Intelligent Battery Charging Solutions
Z8 Encore! XP® 8-bit Microcontrollers

ZiLOG

BATTERY CHARGER APPLICATION

XP FAMILY

BATTERY TYPES COMMONLY SUPPORTED

Consumer electronics products based on:

- Li-Ion (Lithium-Ion)
- NiCd (Nickel-Cadium)
- NiMH (Nickel-Metal-Hydride)

FEATURES THAT SEPARATE US FROM THE REST

- On-chip integrated transimpedance amplifier (op-amp) for direct measurement of the charging current

- 8-Channel, 10-bit high resolution A/D converter and two independent PWM outputs that result in two simultaneous charging events, and provide a cost and space saving solution with increased throughput

- On-chip integrated analog comparator

- Low power consumption in standby modes

THE Z8 ENCORE! XP® FLASH MICROCONTROLLER

ZiLOG's Z8 Encore! XP Flash microcontrollers offer high-performance and feature-rich peripherals in a portable, yet powerful 8-bit package. No other 8-bit MCU can offer the flexibility of our on-chip integrated, high resolution A/D converter, two independent PWM's, transimpedance amplifier, and temperature sensor in an application-specific, cost-effective solution for intelligent battery charging applications. Add to this an extensive development tool suite and full technical support, and you have a complete embedded control solution that affords a fast design cycle for your end application.

OVERCOMING DESIGN CHALLENGES

Fast Charging and Safety

Fast charging requires constant monitoring of battery parameters and precise charging termination control. The Z8 Encore! XP Flash MCU allows easy switch over from a constant current charge to a constant voltage mechanism for the precise termination of the charging process needed for battery applications. Our MCU also has two independent PWM outputs that provide simultaneous charging of multiple batteries, doubling your system's charging capacity.

The high accuracy ADC on the Z8 Encore! XP prevents overcharging as well. For multiple safety devices to be built into your system, the Z8 Encore! XP multi-channel ADC continuously monitors the output voltage and current of the DC-DC converter, battery charging current, and temperature. The 16-bit timer PWMs will then adjust the output parameters of the DC-DC converter during normal operation and if a fault condition happens.

High System Cost

By integrating advanced features into our MCU, such as the transimpedance amplifier and the temperature sensor, the Z8 Encore! XP doesn't need external components like many of its competitors. Our feature-rich solution gives you the ability to reduce your overall system cost while saving precious board space on your application.
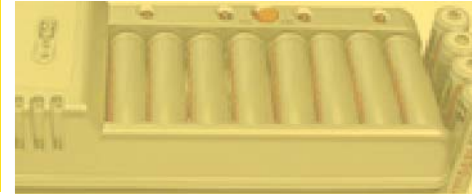

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BATTERY CHARGING APPLICATION	XP FAMILY

XP SERIES FEATURES

- 20MHz CPU core
- 1, 2, 4, or 8KB Flash memory
- Up to 1KB RAM
- Up to 128B NVDS
- 8-channel 10-bit ADC with internal reference and differential input
- Transamplifier/Operational amplifier
- Internal Precision Oscillator
- Analog comparator
- Temperature Sensor
- UART with IrDA
- Two 16-bit timer PWMs with capture/compare
- Single-pin debug with break and trap
- Single-pin flash programming
- Watch Dog Timer (WDT)
- Voltage Brown Out (VBO)
- Power On Reset (POR)
- 8-, 20-, and 28-pin SOIC, SSOP, QFN, and PDIP packages
- 2.7-3.6V operation
- Standard (0° to 70°C) and extended (-40° to 105°C) temperature range

REFERENCE TOOLS

- Reference designs
- Application notes

BLOCK DIAGRAM

1-8KB Flash	256B-1KB RAM	16B-128B NVDS	Up to 8 Channels 10-Bit ADC
Two 16-Bit Timers/PWM	20MHz eZ8 CPU		Trans-Impedence Amplifier
Watch-Dog Timer with RC Oscillator			POR/VBO and Reset Control
UART with IrDA	On-Chip Debugger		Crystal/RC Oscillator
Temperature Sensor	Analog Comparator		Internal Precision Oscillator
Up to 25 General-Purpose I/O Pins			

ORDERING INFORMATION

Z8 Encore! XP® Series MCU Development Kits

Our low cost development tools contain everything you need to evaluate and design your next battery charging project. Each kit Includes a Z8 Encore! XP series MCU development board, a USB debugging and programming cable, and our ZDS II Integrated Development Environment (IDE) with a full ANSI C-compiler.

FOR MORE INFORMATION

Visit us at www.zilog.com or call us at 1 (866) GO ZiLOG

Device	MEMORY			Operating Voltage	Temp. Range (°C)	Pin Count	Development Kit
	Flash (Bytes)	NVDS (Bytes)	SRAM (Bytes)				
Z8F042A	4K	128	1K	2.7-3.6V	-40° to 105°	28,20 8	Z8F04A28100KIT Z8F04A08100KIT
Z8F041A	4K	128	1K	2.7-3.6V	-40° to 105°	28,20 8	Z8F04A28100KIT Z8F04A08100KIT
Z8F022A	2K	64	512	2.7-3.6V	-40° to 105°	28,20 8	Z8F04A28100KIT Z8F04A08100KIT
Z8F021A	2K	64	512	2.7-3.6V	-40° to 105°	28,20 8	Z8F04A28100KIT Z8F04A08100KIT
Z8F012A	1K	16	256	2.7-3.6V	-40° to 105°	28,20 8	Z8F04A28100KIT Z8F04A08100KIT
Z8F011A	1K	16	256	2.7-3.6V	-40° to 105°	28,20 8	Z8F04A28100KIT Z8F04A08100KIT