EVB51JM128

Development Board for Freescale MCF51JM128 MCU

Hardware User Guide

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REVISION

Date	Rev	Comments
December 11, 2007	A	Initial Release.
February 1, 2008	B	Added accel notes, updated LED8 jumper configuration, and updated LCD port configuration

CAUTIONARY NOTES

1) Electrostatic Discharge (ESD) prevention measures should be used when handling this product. ESD damage is not a warranty repair item.

2) Axiom Manufacturing 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.

3) EMC Information on the EVB51JM128 board:

   a) This product, as shipped from the factory with associated power supplies and cables, has been verified to meet with FCC requirements as a **CLASS A** product.

   b) This product is designed and intended for use as a development platform for hardware or software in an educational or professional laboratory.

   c) In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate prevention measures.

   d) Attaching additional wiring to this product or modifying the product operation from the factory default as shipped may effect its performance and cause interference with other apparatus in the immediate vicinity. If such interference is detected, suitable mitigating measures should be taken.

TERMINOLOGY

This development board applies option selection jumpers. Terminology for application of the option jumpers is as follows:

Jumper on, in, or installed = jumper is a plastic shunt that fits across 2 pins and the shunt is installed so that the 2 pins are connected with the shunt.

Jumper off, out, or idle = jumper or shunt is installed so that only 1 pin holds the shunt, no 2 pins are connected, or jumper is removed. It is recommended that the jumpers be placed idle by installing on 1 pin so they will not be lost.

Cut-Trace – a circuit trace connection between component pads. The circuit trace may be cut using a knife to break the default connection. To reconnect the circuit, simply install a suitably sized 0-ohm resistor or attach a wire across the pads.

Signal names followed by an asterisk (*) denote active-low signals.

FEATURES

The EVB51JM128 is a low-cost development system for the Freescale MCF51JM128 ColdFire microcontroller, which is a part of the Freescale FLEXIS Microcontroller Continuum. CodeWarrior Development Tools provide support for quick and easy application development and debug. A BDM port compatible with standard ColdFire BDM / JTAG interface cables and hosting software is provided for programming and debug support.

Features:

- MCF51JM128 CPU, 100 pins
  - 128K Byte Flash
  - 16K Byte Ram
  - Rapid GPIO
  - Random Number Generator
  - USB Phy w/ OTG Support
  - Cryptographic Acceleration Unit
  - 3.3V operation
  - 50.66 MHz Internal Bus
- BDM / JTAG Port
- 12 MHz XTAL,
- USB On-The-Go Support w/ Mini AB connector
- USB FS/LS Support w/ Type-B connector
- 2 ea. RS-232 Serial Ports w/ DB9-S Connector
- ON/OFF Power Switch w/ LED voltage indicators
- RESET switch w/ indicator
- On-board Voltage Regulator, +3.3V, +5.0V
  - Selectable output voltage
- User Features
  - 3-Axis MMA7260 Accelerometer
  - Fault Tolerant
  - CAN Phy
  - LIN Phy
  - IR Diode
  - 8 User LED's w/ enable
  - 4 User Push Switches
  - 5k ohm POT
  - Light Sensor
  - Externally Modulated Buzzer
  - NTC Thermistor
- Connectors
  - USB Mini AB
  - USB Type B
  - 2ea. DB9 Serial Connectors
  - 2.0mm Barrel Power Input
  - 1ea., 2pos., screw type, terminal blocks

Supplied with DB9 Serial Cable, USB cable, Support CD, and CodeWarrior Development Studio CD

Specifications:
Board Size 5.0" x 7.0"
Power Input: +7 to +18VDC, +12VDC typical

REFERENCES

The following documents should be referenced during application development using the EVB51JM128. These documents are available on the MCF51JM128 and EVB51JM128 web pages (http://www.freescale.com/coldfire).

EVB51JM128_UG.pdf	EVB51JM128 User Guide (this document)
EVB51JM12_QSG.pdf	EVB51JM128 Quick Start Guide
EVB51JM128_SCH_B.pdf	EVB51JM128 Schematic
EVB51JM128_Silk_A.pdf	EVB51JM128 Top Silk

GETTING STARTED

To get started quickly, please refer to the EVB51JM128 Quick Start Guide. This quick start will illustrate connecting the board to a PC, installing the correct version of CodeWarrior Development Studio, and run a simple demo program.

APPLICATION DEVELOPMENT

CodeWarrior Development Studio for ColdFire, Special Edition is provided along with the EVB51JM128 to support application development and debug. CodeWarrior provides an IDE for application debug and an integrated FLASH programmer to load application code. Refer to the CodeWarrior Development Studio User Guide further details.

HARDWARE CONFIGURATION

The EVB51JM128 board provides a development or evaluation platform for the MCF51JM128 microcontroller. Following are descriptions of the components and options provided on the board.

Integrated BDM

The EVB51JM128 board features an integrated USB BDM debugger. The integrated debugger supports application development and debugging via the background debug mode. A type B, USB connector provides connectivity between the target board and the host PC.

NOTE: Using the integrated USB BDM requires CodeWarrior Development Studio for Microcontrollers Special Edition, V6.0 or later. Development tools from P&E Microcomputer Systems also support the target device.

The integrated debugger provides power and ground to the target, thereby eliminating the need to power the board externally. Power from the integrated USB BDM is derived from the

USB bus; therefore, current consumption is limited by the USB specification. Total current consumption for the target board, and any connected circuitry, must not exceed **500mA**. Excessive current drain will violate the USB specification causing the bus to disconnect. This will force a target POR.

CAUTION: Violating the USB specification will cause the USB bus to disconnect forcing the target to reset. Damage to the board or host PC may also result.

BDM Port Connector

As standard 6-pin BDM connector is also provide to allow use of external BDM cables capable of supporting the MC51JM128 device.

Figure 1: BDM Connector

BKGD*/MS	1	2	VSS
	3	4	RESET*
	5	6	VDD

EVB POWER

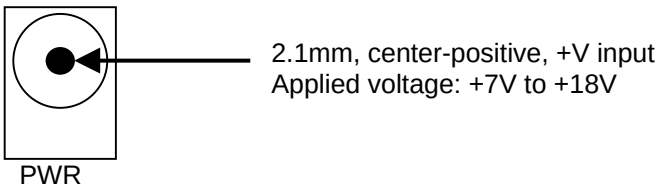
The EVB51JM128 applies 2 voltage regulators to power the board. VR1 supplies +5V to the VDD rail when selected. This regulator also provide +5V output to the USB circuitry when the board is configured for HOST mode. VR2 supplies +3.3V to the VDD rail when selected. The +3.3V output is derived from the +5V regulator. Power to the EVB is limited to 500mA.

Input power is applied using the PWR power jack or the TB1 terminal block. The PWRSW power switch controls input voltage to the board.

Power Jack

The power jack at PWR is the default power input to the board. This connection accepts a standard 2.1mm, center-positive, barrel plug connector. +VIN should remain between +7VDC and +18VDC.

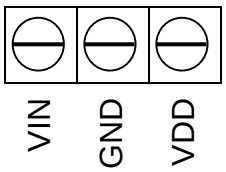
Figure 2: PWR Jack



The terminal block, TB1, allows the user to apply an alternate power source to the board. Input voltage, +VIN, should remain between +7VDC and +18VDC. TB1 accepts wire sizes ranging from 28AWG to 16AWG.

Terminal block position 1 connects directly to the EVB VDD rail. This may be used to drive the voltage rail directly or may be used to provide power to external circuitry. Caution must be exercised when using this input since no protection is provided.

Figure 3: TB1 Terminal Block



Accepts wire size 28AWG – 16AWG
Applied voltage: +7V - +18V

CAUTION: No protection is applied on VDD input

PWRSW Power Switch

The PWRSW easily connects and disconnects input voltage to the board. The silkscreen clearly marks the ON and OFF positions. This switch controls all voltage levels on the board.

Voltage Indicators

The +3.3V and +5V LED indicates availability of the associated voltage rail.

VDD_SEL Option Header

VDD_SEL allows the user to selectively apply +5V or +3.3V to the VDD rail on the EVB. Regardless of the voltage level selected, +5V is available to the USB VBUS output for USB HOST mode applications.

PWR_SEL Option Header

The PWR_SEL option header selects the source of input power to the EVB. The board may be powered from a voltage source connected to either the PWR connector or the terminal block. The board may also be powered from the integrated USB BDM. The BDM can provide up to 350mA of current to the EVB.

Figure 4: PWR_SEL Option Header

Selects input voltage from PWR connector or terminal block

Selects input voltage from the integrated BDM

MCU Power

Each power input to the target MCU has an option header. The option header allows current measurement on each power input individually. The option header may also be used to apply various input voltage levels.

VDD Option Header

The VDD option header applies board VDD to the target MCU. This jumper may be used to apply alternate voltage levels or to measure input current under operating conditions.

VDDA Option Header

The VDDA option header connects the target device VDDA input to the EVB VDD rail by default. This jumper may be used to apply alternate voltage input or to measure input current under operating conditions.

VSSA Option Header

The VSSA option header connects the target device VSSA input to the EVB digital ground by default. This option header may be used to apply ultra clean ground or to measure input current under operating conditions.

VREFH Option Header

The VREFH option header connects the target device VREFH input to the EVB VDD rail by default. This jumper may be used to apply alternate voltage input or to measure input current under operating conditions.

VREFL Option Header

The VREFL option header connects the target device VREFL input to the EVB digital ground by default. This option header may be used to apply ultra clean ground or to measure input current under operating conditions.

VX_EN Option Header

The VX_EN option header is a 2-pin jumper that connects the target-board voltage rail to IO connector position J1A-1. IO connector position J1A-3 connects directly to the ground plane. This input requires a regulated +3.3V voltage source. This power input is decoupled to minimize noise input but is not regulated. Also, no protection is applied on this input and damage to the target board may result if over-driven. Do not attempt to power the target board through this connector while also applying power through the PWR connector as damage to the board may result.

Power may be sourced to off-board circuitry through the MCU_PORT. The current limitation of the on-board regulator must be considered when attempting to source power to external circuitry. Excessive current drain may damage the target board or the on-board regulator. The figure below shows the VX_EN option header connections.

Figure 5: VX_EN Option Header

ON Enable power connection to connector J1

OFF Disable power connection to connector J1

CAUTION: Do not apply power to connector J1 while also sourcing power from either the PWR connector. Damage to the board may result.

NOTE: Do not exceed available current supply from on-board regulator when sourcing power through connector J1 to external circuitry.

RESET Switch

The RESET switch allow the manual application of the RESET* signal. Application of RESET halts the current operation and initializes internal registers to their default state. The previous operating state of the MCF51JM128 will be lost.

External reset may also be applied directly to the RESET * signal at connector J1A-4.

Reset LED

The RESET indicator will be ON for the duration of a valid RESET* signal. The RESET * signal is driven active while the MCU is in the RESET state.

Low Voltage Detect

The MCF51JM128 applies a Low Voltage Detect (LVD) module to detect under-voltage conditions. The LVD may be configured to generate a RESET or an interrupt. Refer to the MCF51JM128 Reference Manual for further details.

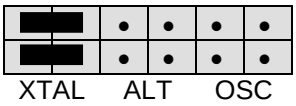
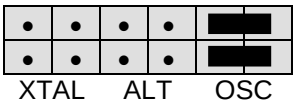
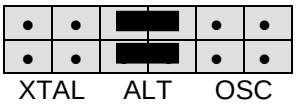
MEMORY

No external memory is applied to the EVB51JM128 board. Memory for application development is internal to the MCF51JM128 MCU. This memory includes 128K bytes of Flash and 16K bytes of SRAM memory. Refer to the MCF51JM128RM for details on memory type and location.

TIMING

The EVB51JM128 accepts timing input from several sources. A 12 MHz crystal is provided to support application development. The target device also provides an internal timing source with 9-bit trimming. Locations for a vertical SMA connector and a 14-pos DIP socket are provided but not installed in default configurations.

Table 1: OSC_SEL Option Header

	Selects Timing input from 12 MHz XTAL at Y1
	Selects Timing input from SMA socket at J6 or DIP socket at X1. Neither the SMA connector nor the DIP socket are installed on production boards.
	Selects PORTG functionality

CAUTION: Communications with the target may be lost if clock frequency or baud rate changes during application execution.

An FLL and PLL to allow synthesizing a range of frequencies. Refer to the target MCU Reference Manual for details on using the FLL or PLL.

PLL settings are under user application control and may be changed during application execution.

Communications

The EVB51JM128 board provides 2 UART ports, 1 IIC port, and 1 USB OTG port. RS-232 communication is supported through UART[2:0] connectors and through the MCU_PORT connector. IIC communications are supported solely through the MCU_PORT connector. The COM_EN option header enables SCI functionality between the MCU and the associated UARTx connector. The COM_EN option header also enables serial communications through the integrated USB BDM.

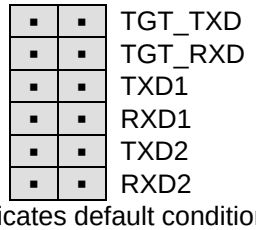
COM Ports

An RS-232 transceiver provides RS-232 to TTL/CMOS logic level translation between the UARTx connector and the MCU. The transceiver provides full RS-232 signaling at input voltage level between 3.0V and 5.0V. The COMx connector is a 9-pin Dsub, right-angle connector. A ferrite bead on shield ground provides conducted immunity protection. Communication signals TXDx, RXDx are routed from the transceiver to the MCU. These signals are also available at the MCU_PORT connector. Handshake signals RSTx and CTSx are not available.

COM_EN

The COM_EN option header individually connects and disconnects UARTx signals between the MCU and the SCI transceiver. Removing a shunt disconnects the associated signal. Installing a shunt connects the associated signal.

Figure 6: UARTx_EN Option Header



	Shunt	
	On	**Off**
TGT_TXD	Enabled	Disabled (*)
TGT_RXD	Enabled	Disabled (*)
TXD1	Enabled (*)	Disabled
RXD1	Enabled (*)	Disabled
TXD2	Enabled (*)	Disabled
RXD2	Enabled (*)	Disabled

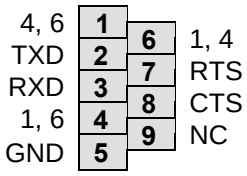
(*) – Indicates default condition

NOTE: TGT_TXD and TGT_RXD connect TXD2 and RXD2 lines to the serial input of the integrated BDM.

COM Connector

A standard 9-pin Dsub connector provides external connections for each COMx port. The Dsub shell is connected to board ground through a ferrite bead. The ferrite bead provides noise isolation on the RS-232 connection. The DB9 connector pin-out is shown below.

Figure 7: COM Connector



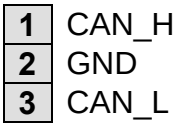
Female DB9 connector that interfaces to the ColdFire internal SCI1 serial port via the RS232 transceiver.

Pins 1, 4, and 6 are connected together.

CAN Communications

The EVB51JM128 provides a high-speed CAN physical layer interface (PHY). A 3-pin connector provides connectivity to the off-board CAN bus. The CAN PHY connects to the CAN0 channel on the MCU. The PHY supports data rates up to 1 MBPS with edge-rate control to reduce EMI/RFI. The figure below shows the pin-out of the CAN_PORT connector.

Figure 8: CAN_PORT Connector



The CAN_EN option header connects the CAN PHY to the target MCU.

Figure 9: CAN_EN Option Header

IIC Port

IIC signaling connects directly between the MCU and the MCU_PORT connector. Refer to the MCF51JM128RM for details on using the IIC interface. Each IIC signal is pulled up to VDD at the I2C_PULL_EN option header.

User Pushbutton Switches

Four user push-button switches are provided for user application input as needed and are configured for active-low signaling. SW1 through SW3 are applied to keyboard interrupt inputs on the target MCU. SW4 is applied to a GPIO port pin. Use of target device internal pull-ups is required for proper operation. No external bias is applied to any push-button switch input.

Table 2: Push Button Switches

Switch	Signal
SW1	PTG1/KBIP1
SW2	PTG2/KBIP2
SW3	PTG3/KBIP3
SW4	PTD5

User LED's

Eight user LED's are provided for output indication and are configured for active-low signaling. The table below details the LED connections to the target MCU

Table 3: User LED's

LED	Signal
LED1	PTE2/TPM1CH0
LED2	PTE3/TPM1CH1
LED3	PTF0/TPM1CH2
LED4	PTF1/TPM1CH3
LED5	PTF5/TPC2CH1
LED6	PTD2/KBIP2/ACMPO
LED7	PTC4
LED8	PTC6/RXCAN

NOTE: To use LED8, remove the RXCAN option jumper at the CAN_EN option header.

Potentiometer

A 5k ohm, single-turn, thumb-wheel type, potentiometer at RV1 provides continuous, variable resistance input for user applications. The potentiometer is connected between VDD and GND with the center tap providing the divider output. The center tap is connected to the MCU on two separate inputs:

Table 4: POT

POT	PTB2/SPSCK2/ADP2
	PTD1/ADP9/ACMP-

Light Sensor

A surface-mount phototransistor, at RZ1, provides light sensitive, variable input for user applications. Current flow within the phototransistor is inversely proportional to light intensity incident on the surface of the device. A rail-to-rail OP amp at U5 boosts the photocell output to useable levels.

Table 5: Light Sensor

λ Sensor	PTD4/ADP11

Thermal Sensor

An NTC thermistor is provided for thermal sensing applications. The thermistor has an ambient resistance of 10K ohms. Device resistance falls with increasing temperature. The B parameter for this device equals 3900

Table 6: Thermal Sensor

Thermal Sensor	PTD3/KBIP3/ADP10 B = 3900

External Drive Piezo Buzzer

A buzzer is provided for use applications requiring audible output. The buzzer is externally driven with a center frequency (f_0) of 2.3 kHz. The buzzer is capable of producing output frequencies ranging from 500 Hz to 5 kHz. The buzzer is connected to a timer channel on the target MCU allowing frequency modulation.

Table 7: Buzzer

Buzzer	PTF4/TMP2CH0

IR Diode

An IR diode is provided for infrared signaling use. The IR diode is connected to the high-current IRO output from the target MCU.

Table 8: Push Button Switches

IR Diode	PTC2/IRO

LCD PORT

The EVB51JM128 applies an LCD port with adjustable contrast input. The LCD port is designed to support the CM082B-SGR1-Z LCD from FEMA Electronics. A 2x7 socket header must be installed on the LCD module for connection to the LCD port.

The LCD port supports a 2x20, STN type, reflective, character LCD panel. LCD panel contract is adjustable using the CONTRAST pot. The LCD setup does not support current cursor position read-back.

The LCD port is connected to serial peripheral interface port #1 on the target MCU. A shift data to a parallel format required by the LCD.

LCD Port Connectors

The LCD control and data signals are connected directly to the MCU_PORT I/O headers. The signal arrangement is designed to coincide with the SPI port of a line of plug-in modules designed by Axiom Manufacturing. To provide maximum flexibility, the select signal SS* has been connected to both a dedicated SS* output and to a GPIO signal on the MCU module. An option header at SS*, selects the select signal source. An option header at LCD_EN also allows the user to disconnect the LCD module from the MCU_PORT signal lines. To prevent signal corruption when using the SPI signals as general purpose I/O, the user should remove the shunts on LCD_EN and SS* option headers.

Figure 10: LCD_PORT – J13

GND	1	2	VDD
CONTRAST	3	4	RS
R/W*	5	6	EN
DB0	7	8	DB1
DB2	9	10	DB3
LCD_D4	11	12	LCD_D5
LCD_D6	13	14	LCD_D7

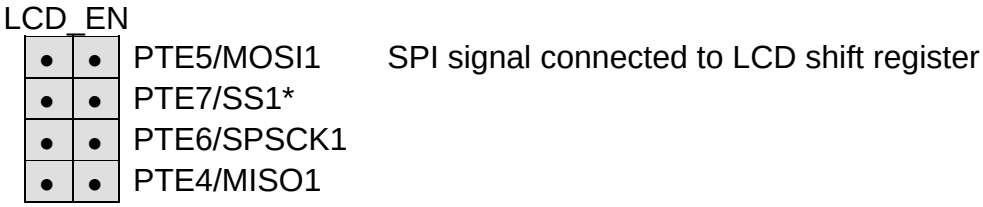
SPI data bit definitions to LCD Port:
LCD_D[7..4] – LCD data bits D[3..0]
DB[3..0] – Unused, 10K ohm pull-downs installed
R/W – Read/Write pin, set to 0 volts, Read only
EN – LCD enable input, 1 = LCD enable
CONTRAST – LCD contrast input
RS – Register Select, 0 = LCD Command, 1 = LCD Data

NOTE: The LCD module must be connected directly to the LCD port. If a cable is used to connect the LCD module, ensure the VDD and GND inputs are not reversed.

LCD Enable

The LCD_EN option header allows module SPI signals to be used as general purpose I/O if needed. Removing the option header shunt prevents the shift register from loading the GPIO signal.

Figure 11: LCD_EN Option Header



USB CONTROLLER

The EVB51JM128 provides an on-board USB physical layer interface (PHY) capable of Host mode, Device mode, and On-the-Go (OTG) mode applications. A Type-A USB connector supports Host mode connections. A miniAB connector supports OTG applications. An optional 6-in-1 USB cable supports Device mode applications. The output USB signal lines (USBP, USBN) are biased either manually or under program control. Option headers at PD_EN and USPD are used to configure the USB lines manually. These two option headers are used to configure the various USB modes and speeds.

A MAX3353, configurable charge-pump applies the pull-up/pull-down resistor configuration under program control. This charge pump also provides the OTG VBUS current when in HOST mode. Pull-up and pull-down configuration may also be applied to the USB data lines independently of the charge-pump. Refer to the USB2.0 specification for further details.

The OTG_EN option header connects the MAX3353 to the target MCU for programmatic control of USB lines for OTG applications. This header also allows signals to the MAX3353 to be disconnected if not used. This prevents signal loading when the USB functionality is not required.

Table 9: OTG_EN

Signal	MAX3353 I/O
PTH0	SDA
PTH1	SCL
PTB4	INT*
PTC7	ID_OUT

An ADM869L, hi-side switch, provides programmatic switching of output voltage for Host mode USB applications. The part is configured for high current output to support a wide-range of applications. The HOST_EN option jumper allows the target MCU to enable or disable USB voltage output under program control. The hi-side switch also provides an active-low FAULT* output to indicate failure.

Table 10: HOST_EN

Signal	ADM869L I/O
PTH4	ON*
PTG0	FAULT*

The VBUS_SEL option header allows the user to configure the voltage source used to power VBUS when in HOST mode. Setting the VBUS_SEL jumper to the HOST position sources VBUS from the on-board voltage regulator. The on-board regulator will supply up to 500mA of current on VBUS when selected. The OTG position selects VBUS from the charge-pump at U4. The charge-pump sources a minimum of 8mA on VBUS when selected.

Table 11: VBSEL

Signal	ADM869L I/O
PTH4	ON*
PTG0	FAULT*

Refer to the MAX3353E datasheet for details on the operation of the configurable charge-pump. Refer to the ADM869L datasheet for details on the operation of the hi-side switch.

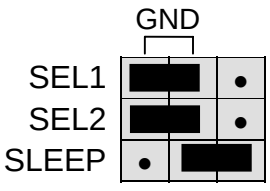
ACCELEROMETER

The EVB51JM128 applies an MMA7260Q, 3-axis accelerometer for tilt and motion-sense applications. The accelerometer supports 4 user selectable sensitivities - 1.5g / 2g / 4g / 6g. The SLEEP* input allows the device to be placed in a low-power mode. Separate X-, Y-, and Z-axis readings are routed to the MCU. The X-axis output is routed to two separate inputs on the target MCU. Low-pass filters remove hi-frequency components on each axis output.

Accelerometer Configuration

Accelerometer configuration is controlled either manually or under program control. Two option headers select the accelerometer sensitivity and one option header places the device in low current, SLEEP, mode.

Figure 12: Accel Configuration Header



NOTES

Jumper set to PTxx – input controlled by MCU
Jumper set GND – input low
Jumper OFF – input high

An option header at ACC_OUT allows the user to disconnect the accelerometer output if necessary.

Table 12: **ACC_OUT Option Header**

Signal	MCU Input
X	PTD0/ADP8/ACMP+
X	PTB3/SS2*/ADP3
Y	PTB0/MISO2/ADP0
Z	PTB1/MOSI2/ADP1

NOTE: The accelerometer is sensitive to power start-up requirement imposed by the USB bus. If the accelerometer fails to function as expected, when powered from the USB bus, apply power to the board from an externals power supply. This will allow the accelerometer to start-up and function normally.

MCU_PORT

The MCU PORT provides user access to the MCF51JM128 I/O ports. Refer to the MCF51JM128 Integrated Device Reference Manual for signal details.

Figure 13: MCU_PORT Connector

VDD	1	2	IRQ*/TPMCLK
VSS	3	4	RESET*
PTE0/TXD1	5	6	BKGD*/MS
PTE1/RXD1	7	8	VUSB33
PTG0/KBIP0	9	10	PTB0/MISO2/ADP0
PTG1/KBIP1	11	12	PTB1/MOSI2/ADP1
PTE2/TPM1CH0	13	14	PTB2/SPSCK2/ADP2
PTE3/TPM1CH1	15	16	PTB3/SS2/ADP3
PTE5/MOSI1	17	18	PTB4/KBIP4/ADP4
PTE4/MISO1	19	20	PTB5/KBIP5/ADP5
PTE6/SPSCK1	21	22	PTB6/ADP6
PTE7/SS1	23	24	PTB7/ADP7
PTF0/TPM1CH2	25	26	PTC0/SCL
PTF1/TPM1CH3	27	28	PTC1/SDA
PTF2/TPM1CH4	29	30	PTG2/KBI1P6
PTF3/TPM1CH5	31	32	PTG3/KBI1P7
VREFH	33	34	PTF4/TPM2CH0
VREFL	35	36	PTF5/TPC2CH1
PTD0/ADP8/ACMP+	37	38	PTC5/RXD2
PTD1/ADP9/ACMP-	39	40	PTC3/TXD2
PTD2/KBIP2/ACMPO	41	42	PTG4/XTAL
PTD3/KBIP3/ADP10	43	44	PTG5/EXTAL
PTD4/ADP11	45	46	PTA0/RGPIO0
PTD5	47	48	PTA1/RGPIO1
PTD6	49	50	PTA2/RGPIO2
PTD7	51	52	PTA3/RGPIO3
PTC2/IRO	53	54	PTA4/RGPIO4
PTC4	55	56	PTA5/RGPIO5
PTC6/RXCAN	57	58	PTF6
VSSAD	59	60	PTF7/TXCAN
PTC7	61	62	PTH0/SDA2
VDDAD	63	64	PTH1/SCL2
VDD	65	66	PTH2/RGPIO8
VSS	67	68	PTH3/RGPIO9
USBDN	69	70	PTH4/RGPIO10
USBDP	71	72	PTJ0/RGPIO11
PTA6/RGPIO6	73	74	PTJ1/RGPIO12
PTA7/RGPIO7	75	76	PTJ2/RGPIO13
PTG6	77	78	PTJ3/RGPIO14
PTG7	79	80	PTJ4/RGPIO15

NOTE: Only primary signal name is applied to MCU_PORT silkscreen.

TROUBLESHOOTING

The EVB51JM128 is fully tested and operational before shipping. If it fails to function properly, inspect the board for obvious physical damage first. Verify the communications setup as described under GETTING STARTED.

Most common problems are related to improperly configured options or communications parameters.

1. Verify the +3.3V and +5V voltage indicators are ON.

2. Verify input power is connected. Using a multi-meter, measure at least +7V at input power.

3. Verify default option jumper settings and RESET the board.

4. Verify the PC COM port is working by substituting a known good serial device or by doing a loop back diagnostic.

5. If the accelerometer fails to function as expected when powered from the USB BDM, apply power to the board from an external power supply.

6. Disconnect all external connections to the board except for UART0 to the PC and the wall plug and check operation again.

Contact support@axman.com by email for further assistance. Provide board name and describe problem.