



Welcome to [E-XFL.COM](#)

### What is "[Embedded - Microcontrollers](#)"?

"[Embedded - Microcontrollers](#)" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

### Applications of "[Embedded - Microcontrollers](#)"

#### Details

|                            |                                                                                                                                                                       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Status             | Discontinued at Digi-Key                                                                                                                                              |
| Core Processor             | ARM® Cortex®-M3                                                                                                                                                       |
| Core Size                  | 32-Bit Single-Core                                                                                                                                                    |
| Speed                      | 48MHz                                                                                                                                                                 |
| Connectivity               | EBI/EMI, I <sup>2</sup> C, IrDA, SmartCard, SPI, UART/USART, USB                                                                                                      |
| Peripherals                | Brown-out Detect/Reset, DMA, POR, PWM, WDT                                                                                                                            |
| Number of I/O              | 83                                                                                                                                                                    |
| Program Memory Size        | 128KB (128K x 8)                                                                                                                                                      |
| Program Memory Type        | FLASH                                                                                                                                                                 |
| EEPROM Size                | -                                                                                                                                                                     |
| RAM Size                   | 32K x 8                                                                                                                                                               |
| Voltage - Supply (Vcc/Vdd) | 1.98V ~ 3.8V                                                                                                                                                          |
| Data Converters            | A/D 8x12b; D/A 2x12b                                                                                                                                                  |
| Oscillator Type            | Internal                                                                                                                                                              |
| Operating Temperature      | -40°C ~ 85°C (TA)                                                                                                                                                     |
| Mounting Type              | Surface Mount                                                                                                                                                         |
| Package / Case             | 100-LQFP                                                                                                                                                              |
| Supplier Device Package    | 100-LQFP (14x14)                                                                                                                                                      |
| Purchase URL               | <a href="https://www.e-xfl.com/product-detail/silicon-labs/efm32lg380f128g-e-qfp100r">https://www.e-xfl.com/product-detail/silicon-labs/efm32lg380f128g-e-qfp100r</a> |

| Module | Configuration      | Pin Connections                                                        |
|--------|--------------------|------------------------------------------------------------------------|
| OPAMP  | Full configuration | Outputs: OPAMP_OUTx, OPAMP_OUTxALT, Inputs: OPAMP_Px, OPAMP_Nx         |
| AES    | Full configuration | NA                                                                     |
| GPIO   | 52 pins            | Available pins are shown in <a href="#">5.6.3 GPIO Pinout Overview</a> |

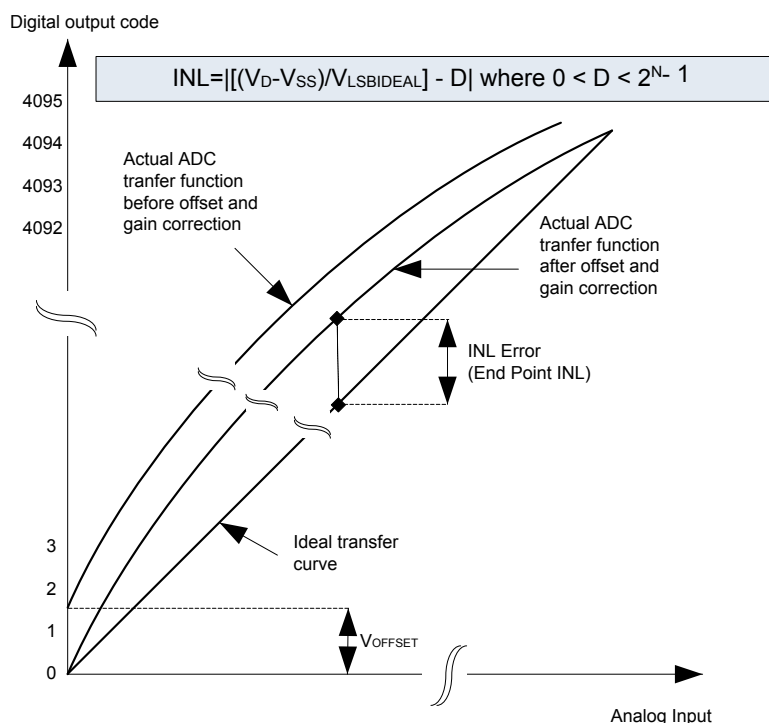
| Parameter                                                            | Symbol          | Test Condition                                                                                      | Min                  | Typ       | Max | Unit       |
|----------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------|----------------------|-----------|-----|------------|
| Input leakage current                                                | $I_{IOLEAK}$    | $V_{SS} < V_{in} < V_{DD}$ ; pin configured as input or disabled, pullup and pull-down are disabled | -40                  | $\pm 0.1$ | 40  | nA         |
| I/O pin pull-up resistor                                             | $R_{PU}$        |                                                                                                     | —                    | 40        | —   | k $\Omega$ |
| I/O pin pull-down resistor                                           | $R_{PD}$        |                                                                                                     | —                    | 40        | —   | k $\Omega$ |
| Internal ESD series resistor                                         | $R_{IOESD}$     |                                                                                                     | —                    | 200       | —   | $\Omega$   |
| Pulse width of pulses to be removed by the glitch suppression filter | $t_{IO-GLITCH}$ |                                                                                                     | 10                   | —         | 50  | ns         |
| Output fall time                                                     | $t_{IOOF}$      | GPIO_Px_CTRL DRIVEMODE = LOW-EST and load capacitance $C_L=12.5-25pF$ .                             | $20+0.1 \times C_L$  | —         | 250 | ns         |
|                                                                      |                 | GPIO_Px_CTRL DRIVEMODE = LOW and load capacitance $C_L=350-600pF$                                   | $20+0.1 \times C_L$  | —         | 250 | ns         |
| I/O pin hysteresis ( $V_{IOTH+} - V_{IOTH-}$ )                       | $V_{IOHYST}$    | $V_{DD} = 1.98 - 3.8 V$                                                                             | $0.10 \times V_{DD}$ | —         | —   | V          |

| Parameter                 | Symbol                  | Test Condition               | Min   | Typ              | Max               | Unit   |
|---------------------------|-------------------------|------------------------------|-------|------------------|-------------------|--------|
| Offset error drift        | OFFSET <sub>ED</sub>    | 1.25 V reference             | —     | 0.2 <sup>2</sup> | 0.7 <sup>3</sup>  | LSB/°C |
|                           |                         | 2.5 V reference              | —     | 0.2 <sup>2</sup> | 0.62 <sup>3</sup> | LSB/°C |
| VREF output voltage       | V <sub>REF</sub>        | 1.25 V reference             | 1.2   | 1.25             | 1.3               | V      |
|                           |                         | 2.5 V reference              | 2.4   | 2.5              | 2.6               | V      |
| VREF voltage drift        | V <sub>REF_VDRIFT</sub> | 1.25 V reference             | -12.4 | 2.9              | 18.2              | mV/V   |
|                           |                         | 2.5 V reference, VDD > 2.5 V | -24.6 | 5.7              | 35.2              | mV/V   |
| VREF temperature drift    | V <sub>REF_TDRIFT</sub> | 1.25 V reference             | -132  | 272              | 677               | μV/°C  |
|                           |                         | 2.5 V reference              | -231  | 545              | 1271              | μV/°C  |
| VREF current consumption  | I <sub>VREF</sub>       | 1.25 V reference             | —     | 67               | 114               | μA     |
|                           |                         | 2.5 V reference              | —     | 55               | 82                | μA     |
| ADC and DAC VREF matching | V <sub>REF_MATCH</sub>  | 1.25 V reference             | —     | 99.85            | —                 | %      |
|                           |                         | 2.5 V reference              | —     | 100.01           | —                 | %      |

**Note:**

1. On the average every ADC will have one missing code, most likely to appear around 2048 +/- n\*512 where n can be a value in the set {-3, -2, -1, 1, 2, 3}. There will be no missing code around 2048, and in spite of the missing code the ADC will be monotonic at all times so that a response to a slowly increasing input will always be a slowly increasing output. Around the one code that is missing, the neighbour codes will look wider in the DNL plot. The spectra will show spurs on the level of -78dBc for a full scale input for chips that have the missing code issue.
2. Typical numbers given by  $\text{abs}(\text{Mean}) / (85 - 25)$ .
3. Max number given by  $(\text{abs}(\text{Mean}) + 3 \times \text{stddev}) / (85 - 25)$ .

The integral non-linearity (INL) and differential non-linearity parameters are explained in the following two figures.



**Figure 4.23. Integral Non-Linearity (INL)**

| Parameter              | Symbol                   | Test Condition                                                                   | Min | Typ  | Max | Unit |
|------------------------|--------------------------|----------------------------------------------------------------------------------|-----|------|-----|------|
| Positive response time | $t_{\text{RESPONSE\_P}}$ | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=0 | —   | 451  | —   | ns   |
|                        |                          | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=1 | —   | 643  | —   | ns   |
|                        |                          | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=2 | —   | 679  | —   | ns   |
|                        |                          | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=3 | —   | 725  | —   | ns   |
|                        |                          | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=4 | —   | 761  | —   | ns   |
|                        |                          | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=5 | —   | 826  | —   | ns   |
|                        |                          | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=6 | —   | 909  | —   | ns   |
|                        |                          | BIASPROG=0b1111, FULL-BIAS=0, HALFBIAS=1, Overdrive = 100 mV, LPREF=0, HYSTSEL=7 | —   | 1021 | —   | ns   |

### 5.1.2 Alternate Functionality Pinout

A wide selection of alternate functionality is available for multiplexing to various pins. This is shown in the following table. The table shows the name of the alternate functionality in the first column, followed by columns showing the possible LOCATION bitfield settings.

**Note:** Some functionality, such as analog interfaces, do not have alternate settings or a LOCATION bitfield. In these cases, the pinout is shown in the column corresponding to LOCATION 0.

**Table 5.2. Alternate functionality overview**

| Alternate     | LOCATION |   |     |   |   |   |   |                                                           |
|---------------|----------|---|-----|---|---|---|---|-----------------------------------------------------------|
| Functionality | 0        | 1 | 2   | 3 | 4 | 5 | 6 | Description                                               |
| ACMP0_CH0     | PC0      |   |     |   |   |   |   | Analog comparator ACMP0, channel 0.                       |
| ACMP0_CH1     | PC1      |   |     |   |   |   |   | Analog comparator ACMP0, channel 1.                       |
| ACMP0_CH2     | PC2      |   |     |   |   |   |   | Analog comparator ACMP0, channel 2.                       |
| ACMP0_CH3     | PC3      |   |     |   |   |   |   | Analog comparator ACMP0, channel 3.                       |
| ACMP0_CH4     | PC4      |   |     |   |   |   |   | Analog comparator ACMP0, channel 4.                       |
| ACMP0_CH5     | PC5      |   |     |   |   |   |   | Analog comparator ACMP0, channel 5.                       |
| ACMP0_CH6     | PC6      |   |     |   |   |   |   | Analog comparator ACMP0, channel 6.                       |
| ACMP0_CH7     | PC7      |   |     |   |   |   |   | Analog comparator ACMP0, channel 7.                       |
| ACMP0_O       | PE13     |   | PD6 |   |   |   |   | Analog comparator ACMP0, digital output.                  |
| ACMP1_CH0     | PC8      |   |     |   |   |   |   | Analog comparator ACMP1, channel 0.                       |
| ACMP1_CH1     | PC9      |   |     |   |   |   |   | Analog comparator ACMP1, channel 1.                       |
| ACMP1_CH2     | PC10     |   |     |   |   |   |   | Analog comparator ACMP1, channel 2.                       |
| ACMP1_CH3     | PC11     |   |     |   |   |   |   | Analog comparator ACMP1, channel 3.                       |
| ACMP1_CH4     | PC12     |   |     |   |   |   |   | Analog comparator ACMP1, channel 4.                       |
| ACMP1_CH5     | PC13     |   |     |   |   |   |   | Analog comparator ACMP1, channel 5.                       |
| ACMP1_CH6     | PC14     |   |     |   |   |   |   | Analog comparator ACMP1, channel 6.                       |
| ACMP1_CH7     | PC15     |   |     |   |   |   |   | Analog comparator ACMP1, channel 7.                       |
| ACMP1_O       | PF2      |   | PD7 |   |   |   |   | Analog comparator ACMP1, digital output.                  |
| ADC0_CH0      | PD0      |   |     |   |   |   |   | Analog to digital converter ADC0, input channel number 0. |
| ADC0_CH1      | PD1      |   |     |   |   |   |   | Analog to digital converter ADC0, input channel number 1. |
| ADC0_CH2      | PD2      |   |     |   |   |   |   | Analog to digital converter ADC0, input channel number 2. |
| ADC0_CH3      | PD3      |   |     |   |   |   |   | Analog to digital converter ADC0, input channel number 3. |
| ADC0_CH4      | PD4      |   |     |   |   |   |   | Analog to digital converter ADC0, input channel number 4. |
| ADC0_CH5      | PD5      |   |     |   |   |   |   | Analog to digital converter ADC0, input channel number 5. |
| ADC0_CH6      | PD6      |   |     |   |   |   |   | Analog to digital converter ADC0, input channel number 6. |

| Alternate     | LOCATION |      |      |   |   |   |   |                                                                      |
|---------------|----------|------|------|---|---|---|---|----------------------------------------------------------------------|
| Functionality | 0        | 1    | 2    | 3 | 4 | 5 | 6 | Description                                                          |
| EBI_A04       | PB10     | PB10 | PB10 |   |   |   |   | External Bus Interface (EBI) address output pin 04.                  |
| EBI_A05       | PC6      | PC6  | PC6  |   |   |   |   | External Bus Interface (EBI) address output pin 05.                  |
| EBI_A06       | PC7      | PC7  | PC7  |   |   |   |   | External Bus Interface (EBI) address output pin 06.                  |
| EBI_A07       | PE0      | PE0  | PE0  |   |   |   |   | External Bus Interface (EBI) address output pin 07.                  |
| EBI_A08       | PE1      | PE1  | PE1  |   |   |   |   | External Bus Interface (EBI) address output pin 08.                  |
| EBI_A09       | PE2      | PC9  | PC9  |   |   |   |   | External Bus Interface (EBI) address output pin 09.                  |
| EBI_A10       | PE3      | PC10 | PC10 |   |   |   |   | External Bus Interface (EBI) address output pin 10.                  |
| EBI_A11       | PE4      | PE4  | PE4  |   |   |   |   | External Bus Interface (EBI) address output pin 11.                  |
| EBI_A12       | PE5      | PE5  | PE5  |   |   |   |   | External Bus Interface (EBI) address output pin 12.                  |
| EBI_A13       | PE6      | PE6  | PE6  |   |   |   |   | External Bus Interface (EBI) address output pin 13.                  |
| EBI_A14       | PE7      | PE7  | PE7  |   |   |   |   | External Bus Interface (EBI) address output pin 14.                  |
| EBI_A15       | PC8      | PC8  | PC8  |   |   |   |   | External Bus Interface (EBI) address output pin 15.                  |
| EBI_A16       | PB0      | PB0  | PB0  |   |   |   |   | External Bus Interface (EBI) address output pin 16.                  |
| EBI_A17       | PB1      | PB1  | PB1  |   |   |   |   | External Bus Interface (EBI) address output pin 17.                  |
| EBI_A18       | PB2      | PB2  | PB2  |   |   |   |   | External Bus Interface (EBI) address output pin 18.                  |
| EBI_A19       | PB3      | PB3  | PB3  |   |   |   |   | External Bus Interface (EBI) address output pin 19.                  |
| EBI_A20       | PB4      | PB4  | PB4  |   |   |   |   | External Bus Interface (EBI) address output pin 20.                  |
| EBI_A21       | PB5      | PB5  | PB5  |   |   |   |   | External Bus Interface (EBI) address output pin 21.                  |
| EBI_A22       | PB6      | PB6  | PB6  |   |   |   |   | External Bus Interface (EBI) address output pin 22.                  |
| EBI_A23       | PC0      | PC0  | PC0  |   |   |   |   | External Bus Interface (EBI) address output pin 23.                  |
| EBI_A24       | PC1      | PC1  | PC1  |   |   |   |   | External Bus Interface (EBI) address output pin 24.                  |
| EBI_A25       | PC2      | PC2  | PC2  |   |   |   |   | External Bus Interface (EBI) address output pin 25.                  |
| EBI_A26       | PC4      | PC4  | PC4  |   |   |   |   | External Bus Interface (EBI) address output pin 26.                  |
| EBI_A27       | PD2      | PD2  | PD2  |   |   |   |   | External Bus Interface (EBI) address output pin 27.                  |
| EBI_AD00      | PE8      | PE8  | PE8  |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 00. |
| EBI_AD01      | PE9      | PE9  | PE9  |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 01. |
| EBI_AD02      | PE10     | PE10 | PE10 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 02. |
| EBI_AD03      | PE11     | PE11 | PE11 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 03. |
| EBI_AD04      | PE12     | PE12 | PE12 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 04. |
| EBI_AD05      | PE13     | PE13 | PE13 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 05. |
| EBI_AD06      | PE14     | PE14 | PE14 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 06. |

| Alternate     | LOCATION |      |      |   |   |   |   | Description                                                          |
|---------------|----------|------|------|---|---|---|---|----------------------------------------------------------------------|
| Functionality | 0        | 1    | 2    | 3 | 4 | 5 | 6 |                                                                      |
| EBI_A06       | PC7      | PC7  | PC7  |   |   |   |   | External Bus Interface (EBI) address output pin 06.                  |
| EBI_A07       | PE0      | PE0  | PE0  |   |   |   |   | External Bus Interface (EBI) address output pin 07.                  |
| EBI_A08       | PE1      | PE1  | PE1  |   |   |   |   | External Bus Interface (EBI) address output pin 08.                  |
| EBI_A09       | PE2      | PC9  | PC9  |   |   |   |   | External Bus Interface (EBI) address output pin 09.                  |
| EBI_A10       | PE3      | PC10 | PC10 |   |   |   |   | External Bus Interface (EBI) address output pin 10.                  |
| EBI_A11       | PE4      | PE4  | PE4  |   |   |   |   | External Bus Interface (EBI) address output pin 11.                  |
| EBI_A12       | PE5      | PE5  | PE5  |   |   |   |   | External Bus Interface (EBI) address output pin 12.                  |
| EBI_A13       | PE6      | PE6  | PE6  |   |   |   |   | External Bus Interface (EBI) address output pin 13.                  |
| EBI_A14       | PE7      | PE7  | PE7  |   |   |   |   | External Bus Interface (EBI) address output pin 14.                  |
| EBI_A15       | PC8      | PC8  | PC8  |   |   |   |   | External Bus Interface (EBI) address output pin 15.                  |
| EBI_A16       | PB0      | PB0  | PB0  |   |   |   |   | External Bus Interface (EBI) address output pin 16.                  |
| EBI_A17       | PB1      | PB1  | PB1  |   |   |   |   | External Bus Interface (EBI) address output pin 17.                  |
| EBI_A18       | PB2      | PB2  | PB2  |   |   |   |   | External Bus Interface (EBI) address output pin 18.                  |
| EBI_A19       | PB3      | PB3  | PB3  |   |   |   |   | External Bus Interface (EBI) address output pin 19.                  |
| EBI_A20       | PB4      | PB4  | PB4  |   |   |   |   | External Bus Interface (EBI) address output pin 20.                  |
| EBI_A21       | PB5      | PB5  | PB5  |   |   |   |   | External Bus Interface (EBI) address output pin 21.                  |
| EBI_A22       | PB6      | PB6  | PB6  |   |   |   |   | External Bus Interface (EBI) address output pin 22.                  |
| EBI_A23       | PC0      | PC0  | PC0  |   |   |   |   | External Bus Interface (EBI) address output pin 23.                  |
| EBI_A24       | PC1      | PC1  | PC1  |   |   |   |   | External Bus Interface (EBI) address output pin 24.                  |
| EBI_A25       | PC2      | PC2  | PC2  |   |   |   |   | External Bus Interface (EBI) address output pin 25.                  |
| EBI_A26       | PC4      | PC4  | PC4  |   |   |   |   | External Bus Interface (EBI) address output pin 26.                  |
| EBI_A27       | PD2      | PD2  | PD2  |   |   |   |   | External Bus Interface (EBI) address output pin 27.                  |
| EBI_AD00      | PE8      | PE8  | PE8  |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 00. |
| EBI_AD01      | PE9      | PE9  | PE9  |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 01. |
| EBI_AD02      | PE10     | PE10 | PE10 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 02. |
| EBI_AD03      | PE11     | PE11 | PE11 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 03. |
| EBI_AD04      | PE12     | PE12 | PE12 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 04. |
| EBI_AD05      | PE13     | PE13 | PE13 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 05. |
| EBI_AD06      | PE14     | PE14 | PE14 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 06. |
| EBI_AD07      | PE15     | PE15 | PE15 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 07. |
| EBI_AD08      | PA15     | PA15 | PA15 |   |   |   |   | External Bus Interface (EBI) address and data input / output pin 08. |



| CSP81 Pin# and Name |          | Pin Alternate Functionality / Description                                                                              |                                                  |                        |                                                           |
|---------------------|----------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------|-----------------------------------------------------------|
| Pin #               | Pin Name | Analog                                                                                                                 | Timers                                           | Communication          | Other                                                     |
| D1                  | PC10     | ACMP1_CH2                                                                                                              | TIM2_CC2 #2                                      | US0_RX #2              | LES_CH10 #0                                               |
| D2                  | PC11     | ACMP1_CH3                                                                                                              |                                                  | US0_TX #2              | LES_CH11 #0                                               |
| D3                  | PC12     | ACMP1_CH4<br>DAC0_OUT1ALT #0/<br>OPAMP_OUT1ALT                                                                         |                                                  | U1_TX #0               | CMU_CLK0 #1<br>LES_CH12 #0                                |
| D4                  | PC9      | ACMP1_CH1                                                                                                              | TIM2_CC1 #2                                      | US0_CLK #2             | LES_CH9 #0<br>GPIO_EM4WU2                                 |
| D5                  | PC8      | ACMP1_CH0                                                                                                              | TIM2_CC0 #2                                      | US0_CS #2              | LES_CH8 #0                                                |
| D6                  | PA4      |                                                                                                                        | TIM0_CDTI1 #0                                    | U0_RX #2               | LES_ALTEX3 #0<br>ETM_TD2 #3                               |
| D7                  | PA5      |                                                                                                                        | TIM0_CDTI2 #0                                    | LEU1_TX #1             | LES_ALTEX4 #0<br>ETM_TD3 #3                               |
| D8                  | PA6      |                                                                                                                        |                                                  | LEU1_RX #1             | ETM_TCLK #3<br>GPIO_EM4WU1                                |
| D9                  | IOVDD_0  | Digital IO power supply 0.                                                                                             |                                                  |                        |                                                           |
| E1                  | PE4      |                                                                                                                        |                                                  | US0_CS #1              |                                                           |
| E2                  | PE5      |                                                                                                                        |                                                  | US0_CLK #1             |                                                           |
| E3                  | PE3      | BU_STAT                                                                                                                |                                                  | U1_RX #3               | ACMP1_O #1                                                |
| E4                  | PC7      | ACMP0_CH7                                                                                                              |                                                  | LEU1_RX #0 I2C0_SCL #2 | LES_CH7 #0 ETM_TD0 #2                                     |
| E5                  | PE15     |                                                                                                                        | TIM3_CC1 #0                                      | LEU0_RX #2             |                                                           |
| E6                  | PB5      |                                                                                                                        |                                                  | US2_CLK #1             |                                                           |
| E7                  | PB3      |                                                                                                                        | PCNT1_S0IN #1                                    | US2_TX #1              |                                                           |
| E8                  | PB4      |                                                                                                                        | PCNT1_S1IN #1                                    | US2_RX #1              |                                                           |
| E9                  | VSS      | Ground.                                                                                                                |                                                  |                        |                                                           |
| F1                  | DECOUPLE | Decouple output for on-chip voltage regulator. An external capacitance of size $C^{DECOUPLE}$ is required at this pin. |                                                  |                        |                                                           |
| F2                  | PE2      | BU_VOUT                                                                                                                | TIM3_CC2 #1                                      | U1_TX #3               | ACMP0_O #1                                                |
| F3                  | PC6      | ACMP0_CH6                                                                                                              |                                                  | LEU1_TX #0 I2C0_SDA #2 | LES_CH6 #0<br>ETM_TCLK #2                                 |
| F4                  | PD7      | ADC0_CH7 OPAMP_N1                                                                                                      | TIM1_CC1 #4 LE-<br>TIM0_OUT1 #0<br>PCNT0_S1IN #3 | US1_TX #2 I2C0_SCL #1  | CMU_CLK0 #2<br>LES_ALTEX1 #0<br>ACMP1_O #2<br>ETM_TCLK #0 |
| F5                  | PD0      | ADC0_CH0<br>DAC0_OUT0ALT #4/<br>OPAMP_OUT0ALT<br>OPAMP_OUT2 #1                                                         | PCNT2_S0IN #0                                    | US1_TX #1              |                                                           |
| F6                  | PA8      |                                                                                                                        | TIM2_CC0 #0                                      |                        |                                                           |
| F7                  | PC2      | ACMP0_CH2<br>DAC0_OUT0ALT #2/<br>OPAMP_OUT0ALT                                                                         | TIM0_CDTI0 #4                                    | US2_TX #0              | LES_CH2 #0                                                |

| Alternate     | LOCATION |      |      |      |      |     |   | Description                                                                                                   |
|---------------|----------|------|------|------|------|-----|---|---------------------------------------------------------------------------------------------------------------|
| Functionality | 0        | 1    | 2    | 3    | 4    | 5   | 6 |                                                                                                               |
| LES_CH14      | PC14     |      |      |      |      |     |   | LESENSE channel 14.                                                                                           |
| LES_CH15      | PC15     |      |      |      |      |     |   | LESENSE channel 15.                                                                                           |
| LETIM0_OUT0   | PD6      | PB11 | PF0  | PC4  |      |     |   | Low Energy Timer LETIM0, output channel 0.                                                                    |
| LETIM0_OUT1   | PD7      | PB12 | PF1  | PC5  |      |     |   | Low Energy Timer LETIM0, output channel 1.                                                                    |
| LEU0_RX       | PD5      | PB14 | PE15 | PF1  | PA0  |     |   | LEUART0 Receive input.                                                                                        |
| LEU0_TX       | PD4      | PB13 | PE14 | PF0  | PF2  |     |   | LEUART0 Transmit output. Also used as receive input in half duplex communication.                             |
| LEU1_RX       | PC7      | PA6  |      |      |      |     |   | LEUART1 Receive input.                                                                                        |
| LEU1_TX       | PC6      | PA5  |      |      |      |     |   | LEUART1 Transmit output. Also used as receive input in half duplex communication.                             |
| LFXTAL_N      | PB8      |      |      |      |      |     |   | Low Frequency Crystal (typically 32.768 kHz) negative pin. Also used as an optional external clock input pin. |
| LFXTAL_P      | PB7      |      |      |      |      |     |   | Low Frequency Crystal (typically 32.768 kHz) positive pin.                                                    |
| PCNT0_S0IN    | PC13     |      | PC0  | PD6  |      |     |   | Pulse Counter PCNT0 input number 0.                                                                           |
| PCNT0_S1IN    | PC14     |      | PC1  | PD7  |      |     |   | Pulse Counter PCNT0 input number 1.                                                                           |
| PCNT1_S0IN    | PC4      | PB3  |      |      |      |     |   | Pulse Counter PCNT1 input number 0.                                                                           |
| PCNT1_S1IN    | PC5      | PB4  |      |      |      |     |   | Pulse Counter PCNT1 input number 1.                                                                           |
| PCNT2_S0IN    | PD0      | PE8  |      |      |      |     |   | Pulse Counter PCNT2 input number 0.                                                                           |
| PCNT2_S1IN    | PD1      | PE9  |      |      |      |     |   | Pulse Counter PCNT2 input number 1.                                                                           |
| PRS_CH0       | PA0      |      |      |      |      |     |   | Peripheral Reflex System PRS, channel 0.                                                                      |
| PRS_CH1       | PA1      |      |      |      |      |     |   | Peripheral Reflex System PRS, channel 1.                                                                      |
| PRS_CH2       | PC0      | PF5  |      |      |      |     |   | Peripheral Reflex System PRS, channel 2.                                                                      |
| PRS_CH3       | PC1      | PE8  |      |      |      |     |   | Peripheral Reflex System PRS, channel 3.                                                                      |
| TIM0_CC0      | PA0      | PA0  |      | PD1  | PA0  | PF0 |   | Timer 0 Capture Compare input / output channel 0.                                                             |
| TIM0_CC1      | PA1      | PA1  |      | PD2  | PC0  | PF1 |   | Timer 0 Capture Compare input / output channel 1.                                                             |
| TIM0_CC2      | PA2      | PA2  |      | PD3  | PC1  | PF2 |   | Timer 0 Capture Compare input / output channel 2.                                                             |
| TIM0_CDTI0    | PA3      | PC13 |      | PC13 | PC2  |     |   | Timer 0 Complimentary Deat Time Insertion channel 0.                                                          |
| TIM0_CDTI1    | PA4      | PC14 |      | PC14 | PC3  |     |   | Timer 0 Complimentary Deat Time Insertion channel 1.                                                          |
| TIM0_CDTI2    | PA5      | PC15 | PF5  | PC15 | PC4  | PF5 |   | Timer 0 Complimentary Deat Time Insertion channel 2.                                                          |
| TIM1_CC0      | PC13     | PE10 |      | PB7  | PD6  |     |   | Timer 1 Capture Compare input / output channel 0.                                                             |
| TIM1_CC1      | PC14     | PE11 |      | PB8  | PD7  |     |   | Timer 1 Capture Compare input / output channel 1.                                                             |
| TIM1_CC2      | PC15     | PE12 |      | PB11 | PC13 |     |   | Timer 1 Capture Compare input / output channel 2.                                                             |
| TIM2_CC0      | PA8      |      | PC8  |      |      |     |   | Timer 2 Capture Compare input / output channel 0.                                                             |
| TIM2_CC1      | PA9      |      | PC9  |      |      |     |   | Timer 2 Capture Compare input / output channel 1.                                                             |

| BGA120 Pin# and Name |           | Pin Alternate Functionality / Description |                 |                                 |                                        |                                            |
|----------------------|-----------|-------------------------------------------|-----------------|---------------------------------|----------------------------------------|--------------------------------------------|
| Pin #                | Pin Name  | Analog                                    | EBI             | Timers                          | Communication                          | Other                                      |
| A3                   | PE12      |                                           | EBI_AD04 #0/1/2 | TIM1_CC2 #1                     | US0_RX #3<br>US0_CLK #0<br>I2C0_SDA #6 | CMU_CLK1 #2<br>LES_ALTEX6 #0               |
| A4                   | PE9       |                                           | EBI_AD01 #0/1/2 | PCNT2_S1IN #1                   |                                        |                                            |
| A5                   | PD11      |                                           | EBI_CS2 #0/1/2  |                                 |                                        |                                            |
| A6                   | PD9       |                                           | EBI_CS0 #0/1/2  |                                 |                                        |                                            |
| A7                   | PF7       |                                           | EBI_BL1 #0/1/2  | TIM0_CC1 #2                     | U0_RX #0                               |                                            |
| A8                   | PF5       |                                           | EBI_REn #0/2    | TIM0_CDTI2 #2/5                 | USB_VBUSEN #0                          | PRS_CH2 #1                                 |
| A9                   | PF4       |                                           | EBI_WEn #0/2    | TIM0_CDTI1 #2/5                 |                                        | PRS_CH1 #1                                 |
| A10                  | PF2       |                                           | EBI_ARDY #0/1/2 | TIM0_CC2 #5                     | LEU0_TX #4                             | ACMP1_O #0<br>DBG_SWO #0<br>GPIO_EM4WU4    |
| A11                  | USB_VREGI |                                           |                 |                                 |                                        |                                            |
| A12                  | USB_VREGO |                                           |                 |                                 |                                        |                                            |
| A13                  | PF11      |                                           |                 |                                 | U1_RX #1 USB_DP                        |                                            |
| B1                   | PA15      |                                           | EBI_AD08 #0/1/2 | TIM3_CC2 #0                     |                                        |                                            |
| B2                   | PE13      |                                           | EBI_AD05 #0/1/2 |                                 | US0_TX #3<br>US0_CS #0<br>I2C0_SCL #6  | LES_ALTEX7 #0<br>ACMP0_O #0<br>GPIO_EM4WU5 |
| B3                   | PE11      |                                           | EBI_AD03 #0/1/2 | TIM1_CC1 #1                     | US0_RX #0                              | LES_ALTEX5 #0<br>BOOT_RX                   |
| B4                   | PE8       |                                           | EBI_AD00 #0/1/2 | PCNT2_S0IN #1                   |                                        | PRS_CH3 #1                                 |
| B5                   | PD12      |                                           | EBI_CS3 #0/1/2  |                                 |                                        |                                            |
| B6                   | PD10      |                                           | EBI_CS1 #0/1/2  |                                 |                                        |                                            |
| B7                   | PF8       |                                           | EBI_WEn #1      | TIM0_CC2 #2                     |                                        | ETM_TCLK #1                                |
| B8                   | PF6       |                                           | EBI_BL0 #0/1/2  | TIM0_CC0 #2                     | U0_TX #0                               |                                            |
| B9                   | PF3       |                                           | EBI_ALE #0      | TIM0_CDTI0 #2/5                 |                                        | PRS_CH0 #1<br>ETM_TD3 #1                   |
| B10                  | PF1       |                                           |                 | TIM0_CC1 #5 LE-<br>TIM0_OUT1 #2 | US1_CS #2<br>LEU0_RX #3<br>I2C0_SCL #5 | DBG_SWDIO<br>#0/1/2/3<br>GPIO_EM4WU3       |
| B11                  | PF12      |                                           |                 |                                 | USB_ID                                 |                                            |
| B12                  | USB_VBUS  | USB 5.0 V VBUS input.                     |                 |                                 |                                        |                                            |
| B13                  | PF10      |                                           |                 |                                 | U1_TX #1 USB_DM                        |                                            |
| C1                   | PA1       |                                           | EBI_AD10 #0/1/2 | TIM0_CC1 #0/1                   | I2C0_SCL #0                            | CMU_CLK1 #0<br>PRS_CH1 #0                  |
| C2                   | PA0       |                                           | EBI_AD09 #0/1/2 | TIM0_CC0 #0/1/4                 | LEU0_RX #4<br>I2C0_SDA #0              | PRS_CH0 #0<br>GPIO_EM4WU0                  |
| C3                   | PE10      |                                           | EBI_AD02 #0/1/2 | TIM1_CC0 #1                     | US0_TX #0                              | BOOT_TX                                    |
| C4                   | PD13      |                                           |                 |                                 |                                        | ETM_TD1 #1                                 |

| BGA120 Pin# and Name |          | Pin Alternate Functionality / Description |                       |                                                  |                            |                                           |
|----------------------|----------|-------------------------------------------|-----------------------|--------------------------------------------------|----------------------------|-------------------------------------------|
| Pin #                | Pin Name | Analog                                    | EBI                   | Timers                                           | Communication              | Other                                     |
| M11                  | AVSS_0   | Analog ground 0.                          |                       |                                                  |                            |                                           |
| M12                  | PD3      | ADC0_CH3<br>OPAMP_N2                      |                       | TIM0_CC2 #3                                      | US1_CS #1                  | ETM_TD1 #0/2                              |
| M13                  | PD6      | ADC0_CH6<br>OPAMP_P1                      |                       | TIM1_CC0 #4 LE-<br>TIM0_OUT0 #0<br>PCNT0_S0IN #3 | US1_RX #2<br>I2C0_SDA #1   | LES_ALTEX0 #0<br>ACMP0_O #2<br>ETM_TD0 #0 |
| N1                   | PB8      | LFXTAL_N                                  |                       | TIM1_CC1 #3                                      | US0_RX #4<br>US1_CS #0     |                                           |
| N2                   | PC5      | ACMP0_CH5<br>OPAMP_N0                     | EBI_NANDWEn<br>#0/1/2 | LETIM0_OUT1 #3<br>PCNT1_S1IN #0                  | US2_CS #0<br>I2C1_SCL #0   | LES_CH5 #0                                |
| N3                   | PA9      |                                           | EBI_DTEN #0/1/2       | TIM2_CC1 #0                                      |                            |                                           |
| N4                   | PA11     |                                           | EBI_HSNC #0/1/2       |                                                  |                            |                                           |
| N5                   | PA12     |                                           | EBI_A00 #0/1/2        | TIM2_CC0 #1                                      |                            |                                           |
| N6                   | PB11     | DAC0_OUT0 /<br>OPAMP_OUT0                 |                       | TIM1_CC2 #3 LE-<br>TIM0_OUT0 #1                  | I2C1_SDA #1                |                                           |
| N7                   | PB12     | DAC0_OUT1 /<br>OPAMP_OUT1                 |                       | LETIM0_OUT1 #1                                   | I2C1_SCL #1                |                                           |
| N8                   | AVSS_2   | Analog ground 2.                          |                       |                                                  |                            |                                           |
| N9                   | PB13     | HFXTAL_P                                  |                       |                                                  | US0_CLK #4/5<br>LEU0_TX #1 |                                           |
| N10                  | PB14     | HFXTAL_N                                  |                       |                                                  | US0_CS #4/5<br>LEU0_RX #1  |                                           |
| N11                  | AVDD_0   | Analog power supply 0.                    |                       |                                                  |                            |                                           |
| N12                  | PD2      | ADC0_CH2                                  | EBI_A27 #0/1/2        | TIM0_CC1 #3                                      | USB_DMPU #0<br>US1_CLK #1  | DBG_SWO #3                                |
| N13                  | PD5      | ADC0_CH5<br>OPAMP_OUT2 #0                 |                       |                                                  | LEU0_RX #0                 | ETM_TD3 #0/2                              |

| LQFP100 Pin# and Name |          | Pin Alternate Functionality / Description         |                       |                                                    |                                       |                             |
|-----------------------|----------|---------------------------------------------------|-----------------------|----------------------------------------------------|---------------------------------------|-----------------------------|
| Pin #                 | Pin Name | Analog                                            | EBI                   | Timers                                             | Communication                         | Other                       |
| 3                     | PA2      | LCD_SEG15                                         | EBI_AD11 #0/1/2       | TIM0_CC2 #0/1                                      |                                       | CMU_CLK0 #0<br>ETM_TD0 #3   |
| 4                     | PA3      | LCD_SEG16                                         | EBI_AD12 #0/1/2       | TIM0_CDTI0 #0                                      | U0_TX #2                              | LES_ALTEX2 #0<br>ETM_TD1 #3 |
| 5                     | PA4      | LCD_SEG17                                         | EBI_AD13 #0/1/2       | TIM0_CDTI1 #0                                      | U0_RX #2                              | LES_ALTEX3 #0<br>ETM_TD2 #3 |
| 6                     | PA5      | LCD_SEG18                                         | EBI_AD14 #0/1/2       | TIM0_CDTI2 #0                                      | LEU1_TX #1                            | LES_ALTEX4 #0<br>ETM_TD3 #3 |
| 7                     | PA6      | LCD_SEG19                                         | EBI_AD15 #0/1/2       |                                                    | LEU1_RX #1                            | ETM_TCLK #3<br>GPIO_EM4WU1  |
| 8                     | IOVDD_0  | Digital IO power supply 0.                        |                       |                                                    |                                       |                             |
| 9                     | PB0      | LCD_SEG32                                         | EBI_A16 #0/1/2        | TIM1_CC0 #2                                        |                                       |                             |
| 10                    | PB1      | LCD_SEG33                                         | EBI_A17 #0/1/2        | TIM1_CC1 #2                                        |                                       |                             |
| 11                    | PB2      | LCD_SEG34                                         | EBI_A18 #0/1/2        | TIM1_CC2 #2                                        |                                       |                             |
| 12                    | PB3      | LCD_SEG20/<br>LCD_COM4                            | EBI_A19 #0/1/2        | PCNT1_S0IN #1                                      | US2_TX #1                             |                             |
| 13                    | PB4      | LCD_SEG21/<br>LCD_COM5                            | EBI_A20 #0/1/2        | PCNT1_S1IN #1                                      | US2_RX #1                             |                             |
| 14                    | PB5      | LCD_SEG22/<br>LCD_COM6                            | EBI_A21 #0/1/2        |                                                    | US2_CLK #1                            |                             |
| 15                    | PB6      | LCD_SEG23/<br>LCD_COM7                            | EBI_A22 #0/1/2        |                                                    | US2_CS #1                             |                             |
| 16                    | VSS      | Ground.                                           |                       |                                                    |                                       |                             |
| 17                    | IOVDD_1  | Digital IO power supply 1.                        |                       |                                                    |                                       |                             |
| 18                    | PC0      | ACMP0_CH0<br>DAC0_OUT0ALT<br>#0/<br>OPAMP_OUT0ALT | EBI_A23 #0/1/2        | TIM0_CC1 #4<br>PCNT0_S0IN #2                       | US0_TX #5<br>US1_TX #0<br>I2C0_SDA #4 | LES_CH0 #0<br>PRS_CH2 #0    |
| 19                    | PC1      | ACMP0_CH1<br>DAC0_OUT0ALT<br>#1/<br>OPAMP_OUT0ALT | EBI_A24 #0/1/2        | TIM0_CC2 #4<br>PCNT0_S1IN #2                       | US0_RX #5<br>US1_RX #0<br>I2C0_SCL #4 | LES_CH1 #0<br>PRS_CH3 #0    |
| 20                    | PC2      | ACMP0_CH2<br>DAC0_OUT0ALT<br>#2/<br>OPAMP_OUT0ALT | EBI_A25 #0/1/2        | TIM0_CDTI0 #4                                      | US2_TX #0                             | LES_CH2 #0                  |
| 21                    | PC3      | ACMP0_CH3<br>DAC0_OUT0ALT<br>#3/<br>OPAMP_OUT0ALT | EBI_NANDREN<br>#0/1/2 | TIM0_CDTI1 #4                                      | US2_RX #0                             | LES_CH3 #0                  |
| 22                    | PC4      | ACMP0_CH4<br>OPAMP_P0                             | EBI_A26 #0/1/2        | TIM0_CDTI2 #4 LE-<br>TIM0_OUT0 #3<br>PCNT1_S0IN #0 | US2_CLK #0<br>I2C1_SDA #0             | LES_CH4 #0                  |
| 23                    | PC5      | ACMP0_CH5<br>OPAMP_N0                             | EBI_NANDWEN<br>#0/1/2 | LETIM0_OUT1 #3<br>PCNT1_S1IN #0                    | US2_CS #0<br>I2C1_SCL #0              | LES_CH5 #0                  |

| Alternate     | LOCATION |      |      |      |      |      |   |                                                                                                                                                       |
|---------------|----------|------|------|------|------|------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functionality | 0        | 1    | 2    | 3    | 4    | 5    | 6 | Description                                                                                                                                           |
| PRS_CH1       | PA1      | PF4  |      |      |      |      |   | Peripheral Reflex System PRS, channel 1.                                                                                                              |
| PRS_CH2       | PC0      | PF5  |      |      |      |      |   | Peripheral Reflex System PRS, channel 2.                                                                                                              |
| PRS_CH3       | PC1      | PE8  |      |      |      |      |   | Peripheral Reflex System PRS, channel 3.                                                                                                              |
| TIM0_CC0      | PA0      | PA0  | PF6  | PD1  | PA0  | PF0  |   | Timer 0 Capture Compare input / output channel 0.                                                                                                     |
| TIM0_CC1      | PA1      | PA1  | PF7  | PD2  | PC0  | PF1  |   | Timer 0 Capture Compare input / output channel 1.                                                                                                     |
| TIM0_CC2      | PA2      | PA2  | PF8  | PD3  | PC1  | PF2  |   | Timer 0 Capture Compare input / output channel 2.                                                                                                     |
| TIM0_CDTI0    | PA3      | PC13 | PF3  | PC13 | PC2  | PF3  |   | Timer 0 Complimentary Deat Time Insertion channel 0.                                                                                                  |
| TIM0_CDTI1    | PA4      | PC14 | PF4  | PC14 | PC3  | PF4  |   | Timer 0 Complimentary Deat Time Insertion channel 1.                                                                                                  |
| TIM0_CDTI2    | PA5      | PC15 | PF5  | PC15 | PC4  | PF5  |   | Timer 0 Complimentary Deat Time Insertion channel 2.                                                                                                  |
| TIM1_CC0      | PC13     | PE10 | PB0  | PB7  | PD6  |      |   | Timer 1 Capture Compare input / output channel 0.                                                                                                     |
| TIM1_CC1      | PC14     | PE11 | PB1  | PB8  | PD7  |      |   | Timer 1 Capture Compare input / output channel 1.                                                                                                     |
| TIM1_CC2      | PC15     | PE12 | PB2  | PB11 | PC13 |      |   | Timer 1 Capture Compare input / output channel 2.                                                                                                     |
| TIM2_CC0      | PA8      | PA12 | PC8  |      |      |      |   | Timer 2 Capture Compare input / output channel 0.                                                                                                     |
| TIM2_CC1      | PA9      | PA13 | PC9  |      |      |      |   | Timer 2 Capture Compare input / output channel 1.                                                                                                     |
| TIM2_CC2      | PA10     | PA14 | PC10 |      |      |      |   | Timer 2 Capture Compare input / output channel 2.                                                                                                     |
| TIM3_CC0      | PE14     | PE0  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 0.                                                                                                     |
| TIM3_CC1      | PE15     | PE1  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 1.                                                                                                     |
| TIM3_CC2      | PA15     | PE2  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 2.                                                                                                     |
| U0_RX         | PF7      | PE1  | PA4  | PC15 |      |      |   | UART0 Receive input.                                                                                                                                  |
| U0_TX         | PF6      | PE0  | PA3  | PC14 |      |      |   | UART0 Transmit output. Also used as receive input in half duplex communication.                                                                       |
| U1_RX         | PC13     |      | PB10 | PE3  |      |      |   | UART1 Receive input.                                                                                                                                  |
| U1_TX         | PC12     |      | PB9  | PE2  |      |      |   | UART1 Transmit output. Also used as receive input in half duplex communication.                                                                       |
| US0_CLK       | PE12     | PE5  | PC9  | PC15 | PB13 | PB13 |   | USART0 clock input / output.                                                                                                                          |
| US0_CS        | PE13     | PE4  | PC8  | PC14 | PB14 | PB14 |   | USART0 chip select input / output.                                                                                                                    |
| US0_RX        | PE11     | PE6  | PC10 | PE12 | PB8  | PC1  |   | USART0 Asynchronous Receive.<br>USART0 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US0_TX        | PE10     | PE7  | PC11 | PE13 | PB7  | PC0  |   | USART0 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART0 Synchronous mode Master Output / Slave Input (MOSI). |
| US1_CLK       | PB7      | PD2  | PF0  |      |      |      |   | USART1 clock input / output.                                                                                                                          |
| US1_CS        | PB8      | PD3  | PF1  |      |      |      |   | USART1 chip select input / output.                                                                                                                    |

| Alternate     | LOCATION |   |   |   |   |   |   |                                                                           |
|---------------|----------|---|---|---|---|---|---|---------------------------------------------------------------------------|
| Functionality | 0        | 1 | 2 | 3 | 4 | 5 | 6 | Description                                                               |
| LCD_SEG25     | PF7      |   |   |   |   |   |   | LCD segment line 25. Segments 24, 25, 26 and 27 are controlled by SEGEN6. |
| LCD_SEG26     | PF8      |   |   |   |   |   |   | LCD segment line 26. Segments 24, 25, 26 and 27 are controlled by SEGEN6. |
| LCD_SEG27     | PF9      |   |   |   |   |   |   | LCD segment line 27. Segments 24, 25, 26 and 27 are controlled by SEGEN6. |
| LCD_SEG28     | PD9      |   |   |   |   |   |   | LCD segment line 28. Segments 28, 29, 30 and 31 are controlled by SEGEN7. |
| LCD_SEG29     | PD10     |   |   |   |   |   |   | LCD segment line 29. Segments 28, 29, 30 and 31 are controlled by SEGEN7. |
| LCD_SEG30     | PD11     |   |   |   |   |   |   | LCD segment line 30. Segments 28, 29, 30 and 31 are controlled by SEGEN7. |
| LCD_SEG31     | PD12     |   |   |   |   |   |   | LCD segment line 31. Segments 28, 29, 30 and 31 are controlled by SEGEN7. |
| LCD_SEG32     | PB0      |   |   |   |   |   |   | LCD segment line 32. Segments 32, 33, 34 and 35 are controlled by SEGEN8. |
| LCD_SEG33     | PB1      |   |   |   |   |   |   | LCD segment line 33. Segments 32, 33, 34 and 35 are controlled by SEGEN8. |
| LCD_SEG34     | PB2      |   |   |   |   |   |   | LCD segment line 34. Segments 32, 33, 34 and 35 are controlled by SEGEN8. |
| LCD_SEG35     | PA7      |   |   |   |   |   |   | LCD segment line 35. Segments 32, 33, 34 and 35 are controlled by SEGEN8. |
| LCD_SEG36     | PA8      |   |   |   |   |   |   | LCD segment line 36. Segments 36, 37, 38 and 39 are controlled by SEGEN9. |
| LCD_SEG37     | PA9      |   |   |   |   |   |   | LCD segment line 37. Segments 36, 37, 38 and 39 are controlled by SEGEN9. |
| LCD_SEG38     | PA10     |   |   |   |   |   |   | LCD segment line 38. Segments 36, 37, 38 and 39 are controlled by SEGEN9. |
| LCD_SEG39     | PA11     |   |   |   |   |   |   | LCD segment line 39. Segments 36, 37, 38 and 39 are controlled by SEGEN9. |
| LES_ALTEX0    | PD6      |   |   |   |   |   |   | LESENSE alternate exite output 0.                                         |
| LES_ALTEX1    | PD7      |   |   |   |   |   |   | LESENSE alternate exite output 1.                                         |
| LES_ALTEX2    | PA3      |   |   |   |   |   |   | LESENSE alternate exite output 2.                                         |
| LES_ALTEX3    | PA4      |   |   |   |   |   |   | LESENSE alternate exite output 3.                                         |
| LES_ALTEX4    | PA5      |   |   |   |   |   |   | LESENSE alternate exite output 4.                                         |
| LES_ALTEX5    | PE11     |   |   |   |   |   |   | LESENSE alternate exite output 5.                                         |
| LES_ALTEX6    | PE12     |   |   |   |   |   |   | LESENSE alternate exite output 6.                                         |
| LES_ALTEX7    | PE13     |   |   |   |   |   |   | LESENSE alternate exite output 7.                                         |
| LES_CH0       | PC0      |   |   |   |   |   |   | LESENSE channel 0.                                                        |
| LES_CH1       | PC1      |   |   |   |   |   |   | LESENSE channel 1.                                                        |
| LES_CH2       | PC2      |   |   |   |   |   |   | LESENSE channel 2.                                                        |
| LES_CH3       | PC3      |   |   |   |   |   |   | LESENSE channel 3.                                                        |

| Water Pads and Coordinates |          |        |        | Pad Alternative Functionality / Description            |                    |                                                       |                                         |                                             |
|----------------------------|----------|--------|--------|--------------------------------------------------------|--------------------|-------------------------------------------------------|-----------------------------------------|---------------------------------------------|
| Pad #                      | Pad Name | X (μm) | Y (μm) | Analog                                                 | EBI                | Timers                                                | Communica-<br>tion                      | Other                                       |
| 92                         | PC14     | 2065.0 | 1558.7 | ACMP1_CH6<br>DAC0_OUT1AL<br>T #2/<br>OPAMP_OUT1<br>ALT |                    | TIM0_CDTI1<br>#1/3 TIM1_CC1<br>#0<br>PCNT0_S1IN<br>#0 | US0_CS #3<br>U0_TX #3                   | LES_CH14 #0                                 |
| 93                         | PF10     | 2065.0 | 1673.6 |                                                        |                    |                                                       | U1_TX #1<br>USB_DM                      |                                             |
| 94                         | PC15     | 2065.0 | 1756.6 | ACMP1_CH7<br>DAC0_OUT1AL<br>T #3/<br>OPAMP_OUT1<br>ALT |                    | TIM0_CDTI2<br>#1/3 TIM1_CC2<br>#0                     | US0_CLK #3<br>U0_RX #3                  | LES_CH15 #0<br>DBG_SWO #1                   |
| 95                         | PF11     | 2065.0 | 1870.0 |                                                        |                    |                                                       | U1_RX #1<br>USB_DP                      |                                             |
| 96                         | IOVSS_7  | 1846.0 | 2065.0 | Digital IO ground 7.                                   |                    |                                                       |                                         |                                             |
| 97                         | PF0      | 1739.3 | 2065.0 |                                                        |                    | TIM0_CC0 #5<br>LETIM0_OUT0<br>#2                      | US1_CLK #2<br>LEU0_TX #3<br>I2C0_SDA #5 | DBG_SWCLK<br>#0/1/2/3                       |
| 98                         | PF1      | 1626.3 | 2065.0 |                                                        |                    | TIM0_CC1 #5<br>LETIM0_OUT1<br>#2                      | US1_CS #2<br>LEU0_RX #3<br>I2C0_SCL #5  | DBG_SWDIO<br>#0/1/2/3<br>GPIO_EM4WU<br>3    |
| 99                         | PF2      | 1513.2 | 2065.0 | LCD_SEG0                                               | EBI_ARDY<br>#0/1/2 | TIM0_CC2 #5                                           | LEU0_TX #4                              | ACMP1_O #0<br>DBG_SWO #0<br>GPIO_EM4WU<br>4 |
| 100                        | PF3      | 1389.7 | 2065.0 | LCD_SEG1                                               | EBI_ALE #0         | TIM0_CDTI0<br>#2/5                                    |                                         | PRS_CH0 #1<br>ETM_TD3 #1                    |
| 101                        | USB_VBUS | 1242.9 | 2065.0 | USB 5.0 V VBUS input.                                  |                    |                                                       |                                         |                                             |
| 102                        | PF4      | 995.9  | 2065.0 | LCD_SEG2                                               | EBI_WEn #0/2       | TIM0_CDTI1<br>#2/5                                    |                                         | PRS_CH1 #1                                  |
| 103                        | PF12     | 886.3  | 2065.0 |                                                        |                    |                                                       | USB_ID                                  |                                             |
| 104                        | PF5      | 782.2  | 2065.0 | LCD_SEG3                                               | EBI_REn #0/2       | TIM0_CDTI2<br>#2/5                                    | USB_VBUSEN<br>#0                        | PRS_CH2 #1                                  |
| 105                        | IOVSS_5  | 672.3  | 2065.0 | Digital IO ground 5.                                   |                    |                                                       |                                         |                                             |
| 106                        | IOVDD_5  | 576.7  | 2065.0 | Digital IO power supply 5.                             |                    |                                                       |                                         |                                             |
| 107                        | PF6      | 488.4  | 2065.0 | LCD_SEG24                                              | EBI_BL0 #0/1/2     | TIM0_CC0 #2                                           | U0_TX #0                                |                                             |
| 108                        | PF7      | 380.5  | 2065.0 | LCD_SEG25                                              | EBI_BL1 #0/1/2     | TIM0_CC1 #2                                           | U0_RX #0                                |                                             |
| 109                        | PF8      | 275.3  | 2065.0 | LCD_SEG26                                              | EBI_WEn #1         | TIM0_CC2 #2                                           |                                         | ETM_TCLK #1                                 |
| 110                        | PF9      | 174.3  | 2065.0 | LCD_SEG27                                              | EBI_REn #1         |                                                       |                                         | ETM_TD0 #1                                  |
| 111                        | NC       | 43.2   | 2065.0 | Do not connect.                                        |                    |                                                       |                                         |                                             |
| 112                        | PD9      | -89.5  | 2065.0 | LCD_SEG28                                              | EBI_CS0<br>#0/1/2  |                                                       |                                         |                                             |
| 113                        | PD10     | -204.5 | 2065.0 | LCD_SEG29                                              | EBI_CS1<br>#0/1/2  |                                                       |                                         |                                             |



### 5.18.2 Alternate Functionality Pinout

A wide selection of alternate functionality is available for multiplexing to various pins. This is shown in the following table. The table shows the name of the alternate functionality in the first column, followed by columns showing the possible LOCATION bitfield settings.

**Note:** Some functionality, such as analog interfaces, do not have alternate settings or a LOCATION bitfield. In these cases, the pinout is shown in the column corresponding to LOCATION 0.

**Table 5.53. Alternate functionality overview**

| Alternate                 | LOCATION |     |      |   |   |   |   | Description                                                           |
|---------------------------|----------|-----|------|---|---|---|---|-----------------------------------------------------------------------|
| Functionality             | 0        | 1   | 2    | 3 | 4 | 5 | 6 |                                                                       |
| ACMP0_CH4                 | PC4      |     |      |   |   |   |   | Analog comparator ACMP0, channel 4.                                   |
| ACMP0_CH5                 | PC5      |     |      |   |   |   |   | Analog comparator ACMP0, channel 5.                                   |
| ACMP0_CH6                 | PC6      |     |      |   |   |   |   | Analog comparator ACMP0, channel 6.                                   |
| ACMP0_CH7                 | PC7      |     |      |   |   |   |   | Analog comparator ACMP0, channel 7.                                   |
| ACMP0_O                   | PE13     |     | PD6  |   |   |   |   | Analog comparator ACMP0, digital output.                              |
| ACMP1_O                   | PF2      |     | PD7  |   |   |   |   | Analog comparator ACMP1, digital output.                              |
| ADC0_CH0                  | PD0      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 0.             |
| ADC0_CH1                  | PD1      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 1.             |
| ADC0_CH2                  | PD2      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 2.             |
| ADC0_CH3                  | PD3      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 3.             |
| ADC0_CH4                  | PD4      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 4.             |
| ADC0_CH5                  | PD5      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 5.             |
| ADC0_CH6                  | PD6      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 6.             |
| ADC0_CH7                  | PD7      |     |      |   |   |   |   | Analog to digital converter ADC0, input channel number 7.             |
| BOOT_RX                   | PE11     |     |      |   |   |   |   | Bootloader RX.                                                        |
| BOOT_TX                   | PE10     |     |      |   |   |   |   | Bootloader TX.                                                        |
| BU_VIN                    | PD8      |     |      |   |   |   |   | Battery input for Backup Power Domain                                 |
| CMU_CLK0                  | PA2      |     | PD7  |   |   |   |   | Clock Management Unit, clock output number 0.                         |
| CMU_CLK1                  | PA1      | PD8 | PE12 |   |   |   |   | Clock Management Unit, clock output number 1.                         |
| OPAMP_N0                  | PC5      |     |      |   |   |   |   | Operational Amplifier 0 external negative input.                      |
| OPAMP_N1                  | PD7      |     |      |   |   |   |   | Operational Amplifier 1 external negative input.                      |
| OPAMP_N2                  | PD3      |     |      |   |   |   |   | Operational Amplifier 2 external negative input.                      |
| DAC0_OUT0 /<br>OPAMP_OUT0 | PB11     |     |      |   |   |   |   | Digital to Analog Converter DAC0_OUT0 /OPAMP output channel number 0. |

| Alternate     | LOCATION  |     |     |      |     |   |   |                                                                                                                                                       |
|---------------|-----------|-----|-----|------|-----|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functionality | 0         | 1   | 2   | 3    | 4   | 5 | 6 | Description                                                                                                                                           |
| US0_TX        | PE10      | PE7 |     | PE13 | PB7 |   |   | USART0 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART0 Synchronous mode Master Output / Slave Input (MOSI). |
| US1_CLK       | PB7       | PD2 | PF0 |      |     |   |   | USART1 clock input / output.                                                                                                                          |
| US1_CS        | PB8       | PD3 | PF1 |      |     |   |   | USART1 chip select input / output.                                                                                                                    |
| US1_RX        |           | PD1 | PD6 |      |     |   |   | USART1 Asynchronous Receive.<br>USART1 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US1_TX        |           | PD0 | PD7 |      |     |   |   | USART1 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART1 Synchronous mode Master Output / Slave Input (MOSI). |
| US2_CLK       | PC4       | PB5 |     |      |     |   |   | USART2 clock input / output.                                                                                                                          |
| US2_CS        | PC5       | PB6 |     |      |     |   |   | USART2 chip select input / output.                                                                                                                    |
| US2_RX        |           | PB4 |     |      |     |   |   | USART2 Asynchronous Receive.<br>USART2 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US2_TX        |           | PB3 |     |      |     |   |   | USART2 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART2 Synchronous mode Master Output / Slave Input (MOSI). |
| USB_DM        | PF10      |     |     |      |     |   |   | USB D- pin.                                                                                                                                           |
| USB_DMPU      | PD2       |     |     |      |     |   |   | USB D- Pullup control.                                                                                                                                |
| USB_DP        | PF11      |     |     |      |     |   |   | USB D+ pin.                                                                                                                                           |
| USB_ID        | PF12      |     |     |      |     |   |   | USB ID pin. Used in OTG mode.                                                                                                                         |
| USB_VBUS      | USB_VBUS  |     |     |      |     |   |   | USB 5 V VBUS input.                                                                                                                                   |
| USB_VBUSEN    | PF5       |     |     |      |     |   |   | USB 5 V VBUS enable.                                                                                                                                  |
| USB_VREGI     | USB_VREGI |     |     |      |     |   |   | USB Input to internal 3.3 V regulator                                                                                                                 |
| USB_VREGO     | USB_VREGO |     |     |      |     |   |   | USB Decoupling for internal 3.3 V USB regulator and regulator output                                                                                  |

| Alternate     | LOCATION |      |      |      |      |      |   |                                                                                                                                                       |
|---------------|----------|------|------|------|------|------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functionality | 0        | 1    | 2    | 3    | 4    | 5    | 6 | Description                                                                                                                                           |
| TIM2_CC1      | PA9      | PA13 | PC9  |      |      |      |   | Timer 2 Capture Compare input / output channel 1.                                                                                                     |
| TIM2_CC2      | PA10     | PA14 | PC10 |      |      |      |   | Timer 2 Capture Compare input / output channel 2.                                                                                                     |
| TIM3_CC0      | PE14     | PE0  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 0.                                                                                                     |
| TIM3_CC1      | PE15     | PE1  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 1.                                                                                                     |
| TIM3_CC2      | PA15     | PE2  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 2.                                                                                                     |
| U0_RX         | PF7      | PE1  | PA4  |      |      |      |   | UART0 Receive input.                                                                                                                                  |
| U0_TX         | PF6      | PE0  | PA3  |      |      |      |   | UART0 Transmit output. Also used as receive input in half duplex communication.                                                                       |
| U1_RX         |          | PF11 | PB10 | PE3  |      |      |   | UART1 Receive input.                                                                                                                                  |
| U1_TX         |          | PF10 | PB9  | PE2  |      |      |   | UART1 Transmit output. Also used as receive input in half duplex communication.                                                                       |
| US0_CLK       | PE12     | PE5  | PC9  |      | PB13 | PB13 |   | USART0 clock input / output.                                                                                                                          |
| US0_CS        | PE13     | PE4  | PC8  |      | PB14 | PB14 |   | USART0 chip select input / output.                                                                                                                    |
| US0_RX        | PE11     | PE6  | PC10 | PE12 | PB8  | PC1  |   | USART0 Asynchronous Receive.<br>USART0 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US0_TX        | PE10     | PE7  | PC11 | PE13 | PB7  | PC0  |   | USART0 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART0 Synchronous mode Master Output / Slave Input (MOSI). |
| US1_CLK       | PB7      | PD2  | PF0  |      |      |      |   | USART1 clock input / output.                                                                                                                          |
| US1_CS        | PB8      | PD3  | PF1  |      |      |      |   | USART1 chip select input / output.                                                                                                                    |
| US1_RX        | PC1      | PD1  | PD6  |      |      |      |   | USART1 Asynchronous Receive.<br>USART1 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US1_TX        | PC0      | PD0  | PD7  |      |      |      |   | USART1 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART1 Synchronous mode Master Output / Slave Input (MOSI). |
| US2_CLK       | PC4      | PB5  |      |      |      |      |   | USART2 clock input / output.                                                                                                                          |
| US2_CS        | PC5      | PB6  |      |      |      |      |   | USART2 chip select input / output.                                                                                                                    |
| US2_RX        | PC3      | PB4  |      |      |      |      |   | USART2 Asynchronous Receive.<br>USART2 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US2_TX        | PC2      | PB3  |      |      |      |      |   | USART2 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART2 Synchronous mode Master Output / Slave Input (MOSI). |
| USB_DM        | PF10     |      |      |      |      |      |   | USB D- pin.                                                                                                                                           |
| USB_DMPU      | PD2      |      |      |      |      |      |   | USB D- Pullup control.                                                                                                                                |

| Alternate     | LOCATION |      |      |      |      |      |   |                                                                                                                                                       |
|---------------|----------|------|------|------|------|------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functionality | 0        | 1    | 2    | 3    | 4    | 5    | 6 | Description                                                                                                                                           |
| TIM2_CC1      | PA9      | PA13 | PC9  |      |      |      |   | Timer 2 Capture Compare input / output channel 1.                                                                                                     |
| TIM2_CC2      | PA10     | PA14 | PC10 |      |      |      |   | Timer 2 Capture Compare input / output channel 2.                                                                                                     |
| TIM3_CC0      | PE14     | PE0  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 0.                                                                                                     |
| TIM3_CC1      | PE15     | PE1  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 1.                                                                                                     |
| TIM3_CC2      | PA15     | PE2  |      |      |      |      |   | Timer 3 Capture Compare input / output channel 2.                                                                                                     |
| U0_RX         | PF7      | PE1  | PA4  |      |      |      |   | UART0 Receive input.                                                                                                                                  |
| U0_TX         | PF6      | PE0  | PA3  |      |      |      |   | UART0 Transmit output. Also used as receive input in half duplex communication.                                                                       |
| U1_RX         |          | PF11 | PB10 | PE3  |      |      |   | UART1 Receive input.                                                                                                                                  |
| U1_TX         |          | PF10 | PB9  | PE2  |      |      |   | UART1 Transmit output. Also used as receive input in half duplex communication.                                                                       |
| US0_CLK       | PE12     | PE5  | PC9  |      | PB13 | PB13 |   | USART0 clock input / output.                                                                                                                          |
| US0_CS        | PE13     | PE4  | PC8  |      | PB14 | PB14 |   | USART0 chip select input / output.                                                                                                                    |
| US0_RX        | PE11     | PE6  | PC10 | PE12 | PB8  | PC1  |   | USART0 Asynchronous Receive.<br>USART0 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US0_TX        | PE10     | PE7  | PC11 | PE13 | PB7  | PC0  |   | USART0 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART0 Synchronous mode Master Output / Slave Input (MOSI). |
| US1_CLK       | PB7      | PD2  | PF0  |      |      |      |   | USART1 clock input / output.                                                                                                                          |
| US1_CS        | PB8      | PD3  | PF1  |      |      |      |   | USART1 chip select input / output.                                                                                                                    |
| US1_RX        | PC1      | PD1  | PD6  |      |      |      |   | USART1 Asynchronous Receive.<br>USART1 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US1_TX        | PC0      | PD0  | PD7  |      |      |      |   | USART1 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART1 Synchronous mode Master Output / Slave Input (MOSI). |
| US2_CLK       | PC4      | PB5  |      |      |      |      |   | USART2 clock input / output.                                                                                                                          |
| US2_CS        | PC5      | PB6  |      |      |      |      |   | USART2 chip select input / output.                                                                                                                    |
| US2_RX        | PC3      | PB4  |      |      |      |      |   | USART2 Asynchronous Receive.<br>USART2 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US2_TX        | PC2      | PB3  |      |      |      |      |   | USART2 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART2 Synchronous mode Master Output / Slave Input (MOSI). |
| USB_DM        | PF10     |      |      |      |      |      |   | USB D- pin.                                                                                                                                           |
| USB_DMPU      | PD2      |      |      |      |      |      |   | USB D- Pullup control.                                                                                                                                |

| Alternate     | LOCATION  |     |   |   |   |   |   | Description                                                                                                                                           |
|---------------|-----------|-----|---|---|---|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functionality | 0         | 1   | 2 | 3 | 4 | 5 | 6 |                                                                                                                                                       |
| US2_CS        | PC5       | PB6 |   |   |   |   |   | USART2 chip select input / output.                                                                                                                    |
| US2_RX        | PC3       | PB4 |   |   |   |   |   | USART2 Asynchronous Receive.<br>USART2 Synchronous mode Master Input / Slave Output (MISO).                                                           |
| US2_TX        | PC2       | PB3 |   |   |   |   |   | USART2 Asynchronous Transmit. Also used as receive input in half duplex communication.<br>USART2 Synchronous mode Master Output / Slave Input (MOSI). |
| USB_DM        | PF10      |     |   |   |   |   |   | USB D- pin.                                                                                                                                           |
| USB_DMPU      | PD2       |     |   |   |   |   |   | USB D- Pullup control.                                                                                                                                |
| USB_DP        | PF11      |     |   |   |   |   |   | USB D+ pin.                                                                                                                                           |
| USB_ID        | PF12      |     |   |   |   |   |   | USB ID pin. Used in OTG mode.                                                                                                                         |
| USB_VBUS      | USB_VBUS  |     |   |   |   |   |   | USB 5 V VBUS input.                                                                                                                                   |
| USB_VBUSEN    | PF5       |     |   |   |   |   |   | USB 5 V VBUS enable.                                                                                                                                  |
| USB_VREGI     | USB_VREGI |     |   |   |   |   |   | USB Input to internal 3.3 V regulator                                                                                                                 |
| USB_VREGO     | USB_VREGO |     |   |   |   |   |   | USB Decoupling for internal 3.3 V USB regulator and regulator output                                                                                  |

### 5.22.3 GPIO Pinout Overview

The specific GPIO pins available in EFM32LG995 is shown in the following table. Each GPIO port is organized as 16-bit ports indicated by letters A through F, and the individual pin on this port is indicated by a number from 15 down to 0.

**Table 5.66. GPIO Pinout**

| Port   | Pin 15 | Pin 14 | Pin 13 | Pin 12 | Pin 11 | Pin 10 | Pin 9 | Pin 8 | Pin 7 | Pin 6 | Pin 5 | Pin 4 | Pin 3 | Pin 2 | Pin 1 | Pin 0 |
|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Port A | PA15   | PA14   | PA13   | PA12   | PA11   | PA10   | PA9   | PA8   | PA7   | PA6   | PA5   | PA4   | PA3   | PA2   | PA1   | PA0   |
| Port B | PB15   | PB14   | PB13   | PB12   | PB11   | PB10   | PB9   | PB8   | PB7   | PB6   | PB5   | PB4   | PB3   | PB2   | PB1   | PB0   |
| Port C | PC15   | PC14   | PC13   | PC12   | PC11   | PC10   | PC9   | PC8   | PC7   | PC6   | PC5   | PC4   | PC3   | PC2   | PC1   | PC0   |
| Port D | PD15   | PD14   | PD13   | PD12   | PD11   | PD10   | PD9   | PD8   | PD7   | PD6   | PD5   | PD4   | PD3   | PD2   | PD1   | PD0   |
| Port E | PE15   | PE14   | PE13   | PE12   | PE11   | PE10   | PE9   | PE8   | PE7   | PE6   | PE5   | PE4   | PE3   | PE2   | PE1   | PE0   |
| Port F | —      | —      | —      | PF12   | PF11   | PF10   | PF9   | PF8   | PF7   | PF6   | PF5   | PF4   | PF3   | PF2   | PF1   | PF0   |