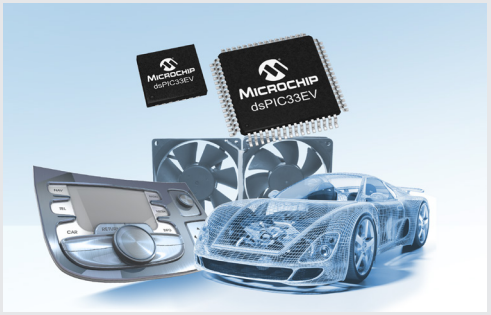
5V dsPIC33 "EV" Family

Enhanced Noise Immunity and Robustness in Harsh Environments

Summary

Many automotive appliances and industrial applications prefer 5V devices for increased robustness in high-noise environments and easy connection to precision sensors. The dsPIC33EVXXXGM00X/10X family provides 5V operation, with support for high temperatures up to 150°C, including CAN, LIN and SENT communications, making this family ideal for motor control and automotive sensing applications.



Key Features

- 5V operation for improved noise immunity and robustness in harsh environments
- Operation up to 150°C with AEC-Q100 Grade 0 qualification targeting under-hood automotive applications
- Six advanced motor control PWMs, 12-bit Analog-to-Digital Converter (ADC) and operational amplifiers, an ideal combination of peripherals for motor control applications
- Error Correcting Code (ECC) Flash for increased reliability and safety
- CAN, LIN and SENT peripherals for automotive communications
- 70 MIPS performance with DSP acceleration for high-speed control algorithm execution

Applications

Automotive

- Sensors
- User interfaces
- Fuel pumps
- Cooling fans
- Water pumps

Appliance

- Dryers
- Refrigerators
- Dishwashers
- Range hoods
- Control panels

Industrial

- Power tools
- Sewing machines
- Actuators
- Building controls
- HVAC systems

dsPIC33 "EV" Highlights

5V Operation

- Improves noise immunity and robustness
- Enables operation in harsh environments: appliance, automotive and industrial
- Up to 150°C with AEC-Q100 Grade 0 automotive qualification

Advanced Peripheral Integration

- Up to six advanced PWMs, op amps and ADC for motor control
- CAN, LIN and SENT peripherals for automotive communications
- Sensor Interfaces for touch, level and flow sensing applications

Safety Critical Features

- 7-bit Error Correction Code Flash
- CRC, Deadman Timer (DMT), Windowed Watchdog Timer (WWDT)
- Backup system oscillator
- Certified Class B software libraries for increased safety and reliability

High-Speed DSP Control Algorithm Execution

- 70 MIPS of performance including DSP acceleration
- Advanced motor control algorithms
- High-performance DSP filtering

Product Family

Device	Flash (KB)	CAN	Packages
dsPIC33EV32GM002	32	–	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV32GM003	32	–	36-pin uQFN
dsPIC33EV32GM004	32	–	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV32GM006	32	–	64-pin TQFP, QFN
dsPIC33EV64GM002	64	–	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV64GM003	64	–	36-pin uQFN
dsPIC33EV64GM004	64	–	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV64GM006	64	–	64-pin TQFP, QFN
dsPIC33EV128GM002	128	–	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV128GM003	128	–	36-pin uQFN
dsPIC33EV128GM004	128	–	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV128GM006	128	–	64-pin TQFP, QFN
dsPIC33EV256GM002	256	–	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV256GM003	256	–	36-pin uQFN
dsPIC33EV256GM004	256	–	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV256GM006	256	–	64-pin TQFP, QFN

Device	Flash (KB)	CAN	Packages
dsPIC33EV32GM102	32	✓	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV32GM103	32	✓	36-pin uQFN
dsPIC33EV32GM104	32	✓	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV32GM106	32	✓	64-pin TQFP, QFN
dsPIC33EV64GM102	64	✓	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV64GM103	64	✓	36-pin uQFN
dsPIC33EV64GM104	64	✓	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV64GM106	64	✓	64-pin TQFP, QFN
dsPIC33EV128GM102	128	✓	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV128GM103	128	✓	36-pin uQFN
dsPIC33EV128GM104	128	✓	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV128GM106	128	✓	64-pin TQFP, QFN
dsPIC33EV256GM102	256	✓	28-pin SOIC, SPDIP, SSOP, QFN
dsPIC33EV256GM103	256	✓	36-pin uQFN
dsPIC33EV256GM104	256	✓	44-pin TQFP, QFN; 48-pin TQFP
dsPIC33EV256GM106	256	✓	64-pin TQFP, QFN

Development Made Easy

The dsPIC33 "EV" family provides a wide range of application notes, software libraries, development boards and tools targeting ease of your end application development.

Application Notes and Tuning Guides

- **AN1292 and AN1078:** *Sensorless Field Oriented Control (FOC) for Permanent Magnet Synchronous Motors (PMSM)*
- **AN1160:** *Sensorless Brushless DC Motors*

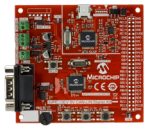
Motor Control Software Library

MATLAB® and Simulink® Blocks (SW007023)

- Includes simulation capabilities
- Code generation (free and enhanced versions)
  - Blocks generate code based on motor control library code
  - Peripheral blocks for code generation
- PMSM motor model

For Non-Motor Control Applications

dsPIC33EV 5V CAN-LIN Starter Kit (DM330018)



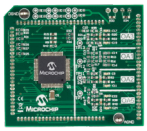
This kit features the dsPIC33EV256GM106 DSC for automotive applications. It contains serial data ports for CAN, LIN and SENT, a self-contained USB programming/debug interface and an expansion footprint for flexibility in application hardware development. The PICkit™ on-board (PKOB) USB programmer and debugger allows simple programming without the need for an additional hardware interface. No other external tools are required to program the device.

For Motor Control Applications

Low-Voltage Motor Control Development Bundle (DV330100)

The Low-Voltage Motor Control Development Bundle provides a cost-effective method of evaluating and developing dual/single motor control power stage targeted to drive two BLDC motors or PMSM concurrently. The bundle comes with a dsPIC® DSC Signal Board, Motor Control 10–24V Driver Board and dsPIC33EP512GM710 Dual Motor Control Plug-In Module.

dsPIC33EV256GM106 5V Motor Control Plug-In Module (MA330036)



The dsPIC33EV256GM106 5V Motor Control Plug-In Module (PIM) enables users to explore the innovative features of the 70 MIPS, 5V dsPIC33EV using both internal and external op amps with the Low-Voltage Motor Control Development Board (DV330100), by using its 105-pin interface.

DS30010099C