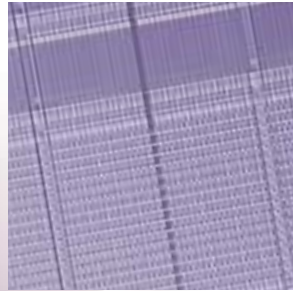




# Actel FPGA Package and Selector Guide



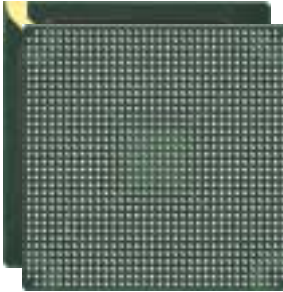
July 1, 2002

# Actel FPGA Selector Guide

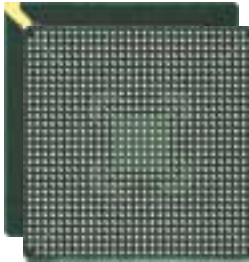
KEY f. – family p.s. – package size h. – package thickness p. – pin pitch/ball pitch

## FBGA

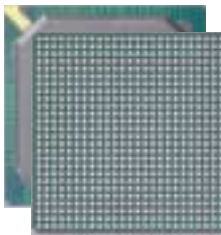
**FG1152**  
 f. ProASIC<sup>PLUS</sup> 1  
 Axcelerator  
 p.s. 35 X 35mm  
 h. 2.23mm  
 p. 1.0mm



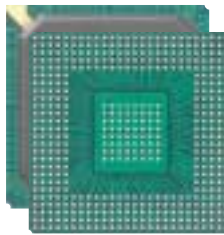
**FG896**  
 f. ProASIC<sup>PLUS</sup> 1  
 Axcelerator  
 p.s. 31 X 31mm  
 h. 2.23mm  
 p. 1.0mm



**FG676**  
 f. ProASIC  
 ProASIC<sup>PLUS</sup>  
 Axcelerator  
 p.s. 27 X 27mm  
 h. 2.23mm  
 p. 1.0mm



**FG484**  
 f. SX-A  
 p.s. 27 X 27mm  
 h. 2.23mm  
 p. 1.0mm



## FBGA (continued)

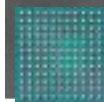
**FG484**  
 f. ProASIC<sup>PLUS</sup> 2  
 Axcelerator  
 p.s. 23 X 23mm  
 h. 2.23mm  
 p. 1.0mm



**FG256**  
 f. SX-A  
 ProASIC<sup>PLUS</sup> 2  
 Axcelerator  
 p.s. 17 X 17mm  
 h. 1.53mm  
 p. 1.0mm




**FG144**  
 f. SX-A,  
 ProASIC  
 ProASIC<sup>PLUS</sup>  
 p.s. 13 X 13mm  
 h. 1.45mm  
 p. 1.0mm

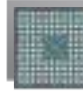


## CSP

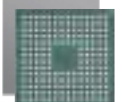
**CS49**  
 f. eX  
 p.s. 7 X 7mm  
 h. 1.35mm  
 p. 0.8mm



**CS128**  
 f. eX  
 p.s. 11 X 11mm  
 h. 1.35mm  
 p. 0.8mm

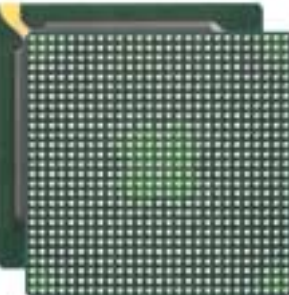


**CS180**  
 f. eX  
 Axcelerator  
 p.s. 13 X 13mm  
 h. 1.35mm  
 p. 0.8mm

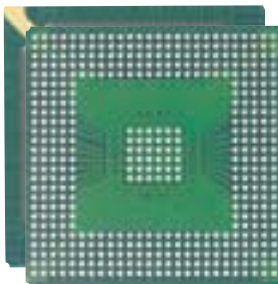


## BGA

**BG729**  
 f. Axcelerator  
 p.s. 35 X 35mm  
 h. 2.33mm  
 p. 1.27mm



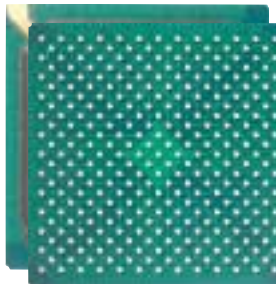
**BG456**  
 f. ProASIC,  
 ProASIC<sup>PLUS</sup>  
 p.s. 35 X 35mm  
 h. 2.33mm  
 p. 1.27mm



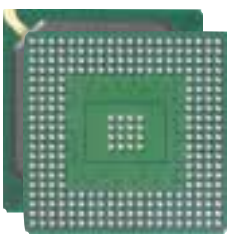
**BG329**  
 f. SX-A, SX  
 p.s. 31 X 31mm  
 h. 2.33mm  
 p. 1.27mm



**BG313**  
 f. SX  
 p.s. 35 X 35mm  
 h. 2.33mm  
 p. 1.27mm




**BG272**  
 f. ProASIC  
 MX  
 p.s. 27 X 27mm  
 h. 2.33mm  
 p. 1.27mm




## PQFP


**PQ240**  
 f. MX  
 p.s. 32 X 32mm  
 h. 3.40mm  
 p. 0.5mm




**PQ208**  
 f. SX-A, SX, MX,  
 ProASIC,  
 ProASIC<sup>PLUS</sup>  
 p.s. 28 X 28mm  
 h. 3.40mm  
 p. 0.5mm



**PQ160**  
 f. MX  
 p.s. 28 X 28mm  
 h. 3.37mm  
 p. 0.65mm



**PQ100**  
 f. MX  
 p.s. 14 X 20mm  
 h. 2.80mm  
 p. 0.65mm




## TQFP


**TQ176**  
 f. SX-A, SX, MX  
 p.s. 24 X 24mm  
 h. 1.4mm  
 p. 0.5mm




**TQ144**  
 f. SX-A, SX  
 p.s. 20 X 20mm  
 h. 1.4mm  
 p. 0.5mm



**TQ100**  
 f. SX-A, eX  
 ProASIC  
 ProASIC<sup>PLUS</sup>  
 p.s. 14 X 14mm  
 h. 1.4mm  
 p. 0.5mm



**TQ64**  
 f. eX  
 p.s. 10 X 10mm  
 h. 1.4mm  
 p. 0.5mm



## VQFP

**VQ100**  
 f. SX, MX  
 p.s. 14 X 14mm  
 h. 1.0mm  
 p. 0.5mm



**VQ80**  
 f. MX  
 p.s. 14 X 14mm  
 h. 1.0mm  
 p. 0.65mm



## PLCC

**PL84**  
 f. SX, MX  
 p.s. 1.154 x 1.154"  
 h. 0.150"  
 p. 0.05"



**PL68**  
 f. MX  
 p.s. 0.954 x 0.954"  
 h. 0.150"  
 p. 0.05"



**PL44**  
 f. MX  
 p.s. 0.654 x 0.654"  
 h. 0.152"  
 p. 0.05"



<sup>1</sup> FG896 and FG1152 are footprint compatible for ProASIC<sup>PLUS</sup> <sup>2</sup> FG256 and FG484 are footprint compatible for ProASIC<sup>PLUS</sup>



Actel FPGA Selector Guide		System Gates	Typical Gates	Logic Modules	Dedicated Flip-Flops	Max Flips-Flops	SRAM Bits	Max I/O Available	2.5V CMOS Drive	3.3V CMOS Drive	5V CMOS Drive	5V Tolerant Inputs	3.3V PCI I/O	5V PCI I/O	Slew Rate Control	Routed Clocks	Hard-Wired Clocks	PLL	JTAG	33MHz PCI	66MHz PCI	Temp Range	Speed Grades
eX	eX64	3,000	2,000	192	64	128	—	84	YES	YES	YES	YES	—	—	YES	2	1	—	YES	—	—	C,I	-F, Std., -P
	eX128	6,000	4,000	384	128	256	—	100	YES	YES	YES	YES	—	—	YES	2	1	—	YES	—	—	C,I	-F, Std., -P
	eX256	12,000	8,000	768	256	512	—	132	YES	YES	YES	YES	—	—	YES	2	1	—	YES	—	—	C,I	-F, Std., -P
SX-A	A54SX08A	12,000	8,000	768	256	512	—	130	YES	YES	YES	YES	YES	YES	YES	2	1	—	YES	YES	YES	C,I	-F, Std., -1, -2,-3
	A54SX16A	24,000	16,000	1,452	528	990	—	180	YES	YES	YES	YES	YES	YES	YES	2	1	—	YES	YES	YES	C,I,M	-F, Std., -1, -2,-3
	A54SX32A	48,000	32,000	2,880	1,080	1,980	—	249	YES	YES	YES	YES	YES	YES	YES	2	1	—	YES	YES	YES	C,I,M	-F, Std., -1, -2,-3
	A54SX72A	108,000	72,000	6,036	2,012	4,024	—	360	YES	YES	YES	YES	YES	YES	YES	6	1	—	YES	YES	YES	C,I,M	-F, Std., -1, -2,-3
SX	A54SX08	12,000	8,000	768	256	512	—	130	—	YES	—	YES	—	—	—	2	1	—	YES	—	—	C,I,M	Std., -1, -2,-3
	A54SX16	24,000	16,000	1,452	528	990	—	175	—	YES	—	YES	—	—	—	2	1	—	YES	—	—	C,I,M	Std., -1, -2,-3
	A54SX16P	24,000	16,000	1,452	528	990	—	175	—	YES	YES	YES	YES	YES	—	2	1	—	YES	YES	YES	C,I,M	Std., -1, -2,-3
	A54SX32	48,000	32,000	2,880	1,080	1,980	—	249	—	YES	—	YES	—	—	—	2	1	—	YES	—	—	C,I,M	Std., -1, -2,-3
MX	A40MX02	3,000	2,000	295	—	147	—	57	—	YES	YES	YES	—	—	—	1	—	—	—	—	—	C,I,M	-F, Std., -1, -2,-3
	A40MX04	6,000	4,000	547	—	273	—	69	—	YES	YES	YES	—	—	—	1	—	—	—	—	—	C,I,M	-F, Std., -1, -2,-3
	A42MX09	14,000	9,000	684	348	516	—	104	—	YES	YES	YES	—	—	—	2	—	—	—	—	—	C,I,M	-F, Std., -1, -2,-3
	A42MX16	24,000	16,000	1,232	624	928	—	140	—	YES	YES	YES	—	—	—	2	—	—	—	—	—	C,I,M	-F, Std., -1, -2,-3
	A42MX24	36,000	24,000	1,890	954	1,410	—	176	—	YES	YES	YES	YES	YES	—	2	—	—	YES	YES	—	C,I,M	-F, Std., -1, -2,-3
	A42MX36	54,000	36,000	2,438	1,230	1,822	2,560	202	—	YES	YES	YES	YES	YES	—	6	—	—	YES	YES	—	C,I,M	-F, Std., -1, -2,-3
ProASIC with FlashLock	A500K050	100,000	43,000	5,376	—	5,376	14k	204	YES	YES	—	—	YES	—	YES	4	—	—	YES	YES	—	C,I	Std.
	A500K130	290,000	105,000	12,800	—	12,800	45k	306	YES	YES	—	—	YES	—	YES	4	—	—	YES	YES	—	C,I	Std.
	A500K180	370,000	150,000	18,432	—	18,432	54k	362	YES	YES	—	—	YES	—	YES	4	—	—	YES	YES	—	C,I	Std.
	A500K270	475,000	215,000	26,880	—	26,880	63k	440	YES	YES	—	—	YES	—	YES	4	—	—	YES	YES	—	C,I	Std.
ProASIC <sup>PLUS</sup> with FlashLock	APA075	75,000	32,000	3,072	—	3,072	27k	158	YES	YES	—	—	YES	—	YES	4	—	2	YES	YES	—	C,I	Std.
	APA150	150,000	65,000	6,144	—	6,144	36k	242	YES	YES	—	—	YES	—	YES	4	—	2	YES	YES	—	C,I	Std.
	APA300	300,000	110,000	8,192	—	8,192	72k	290	YES	YES	—	—	YES	—	YES	4	—	2	YES	YES	—	C,I	Std.
	APA450	450,000	185,000	12,288	—	12,288	108k	344	YES	YES	—	—	YES	—	YES	4	—	2	YES	YES	—	C,I	Std.
	APA600	600,000	270,000	21,504	—	21,504	126k	454	YES	YES	—	—	YES	—	YES	4	—	2	YES	YES	—	C,I	Std.
	APA750	750,000	335,000	32,768	—	32,768	144k	562	YES	YES	—	—	YES	—	YES	4	—	2	YES	YES	—	C,I	Std.
APA1000	1,000,000	460,000	56,320	—	56,320	198k	712	YES	YES	—	—	YES	—	YES	4	—	2	YES	YES	—	C,I	Std.	
Accelerator	AX125	125,000	82,000	2,016	672	1,344	29k	172	YES	YES	NO	—	YES	YES*	YES	4	4	8	YES	YES	YES	C,I	Std., -1, -2,-3
	AX250	250,000	154,000	4,224	1,408	2,816	72k	256	YES	YES	NO	—	YES	YES*	YES	4	4	8	YES	YES	YES	C,I	Std., -1, -2,-3
	AX500	500,000	286,000	8,064	2,688	5,376	95k	336	YES	YES	NO	—	YES	YES*	YES	4	4	8	YES	YES	YES	C,I	Std., -1, -2,-3
	AX1000	1,000,000	612,000	18,144	6,048	12,096	199k	516	YES	YES	NO	—	YES	YES*	YES	4	4	8	YES	YES	YES	C,I	Std., -1, -2,-3
	AX2000	2,000,000	1,060,000	32,256	10,752	21,504	339k	684	YES	YES	NO	—	YES	YES*	YES	4	4	8	YES	YES	YES	C,I	Std., -1, -2,-3

\* with the use of an external resistor