
L5	M5
L7	M7
L9	M9
L11	M11
L12	L13
L14	L15
L16	L17
L18	L19
L20	L21
L22	L23
L24	M24
L26	M26
L28	M28
L30	M30
L32	M32
M2	N2
M4	N4
M6	N6
M8	N8
M10	N10
M12	N12
M13	M14
M15	M16
M17	M18
M19	M20
M21	M22
M23	N23
M25	N25
M27	N27
M29	N29
M31	N31
M33	N33


DC PAIR	
N1	P1
N3	P3
N5	P5
N7	P7
N9	P9
N11	P11
N13	P13
N14	N15
N16	N17
N18	N19
N20	N21
N22	P22
N24	P24
N26	P26
N28	P28
N30	P30
N32	P32
P2	R2
P4	R4
P6	R6
P8	R8
P10	R10
P12	R12
P14	R14
P15	P16
P17	P18
P19	P20
P21	R21
P23	R23
P25	R25
P27	R27
P29	R29
P31	R31
P33	R33

DC PAIR	
R1	T1
R3	T3
R5	T5
R7	T7
R9	T9
R11	T11
R13	T13
R15	T15
R16	R17
R18	R19
R20	T20
R22	T22
R24	T24
R26	T26
R28	T28
R30	T30
R32	T32
T2	U2
T4	U4
T6	U6
T8	U8
T10	U10
T12	U12
T14	U14
T16	U16
T17	T18
T19	U19
T21	U21
T23	U23
T25	U25
T27	U27
T29	U29
T31	U31
T33	U33

DC PAIR	
U1	V1
U3	V3
U5	V5
U7	V7
U9	V9
U11	V11
U13	V13
U15	V15
U18	V18
U20	V20
U22	V22
U24	V24
U26	V26
U28	V28
U30	V30
U32	V32
V2	W2
V4	W4
V6	W6
V8	W8
V10	W10
V12	W12
V14	W14
V16	V17
V19	W19
V21	W21
V23	W23
V25	W25
V27	W27
V29	W29
V31	W31
V33	W33


DC PAIR	
W1	Y1
W3	Y3
W5	Y5
W7	Y7
W9	Y9
W11	Y11
W13	Y13
W15	W16
W17	W18
W20	Y20
W22	Y22
W24	Y24
W26	Y26
W28	Y28
W30	Y30
W32	Y32
Y2	AA2
Y4	AA4
Y6	AA6
Y8	AA8
Y10	AA10
Y12	AA12
Y14	Y15
Y16	Y17
Y18	Y19
Y21	AA21
Y23	AA23
Y25	AA25
Y27	AA27
Y29	AA29
Y31	AA31
Y33	AA33

CONTINUED NEXT PAGE

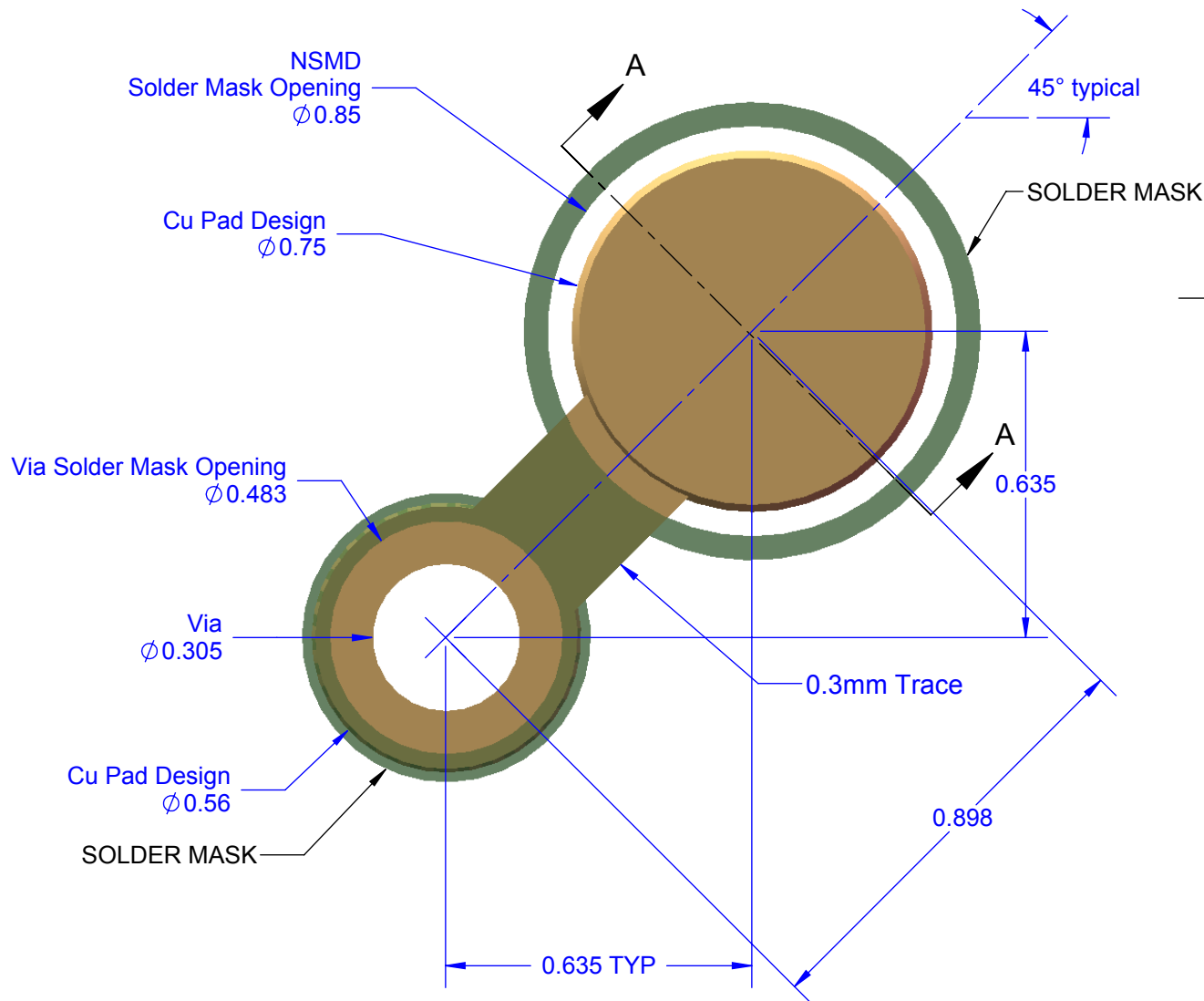
			
TITLE CCGA1077T1.27-DC338 DUMMY COLUMN GRID ARRAY			
SCALE NONE	SIZE A	DRAWING NO. 160120	REV A
DO NOT SCALE DRAWING			SHEET 9 OF 12

DAISY CHAIN NET LIST

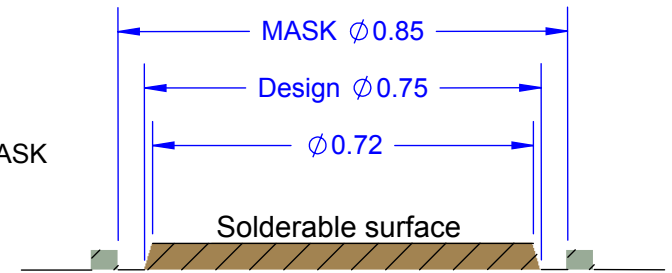
DC PAIR		DC PAIR		DC PAIR		DC PAIR		DC PAIR		DC PAIR		DC PAIR	
AA1	AB1	AC1	AD1	AE1	AF1	AG1	AH1	AJ1	AK1	AL3	AL4	AN3	AN4
AA3	AB3	AC3	AD3	AE3	AF3	AG3	AH3	AJ3	AK3	AL5	AL6	AN5	AN6
AA5	AB5	AC5	AD5	AE5	AF5	AG5	AH5	AJ5	AJ6	AL7	AL8	AN7	AN8
AA7	AB7	AC7	AD7	AE7	AF7	AG7	AG8	AJ7	AJ8	AL9	AL10	AN9	AN10
AA9	AB9	AC9	AD9	AE9	AE10	AG9	AG10	AJ9	AJ10	AL11	AL12	AN11	AN12
AA11	AB11	AC11	AC12	AE11	AE12	AG11	AG12	AJ11	AJ12	AL13	AL14	AN13	AN14
AA13	AA14	AC13	AC14	AE13	AE14	AG13	AG14	AJ13	AJ14	AL15	AL16	AN15	AN16
AA15	AA16	AC15	AC16	AE15	AE16	AG15	AG16	AJ15	AJ16	AL17	AL18	AN17	AN18
AA17	AA18	AC17	AC18	AE17	AE18	AG17	AG18	AJ17	AJ18	AL19	AL20	AN19	AN20
AA19	AA20	AC19	AC20	AE19	AE20	AG19	AG20	AJ19	AJ20	AL21	AL22	AN21	AN22
AA22	AB22	AC21	AC22	AE21	AE22	AG21	AG22	AJ21	AJ22	AL23	AL24	AN23	AN24
AA24	AB24	AC24	AD24	AE23	AE24	AG23	AG24	AJ23	AJ24	AL25	AL26	AN25	AN26
AA26	AB26	AC26	AD26	AE26	AF26	AG25	AG26	AJ25	AJ26	AL27	AL28	AN27	AN28
AA28	AB28	AC28	AD28	AE28	AF28	AG28	AH28	AJ27	AJ28	AL29	AL30	AN29	AN30
AA30	AB30	AC30	AD30	AE30	AF30	AG30	AH30	AJ30	AK30	AL32	AM32	AN30	AN31
AA32	AB32	AC32	AD32	AE32	AF32	AG32	AH32	AJ32	AK32	AM2	AM3		
AB2	AC2	AD2	AE2	AF2	AG2	AH2	AJ2	AK1	AL1	AM4	AM5		
AB4	AC4	AD4	AE4	AF4	AG4	AH4	AJ4	AK2	AL2	AM6	AM7		
AB6	AC6	AD6	AE6	AF6	AG6	AH6	AH7	AK4	AK5	AM8	AM9		
AB8	AC8	AD8	AE8	AF8	AF9	AH8	AH9	AK6	AK7	AM10	AM11		
AB10	AC10	AD10	AD11	AF10	AF11	AH10	AH11	AK8	AK9	AM12	AM13		
AB12	AB13	AD12	AD13	AF12	AF13	AH12	AH13	AK10	AK11	AM14	AM15		
AB14	AB15	AD14	AD15	AF14	AF15	AH14	AH15	AK12	AK13	AM16	AM17		
AB16	AB17	AD16	AD17	AF16	AF17	AH16	AH17	AK14	AK15	AM18	AM19		
AB18	AB19	AD18	AD19	AF18	AF19	AH18	AH19	AK16	AK17	AM20	AM21		
AB20	AB21	AD20	AD21	AF20	AF21	AH20	AH21	AK18	AK19	AM22	AM23		
AB23	AC23	AD22	AD23	AF22	AF23	AH22	AH23	AK20	AK21	AM24	AM25		
AB25	AC25	AD25	AE25	AF24	AF25	AH24	AH25	AK22	AK23	AM26	AM27		
AB27	AC27	AD27	AE27	AF27	AG27	AH26	AH27	AK24	AK25	AM28	AM29		
AB29	AC29	AD29	AE29	AF29	AG29	AH29	AJ29	AK26	AK27	AM30	AM31		
AB31	AC31	AD31	AE31	AF31	AG31	AH31	AJ31	AK28	AK29				
AB33	AC33	AD33	AE33	AF33	AG33	AH33	AJ33	AK31	AL31				
								AK33	AL33				

			
TITLE CCGA1077T1.27-DC338 DUMMY COLUMN GRID ARRAY			
SCALE NONE	SIZE A	DRAWING NO. 160120	REV A
DO NOT SCALE DRAWING			SHEET 10 OF 12

PCB PAD DESIGN RULES CCGA PITCH 1.27MM



Cu PAD SIDE VIEW



Section A-A

NOTES:

1. DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED.
2. SOLDERABLE SURFACE $\phi 0.72$ IS THE FUNCTIONAL SURFACE OF Cu PAD.
3. $\phi 0.75$ 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 CCGA PCB DESIGN RULES
PITCH 1.27mm

SCALE	SIZE	DRAWING NO.	REV
70:1	A	160120	A

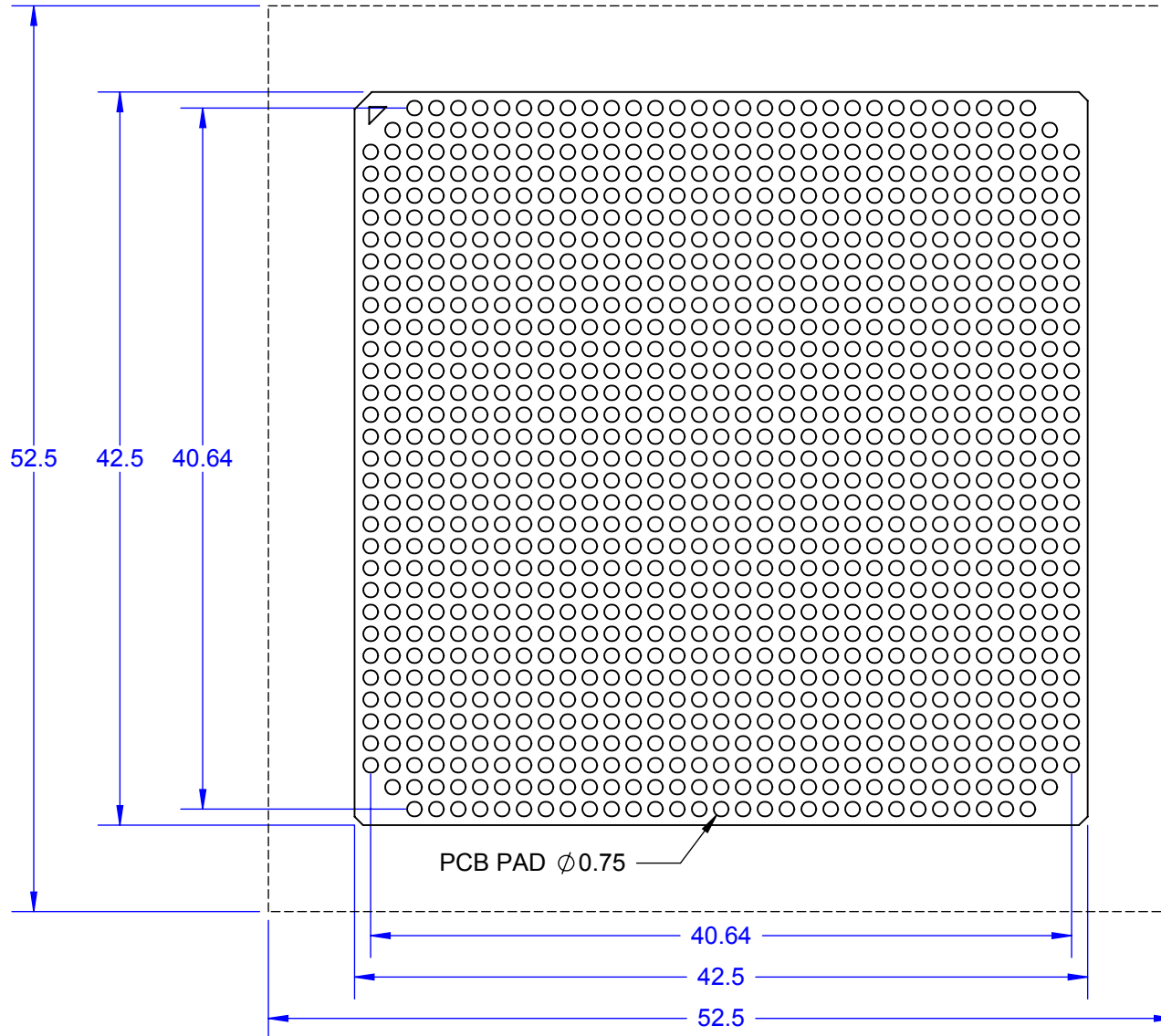
DO NOT SCALE DRAWING

SHEET 11 OF 12

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

PCB LAND ARRAY

SHOWN WITHOUT DAISY CHAIN



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

SOLDER PASTE STENCIL	
Thickness	200µm 8.0 mil
Aperture	1:1

SOLDER PASTE VOLUME	
Nominal	0.078~0.088mm ³ 5000~5600mils ³
Maximum	0.12mm ³ 7600mils ³
Minimum	0.047mm ³ 3000 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 $\phi 0.72$ IS THE FUNCTIONAL SURFACE OF Cu PAD.
3. $\phi 0.75$ 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.



TITLE CCGA1077T1.27-DC338
DUMMY COLUMN GRID ARRAY

SCALE	SIZE	DRAWING NO.	REV
1:1	A	160120	A

DO NOT SCALE DRAWING

SHEET 12 OF 12