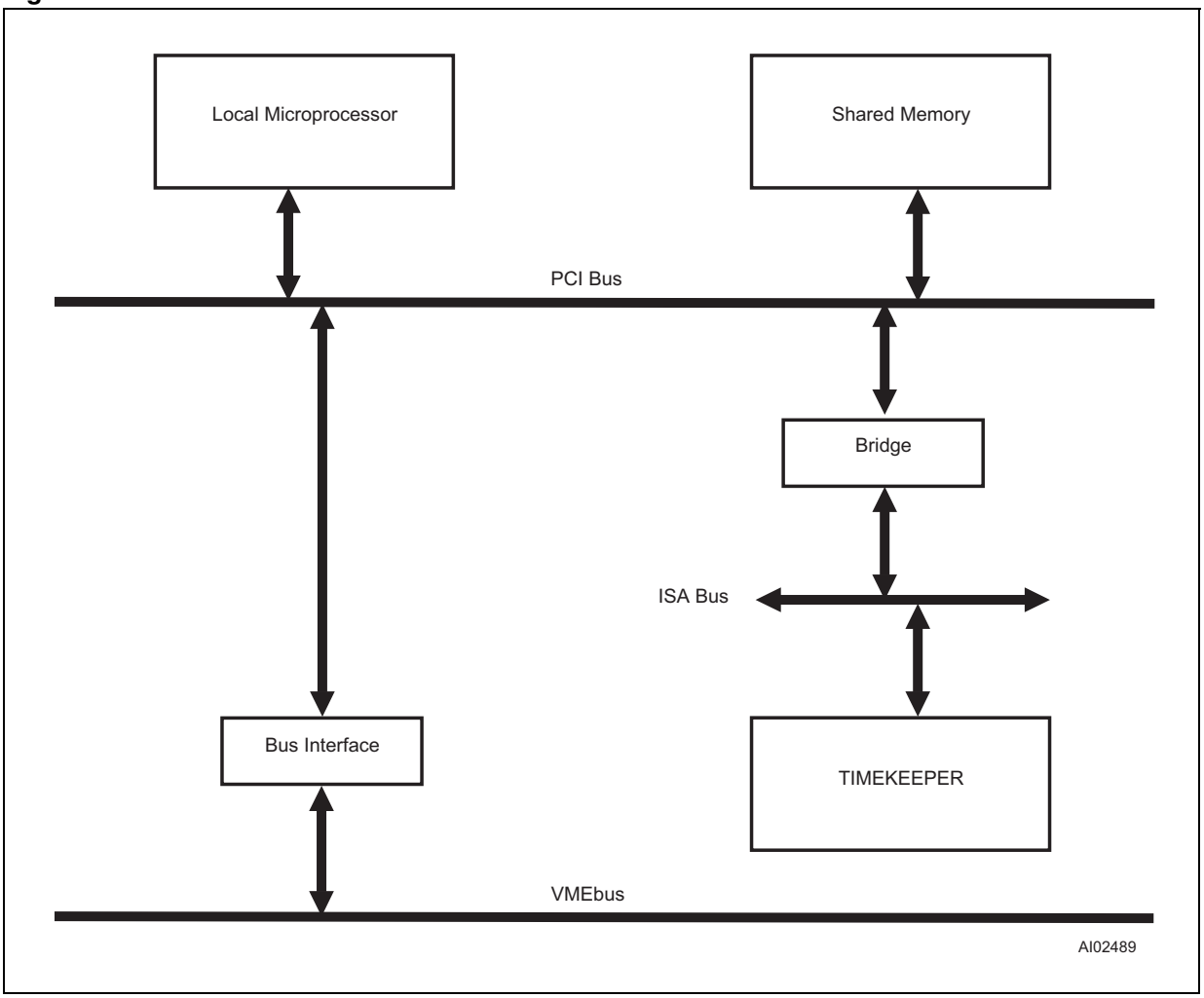
AN968
Application note

VMEbus TIMEKEEPER® requirements

Introduction

Surface-mount TIMEKEEPER® devices, from STMicroelectronics, are designed explicitly for inclusion on CPU boards. A typical arrangement is shown in *Figure 1*.

Figure 1. CPU module with a TIMEKEEPER device



Each member of the TIMEKEEPER® family provides support for the following functions:

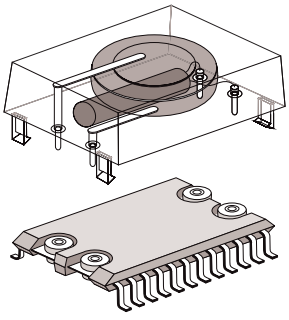
- General timekeeping (i.e. seconds, hour, date, year,...)
- Time stamping (data collection correlated against time)
- Event sequencing during the manufacturing process
- Watchdog (to monitor for processes in the system that are out of control)
- RST: reset signal available for the CPU
- Non-volatile RAM (to store startup parameters, ethernet address, etc.)

Most of the members of the TIMEKEEPER family (M48T02, M48T18, M48T58, M48T58Y, M48T35, M48T35AV, M48T35Y, M48T37V, and M48T37Y) are already being used by manufacturers of VME (Versa Module Eurocard) boards. However, the ones that are best suited for new 'design-in' boards are the M48T58 and the M48T37Y/V. These have the following features:

- Automatic chip deselect and write protect when the power fails (as described in application note AN1012)
- BCD-coded year, month, day, date, hours, minutes, and seconds (as described in application note AN923)
- Software calibration for increased clock accuracy (as described in application note AN934)
- 8K x 8 non-volatile static RAM (as described in application note AN1012)
- Microprocessor power-on reset (devices with 16-byte register maps, only)
- Battery-low warning software bit (devices with 16-byte register maps, only)
- WDF interrupt function (devices with 16-byte register maps, only)
- Periodic alarms (devices with 16-byte register maps, only)
- Industry's first fully surface mountable TIMEKEEPER solution (as described in application note AN1019)
- Industry's smallest non-volatile TIMEKEEPER footprint (as shown in application note AN1019)

However, the significant feature is that each is available in ST's revolutionary SNAPHAT® package: a standard SOIC that is surface mounted in the conventional way, and then is fitted with a SNAPHAT top, as shown in *Figure 2*, containing the battery and crystal.

Figure 2. SOIC and SNAPHAT package



Revision history

Table 1. Document revision history

Date	Revision	Changes
Dec-1998	1	Initial release.
17-Jul-2012	2	Textual updates concerning available TIMEKEEPER® devices.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST’s terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST’S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY TWO AUTHORIZED ST REPRESENTATIVES, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER’S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2012 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com