

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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# 78K0 CAN subseries

## Product Letter

$\mu$ PD78F0822B  
 $\mu$ PD780821/22B

## 8-bit Microcontroller

### Description

The  $\mu$ PD780822/21B (CAN ASSP3+) is an application specific 8-bit microcontroller designed for automotive dashboard applications. Part of NEC's 78K0 series of microcontrollers, CAN ASSP3+ offers 16 MHz performance, 120 Kbytes embedded single-voltage Flash and 5 Kbytes RAM along with 4 stepper motor drivers, sound generator and LCD controller.

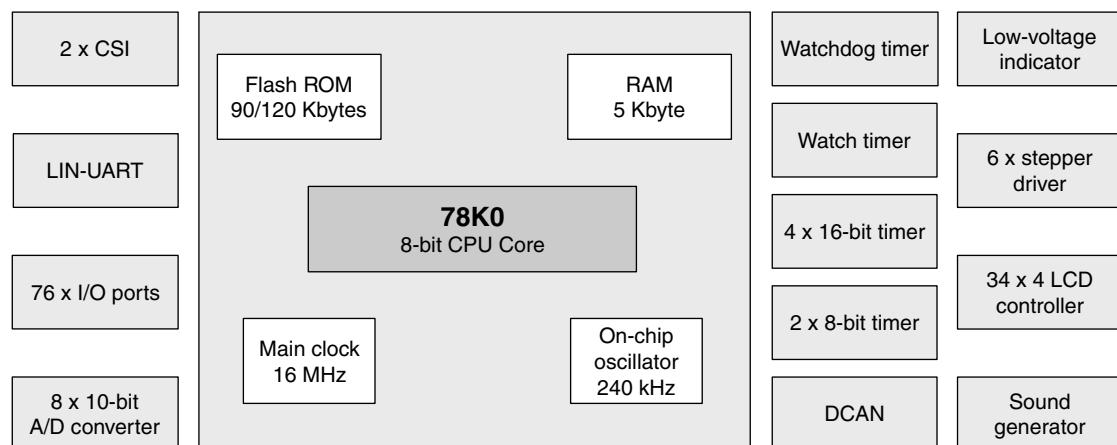
### Applications

The integration of 4 stepper motor drivers make CAN ASSP3+ ideal for driver information systems such as instrument clusters. Moreover, CAN ASSP3+ is suitable for industrial applications where CAN functionality is combined with control oriented peripherals, in particular high-drive output capabilities.

### Features

- 8-bit CISC CPU core
- 16 MHz max. clock frequency (plus 240 KHz internal ring oscillator)
- Real-time clock support via 37.768 KHz
- 120 Kbytes single-voltage Flash with secure self-programming support
- 90/120 Kbytes Mask ROM
- 5 Kbytes RAM
- DCAN interface
- 4 x 16-bit timer and 2 x 8-bit timer, providing up to 5 PWMs
- Watch timer, watchdog timer
- Low voltage indicator
- 2 x CSI (3-wire and 2/3-wire selectable)
- 1 x LIN-UART
- 8 x 10-bit A/D converter
- Sound generator
- 4 x stepper motor driver
- 34 x 4 LCD controller
- 76 I/Os
- Supply voltage: 4.0 - 5.5 V
- Operating temperature: -40 to +85°C
- Package: 100-pin QFP

### Block Diagram



**$\mu$ PD78F0822B**  
 **$\mu$ PD780821/22B**  
**8-bit Microcontroller**

## Ordering Information

Devices	Part Number	Internal ROM	Package
	UPD78F0822BGC(A)-8EA	120 Kbytes Flash	100-pin QFP (14 x 14 mm, 0.50 mm pin pitch)
	UPD780822BGC(A)-8EA	120 Kbytes Mask ROM	100-pin QFP (14 x 14 mm, 0.50 mm pin pitch)
	UPD780821BGC(A)-8EA	90 Kbytes Mask ROM	100-pin QFP (14 x 14 mm, 0.50 mm pin pitch)
	UPD78F0822BGF(A)-3BA	120 Kbytes Flash	100-pin QFP (14 x 20 mm, 0.65 mm pin pitch)
	UPD780822BGF(A)-3BA	120 Kbytes Mask ROM	100-pin QFP (14 x 20 mm, 0.65 mm pin pitch)
	UPD780821BGF(A)-3BA	90 Kbytes Mask ROM	100-pin QFP (14 x 20 mm, 0.65 mm pin pitch)

Tools	Description	Order Number (GC-package)	Order Number (GF-package)
	IECUBE In-circuit emulator	QB-780822-ZZZ-EE	
	Exchange adapter	QB-100GC-EA-02T	QB-100GF-EA-02T
	ICE connector	QB-100GC-YQ-01T	QB-100GF-YQ-01T
	Target connector	QB-100GC-NQ-01T	QB-100GF-NQ-01T
	Extension probe	QB-144-EP-01S	QB-144-EP-01S
	Mount adapter	QB-100GC-HQ-01T	QB-100GF-HQ-01T
	Space adapter	QB-100GC-YS-01T	QB-100GF-YS-01T
	Check pin adapter	QB-144-CA-01	QB-144-CA-01
	IAR Workbench 8-bit (compiler, assembler, linker, debugger, project manager, editor)	EW78K-FULL-EE	
	IAR-Dongle (parallel port interface)	IAR-DONGLE	
	IAR-Dongle (USB interface)	IAR-DONGLE-USB	
	Flash programmer	PG-FP4-E	
	Flash adapter	FA-100GC-8EU-A	FA-100GF-3BA-A

Documentation	Doc reference	Doc type
	U16985E	UPD780822 Subseries User's Manual
	U12326E	78K/0 Series Instruction Manual
	U10903J	78K/0 Series Instruction Table
	U10904J	78K/0 Series Instruction Set

For further information on NEC's 78K controllers visit our European website at [www.ee.nec.de/78k](http://www.ee.nec.de/78k)

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