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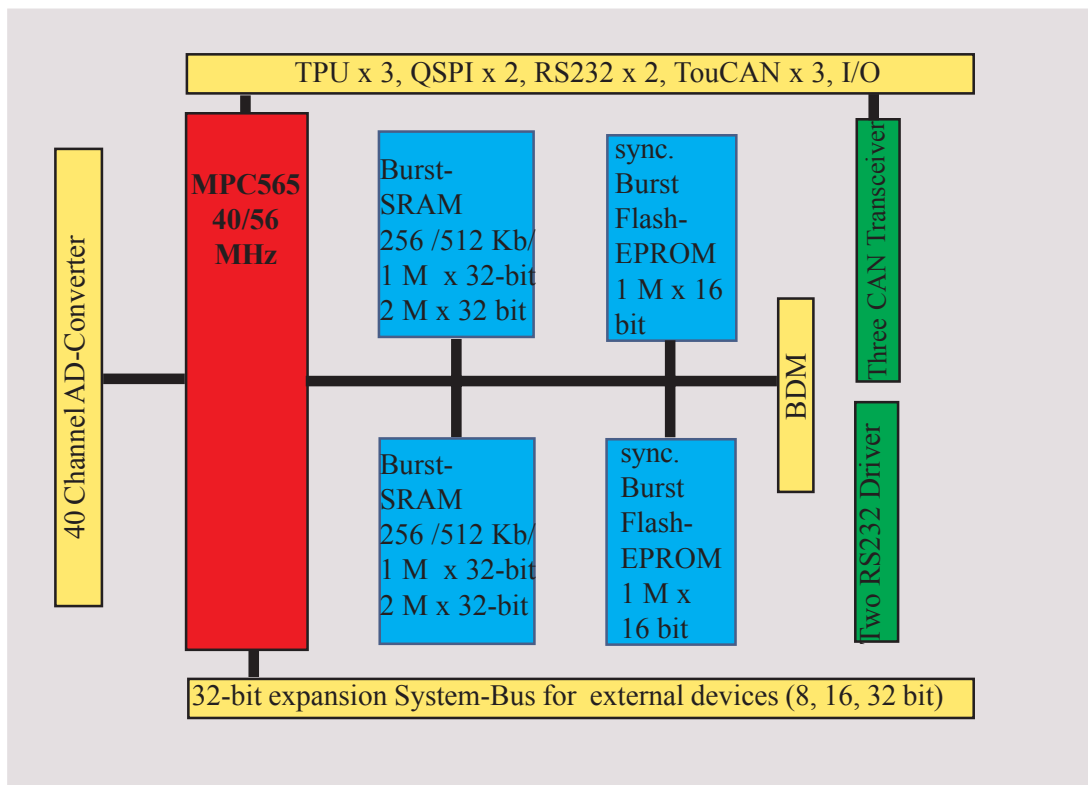


ec565 Microcontroller Module

Product Information



Status: January 2004



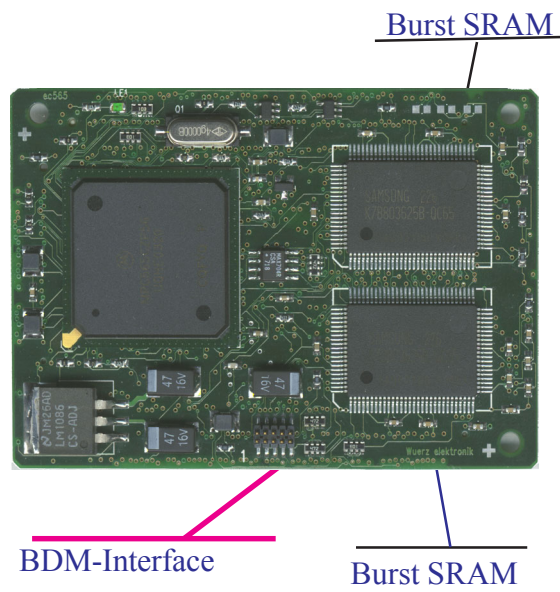
Microcontroller Module with Motorola Processor MPC565.

The module “**ec565**“ made by Würz elektronik is a credit-card sized module with the Motorola processor **MPC565**. The MPC565 is a RISC MCU with a 32 bit PowerPC architecture and integrated floating-point unit. The processor operates at 40 or 56 MHz. It has an on-chip 1 MByte Flash-EPROM and an internal 36 Kbyte SRAM. The internal Flash is split in two modules with 512 Kb; each module consists of 8 / 6 separately erasable 64 Kb blocks. The flash can supply most commands in a single cycle, using a special burst mode. The processor is assisted by intelligent periphery modules, such as a 40 channel 10 bit A/D converter, 16 general-purpose I/O pins, 22-channel modular I/O systems including 12 dedicated PWM submodules, real-time clock submodule, three TouCAN (CAN 2.0B) controllers, three time processor units, each with 16 channels, four serial interfaces. The periphery modules are known from the MC683xx family.

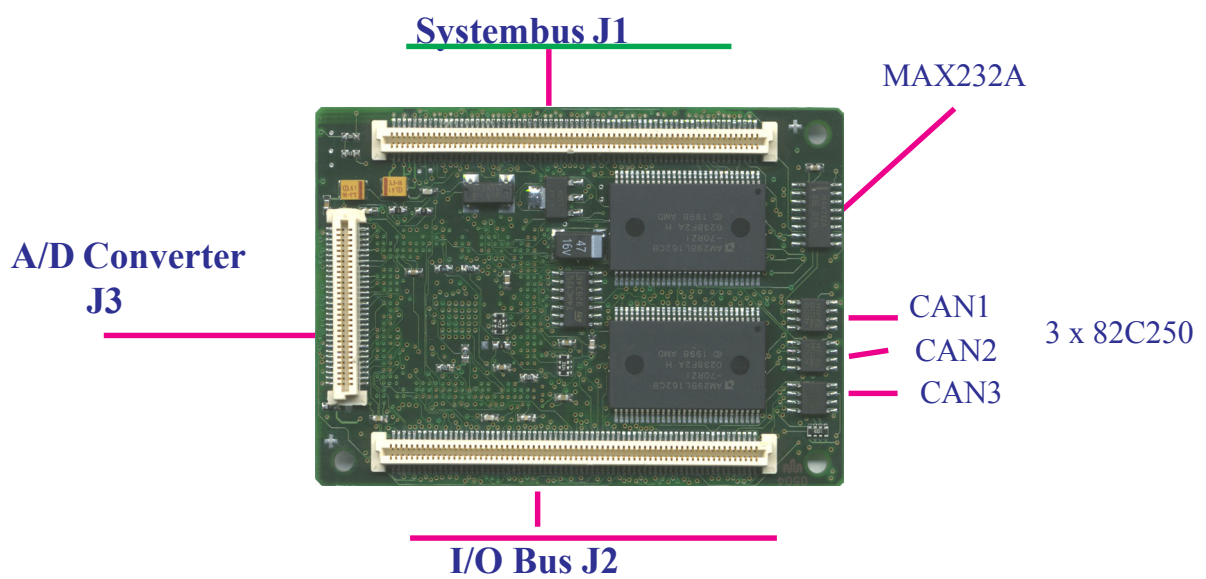
The design intention of the module, sized 81 x 57 mm, was a stand-alone solution for embedded applications. The module can have **up to 4 MB** external sync. Burst-Flash-EPROM (2 M*32 bit), **up to 16 MB** synchronous Burst SRAM , two RS232 drivers and three CAN interfaces. The module is “CAN-Ready” for transfer rates up to 1 Mbps. A 10 pin debug interface (BDM) can be used to program the internal and the external flash-EPROM via debug software. All processor signals are accessible on three SMD connectors. Pins spacing 0,8 mm. The module is also available for an expanded temperature range as an option. **Single 5 Volt Power Supply.**

An Evaluationboard, with a 10 base ETHERNET controller, for the development of applications is available.

Top-View



Bottom-View



Two sync. Burst Flash-EPROMs
16 bits wide each

Bus configuration of the ec565 Module

Systembus			IO bus		
J1-A		J1-B	J2-A		J2-B
+ 5 V	1	+ 5V	A_TPUCH0	1	A_TPUCH1
+ 5 V	2	+ 5V	A_TPUCH2	2	A_TPUCH3
GND	3	GND	A_TPUCH4	3	A_TPUCH5
GND	4	GND	A_TPUCH6	4	A_TPUCH7
GND	5	GND	A_TPUCH8	5	A_TPUCH9
+ 3.3 V	6	+ 3.3V	A_TPUCH10	6	A_TPUCH11
+ 3.3 V	7	+ 3.3V	A_TPUCH12	7	A_TPUCH13
B_PCS3	8	B_PCS2	A_TPUCH14	8	A_TPUCH15
B_PCS1	9	B_PCSO/*SS	A_T2CLK	9	B_T2CLK
SCK/QGPIO6	10	B_MISO	B_TPUCH0	10	B_TPUCH1
B_MOSI	11	A_PCS3	B_TPUCH2	11	B_TPUCH3
A_PCS2	12	A_PCS1	B_TPUCH4	12	B_TPUCH5
A_PCSO/*SS	13	A_SCK	B_TPUCH6	13	B_TPUCH7
A_MOSI	14	A_MISO	B_TPUCH8	14	B_TPUCH9
VFLS1/MPIO32B4	15	VFLSO/MPIO32B3	B_TPUCH10	15	B_TPUCH11
VFO/MPIO32B0	16	VF1/MPIO32B1	B_TPUCH12	16	B_TPUCH13
VF2/MPIO32B2	17	D01	B_TPUCH14	17	B_TPUCH15
D00	18	D03	C_TPUCH0	18	C_TPUCH1
D02	19	D05	C_TPUCH2	19	C_TPUCH3
D04	20	D07	C_TPUCH4	20	C_TPUCH5
D06	21	D09	C_TPUCH6	21	C_TPUCH7
D08	22	D11	C_TPUCH8	22	C_TPUCH9
D10	23	D13	C_TPUCH10	23	C_TPUCH11
D12	24	D15	C_TPUCH12	24	C_TPUCH13
D14	25	D17	C_TPUCH14	25	C_TPUCH15
D16	26	D19	C_T2CLK	26	*BOOT_EXT/I
D18	27	D21	MDA11	27	MDA12
D20	28	D23	MDA13	28	MDA14
D22	29	D25	MDA15	29	MDA27
D24	30	D27	MDA28	30	MDA30
D26	31	D29	MDA29	31	MPWM0
D28	32	D31	MDA31	32	MPWM2
D30	33	RD/*WR	MPWM1	33	MPWM4
*OE	34	*WE1	MPWM3	34	MPWM16
*WEO	35	*WE3	MPWM5_MPIO32B6	35	MPWM18
*WE2	36	TSIZ1	MPWM17	36	MPWM20_MPIO32B11
TSIZO	37	*TS	MPWM19	37	MPIO32B15
*BDIP	38	*BI/STS	MPWM21_MPIO32B12	38	MDO_2
*BURST	39	TMS	MDO_3	39	MDO_0
*TA	40	*IRQ1	MDO_1	40	*RTSTI
*TEA	41	*IRQ3	MCK0	41	*MSEI
*IRQ0	42	*IRQ5	*EVTI	42	MCKI
*IRQ2	43	*IRQ7	MDI_1	43	MDI_0
*IRQ4	44	CLKOUT	*MSEO	44	*EXEPTAB
*IRQ6	45	*HRESET	MD06_MPIOB8	45	MD07_MPIOB7
*SRESET	46	ENGCLK_BUCLK	MD04_MPIO32B10	46	MD05_MPIOB9
*PORESET	47	*CS1	SIPPIO7/*IRQOUT/LWPO	47	SGPIOC6/FRZ/*PTR
*CSO	48	*CS3	ECK	48	EPEE
*CS2	49	*BR/VF1/IWP2	*RESIN	49	*RTSCONF/TEXP
*BB/VF2/IWP3	50	nc	VDD_RTC	50	KAPWR
*BG/VF2/IWP3	51	nc	JCOMP	51	VDDSRAM
nc	52	nc	BOEPEE	52	VFLASH
nc	53	nc	UBAT_IN	53	UBAT
nc	54	nc	B_TXD1	54	B_RXD1
nc	55	nc	B_TXD2	55	B_RXD2
nc	56	nc	A_TXD1	56	A_RXD1
nc	57	nc	A_TXD2	57	A_RXD2
A30	58	A31	nc	58	nc
A28	59	A29	TXD1-RS232	59	RXD1-RS232
A26	60	A27	TXD2-RS232	60	RXD2-RS232
A24	61	A15	nc	61	nc
A22	62	A25	C:CNTX0	62	C:CNRX0
A20	63	A17	B:CNTX0	63	B:CNRX0
A18	64	A23	A:CNTX0	64	A:CNRX0
A16	65	A19	nc	65	cn
A14	66	A21	CAN_H3	66	CAN_L3
A12	67	A11	CAN_H2	67	CAN_L2
A10	68	A13	CAN_H1	68	CAN_L1
A08	69	A09	nc	69	nc
	70		GND	70	GND

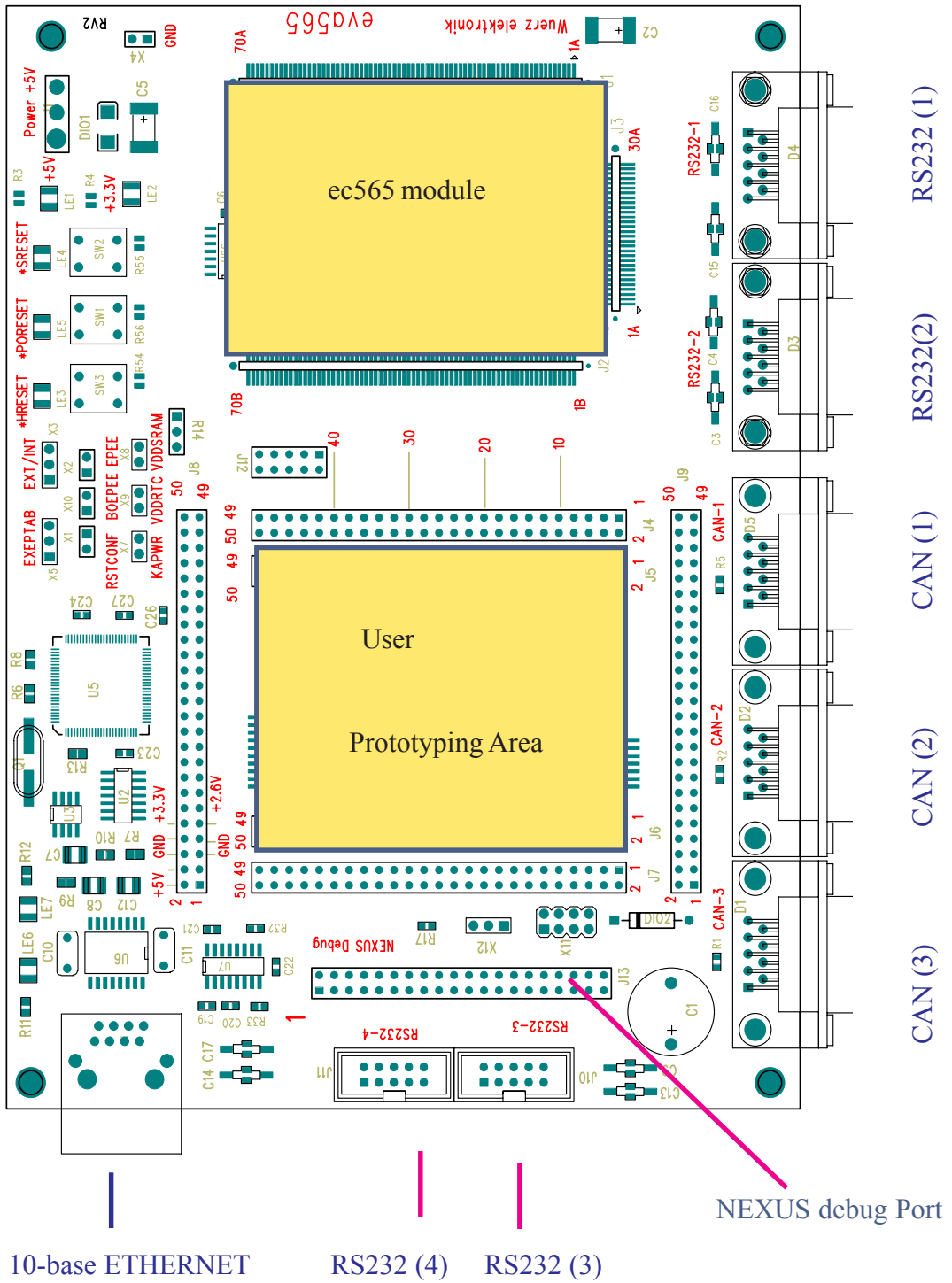
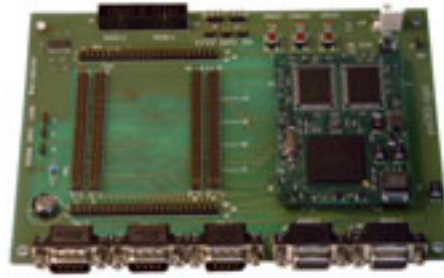
Configuration AD converter

AD Converter		
J3-A		J3-B
VDDA	1	VSSA
VRH	2	VRL
ETRIG1	3	ETRIG2
AN68_B_PQB4	4	AN65_B_PQB1
AN66_B_PQB2	5	AN70_B_PQ6
GND	6	AN71_B_PQB7
AN74_B_M2_PQA2	7	AN67_B_PQB3
AN72_B_M0_PQA0	8	AN73_B_M1_PQA1
AN78_B_PQA6	9	AN75_B_PQA3
AN77_B_PQA5	10	AN69_B_PQB5
AN58_A_PQA6	11	AN76_B_PQA4
nc	12	GND
GND	13	AN79_B_PQA7
AN57_A_PQA5	14	AN59_A_PQA7
VDDA	15	AN55_A_PQA3
VSSA	16	AN56_A_PQA4
AN54_A_PQA2	17	AN52_A_MO_PQA0
AN53_A_M1_PQA2	18	AN51_A_PQB7
AN53_A_M1_PQA1	19	AN50_A_PQB6
AN49_A_PQB5	20	AN47_AZ_A_PQB3
AN48_A_PQB4	21	AN82
GND	22	AN46_AY_A_PQB2
AN87	23	AN83
AN86	24	AN81
AN84	25	GND
AN44_AW_PQB0	26	AN80
AN64_B_PQB0	27	AN85
GND	28	AN45_AX_A_PQB1
VSSA	29	VDDA
nc	30	nc

Technical Specifications

Board	Multilayer 81 x 57 mm, height 7 mm, weight 30 gram
Main Processor	MPC565 RISC MCU Central Processing Unit 32 bit PowerPC Architecture with a floating point unit 1 MB Kbytes Flash-EEPROM 36 Kbytes of Static RAM Three Timeprocessor Units 40 Channel 10-bit Analog-to-Digital Converter Three CAN 2.0B Controller Modules (TouCANs) Two Queued Serial Multi-Channel Modules (QSMCM) provide two Serial communications interfaces (SCI) and one Queued serial peripheral interface (QSPI)
Static RAM	two 32-bit organized synchronous Burst SRAMs up to 16 MByte (256K x 32-bit), (512K x 32-bit), (1 M x 32 bit) or (2 M x 32 bit)
Flash-Memory	two 16-bit organized synchronous Burst Flash devices, 4 Mbytes 32-bit data bus width, 3.3 Volt types
Utilities	MAX704 Battery -Backup Power Switching a Reset Backup of Processor, internal SRAM and KAPWR
Background Debugger	The board has a 10-pin connector. All commercial MPC655 compilers and debuggers using the background mode of the MPC565 can be used for the ec555 board. The pin allocation is compatible to Motorola standards.
Serial Interface	The Processor has four SCI (Serial Communication Interfaces) each SCI Channel consists of one RXD and one TXD. Two SCI Channels are driven by one MAX232A -RS232 Transceiver (116kbit/s).
CAN Interface	Three CAN-Interfaces. Each CAN-Interface has its own PCA82C250T Transceiver. The physically interface is according to ISO/DIS 11898
PCB-Layer	8 Layers
Operating Temp.	(0°C to +70°C) or extended (-40°C to +85°C)
Connectors	Three connectors AMP 0,8 mm spacing, number of pins: 340
Power Supply	Single 5 Volt , 450mA
ROM Monitor included	The ROM Monitor supports programming of the internal and external Flash. Downloading of S-Records and binary Data files via serial port

Evaluationboard for the ec565 module



Tools for ec565 module - MPC565

ROM monitor for ec565

supports: programming of the internal and external Flash, download of SRECORDS and binary files via RS232. (shipped with every module-SRECORD)

Board support packages for ec555/ec565 modules



SingleStep/CrossCode Compiler



(formerly **DIAB-SDS**)

www.embedded-tools.de

Board Support Packs



www.metrowerks.com

GNU Debugger

Complete development environment running under Linux/Windows (GNU)



Realtime kernal for Red Hat and RedBoot