Functional Safety Support For Microcontrollers

Quick Reference Guide

Functional Safety Support

Product Family	CPU	Performance (MHz)	Program Memory (KB)	RAM (KB)	Pin Count	AEC Q100	AUTOSAR® MCAL Drivers*	Functional Safety Standards							Development Tools					Example Applications
								ISO 26262 (ASIL) Automotive Applications			IEC 61508 (SIL) Industrial Applications			IEC 60730 Household Appliances							
								FMEDA Report	Safety Manual	Diagnostic Library/ Safety Level(2)	FMEDA Report	Safety Manual	Diagnostic Library/ Safety Level(3)	Diagnostic Library/ Safety Level	TÜV SÜD Certified XC Compiler	MPLAB® Analysis Tool Suite	MPLAB X Integrated Development Environment (IDE/ Microchip Studio	MPLAB Programmer/ Debugger	LDRA Compliance Management Tool Suite	
dsPIC33 Digital Signal Controllers																				
dsPIC33AK512MPS512	dsPIC33AK	200	256–512	64	48–129	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	✓	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33AK512MC510	dsPIC33AK	200	256–512	64	48–100	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	✓	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33AK256MPS306	dsPIC33AK	200	128–256	64	36–64	Grade 0	✓	✓	✓	Future	✓	✓	Future	–	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33AK128MC106	dsPIC33AK	200	32–128	8–16	28–64	Grade 0	✓	✓	✓	Releasing Soon	✓	✓	Releasing Soon	Releasing Soon	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CH512MP508 (M–Main Core, S–Secondary Core)	Dual–Core dsPIC33CH	90 (M) 100 (S)	256–512 (M) 72 (S)	32–48 (M) 16 (S)	48–80	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CH128MP508 (M–Main Core, S–Secondary Core)	Dual–Core dsPIC33CH	90 (M) 100 (S)	64–128 (M) 24 (S)	16 (M) 4 (S)	28–80	Grade 0	–	✓	✓	Future	✓	✓	Future	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CK1024MP710	dsPIC33CK	100	256–1024	128	48–100	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 andSIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CK512MPT608	dsPIC33CK Secure DSC	100	256–512	64	100	Grade 1	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CK512MP608	dsPIC33CK	100	256–512	64	48–80	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CK256MP508	dsPIC33CK	100	32–256	8–24	28–80	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control

Achieving Higher Safety Levels:
ASIL C and ASIL D can be targeted using multiple devices via ASIL decomposition

SIL 3 can be targeted using multiple devices for redundancy

(2)(3)TÜV Rheinland-certified dsPIC33C and dsPIC33A Diagnostic Software Libraries

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dsPIC33 Digital Signal Controllers																				
dsPIC33CK256MC506	dsPIC33CK	100	32–256	8–24	28–64	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CK64MP105	dsPIC33CK	100	32–64	8	28–48	Grade 0	–	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 and SIL 3	Class B	✓	✓	MPLAB X IDE	✓		High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CK64MC105	dsPIC33CK	100	32–64	8	28–48	Grade 0	–	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 andSIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33EV256GM106	dsPIC33EV	70	32–256	4–16	28–64	Grade 0	✓	✓	✓	–	–	–	–	Class B	✓	✓	MPLAB X IDE	✓	✓	5V Robust Designs, Motor Control, High–performance Real–time Control, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CDVL64MC106	dsPIC33CDV	70-100	64	8	64	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 andSIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CDV64MC106	dsPIC33CDV	70-100	64	8	64	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 andSIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CDVC256MP506	dsPIC33CDV	70-100	128-256	16-24	64	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 andSIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CDV256MP506	dsPIC33CDV	70-100	128-256	16-24	64	Grade 0	✓	✓	✓	ASIL B and ASIL C	✓	✓	SIL 2 andSIL 3	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CDV256MC506	dsPIC33CDV	70-100				Grade 0	✓	✓	✓	Future	✓	✓	Future	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control
dsPIC33CDVL256MC506	dsPIC33CDV	70-100	128-256	16-32	64	Grade 0	✓	✓	✓	Future	✓	✓	Future	Class B	✓	✓	MPLAB X IDE	✓	✓	High–performance Real–time Control, Motor Control, Digital Power, Capacitive Sensing, Sensor Interfacing and Measurement Control

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