

27.4.3 Supply Current of IO Modules

The tables and formulas below can be used to calculate the additional current consumption for the different I/O modules in Active and Idle mode. The enabling or disabling of the I/O modules are controlled by the Power Reduction Register. See ["Power Reduction Register" on page 42](#) for details.

Table 27-7. Additional Current Consumption for the different I/O modules (absolute values)

| PRR bit | Typical numbers | | |
|----------|--------------------------------|--------------------------------|--------------------------------|
| | V _{CC} = 2V, F = 1MHz | V _{CC} = 3V, F = 4MHz | V _{CC} = 5V, F = 8MHz |
| PRUSART0 | 3.20 µA | 22.17 µA | 100.25 µA |
| PRTWI | 7.34 µA | 46.55 µA | 199.25 µA |
| PRTIM2 | 7.34 µA | 50.79 µA | 224.25 µA |
| PRTIM1 | 6.19 µA | 41.25 µA | 176.25 µA |
| PRTIM0 | 1.89 µA | 14.28 µA | 61.13 µA |
| PRSPI | 6.94 µA | 43.84 µA | 186.50 µA |
| PRADC | 8.66 µA | 61.80 µA | 295.38 µA |

Table 27-8. Additional Current Consumption (percentage) in Active and Idle mode

| PRR bit | Additional Current consumption compared to Active with external clock (see Figure 27-139 on page 401 and Figure 27-140 on page 401) | Additional Current consumption compared to Idle with external clock (see Figure 27-144 on page 403 and Figure 27-145 on page 404) |
|----------|--|--|
| PRUSART0 | 1.4 % | 7.8% |
| PRTWI | 3.0 % | 16.6 % |
| PRTIM2 | 3.3 % | 17.8 % |
| PRTIM1 | 2.7 % | 14.5 % |
| PRTIM0 | 0.9 % | 4.8 % |
| PRSPI | 2.9 % | 15.7 % |
| PRADC | 4.1 % | 22.1 % |

It is possible to calculate the typical current consumption based on the numbers from [Table 27-8 on page 406](#) for other V_{CC} and frequency settings than listed in [Table 27-7 on page 406](#).

Example

Calculate the expected current consumption in idle mode with TIMER1, ADC, and SPI enabled at V_{CC} = 2.0V and F = 1MHz. From [Table 27-8 on page 406](#), third column, we see that we need to add 14.5% for the TIMER1, 22.1% for the ADC, and 15.7% for the SPI module. Reading from [Figure 27-145 on page 404](#), we find that the idle current consumption is ~0.055 mA at V_{CC} = 2.0V and F = 1MHz. The total current consumption in idle mode with TIMER1, ADC, and SPI enabled, gives:

$$I_{CC\text{total}} \approx 0.045 \text{ mA} \cdot (1 + 0.145 + 0.221 + 0.157) \approx 0.069 \text{ mA}$$