Item	Specification
A/D converter	■ Successive approximation type / ΔΣ type / Dual integral type ■ Resolution (10 to 16 bits) ■ Analog input terminal (Max. 12 channels) ■ Conversion time: Selectable from 31/ϕ, 62/ϕ, 124/ϕ, and 248/ϕ per one channel ■ Can activate the conversion in response to the external trigger / timer trigger
LCD controller / Driver	■ LCD controller / Driver equipped with segment terminals (max. 40) and common terminals (4) ■ Selectable from 4 duty ratios (Static, 1/2, 1/3, or 1/4) ■ Segment terminals can be changed to the universal port. This can done with a group of 4 terminals. ■ LCD RAM capacity: 8 bits × 32 bytes
Power-on reset and Low voltage detection circuits	■ Power-on reset circuit • Generates the internal reset signal when the power is injected. • Monitors the power supply voltage and generates the internal reset signal when it becomes lower than a certain voltage (Vdd=1.6V). ■ Low voltage detection circuit • Monitors internal reset signal higher than a certain Specification the power supply voltage and generates the or interrupt signal when it becomes lower or voltage.
On-chip oscillator	■ 16MHz on-chip oscillator
Reference voltage	■ Output voltage 1.1V ■ Temperature characteristics +/-50ppm/℃ ■ Low consumption current 0.6uA
Current sensor	"Differential amplifier + Level shift amplifier" configuration ■ Offset cancel function ■ Voltage gain 26dB ■ Consumption current 4.4uA ■ Low flicker noise
Temperature sensor	Digital output type (I2C control) ■ +/-2℃(-25℃ to 100℃), +/-3℃(-40 to 125℃) Linear output type ■ +/-2.5℃(-40 to 100℃)
LED driver	■ Constant current driver for LED emission ■ Variable function (Ex. Current can be set at one of 4 levels, 1mA, 3mA, 5mA, and 10mA.)

Item	Specification
PLL	■ CR oscillator • 38.4kHz • EEPROM trimming function • Accuracy: +/- 1%(25℃) +/-3% (-20℃ to +85℃) ■ Variable at factor of two (16, 32, 64, and 128 times) ■ Start-up time 6ms (Typ.) 10ms (Max.)
Operational amplifier	■ Offset voltage (Voltage reduced to input voltage) • +/-0.5mV • +/-20uV (Offset cancel function) ■ Open loop gain 100dB ■ Common mode rejection ratio 70dB ■ Power supply ripple rejection ratio 90dB
LDO	■ High accuracy +/-1% ■ High ripple rejection ratio 80dB (1kHz) ■ Low consumption current 0.8uA (at no load) ■ Auto power saving function ■ Reverse current protection ■ Quick response ■ Soft start
DCDC	■ Step-up and Step-down circuits ■ Synchronous rectification ■ Current control mode ■ PWM/PFM controls ■ High efficiency 90% or more ■ Operation with low input voltage (Operational at 0.9V) ■ High withstand voltage 30V ■ Built-in power transistor with low ON resistance 0.1Ω (Typ.)
Sinusoidal oscillator	■ Ex: 50kHz 4-bit digital output → LPF

Item	Specification
Audio amplifier	■ Operating voltage 2.3 to 3.4V ■ Consumption current: 4uA (in standby mode) and 9.5mA (in operation mode generating audio output) ■ Maximum output power 0.31W ■ 8-bit DA, 5kHz-LPF ■ 8Ω drive amplifier (Voltage gain: -6 to 8 dB, 3-bit variable)
Charging	■ Accuracy of constant voltage charging: 4.2V+/-30mV ■ Accuracy of constant current charging: +/-5% ■ Built-in power FET ■ Reverse current protection diode is not required ■ Sensing resistor is not required. ■ Precharge, Recharge, and Forced charge functions ■ Full charge detection ■ Adaptor error detection ■ Battery temperature detection ■ Chip temperature control function ■ Over charge-current detection ■ Precharge and Rapid charge timers ■ LED driver