

# TMS470M Transportation Microcontroller Family

**TMS470M**  
Transportation MCUs



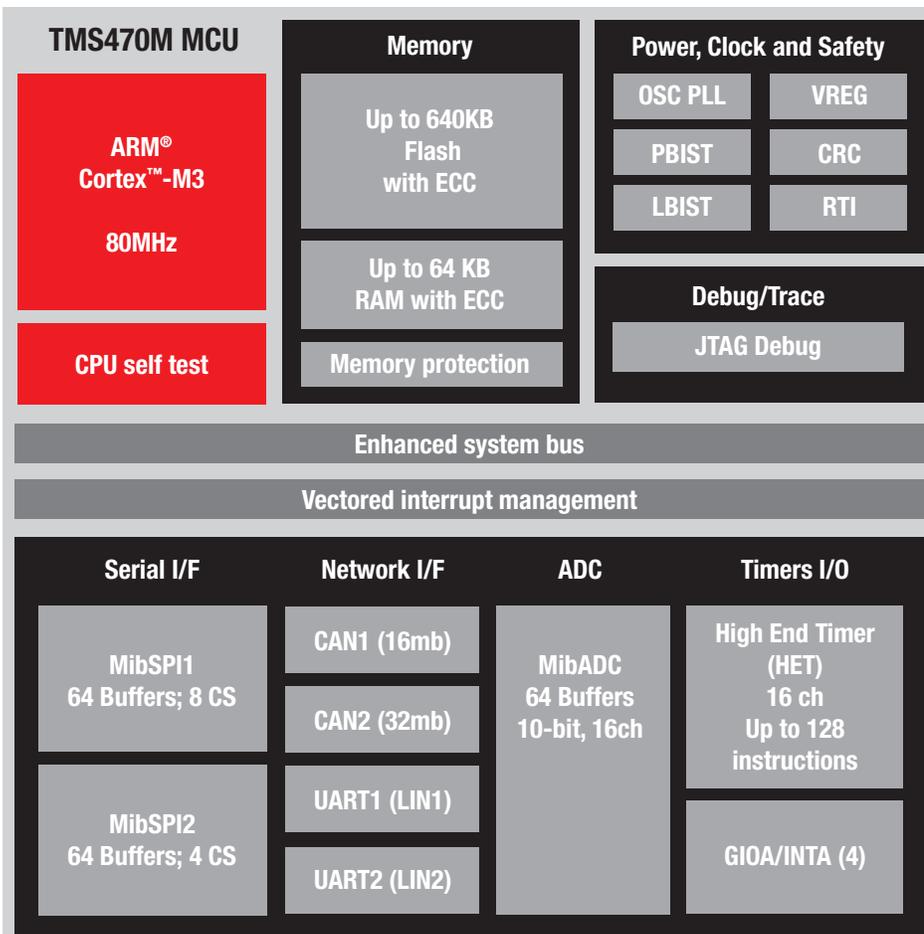
The TMS470M microcontroller family enables developers to easily create safety-related applications for the transportation industry. TMS470M microcontrollers use the widely adopted ARM® Cortex™-M3 CPU running at 80MHz. The family offers Flash memory options ranging from 256KB to 640KB (including up to 128KB EEPROM emulation capability) and RAM memory ranging from 16KB to 64KB. A wide range of connectivity and control peripherals include two CAN controllers, two LINs/UARTs, two multi-buffered SPIs, a 10-bit multi-buffered Analog to Digital converter and the powerful High End Timer co-processor module (HET). Built-in safety features like CPU and RAM self test (BIST) engines, error correction code (ECC) and parity-checking make the TMS470M family a great value extension of the well known TI TMS570 Cortex™-R4F family for safety and transportation applications.

### Family key features:

- 80MHz Cortex™-M3 CPU
- Up to 640KB Flash / 64KB RAM with ECC protection and EEPROM emulation
- Single 3.3V supply (Vreg on-chip)
- Various communication peripherals  
2 CAN, 2 MibSPIs, 2 LIN/UART
- Flexible Timer module (16ch)
- 10-bit Analog/Digital converter (16ch)
- Safety features (ECC, BISTs, CRC)
- Pin and software compatible family
- Embedded debug module

### Targeted transportation applications:

- Electric Power Steering (EPS)
- Braking systems (ABS, ESC)
- Safety related automotive
- Automotive infrastructure
- Commercial vehicles
- Off road vehicles
- Railway communication
- Aerospace applications



## TMS470M family overview

Device	Speed	Flash	EEPROM or Flash*	RAM	CAN	MibSPI (CS)	UART (LIN)	HET (ch)	MbADC 10-b (ch)	GIO	Voltage	Package	Temp	Q100
TMS470MF03107	80MHz	256KB	64KB	16KB	2	2 (12)	2 (2)	16	16	4	3.3V	100QFP	-40 +125C	Yes
TMS470MF04207	80MHz	384KB	64KB	24KB	2	2 (12)	2 (2)	16	16	4	3.3V	100QFP	-40 +125C	Yes
TMS470MF06607	80MHz	512KB	128KB	64KB	2	2 (12)	2 (2)	16	16	4	3.3V	100QFP	-40 +125C	Yes

Note: \* Memory area can be used for code Flash or EEPROM emulation.

Please see the datasheet online at [www.ti.com/tms470m](http://www.ti.com/tms470m) for orderable part numbers.

## TMS470M development tools

### TMS470M USB Development Stick order code:

TMDX470MF066USB; SRP: \$79

- 100pin QFP TMS470MF0667 MCU
- Powered by USB only – no power supply required
- On-Board USB XDS100v2 JTAG for on-board emulation (no need for external JTAG emulator)
- On board SCI to USB Serial
- Access to key peripheral pins (30 signals)
- 6 HET LEDs
- Ambient light sensor and temperature sensor
- CAN transceiver
- Reset button

### Software

- Code Composer Studio™ v4.2 includes C/C++ compiler/linker/debugger
- Demo Project/Code Examples
- Flash programming integrated into CCStudio
- HET simulator with integrated Synapticad WaveViewer

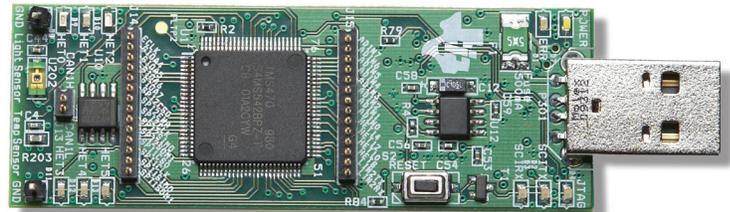


## TMS470M power management and interfacing

Device	Product description	Status
TPS7A6333	High-voltage (45V), low Iq LDO with Window Watchdog	Samples
TLV70033	Cost-effective LDO post regulator	Available
TPS43330	Dual buck/boost controller, 60V load dump, input down to 2V, Iq=30 µA	Samples
TPS54040	42-V step-down converter with integrated FETs and ECO-Mode™	Available
TPS54x62	Buck converter with integrated supervisor, Iq=50µA, 1A, 2A or 3A	Available
SN65HVDA100	LIN transceiver with 5V and 3.3V I/O, sleep mode, inhibit pin	Samples
SN65HVDA54x	CAN transceiver with I/O level shifting, low power mode and wakeup	Available

A wide range of automotive qualified analog devices is available – please check for more at [www.ti.com/automotive](http://www.ti.com/automotive).

## TMS470M USB Development Stick



**Important Notice:** The products and services of Texas Instruments Incorporated and its subsidiaries described herein are sold subject to TI's standard terms and conditions of sale. Customers are advised to obtain the most current and complete information about TI products and services before placing orders. TI assumes no liability for applications assistance, customer's applications or product designs, software performance, or infringement of patents. The publication of information regarding any other company's products or services does not constitute TI's approval, warranty or endorsement thereof.

The platform bar and Code Composer Studio are trademarks of Texas Instruments. All other trademarks are the property of their respective owners.

A122010

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
RF/IF and ZigBee® Solutions	<a href="http://www.ti.com/lprf">www.ti.com/lprf</a>

### Applications

Communications and Telecom	<a href="http://www.ti.com/communications">www.ti.com/communications</a>
Computers and Peripherals	<a href="http://www.ti.com/computers">www.ti.com/computers</a>
Consumer Electronics	<a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>
Energy and Lighting	<a href="http://www.ti.com/energy">www.ti.com/energy</a>
Industrial	<a href="http://www.ti.com/industrial">www.ti.com/industrial</a>
Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Space, Avionics and Defense	<a href="http://www.ti.com/space-avionics-defense">www.ti.com/space-avionics-defense</a>
Transportation and Automotive	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Video and Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
Wireless	<a href="http://www.ti.com/wireless-apps">www.ti.com/wireless-apps</a>

TI E2E Community Home Page

[e2e.ti.com](http://e2e.ti.com)

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2011, Texas Instruments Incorporated