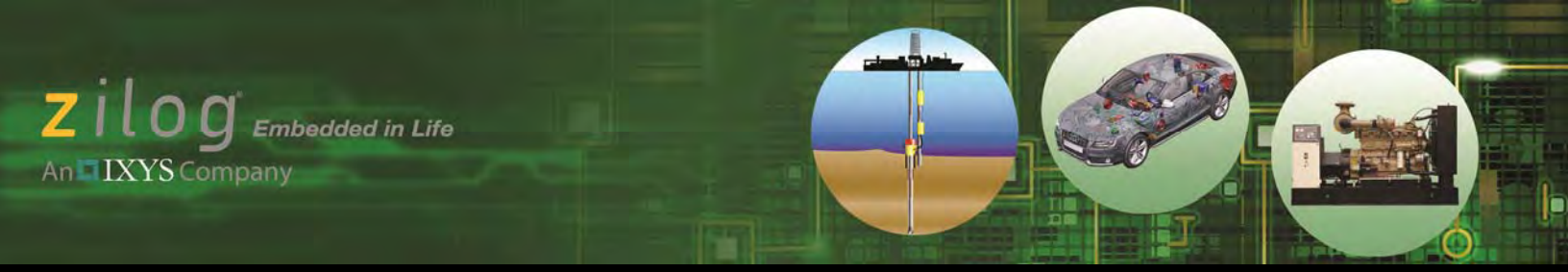


Z86C08 High Temperature ROM MCU Advance Product Brief

APB024502-0413

Durable General-Purpose ROM MCU Withstands High Heat Environments

Z86C08 HIGH-TEMPERATURE ROM MCU ADVANTAGES

- Guaranteed to operate at prolonged high temperatures
- No loss of data retention
- Best-in-class performance
- Improved reliability
- Extended product lifetimes
- Cost savings

APPLICATIONS

- Automotive Systems
- Aircraft Propulsion Systems
- High-Power Motors
- High-Power Generators
- Natural Resource Exploration/Production
- HVAC Applications
- Industrial/Instrumentation Systems
- Distribution Control
- Military Systems

Overview

Zilog's High Temperature Masked ROM Z86C08 MCU is suitable for applications that require a general-purpose MCU to operate at sustained elevated temperatures. Unlike Flash-based MCUs that are guaranteed to operate at 150°C for only 40 to 310 days, the High Temperature Z86C08 MCU can operate at a prolonged temperature of 150°C for many years without experiencing program memory data retention issues. Such applications can include under-the-hood automotive applications, aircraft propulsion systems, HVAC applications, high-power motor/generator systems, industrial, instrumentation, and distributed control applications (e.g., natural resources exploration & production), as well as military applications.

For applications demanding powerful I/O capabilities, the Z86C08 MCU's dedicated input and output lines are grouped into three ports, and are configurable under software control to provide timing, status signals, or parallel I/O.

Two on-chip counter/timers, with a large number of user-selectable modes, offload the system of administering real-time tasks such as counting/timing and I/O data communications.

Features

- Fast Instruction Pointer (1 ms @ 12 MHz)
- 2 Analog Comparators
- Program Options:
  - Low Noise
  - ROM Protect
  - Auto Latch
  - Always-Enabled Watchdog Timer (WDT)
  - RC Oscillator
  - 32kHz Operation
- WDT/Power-On Reset (POR)
- On-Chip Oscillator that accepts Crystal, Ceramic Resonance, LC, RC, or External Clock
- 2 KB Program ROM
- 125 Bytes RAM
- Minimal components ensures high reliability (no electrolytic capacitors)
- Modify the application code to suite your own application requirements
- 3.5V to 5.5V operation from –40°C to 150°C

Operating Characteristics

- 12 MHz Operation
- 3.5V–5.5V Operating Voltage
- Low Power Consumption: 50mW, typical

Counter/Timer Structure

- 2 Programmable 8-Bit Counter/Timers, each with 6-Bit Programmable Prescaler

Input/Output and Interrupts

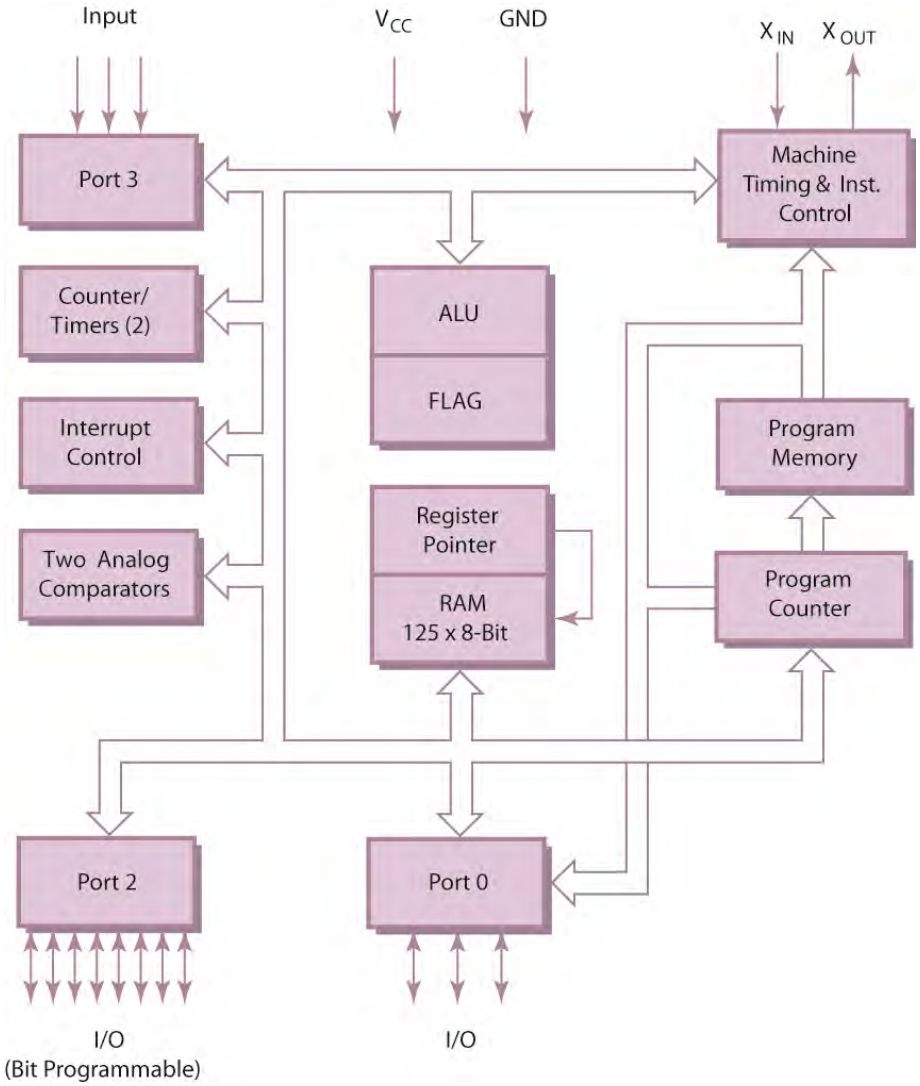
- 14 I/O Lines
- 6 Vectored, Prioritized Interrupts (3 Falling Edge, 1 Rising Edge, 2 Timers)

BENEFITS

General Applications

- Onsite peripheral control of DC fan motors, relays, pumps and valves
- Peripheral control in environments spanning extreme temperature ranges
- Can be mounted in high-temperature and high-power motor assemblies
- Can be mounted with sensors in heat chambers and power generators
- General-purpose control in engine, generator and high-temperature HVAC compartments
- Localized intelligence in extreme temperature spaces

Block Diagram

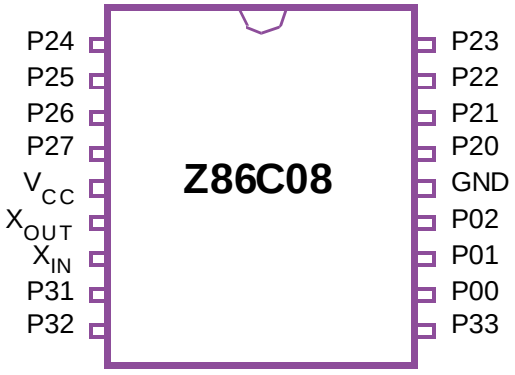


BENEFITS

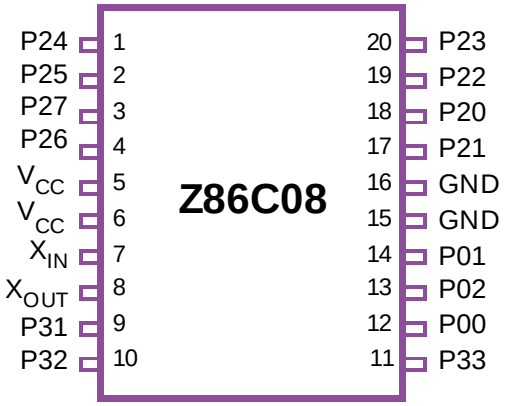
General Applications

- Can be used in conjunction with sensors in cooling systems, fluid reservoirs and gearboxes
- Fault detection
- Extended equipment longevity
- Multiple reuse of equipment
- Reduced or no heat shield requirements
- Eliminated requirement for extra wiring and heat shields

Pin-Outs and Pin Direction



Z86C08 18-Pin DIP/SOIC Configuration



Z86C08 20-Pin SSOP Configuration

Development and Support Tools

The following development tools are available for programming and debugging the Z86C08 High Temperature ROM device:

- Z86CCP01ZEM Emulator/Programmer
- Z86E08 One-Time Programmable (OTP) EPROM (–40°C to +105°C)
- Z86E0700ZDP 18-Pin SOIC to 18-Pin DIP Adapter
- Z86E0200ZDH 20-Pin SSOP to 18-Pin DIP Adapter

Electrical Features Summary

- 3.5V–5.5V Operating Range @ –40°C to +150°C High Temperature

APPLICATIONS

Natural Resource Exploration/Production

- Can be mounted in drill heads for sensor monitoring
- Control valves at exploration probe
- Detect fault conditions
- Perform measurements at exploration probe or drill
- Evolve your cost savings from one-time use to multiple-use equipment

Z86C08 Device Specification

Device	Applications	Package	ROM	RAM (Bytes)	Comparators	I/O	Timers
Z86C08	General-Purpose MCU	18PDIP/SOIC, 20SSOP	2KB	125	2	14	2

Ordering Information

Part	PSI	Description
Z86C08	Z86C0812PPC	18-Pin DIP High Temperature
	Z86C0812SPC	18-Pin SOIC High Temperature
	Z86C0812HPC	20-Pin SSOP High Temperature

Warning: DO NOT USE THIS PRODUCT IN LIFE SUPPORT SYSTEMS.

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ENGINEERING NOTES