dsPIC33EP512MU810 and PIC24EP512GU810

dsPIC33EP512MU810 and PIC24EP512GU810 100-pin TQFP to 100-pin Plug-In Module (PIM) Information Sheet

OVERVIEW

The dsPIC33EP512MU810 and PIC24EP512GU810 PIMs (MA330025-1 and MA240025-1, respectively) are designed to demonstrate the capabilities of the dsPIC33EP512MU810 and PIC24EP512GU810 devices. The dsPIC33EP512MU810 is a high-performance 16-bit Digital Signal Controller (DSC) and the PIC24EP512GU810 is a high-performance 16-bit Microcontroller (MCU). Both devices include a USB 2.0 OTG interface. Refer to Figure 1 for the device schematics and Figure 2 for the PIM connector schematics.

These PIMs can be used for USB as well as non-USB applications by configuring jumpers on the PIM PC board. This routing is intended to maximize the compatibility of the PIM with the Explorer 16 Development Board (DM240001) and its related PICtail™ Plus daughter boards. For non-USB applications, jumpers J1 through J5 must be populated across positions 1 and 2, while jumpers J6 through J10 should be populated. For USB applications, jumpers J1 through J5 must be populated across positions 2 and 3, while jumpers J6 through J10 should not be populated. Figure 3 shows the jumper locations.

Table 1 shows the mapping between the 100-pin PIM interface board and the device pins when the jumpers on the PIM are configured for USB applications. Table 2 shows the mapping between the 100-pin PIM interface board and the device pins when the jumpers on the PIM are configured for non-USB applications.

In addition, the dsPIC33EP512MU810 PIM can be used to control the Microchip MCLV (DM330021), MCHV (DM330023) and MCSM (DM330022) motor control development boards. The Microchip application note AN1208 *"Integrated Power Factor Correction (PFC) and Sensorless Field Oriented Control (FOC) System"* (DS01208) requires that an optional zero Ohm resistor to be installed at location R1.

TABLE 1: 100-PIN TQFP TO 100-PIN PIM FOR USB APPLICATIONS

Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #	Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #
1	RP127/RG15	—	19	AN21/RP89/RE9	19
2	V$_{DD}$	2	20	AN5/C1INA/VBUSON/VBUSST/RP37/RB5	96
3	AN29/PWM3H/PMD5/RP85/RE5	3	21	AN4/C1INB/USBOEN/RP36/RB4	21
4	AN30/PWM4L/PMD6/RP86/RE6	4	22	AN3/C2INA/VPIO/RP35/RB3	22
5	AN31/PWM4H/PMD7/RP87/RE7	5	23	AN2/C2INB/VMIO/RP34/RB2	23
6	AN16/PWM5L/RP49/RC1	6	24	PGEC3/AN1/RP33/RB1	24
7	AN17/PWM5H/RP50/RC2	7	25	PGED3/AN0/RP32/RB0	25
8	AN18/PWM6L/RP51/RC3	8	26	PGEC1/AN6/RP38/RB6	26
9	AN19/PWM6H/RP52/RC4	9	27	PGED1/AN7/RCV/RP39/RB7	27
10	C1IND/SCK2/PMA5/RP118/RG6	10	28	V$_{REF}$-/RA9	28
11	C1INC/SDI2/PMA4/RP119/RG7	11	29	V$_{REF}$+/RA10	29
12	C2IND/SDO2/PMA3/RP120/RG8	12	30	AV$_{DD}$	30
13	MCLR	13	31	AV$_{SS}$	31
14	C2INC/PMA2/RP121/RG9	14	32	AN8/PMA6/RP40/RB8	32
15	V$_{SS}$	15	33	AN9/PMA7//RP41/RB9	33
16	V$_{DD}$	16	34	AN10/CVREF/PMA13/RP42/RB10	34
17	TMS/RP16/RA0	17	35	AN11/PMA12/RP43/RB11	35
18	AN20/RP88/RE8	18	36	V$_{SS}$	36
37	V$_{DD}$	37	69	ASDA1/DPLN/RP73/RD9	69

TABLE 1: **100-PIN TQFP TO 100-PIN PIM FOR USB APPLICATIONS (CONTINUED)**

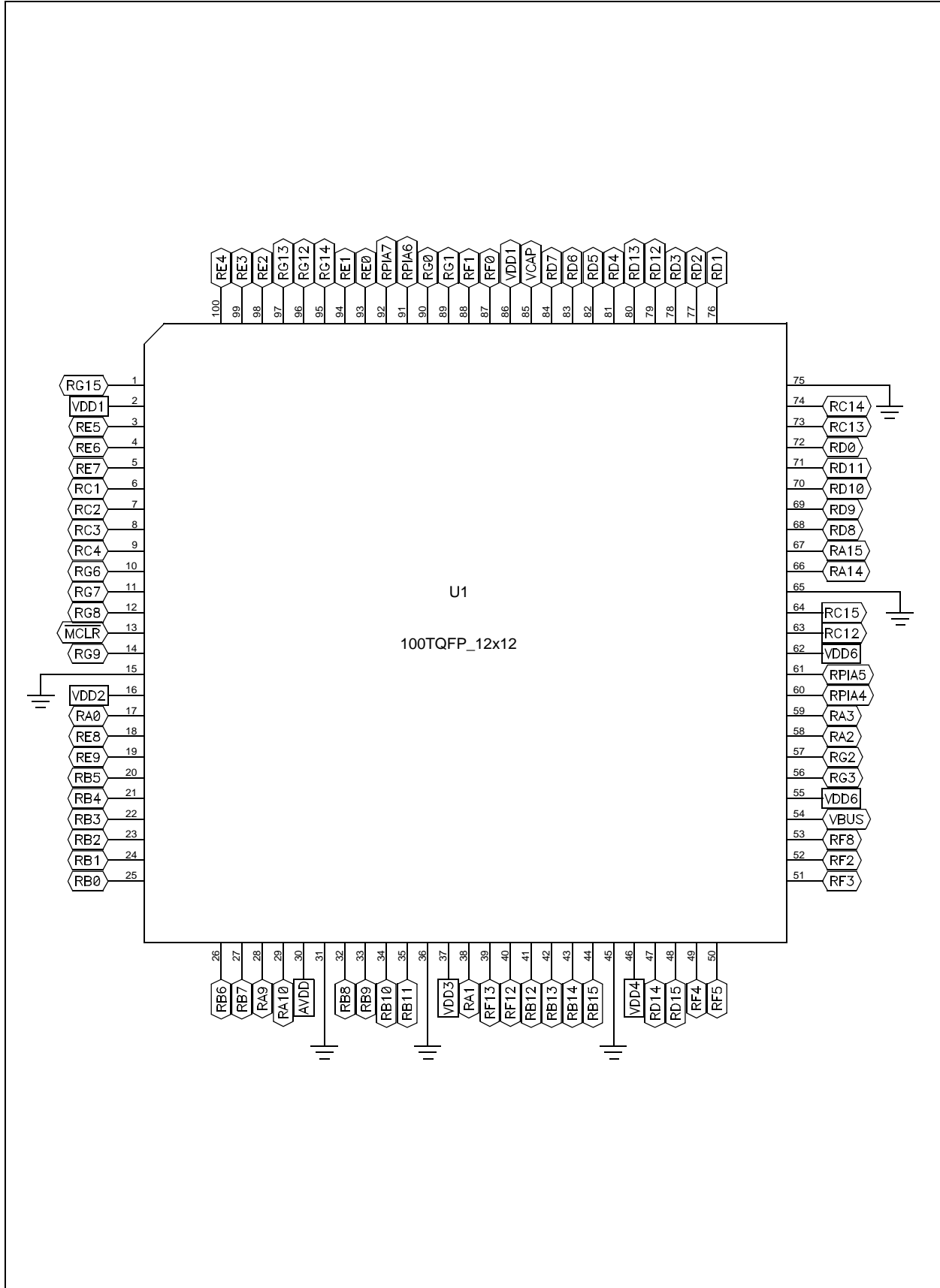| Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #	Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #
38	TCK/RP17/RA1	38	70	ASCL1/PMCS2/RP74/RD10	70
39	RP109/RF13	39	71	PMCS1/RP75/RD11	71
40	RP108/RF12	40	72	INT0/DMH/RP64/RD0	72,55
41	AN12/PMA11/RP44/RB12	41	73	PGED2/SOSCI/C3IND/RP61/RC13	73
42	AN13/PMA10/RP45/RB13	42	74	PGEC2/SOSCO/C3INC/T1CK/RP62/RC14	74
43	AN14/PMA1/RP46/RB14	43	75	V$_{SS}$	75
44	AN15/PMA0/RP47/RB15	44	76	VCPCON/RP65/RD1	76
45	V$_{SS}$	45	77	DPH/RP66/RD2	77
46	V$_{DD}$	46	78	PMBE/RP67/RD3	78
47	RP78/RD14	47	79	RP76/RD12	79
48	RP79/RD15	48	80	RP77/RD13	80
49	SDA2/PMA9/RP100/RF4	49	81	PMWR/RP68/RD4	81
50	SCL2/PMA8/RP101/RF5	50	82	PMRD/RP69/RD5	82
51	USBID/RP99/RF3	95	83	C3INB/RP70/RD6	83
52	RP98/RF2	52	84	C3INA/VCMPST3/RP71/RD7	84
53	RP104/RF8	53	85	V$_{CAP}$	85
54	V$_{BUS}$	1	86	V$_{DD}$	86
55	V$_{USB}$	62	87	VCMPST1/RP96/RF0	87
56	D-/RG3	89	88	VCMPST2/RP97/RF1	88
57	D+/RG2	90	89	RP113/RG1	—
58	ASCL2/RP18/RA2	58	90	RP112/RG0	—
59	ASDA2/RP19/RA3	59	91	AN22/RP22/RA6	91
60	TDI/RP20/RA4	60	92	AN23/RP23/RA7	92
61	TDO/RP21/RA5	61	93	AN24/PWM1L/PMD0/RP80/RE0	93
62	V$_{DD}$	62	94	AN25/PWM1H/PMD1/RP81/RE1	94
63	OSC1/RP60/RC12	63	95	RP126/RG14	—
64	OSC2/CLKO/RC15	64	96	RP124/RG12	—
65	V$_{SS}$	65	97	RP125/RG13	97
66	RP30/RA14	66	98	AN26/PWM2L/PMD2/RP82/RE2	98
67	RP31/RA15	67	99	AN27/PWM2H/PMD3/RP83/RE3	99
68	RTCC/DMLN/RP72/RD8	68	100	AN28/PWM3L/PMD4/RP84/RE4	100

TABLE 2: 100-PIN TQFP TO 100-PIN PIM FOR NON-USB APPLICATIONS

Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #	Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #
1	RP127/RG15	1	48	RP79/RD15	48
2	V$_{DD}$	2	49	SDA2/PMA9/RP100/RF4	49
3	AN29/PWM3H/PMD5/RP85/RE5	3	50	SCL2/PMA8/RP101/RF5	50
4	AN30/PWM4L/PMD6/RP86/RE6	4	51	USBID/RP99/RF3	51
5	AN31/PWM4H/PMD7/RP87/RE7	5	52	RP98/RF2	52
6	AN16/PWM5L/RP49/RC1	6	53	RP104/RF8	53
7	AN17/PWM5H/RP50/RC2	7	54	V$_{BUS}$	54
8	AN18/PWM6L/RP51/RC3	8	55	V$_{USB}$	62
9	AN19/PWM6H/RP52/RC4	9	56	D-/RG3	56
10	C1IND/SCK2/PMA5/RP118/RG6	10	57	D+/RG2	57
11	C1INC/SDI2/PMA4/RP119/RG7	11	58	ASCL2/RP18/RA2	58
12	C2IND/SDO2/PMA3/RP120/RG8	12	59	ASDA2/RP19/RA3	59
13	MCLR	13	60	TDI/RP20/RA4	60
14	C2INC/PMA2/RP121/RG9	14	61	TDO/RP21/RA5	61
15	V$_{SS}$	15	62	V$_{DD}$	62
16	V$_{DD}$	16	63	OSC1/RP60/RC12	63
17	TMS/RP16/RA0	17	64	OSC2/CLKO/RC15	64
18	AN20/RP88/RE8	18	65	V$_{SS}$	65
19	AN21/RP89/RE9	19	66	RP30/RA14	66
20	AN5/C1INA/VBUSON//VBUSST/RP37/RB5	20	67	RP31/RA15	67
21	AN4/C1INB/USBOEN/RP36/RB4	21	68	RTCC/DMLN/RP72/RD8	68
22	AN3/C2INA/VPIO/RP35/RB3	22	69	ASDA1/DPLN/RP73/RD9	69
23	AN2/C2INB/VMIO/RP34/RB2	23	70	ASCL1/PMCS2/RP74/RD10	70
24	PGEC3/AN1/RP33/RB1	24	71	PMCS1/RP75/RD11	71
25	PGED3/AN0/RP32/RB0	25	72	INT0/DMH/RP64/RD0	72,55
26	PGEC1/AN6/RP38/RB6	26	73	PGED2/SOSCI/C3IND/RP61/RC13	73
27	PGED1/AN7/RCV/RP39/RB7	27	74	PGEC2/SOSCO/C3INC/T1CK/RP62/RC14	74
28	V$_{REF}$-/RA9	28	75	V$_{SS}$	75
29	V$_{REF}$+/RA10	29	76	VCPCON/RP65/RD1	76
30	AV$_{DD}$	30	77	DPH/RP66/RD2	77
31	AV$_{SS}$	31	78	PMBE/RP67/RD3	78
32	AN8/PMA6/RP40/RB8	32	79	RP76/RD12	79
33	AN9/PMA7//RP41/RB9	33	80	RP77/RD13	80
34	AN10/CV$_{REF}$/PMA13/RP42/RB10	34	81	PMWR/RP68/RD4	81
35	AN11/PMA12/RP43/RB11	35	82	PMRD/RP69/RD5	82
36	V$_{SS}$	36	83	C3INB/RP70/RD6	83
37	V$_{DD}$	37	84	C3INA/VCMPST3/RP71/RD7	84
38	TCK/RP17/RA1	38	85	V$_{CAP}$	85
39	RP109/RF13	39	86	V$_{DD}$	86
40	RP108/RF12	40	87	VCMPST1/RP96/RF0	87
41	AN12/PMA11/RP44/RB12	41	88	VCMPST2/RP97/RF1	88
42	AN13/PMA10/RP45/RB13	42	89	RP113/RG1	89
43	AN14/PMA1/RP46/RB14	43	90	RP112/RG0	90
44	AN15/PMA0/RP47/RB15	44	91	AN22/RP22/RA6	91
45	V$_{SS}$	45	92	AN23/RP23/RA7	92
46	V$_{DD}$	46	93	AN24/PWM1L/PMD0/RP80/RE0	93
47	RP78/RD14	47	94	AN25/PWM1H/PMD1/RP81/RE1	94

TABLE 2: 100-PIN TQFP TO 100-PIN PIM FOR NON-USB APPLICATIONS (CONTINUED)

Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #	Device Pin #	dsPIC33EP512MU810 and PIC24EP512GU810 Functional Description	PIM Pin #
95	RP126/RG14	95	98	AN26/PWM2L/PMD2/RP82/RE2	98
96	RP124/RG12	96	99	AN27/PWM2H/PMD3/RP83/RE3	99
97	RP125/RG13	97	100	AN28/PWM3L/PMD4/RP84/RE4	100

FIGURE 1: **100-PIN DEVICE SCHEMATIC**

FIGURE 2: **100-PIN PIM SOCKET SCHEMATIC**
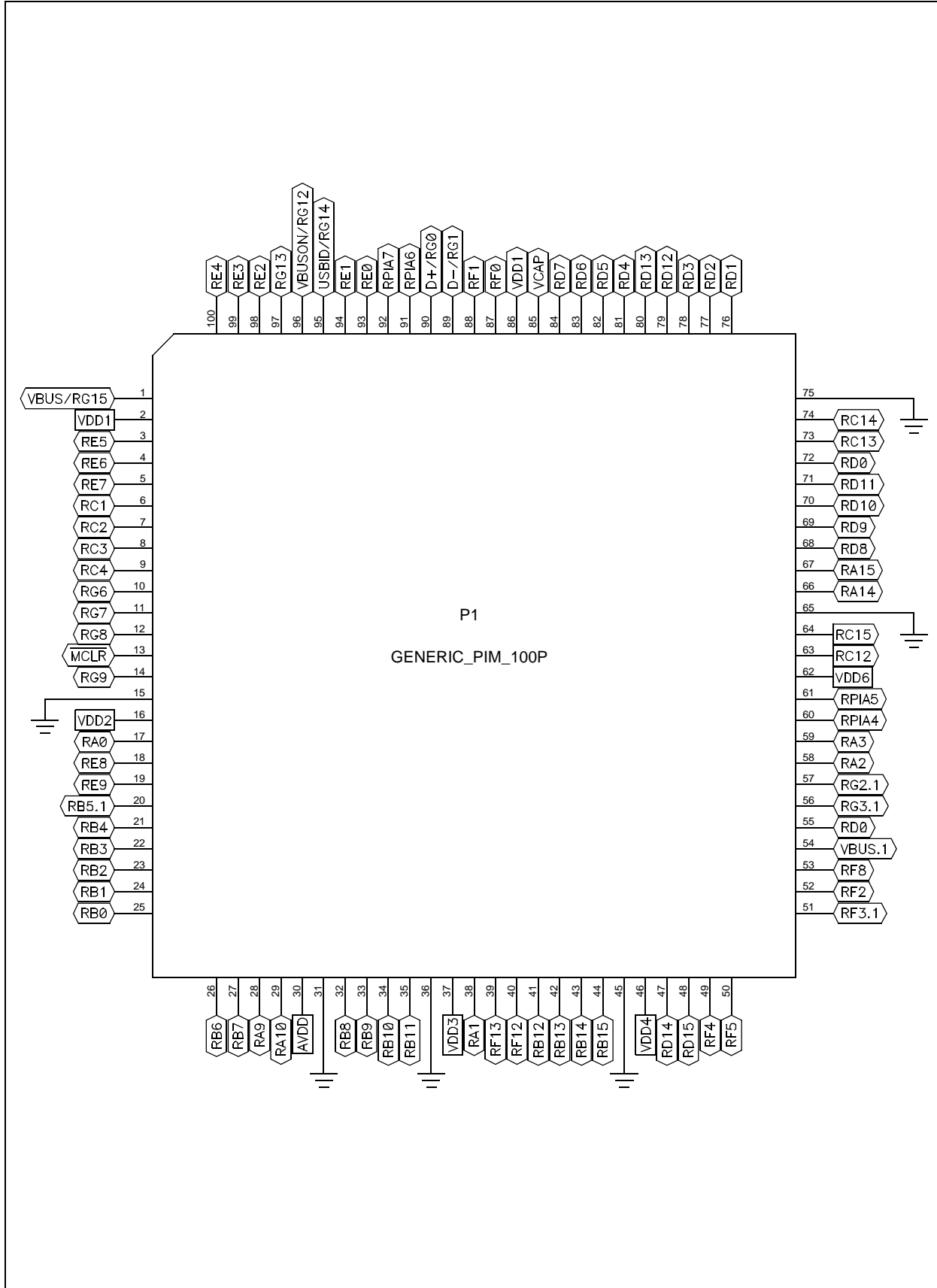
FIGURE 3: JUMPER CONFIGURATION SCHEMATIC
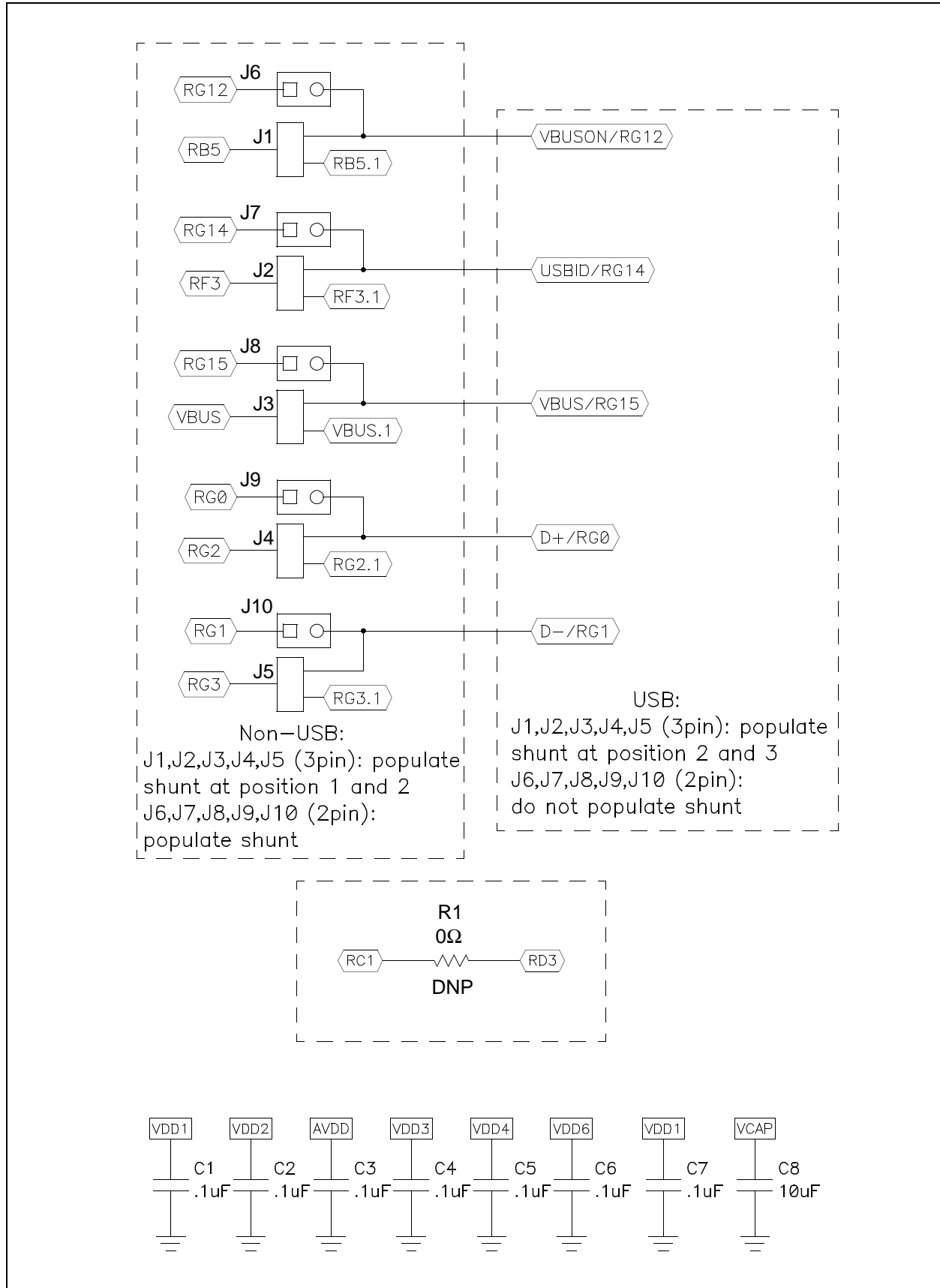
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