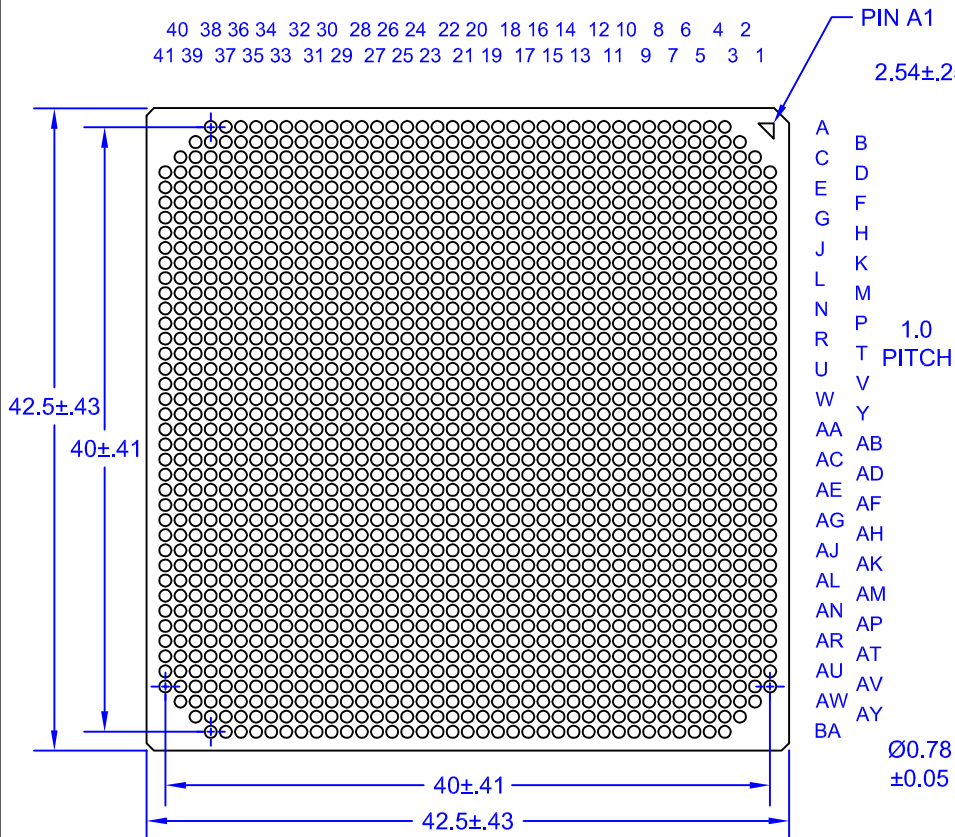
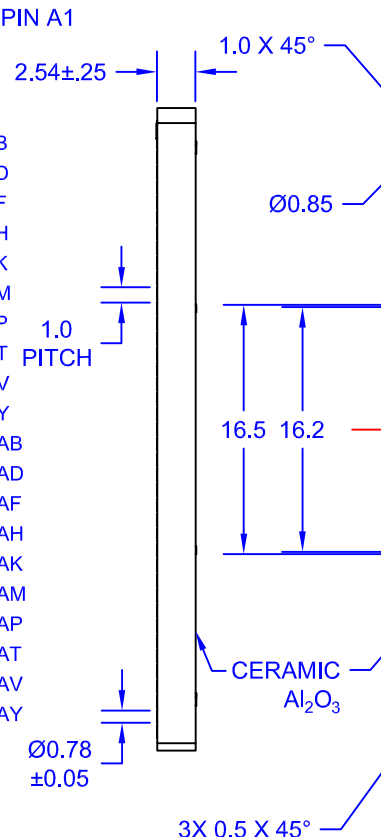


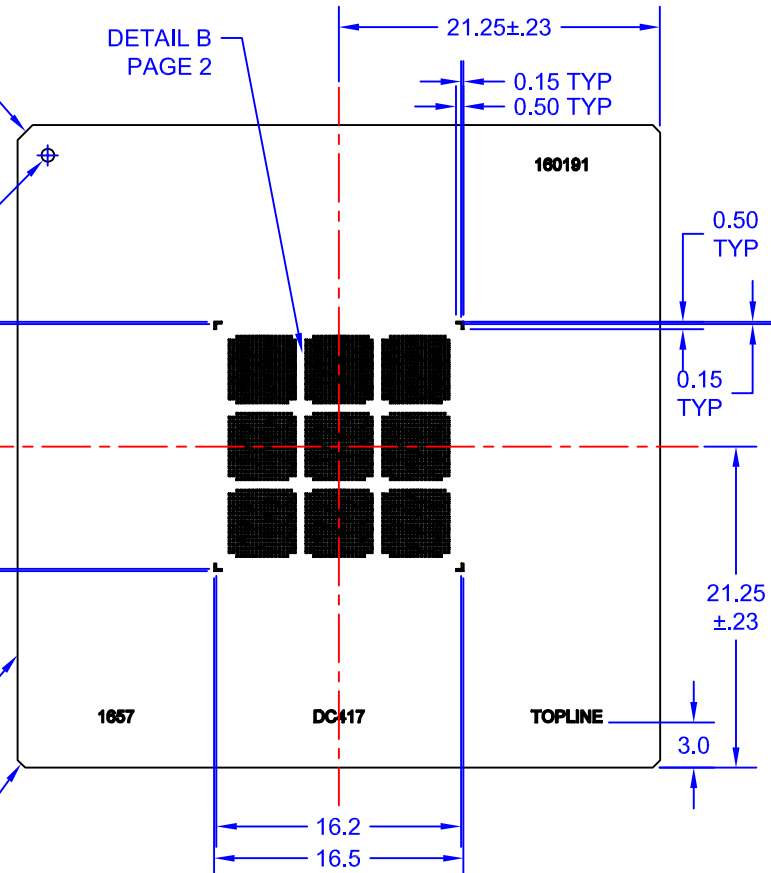
**BOTTOM VIEW**



**SIDE VIEW**



**TOP VIEW**



**NOTES:**


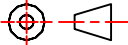
1. PLATING TOP AND BOTTOM  
ELECTROLESS Ni 3.2~8.89µm (125~350 micro-inch)  
ELECTROLESS Au 0.25µm (10 micro-inch) MAX

**NOTES (UNLESS OTHERWISE SPECIFIED):**

1. DIMENSIONS ARE IN mm.
2. CGLA SHOWN WITHOUT COLUMNS.
3. SHOWN WITHOUT HEAT SINK.
4. SHOWN WITHOUT DUMMY DIE

**PART NUMBER OPTIONS**

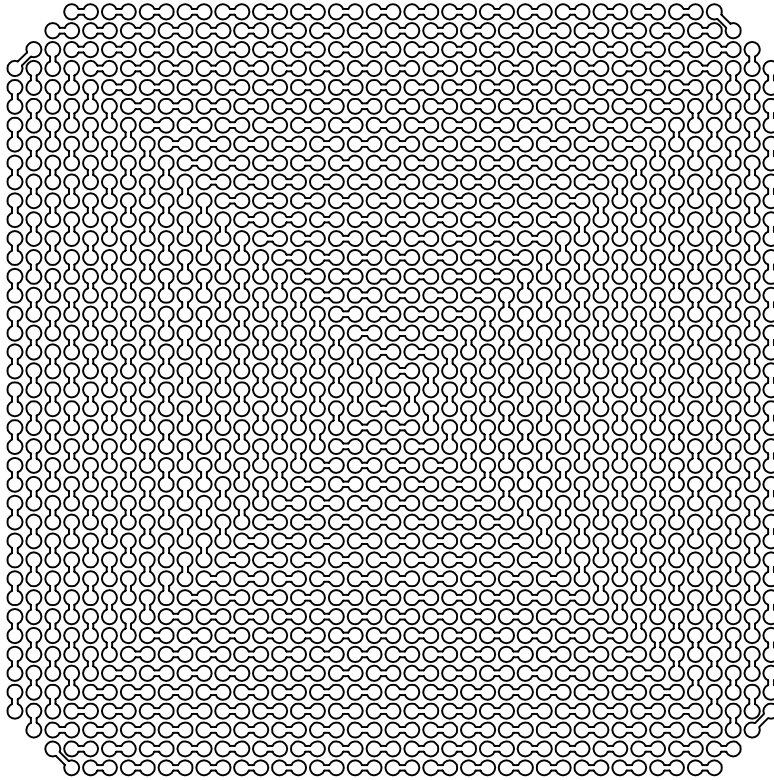
PART NUMBER	DUMMY DIE	SOLDER PIN	HEAT SINK
CLGA1657T1.0-DC417	NO	NONE	NONE

TOLERANCE UNLESS NOTED		APPROVALS	DATE				
X.X	+/- 0.50	DRAWN J. HINES	12/18/2015				
X.XX	+/- 0.25						
X.XXX	+/- 0.13	ENG M. HART	12/18/2015	SCALE	SIZE	DRAWING NO.	REV
ANGLES	+/- 1.0°	MFG		2:1	A	160192	A
ALL DIMENSIONS IN	<input type="checkbox"/> INCHES <input checked="" type="checkbox"/> MILLIMETERS	QA		DO NOT SCALE DRAWING			
THIRD ANGLE PROJECTION		CUST					
		REVISED		SHEET 1 OF 6			



# COLUMN (BALL) VIEW DAISY CHAIN PATTERN

40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2  
41 39 37 35 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  
AR AT  
AU AV  
AW AY  
BA

<b>TopLine<sup>®</sup></b>			
TITLE CLGA1657T1.0-DC417 DUMMY LAND GRID ARRAY			
SCALE	SIZE	DRAWING NO.	REV
2.5:1	A	160192	A
DO NOT SCALE DRAWING			SHEET 3 OF 6

# NET LIST DAISY CHAIN CONNECTION TABLE

DC PAIR	DC PAIR	DC PAIR	DC PAIR	DC PAIR	DC PAIR	DC PAIR
A4 B3	C2 D2	E2 F2	G2 H2	J2 K2	L2 M2	N2 P2
A5 A6	C3 C4	E4 F4	G4 H4	J4 K4	L4 M4	N4 P4
A7 A8	C5 C6	E5 E6	G6 H6	J6 K6	L6 M6	N6 P6
A9 A10	C7 C8	E7 E8	G7 G8	J8 K8	L8 M8	N8 P8
A11 A12	C9 C10	E9 E10	G9 G10	J9 J10	L10 M10	N10 P10
A13 A14	C11 C12	E11 E12	G11 G12	J11 J12	L11 L12	N12 P12
A15 A16	C13 C14	E13 E14	G13 G14	J13 J14	L13 L14	N13 N14
A17 A18	C15 C16	E15 E16	G15 G16	J15 J16	L15 L16	N15 N16
A19 A20	C17 C18	E17 E18	G17 G18	J17 J18	L17 L18	N17 N18
A21 A22	C19 C20	E19 E20	G19 G20	J19 J20	L19 L20	N19 N20
A23 A24	C21 C22	E21 E22	G21 G22	J21 J22	L21 L22	N21 N22
A25 A26	C23 C24	E23 E24	G23 G24	J23 J24	L23 L24	N23 N24
A27 A28	C25 C26	E25 E26	G25 G26	J25 J26	L25 L26	N25 N26
A29 A30	C27 C28	E27 E28	G27 G28	J27 J28	L27 L28	N27 N28
A31 A32	C29 C30	E29 E30	G29 G30	J29 J30	L29 L30	N29 P29
A33 A34	C31 C32	E31 E32	G31 G32	J31 J32	L31 M31	N31 P31
A35 A36	C33 C34	E33 E34	G33 G34	J33 K33	L33 M33	N33 P33
A37 A38	C35 C36	E35 E36	G35 H35	J35 K35	L35 M35	N35 P35
B4 B5	C37 C38	E37 F37	G37 H37	J37 K37	L37 M37	N37 P37
B6 B7	C39 D39	E39 F39	G39 H39	J39 K39	L39 M39	N39 P39
B8 B9	C40 D41	E41 F41	G41 H41	J41 K41	L41 M41	N41 P41
B10 B11	D1 E1	F1 G1	H1 J1	K1 L1	M1 N1	P1 R1
B12 B13	D3 E3	F3 G3	H3 J3	K3 L3	M3 N3	P3 R3
B14 B15	D4 D5	F5 G5	H5 J5	K5 L5	M5 N5	P5 R5
B16 B17	D6 D7	F6 F7	H7 J7	K7 L7	M7 N7	P7 R7
B18 B19	D8 D9	F8 F9	H8 H9	K9 L9	M9 N9	P9 R9
B20 B21	D10 D11	F10 F11	H10 H11	K10 K11	M11 N11	P11 R11
B22 B23	D12 D13	F12 F13	H12 H13	K12 K13	M12 M13	P13 R13
B24 B25	D14 D15	F14 F15	H14 H15	K14 K15	M14 M15	P14 P15
B26 B27	D16 D17	F16 F17	H16 H17	K16 K17	M16 M17	P16 P17
B28 B29	D18 D19	F18 F19	H18 H19	K18 K19	M18 M19	P18 P19
B30 B31	D20 D21	F20 F21	H20 H21	K20 K21	M20 M21	P20 P21
B32 B33	D22 D23	F22 F23	H22 H23	K22 K23	M22 M23	P22 P23
B34 B35	D24 D25	F24 F25	H24 H25	K24 K25	M24 M25	P24 P25
B36 B37	D26 D27	F26 F27	H26 H27	K26 K27	M26 M27	P26 P27
B38 B39	D28 D29	F28 F29	H28 H29	K28 K29	M28 M29	P28 R28
	D30 D31	F30 F31	H30 H31	K30 K31	M30 N30	P30 R30
	D32 D33	F32 F33	H32 H33	K32 L32	M32 N32	P32 R32
	D34 D35	F34 F35	H34 J34	K34 L34	M34 N34	P34 R34
	D36 D37	F36 G36	H36 J36	K36 L36	M36 N36	P36 R36
	D38 E38	F38 G38	H38 J38	K38 L38	M38 N38	P38 R38
	D40 E40	F40 G40	H40 J40	K40 L40	M40 N40	P40 R40


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TITLE CLGA1657T1.0-DC417 DUMMY LAND GRID ARRAY			
SCALE 2.5:1	SIZE A	DRAWING NO. 160192	REV A
DO NOT SCALE DRAWING		SHEET 4 OF 6	

# NET LIST DAISY CHAIN CONNECTION TABLE

DC PAIR	DC PAIR	DC PAIR	DC PAIR	DC PAIR	DC PAIR	DC PAIR
R2 T2	U2 V2	W2 Y2	AA2 AB2	AC2 AD2	AE2 AF2	AG2 AH2
R4 T4	U4 V4	W4 Y4	AA4 AB4	AC4 AD4	AE4 AF4	AG4 AH4
R6 T6	U6 V6	W6 Y6	AA6 AB6	AC6 AD6	AE6 AF6	AG6 AH6
R8 T8	U8 V8	W8 Y8	AA8 AB8	AC8 AD8	AE8 AF8	AG8 AH8
R10 T10	U10 V10	W10 Y10	AA10 AB10	AC10 AD10	AE10 AF10	AG10 AH10
R12 T12	U12 V12	W12 Y12	AA12 AB12	AC12 AD12	AE12 AF12	AG12 AH12
R14 T14	U14 V14	W14 Y14	AA14 AB14	AC14 AD14	AE14 AF14	AG14 AH14
R15 R16	U16 V16	W16 Y16	AA16 AB16	AC16 AD16	AE16 AF16	AG16 AG17
R17 R18	U17 U18	W18 Y18	AA18 AB18	AC18 AD18	AE18 AE19	AG18 AG19
R19 R20	U19 U20	W19 W20	AA20 AB20	AC20 AC21	AE20 AE21	AG20 AG21
R21 R22	U21 U22	W21 W22	AA23 AB23	AC22 AC23	AE22 AE23	AG22 AG23
R23 R24	U23 U24	W23 Y23	AA25 AB25	AC25 AD25	AE24 AE25	AG24 AG25
R25 R26	U25 V25	W25 Y25	AA27 AB27	AC27 AD27	AE27 AF27	AG26 AG27
R27 T27	U27 V27	W27 Y27	AA29 AB29	AC29 AD29	AE29 AF29	AG29 AH29
R29 T29	U29 V29	W29 Y29	AA31 AB31	AC31 AD31	AE31 AF31	AG31 AH31
R31 T31	U31 V31	W31 Y31	AA33 AB33	AC33 AD33	AE33 AF33	AG33 AH33
R33 T33	U33 V33	W33 Y33	AA35 AB35	AC35 AD35	AE35 AF35	AG35 AH35
R35 T35	U35 V35	W35 Y35	AA37 AB37	AC37 AD37	AE37 AF37	AG37 AH37
R37 T37	U37 V37	W37 Y37	AA39 AB39	AC39 AD39	AE39 AF39	AG39 AH39
R39 T39	U39 V39	W39 Y39	AA41 AB41	AC41 AD41	AE41 AF41	AG41 AH41
R41 T41	U41 V41	W41 Y41	AB1 AC1	AD1 AE1	AF1 AG1	AH1 AJ1
T1 U1	V1 W1	Y1 AA1	AB3 AC3	AD3 AE3	AF3 AG3	AH3 AJ3
T3 U3	V3 W3	Y3 AA3	AB5 AC5	AD5 AE5	AF5 AG5	AH5 AJ5
T5 U5	V5 W5	Y5 AA5	AB7 AC7	AD7 AE7	AF7 AG7	AH7 AJ7
T7 U7	V7 W7	Y7 AA7	AB9 AC9	AD9 AE9	AF9 AG9	AH9 AJ9
T9 U9	V9 W9	Y9 AA9	AB11 AC11	AD11 AE11	AF11 AG11	AH11 AJ11
T11 U11	V11 W11	Y11 AA11	AB13 AC13	AD13 AE13	AF13 AG13	AH13 AJ13
T13 U13	V13 W13	Y13 AA13	AB15 AC15	AD15 AE15	AF15 AG15	AH15 AH16
T15 U15	V15 W15	Y15 AA15	AB17 AC17	AD17 AE17	AF17 AF18	AH17 AH18
T16 T17	V17 W17	Y17 AA17	AB19 AC19	AD19 AD20	AF19 AF20	AH19 AH20
T18 T19	V18 V19	Y19 AA19	AB21 AB22	AD21 AD22	AF21 AF22	AH21 AH22
T20 T21	V20 V21	Y20 Y21	AB24 AC24	AD23 AD24	AF23 AF24	AH23 AH24
T22 T23	V22 V23	Y22 AA22	AB26 AC26	AD26 AE26	AF25 AF26	AH25 AH26
T24 T25	V24 W24	Y24 AA24	AB28 AC28	AD28 AE28	AF28 AG28	AH27 AH28
T26 U26	V26 W26	Y26 AA26	AB30 AC30	AD30 AE30	AF30 AG30	AH30 AJ30
T28 U28	V28 W28	Y28 AA28	AB32 AC32	AD32 AE32	AF32 AG32	AH32 AJ32
T30 U30	V30 W30	Y30 AA30	AB34 AC34	AD34 AE34	AF34 AG34	AH34 AJ34
T32 U32	V32 W32	Y32 AA32	AB36 AC36	AD36 AE36	AF36 AG36	AH36 AJ36
T34 U34	V34 W34	Y34 AA34	AB38 AC38	AD38 AE38	AF38 AG38	AH38 AJ38
T36 U36	V36 W36	Y36 AA36	AB40 AC40	AD40 AE40	AF40 AG40	AH40 AJ40
T38 U38	V38 W38	Y38 AA38				
T40 U40	V40 W40	Y40 AA40				


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TITLE CLGA1657T1.0-DC417 DUMMY LAND GRID ARRAY			
SCALE 2.5:1	SIZE A	DRAWING NO. 160192	REV A
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# NET LIST DAISY CHAIN CONNECTION TABLE

DC PAIR		DC PAIR		DC PAIR		DC PAIR		DC PAIR		DC PAIR	
AJ2	AK2	AL2	AM2	AN2	AP2	AR2	AT2	AU2	AV2	AW4	AW5
AJ4	AK4	AL4	AM4	AN4	AP4	AR4	AT4	AU4	AV4	AW6	AW7
AJ6	AK6	AL6	AM6	AN6	AP6	AR6	AT6	AU6	AU7	AW8	AW9
AJ8	AK8	AL8	AM8	AN8	AP8	AR8	AR9	AU8	AU9	AW10	AW11
AJ10	AK10	AL10	AM10	AN10	AN11	AR10	AR11	AU10	AU11	AW12	AW13
AJ12	AK12	AL12	AL13	AN12	AN13	AR12	AR13	AU12	AU13	AW14	AW15
AJ14	AJ15	AL14	AL15	AN14	AN15	AR14	AR15	AU14	AU15	AW16	AW17
AJ16	AJ17	AL16	AL17	AN16	AN17	AR16	AR17	AU16	AU17	AW18	AW19
AJ18	AJ19	AL18	AL19	AN18	AN19	AR18	AR19	AU18	AU19	AW20	AW21
AJ20	AJ21	AL20	AL21	AN20	AN21	AR20	AR21	AU20	AU21	AW22	AW23
AJ22	AJ23	AL22	AL23	AN22	AN23	AR22	AR23	AU22	AU23	AW24	AW25
AJ24	AJ25	AL24	AL25	AN24	AN25	AR24	AR25	AU24	AU25	AW26	AW27
AJ26	AJ27	AL26	AL27	AN26	AN27	AR26	AR27	AU26	AU27	AW28	AW29
AJ28	AJ29	AL28	AL29	AN28	AN29	AR28	AR29	AU28	AU29	AW30	AW31
AJ31	AK31	AL30	AL31	AN30	AN31	AR30	AR31	AU30	AU31	AW32	AW33
AJ33	AK33	AL33	AM33	AN32	AN33	AR32	AR33	AU32	AU33	AW34	AW35
AJ35	AK35	AL35	AM35	AN35	AP35	AR34	AR35	AU34	AU35	AW36	AW37
AJ37	AK37	AL37	AM37	AN37	AP37	AR37	AT37	AU36	AU37	AW38	AW39
AJ39	AK39	AL39	AM39	AN39	AP39	AR39	AT39	AU39	AV39	AY3	AY4
AJ41	AK41	AL41	AM41	AN41	AP41	AR41	AT41	AU41	AV41	AY5	AY6
AK1	AL1	AM1	AN1	AP1	AR1	AT1	AU1	AV1	AW2	AY7	AY8
AK3	AL3	AM3	AN3	AP3	AR3	AT3	AU3	AV3	AW3	AY9	AY10
AK5	AL5	AM5	AN5	AP5	AR5	AT5	AU5	AV5	AV6	AY11	AY12
AK7	AL7	AM7	AN7	AP7	AR7	AT7	AT8	AV7	AV8	AY13	AY14
AK9	AL9	AM9	AN9	AP9	AP10	AT9	AT10	AV9	AV10	AY15	AY16
AK11	AL11	AM11	AM12	AP11	AP12	AT11	AT12	AV11	AV12	AY17	AY18
AK13	AK14	AM13	AM14	AP13	AP14	AT13	AT14	AV13	AV14	AY19	AY20
AK15	AK16	AM15	AM16	AP15	AP16	AT15	AT16	AV15	AV16	AY21	AY22
AK17	AK18	AM17	AM18	AP17	AP18	AT17	AT18	AV17	AV18	AY23	AY24
AK19	AK20	AM19	AM20	AP19	AP20	AT19	AT20	AV19	AV20	AY25	AY26
AK21	AK22	AM21	AM22	AP21	AP22	AT21	AT22	AV21	AV22	AY27	AY28
AK23	AK24	AM23	AM24	AP23	AP24	AT23	AT24	AV23	AV24	AY29	AY30
AK25	AK26	AM25	AM26	AP25	AP26	AT25	AT26	AV25	AV26	AY31	AY32
AK27	AK28	AM27	AM28	AP27	AP28	AT27	AT28	AV27	AV28	AY33	AY34
AK29	AK30	AM29	AM30	AP29	AP30	AT29	AT30	AV29	AV30	AY35	AY36
AK32	AL32	AM31	AM32	AP31	AP32	AT31	AT32	AV31	AV32	AY37	AY38
AK34	AL34	AM34	AN34	AP33	AP34	AT33	AT34	AV33	AV34	AY39	BA38
AK36	AL36	AM36	AN36	AP36	AR36	AT35	AT36	AV35	AV36		
AK38	AL38	AM38	AN38	AP38	AR38	AT38	AU38	AV37	AV38		
AK40	AL40	AM40	AN40	AP40	AR40	AT40	AU40	AV40	AW40		

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TITLE CLGA1657T1.0-DC417 DUMMY LAND GRID ARRAY			
SCALE	SIZE	DRAWING NO.	REV
2.5:1	A	160192	A
DO NOT SCALE DRAWING			SHEET 6 OF 6