UM0156
USER MANUAL

SDK-ST10F269 Quick Start Software Development Kit

Introduction

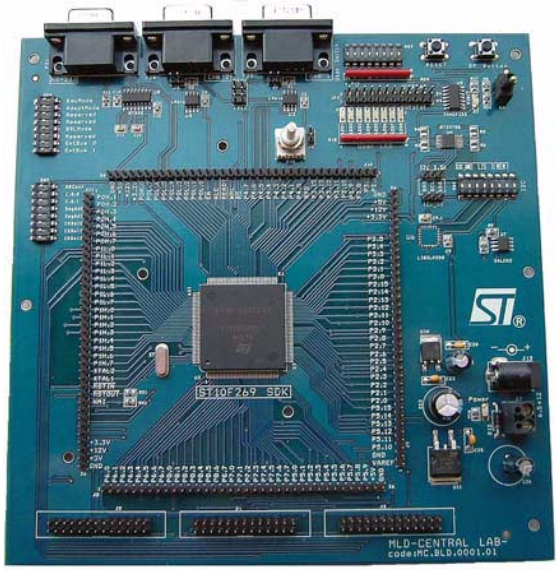
This SDK-ST10F269 Quick Start Software Development Kit User Manual provides extensive information about the development board, including board diagrams, associated schematics, main components, and connectors. The SDK-ST10F269 Kit includes a two-layer, low-cost development board with an ST10F269 16-bit Embedded Flash Memory Microcontroller. The board features versatile circuitry which allows the user to develop a variety of applications. The SDK-ST10F269 is considered a general purpose application board used for developing advanced motor control solutions and processing external data (e.g., sensor outputs).

Three dedicated connectors for motion control allow the user to control different kinds of motors by plugging in external power motor boards. An RS232 connector, two Controller Area Network (CAN) connectors, and one I^2C connector are used for additional external device management. In particular, the I^2C bus framework is used to connect to an EEPROM IC embedded in the board (see *Figure 3 on page 7*).

See associated datasheets and technical literature for details about the components related to the ST10F269 development board (on the companion CD-ROM or on the web):

- http://www.st.com/mcu/ (ST10F269 information and User Manual)
- http://www.st.com/powerspin/ (L6205, L6235 information)
- http://www.st.com/ (L6386 information)

Figure 1. SDK-ST10F269 Development Board



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1 Main Devices and Features

The SDK-ST10F269 Development Board allows the user to perform general motor control tasks more easily because of the topology used on the board as well as improved software programming.

1.1 ST10F269Z2 16-bit Microcontroller

The ST10 core features include:

- 16-bit CPU With 4-stage Pipeline;
- 50ns instruction cycle time at 40MHz Max CPU Clock;
- Multiply/Accumulate Unit (MAC) 16 X 16-bit Multiplication, 40-bit Accumulator;
- Repeat Unit;
- enhanced Boolean bit manipulation facilities;
- additional instructions to support HLL and operating systems; and
- single-cycle context switching support.

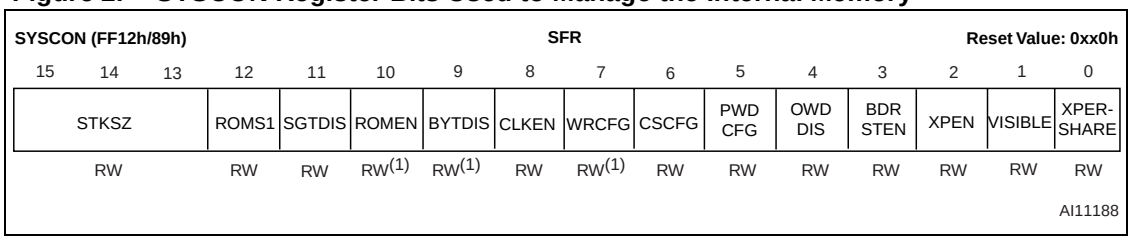
The ST10 System Configuration is accessible through 16 microcontroller DIP switches on the board. They allow the user direct access to the internal memory via the SYSCON register bits (see *Figure 2*, and *: Appendix B: SDK-ST10F269 Schematics*).

Note: Refer to the documents listed in the *Introduction on page 1* or to those attached to the kit for further information on program setting.

For the user's convenience, the ST10 I/O pins on the Development board are split into four main connectors located on each side of the ST10 device (see *Figure 3 on page 7* and *: Appendix A: Strip-line Pin Descriptions on page 22*).

See *Figure 4: ST10F269 Connections, Top View on page 8* and *Figure 5: ST10F269 Block Diagram on page 9* for more details.

Figure 2. SYSCON Register Bits Used to Manage the Internal Memory



Note: 1 These bits are set directly or indirectly, according to the PORT0 and $\overline{EA}$ pin configuration during the reset sequence.

Figure 3. SDK-ST10F269 Development Board Layout

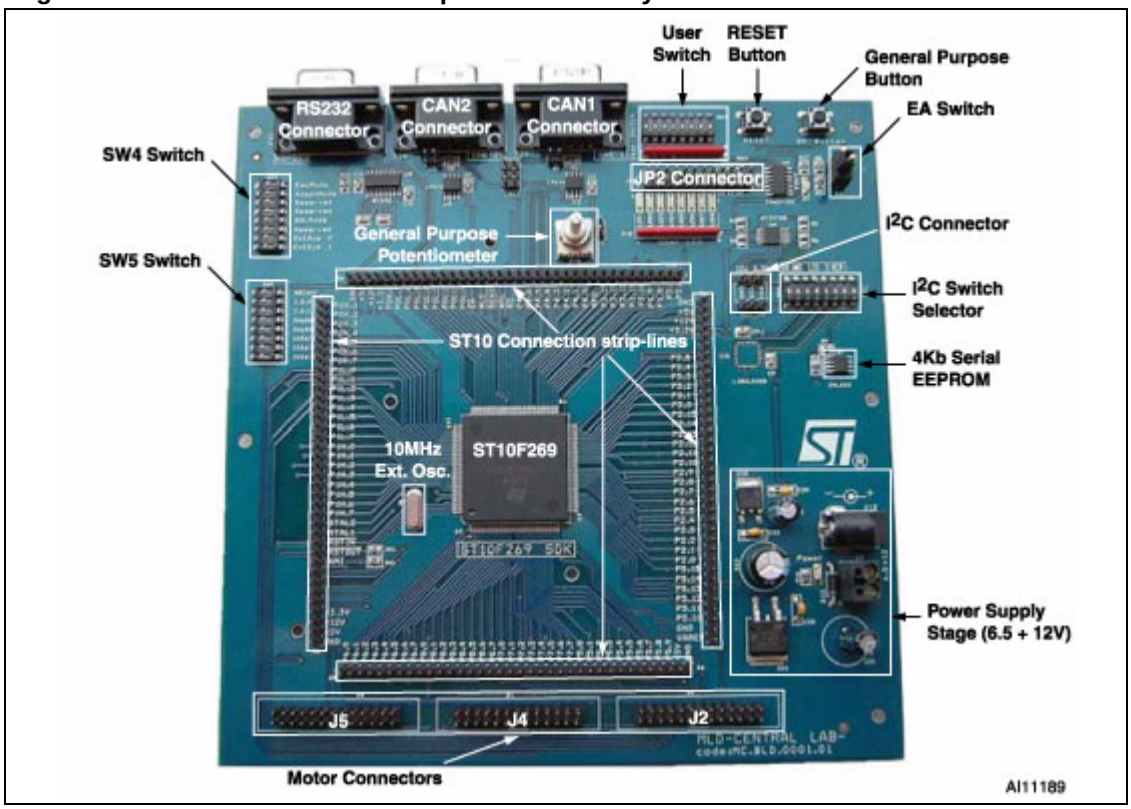


Figure 4. ST10F269 Connections, Top View

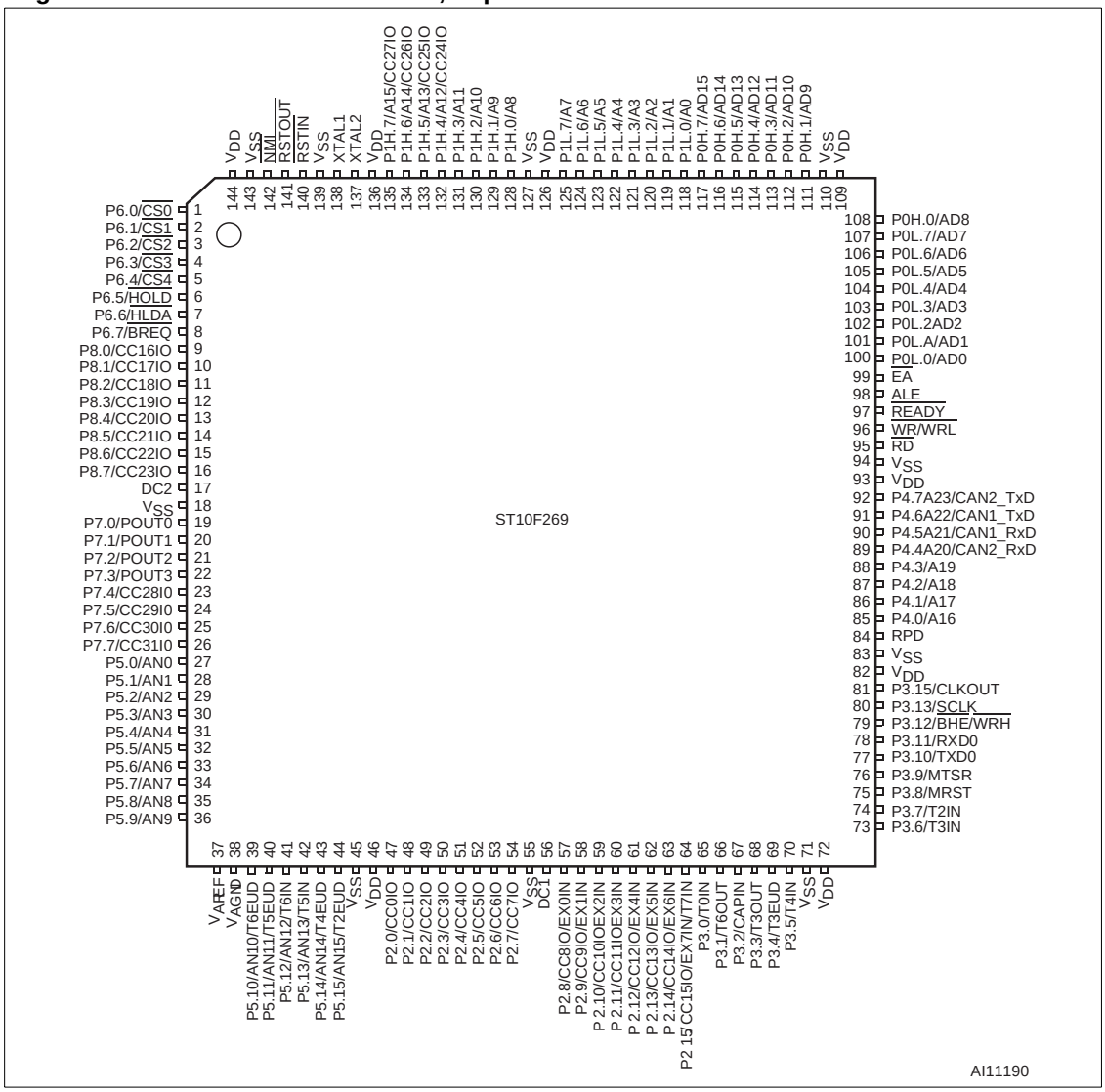
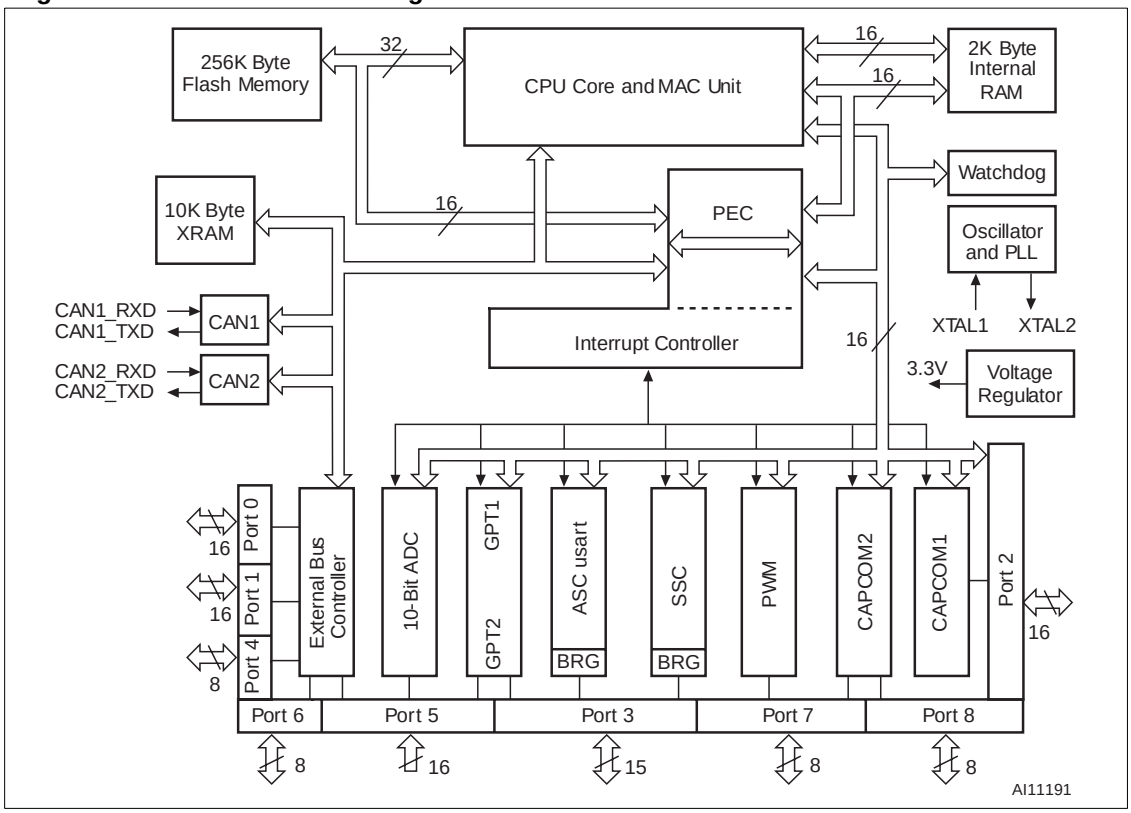


Figure 5. ST10F269 Block Diagram



1.2 M24C04 4Kbit Serial I²C Bus EEPROM

The M24C04 core features include:

- Two-wire I^2C Serial Interface;
- supports 400kHz Protocol;
- write control input;
- BYTE and PAGE WRITE (up to 16 Bytes);
- RANDOM and SEQUENTIAL READ modes;
- self-timed programming cycle;
- automatic address incrementing;
- enhanced ESD/latch-up behavior;
- more than 1 million Erase/WRITE cycles; and
- more than 40-year data retention.

The M24C04 allows the developer to store and restore user data through a standard I^2C bus interface. It is accessible through 3 switches on the board which connect to the ST10F269 via the Synchronous Serial Channel (SSC) port (see *Figure 3 on page 7*).

Note: Refer to the M24C04 datasheet for more details (http://www.st.com/eeprom/).

2 Main Platform Features

2.1 User Interfaces

The main interfaces used to communicate with the SDK-ST10F269 platform include (see *Figure 3 on page 7*):

- two CAN 2.0B interfaces which operate on one or two CAN buses (30 or 2x15 message objects);
- one RS232 connector for serial signal communication with external devices;
- one I^2C connector for additional external device management;
- three dedicated connectors for motion control (external power motor boards);
- a series of general purpose LEDs and DIP switches;
- one potentiometer and a push-button; and
- ST10 pins positioned within easy reach of the user.

To facilitate use of the I^2C bus to manage external devices, it is designed to host both, 3.3V and 5V devices, and the ST2378E ESD-protected, Bidirectional, ±15kV High Speed Level Translator is used to provide the level shifting necessary to allow reliable operation in multi-voltage systems.

Note: Refer to the ST2378E datasheet for more details (http://www.st.com/).

The eight general purpose Light Emitting Diodes (LEDs) may be used for end-user applications. They can be activated via the JP2 connector.

The potentiometer and push-button may be set in different and independent ways for general purpose uses.

2.2 Memory Organization

- 256K Bytes of on-chip single voltage Flash memory with Erase/Program controller;
- up to 1K Erase/Program cycles;
- up to 16 MB of linear address space for code and data (5 MB with a CAN);
- 2K Bytes of on-chip internal RAM (IRAM); and
- 10K Bytes of on-chip extension RAM (XRAM).

2.3 Communication Bus with External Peripheral Access

- programmable external bus characteristics for different address ranges;
- 8-bit or 16-bit external data bus;
- multiplexed or de-multiplexed external Address/Data buses;
- five programmable chip select signals; and
- Hold-acknowledge bus arbitration support.

2.4 Managing Interrupts (Hardware)

- 8-channel Peripheral Event Controller for single cycle, interrupt-driven data transfer; and
- 16-levels of priority for the Interrupt System with 56 sources, and a sampling rate down to 25ns at 40MHz.

2.5 Timers and Pulse Width Modulation (PWM) Units

- two multi-functional general purpose timer units with 5 timers; and
- 4-channel PWM units.

2.6 Analog-to-Digital Conversion (ADC)

- 16-channel at 10-bit resolution; and
- 40MHz CPU clock with 4.85µs conversion time.

2.7 Other General Features

- two 16-channel Capture/Compare units;
- synchronous/asynchronous serial channel;
- high-speed synchronous channel;
- programmable watchdog timer and oscillator watchdog;
- on-chip bootstrap loader;
- on-chip Phased Locked Loop (PLL);
- direct or prescaled clock input;
- Real Time Clock (RTC);
- up to 111 general-purpose I/O lines, individually programmable as Input, Output or Special Function, with programmable hysteresis threshold;
- idle and power-down modes;
- 5V ±10% single voltage supply (embedded regulator for 2.7V or 3.3V core supply);
- available in Extended (–40° to 125°C) and Industrial (–40° to 85°C) temperature ranges; and
- packages include the 144-pin PQFP and TQFP.

Note: Refer to the ST10 information listed in the *Introduction on page 1* for device details.

3 Connectors

3.1 On-board Motor Control Connectors

The SDK-ST10F269 board provides an embedded solution (3 modular connectors) for power requirements up to 3000W, so they are well suited for driving motors (e.g. BLDC, Brushless Direct Current) via an appropriate external motor board. The various power boards that can be connected to the SDK-ST10F269 (see *Figure 6*) are optimized to support a wide variety of advanced motor control applications (i.e., the ability to address up to 4 PWM channels). The power boards also provide these signals:

- motor turn-on and excitation;
- brake activation;
- Forward/Reverse direction; and
- Hall Effect sensor feedback, which could be combined with encoder signals coming for the control system in order to perform closed control loops with Pulse Width Modulation (PWM) and a tachometer dynamo.

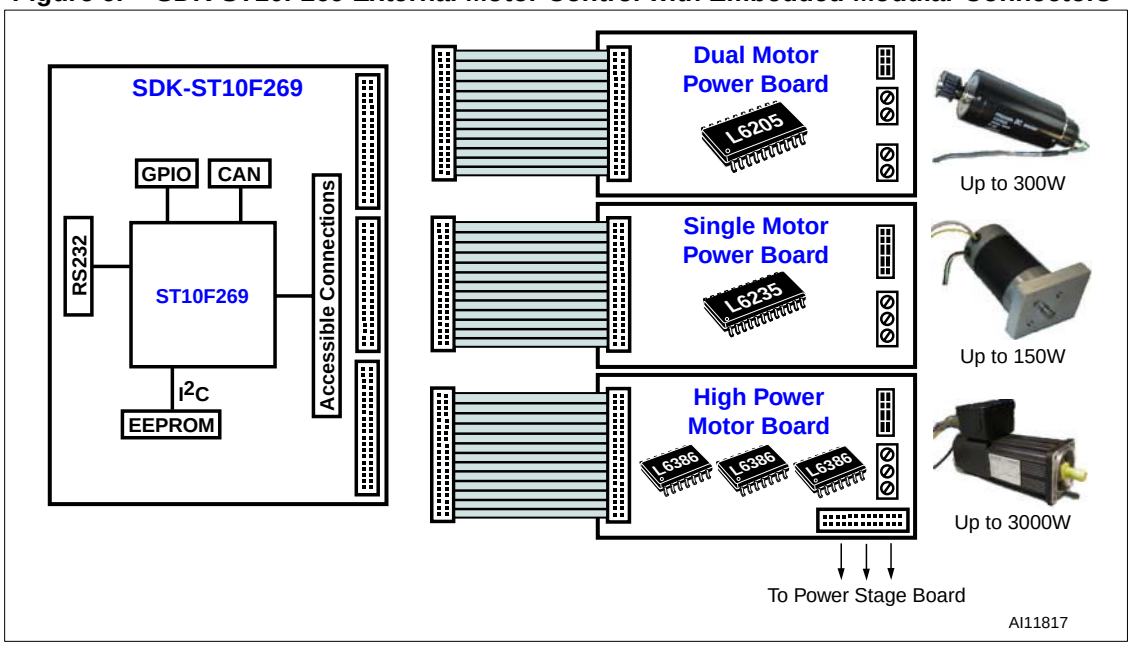
ST offers several motor control boards with single chip motor driver solutions (see *: Appendix C: Motor Board Example Schematics on page 28*), for example:

- L6205 Dual Full Bridge (DC, up to 300W), and
- L6235 DMOS 3-Phase BLDC (up to 150W)

Note: Refer to the L6205 and L6235 information listed in the *Introduction on page 1* for device details.

Note: Care must be taken with respect to the L6205-based motor control board and third connector on the SDK-ST10F269, which offers two PWM signals appropriate for this development board.

Figure 6. SDK-ST10F269 External Motor Control with Embedded Modular Connectors

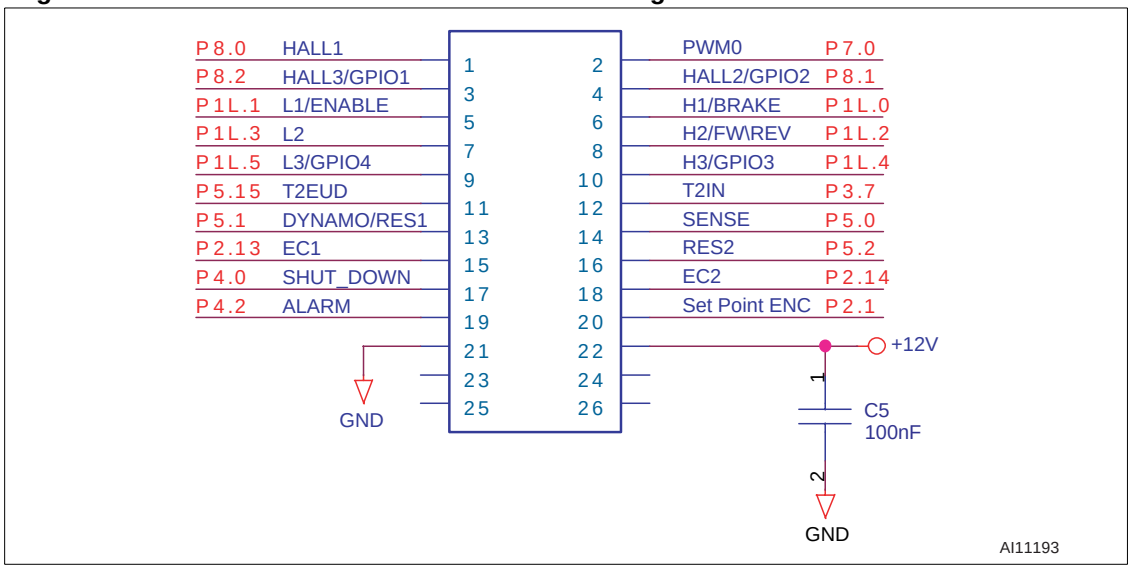


3.2 Power Board Connectors (for Motor Control)

Each of the three power connectors on the SDK-ST10F269 development board has 26 pins (see *Figure 7*). When a connector is used with a compatible motor board, the user can drive motors with the following signals:

- PWM,
- Hall Effect sensor/GPIO,
- Power/Brake,
- Encoder,
- Tachometer/Resolver,
- Shutdown, and
- Alarm.

Figure 7. Power Board Connector and Related Signals



3.3 Additional External Device Access Connectors

3.3.1 RS232

SDK-ST10F269 board has one RS232 connector for serial signal communication with external devices (see *Figure 8* and *Table 1*).

Figure 8. RS232 DB9 Connector

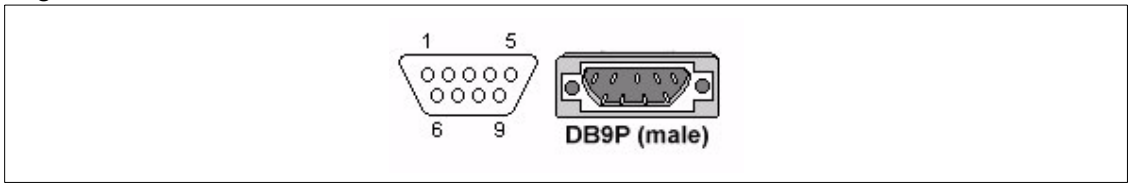


Table 1. RS232 Connector Pin Description

Pin	Name	Direction	Description
1	CD	In	Carrier Detect
2	RXD	In	Receive Data
3	TXD	Out	Transmit Data
4	DTR	Out	Data Terminal Ready
5	GND	–	System Ground
6	DSR	In	Data Set Ready
7	RTS	Out	Request To Send
8	CTS	In	Clear To Send
9	RI	In	Ring Indicator

3.3.2 Controller Area Network (CAN) Connectors

The two CAN connectors on the board perform bus-based data transfers which allow multiple connections with external devices. *Figure 9* shows a male connector viewed from the connector side (the corresponding female connector perspective would be viewed from the soldering side). The associated signals are given in *Table 2*.

Figure 9. CAN Connector, 9-pin DSUB Type

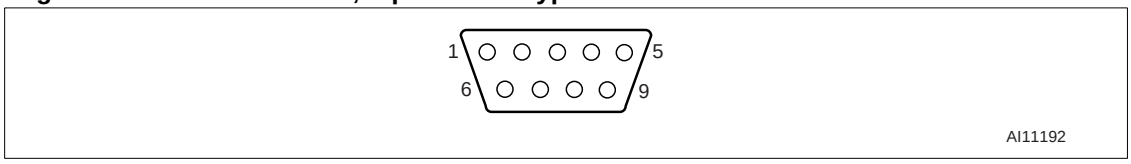


Table 2. CAN Pin Descriptions

Pin	Name	Description
1	–	Reserved
2	CAN_L	CAN_L Bus Line (dominant low)
3	CAN_GND	CAN Ground
4	–	Reserved
5	CAN_SHLD	Optional CAN Shield
6	GND	Optional CAN Ground
7	CAN_H	CAN_H Bus Line (dominant high)
8	–	Reserved (error line)
9	CAN_V+	Optional Power

4 DIP Switch Configuration

Developers can easily manage SDK-ST10F269 characteristics by using the three DIP switch batteries provided on the board (see *Figure 15 on page 27*).

4.1 SW4 Initialization

The initialization settings (see *Figure 10 on page 18*) are activated during the test phase (see *Figure 3 on page 7* for SW4 location). Understanding these settings will help the user understand how to modify them for specific applications.

4.1.1 8 - Emu. Mode

This switch selects the Emulation Mode when it is set to logic low during a reset. This mode of operation allows the user to access the XBUS peripherals via the external bus interface. The Emu. Mode can be used also for special emulator purposes.

4.1.2 7 - Adapt. Mode

This switch selects the ADAPT Mode when it is set to logic low during a reset. In this mode of operation the ST10F269 goes into a passive, floating state. This mode allows the user to switch the Control Unit virtually OFF so the user can perform applications for special emulator purposes only.

4.1.3 6, 5, 3 - Reserved.

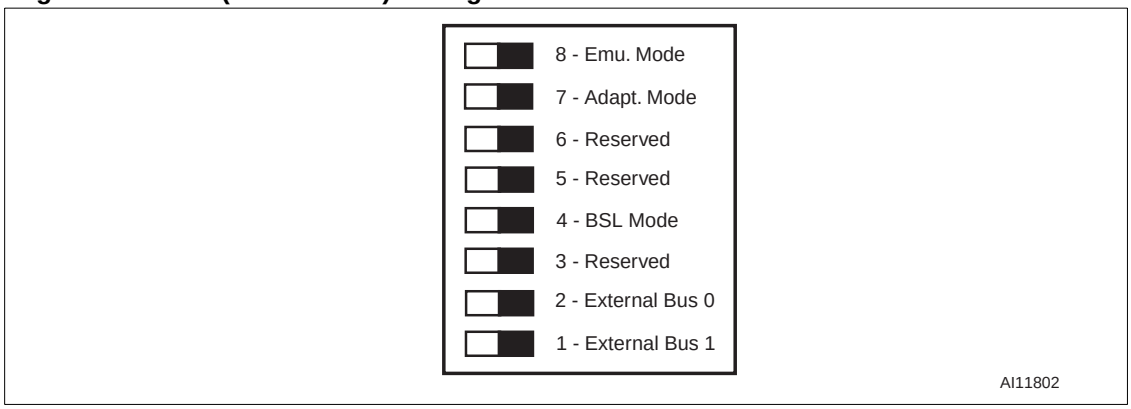
4.1.4 4 - BSL Mode (until a hardware reset occurs)

This switch activates the on-chip Bootstrap Loader when it is set to logic high during the reset phase. This Bootstrap Loader mode allows the user to move a small start code (about 32 bytes) into the internal RAM of the unit via the serial interface (ASC0). The ST10F269 remains in BSL Mode until a hardware reset occurs. This mode of operation may also be exited through a software reset instruction. This option allows the user to program the device.

4.1.5 2, 1 - External Bus 0, 1

These switches allow the user to work in Bus Mode. *Table 3 on page 18* shows the correct initialization settings.

Figure 10. SW4 (User Switch) Configuration



Note: The black color shows the switch status to be ON.

Table 3. External Bus Chip Initialization

External Bus 1	External Bus 0	External Data Bus Width	Ext. Address Bus Mode
ON	ON	8-bit Data	Demultiplexed Addresses
ON	OFF	8-bit Data	Multiplexed Addresses
OFF	ON	16-bit Data	Demultiplexed Addresses
OFF	OFF	16-bit Data	Multiplexed Addresses

4.2 SW5 Initialization

The initialization settings (see *Figure 11 on page 20*) are activated during the test phase (see *Figure 3 on page 7* for SW5 location). Understanding these settings will help the user understand how to modify them for specific applications.

Note: Refer to the documents listed in the *Introduction on page 1* or to those attached to the kit for further information on ST10F269 program setting.

4.2.1 8 - Write Conf.

This switch is used to select the operation mode of the $\overline{WR}$ and $\overline{BHE}$ pins. When set to logic high, this switch selects the standard mode, and if it is set to logic low, the alternate function is selected.

4.2.2 7, 6 - Chip Sel.

These switches define the number of chip select lines activated after a reset signal occurs. The user is allowed to select which Port 6 pins drive the external chip select signals, and which may be used for general purpose I/O lines (see *Table 4 on page 20*).

4.2.3 5, 4 - Segm. Addr.

These switches activate the control the lines that establish the number of active segment address lines during the reset phase.

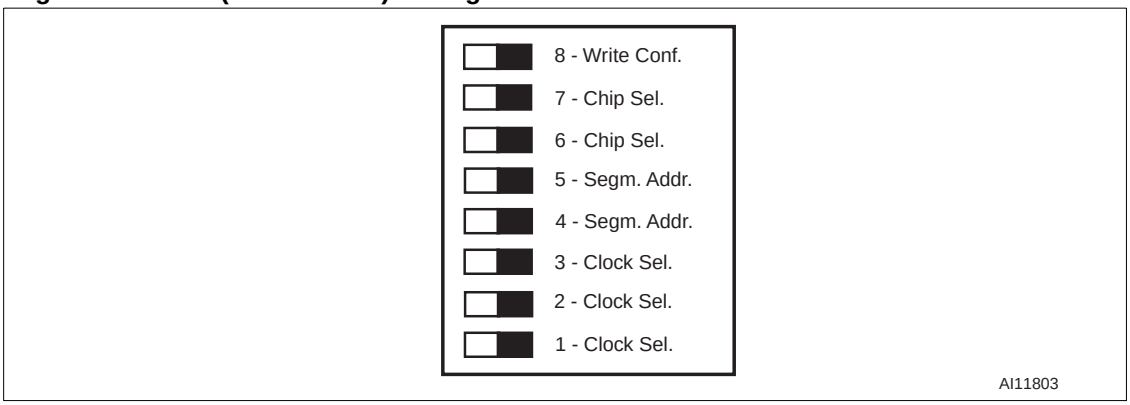
With this setting it is possible to select the Port 4 pins to work as general I/O lines, as well as become a part of the controller address logic. Depending on the selection made, the required address space is chosen right after the system start-up, and the program may address all of the locations without prior programming (see *Table 5 on page 20*). If the Port 4 segment address lines are not all enabled, the ST10F269 uses its complete 24-bit addressing mechanism. This allows CS signals to be generated over the entire address space, even if the external bus width is less than 24 bits.

Note: The number of segment address lines selected cannot be changed with software after a reset occurs.

4.2.4 3, 2, 1 - Clock Sel.

Since the ST10F269 includes an internal PLL circuit, the external oscillator device does not need to be driven by a high frequency crystal. The external oscillator output either directly feeds the CPU and peripherals, or it can be connected to the on-chip PLL circuit which then provides the CPU clock (see *Table 6 on page 20*).

Figure 11. SW5 (User Switch) Configuration



Note: The black color shows the switch status to be ON.

Table 4. Chip Select Line Settings

Chip Select 1	Chip Select 0	Active Chip Selected	Comment
OFF	OFF	From CS0 to CS4	Port 6 pins available for I/O
OFF	ON	None	Presetting of SDK-ST10F269
ON	OFF	CS0, CS1	
ON	ON	From CS0 to CS2	

Table 5. Segment Address Lines

Segm. Addr. 1	Segm. Addr. 0	Segment Address Lines	Directly addressable space
OFF	OFF	A17, A16	256 KByte
OFF	ON	From A23 to A16	16 MByte, CAN modules disabled
ON	OFF	None	64 KByte
ON	ON	From A19 to A16	1 MByte, default setting

Table 6. Selection of CPU Clock

Clock Sel. 2	Clock Sel. 1	Clock Sel. 0	CPU-Clock Fcpu=fxtal*F	Ext. Clock Input Range (MHz)	PLL Mode(1)
OFF	OFF	OFF	fxtal*4	2.5 to 10	Active
OFF	OFF	ON	fxtal*3	3.33 to 13.33	Active
OFF	ON	OFF	fxtal*2	5 to 20	Active
OFF	ON	ON	fxtal*5	2 to 8	Active
ON	OFF	OFF	fxtal*1	1 to 40	Inactive
ON	OFF	ON	fxtal*1.5	6.66 to 26.66	Active
ON	ON	OFF	fxtal*0.5	2 to 80	Active(2)
ON	ON	ON	fxtal*2.5	4 to 16	Active

1. The SDK-ST10F269 board comes with an external 10MHz oscillator circuit.
2. Additional information is available in the ST10F269 datasheet listed in the *Introduction on page 1*.

4.3 EA Switch

This switch enables the Single Chip Mode (see *Figure 3 on page 7*). By default it is in the ON state. It can be set to the OFF state only if an external Flash memory is connected to the SDK-ST10F269 board.

4.4 User Switch

It is located at the top of the development board (above the ST10F269, see *Figure 3*) so the developer can use the DIP switches to perform I/O operations by linking the JP2 connector to the ST10F269.

4.5 I^2C Switch

This switch is located to the right of the ST10F269, by the edge of the board (see *Figure 3*).

4.5.1 1, 2 - Enable I^2C

These switches connect the ST10F269 to the I^2C bus.

4.5.2 3, 4 - External Devices Connection

These switches allow the user to connect external devices to the I^2C bus.

4.5.3 5 - External Device Interrupt

When an external device is connected to the SDK-ST10F269, this switch allows the ST10F269 to receive external interrupts from the device.

4.5.4 6, 7 - EEPROM Connection

These switches allow the on-board EEPROM to connect to the I^2C bus.

4.6 I^2C 3.3V and 5V 3-pin Connectors

These connectors allow the user to interface the SDK-ST10F269 with external I^2C 3.3V and 5V peripherals.

Note: The ST10F269 only has HSSC peripheral connections. This is to facilitate I^2C or SPI protocol emulations. When HSSC connections are used with external units, the MTSR and MRST pins must be connected together to form an I/O bus. This way, the HSSC peripheral can be used to emulate the I^2C protocol (after it is enabled using the switches).

Appendix A: Strip-line Pin Descriptions

Figure 3 on page 7 shows that all of the ST10F269 connections are traced to four strip-lines around the chip (see *Table 7* for pin assignments by connector).

Starting at the bottom 36-pin strip, J8, and moving counter clockwise around the microcontroller, the rest of the strips are J9, J10, and J11.

Table 7. Strip-line (4) Connector Pin Assignments

Pin	Connector J8	Connector J9	Connector J10	Connector J11
1	P6.0/~CS0	VA_REF	P3.6/T3IN	P0H.1/AD9
2	P6.1/~CS1	VA_GND	P3.7/T2IN	P0H.2/AD10
3	P6.2/~CS2	P5.10/AN10/T6EUD	P3.8/MRST	P0H.3/AD11
4	P6.3/~CS3	P5.11/AN11/T5EUD	P3.9/MTSR	P0H.4/AD12
5	P6.4/~CS4	P5.12/AN12/T6IN	P3.10/TXD0	P0H.5/AD13
6	P6.5/~HOLD	P5.13/AN13/T5IN	P3.11/RXD0	P0H.6/AD14
7	P6.6/~HLDA	P5.14/AN14/T4EUD	P3.12/~BHE/~WRH	P0H.7/AD15
8	P6.7/~BREQ	P5.15/AN15/T2EUD	P3.13/SCLK	P1L.0/A0
9	P8.0/CC16IO	P2.0/CC0IO	P3.15/CLKOUT	P1L.1/A1
10	P8.1/CC17IO	P2.1/CC1IO	RPD	P1L.2/A2
11	P8.2/CC18IO	P2.2/CC2IO	P4.0/A16	P1L.3/A3
12	P8.3/CC19IO	P2.3/CC3IO	P4.1/A17	P1L.4/A4
13	P8.4/CC20IO	P2.4/CC4IO	P4.2/A18	P1L.5/A5
14	P8.5/CC21IO	P2.5/CC5IO	P4.3/A19	P1L.6/A6
15	P8.6/CC22IO	P2.6/CC6IO	P4.4/A20/CAN2.RxD	P1L.7/A7
16	P8.7/CC23IO	P2.7/CC7IO	P4.5/A21/CAN1.RxD	P1H.0/A8
17	P7.0/P_OUT0	P2.8/CC8IO/EX0IN	P4.6/A22/CAN1.TxD	P1H.1/A9
18	P7.1/P_OUT1	P2.9/CC9IO/EX1IN	P4.7/A23/CAN2.TxD	P1H.2/A10
19	P7.2/P_OUT2	P2.10/CC10IO/EX2IN	~RD	P1H.3/A11
20	P7.3/P_OUT3	P2.11/CC11IO/EX3IN	~(WR/WRL)	P1H.4/A12/(*)
21	P7.4/CC28IO	P2.12/CC12IO/EX4IN	~READY	P1H.5/A13/(*)
22	P7.5/CC29IO	P2.13/CC13IO/EX5IN	ALE	P1H.6/A14/(*)
23	P7.6/CC30IO	P2.14/CC14IO/EX6IN	~EA	~EA
24	P7.7/CC31IO	P2.15/CC15IO/EX7IN/T7IN	P0L.0/AD0	P0L.0/AD0
25	P5.0/AN0	P3.0/T0IN	P0L.1/AD1	P0L.1/AD1
26	P5.1/AN1	P3.1/T6OUT	P0L.2/AD2	P0L.2/AD2
27	P5.2/AN2	P3.2/CAPIN	P3.2/CAPIN	P0L.3/AD3
28	P5.3/AN3	P3.3/T3OUT	P3.3/T3OUT	P0L.4/AD4
29	P5.4/AN4	P3.4T3EUD	P3.4T3EUD	P0L.5/AD5
30	P5.5/AN5	P3.5/T4IN	P3.5/T4IN	P0L.6/AD6
31	P5.6/AN6	N.C.	N.C.	P0L.7/AD7
32	P5.7/AN7	N.C.	N.C.	P0H.0/AD8
33	P5.8/AN8	+3.3V	+3.3V	+3.3V
34	P5.9/AN9	+12V	+12V	+12V
35	+5V	+5V	+5V	+5V
36	GND	GND	GND	GND

Note: "(*)" Represents the third alternate functions for pin 20 - CC24IO; pin 21 - CC25IO; pin 22 - CC26IO; and pin 23 - CC27IO.

Appendix B: SDK-ST10F269 Schematics

Figure 12. SDK-ST10F269 Board Schematic, page 1

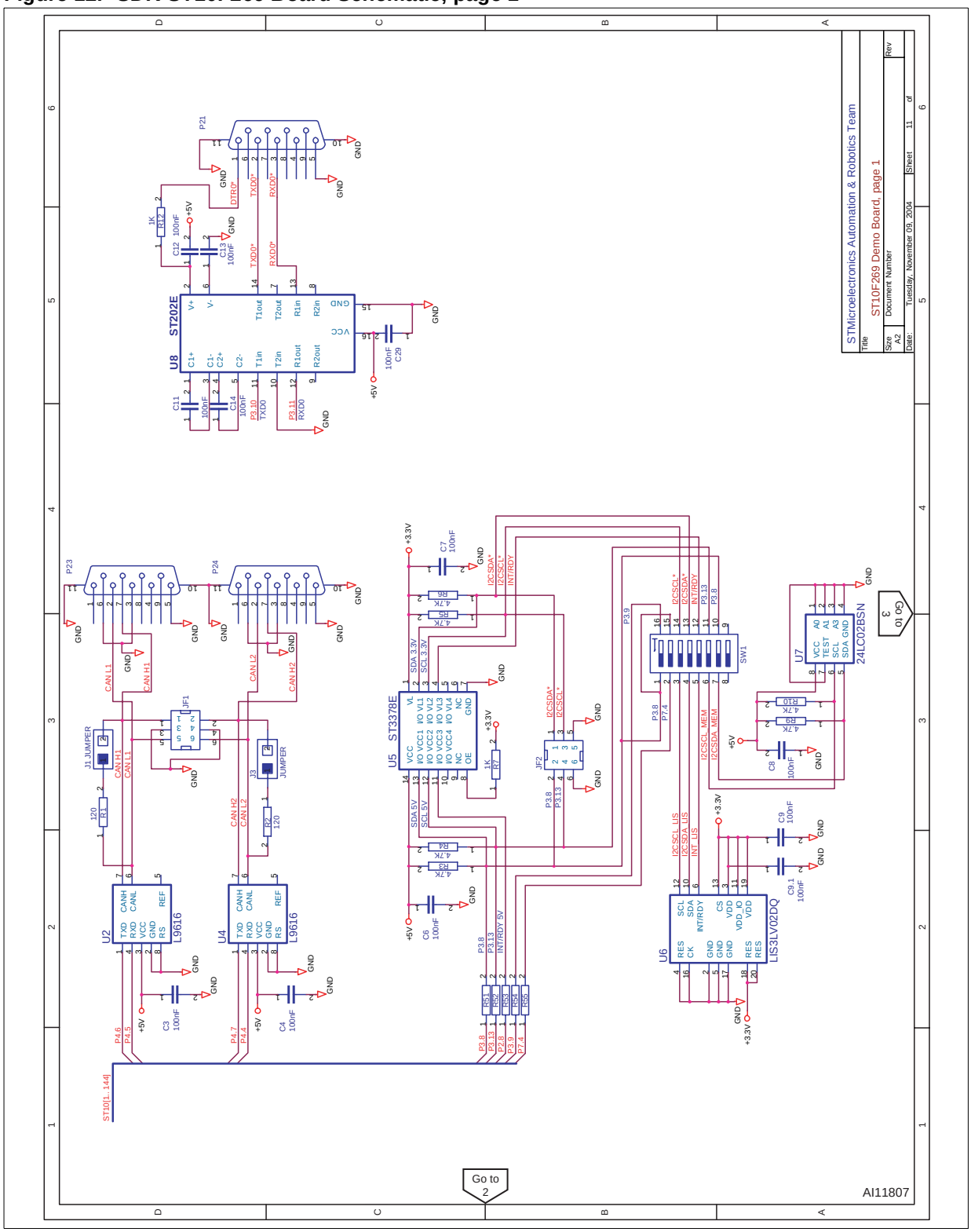


Figure 13. SDK-ST10F269 Board Schematic, page 2

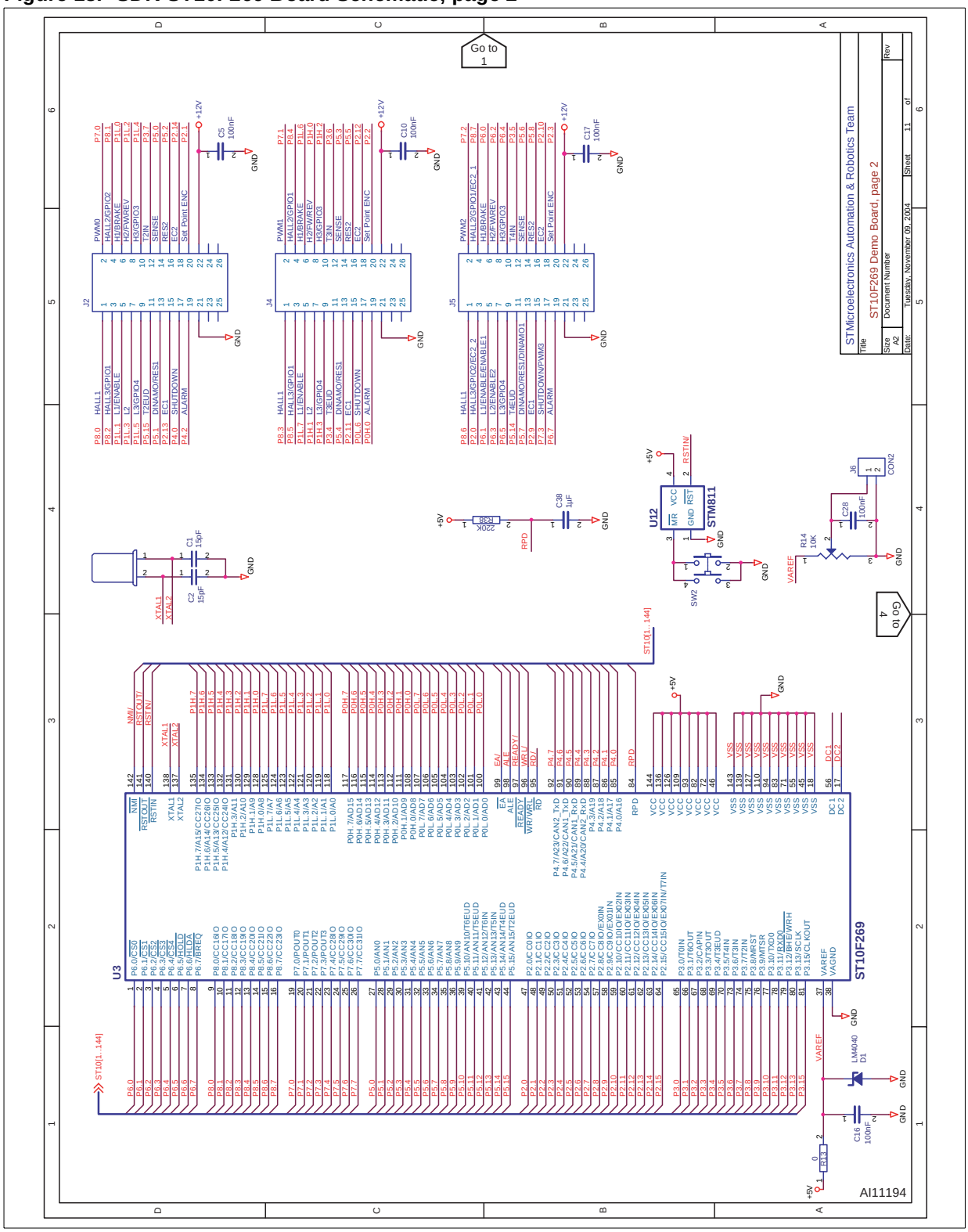


Figure 14. SDK-ST10F269 Board Schematic, page 3

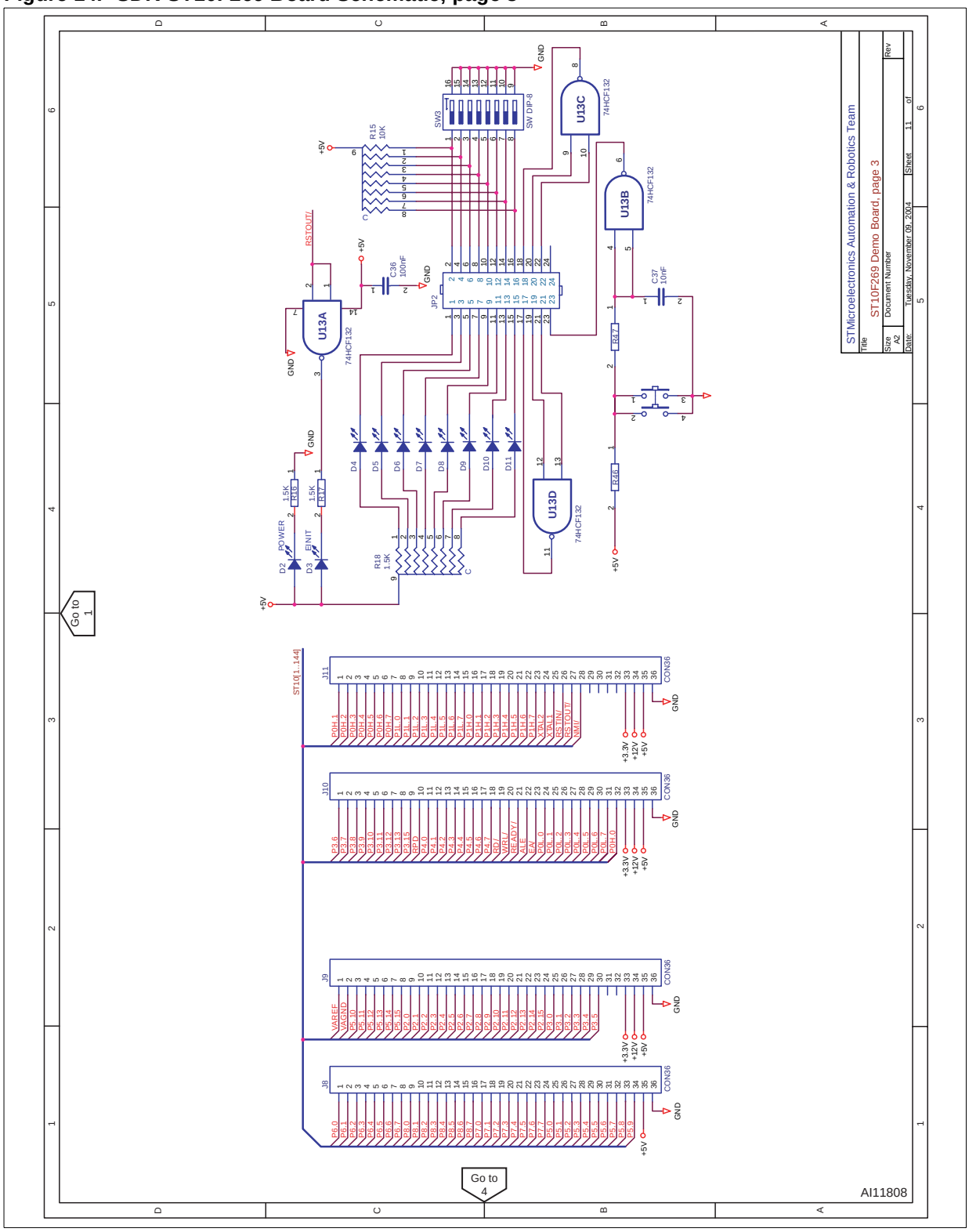
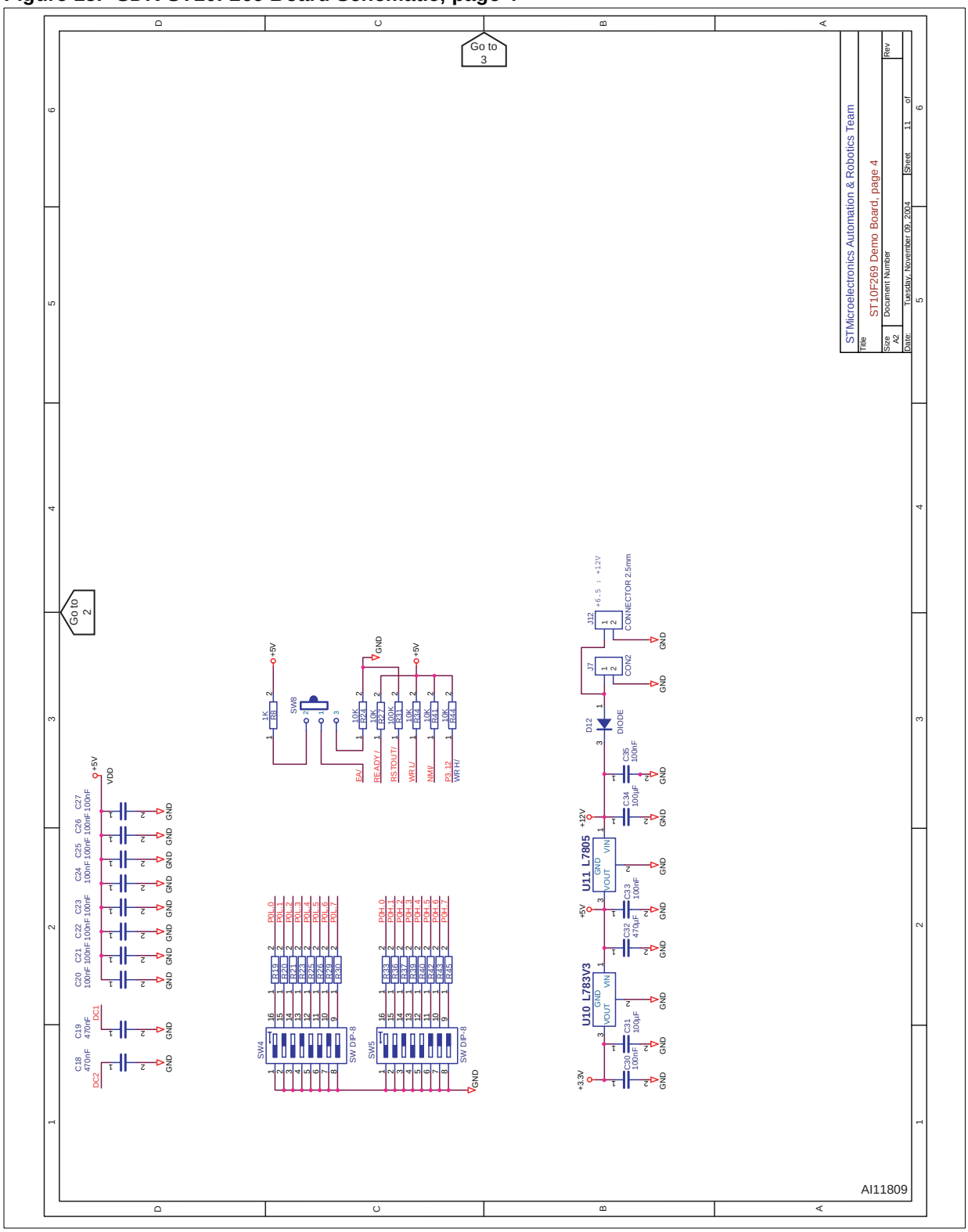


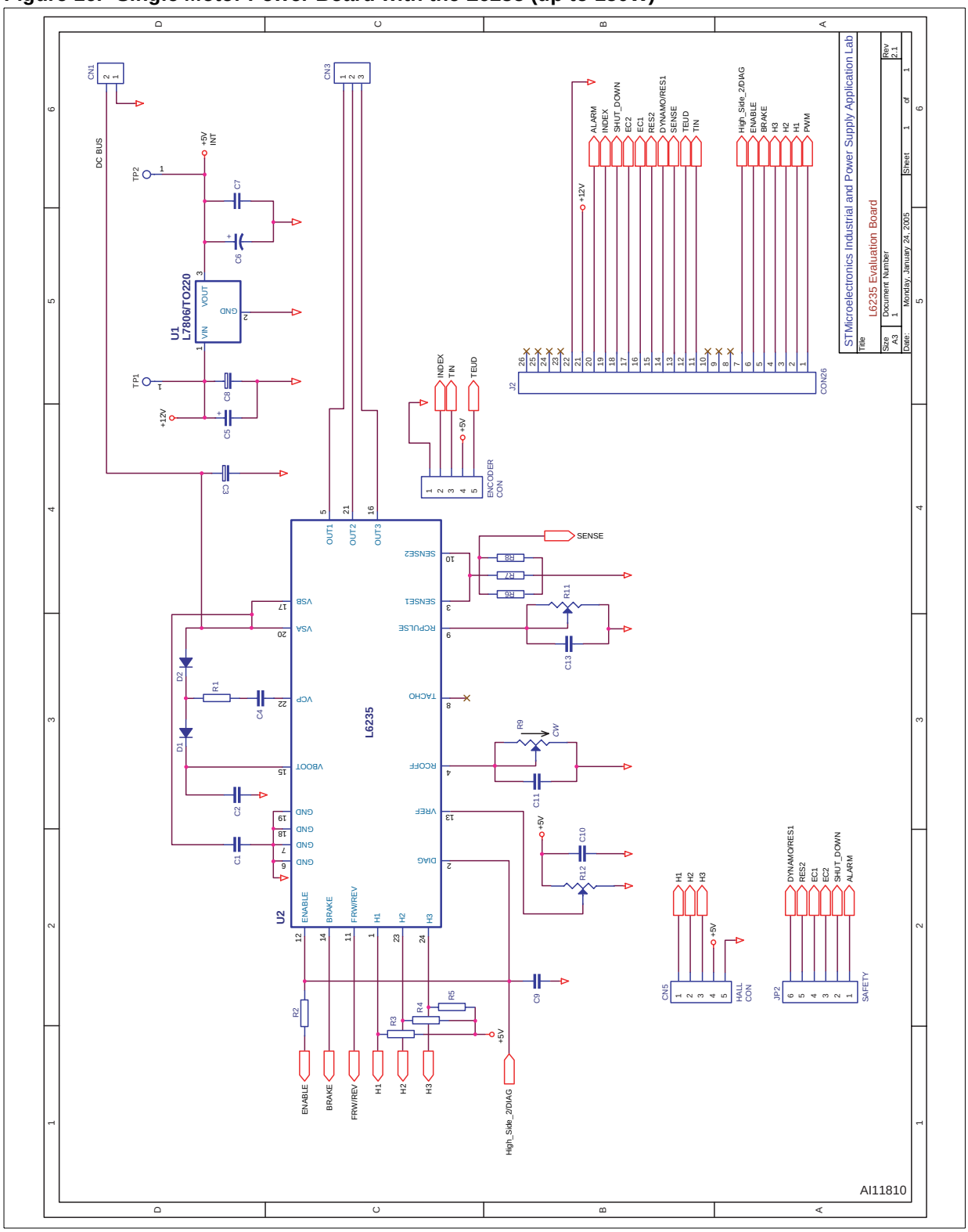
Figure 15. SDK-ST10F269 Board Schematic, page 4



Appendix C: Motor Board Example Schematics

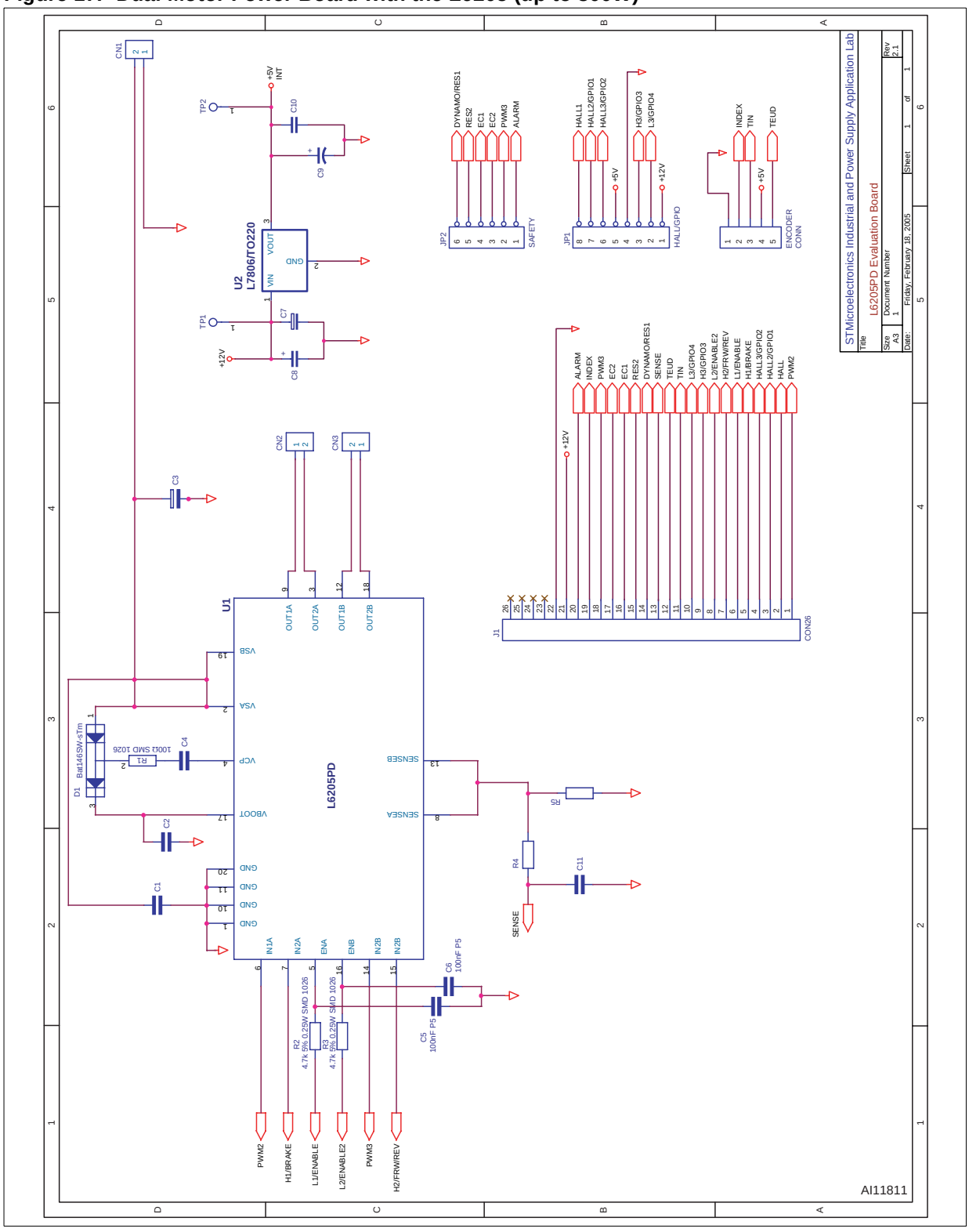
Additional motor control boards can be easily added to SDK-ST10F269 (see *Chapter 3: Connectors on page 13*). ST offers modular solutions for developers who require a lot of flexibility in their motor control designs (up to 3000W).

Figure 16. Single Motor Power Board with the L6235 (up to 150W)



Note: Refer to the L6235 information listed in the Introduction on page 1 for device details.

Figure 17. Dual Motor Power Board with the L6205 (up to 300W)



Note: Refer to the L6205 information listed in the Introduction on page 1 for device details.

Appendix D: SDK-ST10F269 Bill Of Materials

Table 8. Bill Of Materials

Item	Quantity	Reference Part	Size/Description
1	2	C1, C2	15pF
2	26	C3, C4, C5, C8, C9, C10, C11, C12, C13, C14, C16, C17, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C33, C35, C36	100nF
3	4	C6, C7, C18, C19	470nF
4	2	C37, C15	10nF
5	2	C34, C31	100µF
6	1	C32	470µF
7	1	D1	LM4040
8	7	D2, D3, D4, D5, D6, D7, D8	HLMP3 (LED diodes)
9	2	JF2, JF1	CONN FLEX 6 (strip line 3x2)
10	1	JP1	HEADER 9 (RSR232 female connector)
11	1	JP2	CONN PLUG (strip line 12x2)
12	2	J3, J1	JUMPER
13	1	J2	CON22 (strip line 11x2)
14	1	J4	CON23 (strip line 11x2)
15	1	J5	CON24 (strip line 11x2)
16	2	J7, J6	CON2 (strip line 2x1)
17	4	J8, J9, J10, J11	CON36 (strip line 36x1)
18	34	R1, R2, R3, R4, R5, R6, R8, R11, R15, R19, R20, R21, R23, R24, R25, R26, R27, R29, R30, R31, R33, R34, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47	10kΩ
19	2	R12, R7	1kΩ
20	2	R10, R9	4.7kΩ
21	1	R13	100Ω
22	1	R14	RESISTOR VAR 10kΩ
23	7	R16, R17, R18, R22, R28, R32, R35	1.5kΩ
24	4	SW1, SW3, SW4, SW5	SW DIP-8
25	2	SW6, SW2	RESET PUSH-BUTTON
26	1	U1	XTAL
27	2	U4, U2	L9616D CAN DRIVER
28	1	U3	ST10F269 MCU
29	1	U5	ST3378E Level translator
30	1	U7	24LC02BSN Memory
31	1	U8	ST202 RS232 interface
32	1	U10	L783V3 Voltage regulator
33	1	U11	L7805 Voltage regulator
34	1	U12	74HCF132 Nand gate

Appendix E: SDK-ST10F269 CD-ROM Content

The SDK-ST10F269 is a low-cost, 2-layer board. The companion CD for the Quick Start Software Development Kit has everything the user needs to start application development (e.g., tools, code, and documentation), for example:

- a ready-to-use software environment (including sample code) for generating and compiling code of up to 4kb (µVision3 v3.05, from Keil Software, **http://www.keil.com/**);
- ST10Flasher (application by STMicroelectronics that programs the ST10F269 internal Flash memory); and
- Gerber files (which offer developers a more cost-effective way to realize the board).

The CD's root directory provides a short presentation illustrating the main features of the ST10F269 board, as well as a soft copy of this User Manual in PDF format.

Note: Using the HTML file (in the CD's root directory) to browse the CD-ROM is recommended.

Tools

- MonolithicICmotor: Contains Application Notes and Datasheets for driving external motors with the three power motor connectors
- Examples: contains several sub-folders with complete projects for the ST10F269 (refer to the README.txt file for content information)
- FLASHER-KEIL: a brief guide for using the ST10Flasher provided in the CD-ROM
- SDK_Presentation_ST10training: provides an SDK-ST10F269 board presentation and ST10F269 microprocessor startup training
- µVision3 Software: the "C-like" compiler used to generate code to download onto the ST10F269 through the (included) ST10Flasher; ek166v504a is the executable file useful for installing the software environment
- stfl22.zip: contains ST10Flasher which allows developers to download code in hexadecimal format to the ST10F269's Flash memory

  Note: When used with µVision3, the ST10Flasher application may be run directly from the programming environment or separately.

Code

- pack_st10dsp_lib.zip: compressed archive that contains several libraries developed by STMicroelectronics to use the ST10F269 DSP features
- GeberFiles: files that give users the ability to realize their own board (i.e., for printing layouts of the PCB)

  Note: Consult the Readme.txt file prior to using the Gerber files.
- GerberFiles.zip: archive that stores all of the files necessary to develop and print the SDKST10F269

Application Notes

- AN1334: ST10F269/F280 System Reset
- AN1442: Signal Processing with ST10-DSP
- AN1496: Flash Programming/Reprogramming ST10F269/ST10F280
- AN1538: Reducing Analog-Digital Conversion Error Using ST10F269/ST10F280
- AN1544: Designing an Application with ST10F269
- ST10_MAC_alg: ST10 DSP MAC Signal Processing Algorithms

Datasheets

- 74HCT132: Quad 2-input Schmitt NAND Gate
- L9616: High Speed CAN Bus Transceiver
- ST10F269_programmingManual: ST10 family programming manual, Release 1
- ST3378E: 4-bit dual supply 1.71V to 5.5V Level Translator with I/OVcc ±15KV ESD Protection
- 24Cxx: 2Kbit Serial I^2C Bus EEPROM
- L7805AB: Precision 1A Regulator
- LF33: Very Low Drop Voltage Regulator with Inhibit
- ST10F269: 16-bit MCU with MAC Unit, 128K to 256Kbyte FLASH memory and 12Kbyte RAM
- ST202: 5V Powered Multi-channel RS-232 Driver and Receiver
- AN6205: L6205, L6206, L6207 Dual Full Bridge Drivers
- AN_L6235: L6235 Three-Phase Brushless DC Motor Driver
- L6205: DMOS Dual Full Bridge Driver
- L6235: DMOS Driver for Three-phase Brushless DC Motor
- L6386: High-voltage High and Low Side Driver

Other Documents

- ST10F269_ErrataSheet: explains the known functional and electrical problems in the ST10F269Z2Qx, rev. D
- ST10F269_User_Manual: ST10F269 User Manual
- Flyers: documents with summaries of some of the other devices' characteristics
- ST10F269_Flyer: ST10 Advanced 16-bit MCU with DSP-MAC High-volume Flash and ROMless Variants
- SDK_ST10F269_schematics: complete schematics of SDK-ST10F269 board
- SDK-ST10F269_UserManual: this document in PDF format

5 Revision History

Date	Revision	Changes
14-September-2005	1	First edition
24-Sep-2013	2	Updated Disclaimer.

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