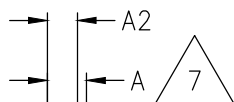
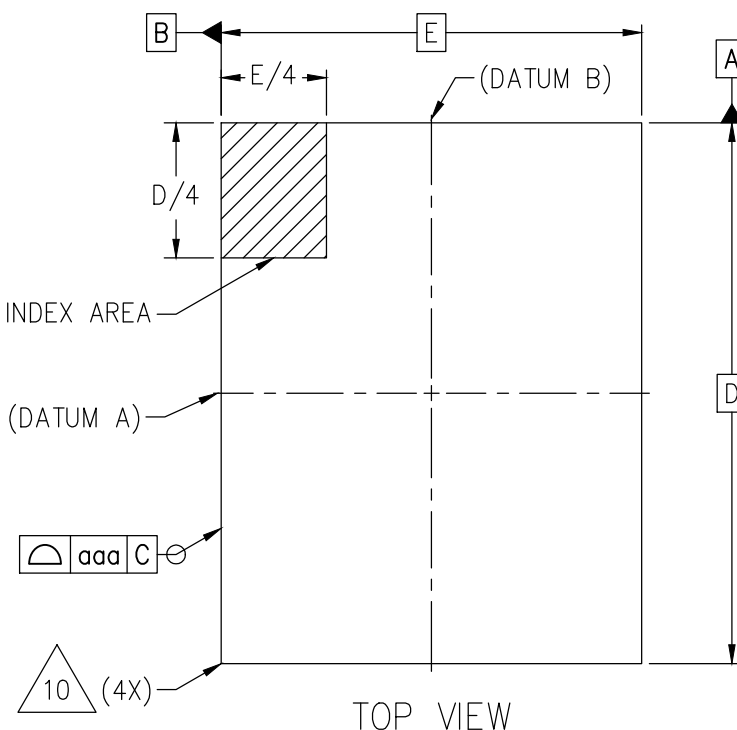


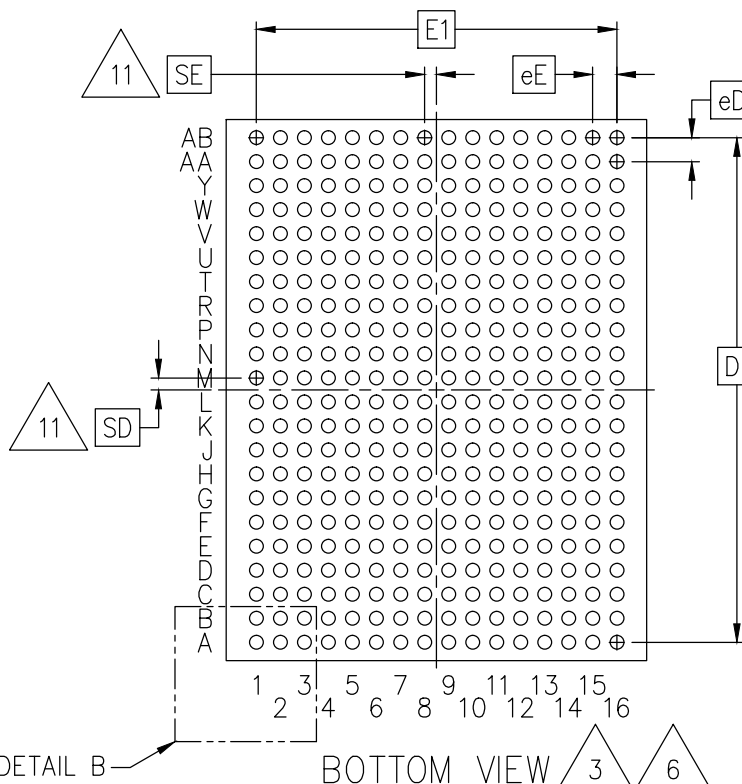
PATENT ISSUES



TERMINAL A1 CORNER INDEX AREA



SEE DETAIL A



SEE DETAIL B

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PRODUCT OUTLINE
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AND REFLECTS A PRODUCT WITH ANTICIPATED USAGE IN THE ELECTRONICS INDUSTRY;
CHANGES ARE LIKELY TO OCCUR

TITLE FINE PITCH
BALL GRID ARRAY FAMILY,
RECTANGULAR, 0.80 MM PITCH

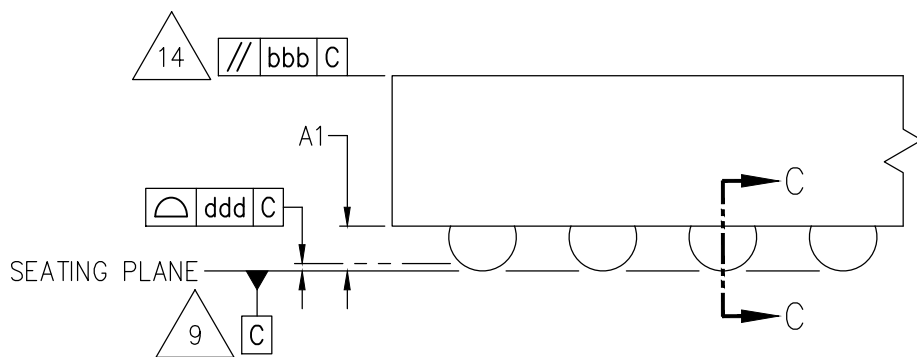
PACKAGE DESIGNATOR
(V,T,L)FR-XBGA

NUMBER
MO-210

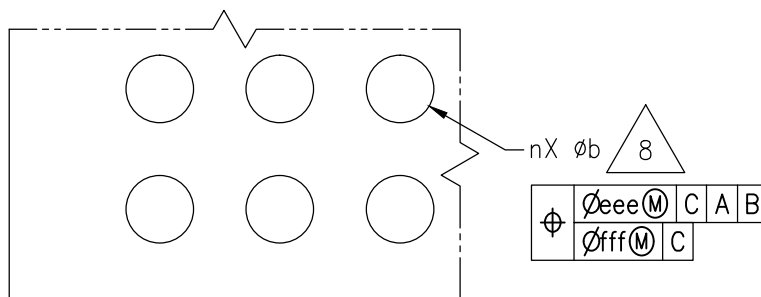
ISSUE
N

DATE
JAN 2016

SHEET
1 OF 18

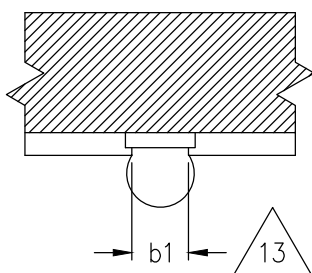


DETAIL A
(ROTATED 90° CW)

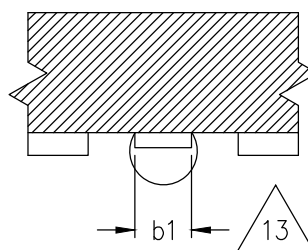


DETAIL B

TYPE 1 – SMD
(SOLDER MASK DEFINED)



TYPE 2 – NSMD
(NON SOLDER MASK DEFINED)



SECTION C-C

TABLE 1

COMMON DIMENSIONS						
SYMBOL	P = PACKAGE PROFILE HEIGHT					
	V: VERY THIN PROFILE			T: THIN PROFILE		
	MIN	NOM	MAX	MIN	NOM	MAX
A	< 0.80	---	1.00	< 1.00	---	1.20
A2	---	---	0.75	---	---	0.95
eD	0.80 BASIC					
eE	0.80 BASIC					
NOTES	1, 2, 7, 8			1, 2, 7, 8		
REF	11-877, 11-917			11-877, 11-917		
ISSUE	N			N		

TABLE 1 CONTINUED

COMMON DIMENSIONS						
SYMBOL	P = PACKAGE PROFILE HEIGHT					
	L: LOW PROFILE			STANDARD PROFILE		
	MIN	NOM	MAX	MIN	NOM	MAX
A	< 1.20	---	1.70	< 1.70	---	2.45
A2	---	---	1.45	---	---	2.20
eD	0.80 BASIC					
eE	0.80 BASIC					
NOTES	1, 2, 7, 8			1, 2, 7, 8		
REF	11-877, 11-917			11-877, 11-917		
ISSUE	N			N		

TABLE 2

COMMON DIMENSIONS									
SYMBOL	(b) SOLDER BALL DIAMETER								
	MIN	NOM	MAX	MIN	NOM	MAX	MIN	NOM	MAX
b	0.25	0.30	0.35	0.40	0.45	0.50	0.45	0.50	0.55
A1	0.15	----	----	0.25	----	----	0.25	----	----
b1	TYPE1	0.20	----	0.30	----	----	0.35	----	----
	TYPE2	0.20	----	0.30	----	----	0.35	----	----
NOTES	1, 2, 8								
REF	11-877								
ISSUE	L								

TABLE 3

TOLERANCE OF FORM AND POSITION			
SYMBOL	(b) SOLDER BALL DIAMETER		
	0.30 NOM	0.45 NOM	0.50 NOM
aaa	0.15	0.15	0.15
bbb	0.20	0.20	0.20
ddd	0.08	0.12	0.12
eee	0.15	0.15	0.15
fff	0.08	0.08	0.08
NOTES	1, 2	1, 2	1, 2
REF	11-510, 11-530	11-564	11-670
ISSUE	C	D	H

TABLE 4

$\phi b = 0.30 \text{ MM NOMINAL}$														
NEW VARIATION 	OLD VARIATION	D BASIC	E BASIC	D1 BASIC	E1 BASIC	MD	ME	SD BASIC	SE BASIC	n	N	FOOT PRINT	REF	ISSUE
P9.0x6.0-FM-48B	CA-2	9.00	6.00	5.60	4.00	8	6	0.40	0.40	48	48	B	11-564	D
P9.0x8.0-FM-48B	CB-2	9.00	8.00	5.60	4.00	8	6	0.40	0.40	48	48	B	11-564	D
P9.0x8.0-FM-60H	CJ-2	9.00	8.00	5.60	5.60	8	8	0.40	0.40	60	64	H	11-578	E
P12.0x6.0-FM-48B	CC-2	12.00	6.00	5.60	4.00	8	6	0.40	0.40	48	48	B	11-564	D
P12.0x9.0-FM-84J	CH-2	12.00	9.00	7.20	6.40	10	9	0.40	0.00	84	90	J	11-564	D
P12.0x11.0-FM-63C	CD-2	12.00	11.00	8.80	5.60	12	8	0.40	0.40	63	96	C	11-564	D
P14.0x8.0-FM-63C	CE-2	14.00	8.00	8.80	5.60	12	8	0.40	0.40	63	96	C	11-564	D
P15.0x8.0-FM-40G	CF-2	15.00	8.00	7.20	4.00	10	6	0.40	0.40	40	60	G	11-564	D
P16.0x10.0-FM-60H	CG-2	16.00	10.00	5.60	5.60	8	8	0.40	0.40	60	64	H	11-564	D
NOTES		2	2	2	2	4	4	2, 11	2, 11	5, 12		12		

TABLE 5

$\phi b = 0.45 \text{ MM NOMINAL}$														
NEW VARIATION 	OLD VARIATION	D BASIC	E BASIC	D1 BASIC	E1 BASIC	MD	ME	SD BASIC	SE BASIC	n	N	FOOT PRINT	REF	ISSUE
P8.0x6.0-FJ-48B	AB-1	8.00	6.00	5.60	4.00	8	6	0.40	0.40	48	48	B	11-522	B
P9.0x6.0-FJ-48B	AC-1	9.00	6.00	5.60	4.00	8	6	0.40	0.40	48	48	B	11-522	B
P9.0x8.0-FJ-48B	AD-1	9.00	8.00	5.60	4.00	8	6	0.40	0.40	48	48	B	11-522	B
P10.0x8.0-FJ-60W	AV-1	10.00	8.00	8.00	6.40	11	9	0.00	0.00	60	99	W	11-574	J
P10.0x10.0-FJ-60W	AAB-1	10.00	10.00	8.00	6.40	11	9	0.00	0.00	60	99	W	11-754	J
P11.0x9.0-FJ-78AL	-	11.00	9.00	9.60	6.40	13	9	0.00	0.00	78	117	AL	11-917	N
P11.5x8.0-FJ-60W	AW-1	11.50	8.00	8.00	6.40	11	9	0.00	0.00	60	99	W	11-574	J
P12.0x7.0-FJ-483B	AE-1	12.00	7.00	5.60	4.00	8	6	0.40	0.40	48	48	B	11-522	B
P12.0x8.0-FJ-60W	AY-1	12.00	8.00	8.00	6.40	11	9	0.00	0.00	60	99	W	11-574	J
P12.5x8.0-FJ-84Y	AAE-1	12.50	8.00	11.20	6.40	15	9	0.00	0.00	84	135	Y	11-754	J
P12.5x10.0-FJ-84Y	AAH-1	12.50	10.00	11.20	6.40	15	9	0.00	0.00	84	135	Y	11-754	J
P13.0x8.0-FJ-90AC	AAL-1	13.00	8.00	11.20	6.40	15	9	0.00	0.00	90	135	AC	11-754	J
P13.0x10.5-FJ-63AF	AAN-1	13.00	10.50	8.80	7.20	12	10	0.40	0.40	63	120	AF	11-855	K
P13.0x11.0-FJ-60A	AG-1	13.00	11.00	11.20	5.60	15	8	0.00	0.40	60	120	A	11-530	C
P13.0x11.0-FJ-90M	AN-1	13.00	11.00	11.20	6.40	15	9	0.00	0.00	90	135	M	11-578	E
P13.0x11.0-FJ-128P	AR-1	13.00	11.00	8.80	8.80	12	12	0.40	0.40	128	144	P	11-600	F
P13.5x10.5-FJ-126AD	AAM-1	13.50	10.50	12.00	8.80	16	12	0.40	0.40	126	192	AD	11-754	J
P14.0x8.0-FJ-60W	AAA-1	14.00	8.00	8.00	6.40	11	9	0.00	0.00	60	99	W	11-754	J
P14.0x8.0-FJ-64AE	AF-1	14.00	8.00	8.80	5.60	12	8	0.40	0.40	64	96	AE	11-522 11-574	B
P14.0x8.0-FJ-84Y	AAG-1	14.00	8.00	11.20	6.40	15	9	0.00	0.00	84	135	Y	11-754	J
P14.0x9.0-FJ-96AA	AAJ-1	14.00	9.00	12.00	6.40	16	9	0.40	0.00	96	144	AA	11-754	J
P14.0x10.0-FJ-136V	AU-1	14.00	10.00	12.80	8.80	17	12	0.00	0.40	136	201	V	11-682	I
NOTES		2	2	2	2	4	4	2, 11	2, 11	5, 12		12		

TABLE 5 (CONT)

ϕb = 0.45 MM NOMINAL														
NEW VARIATION	OLD VARIATION	D BASIC	E BASIC	D1 BASIC	E1 BASIC	MD	ME	SD BASIC	SE BASIC	n	N	FOOT PRINT	REF	ISSUE
P14.0x10.0-FJ-144AK	-	14.00	10.00	12.80	8.00	17	11	0.00	0.00	144	187	AK	11-885	M
P14.0x10.5-FJ-144AG	---	14.00	10.50	12.80	8.00	17	11	0.00	0.00	144	187	AG	11-877	L
P14.0x11.0-FJ-144AG	---	14.00	11.00	12.80	8.00	17	11	0.00	0.00	144	187	AG	11-877	L
P14.0x11.5-FJ-56N	AP-1	14.00	11.50	8.00	6.40	11	9	0.00	0.00	56	99	N	11-578	E
P14.0x11.5-FJ-60W	AAC-1	14.00	11.50	8.00	6.40	11	9	0.00	0.00	60	99	W	11-754	J
P14.0x11.5-FJ-84Y	AAD-1	14.00	11.50	11.20	6.40	15	9	0.00	0.00	84	135	Y	11-754	J
P15.0x13.0-FJ-144D	AH-1	15.00	13.00	9.60	9.60	13	13	0.00	0.00	144	169	D	11-564	D
P15.0x13.0-FJ-195E	AJ-1	15.00	13.00	11.20	9.60	15	13	0.00	0.00	195	195	E	11-564	D
P15.0x13.0-FJ-221K	AK-1	15.00	13.00	12.80	9.60	17	13	0.00	0.00	221	221	K	11-564	D
P16.0x8.0-FJ-60A	AA-1	16.00	8.00	11.20	5.60	15	8	0.00	0.40	60	120	A	11-510	A
P16.0x9.0-FJ-60F	AL-1	16.00	9.00	11.20	4.80	15	7	0.00	0.00	60	105	F	11-578	E
P16.0x9.0-FJ-64R	AT-1	16.00	9.00	11.20	6.40	15	9	0.00	0.00	64	135	R	11-622	G
P16.0x9.0-FJ-80L	AM-1	16.00	9.00	11.20	6.40	15	9	0.00	0.00	80	135	L	11.578	E
P16.5x10.0-FJ-68AB	AAK-1	16.50	10.00	14.40	6.40	19	9	0.00	0.00	68	171	AB	11-754	J
P16.5x10.0-FJ-84Y	AAF-1	16.50	10.00	11.20	6.40	15	9	0.00	0.00	84	135	Y	11-754	J
P18.0x14.0-FJ-272AH	---	18.00	14.00	16.80	12.00	22	16	0.40	0.40	272	352	AH	11-877	L
P18.0x14.0-FJ-316AJ	---	18.00	14.00	16.80	12.00	22	16	0.40	0.40	316	352	AJ	11-877	L
NOTES		2	2	2	2	4	4	2, 11	2, 11	5, 12		12		