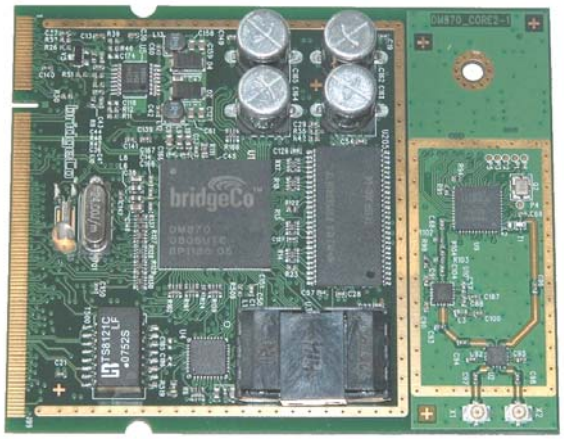
Key features

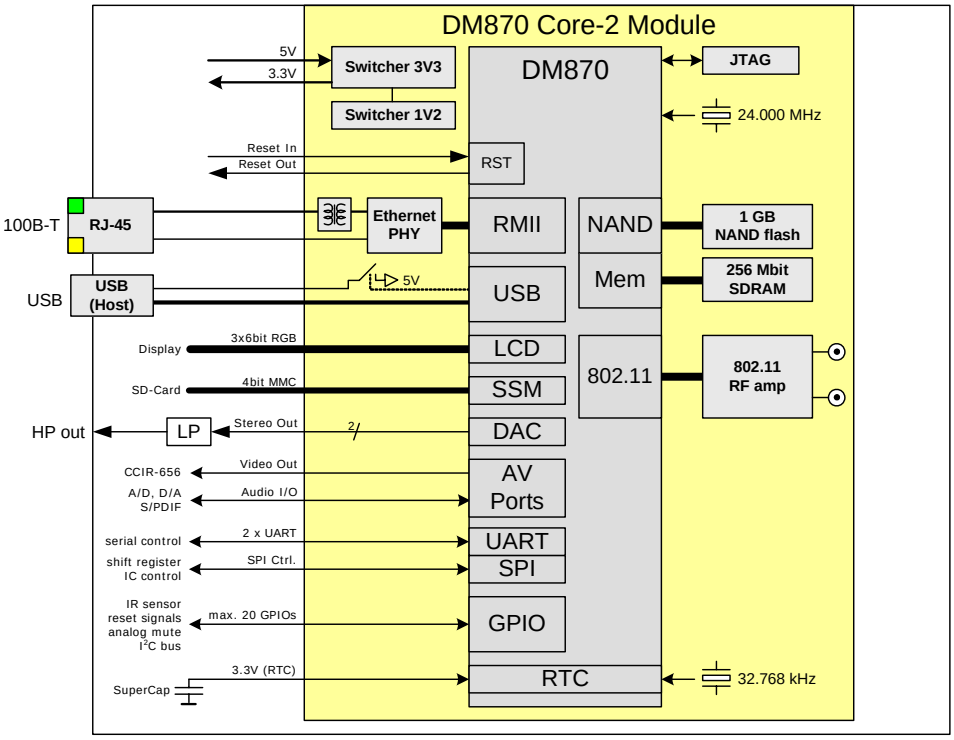
- Complete system on a small module
- Standard SODIMM connector
- Integrated 802.11b/g + ethernet + USB2.0
- Glueless audio, video and control ports
- Single 5V supply
- Provides stabilized 3.3V
- WiFi certified (target)
- FCC certified (target)



Introduction

The DM870 Core-2 module is a single-board networked media player module, based on BridgeCo's DM870 media processor, and enables fast product developments with ethernet, WiFi and USB connectivity. The module connects to standard legacy components in various audio, video/LCD and control formats. It runs from a single 5V power supply and creates all the necessary voltages on the module. A stabilized 3.3V power is provided to the main board, to allow for further system cost reduction.

Block Diagram



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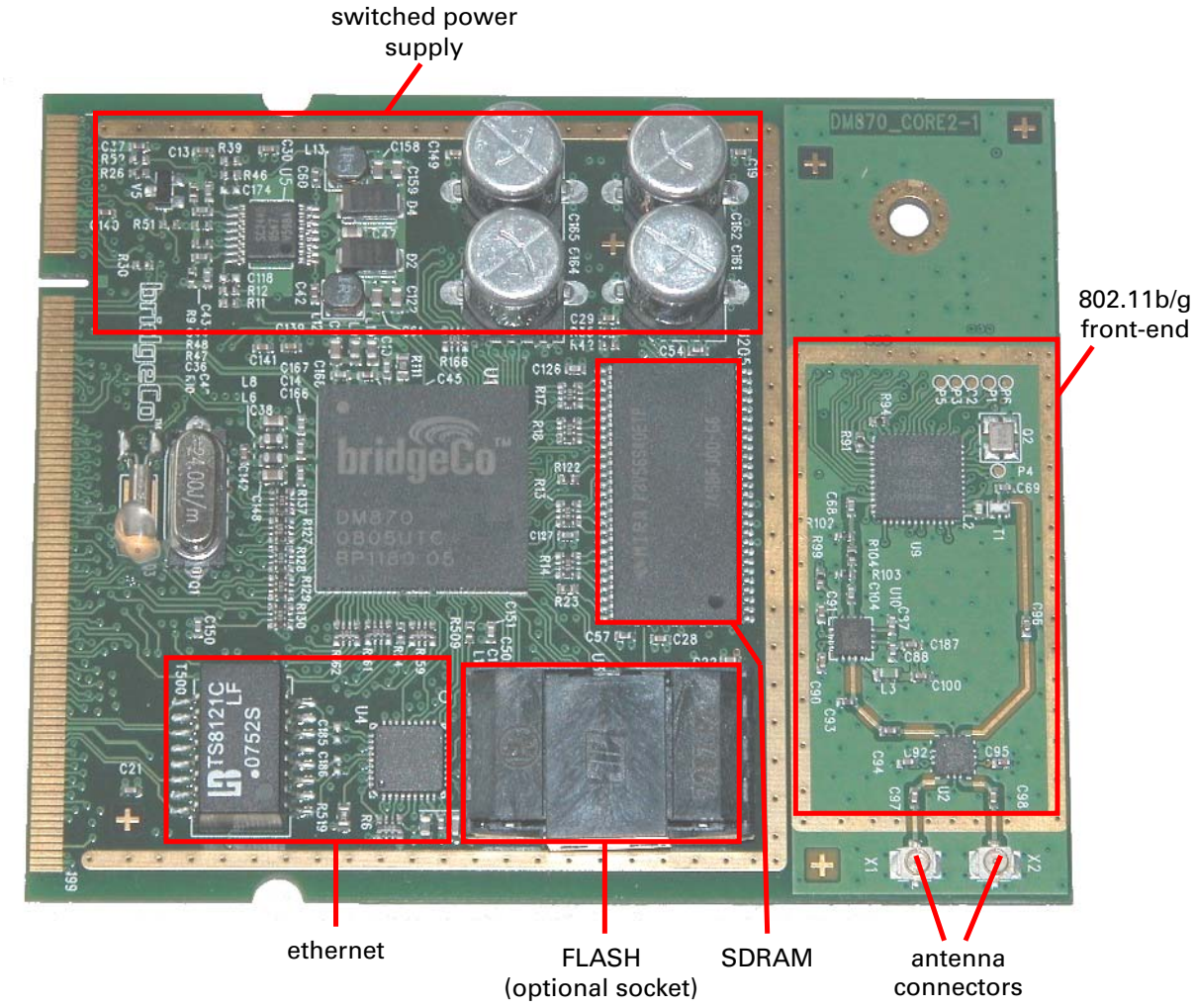
Overview



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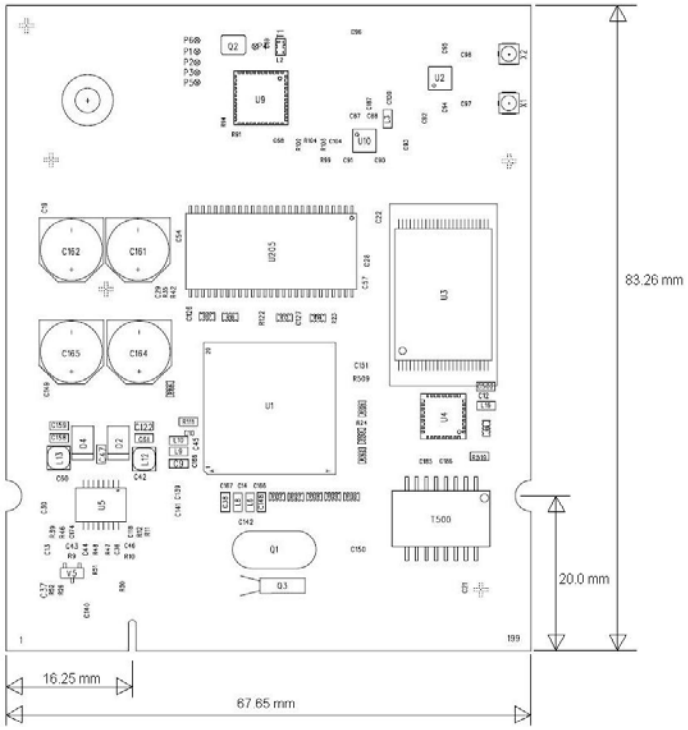
Board Dimensions



Electrical Specifications

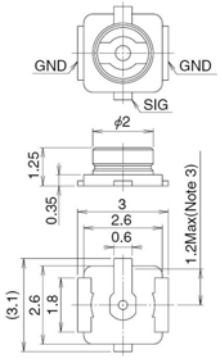
Parameter	Symbol	Specification (typ.)	Units
Input Voltage	VIN	+5.0 ± 5%	V
Power Consumption	PIN	reset < 0.4 WLAN mode < 2.5	W W
Output Voltage	VOUT	+3.3 ± 5%	V
Output Current	IOUT	max. 150	mA

Connectors

WLAN Antenna Connectors

Two coaxial antenna connectors are provided for antenna diversity support.

The surface-mount receptable parts:
Hirose
U.FL-R-SMT (CL No. 331-0471-0)



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SODIMM Module Connector

The DM870 Core-2 module uses a 200-pin SODIMM connector (1.8V type, 0.6 mm pitch, Jedec MO-224 outline) as an interface to the main board.

Example sockets: AMP 1565917-4
FCI 10033853-052FSLF
Molex 48213-1100

The pinout and signal names are shown on the next page. The following table provides an overview for the most important control and interface signals:

Signal(s)	Pin(s)	Description
VIN	7,8,9,10	Input voltage; +5V ±5%
VOUT	27,28, 29,30	Stabilized +3.3V ±5% power supply for peripheral circuits; max. 150 mA
SPI_MOSI, SPI_MISO, SPI_CLK SPI_NCS0, 1	11 13 15 12,14	SPI bus from DM870's SPI controller. The signals are shown in master-mode configuration, but they can be configured for slave-mode by software.
RXD1, TXD1	23,25	3.3V logic level UART I/Os for the debug UART. Provide external RS-232 transceiver to connect to a PC's COM port.
NRESET	26	Low-active input to reset the module; internal 10K pull-up
NPOWERDOWN	42	Low-active input to shut down the module's power supply; internal 15K pull-up
NPD_RF	62	Low-active input to shut down the power for the 802.11 Rf part; internal 10K pull-up
AOUTL+/-	59,61	Differential stereo output from PWM-DAC.
AOUTR+/-	63,65	
BIST activate	72	Low-active input to invoke the production BIST; DM870-internal pull-up
TEST1	78	Low-active input to invoke DM870 test mode; internal 10K pull-up
Factory Reset	81	High-active input to reset the configuration; DM870-internal pull-down
IR input	83	Infrared sensor input. This is a Schmitt-Trigger input and can handle interrupt inputs with slow slopes.
ETH_NRESET	85	Low-active reset for the on-board ethernet phy. This output is driven by the DM870 and is not suited for other purpose.
SDA, SCL	87,89	I2C bus created by GPIO-14 and GPIO-13. No internal pull-ups; if I2C is to be used, please add also the proper pull-up resistors.
VPP	130	Voltage input to allow programming of DM870's OTP. Leave unconnected for normal operation.
FCLE, FALE	132,134	Boot mode inputs. The module uses a 4K7 pull-up on FCLE and a 4K7 pull-down resistor to boot from the on-board NAND flash. Leave unconnected for normal operation.
ETH_LED_ACT ETH_LED_SPEED	160 162	3.3V push-pull outputs (max. ±12mA) to drive the ethernet LEDs. A low-level indicates 100Mbps mode and activity respectively.

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Function	GPIO	Signal	Power			Power	Signal	GPIO	Function
			GND	1	2	GND			
			GND	3	4	GND			
			GND	5	6	GND			
			VIN (+5V)	7	8	VIN (+5V)			
			VIN (+5V)	9	10	VIN (+5V)			
SPI		SPI_MOSI		11	12		SPI_NCS0	SPI	
SPI		SPI_MISO		13	14		SPI_NCS1	SPI	
SPI		SPI_CLK		15	16	GND			
			GND	17	18		TMS	JTAG	
		TXD0		19	20		TCK	JTAG	
		RXD0		21	22		TDI	JTAG	
Debug UART		RXD1		23	24		TDO	JTAG	
Debug UART		TXD1		25	26		NRESET		
			VOUT (+3.3V)	27	28	VOUT (+3.3V)			
			VOUT (+3.3V)	29	30	VOUT (+3.3V)			
SPI_E_NCS	GPIO-11	SSMD7		31	32		SSMD6	GPIO-10	SPI_E_CLK
SPI_E_SDI	GPIO-09	SSMD5		33	34		SSMD4	GPIO-08	SPI_E_SDO
		SSMD3		35	36		SSMD2		
		SSMD0		37	38		SSMD1		
		SSMCLK		39	40	GND			
		SSMCMD		41	42		NPOWERDOWN		
		SSMCP		43	44	GND			
		SSMWP		45	46	GND			
				47	48	GND			
				49	50	GND			
			GND	51	52	GND			
USB		USB D-		53	54	GND			
USB		USB D+		55	56		USB_VBUS	USB	
			GND	57	58				
		AOUT L+		59	60	GND			
		AOUT L-		61	62		NPD_RF		
		AOUT R+		63	64				
		AOUT R-		65	66	GND			
			GND	67	68	GND			
				69	70	3V3 (RTC)			
	GPIO-16	A23		71	72		NCS3	GPIO-17	BIST activate
IRQ input	GPIO-18	A22		73	74		NCS2	GPIO-19	
			GND	75	76	GND			
	GPIO-06	PDOUT1		77	78		TEST1		
	GPIO-07	VCO1		79	80	GND			
Factory reset	GPIO-04	PDOUT0		81	82	GND			
IR input	GPIO-05	VCO0		83	84	GND			
ETH NRESET	GPIO-12	AV3CLK		85	86	GND			
I2C SDA	GPIO-14	AV3CTRL1		87	88	GND			
I2C SCL	GPIO-13	AV3CTRL0		89	90	GND			
Video Output		AV0CTRL2		91	92	GND			
Video Output		AV0CTRL1		93	94	GND			
Video Output		AV0CTRL0		95	96	GND			
Video Output		AV0CLK		97	98	GND			
Video Output		AV0DATA3		99	100		AV1DATA3	Video Output	
Video Output		AV0DATA2		101	102		AV1DATA2	Video Output	
Video Output		AV0DATA1		103	104		AV1DATA1	Video Output	
Video Output		AV0DATA0		105	106		AV1DATA0	Video Output	
			GND	107	108	GND			
256FS		ADDA_MCLK		109	110	GND			
			GND	111	112	GND			
LRCK		ADDA_LRCK		113	114	GND			
SCLK		ADDA_SCLK		115	116	GND			
A/D data 1		AV2DATA3		117	118	GND			
A/D data 0		AV2DATA2		119	120				
D/A data 1		AV2DATA1		121	122				
D/A data 0		AV2DATA0		123	124		AV4DATA1		SPDIF output
			GND	125	126		AV4DATA0		SPDIF input
LCD Interface		LCDCTRL3		127	128	GND			
LCD Interface		LCDCTRL2		129	130		VPP		
LCD Interface		LCDCTRL1		131	132		FCLE		
LCD Interface		LCDCTRL0		133	134		FALE		
LCD Interface		LCDCLK		135	136	GND			
LCD Interface		LCDD16		137	138		LCDD17	LCD Interface	
LCD Interface		LCDD14		139	140		LCDD15	LCD Interface	
LCD Interface		LCDD12		141	142		LCDD13	LCD Interface	
LCD Interface		LCDD10		143	144		LCDD11	LCD Interface	
LCD Interface		LCDD8		145	146		LCDD9	LCD Interface	
LCD Interface		LCDD6		147	148		LCDD7	LCD Interface	
LCD Interface		LCDD4		149	150		LCDD5	LCD Interface	
LCD Interface		LCDD2		151	152		LCDD3	LCD Interface	
LCD Interface		LCDD0		153	154		LCDD1	LCD Interface	
			GND	155	156	GND			
Ethernet		ETH_RX-		157	158	GND			
Ethernet		ETH_RX+		159	160		ETH_LED_ACT	Ethernet	
Ethernet		ETH_CT		161	162		ETH_LED_SPEED	Ethernet	
Ethernet		ETH_TX-		163	164	GND			
Ethernet		ETH_TX+		165	166	GND			
			GND	167	168	GND			
	GPIO-00	MIICRS		169	170				
	GPIO-01	MIICOL		171	172				
	GPIO-02	MIITXER		173	174				
	GPIO-03	MIITXCLK		175	176				
		MIITXD0		177	178				
		MIITXD1		179	180				
		MIIRXD0		181	182				
		MIIRXD1		183	184				
			GND	185	186	GND			
				187	188				
				189	190				
				191	192				
	GPIO-15	NWAIT		193	194				
			GND	195	196	GND			
			GND	197	198	GND			
			GND	199	200	GND			

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FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF exposure warning ·

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canada Warning

"Industry Canada regulatory information Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. ""The user is cautioned that this device should be used only as specified within this manual to meet RF exposure requirements. Use of this device in a manner inconsistent with this manual could lead to excessive RF exposure conditions."