A. ECAD Design Information

This appendix contains information that supports the development of the PCB ECAD model for this device. It is intended to be used by PCB designers.

A.1 Part Number Indexing

Orderable Part Number	Number of Pins	Package Type	Package Code/POD Number
R5F11BCCGLA#U0	36	WFLGA	PWLG0036KA-A
R5F11BCCGLA#W0	36	WFLGA	PWLG0036KA-A
R5F11BCCALA#U0	36	WFLGA	PWLG0036KA-A
R5F11BCCALA#W0	36	WFLGA	PWLG0036KA-A
R5F11BCEGLA#U0	36	WFLGA	PWLG0036KA-A
R5F11BCEGLA#W0	36	WFLGA	PWLG0036KA-A
R5F11BCEALA#U0	36	WFLGA	PWLG0036KA-A
R5F11BCEALA#W0	36	WFLGA	PWLG0036KA-A
R5F11B7CANA#00	24	HWQFN	PWQN0024KF-A
R5F11B7CANA#20	24	HWQFN	PWQN0024KF-A
R5F11B7CANA#40	24	HWQFN	PWQN0024KF-A
R5F11B7CGNA#00	24	HWQFN	PWQN0024KF-A
R5F11B7CGNA#20	24	HWQFN	PWQN0024KF-A
R5F11B7CGNA#40	24	HWQFN	PWQN0024KF-A
R5F11B7EANA#00	24	HWQFN	PWQN0024KF-A
R5F11B7EANA#20	24	HWQFN	PWQN0024KF-A
R5F11B7EANA#40	24	HWQFN	PWQN0024KF-A
R5F11B7EGNA#00	24	HWQFN	PWQN0024KF-A
R5F11B7EGNA#20	24	HWQFN	PWQN0024KF-A
R5F11B7EGNA#40	24	HWQFN	PWQN0024KF-A
R5F11BBCAFP#10	32	LQFP	PLQP0032GB-A
R5F11BBCAFP#30	32	LQFP	PLQP0032GB-A
R5F11BBCAFP#50	32	LQFP	PLQP0032GB-A
R5F11BBCANA#00	32	HWQFN	PWQN0032KE-A
R5F11BBCANA#20	32	HWQFN	PWQN0032KE-A
R5F11BBCANA#40	32	HWQFN	PWQN0032KE-A
R5F11BBCGFP#10	32	LQFP	PLQP0032GB-A
R5F11BBCGFP#30	32	LQFP	PLQP0032GB-A
R5F11BBCGFP#50	32	LQFP	PLQP0032GB-A
R5F11BBCGNA#00	32	HWQFN	PWQN0032KE-A
R5F11BBCGNA#20	32	HWQFN	PWQN0032KE-A
R5F11BBCGNA#40	32	HWQFN	PWQN0032KE-A
R5F11BBEAFP#10	32	LQFP	PLQP0032GB-A
R5F11BBEAFP#30	32	LQFP	PLQP0032GB-A
R5F11BBEAFP#50	32	LQFP	PLQP0032GB-A
R5F11BBEANA#00	32	HWQFN	PWQN0032KE-A
R5F11BBEANA#20	32	HWQFN	PWQN0032KE-A
R5F11BBEANA#40	32	HWQFN	PWQN0032KE-A
R5F11BBEGFP#10	32	LQFP	PLQP0032GB-A
R5F11BBEGFP#30	32	LQFP	PLQP0032GB-A
R5F11BBEGFP#50	32	LQFP	PLQP0032GB-A
R5F11BBEGNA#00	32	HWQFN	PWQN0032KE-A
R5F11BBEGNA#20	32	HWQFN	PWQN0032KE-A
R5F11BBEGNA#40	32	HWQFN	PWQN0032KE-A
R5F11BGCAFB#10	48	LFQFP	PLQP0048KB-B
R5F11BGCAFB#30	48	LFQFP	PLQP0048KB-B
R5F11BGCAFB#50	48	LFQFP	PLQP0048KB-B
R5F11BGCGFB#10	48	LFQFP	PLQP0048KB-B

Orderable Part Number	Number of Pins	Package Type	Package Code/POD Number
R5F11BGCGFB#30	48	LFQFP	PLQP0048KB-B
R5F11BGCGFB#50	48	LFQFP	PLQP0048KB-B
R5F11BGEAFB#10	48	LFQFP	PLQP0048KB-B
R5F11BGEAFB#30	48	LFQFP	PLQP0048KB-B
R5F11BGEAFB#50	48	LFQFP	PLQP0048KB-B
R5F11BGEGFB#10	48	LFQFP	PLQP0048KB-B
R5F11BGEGFB#30	48	LFQFP	PLQP0048KB-B
R5F11BGEGFB#50	48	LFQFP	PLQP0048KB-B
R5F11BLCAFB#10	64	LFQFP	PLQP0064KB-C
R5F11BLCAFB#30	64	LFQFP	PLQP0064KB-C
R5F11BLCAFB#50	64	LFQFP	PLQP0064KB-C
R5F11BLCGFB#10	64	LFQFP	PLQP0064KB-C
R5F11BLCGFB#30	64	LFQFP	PLQP0064KB-C
R5F11BLCGFB#50	64	LFQFP	PLQP0064KB-C
R5F11BLEAFB#10	64	LFQFP	PLQP0064KB-C
R5F11BLEAFB#30	64	LFQFP	PLQP0064KB-C
R5F11BLEAFB#50	64	LFQFP	PLQP0064KB-C
R5F11BLEGFB#10	64	LFQFP	PLQP0064KB-C
R5F11BLEGFB#30	64	LFQFP	PLQP0064KB-C
R5F11BLEGFB#50	64	LFQFP	PLQP0064KB-C

A.2 Symbol Pin Information

A.2.1 24-HWQFN

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
1	\RESET	Input	-
2	P137	Input	INTP0
3	P122	Input	X2/EXCLK
4	P121	Input	X1
5	REGC	Power	-
6	VSS	Power	-
7	VDD	Power	-
8	P73	I/O	INTP3/SSI00#/(TRJIO0)/(RxD1)/(VCOUT0)
9	P72	I/O	PCLBUZ0/INTP4/SCK00/SCL00/TRJO0/(TxD1)/(VCOUT1)
10	P50	I/O	INTP1/SI00/RxD0/TOOLRxD/SDA00/TRGIOA/(TRJO0)/(TRDIOC1)
11	P51	I/O	INTP2/SO00/TxD0/TOOLTxD/TRGIOB/(TRDIOD1)
12	P15	I/O	PCLBUZ1/SCK20/SCL20/TRDIOB0/(SDAA0)
13	P14	I/O	RxD2/SI20/SDA20/TRDIOD0/(SCLA0)/IrRxD
14	P13	I/O	TxD2/SO20/TRDIOA1/(TRDIOC0)/IrTxD/TI03/TO03
15	P12	I/O	SO11/TRDIOB1/INTP5/VCOUT0
16	P11	I/O	ANI21/SI11/SDA11/TRDIOC1
17	P10	I/O	ANI20/SCK11/SCL11/TRDIOD1/(TxD2)
18	P147	I/O	ANI18/VCOUT1/IVREF0
19	P22	I/O	ANI2/ANO0/PGAI/IVCMP0
20	P21	I/O	ANI1/AVREFM/IVCMP13
21	P20	I/O	ANI0/AVREFP/INTP11/IVCMP12
22	P01	I/O	ANI16/TO00/RxD1/TRGCLKB/TRJIO0/(IrRxD)/INTP10/SCLA0/IVCMP11
23	P00	I/O	ANI17/TI00/TxD1/TRGCLKA/(TRJO0)/(IrTxD)/INTP8/SDAA0/IVCMP10
24	P40	I/O	TOOL0

A.2.2 32-LQFP/HWQFN

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
1	P40	I/O	TOOL0
2	\RESET	Input	-
3	P137	Input	INTP0
4	P122	Input	X2/EXCLK
5	P121	Input	X1
6	REGC	Power	-
7	VSS	Power	-
8	VDD	Power	-
9	P31	I/O	TI03/TO03/INTP4/PCLBUZ0/#SSI00/(TRJIO0)/VCOUT1/SCLA0
10	P74	I/O	SDAA0
11	P73	I/O	(RxD1)/(VCOUT0)
12	P72	I/O	INTP7/(TxD1)
13	P70	I/O	INTP6/(VCOUT1)
14	P30	I/O	INTP3/SCK00/SCL00/TRJO0/(TRDIOB1)
15	P50	I/O	INTP1/SI00/RxD0/TOOLRxD/SDA00/TRGIOA/(TRJO0)/(TRDIOC1)
16	P51	I/O	INTP2/SO00/TxD0/TOOLTxD/TRGIOB/(TRDIOD1)
17	P17	I/O	TI02/TO02/TRDIOA0/TRDCLK/(TxD0)/(TRDIOD0)
18	P16	I/O	TI01/TO01/INTP5/TRDIOC0/(RxD0)/(TRDIOA1)
19	P15	I/O	PCLBUZ1/SCK20/SCL20/TRDIOB0/(SDAA0)

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
20	P14	I/O	ANI24/RxD2/SI20/SDA20/TRDIOD0/(SCLA0)/IrRxD
21	P13	I/O	ANI23/TxD2/SO20/TRDIOA1/IrTxD
22	P12	I/O	ANI22/SO11/TRDIOB1
23	P11	I/O	ANI21/SI11/SDA11/TRDIOC1
24	P10	I/O	ANI20/SCK11/SCL11/TRDIOD1/(TxD2)
25	P147	I/O	ANI18/IVREF0
26	P23	I/O	ANI3/ANO1/PGAGND
27	P22	I/O	ANI2/ANO0/PGAI/IVCMP0
28	P21	I/O	ANI1/AVREFM/IVCMP13
29	P20	I/O	ANI0/AVREFP/INTP11/IVCMP12
30	P01	I/O	ANI16/TO00/RxD1/TRGCLKB/TRJIO0/INTP10/IVCMP11
31	P00	I/O	ANI17/TI00/TxD1/TRGCLKA/(TRJO0)/INTP8/IVCMP10
32	P120	I/O	ANI19/VCOUT0

A.2.3 **36-WFLGA**

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
A1	P51	I/O	INTP2/SO00/TxD0/TOOLTxD/TRGIOB/(TRDIOD1)
A2	P30	I/O	INTP3/RTC1HZ/SCK00/SCL00/TRJO0/(TRDIOB1)
A3	P50	I/O	INTP1/SI00/RxD0/TOOLRxD/SDA00/TRGIOA/(TRJO0)/(TRDIOC1)
A4	P31	I/O	TI03/TO03/INTP4/PCLBUZ0/SSI00#/(TRJIO0)/VCOUT1
A5	P61	I/O	SDAA0
A6	EVDD0	Power	-
B1	P17	I/O	TI02/TO02/TRDIOA0/TRDIOA0/TRDCLK0/(TxD0)/(TRDIOD0)
B2	P16	I/O	TI01/TO01/INTP5/TRDIOC0/(RxD0)/(TRDIOA1)
B3	P70	I/O	INTP6/(VCOUT0)/(VCOUT1)
B4	P14	I/O	ANI24/RxD2/SI20/SDA20/TRDIOD0/(SCLA0)/IrRxD
B5	P60	I/O	SCLA0
B6	VDD	Power	-
C1	P13	I/O	ANI23/TxD2/SO20/TRDIOA1/IrTxD
C2	P12	I/O	ANI22/SO11/TRDIOB1
C3	P15	I/O	PCLBUZ1/SCK20/SCL20/TRDIOB0/(SDAA0)
C4	P20	I/O	ANI0/AVREFP/IVCMP12/INTP11
C5	VSS	Power	-
C6	P121	Input	X1
D1	P10	I/O	ANI20/SCK11/SCL11/TRDIOD1/(TxD2)
D2	P11	I/O	ANI21/SI11/SDA11/TRDIOC1
D3	P23	I/O	ANI3/ANO1/PGAGND
D4	P21	I/O	ANI1/AVREFM/IVCMP13
D5	REGC	Power	-
D6	P122	Input	X2/EXCLK
E1	P147	I/O	ANI18/IVREF0
E2	P24	I/O	ANI4
E3	P00	I/O	ANI17/TI00/TxD1/TRGCLKA/(TRJO0)/INTP8/IVCMP10
E4	P01	I/O	ANI16/TO00/RxD1/TRGCLKB/TRJIO0/INTP10/IVCMP11
E5	\RESET	Input	-
E6	P137	Input	INTP0
F1	P25	I/O	ANI5
F2	P22	I/O	ANI2/ANO0/PGAI/IVCMP0
F3	P120	I/O	ANI19/VCOUT0

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
F4	P123	Input	XT1
F5	P124	Input	XT2/EXCLKS
F6	P40	I/O	TOOL0

A.2.4 **48-LFQFP**

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
1	P60	I/O	SCLA0
2	P61	I/O	SDAA0
3	P62	I/O	SSI00#
4	P63	I/O	-
5	P31	I/O	TI03/TO03/INTP4/(PCLBUZ0)/(TRJIO0)/VCOUT1
6	P75	I/O	KR5/INTP9/SCK01/SCL01
7	P74	I/O	KR4/SI01/SDA01
8	P73	I/O	KR3/SO01/(RxD1)
9	P72	I/O	KR2/SO21/(TxD1)
10	P71	I/O	KR1/SI21/SDA21/(VCOUT0)
11	P70	I/O	KR0/SCK21/SCL21/(VCOUT1)
12	P30	I/O	INTP3/RTC1HZ/SCK00/SCL00/TRJO0/(TRDIOB1)
13	P50	I/O	INTP1/SI00/RxD0/TOOLRxD/SDA00/TRGIOA/(TRJO0)/(TRDIOC1)
14	P51	I/O	INTP2/SO00/TxD0/TOOLTxD/TRGIOB/(TRDIOD1)
15	P17	I/O	TI02/TO02/TRDIOA0/TRDCLK/(TxD0)/(TRDIOD0)
16	P16	I/O	TI01/TO01/INTP5/TRDIOC0/(RxD0)/(TRDIOA1)
17	P15	I/O	PCLBUZ1/SCK20/SCL20/TRDIOB0/(SDAA0)
18	P14	I/O	ANI24/RxD2/SI20/SDA20/TRDIOD0/(SCLA0)/IrRxD
19	P13	I/O	ANI23/TxD2/SO20/TRDIOA1/IrTxD
20	P12	I/O	ANI22/SO11/TRDIOB1
21	P11	I/O	ANI21/SI11/SDA11/TRDIOC1
22	P10	I/O	ANI20/SCK11/SCL11/TRDIOD1/(TxD2)
23	P146	I/O	-
24	P147	I/O	ANI18/IVREF0
25	P27	I/O	ANI7
26	P26	I/O	ANI6
27	P25	I/O	ANI5
28	P24	I/O	ANI4
29	P23	I/O	ANI3/ANO1/PGAGND
30	P22	I/O	ANI2/ANO0/PGAI/IVCMP0
31	P21	I/O	ANI1/AVREFM/IVCMP13
32	P20	I/O	ANI0/AVREFP/IVCMP12/INTP11
33	P130	Output	-
34	P01	I/O	ANI16/TO00/RxD1/TRGCLKB/TRJIO0/INTP10/IVCMP11
35	P00	I/O	ANI17/TI00/TxD1/TRGCLKA/(TRJO0)/INTP8/IVCMP10
36	P140	I/O	PCLBUZ0/INTP6
37	P120	I/O	ANI19/VCOUT0
38	P41	I/O	(TRJIO0)
39	P40	I/O	TOOL0
40	\RESET	Input	-
41	P124	Input	XT2/EXCLKS
42	P123	Input	XT1
43	P137	Input	INTP0

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
44	P122	Input	X2/EXCLK
45	P121	Input	X1
46	REGC	Power	-
47	VSS	Power	-
48	VDD	Power	-

A.2.5 **56-LFQFP**

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
1	P120	I/O	ANI19/VCOUT0
2	P43	I/O	(INTP9)
3	P42	I/O	(INTP8)
4	P41	I/O	(TRJIO0)
5	P40	I/O	TOOL0
6	\RESET	Input	
7	P124	Input	XT2/EXCLKS
8	P123	Input	XT1
9	P137	Input	INTP0
10	P122	Input	X2/EXCLK
11	P121	Input	X1
12	REGC	Power	-
13	VSS	Power	-
14	EVSS0	Power	-
15	VDD	Power	-
16	EVDD0	Power	-
17	P60	I/O	SCLA0
18	P61	I/O	SDAA0
19	P62	I/O	SSI00#
20	P63	I/O	-
21	P31	I/O	TI03/TO03/INTP4/(PCLBUZ0)/(TRJIO0)/VCOUT1
22	P77	I/O	KR7/INTP11/(TxD2)
23	P76	I/O	KR6/INTP10/(RxD2)
24	P75	I/O	KR5/INTP9/SCK01/SCL01
25	P74	I/O	KR4/INTP8/SI01/SDA01
26	P73	I/O	KR3/SO01
27	P72	I/O	KR2/SO21
28	P71	I/O	KR1/SI21/SDA21/(VCOUT0)
29	P70	I/O	KR0/SCK21/SCL21/(VCOUT1)
30	P06	I/O	(INTP11)/(TRJIO0)
31	P05	I/O	(INTP10)
32	P30	I/O	INTP3/RTC1HZ/SCK00/SCL00/TRJO0/(TRDIOB1)
33	P50	I/O	INTP1/SI00/RxD0/TOOLRxD/SDA00/TRGIOA/(TRJO0)/(TRDIOC1)
34	P51	I/O	INTP2/SO00/TxD0/TOOLTxD/TRGIOB/(TRDIOD1)
35	P52	I/O	(INTP1)
36	P53	I/O	(INTP2)
37	P54	I/O	(INTP3)
38	P55	I/O	(PCLBUZ1)/(SCK00)/(INTP4)
39	P17	I/O	TI02/TO02/TRDIOA0/TRDCLK/(SO00)/(TxD0)/(TRDIOD0)
40	P16	I/O	TI01/TO01/INTP5/TRDIOC0/(SI00)/(RxD0)/(TRDIOA1)
41	P15	I/O	SCK20/SCL20/TRDIOB0/(SDAA0)

Pin Number	Primary Pin Name	Primary Electrical Type	Alternate Pin Name(s)
42	P14	I/O	ANI24/RxD2/SI20/SDA20/TRDIOD0/(SCLA0)/IrRxD
43	P13	I/O	ANI23/TxD2/SO20-/TRDIOA1/IrTxD
44	P12	I/O	ANI22/SO11/TRDIOB1/(INTP5)
45	P11	I/O	ANI21/SI11/SDA11/TRDIOC1
46	P10	I/O	ANI20/SCK11/SCL11/TRDIOD1
47	P146	I/O	-
48	P147	I/O	ANI18/IVREF0
49	P27	I/O	ANI7
50	P26	I/O	ANI6
51	P25	I/O	ANI5
52	P24	I/O	ANI4
53	P23	I/O	ANI3/ANO1/PGAGND
54	P22	I/O	ANI2/ANO0/PGAI/IVCMP0
55	P21	I/O	ANI1/AVREFM/IVCMP13
56	P20	I/O	ANI0/AVREFP/IVCMP12/(INTP11)

A.3 Symbol Parameters

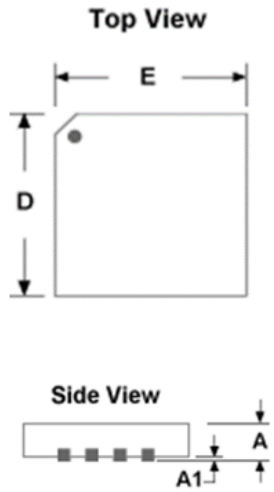
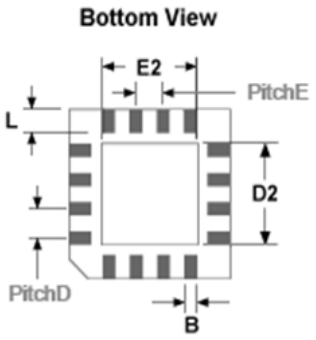
Part Number	Input Voltage Min	Input Voltage Max	Operable Frequency Max	RAM Size	Memory Size	Interface	ADC Channels	I2C Channels	SPI Channels	UART Channels	Timers/Counters
R5F11BCCGLA#U0	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11BCCGLA#W0	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11BCCALA#U0	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11BCCALA#W0	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11BCEGLA#U0	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11BCEGLA#W0	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11BCEALA#U0	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11BCEALA#W0	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 15-ch	3	3	3	9
R5F11B7CANA#00	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7CANA#20	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7CANA#40	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7CGNA#00	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7CGNA#20	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7CGNA#40	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7EANA#00	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7EANA#20	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7EANA#40	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7EGNA#00	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7EGNA#20	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11B7EGNA#40	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 8-ch	3	3	3	9
R5F11BBCAFP#10	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCAFP#30	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCAFP#50	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCANA#00	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCANA#20	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCANA#40	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCGFP#10	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCGFP#30	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCGFP#50	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCGNA#00	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCGNA#20	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBCGNA#40	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEAFP#10	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEAFP#30	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEAFP#50	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEANA#00	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9

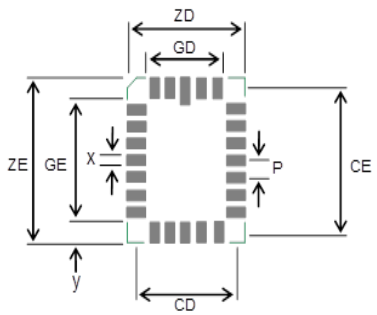
Part Number	Input Voltage Min	Input Voltage Max	Operable Frequency Max	RAM Size	Memory Size	Interface	ADC Channels	I2C Channels	SPI Channels	UART Channels	Timers/Counters
R5F11BBEANA#20	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEANA#40	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEGFP#10	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEGFP#30	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEGFP#50	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEGNA#00	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEGNA#20	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BBEGNA#40	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 13-ch	3	3	3	9
R5F11BGCAFB#10	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGCAFB#30	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGCAFB#50	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGCGFB#10	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGCGFB#30	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGCGFB#50	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGEAFB#10	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGEAFB#30	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGEAFB#50	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGEGFB#10	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGEGFB#30	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BGEGFB#50	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	5	5	3	9
R5F11BLCAFB#10	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLCAFB#30	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLCAFB#50	1.6 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLCGFB#10	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLCGFB#30	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLCGFB#50	2.4 V	5.5 V	32 MHz	4 KB	32 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLEAFB#10	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLEAFB#30	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLEAFB#50	1.6 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLEGFB#10	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLEGFB#30	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9
R5F11BLEGFB#50	2.4 V	5.5 V	32 MHz	4 KB	64 KB	SPI, UART, I2C	10-bit X 17-ch	6	6	3	9

A.4 Footprint Design Information

A.4.1 24-HWQFN

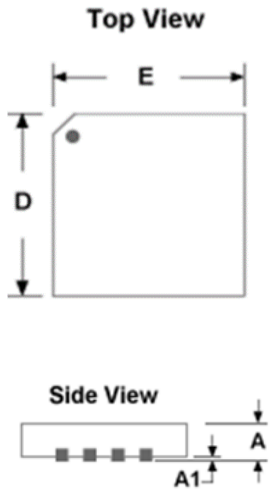
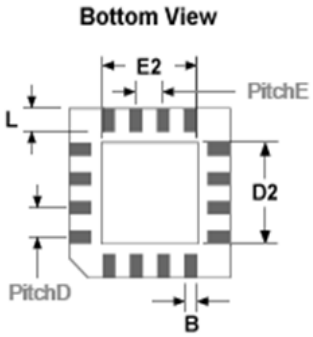
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFN	PWQN0024KE-A	24

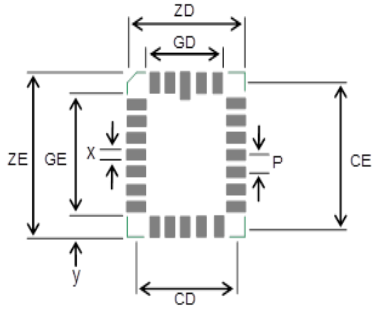
Description	Dimension	Value (mm)	Diagram
Minimum body span (vertical side)	Dmin	3.95	
Maximum body span (vertical side)	Dmax	4.05	
Minimum body span (horizontal side)	Emin	3.95	
Maximum body span (horizontal side)	Emax	4.05	
Minimum Lead Width	Bmin	0.18	
Maximum Lead Width	Bmax	0.3	
Minimum Lead Length	Lmin	0.3	
Maximum Lead Length	Lmax	0.5	
Maximum Height	Amax	0.8	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	-	
Maximum Lead Thickness	cmax	-	
Number of pins (vertical side)	PinCountD	6	
Number of pins (horizontal side)	PinCountE	6	
Distance between the center of any two adjacent pins (vertical side)	PitchD	0.5	
Distance between the center of any two adjacent pins (horizontal side)	PitchE	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	2.45	
Maximum thermal pad size (vertical side)	D2max	2.55	
Minimum thermal pad size (horizontal side)	E2min	2.45	
Maximum thermal pad size (horizontal side)	E2max	2.55	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.2 **24-HWQFN**

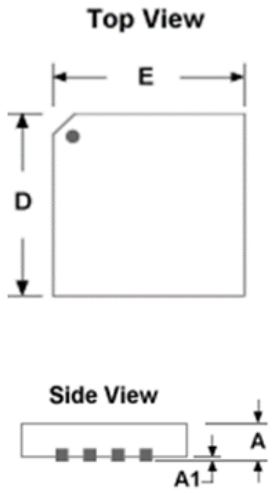
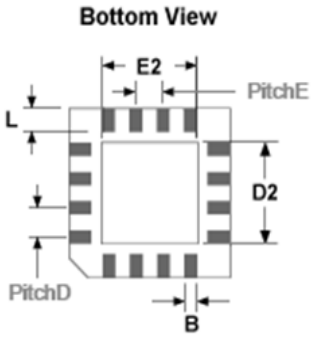
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFN	PWQN0024KF-A	24

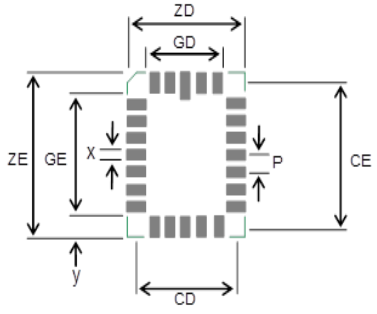
Description	Dimension	Value (mm)	Diagram
Minimum body span (vertical side)	Dmin	4	
Maximum body span (vertical side)	Dmax	4	
Minimum body span (horizontal side)	Emin	4	
Maximum body span (horizontal side)	Emax	4	
Minimum Lead Width	Bmin	0.18	
Maximum Lead Width	Bmax	0.3	
Minimum Lead Length	Lmin	0.35	
Maximum Lead Length	Lmax	0.45	
Maximum Height	Amax	0.8	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	-	
Maximum Lead Thickness	cmax	-	
Number of pins (vertical side)	PinCountD	6	
Number of pins (horizontal side)	PinCountE	6	
Distance between the center of any two adjacent pins (vertical side)	PitchD	0.5	
Distance between the center of any two adjacent pins (horizontal side)	PitchE	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	2.55	
Maximum thermal pad size (vertical side)	D2max	2.65	
Minimum thermal pad size (horizontal side)	E2min	2.55	
Maximum thermal pad size (horizontal side)	E2max	2.65	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.3 **24-HWQFN**

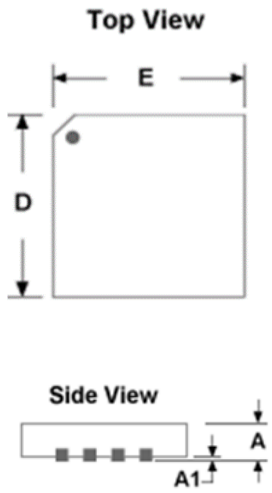
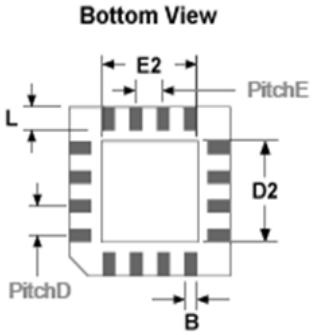
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFN	PWQN0024KH-A	24

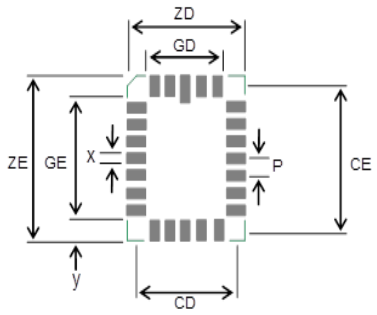
Description	Dimension	Value (mm)	Diagram
Minimum body span (vertical side)	Dmin	4	
Maximum body span (vertical side)	Dmax	4	
Minimum body span (horizontal side)	Emin	4	
Maximum body span (horizontal side)	Emax	4	
Minimum Lead Width	Bmin	0.2	
Maximum Lead Width	Bmax	0.3	
Minimum Lead Length	Lmin	0.3	
Maximum Lead Length	Lmax	0.5	
Maximum Height	Amax	0.8	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	-	
Maximum Lead Thickness	cmax	-	
Number of pins (vertical side)	PinCountD	6	
Number of pins (horizontal side)	PinCountE	6	
Distance between the center of any two adjacent pins (vertical side)	PitchD	0.5	
Distance between the center of any two adjacent pins (horizontal side)	PitchE	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	2.5	
Maximum thermal pad size (vertical side)	D2max	2.7	
Minimum thermal pad size (horizontal side)	E2min	2.5	
Maximum thermal pad size (horizontal side)	E2max	2.7	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.4 **32-HWQFN**

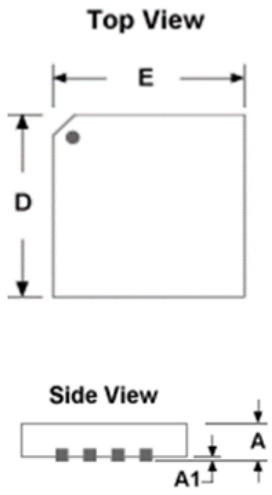
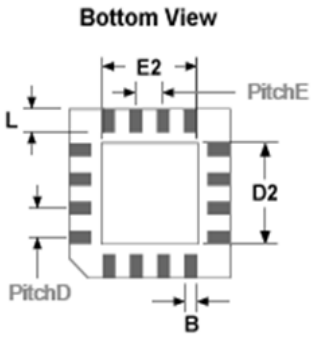
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFN	PWQN0032KE-A	32

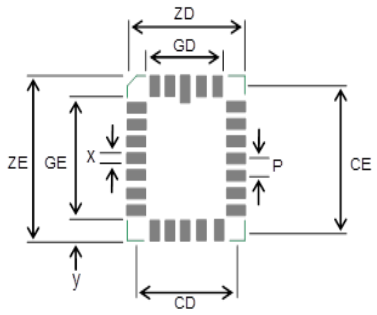
Description	Dimension	Value (mm)	Diagram
Minimum body span (vertical side)	Dmin	5	
Maximum body span (vertical side)	Dmax	5	
Minimum body span (horizontal side)	Emin	5	
Maximum body span (horizontal side)	Emax	5	
Minimum Lead Width	Bmin	0.18	
Maximum Lead Width	Bmax	0.3	
Minimum Lead Length	Lmin	0.35	
Maximum Lead Length	Lmax	0.45	
Maximum Height	Amax	0.8	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	-	
Maximum Lead Thickness	cmax	-	
Number of pins (vertical side)	PinCountD	8	
Number of pins (horizontal side)	PinCountE	8	
Distance between the center of any two adjacent pins (vertical side)	PitchD	0.5	
Distance between the center of any two adjacent pins (horizontal side)	PitchE	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	3.15	
Maximum thermal pad size (vertical side)	D2max	3.25	
Minimum thermal pad size (horizontal side)	E2min	3.15	
Maximum thermal pad size (horizontal side)	E2max	3.25	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.5 **32-HWQFN**

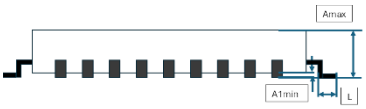
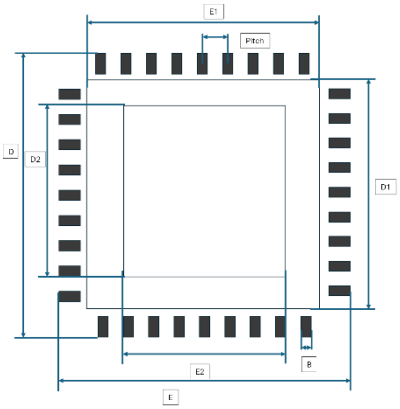
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFN	PWQN0032KG-A	32

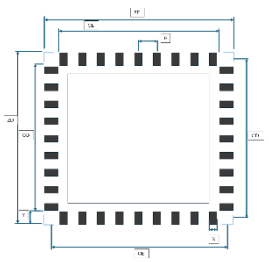
Description	Dimension	Value (mm)	Diagram
Minimum body span (vertical side)	Dmin	5	
Maximum body span (vertical side)	Dmax	5	
Minimum body span (horizontal side)	Emin	5	
Maximum body span (horizontal side)	Emax	5	
Minimum Lead Width	Bmin	0.2	
Maximum Lead Width	Bmax	0.3	
Minimum Lead Length	Lmin	0.3	
Maximum Lead Length	Lmax	0.5	
Maximum Height	Amax	0.8	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	-	
Maximum Lead Thickness	cmax	-	
Number of pins (vertical side)	PinCountD	8	
Number of pins (horizontal side)	PinCountE	8	
Distance between the center of any two adjacent pins (vertical side)	PitchD	0.5	
Distance between the center of any two adjacent pins (horizontal side)	PitchE	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	3.1	
Maximum thermal pad size (vertical side)	D2max	3.3	
Minimum thermal pad size (horizontal side)	E2min	3.1	
Maximum thermal pad size (horizontal side)	E2max	3.3	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.6 **32-LFQFP**

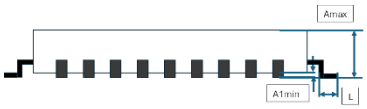
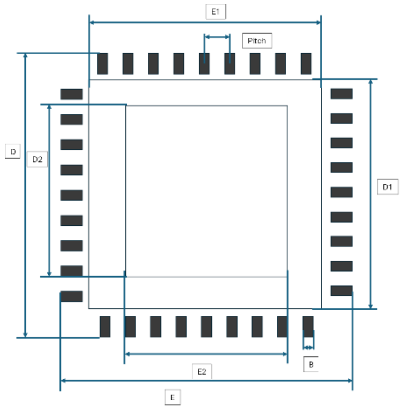
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFP	PLQP0032GB-A	32

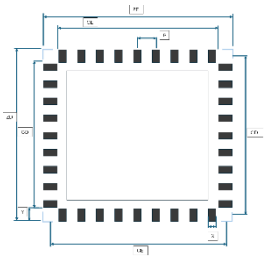
Description	Dimension	Value (mm)	Diagram
Minimum lead span (vertical side)	Dmin	8.8	
Maximum lead span (vertical side)	Dmax	9.2	
Minimum lead span (horizontal side)	Emin	8.8	
Maximum lead span (horizontal side)	Emax	9.2	
Minimum body span (vertical side)	D1min	6.9	
Maximum body span (vertical side)	D1max	7.1	
Minimum body span (horizontal side)	E1min	6.9	
Maximum body span (horizontal side)	E1max	7.1	
Minimum Lead Width	Bmin	0.32	
Maximum Lead Width	Bmax	0.42	
Minimum Lead Length	Lmin	0.3	
Maximum Lead Length	Lmax	0.7	
Maximum Height	Amax	1.7	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	0.09	
Maximum Lead Thickness	cmax	0.2	
Number of pins (vertical side)	PinCountD	8	
Number of pins (horizontal side)	PinCountE	8	
Distance between the center of any two adjacent pins	Pitch	0.8	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	0	
Maximum thermal pad size (vertical side)	D2max	0	
Minimum thermal pad size (horizontal side)	E2min	0	
Maximum thermal pad size (horizontal side)	E2max	0	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.7 **32-LFQFP**

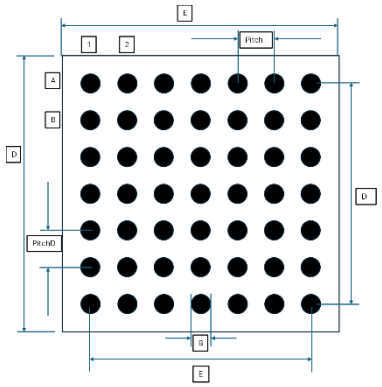
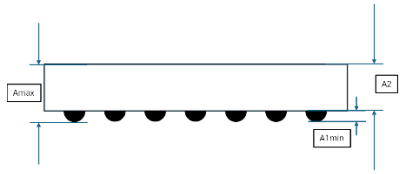
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFP	PLQP0032GE-A	32

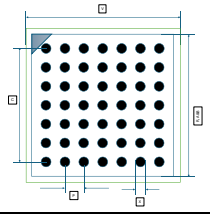
Description	Dimension	Value (mm)	Diagram
Minimum lead span (vertical side)	Dmin	9	
Maximum lead span (vertical side)	Dmax	9	
Minimum lead span (horizontal side)	Emin	9	
Maximum lead span (horizontal side)	Emax	9	
Minimum body span (vertical side)	D1min	7	
Maximum body span (vertical side)	D1max	7	
Minimum body span (horizontal side)	E1min	7	
Maximum body span (horizontal side)	E1max	7	
Minimum Lead Width	Bmin	0.3	
Maximum Lead Width	Bmax	0.45	
Minimum Lead Length	Lmin	0.45	
Maximum Lead Length	Lmax	0.75	
Maximum Height	Amax	1.6	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	-	
Maximum Lead Thickness	cmax	-	
Number of pins (vertical side)	PinCountD	8	
Number of pins (horizontal side)	PinCountE	8	
Distance between the center of any two adjacent pins	Pitch	0.8	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	-	
Maximum thermal pad size (vertical side)	D2max	-	
Minimum thermal pad size (horizontal side)	E2min	-	
Maximum thermal pad size (horizontal side)	E2max	-	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.8 **36-WFLGA**

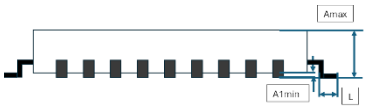
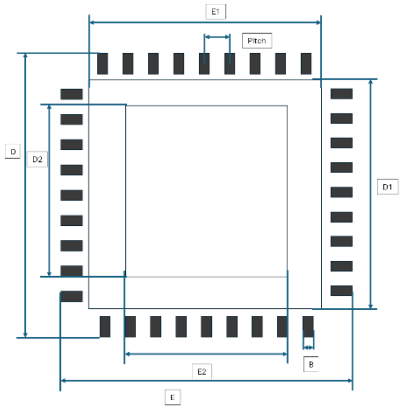
IPC Footprint Type	Package Code/ POD number	Number of Pins
LGA	PWLG0036KA-A	36

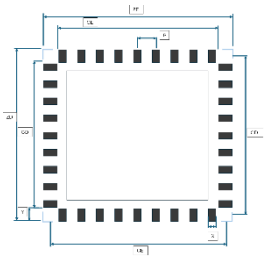
Description	Dimension	Value (mm)	Diagram
Minimum body span (vertical side)	Dmin	3.9	
Maximum body span (vertical side)	Dmax	4.1	
Average length of grid (vertical side)	D1ave	2.5	
Minimum body span (horizontal side)	Emin	3.9	
Maximum body span (horizontal side)	Emax	4.1	
Average length of grid (horizontal side)	E1ave	2.5	
Minimum Standoff Height	A1min	0	
Maximum Height	Amax	0.76	
Average ball diameter	Bnom	0.24	
R= Round or S= Square	LeadShape	R	
Distance between the center of any two adjacent balls (vertical side)	PitchD	0.5	
Distance between the center of any two adjacent balls (horizontal side)	PitchE	0.5	
P = Plain Grid, S = Staggered Grid	GridType	P	
F = Full Matrix, P = Perimeter, SD = Selectively Depopulated, TE = Thermally Enhanced	MatrixType	F	
Number of balls (vertical side)	Rows	6	
Number of balls (horizontal side)	Columns	6	
Maximum number of ball positions (Rows x Columns)	Nmax	36	
Number of actual balls present	PinCount	36	
Ball positions removed from matrix. Example: C5-H10,B6-B9,A1	DepopulateBalls	-	
Ball positions added back into depopulated matrix. Example: C8,D6-F9	RepopulateBalls	-	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Diameter of pad. If specified this overrides the calculated value. This can be used to specify a manufacturer's recommended pad size.	X	-	
Solder Mask Expansion	-	-	

A.4.9 **48-LFQFP**

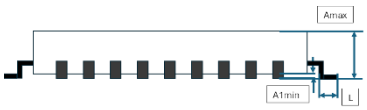
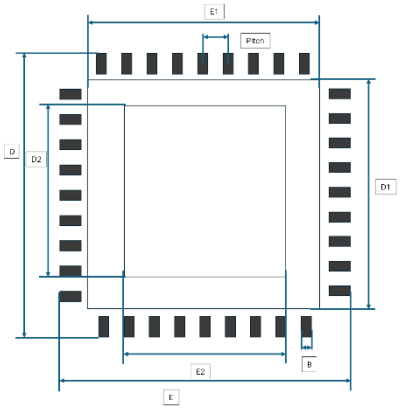
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFP	PLQP0048KB-B	48

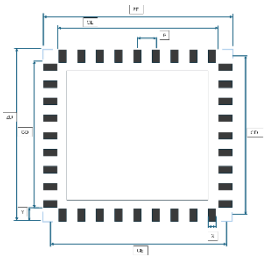
Description	Dimension	Value (mm)	Diagram
Minimum lead span (vertical side)	Dmin	8.8	
Maximum lead span (vertical side)	Dmax	9.2	
Minimum lead span (horizontal side)	Emin	8.8	
Maximum lead span (horizontal side)	Emax	9.2	
Minimum body span (vertical side)	D1min	6.9	
Maximum body span (vertical side)	D1max	7.1	
Minimum body span (horizontal side)	E1min	6.9	
Maximum body span (horizontal side)	E1max	7.1	
Minimum Lead Width	Bmin	0.17	
Maximum Lead Width	Bmax	0.27	
Minimum Lead Length	Lmin	0.45	
Maximum Lead Length	Lmax	0.75	
Maximum Height	Amax	1.7	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	0.09	
Maximum Lead Thickness	cmax	0.2	
Number of pins (vertical side)	PinCountD	12	
Number of pins (horizontal side)	PinCountE	12	
Distance between the center of any two adjacent pins	Pitch	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	-	
Maximum thermal pad size (vertical side)	D2max	-	
Minimum thermal pad size (horizontal side)	E2min	-	
Maximum thermal pad size (horizontal side)	E2max	-	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.10 **48-LFQFP**

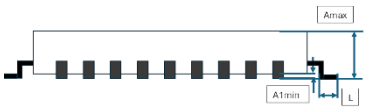
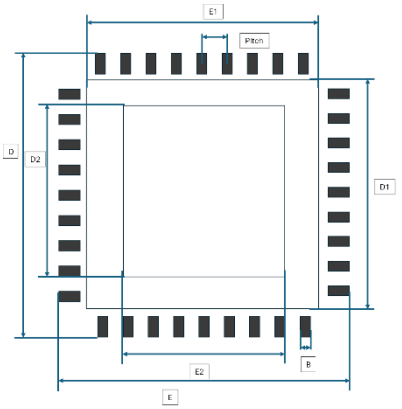
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFP	PLQP0048KL-A	48

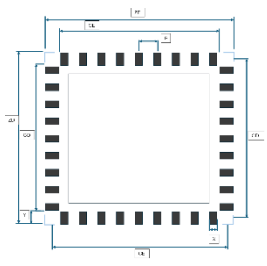
Description	Dimension	Value (mm)	Diagram
Minimum lead span (vertical side)	Dmin	9	
Maximum lead span (vertical side)	Dmax	9	
Minimum lead span (horizontal side)	Emin	9	
Maximum lead span (horizontal side)	Emax	9	
Minimum body span (vertical side)	D1min	7	
Maximum body span (vertical side)	D1max	7	
Minimum body span (horizontal side)	E1min	7	
Maximum body span (horizontal side)	E1max	7	
Minimum Lead Width	Bmin	0.17	
Maximum Lead Width	Bmax	0.27	
Minimum Lead Length	Lmin	0.45	
Maximum Lead Length	Lmax	0.75	
Maximum Height	Amax	1.6	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	0.09	
Maximum Lead Thickness	cmax	0.2	
Number of pins (vertical side)	PinCountD	12	
Number of pins (horizontal side)	PinCountE	12	
Distance between the center of any two adjacent pins	Pitch	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	-	
Maximum thermal pad size (vertical side)	D2max	-	
Minimum thermal pad size (horizontal side)	E2min	-	
Maximum thermal pad size (horizontal side)	E2max	-	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.11 **64-LFQFP**

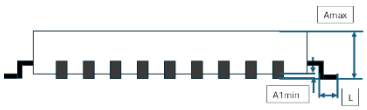
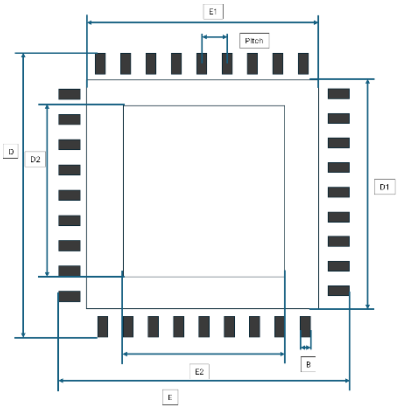
IPC Footprint Type	Package Code/ POD number	Number of Pins
QFP	PLQP0064KB-C	64

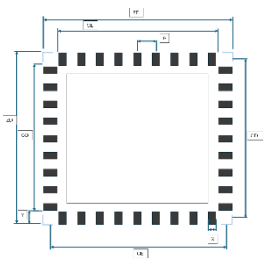
Description	Dimension	Value (mm)	Diagram
Minimum lead span (vertical side)	Dmin	11.8	
Maximum lead span (vertical side)	Dmax	12.2	
Minimum lead span (horizontal side)	Emin	11.8	
Maximum lead span (horizontal side)	Emax	12.2	
Minimum body span (vertical side)	D1min	9.1	
Maximum body span (vertical side)	D1max	10.1	
Minimum body span (horizontal side)	E1min	9.1	
Maximum body span (horizontal side)	E1max	10.1	
Minimum Lead Width	Bmin	0.15	
Maximum Lead Width	Bmax	0.27	
Minimum Lead Length	Lmin	0.45	
Maximum Lead Length	Lmax	0.75	
Maximum Height	Amax	1.7	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	0.09	
Maximum Lead Thickness	cmax	0.2	
Number of pins (vertical side)	PinCountD	16	
Number of pins (horizontal side)	PinCountE	16	
Distance between the center of any two adjacent pins	Pitch	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	-	
Maximum thermal pad size (vertical side)	D2max	-	
Minimum thermal pad size (horizontal side)	E2min	-	
Maximum thermal pad size (horizontal side)	E2max	-	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	

A.4.12 **64-LFQFP**

IPC Footprint Type	Package Code/ POD number	Number of Pins
QFP	PLQP0064KL-A	64

Description	Dimension	Value (mm)	Diagram
Minimum lead span (vertical side)	Dmin	12	
Maximum lead span (vertical side)	Dmax	12	
Minimum lead span (horizontal side)	Emin	12	
Maximum lead span (horizontal side)	Emax	12	
Minimum body span (vertical side)	D1min	10	
Maximum body span (vertical side)	D1max	10	
Minimum body span (horizontal side)	E1min	10	
Maximum body span (horizontal side)	E1max	10	
Minimum Lead Width	Bmin	0.17	
Maximum Lead Width	Bmax	0.27	
Minimum Lead Length	Lmin	0.45	
Maximum Lead Length	Lmax	0.75	
Maximum Height	Amax	1.6	
Minimum Standoff Height	A1min	0	
Minimum Lead Thickness	cmin	0.09	
Maximum Lead Thickness	cmax	0.2	
Number of pins (vertical side)	PinCountD	16	
Number of pins (horizontal side)	PinCountE	16	
Distance between the center of any two adjacent pins	Pitch	0.5	
Location of pin 1; S2 = corner of D side, C1 = center of E side	Pin1	S2	
Minimum thermal pad size (vertical side)	D2min	0	
Maximum thermal pad size (vertical side)	D2max	0	
Minimum thermal pad size (horizontal side)	E2min	0	
Maximum thermal pad size (horizontal side)	E2max	0	

Recommended Land Pattern (NSMD Design)			
Description	**Dimension**	**Value (mm)**	**Diagram**
Distance between left pad toe to right pad toe (horizontal side)	ZE	-	
Distance between top pad toe to bottom pad toe (vertical side)	ZD	-	
Distance between left pad heel to right pad heel (horizontal side)	GE	-	
Distance between top pad heel to bottom pad heel (vertical side)	GD	-	
Pad Width	X	-	
Pad Length	Y	-	