## 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 |
|---|---|---|---|
| R5F10NLEDFB#75 | 64 | LFQFP | PLQP0064KC-A |
| R5F10NLGDFB#75 | 64 | LFQFP | PLQP0064KC-A |
| R5F10NMEDFB#75 | 80 | LFQFP | PLQP0080KB-B |
| R5F10NMGDFB#75 | 80 | LFQFP | PLQP0080KB-B |
| R5F10NMJDFB#75 | 80 | LFQFP | PLQP0080KB-B |
| R5F10NMLDFB#70 | 80 | LFQFP | PLQP0080KJ-A |
| R5F10NPGDFB#75 | 100 | LFQFP | PLQP0100KB-B |
| R5F10NPJDFB#75 | 100 | LFQFP | PLQP0100KB-B |
| R5F10NPLDFB#70 | 100 | LFQFP | PLQP0100KB-B |
| R5F11TLEDFB#75 | 64 | LFQFP | PLQP0064KC-A |
| R5F11TLGDFB#75 | 64 | LFQFP | PLQP0064KC-A |

### A.2 Symbol Pin Information

#### A.2.1 100-LFQFP

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 1 | P06 | I/O | SI00/RxD0/SDA00/TI03/TO03/TOOLRxD |
| 2 | P05 | I/O | SCK00/SCL00/TI04/TO04/INTP3 |
| 3 | P04 | I/O | SO10/TxD1/TI05/TO05/INTP4 |
| 4 | P03 | I/O | SI10/RxD1/SDA10/TI06/TO06 |
| 5 | P02 | I/O | SCK10/SCL10/TI07/TO07/INTP5 |
| 6 | P43 | I/O | TI00/TO00/PCLBUZ0 |
| 7 | P42 | I/O | INTP7 |
| 8 | P41 | I/O | TI01/TO01/PCLBUZ1/INTP6 |
| 9 | P40 | I/O | TOOL0 |
| 10 | P152 | I/O | RTCIC2 |
| 11 | P151 | I/O | RTCIC1 |
| 12 | P150 | I/O | RTCOUT/RTCIC0 |
| 13 | \RESET | Input | - |
| 14 | P122 | Input | X2/EXCLK |
| 15 | P121 | Input | X1 |
| 16 | P137 | Input | INTP0 |
| 17 | P124 | Input | XT2/EXCLKS |
| 18 | P123 | Input | XT1 |
| 19 | VRTC | Power | - |
| 20 | REGC | Power | - |
| 21 | VSS | Power | EVSS0 |
| 22 | VDD | Power | - |
| 23 | EVDD0 | Power | - |
| 24 | VBAT | Power | - |
| 25 | P60 | I/O | SCLA0/(TI00)/(TO00) |
| 26 | P61 | I/O | SDAA0/(TI01)/(TO01) |
| 27 | P62 | I/O | (TI02)/(TO02)/(RTCOUT) |
| 28 | P127 | I/O | CAPH/(TI03)/(TO03) |
| 29 | P126 | I/O | CAPL/(TI04)/(TO04) |
| 30 | VL1 | Power | - |
| 31 | VL2 | Power | - |
| 32 | VL4 | Power | - |
| 33 | P125 | I/O | VL3/INTP1/(TI05)/(TO05) |
| 34 | P37 | I/O | SEG31 |

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 35 | P36 | I/O | SEG30 |
| 36 | P35 | I/O | SEG29 |
| 37 | P34 | I/O | SEG28 |
| 38 | P33 | I/O | SEG27/(PCLBUZ0) |
| 39 | P32 | I/O | SEG26/(PCLBUZ1) |
| 40 | P31 | I/O | SEG25/(TI06)/(TO06) |
| 41 | P30 | I/O | SEG24/(TI07)/(TO07) |
| 42 | P77 | I/O | SEG23/KR7/(INTP7) |
| 43 | P76 | I/O | SEG22/KR6/(INTP6) |
| 44 | P75 | I/O | SEG21/KR5/(INTP5) |
| 45 | P74 | I/O | SEG20/KR4/(INTP4) |
| 46 | P73 | I/O | SEG19/KR3/(INTP3) |
| 47 | P72 | I/O | SEG18/KR2/(INTP2) |
| 48 | P71 | I/O | SEG17/KR1/(INTP1) |
| 49 | P70 | I/O | SEG16/KR0/(INTP0) |
| 50 | P83 | I/O | SEG15 |
| 51 | P82 | I/O | SEG14/(SO10)/(TxD1) |
| 52 | P81 | I/O | SEG13/(SI10)/(RxD1)/(SDA10) |
| 53 | P80 | I/O | SEG12/(SCK10)/(SCL10) |
| 54 | EVSS1 | Power | - |
| 55 | P17 | I/O | SEG11/(SO00)/(TxD0) |
| 56 | P16 | I/O | SEG10/(SI00)/(RxD0)/(SDA00) |
| 57 | P15 | I/O | SEG9/(SCK00)/(SCL00) |
| 58 | P14 | I/O | SEG8 |
| 59 | P13 | I/O | SEG7 |
| 60 | P12 | I/O | SEG6 |
| 61 | P11 | I/O | SEG5 |
| 62 | P10 | I/O | SEG4 |
| 63 | EVDD1 | Power | - |
| 64 | COM7 | Output | SEG3 |
| 65 | COM6 | Output | SEG2 |
| 66 | COM5 | Output | SEG1 |
| 67 | COM4 | Output | SEG0 |
| 68 | COM3 | Output | - |
| 69 | COM2 | Output | - |
| 70 | COM1 | Output | - |
| 71 | COM0 | Output | - |
| 72 | P85 | I/O | SEG41/SO30/TxD3 |
| 73 | P84 | I/O | SEG40/SI30/RxD3/SDA30 |
| 74 | P57 | I/O | SEG39/SCK30/SCL30 |
| 75 | P56 | I/O | SEG38/TxD2/IrTxD |
| 76 | P55 | I/O | SEG37/RxD2/IrRxD |
| 77 | P54 | I/O | SEG36 |
| 78 | P53 | I/O | SEG35 |
| 79 | P52 | I/O | SEG34 |
| 80 | P51 | I/O | SEG33 |
| 81 | P50 | I/O | SEG32 |
| 82 | ANIP3 | Input | - |
| 83 | ANIN3 | Input | - |
| 84 | ANIP2 | Input | - |
| 85 | ANIN2 | Input | - |
| 86 | AVRT | Power | - |
| 87 | AVCM | Power | - |
| 88 | AVSS | Power | - |
| 89 | AREGC | Power | - |
| 90 | ANIP1 | Input | - |
| 91 | ANIN1 | Input | - |
| 92 | ANIP0 | Input | - |
| 93 | ANIN0 | Input | - |
| 94 | P25 | I/O | ANI5 |
| 95 | P24 | I/O | ANI4 |
| 96 | P23 | I/O | ANI3 |

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 97 | P22 | I/O | ANI2/EXLVD |
| 98 | P21 | I/O | AVREFM/ANI1 |
| 99 | P20 | I/O | AVREFP/ANI0 |
| 100 | P07 | I/O | SO00/TxD0/TI02/TO02/INTP2/TOOLTxD |

## A.2.2 64-LFQFP

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 1 | P07 | I/O | SO00/TxD0/TI02/TO02/INTP2/TOOLTxD |
| 2 | P06 | I/O | SI00/RxD0/SDA00/TI03/TO03/INTP4/TOOLRxD |
| 3 | P05 | I/O | SCK00/SCL00/TI04/TO04/INTP3 |
| 4 | P43 | I/O | TI00/TO00/PCLBUZ0/RTCOUT |
| 5 | P40 | I/O | TOOL0 |
| 6 | \RESET | Input | - |
| 7 | P122 | Input | X2/EXCLK |
| 8 | P121 | Input | X1 |
| 9 | P137 | Input | INTP0 |
| 10 | P124 | Input | XT2/EXCLKS |
| 11 | P123 | Input | XT1 |
| 12 | VRTC | Power | - |
| 13 | REGC | Power | - |
| 14 | VSS | Power | EVSS0 |
| 15 | VDD | Power | EVDD0 |
| 16 | VBAT | Power | - |
| 17 | P60 | I/O | SCLA0/(TI00)/(TO00) |
| 18 | P61 | I/O | SDAA0/(TI01)/(TO01) |
| 19 | P62 | I/O | (TI02)/(TO02)/(RTCOUT) |
| 20 | P127 | I/O | CAPH/(TI03)/(TO03) |
| 21 | P126 | I/O | CAPL/(TI04)/(TO04) |
| 22 | VL1 | Power | - |
| 23 | VL2 | Power | - |
| 24 | VL4 | Power | - |
| 25 | P125 | I/O | VL3/INTP1/TI05/TO05/PCLBUZ1 |
| 26 | P31 | I/O | SEG25/TxD2/IrTxD/TI06/TO06 |
| 27 | P30 | I/O | SEG24/RxD2/IrRxD/TI07/TO07/INTP5 |
| 28 | P74 | I/O | SEG20/KR4/(INTP4)/(PCLBUZ0) |
| 29 | P73 | I/O | SEG19/KR3/(INTP3)/(PCLBUZ1) |
| 30 | P72 | I/O | SEG18/KR2/TI01/TO01/(INTP2) |
| 31 | P71 | I/O | SEG17/KR1/(INTP1) |
| 32 | P70 | I/O | SEG16/KR0/(INTP0) |
| 33 | P17 | I/O | SEG11/(SO00)/(TxD0) |
| 34 | P16 | I/O | SEG10/INTP7/(SI00)/(RxD0)/(SDA00) |
| 35 | P15 | I/O | SEG9/(SCK00)/(SCL00) |
| 36 | P14 | I/O | SEG8/SO10/TxD1 |
| 37 | P13 | I/O | SEG7/SI10/RxD1/SDA10/INTP6 |
| 38 | P12 | I/O | SEG6/SCK10/SCL10 |
| 39 | P11 | I/O | SEG5 |
| 40 | P10 | I/O | SEG4 |
| 41 | COM7 | Output | SEG3 |
| 42 | COM6 | Output | SEG2 |
| 43 | COM5 | Output | SEG1 |
| 44 | COM4 | Output | SEG0 |
| 45 | COM3 | Output | - |
| 46 | COM2 | Output | - |
| 47 | COM1 | Output | - |
| 48 | COM0 | Output | - |
| 49 | ANIP3 | Input | - |
| 50 | ANIN3 | Input | - |
| 51 | ANIP2 | Input | - |
| 52 | ANIN2 | Input | - |
| 53 | AVRT | Power | - |
| 54 | AVCM | Power | - |

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 55 | AVSS | Power | - |
| 56 | AREGC | Power | - |
| 57 | ANIP1 | Input | - |
| 58 | ANIN1 | Input | - |
| 59 | ANIP0 | Input | - |
| 60 | ANIN0 | Input | - |
| 61 | P23 | I/O | ANI3 |
| 62 | P22 | I/O | ANI2/EXLVD |
| 63 | P21 | I/O | AVREFM/ANI1 |
| 64 | P20 | I/O | AVREFP/ANI0 |

### A.2.3 80-LFQFP

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 1 | P55 | I/O | RxD2/IrRxD |
| 2 | P41 | I/O | INTP6/TI01/TO01/PCLBUZ1 |
| 3 | P40 | I/O | TOOL0 |
| 4 | P152 | I/O | RTCIC2 |
| 5 | P151 | I/O | RTCIC1 |
| 6 | P150 | I/O | RTCOUT/RTCIC0 |
| 7 | \RESET | Input | - |
| 8 | P122 | Input | X2/EXCLK |
| 9 | P121 | Input | X1 |
| 10 | P137 | Input | INTP0 |
| 11 | P124 | Input | XT2/EXCLKS |
| 12 | P123 | Input | XT1 |
| 13 | VRTC | Power | - |
| 14 | REGC | Power | - |
| 15 | VSS | Power | EVSS0 |
| 16 | VDD | Power | - |
| 17 | EVDD0 | Power | - |
| 18 | VBAT | Power | - |
| 19 | P60 | I/O | SCLA0/(TI00)/(TO00) |
| 20 | P61 | I/O | SDAA0/(TI01)/(TO01) |
| 21 | P62 | I/O | (TI02)/(TO02)/(RTCOUT) |
| 22 | P127 | I/O | CAPH/(TI03)/(TO03) |
| 23 | P126 | I/O | CAPL/(TI04)/(TO04) |
| 24 | VL1 | Power | - |
| 25 | VL2 | Power | - |
| 26 | VL4 | Power | - |
| 27 | P125 | I/O | VL3/INTP1/(TI05)/(TO05) |
| 28 | P33 | I/O | SEG27/(PCLBUZ0) |
| 29 | P32 | I/O | SEG26/(PCLBUZ1) |
| 30 | P31 | I/O | SEG25/(TI06)/(TO06) |
| 31 | P30 | I/O | SEG24/(TI07)/(TO07) |
| 32 | P77 | I/O | SEG23/KR7/(INTP7) |
| 33 | P76 | I/O | SEG22/KR6/(INTP6) |
| 34 | P75 | I/O | SEG21/KR5/(INTP5) |
| 35 | P74 | I/O | SEG20/KR4/(INTP4) |
| 36 | P73 | I/O | SEG19/KR3/(INTP3) |
| 37 | P72 | I/O | SEG18/KR2/(INTP2) |
| 38 | P71 | I/O | SEG17/KR1/(INTP1) |
| 39 | P70 | I/O | SEG16/KR0/(INTP0) |
| 40 | P83 | I/O | SEG15 |
| 41 | P82 | I/O | SEG14/(SO10)/(TxD1) |
| 42 | P81 | I/O | SEG13/(SI10)/(RxD1)/(SDA10) |
| 43 | P80 | I/O | SEG12/(SCK10)/(SCL10) |
| 44 | P17 | I/O | SEG11/(SO00)/(TxD0) |
| 45 | P16 | I/O | SEG10/(SI00)/(RxD0)/(SDA00) |
| 46 | P15 | I/O | SEG9/(SCK00)/(SCL00) |
| 47 | P14 | I/O | SEG8 |
| 48 | P13 | I/O | SEG7 |

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 49 | P12 | I/O | SEG6 |
| 50 | P11 | I/O | SEG5 |
| 51 | P10 | I/O | SEG4 |
| 52 | COM7 | Output | SEG3 |
| 53 | COM6 | Output | SEG2 |
| 54 | COM5 | Output | SEG1 |
| 55 | COM4 | Output | SEG0 |
| 56 | COM3 | Output | - |
| 57 | COM2 | Output | - |
| 58 | COM1 | Output | - |
| 59 | COM0 | Output | - |
| 60 | P07 | I/O | SO00/TxD0/TI02/TO02/INTP2/TOOLTxD/SEG37 |
| 61 | P06 | I/O | SI00/RxD0/SDA00/TI03/TO03/TOOLRxD/SEG36 |
| 62 | P05 | I/O | SCK00/SCL00/TI04/TO04/INTP3/SEG35 |
| 63 | P04 | I/O | SO10/TxD1/TI05/TO05/INTP4/SEG34 |
| 64 | P03 | I/O | SI10/RxD1/SDA10/TI06/TO06/SEG33 |
| 65 | P02 | I/O | SCK10/SCL10/TI07/TO07/INTP5/SEG32 |
| 66 | ANIP2 | Input | - |
| 67 | ANIN2 | Input | - |
| 68 | AVRT | Power | - |
| 69 | AVCM | Power | - |
| 70 | AVSS | Power | - |
| 71 | AREGC | Power | - |
| 72 | ANIP1 | Input | - |
| 73 | ANIN1 | Input | - |
| 74 | ANIP0 | Input | - |
| 75 | ANIN0 | Input | - |
| 76 | P23 | I/O | ANI3 |
| 77 | P22 | I/O | ANI2/EXLVD |
| 78 | P21 | I/O | AVREFM/ANI1 |
| 79 | P20 | I/O | AVREFP/ANI0 |
| 80 | P56 | I/O | TxD2/IrTxD |

### A.2.4 80-LFQFP

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 1 | P55 | I/O | RxD2/IrRxD/RxDMG0/(INTP8) |
| 2 | P130 | Output | PCLBUZ1/SMO02 |
| 3 | P40 | I/O | TOOL0/(RTCOUT) |
| 4 | P152 | I/O | RTCIC2/INTP12 |
| 5 | P151 | I/O | RTCIC1/INTP13 |
| 6 | P150 | I/O | RTCOUT/RTCIC0/INTP14 |
| 7 | RESET | Input | - |
| 8 | P122 | Input | X2/EXCLK/INTP8 |
| 9 | P121 | Input | X1/INTP9 |
| 10 | P137 | Input | INTP0 |
| 11 | P124 | Input | XT2/EXCLKS |
| 12 | P123 | Input | XT1 |
| 13 | VRTC | Power | - |
| 14 | REGC | Power | - |
| 15 | VSS | Power | EVSS0/AVSS1 |
| 16 | AVDD | Power | - |
| 17 | VDD | Power | EVDD0 |
| 18 | LVDVBAT | Input | - |
| 19 | P60 | I/O | SCLA0/(TI00)/(TO00) |
| 20 | P61 | I/O | SDAA0/(TI01)/(TO01) |
| 41 | P82 | I/O | SEG14/(SO10)/(TxD1) |
| 42 | P81 | I/O | SEG13/(SI10)/(RxD1)/(SDA10) |
| 43 | P80 | I/O | SEG12/(SCK10)/(SCL10) |
| 44 | P17 | I/O | SEG11/(SO00)/(TxD0) |
| 45 | P16 | I/O | SEG10/(SI00)/(RxD0)/(SDA00) |

| Pin Number | Primary Pin Name | Primary Electrical Type | Alternate Pin Name(s) |
|---|---|---|---|
| 46 | P15 | I/O | SEG9/(SCK00)/(SCL00) |
| 47 | P14 | I/O | SEG8 |
| 48 | P13 | I/O | SEG7 |
| 49 | P12 | I/O | SEG6 |
| 50 | P11 | I/O | SEG5 |
| 51 | P10 | I/O | SEG4 |
| 52 | P97 | I/O | COM7/SEG3 |
| 53 | P96 | I/O | COM6/SEG2 |
| 54 | P95 | I/O | COM5/SEG1 |
| 55 | P94 | I/O | COM4/SEG0 |
| 56 | P93 | I/O | COM3 |
| 57 | P92 | I/O | COM2 |
| 58 | P91 | I/O | COM1 |
| 59 | P90 | I/O | COM0 |
| 60 | P07 | I/O | SEG37/SO00/TxD0/TI02/TO02/INTP2/TOOLTxD/TxDMG1 |
| 61 | P06 | I/O | SEG36/SI00/RxD0/SDA00/TI03/TO03/TOOLRxD/RxDMG1/(INTP9) |
| 61 | P06 | I/O | SEG36/SI00/RxD0/SDA00/TI03/TO03/TOOLRxD/RxDMG1/(INTP9) |
| 62 | P05 | I/O | SEG35/SCK00/SCL00/TI04/TO04/INTP3/TRJIO0 |
| 62 | P05 | I/O | SEG35/SCK00/SCL00/TI04/TO04/INTP3/TRJIO0 |
| 63 | P04 | I/O | SEG34/SO10/TxD1/TI05/TO05/INTP4/TRJO0/SMO10 |
| 63 | P04 | I/O | SEG34/SO10/TxD1/TI05/TO05/INTP4/TRJO0/SMO10 |
| 64 | P03 | I/O | SEG33/SI10/RxD1/SDA10/TI06/TO06/TRJO1/SMO11 |
| 64 | P03 | I/O | SEG33/SI10/RxD1/SDA10/TI06/TO06/TRJO1/SMO11 |
| 65 | P02 | I/O | SEG32/SCK10/SCL10/TI07/TO07/INTP5/SMO12 |
| 65 | P02 | I/O | SEG32/SCK10/SCL10/TI07/TO07/INTP5/SMO12 |
| 66 | ANIP2 | Input | - |
| 66 | ANIP2 | Input | - |
| 67 | ANIN2 | Input | - |
| 67 | ANIN2 | Input | - |
| 68 | AVRT | Power | - |
| 68 | AVRT | Power | - |
| 69 | AVCM | Power | - |
| 69 | AVCM | Power | - |
| 70 | AVSS0 | Power | - |
| 70 | AVSS0 | Power | - |
| 71 | AREGC | Power | - |
| 71 | AREGC | Power | - |
| 72 | ANIP1 | Input | - |
| 72 | ANIP1 | Input | - |
| 73 | ANIN1 | Input | - |
| 73 | ANIN1 | Input | - |
| 74 | ANIP0 | Input | - |
| 74 | ANIP0 | Input | - |
| 75 | ANIN0 | Input | - |
| 75 | ANIN0 | Input | - |
| 76 | P23 | I/O | ANI0 |
| 76 | P23 | I/O | ANI0 |
| 77 | P22 | I/O | ANI5/EXLVD |
| 77 | P22 | I/O | ANI5/EXLVD |
| 78 | P21 | I/O | ANI4/AVREFM |
| 78 | P21 | I/O | ANI4/AVREFM |
| 79 | P20 | I/O | ANI3/AVREFP/VREFOUT |
| 79 | P20 | I/O | ANI3/AVREFP/VREFOUT |
| 80 | P56 | I/O | TxD2/IrTxD/TxDMG0 |
| 80 | P56 | I/O | TxD2/IrTxD/TxDMG0 |

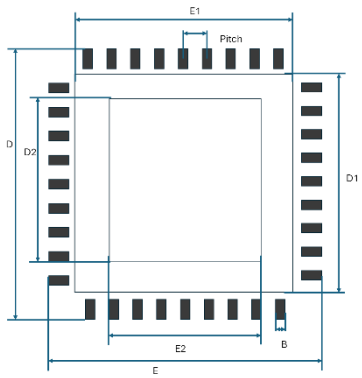
## A.3 Symbol Parameters

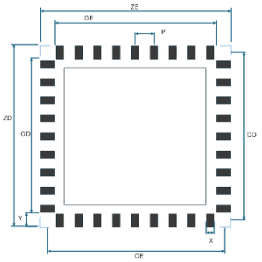
| Orderable Part Number | Min Input Voltage | Max Input Voltage | Max Output Frequency | Min Operating Temperature | Max Operating Temperature | RAM Size | Memory Size | Interface | Number of ADC Channels | Number of I2C Channels | Number of SPI Channels | Number of UART Channels | Number of Timers/Counters |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R5F10NLEDFB #75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 6 KB | 64 KB | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NLGDFB#75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 8 KB | 128 KB | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NMEDFB#75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 6 KB | 64 KB | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NMGDFB#75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 8 KB | 128 KB | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NMJDFB#75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 16 KB | 256 KB | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NMLDFB#70 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | - | - | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NPGDFB#75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 8 KB | 128 KB | I2C, SPI, UART | 10-bit X 6-Ch | 4 | 3 | 4 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NPJDFB #75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 16 KB | 256 KB | I2C, SPI, UART | 10-bit X 6-Ch | 4 | 3 | 4 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F10NPLDFB#70 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | - | - | I2C, SPI, UART | 10-bit X 6-Ch | 4 | 3 | 4 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F11TLEDFB #75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 6 KB | 64 KB | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |
| R5F11TLGDFB #75 | 1.7 V | 5.5 V | 32 MHz | -40 °C | +85 °C | 8 KB | 128 KB | I2C, SPI, UART | 10-bit X 4-Ch | 3 | 2 | 3 | 16-bit X 10-Ch, 12-bit X 1-Ch, 8-bit X 4-Ch |

## A.4 Footprint Design Information

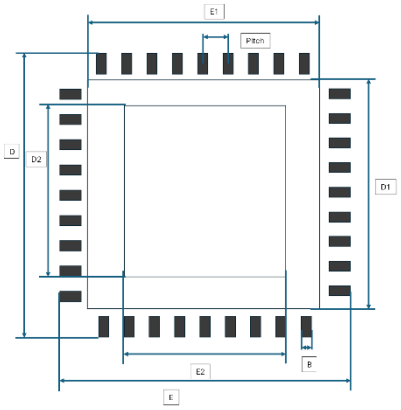
### A.4.1 80-LQFP

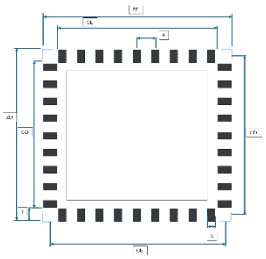
| IPC Footprint Type | Package Code/ POD number | Number of Pins |
|---|---|---|
| QFP | PLQP0080KB-B | 80 |

| Description | Dimension | Value (mm) | Diagram |
|---|---|---|---|
| Minimum lead span (vertical side) | Dmin | 14.2 |   |
| Maximum lead span (vertical side) | Dmax | 14.2 | |
| Minimum lead span (horizontal side) | Emin | 14.2 | |
| Maximum lead span (horizontal side) | Emax | 14.2 | |
| Minimum body span (vertical side) | D1min | 12.1 | |
| Maximum body span (vertical side) | D1max | 12.1 | |
| Minimum body span (horizontal side) | E1min | 12.1 | |
| Maximum body span (horizontal side) | E1max | 12.1 | |
| Minimum Lead Width | Bmin | 0.2 | |
| Maximum Lead Width | Bmax | 0.2 | |
| 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 | - | |
| Maximum Lead Thickness | cmax | - | |
| Number of pins (vertical side) | PinCountD | 20 | |
| Number of pins (horizontal side) | PinCountE | 20 | |
| Distance between the center of any two adjacent pins | Pitch | 0.5 | |
| Location of pin 1;<br>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 | - | |

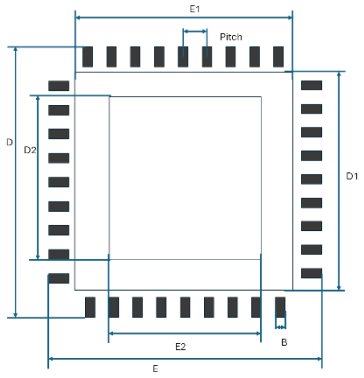
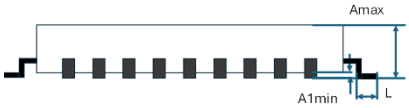
| IPC Footprint Type | Package Code/ POD number | Number of Pins |
|---|---|---|
| QFP | - | - |

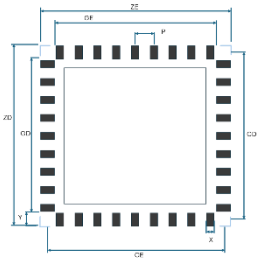
| Description | Dimension | Value (mm) | Diagram |
|---|---|---|---|
| Minimum lead span (vertical side) | Dmin | - |   |
| Maximum lead span (vertical side) | Dmax | - | |
| Minimum lead span (horizontal side) | Emin | - | |
| Maximum lead span (horizontal side) | Emax | - | |
| Minimum body span (vertical side) | D1min | - | |
| Maximum body span (vertical side) | D1max | - | |
| Minimum body span (horizontal side) | E1min | - | |
| Maximum body span (horizontal side) | E1max | - | |
| Minimum Lead Width | Bmin | - | |
| Maximum Lead Width | Bmax | - | |
| Minimum Lead Length | Lmin | - | |
| Maximum Lead Length | Lmax | - | |
| Maximum Height | Amax | - |   |
| Minimum Standoff Height | A1min | - | |
| Minimum Lead Thickness | cmin | - | |
| Maximum Lead Thickness | cmax | - | |
| Number of pins (vertical side) | PinCountD | - | |
| Number of pins (horizontal side) | PinCountE | - | |
| Distance between the center of any two adjacent pins | Pitch | - | |
| Location of pin 1;<br>S2 = corner of D side, C1 = center of E side | Pin1 | - | |
| 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.4.2 **100-LQFP**

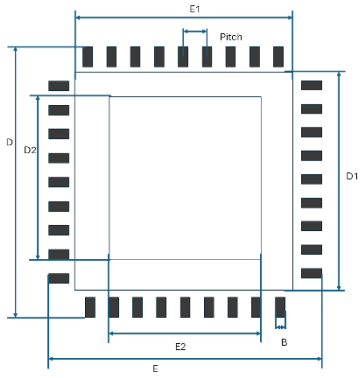
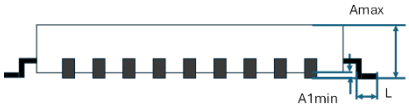
| IPC Footprint Type | Package Code/ POD number | Number of Pins |
|---|---|---|
| QFP | PLQP0100KB-B | 100 |

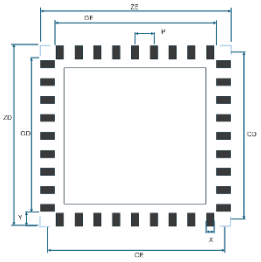
| Description | Dimension | Value (mm) | Diagram |
|---|---|---|---|
| Minimum lead span (vertical side) | Dmin | 15.8 |   |
| Maximum lead span (vertical side) | Dmax | 16.2 | |
| Minimum lead span (horizontal side) | Emin | 15.8 | |
| Maximum lead span (horizontal side) | Emax | 16.2 | |
| Minimum body span (vertical side) | D1min | 13.9 | |
| Maximum body span (vertical side) | D1max | 14.1 | |
| Minimum body span (horizontal side) | E1min | 13.9 | |
| Maximum body span (horizontal side) | E1max | 14.1 | |
| 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 | - | |
| Maximum Lead Thickness | cmax | - | |
| Number of pins (vertical side) | PinCountD | 25 | |
| Number of pins (horizontal side) | PinCountE | 25 | |
| Distance between the center of any two adjacent pins | Pitch | 0.5 | |
| Location of pin 1;<br>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.4.3 **64-LQFP**

| IPC Footprint Type | Package Code/ POD number | Number of Pins |
|---|---|---|
| QFP | PLQP0064KC-A | 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 | 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 | 0.3 | |
| Maximum Lead Length | Lmax | 0.7 | |
| Maximum Height | Amax | 1.7 |   |
| Minimum Standoff Height | A1min | 0 | |
| Minimum Lead Thickness | cmin | 0.12 | |
| Maximum Lead Thickness | cmax | 0.22 | |
| 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;<br>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 | - | |