

Dedicated Pin	48-Pin VTQFP	49-Pin Ultra FineLine BGA	100-Pin TQFP	100-Pin FineLine BGA	144-Pin TQFP	169-Pin Ultra FineLine BGA	256-Pin FineLine BGA
INPUT/GCLK1	41	A5	87	A6	125	D8	D9
INPUT/GCLRn	43	A3	89	B5	127	D6	E8
INPUT/OE1	42	A4	88	B6	126	D7	E9
INPUT/OE2/GCLK2	44	B4	90	A5	128	E7	D8
TDI (1)	2	B1	4	A1	4	E4	D4
TMS (1)	8	F1	15	F3	20	J4	J6
TCK (1)	29	F7	62	F8	89	J10	J11
TDO (1)	35	B7	73	A10	104	E10	D13
VREFA (2)	6	D1	12	F1	14	G4	J4
VREFB (2)	28	E7	60	E8	87	H10	H11
GNDINT	18, 40	B5, F4	38, 86	D6, G5	52, 57, 124, 129	A7, E8, J7, N7	A8, C9, G9, K8, P9
GNDIO	5, 27	C2, E6	11, 26, 43, 59, 74, 95	C3, D7, E5, F6, G4, H8	3, 13, 17, 33, 59, 64, 85, 105, 135	A3, A12, E1, F5, F13, H1, H9, J13, N2, N11	A3, B10, C2, D14, F6, G10, H8, J9, K7, L11, M3, P6, P10, R2, R3, T1, T15
VCCINT (2.5 V Only)	19, 45	B3, E4	39, 91	D5, G6	51, 58, 123, 130	B7, E6, H7, M7	B9, C8, G8, K9, P8
VCCIO1 (1.8 V, 2.5 V, or 3.3 V)	10	E2	3, 18, 34	D4, F5, H3	24, 50, 144	A2, F1, H5, J1, N3	B3, B5, G3, G7, J8, L3, L6, T2, T3
VCCIO2 (1.8 V, 2.5 V, or 3.3 V)	32	C6	51, 66, 82	C8, E6, G7	73, 76, 95, 115	A11, E13, F9, H13, N12	C14, E15, F11, G15, H9, K10, M15, P14

Dedicated Pin	48-Pin VTQFP	49-Pin Ultra FineLine BGA	100-Pin TQFP	100-Pin FineLine BGA	144-Pin TQFP	169-Pin Ultra FineLine BGA	256-Pin FineLine BGA
No Connect (N.C.)	–	–	–	–	1, 2, 12, 19, 34, 35, 36, 43, 46, 47, 48, 49, 66, 75, 90, 103, 108, 120, 121, 122	B5, B6, B8, B9, C5, C6, C7, C8, C9, C10, E2, E3, E11, E12, F2, F3, F11, F12, G1, G2, G3, G11, G12, H2, H3, H11, H12, J2, J3, J11, J12, L4, L5, L6, L7, L8, L9, M5, M6, M8, M9	A1, A2, A4, A5, A6, A7, A9, A10, A11, A12, A13, A14, A15, A16, B1, B2, B4, B6, B7, B8, B11, B12, B13, B14, B15, B16, C1, C3, C4, C6, C11, C13, C15, C16, D1, D2, D3, D15, D16, E1, E2, E3, E14, E16, F1, F2, F15, F16, G1, G2, G14, G16, H1, H2, H15, H16, J1, J2, J15, J16, K1, K2, K3, K14, K15, K16, L1, L2, L15, L16, M1, M14, M16, N1, N2, N3, N14, N15, N16, P1, P2, P3, P4, P12, P13, P15, P16, R1, R4, R5, R6, R7, R8, R9, R11, R12, R13, R14, R15, R16, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13, T14, T16
Total User I/O Pins (3)	40	41	84	84	100	100	100

LAB	MC	48-Pin VTQFP	IOGND Group for 48-pin VTQFP (200 mA)	IOVCC Group for 48-Pin VTQFP (100 mA)	I/O Bank
A	1	1	A	A	1
A	2	–	–	–	1
A	3	48	A	A	1
A	4	–	–	–	1
A	5	–	–	–	1
A	6	–	–	–	1
A	7	–	–	–	1
A	8	–	–	–	1
A	9	–	–	–	1
A	10	–	–	–	1
A	11	47	A	A	1
A	12	–	–	–	1
A	13	46	A	A	1
A	14	–	–	–	1
A	15	–	–	–	1
A	16	–	–	–	1
B	17	–	–	–	1
B	18	–	–	–	1
B	19	7	B	A	1
B	20	–	–	–	1
B	21	6 (2)	B	A	1
B	22	–	–	–	1
B	23	–	–	–	1
B	24	–	–	–	1
B	25	–	–	–	1
B	26	–	–	–	1
B	27	4	A	A	1
B	28	–	–	–	1
B	29	3	A	A	1
B	30	–	–	–	1
B	31	–	–	–	1
B	32	2 (1)	A	A	1
C	33	13	B	B	1
C	34	–	–	–	1
C	35	12	B	B	1
C	36	–	–	–	1
C	37	–	–	–	1
C	38	–	–	–	1
C	39	–	–	–	1
C	40	–	–	–	1
C	41	–	–	–	1
C	42	–	–	–	1
C	43	11	B	B	1
C	44	–	–	–	1
C	45	9	B	A	1
C	46	–	–	–	1
C	47	–	–	–	1
C	48	8 (1)	B	A	1

LAB	MC	48-Pin VTQFP	IOGND Group for 48-pin VTQFP (200 mA)	IOVCC Group for 48-Pin VTQFP (100 mA)	I/O Bank
D	49	–	–	–	1
D	50	–	–	–	1
D	51	17	B	B	1
D	52	–	–	–	1
D	53	–	–	–	1
D	54	–	–	–	1
D	55	–	–	–	1
D	56	16	B	B	1
D	57	–	–	–	1
D	58	–	–	–	1
D	59	15	B	B	1
D	60	–	–	–	1
D	61	–	–	–	1
D	62	–	–	–	1
D	63	–	–	–	1
D	64	14	B	B	1
E	65	–	–	–	2
E	66	–	–	–	2
E	67	20	B	C	2
E	68	–	–	–	2
E	69	21	B	C	2
E	70	–	–	–	2
E	71	–	–	–	2
E	72	22	B	C	2
E	73	–	–	–	2
E	74	–	–	–	2
E	75	23	B	C	2
E	76	–	–	–	2
E	77	24	B	C	2
E	78	–	–	–	2
E	79	–	–	–	2
E	80	–	–	–	2
F	81	–	–	–	2
F	82	–	–	–	2
F	83	25	B	C	2
F	84	–	–	–	2
F	85	–	–	–	2
F	86	–	–	–	2
F	87	–	–	–	2
F	88	–	–	–	2
F	89	–	–	–	2
F	90	–	–	–	2
F	91	26	B	C	2
F	92	–	–	–	2
F	93	28 (2)	A	C	2
F	94	–	–	–	2
F	95	–	–	–	2
F	96	29 (1)	A	C	2

LAB	MC	48-Pin VTQFP	IOGND Group for 48-pin VTQFP (200 mA)	IOVCC Group for 48-Pin VTQFP (100 mA)	I/O Bank
G	97	–	–	–	2
G	98	–	–	–	2
G	99	30	A	C	2
G	100	–	–	–	2
G	101	31	A	C	2
G	102	–	–	–	2
G	103	–	–	–	2
G	104	–	–	–	2
G	105	–	–	–	2
G	106	–	–	–	2
G	107	33	A	D	2
G	108	–	–	–	2
G	109	34	A	D	2
G	110	–	–	–	2
G	111	–	–	–	2
G	112	35 (1)	A	D	2
H	113	–	–	–	2
H	114	–	–	–	2
H	115	36	A	D	2
H	116	–	–	–	2
H	117	37	A	D	2
H	118	–	–	–	2
H	119	–	–	–	2
H	120	–	–	–	2
H	121	–	–	–	2
H	122	–	–	–	2
H	123	38	A	D	2
H	124	–	–	–	2
H	125	39	A	D	2
H	126	–	–	–	2
H	127	–	–	–	2
H	128	–	–	–	2

EPM7128B I/O Pins and I/O Standards

49-Pin, 169-Pin Ultra FineLine BGA, 100-Pin, 144-Pin TQFP, 100-Pin, 256-Pin FineLine BGA
ver. 1.0

LAB	MC	49-Pin Ultra FineLine BGA	100-Pin TQFP	100-Pin FineLine BGA	144-Pin TQFP	169-Pin Ultra FineLine BGA	256-Pin FineLine BGA	IOGND Group for Other Packages (200 mA)	IOVCC Group for Other Packages	I/O Bank
A	1	B2	2	C1	143	E5	F4	B	A (100 mA)	1
A	2	–	–	–	–	–	–	–	–	1
A	3	A1	1	B1	142	D4	E4	B	A (100 mA)	1
A	4	–	–	–	141	B2	C5	B	A (100 mA)	1
A	5	–	100	B2	140	B3	E5	B	A (100 mA)	1
A	6	–	99	A2	139	C3	D5	B	A (100 mA)	1
A	7	–	–	–	–	–	–	–	–	1
A	8	–	98	A3	138	C4	D6	B	A (100 mA)	1
A	9	–	97	B3	137	B4	E6	B	A (100 mA)	1
A	10	–	–	–	–	–	–	–	–	1
A	11	A2	96	A4	136	A4	D7	B	A (100 mA)	1
A	12	–	–	–	134	D5	C7	A	A (100 mA)	1
A	13	C3	94	B4	133	A5	E7	A	A (100 mA)	1
A	14	–	93	C4	132	F6	F7	A	A (100 mA)	1
A	15	–	–	–	–	–	–	–	–	1
A	16	–	92	C5	131	A6	F8	A	A (100 mA)	1
B	17	–	14	F4	18	D1	J7	C	B (200 mA)	1
B	18	–	–	–	–	–	–	–	–	1
B	19	D2	13	E2	16	G5	H5	C	B (200 mA)	1
B	20	–	–	–	15	D2	H3	C	B (200 mA)	1
B	21	D1 (2)	12 (2)	E1	14 (2)	G4 (2)	H4	C	B (200 mA)	1
B	22	–	10	E3	11	D3	H6	B	B (200 mA)	1
B	23	–	–	–	–	–	–	–	–	1
B	24	–	9	E4	10	C1	H7	B	B (200 mA)	1
B	25	–	8	D2	9	C2	G5	B	B (200 mA)	1
B	26	–	–	–	–	–	–	–	–	1
B	27	D4	7	D1	8	G7	G4	B	B (200 mA)	1
B	28	–	–	–	7	B1	F3	B	B (200 mA)	1
B	29	C1	6	D3	6	F4	G6	B	B (200 mA)	1
B	30	–	5	C2	5	A1	F5	B	B (200 mA)	1
B	31	–	–	–	–	–	–	–	–	1
B	32	B1 (1)	4 (1)	A1 (1)	4 (1)	E4 (1)	D4 (1)	B	B (200 mA)	1
C	33	G1	25	K1	32	K4	N4	C	C (200 mA)	1
C	34	–	–	–	–	–	–	–	–	1
C	35	F2	24	J1	31	J5	M4	C	C (200 mA)	1
C	36	–	–	–	30	N1	M2	C	C (200 mA)	1
C	37	–	23	H1	29	M1	L4	C	C (200 mA)	1
C	38	–	22	H2	28	L1	L5	C	C (200 mA)	1
C	39	–	–	–	–	–	–	–	–	1
C	40	–	21	G2	27	L2	K5	C	C (200 mA)	1
C	41	–	20	G1	26	K3	K4	C	C (200 mA)	1
C	42	–	–	–	–	–	–	–	–	1
C	43	D3	19	G3	25	G6	K6	C	C (200 mA)	1
C	44	–	–	–	23	K2	J3	C	B (200 mA)	1
C	45	E1	17	F2	22	H4	J5	C	B (200 mA)	1

EPM7128B I/O Pins and I/O Standards

49-Pin, 169-Pin Ultra FineLine BGA, 100-Pin, 144-Pin TQFP, 100-Pin, 256-Pin FineLine BGA
ver. 1.0

LAB	MC	49-Pin Ultra FineLine BGA	100- Pin TQFP	100-Pin FineLine BGA	144- Pin TQFP	169-Pin Ultra FineLine BGA	256-Pin FineLine BGA	IOGND Group for Other Packages (200 mA)	IOVCC Group for Other Packages	I/O Bank
C	46	–	16	F1 (2)	21	K1	J4 (2)	C	B (200 mA)	1
C	47	–	–	–	–	–	–	–	–	1
C	48	F1 (1)	15 (1)	F3 (1)	20 (1)	J4 (1)	J6 (1)	C	B (200 mA)	1
D	49	–	37	K5	56	N6	N8	D	D (100 mA)	1
D	50	–	–	–	–	–	–	–	–	1
D	51	G4	36	J5	55	K7	M8	D	D (100 mA)	1
D	52	–	–	–	54	N5	P7	D	D (100 mA)	1
D	53	E3	35	H5	53	H6	L8	D	D (100 mA)	1
D	54	–	33	K4	45	N4	N7	D	C (200 mA)	1
D	55	–	–	–	–	–	–	–	–	1
D	56	G3	32	J4	44	K6	M7	D	C (200 mA)	1
D	57	–	31	H4	42	M4	L7	D	C (200 mA)	1
D	58	–	–	–	–	–	–	–	–	1
D	59	F3	30	J3	41	J6	M6	D	C (200 mA)	1
D	60	–	–	–	40	M3	P5	D	C (200 mA)	1
D	61	–	29	K3	39	L3	N6	D	C (200 mA)	1
D	62	–	28	J2	38	M2	M5	D	C (200 mA)	1
D	63	–	–	–	–	–	–	–	–	1
D	64	G2	27	K2	37	K5	N5	D	C (200 mA)	1
E	65	–	40	K6	60	L10	N9	D	E (100 mA)	2
E	66	–	–	–	–	–	–	–	–	2
E	67	E5	41	J6	61	H8	M9	D	E (100 mA)	2
E	68	–	–	–	62	N8	R10	D	E (100 mA)	2
E	69	G5	42	H6	63	K8	L9	D	E (100 mA)	2
E	70	–	44	K7	65	N9	N10	E	E (100 mA)	2
E	71	–	–	–	–	–	–	–	–	2
E	72	F5	45	J7	67	J8	M10	E	E (100 mA)	2
E	73	–	46	H7	68	M10	L10	E	E (100 mA)	2
E	74	–	–	–	–	–	–	–	–	2
E	75	G6	47	J8	69	K9	M11	E	E (100 mA)	2
E	76	–	–	–	70	N10	P11	E	E (100 mA)	2
E	77	G7	48	K8	71	K10	N11	E	E (100 mA)	2
E	78	–	49	K9	72	L11	N12	E	E (100 mA)	2
E	79	–	–	–	–	–	–	–	–	2
E	80	–	50	K10	74	M11	N13	E	E (100 mA)	2
F	81	–	52	J10	77	M12	M13	E	F (200 mA)	2
F	82	–	–	–	–	–	–	–	–	2
F	83	F6	53	H10	78	J9	L13	E	F (200 mA)	2
F	84	–	–	–	79	N13	L14	E	F (200 mA)	2
F	85	–	54	H9	80	M13	L12	E	F (200 mA)	2
F	86	–	55	J9	81	L13	M12	E	F (200 mA)	2
F	87	–	–	–	–	–	–	–	–	2
F	88	–	56	G9	82	L12	K12	E	F (200 mA)	2
F	89	–	57	G10	83	K13	K13	E	F (200 mA)	2
F	90	–	–	–	–	–	–	–	–	2

EPM7128B I/O Pins and I/O Standards

49-Pin, 169-Pin Ultra FineLine BGA, 100-Pin, 144-Pin TQFP, 100-Pin, 256-Pin FineLine BGA
ver. 1.0

LAB	MC	49-Pin Ultra FineLine BGA	100- Pin TQFP	100-Pin FineLine BGA	144- Pin TQFP	169-Pin Ultra FineLine BGA	256-Pin FineLine BGA	IOGND Group for Other Packages (200 mA)	IOVCC Group for Other Packages	I/O Bank
F	91	D5	58	G8	84	G8	K11	E	F (200 mA)	2
F	92	–	–	–	86	K12	J14	F	F (200 mA)	2
F	93	E7 (2)	60 (2)	F9	87 (2)	H10 (2)	J12	F	F (200 mA)	2
F	94	–	61	F10	88	K11	J13	F	F (200 mA)	2
F	95	–	–	–	–	–	–	–	–	2
F	96	F7 (1)	62 (1)	F8 (1)	89 (1)	J10 (1)	J11 (1)	F	F (200 mA)	2
G	97	–	63	F7	91	G13	J10	F	F (200 mA)	2
G	98	–	–	–	–	–	–	–	–	2
G	99	D7	64	E9	92	G10	H12	F	F (200 mA)	2
G	100	–	–	–	93	D13	H14	F	F (200 mA)	2
G	101	D6	65	E10	94	G9	H13	F	F (200 mA)	2
G	102	–	67	E8 (2)	96	D12	H11 (2)	F	G (200 mA)	2
G	103	–	–	–	–	–	–	–	–	2
G	104	–	68	E7	97	D11	H10	F	G (200 mA)	2
G	105	–	69	D9	98	C13	G12	F	G (200 mA)	2
G	106	–	–	–	–	–	–	–	–	2
G	107	C7	70	D10	99	F10	G13	F	G (200 mA)	2
G	108	–	–	–	100	C12	F14	F	G (200 mA)	2
G	109	B6	71	D8	101	E9	G11	F	G (200 mA)	2
G	110	–	72	C9	102	B13	F12	F	G (200 mA)	2
G	111	–	–	–	–	–	–	–	–	2
G	112	B7 (1)	73 (1)	A10 (1)	104 (1)	E10 (1)	D13 (1)	F	G (200 mA)	2
H	113	–	75	C10	106	A13	F13	A	G (200 mA)	2
H	114	–	–	–	–	–	–	–	–	2
H	115	A7	76	B10	107	D10	E13	A	G (200 mA)	2
H	116	–	–	–	109	B12	C12	A	G (200 mA)	2
H	117	A6	77	B9	110	D9	E12	A	G (200 mA)	2
H	118	–	78	A9	111	C11	D12	A	G (200 mA)	2
H	119	–	–	–	–	–	–	–	–	2
H	120	–	79	A8	112	B11	D11	A	G (200 mA)	2
H	121	–	80	B8	113	B10	E11	A	G (200 mA)	2
H	122	–	–	–	–	–	–	–	–	2
H	123	C5	81	A7	114	F8	D10	A	G (200 mA)	2
H	124	–	–	–	116	A10	C10	A	H (100 mA)	2
H	125	C4	83	B7	117	F7	E10	A	H (100 mA)	2
H	126	–	84	C7	118	A9	F10	A	H (100 mA)	2
H	127	–	–	–	–	–	–	–	–	2
H	128	–	85	C6	119	A8	F9	A	H (100 mA)	2

Notes:

- (1) This pin may function as either a JTAG port or a user I/O pin. If the device is configured to use the JTAG ports for in-system programming, this pin is not available as a user I/O pin.
- (2) This pin may function as either a VREF pin or a user I/O pin. If this pin is programmed to be a VREF pin for using the advanced I/O standards, this pin is not available as a user I/O pin.
- (3) The user I/O pin count includes dedicated input pins and all I/O pins.