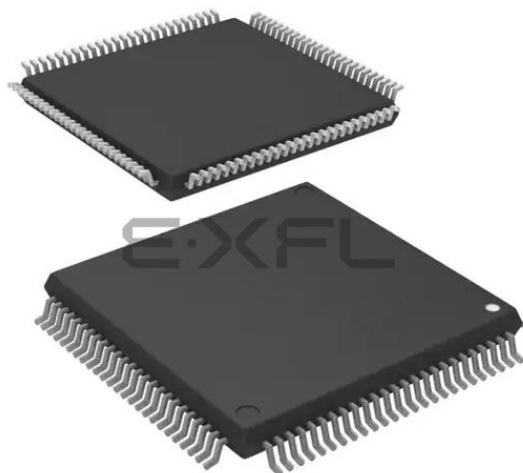




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### What is "[Embedded - Microcontrollers](#)"?

"[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             | Obsolete                                                                                                                                                                                    |
| Core Processor             | V850ES                                                                                                                                                                                      |
| Core Size                  | 32-Bit Single-Core                                                                                                                                                                          |
| Speed                      | 50MHz                                                                                                                                                                                       |
| Connectivity               | CANbus, CSI, Ethernet, I²C, UART/USART, USB                                                                                                                                                 |
| Peripherals                | DMA, LVD, PWM, WDT                                                                                                                                                                          |
| Number of I/O              | 62                                                                                                                                                                                          |
| Program Memory Size        | 64KB (64K x 8)                                                                                                                                                                              |
| Program Memory Type        | FLASH                                                                                                                                                                                       |
| EEPROM Size                | -                                                                                                                                                                                           |
| RAM Size                   | 32K x 8                                                                                                                                                                                     |
| Voltage - Supply (Vcc/Vdd) | 2.85V ~ 3.6V                                                                                                                                                                                |
| Data Converters            | A/D 10x10b                                                                                                                                                                                  |
| Oscillator Type            | Internal                                                                                                                                                                                    |
| Operating Temperature      | -40°C ~ 85°C (TA)                                                                                                                                                                           |
| Mounting Type              | Surface Mount                                                                                                                                                                               |
| Package / Case             | 100-LQFP                                                                                                                                                                                    |
| Supplier Device Package    | -                                                                                                                                                                                           |
| Purchase URL               | <a href="https://www.e-xfl.com/product-detail/renesas-electronics-america/upd70f3834gc-r-ueu-ax">https://www.e-xfl.com/product-detail/renesas-electronics-america/upd70f3834gc-r-ueu-ax</a> |

## APPLICATIONS

- Applications that require Ethernet controller  
Home audio, printers, and scanners.

## ORDERING INFORMATION

### • V850ES/JE3-E

| Part Number         | Package                                    | On-Chip Flash Memory |
|---------------------|--------------------------------------------|----------------------|
| μPD70F3826GB-GAH-AX | 64-pin plastic LQFP (fine pitch) (10 × 10) | 64 KB                |
| μPD70F3827GB-GAH-AX | 64-pin plastic LQFP (fine pitch) (10 × 10) | 128 KB               |
| μPD70F3828GB-GAH-AX | 64-pin plastic LQFP (fine pitch) (10 × 10) | 256 KB               |
| μPD70F3829GB-GAH-AX | 64-pin plastic LQFP (fine pitch) (10 × 10) | 256 KB               |
| μPD70F3826K8-6B4-AX | 64-pin plastic WQFN (9 × 9)                | 64 KB                |
| μPD70F3827K8-6B4-AX | 64-pin plastic WQFN (9 × 9)                | 128 KB               |
| μPD70F3828K8-6B4-AX | 64-pin plastic WQFN (9 × 9)                | 256 KB               |
| μPD70F3829K8-6B4-AX | 64-pin plastic WQFN (9 × 9)                | 256 KB               |

### • V850ES/JF3-E

| Part Number         | Package                                    | On-Chip Flash Memory |
|---------------------|--------------------------------------------|----------------------|
| μPD70F3830GK-GAK-AX | 80-pin plastic LQFP (fine pitch) (12 × 12) | 64 KB                |
| μPD70F3831GK-GAK-AX | 80-pin plastic LQFP (fine pitch) (12 × 12) | 128 KB               |
| μPD70F3832GK-GAK-AX | 80-pin plastic LQFP (fine pitch) (12 × 12) | 256 KB               |
| μPD70F3833GK-GAK-AX | 80-pin plastic LQFP (fine pitch) (12 × 12) | 256 KB               |

### • V850ES/JG3-E

| Part Number                         | Package                                     | On-Chip Flash Memory |
|-------------------------------------|---------------------------------------------|----------------------|
| μPD70F3834GC-UEU-AX                 | 100-pin plastic LQFP (fine pitch) (14 × 14) | 64 KB                |
| μPD70F3835GC-UEU-AX                 | 100-pin plastic LQFP (fine pitch) (14 × 14) | 128 KB               |
| μPD70F3836GC-UEU-AX                 | 100-pin plastic LQFP (fine pitch) (14 × 14) | 256 KB               |
| μPD70F3837GC-UEU-AX                 | 100-pin plastic LQFP (fine pitch) (14 × 14) | 256 KB               |
| μPD70F3837F1-CAH-AX <sup>Note</sup> | 113-pin plastic FBGA (8 × 8)                | 256 KB               |

**Note** Under planning

**Remark** The V850ES/Jx3-E microcontrollers are lead-free products.

## PIN CONFIGURATION

- V850ES/JE3-E

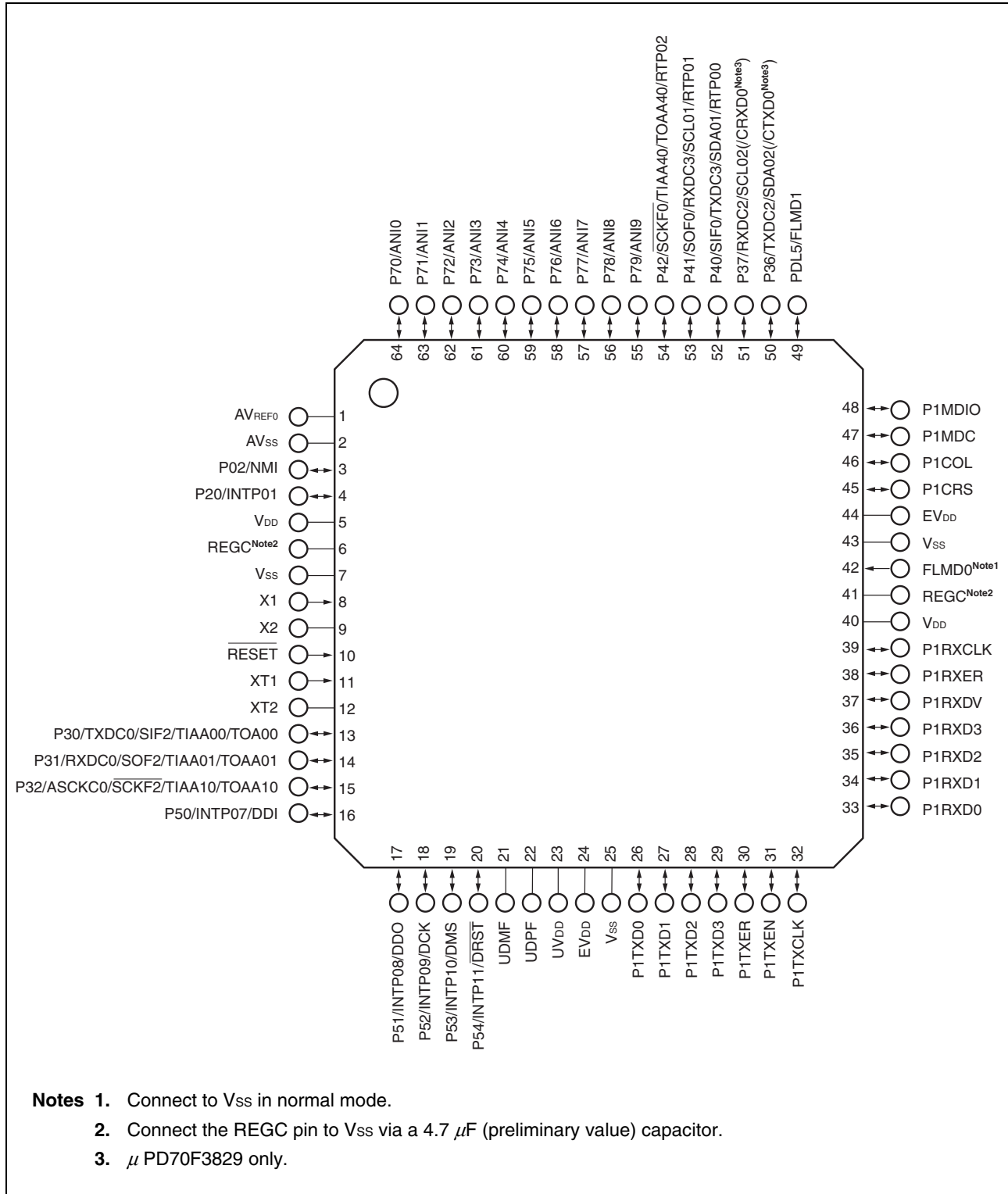
64-pin plastic LQFP (fine pitch) (10 × 10)

μPD70F3826GB-GAH-AX

μPD70F3827GB-GAH-AX

μPD70F3828GB-GAH-AX

μPD70F3829GB-GAH-AX



• V850ES/JE3-E

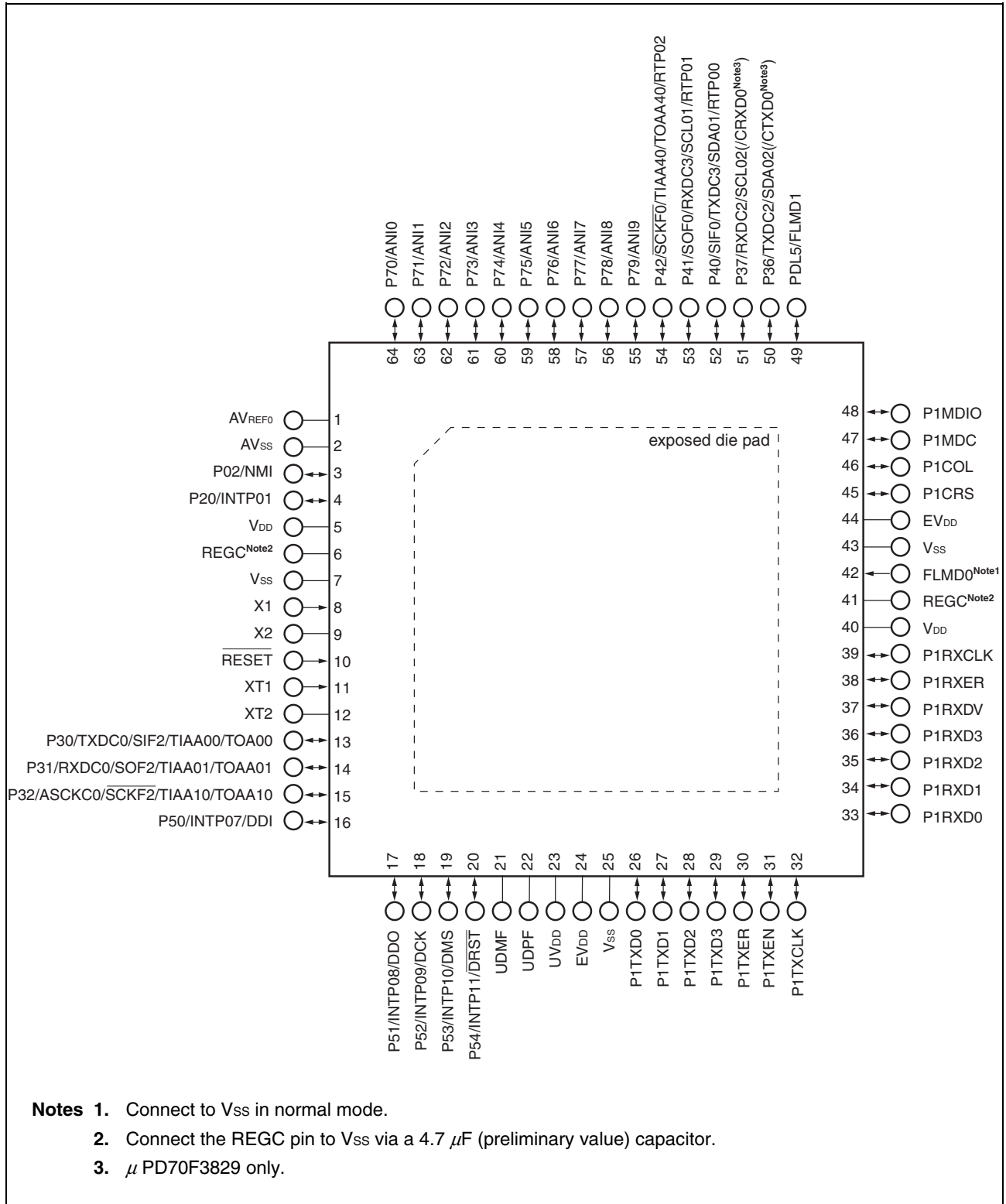
64-pin plastic WQFN (9 × 9)

μPD70F3826K8-6B4-AX

μPD70F3827K8-6B4-AX

μPD70F3828 K8-6B4-AX

μPD70F3829K8-6B4-AX



## CONTENTS

|     |                                                                 |    |
|-----|-----------------------------------------------------------------|----|
| 1.  | PIN FUNCTIONS .....                                             | 15 |
| 1.1 | Port Pins.....                                                  | 15 |
| 1.2 | Non-Port Pins.....                                              | 17 |
| 1.3 | Pin I/O Circuits and Recommended Connection of Unused Pins..... | 22 |
| 2.  | CPU FUNCTIONS .....                                             | 26 |
| 3.  | MEMORY MAP .....                                                | 27 |
| 4.  | PORTS.....                                                      | 29 |
| 5.  | CLOCK GENERATION FUNCTION.....                                  | 30 |
| 6.  | 16-BIT TIMER/EVENT COUNTER AA (TAA).....                        | 32 |
| 7.  | 16-BIT TIMER/EVENT COUNTER AB (TAB).....                        | 34 |
| 8.  | 16-BIT TIMER/EVENT COUNTER T (TMT).....                         | 36 |
| 9.  | 16-BIT INTERVAL TIMER M (TMM).....                              | 38 |
| 10. | MOTOR CONTROL FUNCTION .....                                    | 39 |
| 11. | REAL-TIME COUNTER .....                                         | 41 |
| 12. | WATCHDOG TIMER 2 FUNCTIONS .....                                | 43 |
| 13. | REAL-TIME OUTPUT FUNCTION (RTO) .....                           | 44 |
| 14. | A/D CONVERTER .....                                             | 45 |
| 15. | ASYNCHRONOUS SERIAL INTERFACE C (UARTC) .....                   | 47 |
| 16. | CLOCKED SERIAL INTERFACE F (CSIF) .....                         | 49 |
| 17. | I <sup>2</sup> C BUS .....                                      | 51 |
| 18. | CAN CONTROLLER.....                                             | 53 |
| 19. | USB FUNCTION CONTROLLER (USBF) .....                            | 54 |
| 20. | ETHERNET CONTROLLER .....                                       | 55 |
| 21. | DMA CONTROLLER .....                                            | 56 |
| 22. | INTERRUPT/EXCEPTION PROCESSING FUNCTION.....                    | 58 |
| 23. | KEY INTERRUPT FUNCTION (V850ES/JF3-E, V850ES/JG3-E).....        | 62 |
| 24. | STANDBY FUNCTION .....                                          | 63 |
| 25. | RESET FUNCTIONS.....                                            | 64 |
| 26. | CLOCK MONITOR, LOW-VOLTAGE DETECTOR.....                        | 65 |
| 27. | CRC FUNCTIONS .....                                             | 66 |
| 28. | REGULATOR FUNCTION.....                                         | 67 |
| 29. | FLASH MEMORY .....                                              | 68 |
| 30. | ON-CHIP DEBUG FUNCTION .....                                    | 69 |
| 31. | PACKAGE DRAWINGS.....                                           | 70 |

(3/5)

| Pin Name | I/O    | Function                                                                                                          | Alternate Function                 | Pin number |       |       |
|----------|--------|-------------------------------------------------------------------------------------------------------------------|------------------------------------|------------|-------|-------|
|          |        |                                                                                                                   |                                    | JE3-E      | JF3-E | JG3-E |
| REGC     | –      | Connecting capacitor for regulator output stabilization (4.7 μF (preliminary value))                              | –                                  | 6, 41      | 6, 49 | 9, 62 |
| RESET    | Input  | System reset input                                                                                                | –                                  | 10         | 10    | 13    |
| RTC1HZ   | Output | Real-time counter correction clock (1 Hz) output                                                                  | P22/INTP02                         | –          | –     | 7     |
| RTCCCL   | Output | Real-time counter clock (original 32 kHz clock) output                                                            | P21/RTCDIV                         | –          | –     | 6     |
| RTCDIV   | Output | Real-time counter clock (divided 32 kHz clock) output                                                             | P21/RTCCCL                         | –          | –     | 6     |
| RTP00    | Output | Real-time output port<br>RTP00, RTP01 are N-ch open-drain output selectable.                                      | P40/SIF0/TXDC3/SDA01               | 52         | 68    | 85    |
| RTP01    |        |                                                                                                                   | P41/SOF0/RXDC3/SCL01               | 53         | 69    | 86    |
| RTP02    |        |                                                                                                                   | P42/SCKF0/TIAA40/TOAA40            | 54         | 70    | 87    |
| RTP03    |        |                                                                                                                   | P43                                | –          | –     | 88    |
| RTP04    |        |                                                                                                                   | P44                                | –          | –     | 89    |
| RTP05    |        |                                                                                                                   | P45/TIAA41/TOAA41                  | –          | –     | 90    |
| RXDC0    | Input  | Serial receive data input (UARTC0 to UARTC3)                                                                      | P31/SOF2/TIAA01/TOAA01             | 14         | 18    | 21    |
| RXDC1    |        |                                                                                                                   | P24/SOF1/SDL00/INTP04              | –          | 14    | 17    |
| RXDC2    |        |                                                                                                                   | P37/SCL02/CRXD0 <sup>Note</sup>    | 51         | 67    | 82    |
| RXDC3    |        |                                                                                                                   | P41/SOF0/SCL01/RTP01               | 53         | 69    | 86    |
| SCKF0    | I/O    | Serial clock I/O (CSIF0 to CSIF4)                                                                                 | P42/TIAA40/TOAA40/RTP02            | 54         | 70    | 87    |
| SCKF1    |        |                                                                                                                   | P25/TIAA30/TOAA30                  | –          | 15    | 18    |
| SCKF2    |        |                                                                                                                   | P32/ASCKC0/TIAA10/TOAA10           | 15         | 19    | 22    |
| SCKF3    |        |                                                                                                                   | P915                               | –          | –     | 32    |
| SCKF4    |        |                                                                                                                   | P35/TIAA21/TOAA21/TOAA1OFF /INTP06 | –          | –     | 80    |
| SCL00    | I/O    | Serial clock I/O (I <sup>2</sup> C00 to I <sup>2</sup> C02)<br>N-ch open-drain output selectable.                 | P24/SOF1/RXDC1/INTP04              | –          | 14    | 17    |
| SCL01    |        |                                                                                                                   | P41/SOF0/RXDC3/RTP01               | 53         | 69    | 86    |
| SCL02    |        |                                                                                                                   | P37/RXDC2/CRXD0 <sup>Note</sup>    | 51         | 67    | 82    |
| SDA00    | I/O    | Serial transmit/receive data I/O (I <sup>2</sup> C00 to I <sup>2</sup> C02)<br>N-ch open-drain output selectable. | P23/SIF1/TXDC1/INTP03              | –          | 13    | 16    |
| SDA01    |        |                                                                                                                   | P40/SIF0/TXDC3/RTP00               | 52         | 68    | 85    |
| SDA02    |        |                                                                                                                   | P36/TXDC2/CTXD0 <sup>Note</sup>    | 50         | 66    | 81    |
| SIF0     | Input  | Serial receive data input (CSIF0 to CSIF4)                                                                        | P40/TXDC3/SDA01/RTP00              | 52         | 68    | 85    |
| SIF1     |        |                                                                                                                   | P23/TXDC1/SDA00/INTP03             | –          | 13    | 16    |
| SIF2     |        |                                                                                                                   | P30/TXDC0/TIAA00/TOAA00            | 13         | 17    | 20    |
| SIF3     |        |                                                                                                                   | P913/INTP19                        | –          | –     | 30    |
| SIF4     |        |                                                                                                                   | P33/TIAA11/TOAA11                  | –          | –     | 23    |
| SOF0     | Output | Serial transmit data output (CSIF0 to CSIF4)<br>N-ch open-drain output selectable.                                | P41/RXDC3/SCL01/RTP01              | 53         | 69    | 86    |
| SOF1     |        |                                                                                                                   | P24/RXDC1/SDL00/INTP04             | –          | 14    | 17    |
| SOF2     |        |                                                                                                                   | P31/RXDC0/TIAA01/TOAA01            | 14         | 18    | 21    |
| SOF3     |        |                                                                                                                   | P914/INTP20                        | –          | –     | 31    |
| SOF4     |        |                                                                                                                   | P34/TIAA20/TOAA20                  | –          | –     | 24    |
| TECR0    | Input  | Encoder clear input of TMT0                                                                                       | P96/TIT00/KR6/TOT00                | –          | 31    | 40    |
| TENC00   |        | Encoder input/external event input/external trigger input of TMT0                                                 | P97/TIT01/KR7/TOT01                | –          | 32    | 41    |
| TENC01   |        | Encoder input of TMT0                                                                                             | P98/INTP17                         | –          | 33    | 42    |

**Note** Available only in on-chip CAN controller products

**Remark** JE3-E: V850ES/JE3-E, JF3-E: V850ES/JF3-E, JG3-E: V850ES/JG3-E

Table 1-1. Types of Pin I/O Circuits (2/3)

| Pin Name           | Alternate Function                | I/O Circuit Type | Recommended Connection of Unused Pins                                                                      | JE3-E  | JF3-E  | JG3-E            |
|--------------------|-----------------------------------|------------------|------------------------------------------------------------------------------------------------------------|--------|--------|------------------|
| P90                | TOAB1T1/TOAB11/TIAB11/KR0 /INTP12 | 10-D             | Input: Independently connect to EV <sub>DD</sub> or V <sub>SS</sub> via a resistor.<br>Output: Leave open. | –      | 57     | 72               |
| P91                | TOAB1B1/TIAB10/KR1/TOAB10         |                  |                                                                                                            | –      | 58     | 73               |
| P92                | TOAB1T2/TOAB12/TIAB12/KR2 /INTP13 |                  |                                                                                                            | –      | 59     | 74               |
| P93                | TOAB1B2/TRGAB1/KR3/INTP14         |                  |                                                                                                            | –      | 60     | 75               |
| P94                | TOAB1T3/TOAB13/TIAB13/KR4 /INTP15 |                  |                                                                                                            | –      | 61     | 76               |
| P95                | TOAB1B3/EVTB1/KR5/INTP16          |                  |                                                                                                            | –      | 62     | 77               |
| P96                | TECR0/TIT00/KR6/TOT00             |                  |                                                                                                            | –      | 31     | 40               |
| P97                | TENC00/TIT01/KR7/TOT01            |                  |                                                                                                            | –      | 32     | 41               |
| P98                | TENC01/INTP17                     |                  |                                                                                                            | –      | 33     | 42               |
| P912               | TOAB1OFF/INTP18                   |                  |                                                                                                            | –      | 63     | 78               |
| P913               | SIF3/INTP19                       |                  |                                                                                                            | –      | –      | 30               |
|                    | INTP19                            |                  |                                                                                                            | –      | 25     | –                |
| P914               | SOF3/INTP20                       |                  |                                                                                                            | –      | –      | 31               |
| P915               | SCKF3                             |                  |                                                                                                            | –      | –      | 32               |
| PDL0 to PDL4       | –                                 | 5                | Input: Independently connect to EV <sub>DD</sub> or V <sub>SS</sub> via a resistor.<br>Output: Leave open. | –      | –      | 58 to 67         |
| PDL5               | FLMD1                             | 5                |                                                                                                            | 49     | 64     | 79               |
| PDL6 to PDL10      | –                                 | 5                |                                                                                                            | –      | –      | 83,84, 33,34, 43 |
| AV <sub>REF0</sub> | –                                 | –                | Directly connect to V <sub>DD</sub> and always supply power.                                               | 1      | 1      | 1                |
| AV <sub>SS</sub>   | –                                 | –                | Directly connect to V <sub>SS</sub> .                                                                      | 2      | 2      | 2                |
| EV <sub>DD</sub>   | –                                 | –                | Directly connect to V <sub>DD</sub> and always supply power.                                               | 24, 44 | 29, 52 | 38, 65           |
| FLMD0              | –                                 | –                | Connect to V <sub>SS</sub> in other than flash mode.                                                       | 42     | 50     | 63               |
| P1COL              | –                                 | 5                | Independently connect to EV <sub>DD</sub> or V <sub>SS</sub> via a resistor.                               | 46     | 54     | 69               |
| P1CRS              | –                                 | 5                |                                                                                                            | 45     | 53     | 68               |
| P1MDIO             | –                                 | 5                |                                                                                                            | 47     | 55     | 70               |
| P1RXCLK            | –                                 | 5                |                                                                                                            | 48     | 56     | 71               |
| P1RXD0             | –                                 | 5                |                                                                                                            | 39     | 47     | 57               |
| P1RXD1             | –                                 | 5                |                                                                                                            | 33     | 41     | 51               |
| P1RXD2             | –                                 | 5                |                                                                                                            | 34     | 42     | 52               |
| P1RXD3             | –                                 | 5                |                                                                                                            | 35     | 43     | 53               |
| P1RXDV             | –                                 | 5                |                                                                                                            | 36     | 44     | 54               |
| P1RXER             | –                                 | 5                |                                                                                                            | 37     | 45     | 55               |
| P1TXCLK            | –                                 | 5                |                                                                                                            | 38     | 46     | 56               |
| P1MDC              | –                                 | 5                | Leave open.                                                                                                | 32     | 40     | 50               |
| P1TXD0             | –                                 | 5                |                                                                                                            | 26     | 34     | 44               |
| P1TXD1             | –                                 | 5                |                                                                                                            | 27     | 35     | 45               |
| P1TXD2             | –                                 | 5                |                                                                                                            | 28     | 36     | 46               |
| P1TXD3             | –                                 | 5                |                                                                                                            | 29     | 37     | 47               |
| P1TXEN             | –                                 | 5                |                                                                                                            | 31     | 39     | 49               |
| P1TXER             | –                                 | 5                |                                                                                                            | 30     | 38     | 48               |

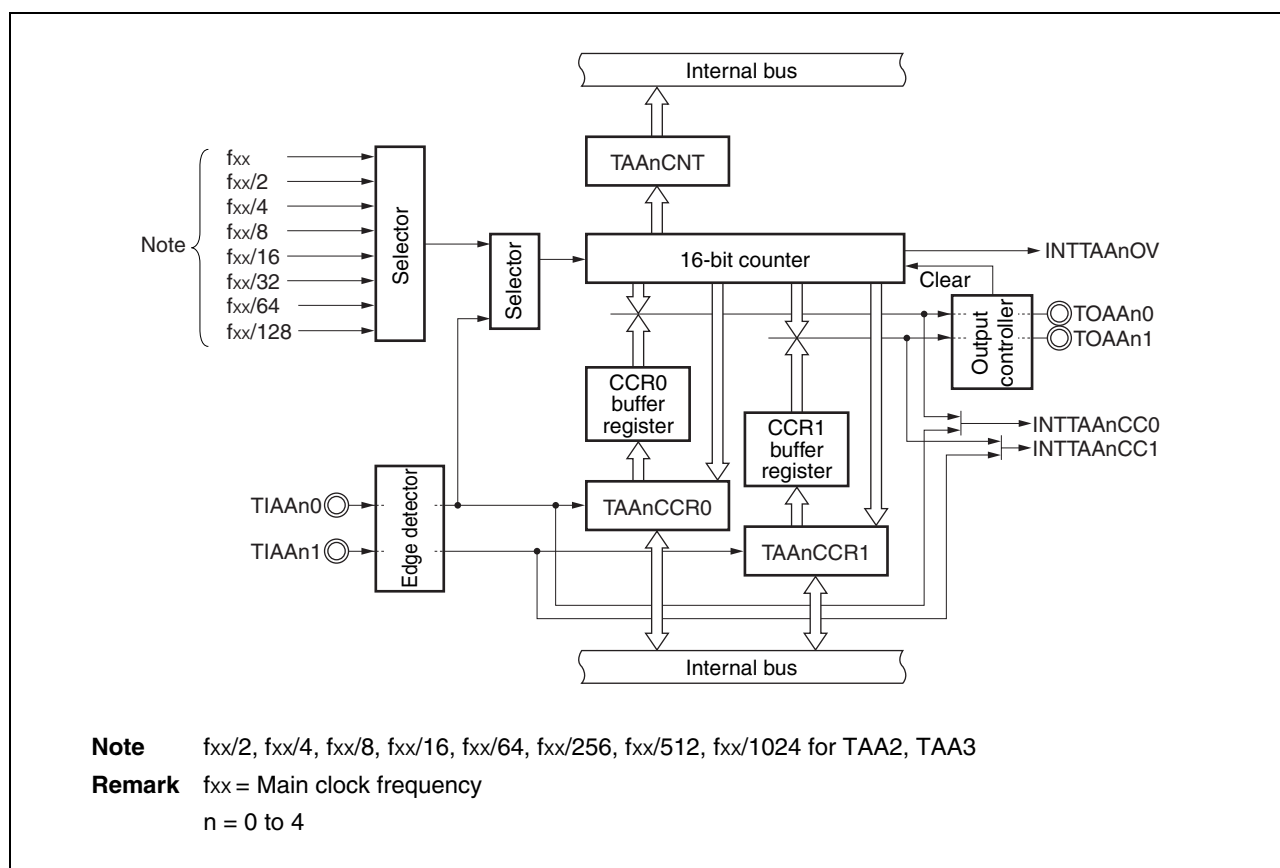
**Remark** JE3-E: V850ES/JE3-E, JF3-E: V850ES/JF3-E, JG3-E: V850ES/JG3-E

## 5. CLOCK GENERATION FUNCTION

The clock generation function has the following features.

- Main clock oscillator
  - PLL mode ( $\times 8$ ):  $f_x = 3$  to 6.25 MHz ( $f_{xx} = 24$  to 50 MHz)
  - Clock through mode:  $f_x = 3$  to 6.25 MHz ( $f_{xx} = 3$  to 6.25 MHz)
- Subclock oscillator
  - $f_{XT} = 32.768$  kHz
- Internal oscillator ( $f_R = 220$  kHz)
  - Default clock of watchdog timer
  - Sampling clock for clock monitor function of the main clock oscillator
  - Can be used as the internal system clock after the main clock is stopped
- Internal system clock generation
  - 7 levels ( $f_{xx}$ ,  $f_{xx}/2$ ,  $f_{xx}/4$ ,  $f_{xx}/8$ ,  $f_{xx}/16$ ,  $f_{xx}/32$ ,  $f_{XT}$ )
- Peripheral clock generation
- Clock output function

The following figure shows the configuration of TAA.



## 7. 16-BIT TIMER/EVENT COUNTER AB (TAB)

The number of TAB of the V850ES/Jx3-E is shown below.

| Product Name           | V850ES/JF3-E                      | V850ES/JF-E      | V850ES/JG3-E     |
|------------------------|-----------------------------------|------------------|------------------|
| Number of channel      | 1 channel (TAB1 <sup>Note</sup> ) | 1 channel (TAB1) | 1 channel (TAB1) |
| Number of timer output | -                                 | 4                | 4                |

**Note** Interval timer function only.

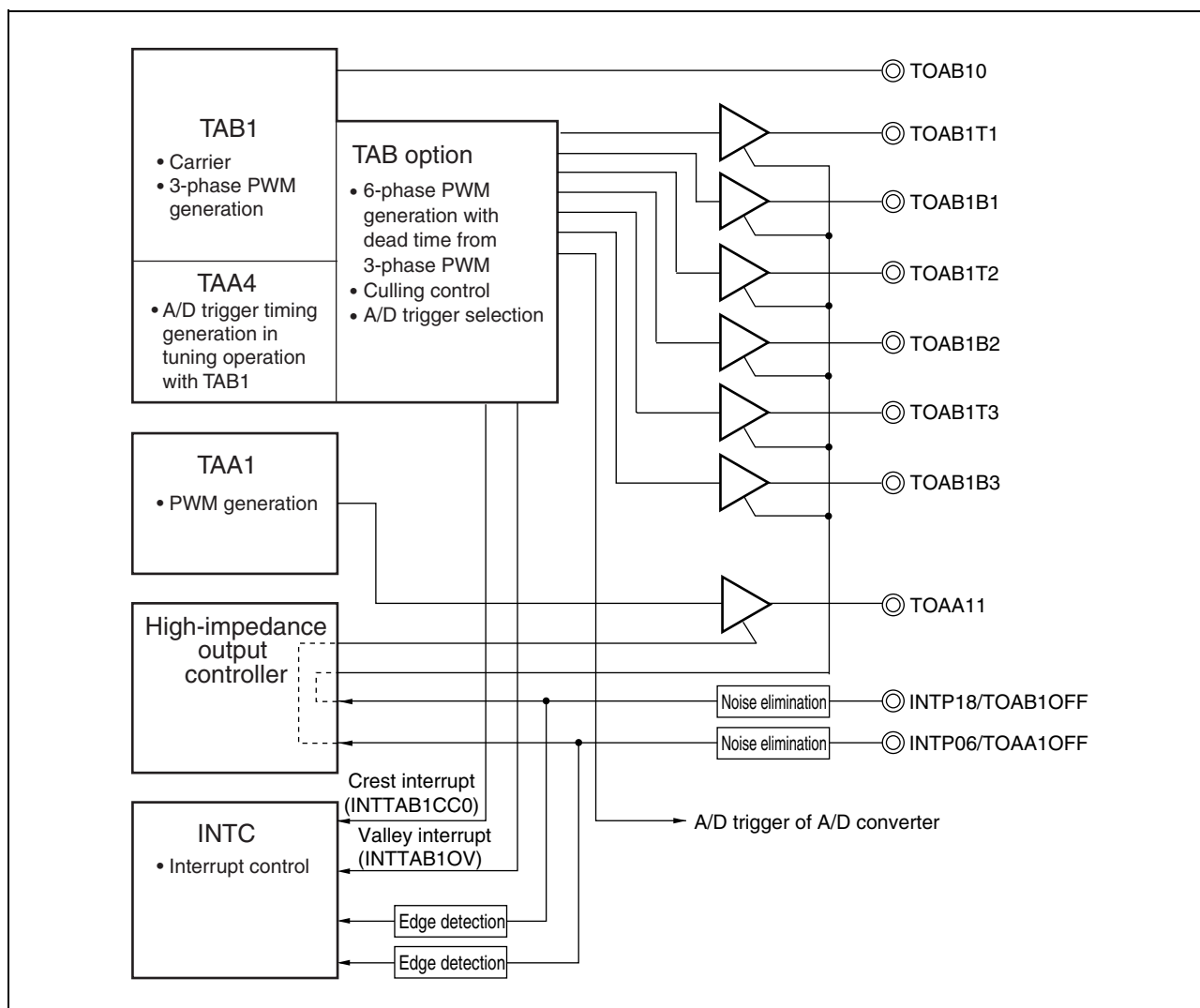
The TAB function has the following features.

- 16-bit timer/counter (TAB1)
- Clock selection: 8 ways
- Capture/trigger input pins (TIAB10 to TIAB13): 4
- External event count input pin (EVTAB1): 1
- External trigger input pin (TRGAB1): 1
- Timer/counter: 1
- Capture/compare registers: 4
- Capture/compare match interrupt request signals: 4
- Timer output pins (TOAB10 to TOAB13): 4

The TAB1 function has the following features.

- Interval timer
- External event counter
- External trigger pulse output
- One-shot pulse output
- PWM output
- Free-running timer
- Pulse width measurement
- Triangular wave PWM output
- Timer tuning function

The following figure shows the configuration of motor control function.



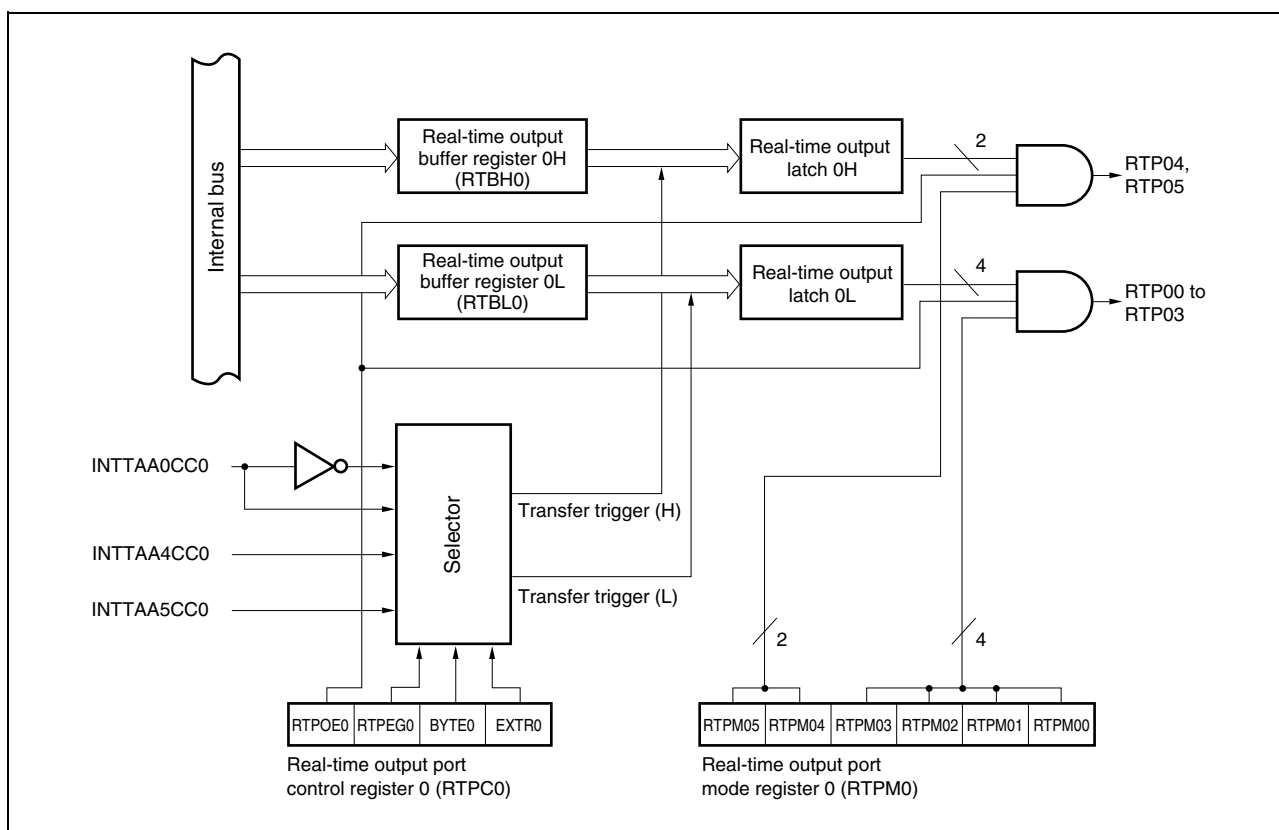
## 13. REAL-TIME OUTPUT FUNCTION (RTO)

In the V850ES/Jx3-E, one channel of real-time output is provided.

The RTO has the following features.

- 6-bit real-time output port: 1 channel
- The real-time output port can be set to the port mode or real-time output port mode in 1-bit units.

The RTO has the following configurations.



## 15. ASYNCHRONOUS SERIAL INTERFACE C (UARTC)

The number of UARTC of the V850ES/Jx3-E is shown below.

| Product Name      | V850ES/JF3-E                              | V850ES/JF-E                      | V850ES/JG3-E                     |
|-------------------|-------------------------------------------|----------------------------------|----------------------------------|
| Number of channel | 3 channels<br>(UARTC0, UARTC2 and UARTC3) | 4 channels<br>(UARTC0 to UARTC3) | 4 channels<br>(UARTC0 to UARTC3) |

The UARTC has the following features.

- Transfer rate: 300 bps to 3.125 Mbps (using internal system clock of 24 MHz and dedicated baud rate generator)
- Full-duplex communication: On-chip UARTCn receive data register (UCnRX)  
On-chip UARTCn transmit data register (UCnTX)
- 2-pin configuration: TXDCn: Transmit data output pin  
RXDCn: Receive data input pin
- Reception error detect function
  - Parity error
  - Framing error
  - Overrun error
  - LIN communication data consistency error detect function
  - SBF reception success detect function
- Interrupt sources: 2 types
  - Reception completion interrupt (INTUCnR): This interrupt occurs upon transfer of receive data from the receive shift register to receive data register after serial transfer completion, in the reception enabled status.
  - Transmission enable interrupt (INTUCnT): This interrupt occurs upon transfer of transmit data from the transmit data register to the transmit shift register in the transmission enabled status.
- Character length: 7, 8, 9 bits
- Parity function: Odd, even, 0, none
- Transmission stop bit: 1, 2 bits
- On-chip dedicated baud rate generator
- MSB-/LSB-first transfer selectable
- Transmit/receive data inverted input/output possible
- SBF (Sync Break Field) transmission/reception in the LIN (Local Interconnect Network) communication format possible
  - 13 to 20 bits are selectable for SBF transmission
  - Recognition of 11 bits or more possible for SBF reception in LIN format
  - SBF reception flag provided

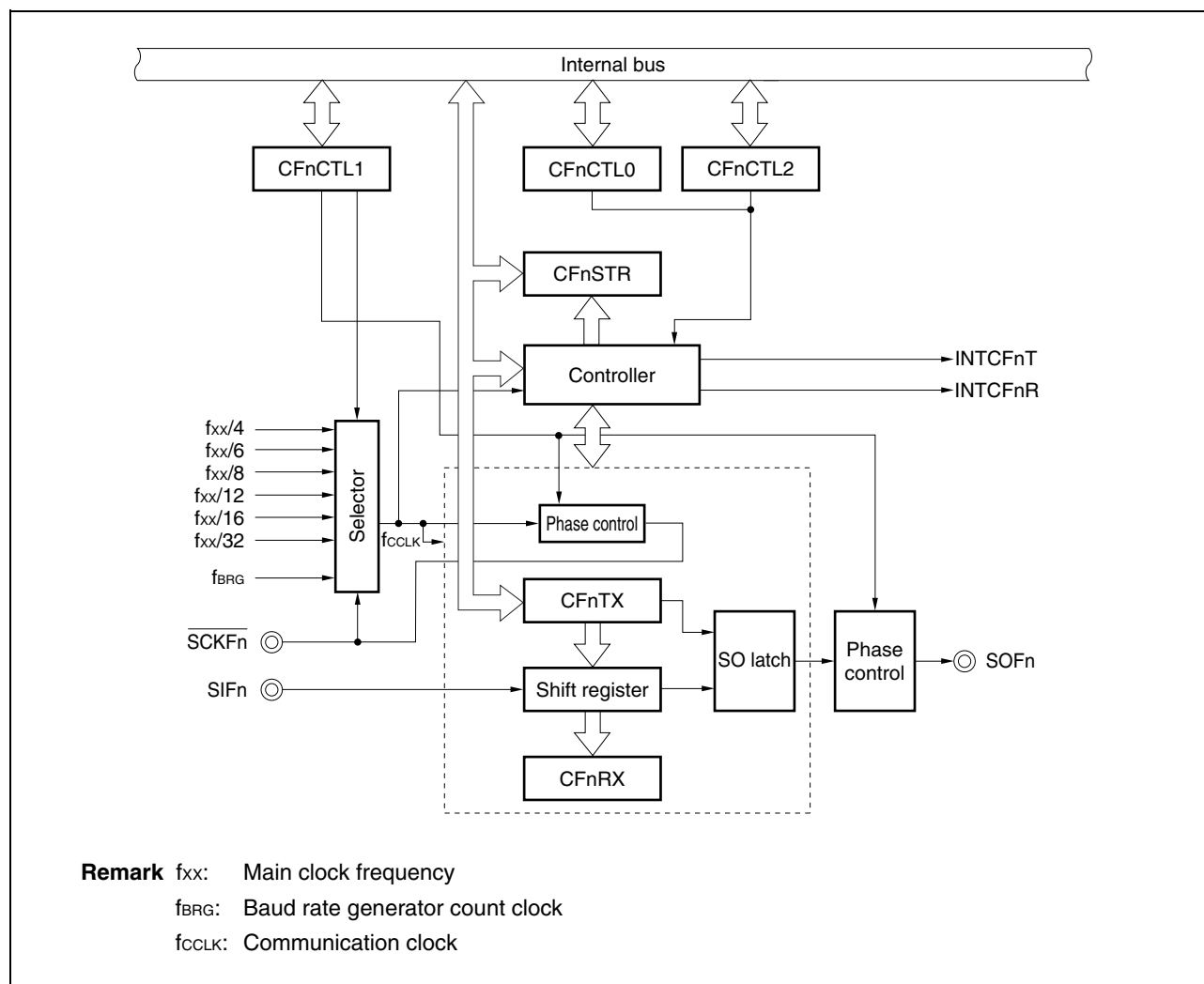
## 16. CLOCKED SERIAL INTERFACE F (CSIF)

The number of CSIF of the V850ES/Jx3-E is shown below.

| Product Name      | V850ES/JF3-E                    | V850ES/JF-E                    | V850ES/JG3-E                   |
|-------------------|---------------------------------|--------------------------------|--------------------------------|
| Number of channel | 2 channels<br>(CSIF0 and CSIF2) | 3 channels<br>(CSIF0 to CSIF2) | 5 channels<br>(CSIF0 to CSIF4) |

- Transfer rate: 8 Mbps max. (f<sub>xx</sub> = 50 MHz, using internal clock)
  - Master mode and slave mode selectable
  - 8-bit to 16-bit transfer, 3-wire serial interface
  - Interrupt request signals (INTCFnT, INTCFnR)
  - Serial clock and data phase switchable
  - Transfer data length selectable in 1-bit units between 8 and 16 bits
  - Transfer data MSB-first/LSB-first switchable
  - 3-wire
    - SOFn: Serial data output
    - SIFn: Serial data input
    - SCKFn: Serial clock I/O
- Transmission mode, reception mode, and transmission/reception mode specifiable

The following figure shows the configuration of CSIF.



The following figure shows the configuration of  $I^2C$ .

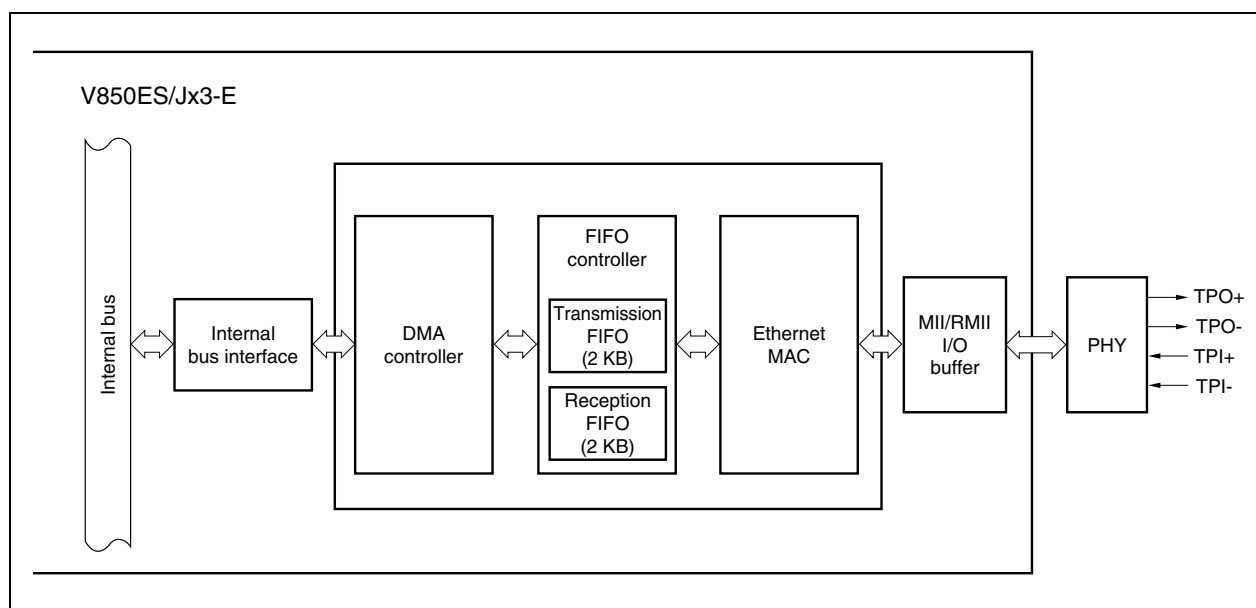


## 20. ETHERNET CONTROLLER

In the V850ES/Jx3-E, one channel of Ethernet controller is provided.

- 10 Mbps/100 Mbps MAC function conforming to the IEEE802.3 standard
  - Full-duplex and half-duplex communications and a flow control function are supported
  - On-chip packet filtering function based on address type
  - On-chip VLAN detection function
- Ethernet-dedicated DMA controller
  - Reception status DMA transfer possible
  - Reading (in pointer-chain format), analysis, and writing back of buffer descriptors possible
  - Interrupt control functions for packet transfers
- FIFO controller
  - Transmission/reception FIFO size: Transmission FIFO (2 KB), reception FIFO (2 KB)
  - On-chip FIFO status register
  - Interrupts occur in accordance with the transmission/reception status and FIFO status.
- MII is supported as the interface with physical-layer devices (PHY)
- On-chip reception checksum calculation function conforming to RFC1071

The following figure shows the configuration of USB function controller.



## 25. RESET FUNCTIONS

The following reset functions are available.

(1) Four types of reset sources

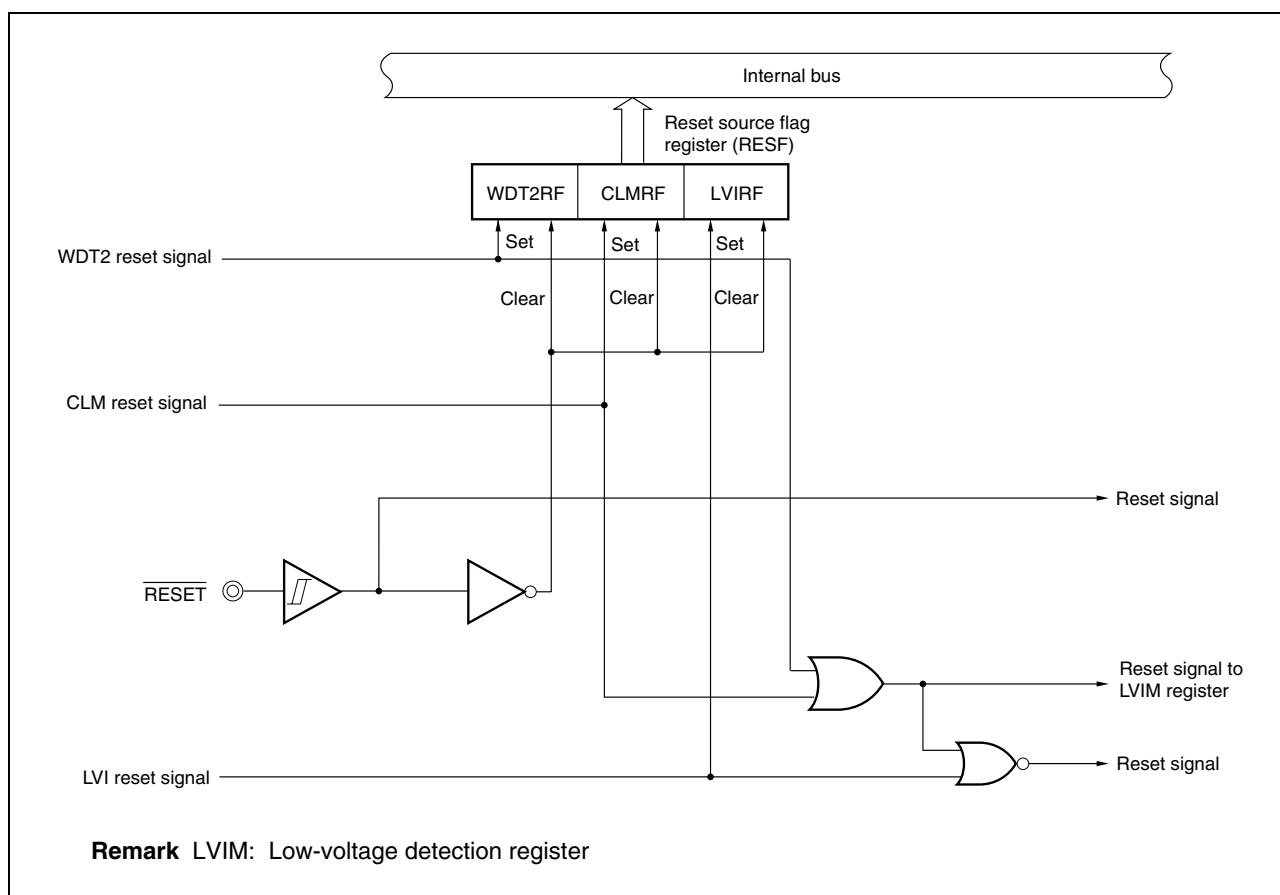
- External reset input via the  $\overline{\text{RESET}}$  pin
- Reset via the watchdog timer 2 (WDT2) overflow (WDT2RES)
- System reset by comparing the supply voltage and detection voltage by using the low-voltage detector (LVI)
- System reset by the clock monitor (CLM) upon detection of oscillation stop

After a reset is released, the source of the reset can be confirmed with the reset source flag register (RESF).

(2) Emergency operation mode

If the WDT2 overflows during the main clock oscillation stabilization time inserted after reset, a main clock oscillation anomaly is judged and the CPU starts operating on the internal oscillation clock.

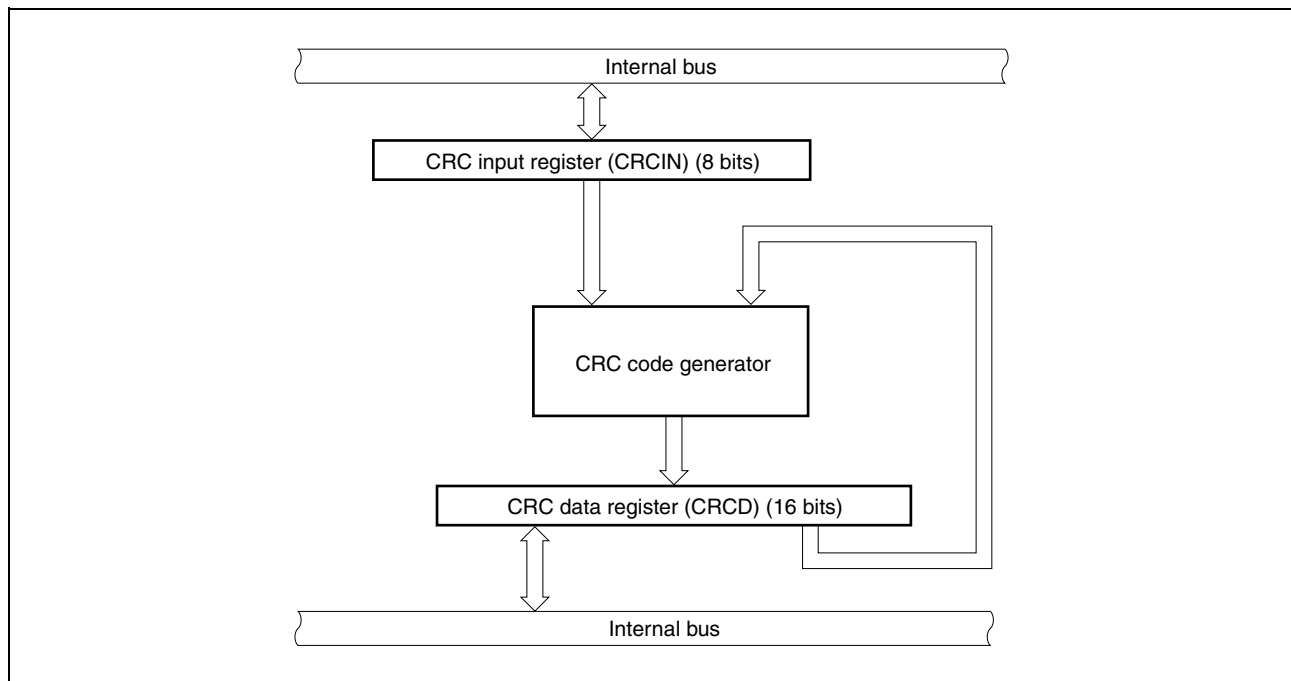
The outline of the reset functions is shown below.



## 27. CRC FUNCTIONS

The outline of the CRC function is shown below.

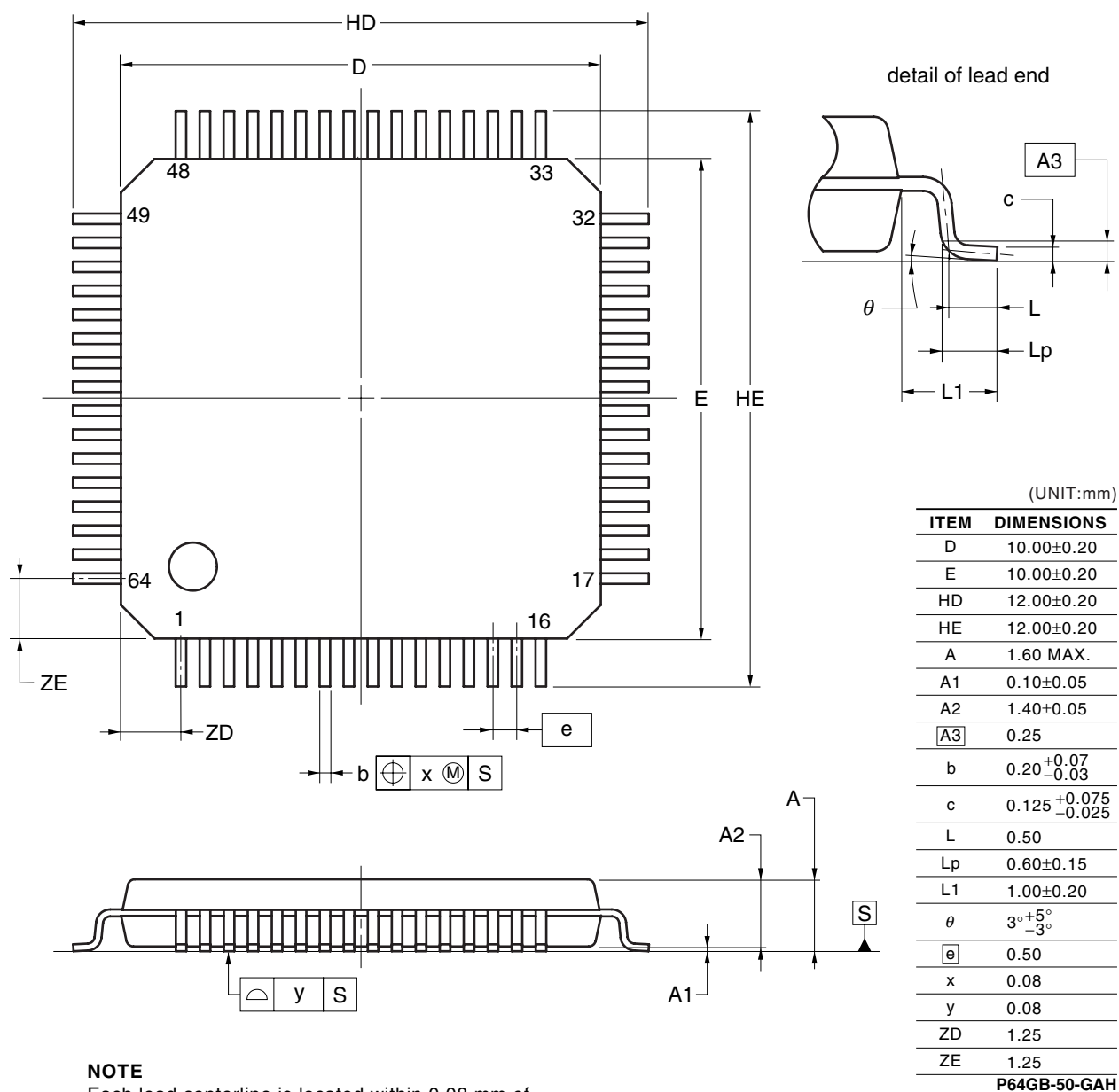
- CRC operation circuit for detection of data block errors
- Generation of 16-bit CRC code using a CRC-CCITT ( $X^{16} + X^{12} + X^5 + 1$ ) generation polynomial for blocks of data of any length in 8-bit units
- CRC code is set to the CRCD data register each time 1-byte data is transferred to the CRCIN register, after the initial value is set to the CRCD register.



## 31. PACKAGE DRAWINGS

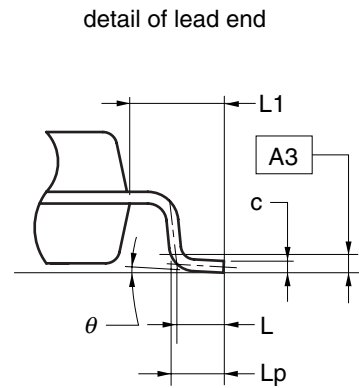
- V850ES/JE3-E

### 64-PIN PLASTIC LQFP(FINE PITCH)(10x10)



- V850ES/JG3-E

## 100-PIN PLASTIC LQFP (FINE PITCH) (14x14)



| (UNIT:mm)      |                           |
|----------------|---------------------------|
| ITEM           | DIMENSIONS                |
| D              | 14.00±0.20                |
| E              | 14.00±0.20                |
| HD             | 16.00±0.20                |
| HE             | 16.00±0.20                |
| A              | 1.60 MAX.                 |
| A1             | 0.10±0.05                 |
| A2             | 1.40±0.05                 |
| A3             | 0.25                      |
| b              | $0.20^{+0.07}_{-0.03}$    |
| c              | $0.125^{+0.075}_{-0.025}$ |
| L              | 0.50                      |
| Lp             | 0.60±0.15                 |
| L1             | 1.00±0.20                 |
| $\theta$       | $3^{\circ}+_{-3}^{\circ}$ |
| e              | 0.50                      |
| x              | 0.08                      |
| y              | 0.08                      |
| ZD             | 1.00                      |
| ZE             | 1.00                      |
| P100GC-50-UEU- |                           |