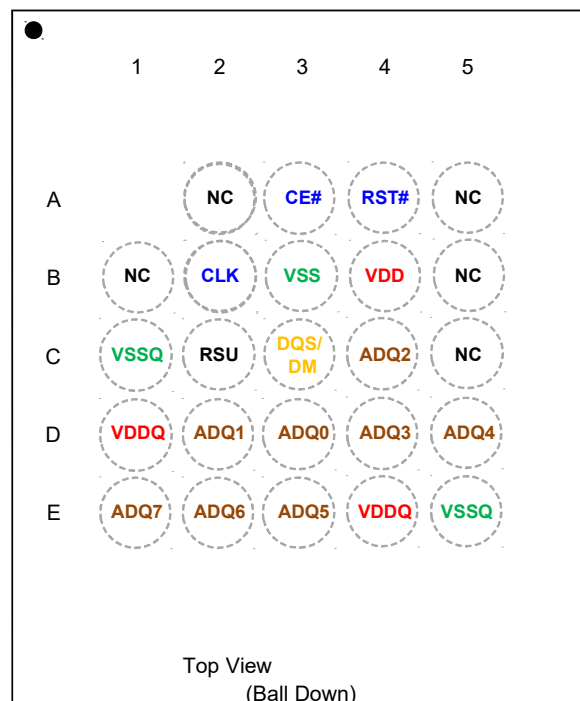# apmemory

Quad and Octal SPI IOT RAM and Mobile LPDRAM DDR2 and DDR3

APMemory Octal SPI Pseudo SRAMs are compliant with the Xccela ^{TM} consortium standard memory bus allowing up to 400MB/s data transfer rates with lowest standby current and I/O count especially for mobile, wearable and various IoT applications as a cost-optimized compact solution. APMemory is one of the consortium founding members as specialist for low to mid density volatile memory products already supplied as Known-Good-Die (bare tested chips) for Chip-On-Board or Multi-Chip-Package applications – now coming out in popular package standards for Surface-Mount-Technology board assembly throughout 2018 according to a tentative road map at the bottom of page 3.

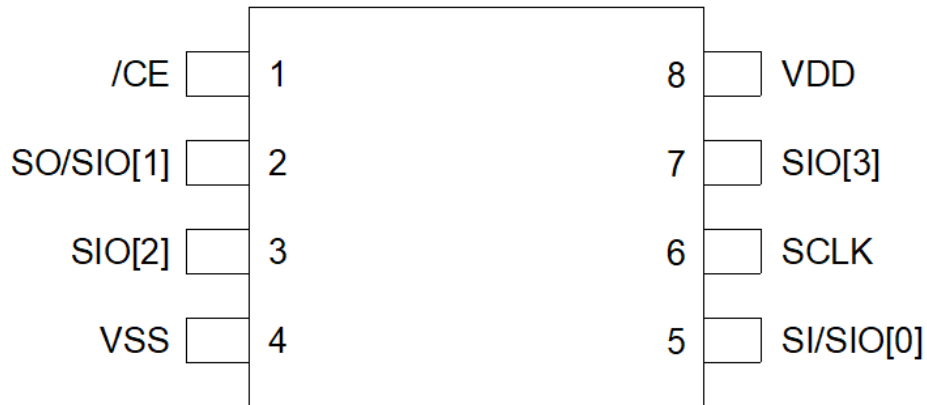### Ball Assignment for Octal SPI miniBGA 24L package

	1	2	3	4	5
A		NC	CE#	RST#	NC
B	NC	CLK	VSS	VDD	NC
C	VSSQ	RSU	DQS/DM	ADQ2	NC
D	VDDQ	ADQ1	ADQ0	ADQ3	ADQ4
E	ADQ7	ADQ6	ADQ5	VDDQ	VSSQ

Top View
(Ball Down)

6 x 8 x 1.2mm (Ball Size 0.4 - Pitch 1.0)

APS6408L-OB-BA for 1.8V

APS6408L-3OB-BA for 3V

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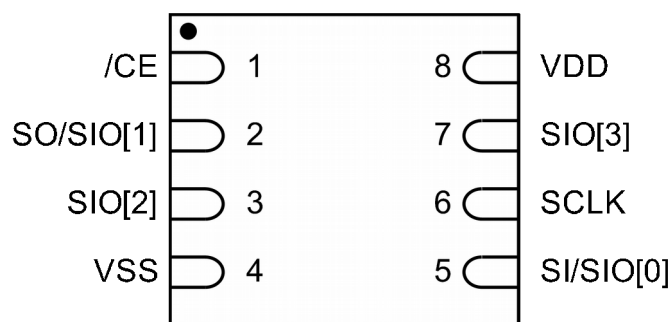**Pin/Pad assignment for SPI and Quad SPI PSRAM in SOP / USON / WSON Package Types**

SOP-8L

/CE	1		8	VDD
SO/SIO[1]	2		7	SIO[3]
SIO[2]	3		6	SCLK
VSS	4		5	SI/SIO[0]

APS6404L-SQ-SN for 1.8V

APS6404L-3SQ-SN for 3V

USON

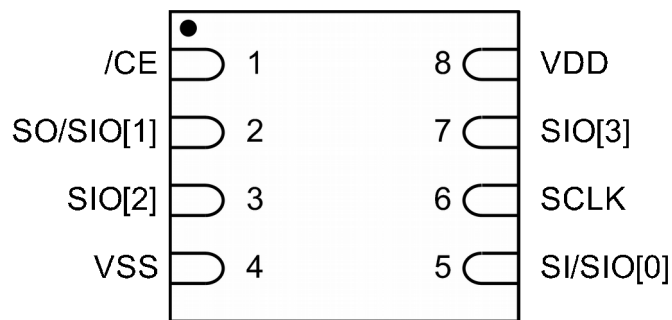|				
/CE	1		8	VDD
SO/SIO[1]	2		7	SIO[3]
SIO[2]	3		6	SCLK
VSS	4		5	SI/SIO[0]

(3 x 2 x 0.55mm)

APS6404L-SQ-ZR for 1.8V

APS6404L-3SQ-ZR for 3V

WSON

(6 x 5 x 0.75mm)

APS6404L-SQ-ZP for 1.8V

APS6404L-3SQ-ZP for 3V

Packaged Quad and Octal SPI
IoT RAM Availability in 2018

Tech	Density	PN	Voltage	Package	Temp	Grade	Speed Max	Sampling
QSPI (x4)	16Mb	APS1604M-SQ-SN	1.8	SOP8	-40~85C	Industrial	133Mhz	available
		APS1604M-3SQ-SN	3	SOP8	-40~85C	Industrial	133Mhz	available
	32Mb	APS3204L-SQH-SN	1.8	SOP8	-40~85C	Industrial	133Mhz	June
		APS3204L-3SQ-SN	3	SOP8	-40~85C	Industrial	133Mhz	June
	64Mb	APS6404L-SQH-SN	1.8	SOP8	-40~85C	Industrial	133Mhz	available
		APS6404L-3SQ-SN	3	SOP8	-40~85C	Industrial	133Mhz	available
Tech	Density	PN	Voltage	Package	Temp	Grade	Speed Max	Sampling
OPI (x8)	32Mb	APS3208L-OB-BA	1.8	BGA24	-40~85C	Industrial	200MHz	June
		APS3208L-3OB-BA	3	BGA24	-40~85C	Industrial	133MHz	June
	64Mb	APS6408L-OB-BA	1.8	BGA24	-40~85C	Industrial	200MHz	available
		APS6408L-3OB-BA	3	BGA24	-40~85C	Industrial	133MHz	available
	128Mb	APS12808L-OB-BA	1.8	BGA24	-40~85C	Industrial	200MHz	available
		APS12808L-3OB-BA	3	BGA24	-40~85C	Industrial	133MHz	available

Mobile 16/32bit-parallel DDR2 and DDR3 LPDRAM

APMemory as a leading LPDRAM supplier in Known-Good-Die form plans to release DDR2 and DDR3 versions also in standard Flat Ball Grid Array packages:
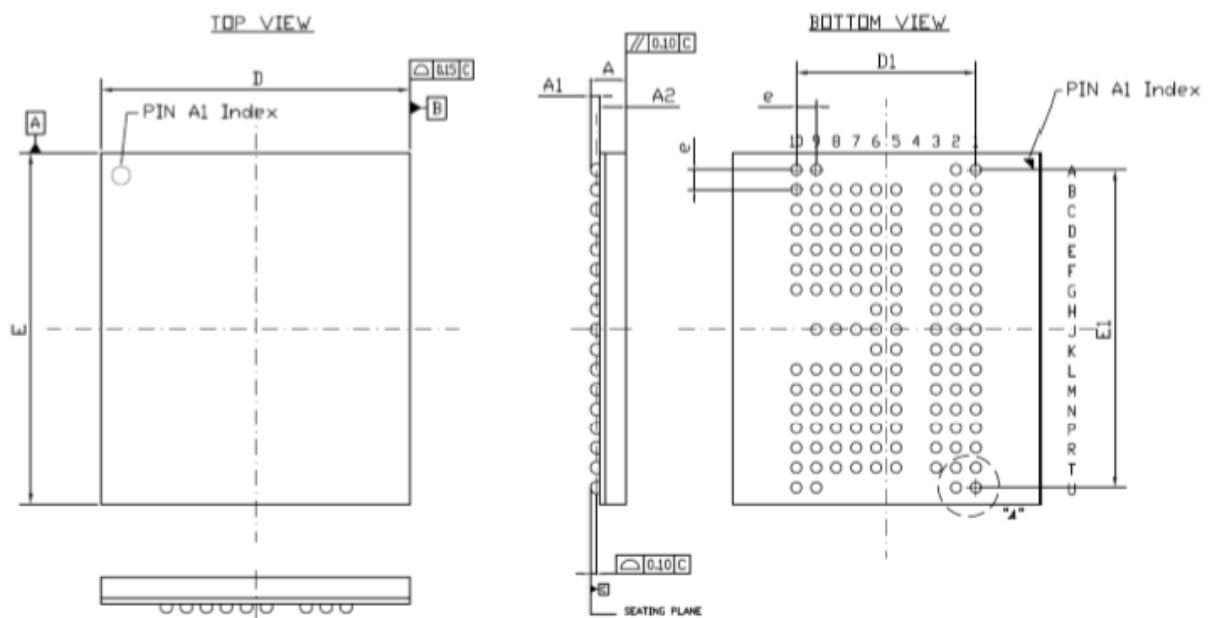
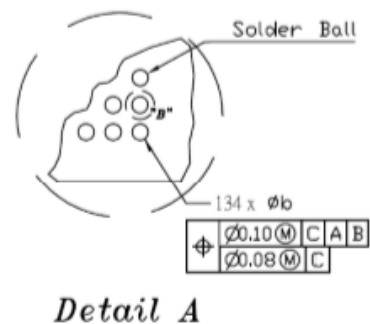AD251232/16E-y 512Mb LPDDR2

AD210032/16F-x 1Gb LPDDR2

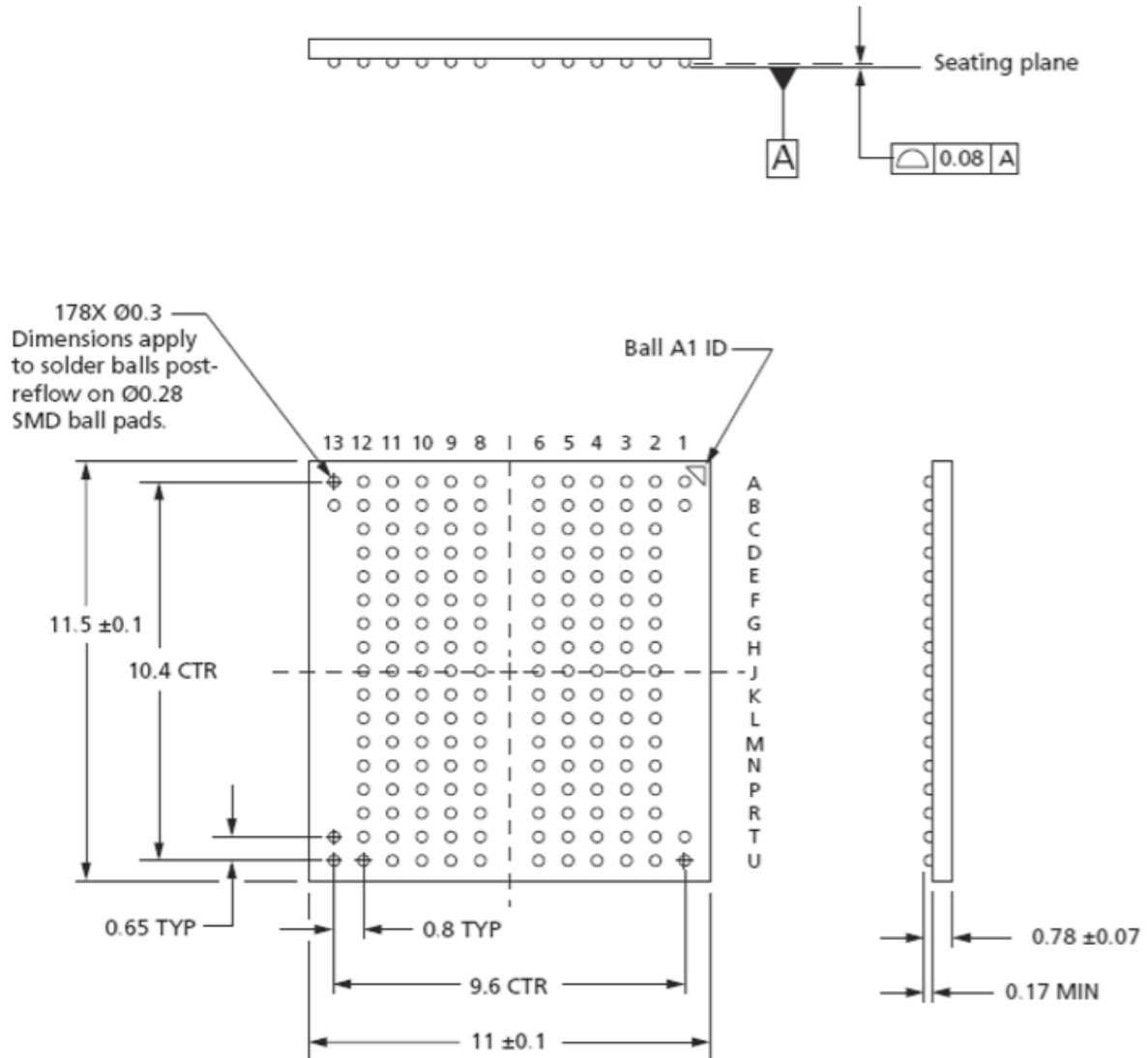AD220032/16D 2Gb LPDDR2

AD240032/16C 4Gb LPDDR2

134-Ball FBGA

REF.	Dimension in mm		
	Min	Nom	Max
A	—	—	0.98
A1	0.27	0.32	0.37
A2	0.55	0.58	0.61
øb	0.35	0.40	0.45
D	9.90	10.00	10.10
D1	5.85 BSC		
E	11.40	11.50	11.60
E1	10.40 BSC		
e	0.65 BSC		

10x11.5x1.0mm, ball pitch 0.65mm, ball size 0.3mm (package code AB)

AD340032/16A 4Gb LPDDR3

178-Ball FBGA

11x11.5x0.8mm, ball pitch 0.8/0.65mm, ball size 0.3mm (package code BL)

Other package standards are under evaluation and are depending on market demand. Further information on availability of various package types can be made available upon request.