DEVKIT-S12XE
QUICK START GUIDE (QSG)

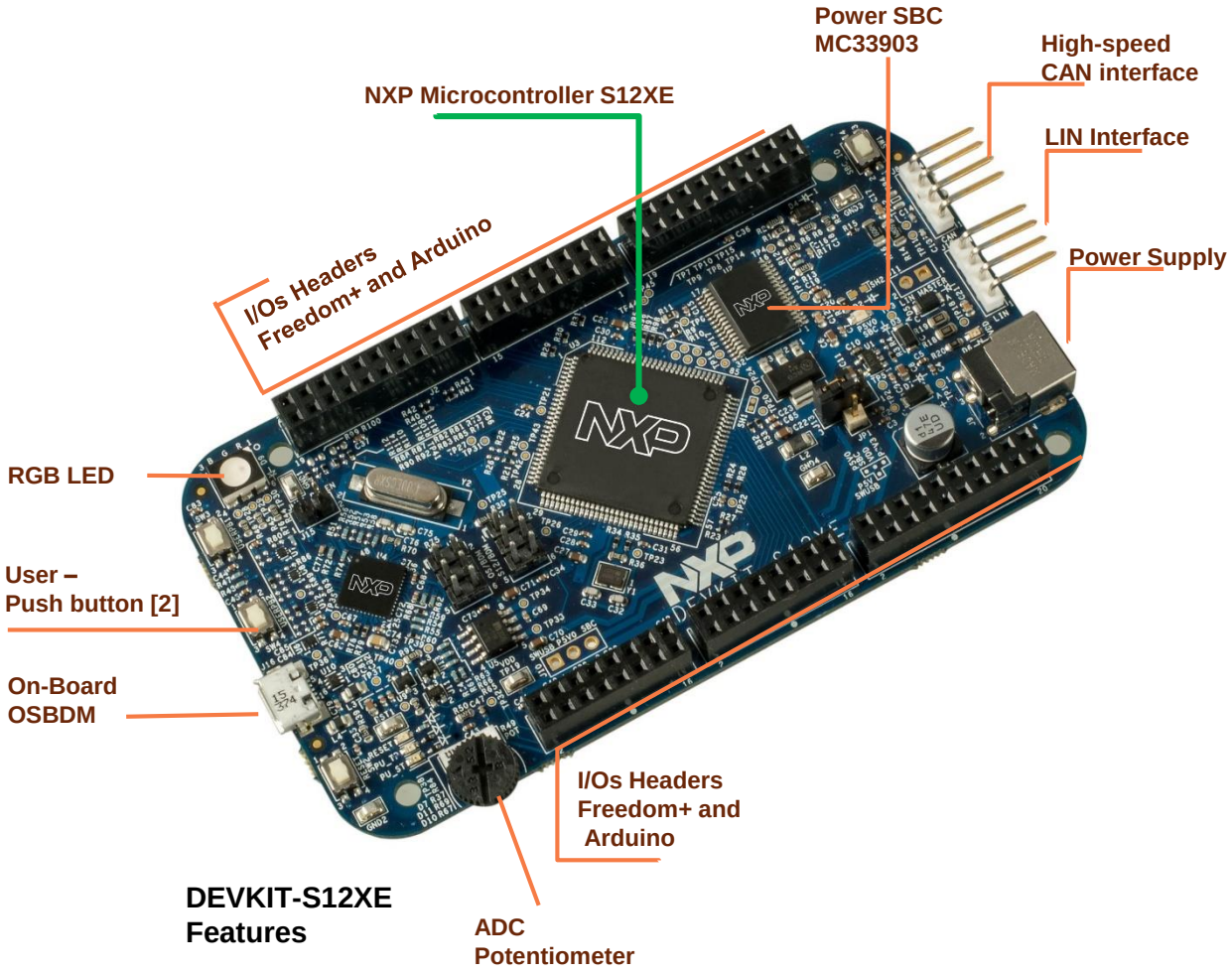
ULTRA-RELIABLE MCUs FOR
INDUSTRIAL AND AUTOMOTIVE

SECURE CONNECTIONS
FOR A SMARTER WORLD

Get to know the DEVKIT-S12XE

The DEVKIT-S12XE is an ultra-low-cost development platform for S12 Microcontrollers.

Features include easy access to all MCU I/O´s, a standard-based form factor compatible with the Arduino™ pin layout, providing a broad range of expansion board options, and an USB serial port interface for connection to the IDE, the board has option to be powered via USB or an external power supply.

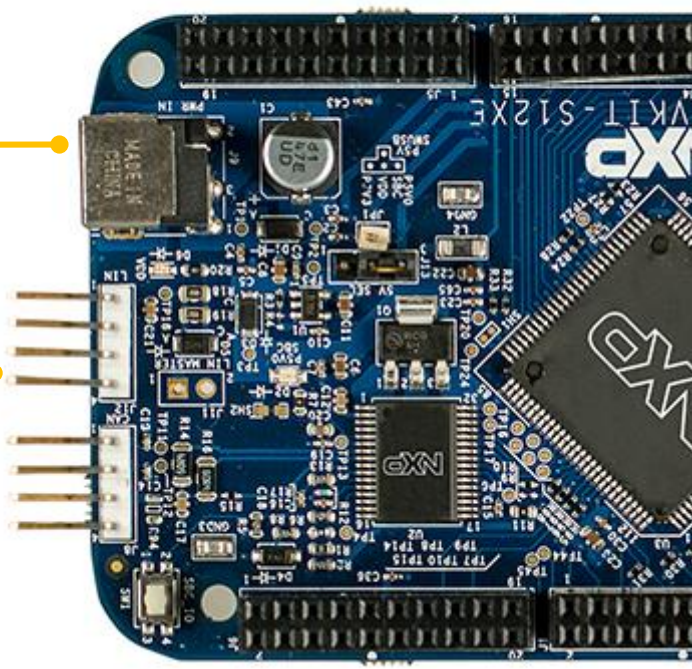


Power Supply and Communications

DESCRIPTION	NAME	PIN
	VBAT	**J9-01**
	GND	**J9-02**
	GND	**J9-03**

DESCRIPTION	NAME	PIN
	LIN	**J12-01**
	VBAT	**J12-02**
	NC	**J12-03**
	GND	**J12-04**

DESCRIPTION	NAME	PIN
	CANH	**J8-01**
	CANL	**J8-02**
	VBAT	**J8-03**
	GND	**J8-04**



High-speed CAN interface

Input/Output Connectors

Arduino Compatibility
The internal rows of the I/O headers on the DEVKIT-S12XE are arranged to fulfill Arduino™ shields compatibility .

PIN	PORT	FUNCTION	J1	PIN	PORT	FUNCTION
J1-01	PS0	**RXD0**		J1-02	PA7	**GPIO**
J1-03	PS1	**TXD0**		J1-04	PA6	**GPIO**
J1-05	PP7	**PWM7**		J1-06	PA5	**GPIO**
J1-07	PP6	**PWM6**		J1-08	PA4	**GPIO**
J1-09	PP5	**PWM5**		J1-10	PA3	**GPIO**
J1-11	PP4	**PWM4**		J1-12	PA2	**GPIO**
J1-13	PP3	**PWM3**		J1-14	PA1	**GPIO**
J1-15	PP2	**PWM2**		J1-16	PA0	**GPIO**

PIN	PORT	FUNCTION	J2	PIN	PORT	FUNCTION
J2-01	PP1	**PWM1**		J2-02	PT0	**IOC**
J2-03	PP0	**PWM0**		J2-04	PT1	**IOC**
J2-05	PH3	**PWM5 / SPI1_SS**		J2-06	PT2	**IOC**
J2-07	PH1	**PWM2 / SPI1_M0SI**		J2-08	PT3	**IOC**
J2-09	PH0	**SPI1_MISO**		J2-10	PT4	**IOC**
J2-11	PH2	**SPI1_SCK**		J2-12	PT5	**IOC**
J2-13	GND	**GND**		J2-14	PE0	**GPIO**
J2-15	VRH_MCU	**VRH_MCU**		J2-16	PE1	**GPIO**
J2-17	PJ6	**SDA**		J2-18	PE2	**GPIO**
J2-19	PJ7	**SCL**		J2-20	PE3	**GPIO**

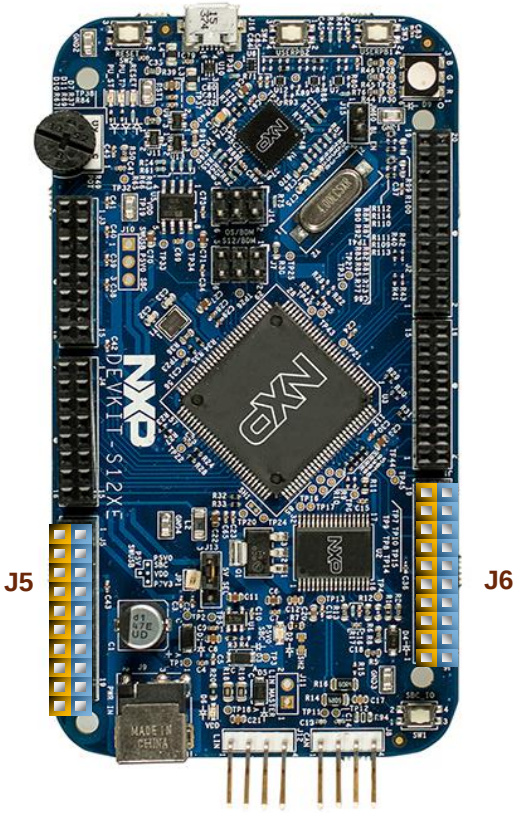
Input/Output Connectors

Arduino Compatibility
The internal rows of the I/O headers on the DEVKIT-S12XE are arranged to fulfill Arduino™ shields compatibility .

PIN	PORT	FUNCTION	J3	PIN	PORT	FUNCTION
J3-02	PE7	**GPIO**		J3-01		**VIN**
J3-04	PE6	**GPIO**		J3-03		**VDD**
J3-06	PE5	**GPIO**		J3-05		**RESET**
J3-08	PE4	**GPIO**		J3-07		**P3V3**
J3-10	PK1	**GPIO**		J3-09		**P5V0**
J3-12	PK0	**GPIO**		J3-11		**GND**
J3-14	PM3	**TXCAN1**		J3-13		**GND**
J3-16	PM2	**RXCAN1**		J3-15		**VIN**

PIN	PORT	FUNCTION	J4	PIN	PORT	FUNCTION
J4-02	PB7	**GPIO**		J4-01	PAD0	**ADC0**
J4-04	PB6	**GPIO**		J4-03	PAD1	**ADC1**
J4-06	PB5	**GPIO**		J4-05	PAD2	**ADC2**
J4-08	PB4	**GPIO**		J4-07	PAD3	**ADC3**
J4-10	PB3	**GPIO**		J4-09	PAD4	**ADC4**
J4-12	PB2	**GPIO**		J4-11	PAD5	**ADC5**
J4-14	PB1	**GPIO**		J4-13	PAD6	**ADC6**
J4-16	PB0	**GPIO**		J4-15	PAD7	**ADC7**

Input/Output Connectors

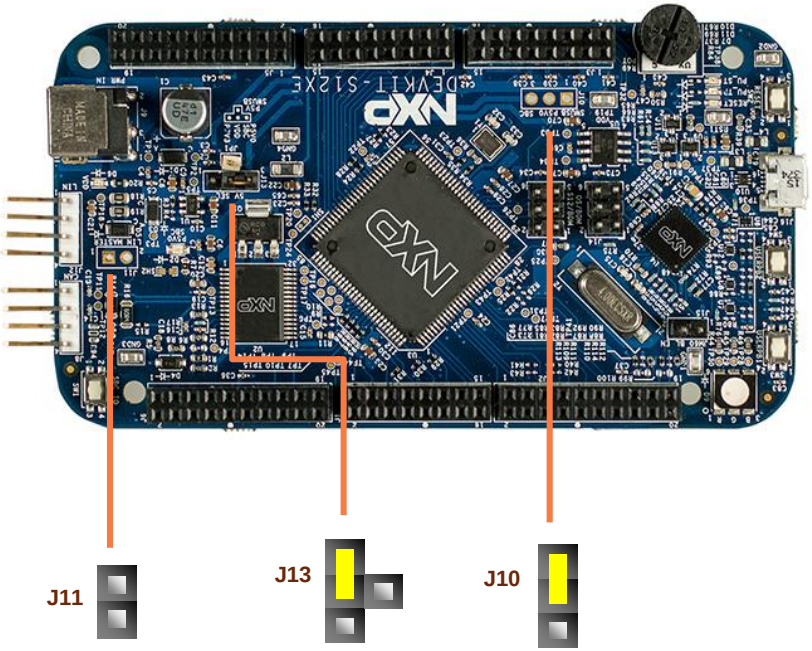


Arduino Compatibility
The internal rows of the I/O headers on the DEVKIT-S12XE are arranged to fulfill Arduino™ shields compatibility .

PIN	PORT	FUNCTION	J5	PIN	PORT	FUNCTION
J5-02	PK2	GPIO		J5-01	PAD8	ADC8
J5-04	PK3	GPIO		J5-03	PAD9	ADC9
J5-06	PK4	GPIO		J5-05	PAD10	ADC10
J5-08	PK5	GPIO		J5-07	PAD11	ADC11
J5-10	VDD	VDD		J5-09	PAD12	ADC12
J5-12	GND	GND		J5-11	PAD13	ADC13
J5-14	PK7	GPIO		J5-13	PAD14	ADC14
J5-16	NC	NC		J5-15	PAD15	ADC15
J5-18	NC	NC		J5-17	NC	NC
J5-20	NC	NC		J5-19		SBC_SAFE

PIN	PORT	FUNCTION	J6	PIN	PORT	FUNCTION
J6-19	PH7	SPI2_SS		J6-20	NC	NC
J6-17	PH6	SPI2_SCK		J6-18	NC	NC
J6-15	PH5	SPI2_MOSI		J6-16	PM4	RXCAN2
J6-13	PH4	SPI2_MISO		J6-14	PM5	TXCAN2
J6-11	PJ1	TXD2		J6-12	GND	GND
J6-09	PJ0	RXD2		J6-10	VDD	VDD
J6-07	NC	NC		J6-08	PM6	RXCAN3
J6-05	NC	NC		J6-06	PM7	TXCAN3
J6-03	NC	NC		J6-04	NC	NC
J6-01	NC	NC		J6-02	NC	NC

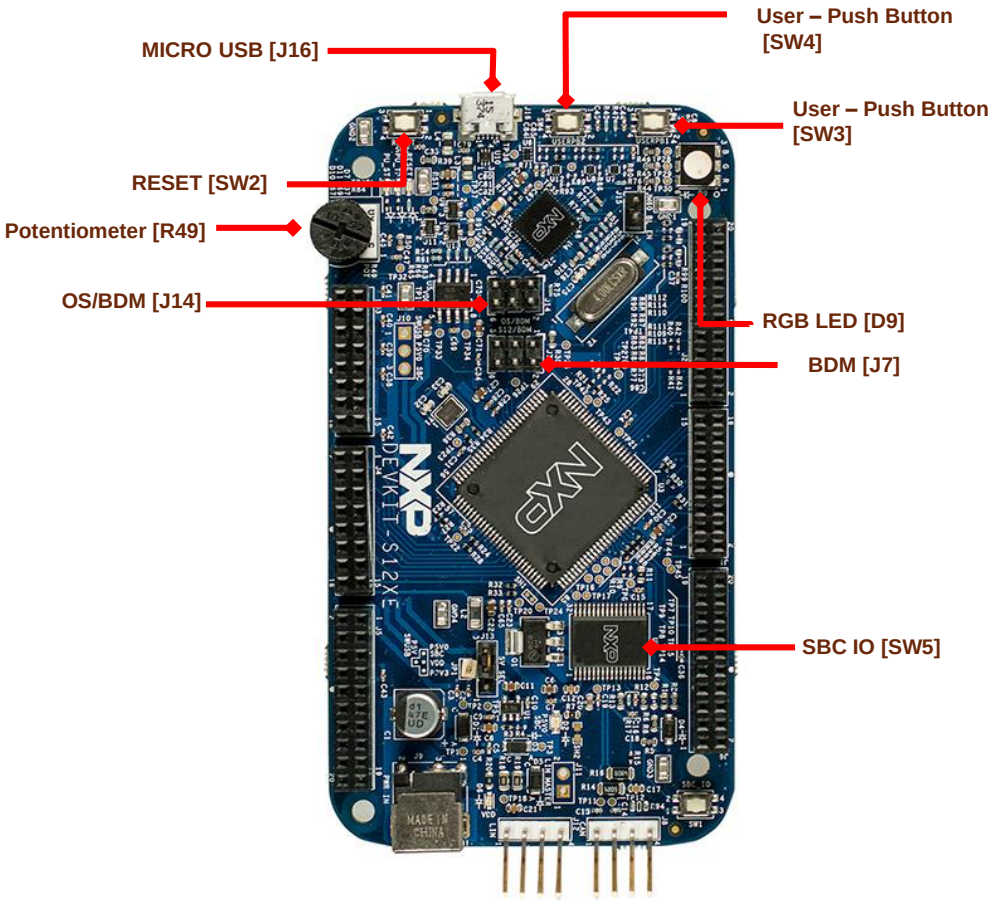
Default jumpers



REF	POSITION	DESCRIPTION
J11	OPEN	Enable LIN Master mode
J13	1 - 2	VDD Power MCU linked to 3.3V
	2 – 3 [DEFAULT]	VDD Power MCU linked to 5.0V
	2 - JP1	VDD Power MCU linked to USB
J10	1 - 2	P5V0 reference is linked to P5V_SWUSB
	2 – 3 [DEFAULT]	P5V0 reference is linked to P5V_SBC

CAUTION:
When powered from the USB bus, do not exceed the 500mA maximum allowable current drain. Damage to the target board or host PC may result.

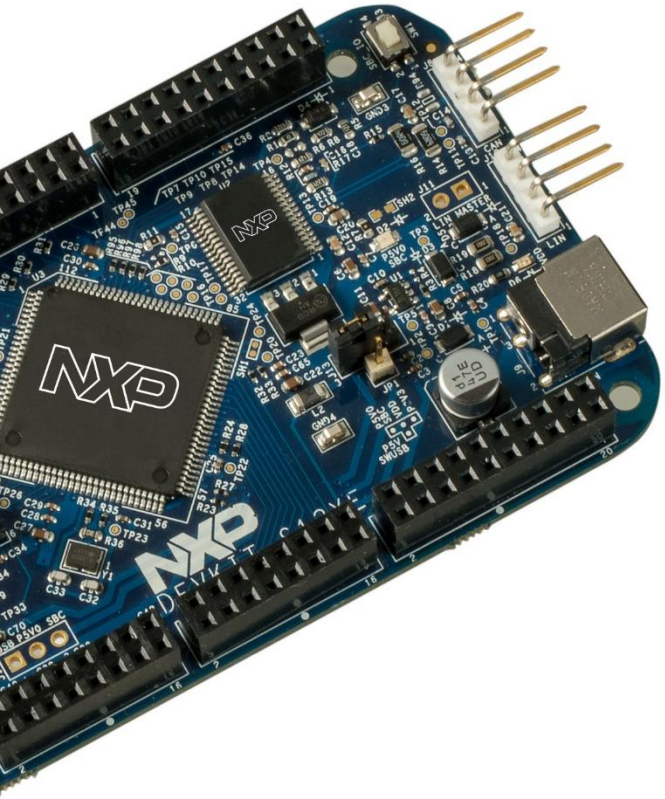
Programming interface and User Peripherals



REFERENCE		MCU PORT	DESCRIPTION
Potentiometer	R49	AN0	Rotary Potentiometer
Push Button	SW1	PWRSBC	
	SW2	RESET	
	SW3	PT6	
	SW4	PT7	
LED	D2	PWRSBC	GREEN LED power Indicator
	D7	RESET	RESET LED indicator
	D9	PP3	User LED
	RGB	PP4	User LED
		PP6	User LED
	D10		
	D11		
Programming and Debug Interface	J16		On-board JTAG connection via open source OSBDM circuit using the MC9S08JM60 microcontroller
	J7		Support for USB Multilink Interface BDM

Step-by-Step Installation Instructions

In this quick start guide, you will learn how to set up the **DEVKIT-S12XE** board and run the default exercise.



1

Install Software and Tools

Install CodeWarrior Development Studio for S12 V5.1 or later. CodeWarrior Dev Tools for HCS12(X) MCUs

2

Connect the USB Cable

Connect one end of the USB cable to the PC and the other end to the mini-B connector on the DEVKIT-S12XE board. Allow the PC to automatically configure the USB drivers if needed.

3

Using the Example Project

The pre-loaded example project utilizes the RGB LED. Once the board is plugged in you can see how the RGB LEDs change the color.

4

Learn More About the S12XE

Read the release notes and documentation on the nxp.com/S12XE.

- The Processor Expert graphical initialization software included in your CodeWarrior installation will help reduce your time to market
- CodeWarrior for S12 with examples

CAUTIONARY NOTES

- Electrostatic Discharge (ESD) prevention measures should be used when handling this product. ESD damage is not a warranty repair item.
- NXP does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under patent rights or the rights of others.
- EMC Information on the DEVKIT-S12XE board:
  - This product as shipped from the factory with associated power supplies and cables, has been verified to meet with requirements of CE and the FCC as a CLASS A product.
  - This product is designed and intended for use as a development platform for hardware or software in an educational or professional laboratory.
  - Attaching additional wiring to this product or modifying the products operation from the factory default as shipped may effect its performance.

Documentation and References

Datasheet

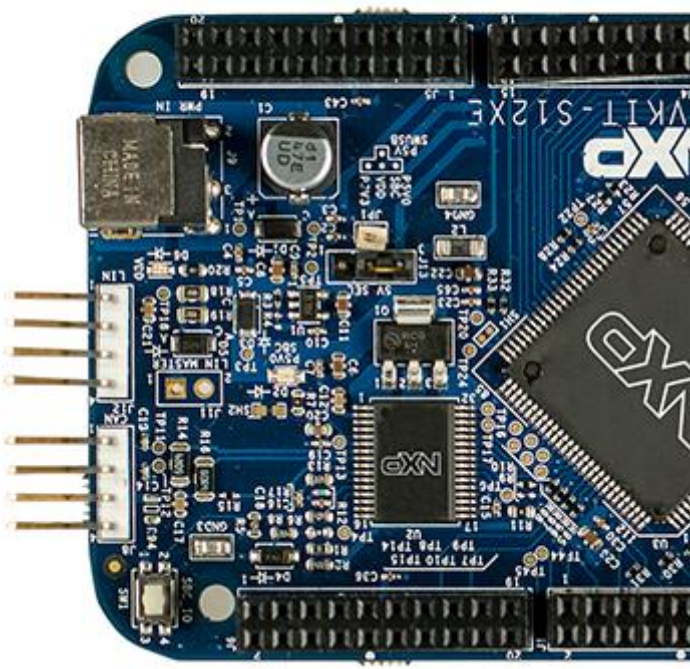
- S12XE Family - Data Sheet

Application Notes

- AN4731, Understanding Injection Current on Freescale Automotive Microcontrollers - Application Note (REV 1)
- AN4483, Emulated EEPROM Routines for the S12P Family - Application Note
- AN4258, Serial Bootloader for S12(X) Microcontrollers Based on 180 nm Technology - Application Note

Reference Manuals

- S12 & S12S S12X & S12XS & S12XE Microcontrollers - Reference Manual



For more information please visit : www.nxp.com/s12xe

Development Tools Ecosystem

Compilers
- Codewarrior S12
- Cosmic

IDE
- Codewarrior
- Cosmic Zap

Programmers
- P&E
- Cyclone Pro Programmer

Debugger
- CW & P&E S12 Debugger
- Cosmic Zap Debugger
- iSYSTEM winIDEA

Support Tools:
- FREEMASTER run time debugger and for instrumentation/calibration

SECURE CONNECTIONS
FOR A SMARTER WORLD