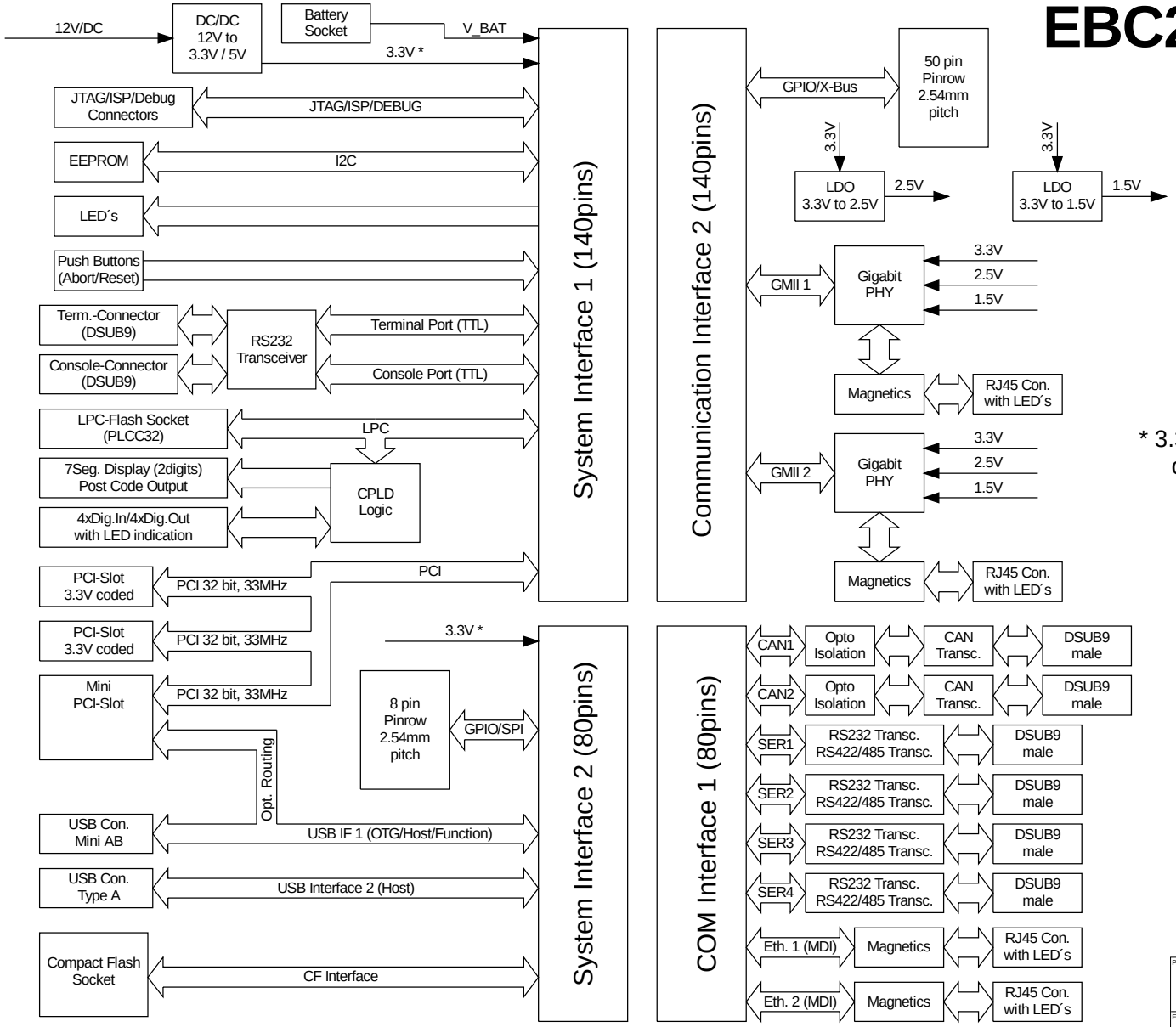
EBC2 E2Brain Carrier
for E2Brain CPU modules

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PROJECT: EBC2			kontron		
ELEMENT: Top_EBC2	ELEMENT PAGE: 01 of 08		DIVISION	NAME	DATE
FUNCTION:		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
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PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 1 of 39			REV: 00/2

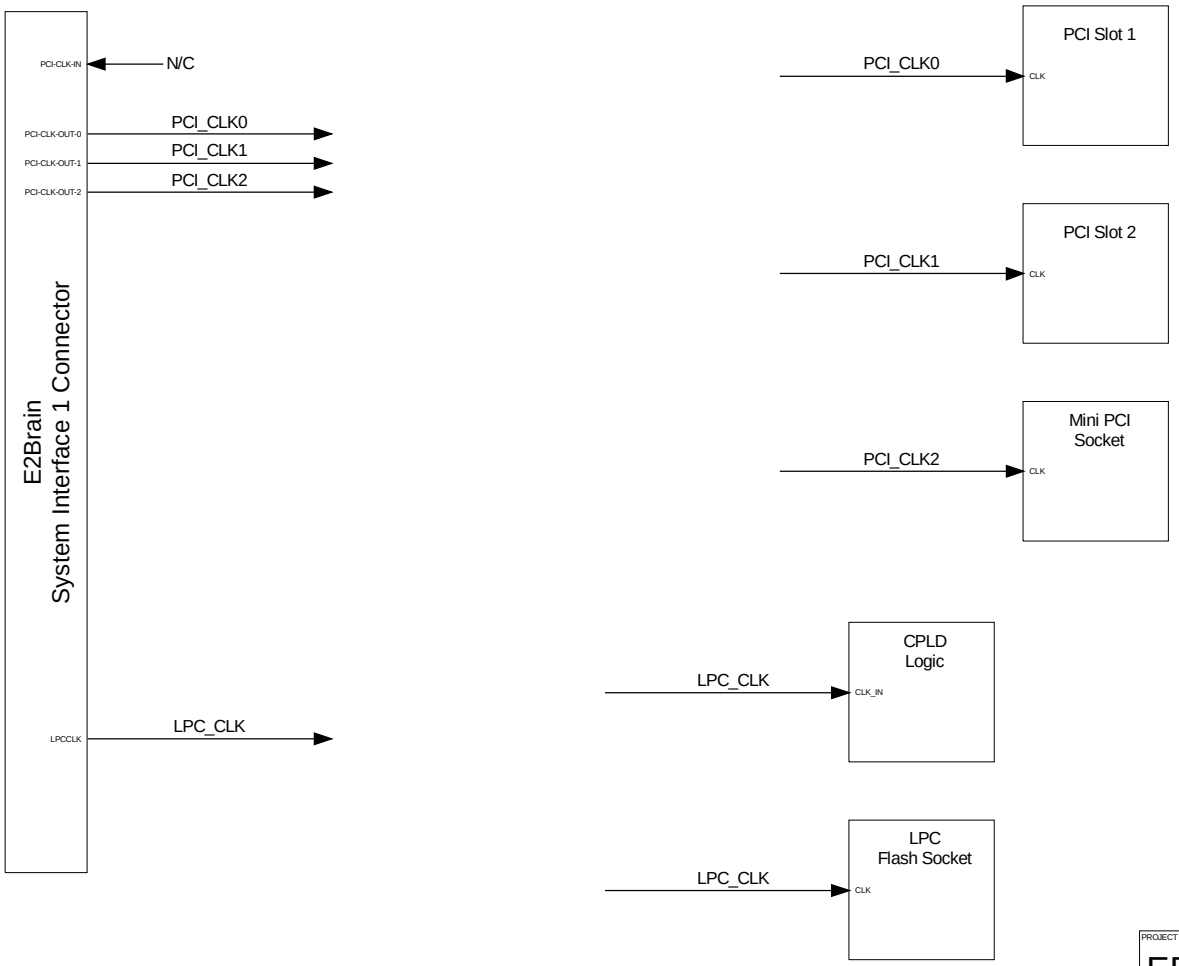
EBC2 Block Diagramm



* 3.3V Supply to E2Brain module can be opened for current measurements

PROJECT	EBC2				kontron
ELEMENT	Top_EBC2	ELEMENT PAGE	02 of 08	DIVISION / NAME / DATE	
FUNCTION				CREATED	KOM Mayr 02.2005
				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	2 of 39
				REV	00/2

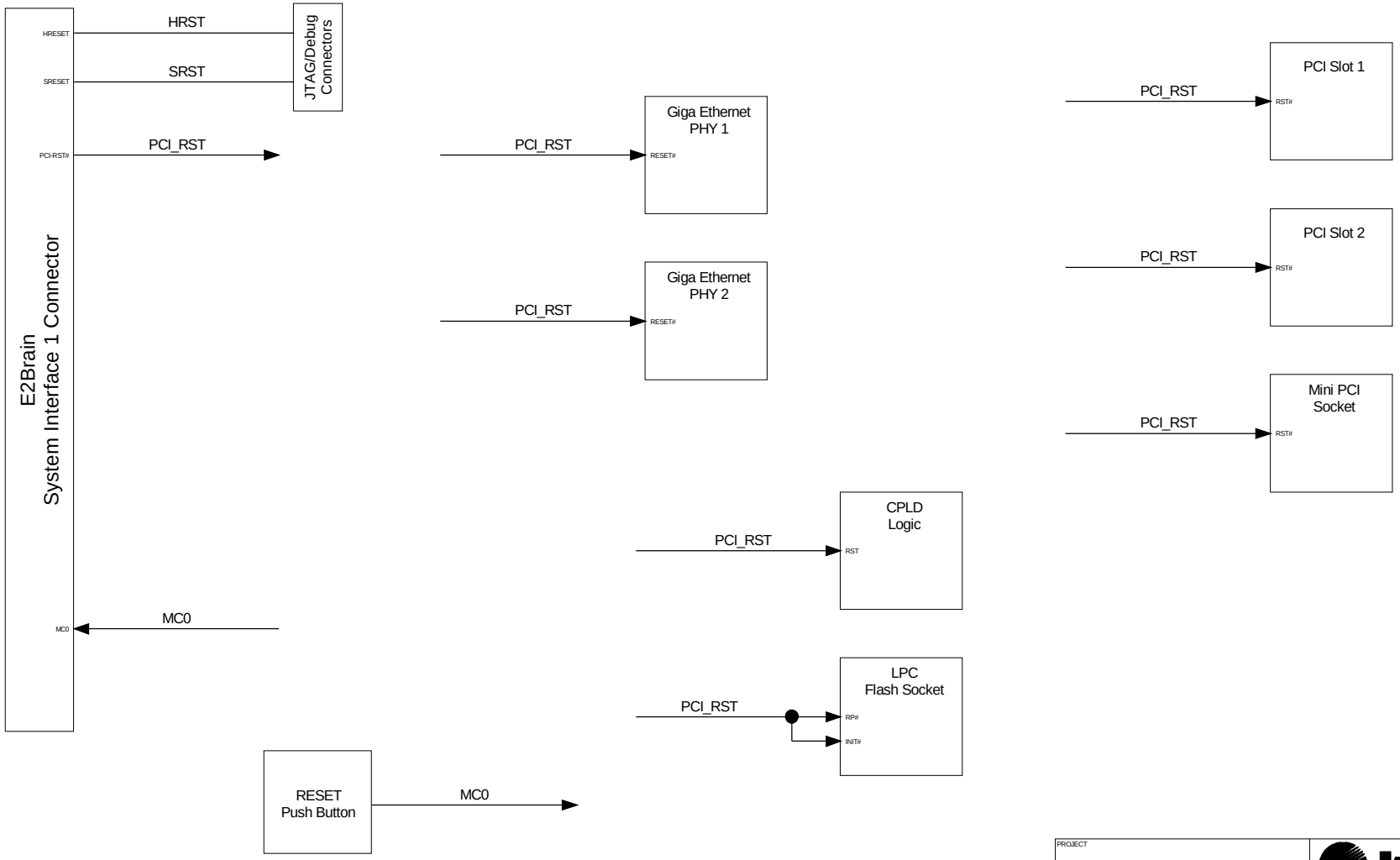
CLOCK DISTRIBUTION



PROJECT	EBC2					
ELEMENT	Top_EBC2	ELEMENT PAGE	03 of 08		DIVISION	NAME	DATE
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				VERIFIED	KOM	Mayr	02.2005
				APPROVED	KOM		
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	3 of 39		REV 00/2

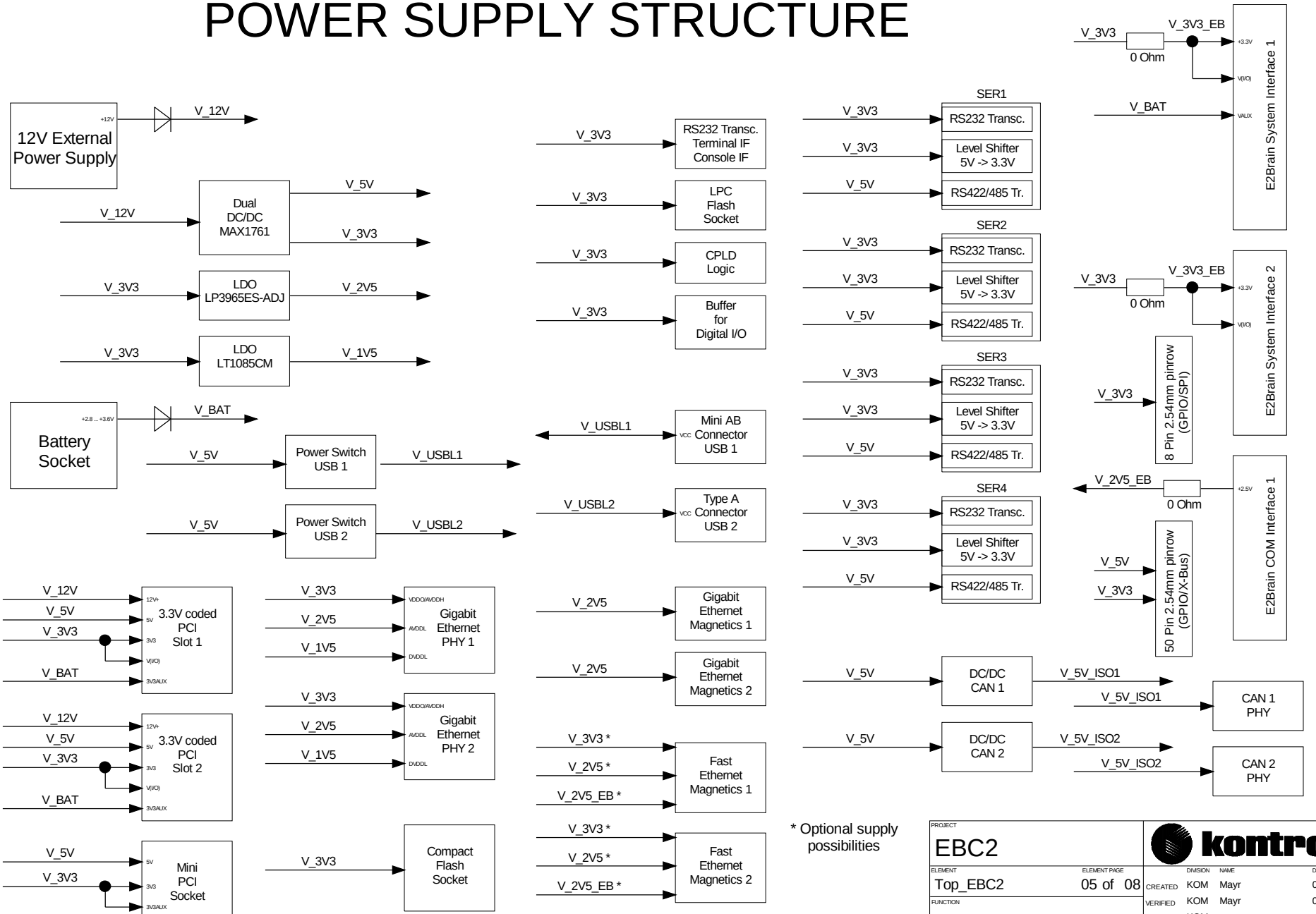
kontron

RESET STRUCTURE



PROJECT: EBC2					kontron
ELEMENT: Top_EBC2	ELEMENT PAGE: 04 of 08		DIVISION	NAME	DATE
FUNCTION:		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 4 of 39			REV: 00/2

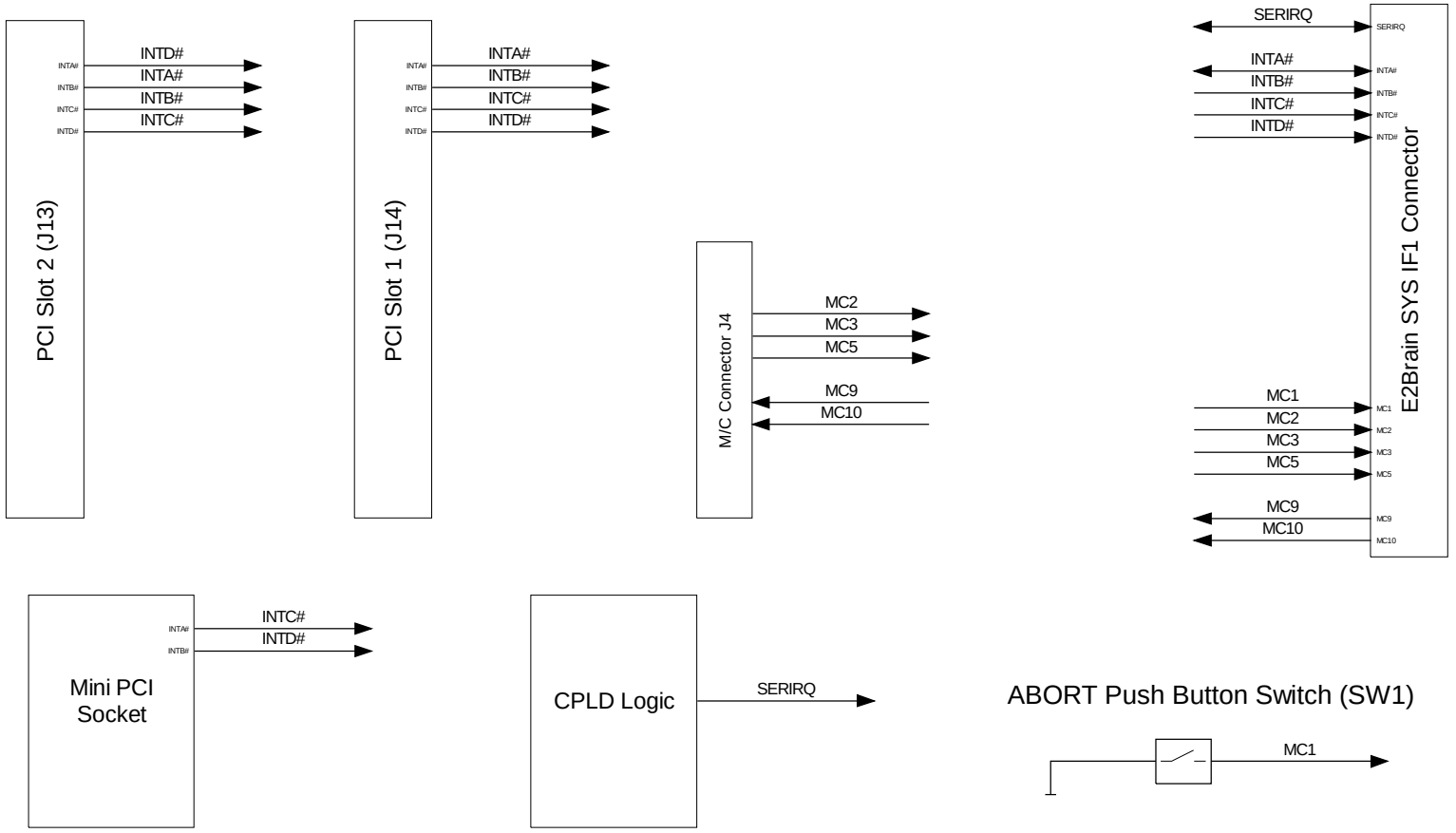
POWER SUPPLY STRUCTURE



* Optional supply possibilities

PROJECT	EBC2				kontron
ELEMENT	Top_EBC2	ELEMENT PAGE	05 of 08	DIVISION / NAME / DATE	
FUNCTION				CREATED	KOM Mayr 02.2005
				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	5 of 39
REV	00/2				

INTERRUPT - STRUCTURE



PROJECT	EBC2				kontron
ELEMENT	Top_EBC2	ELEMENT PAGE	06 of 08	DIVISION / NAME / DATE	
FUNCTION				CREATED	KOM Mayr 02.2005
				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	6 of 39
REV	00/2				

Resource Tables

M/C Signal Routing

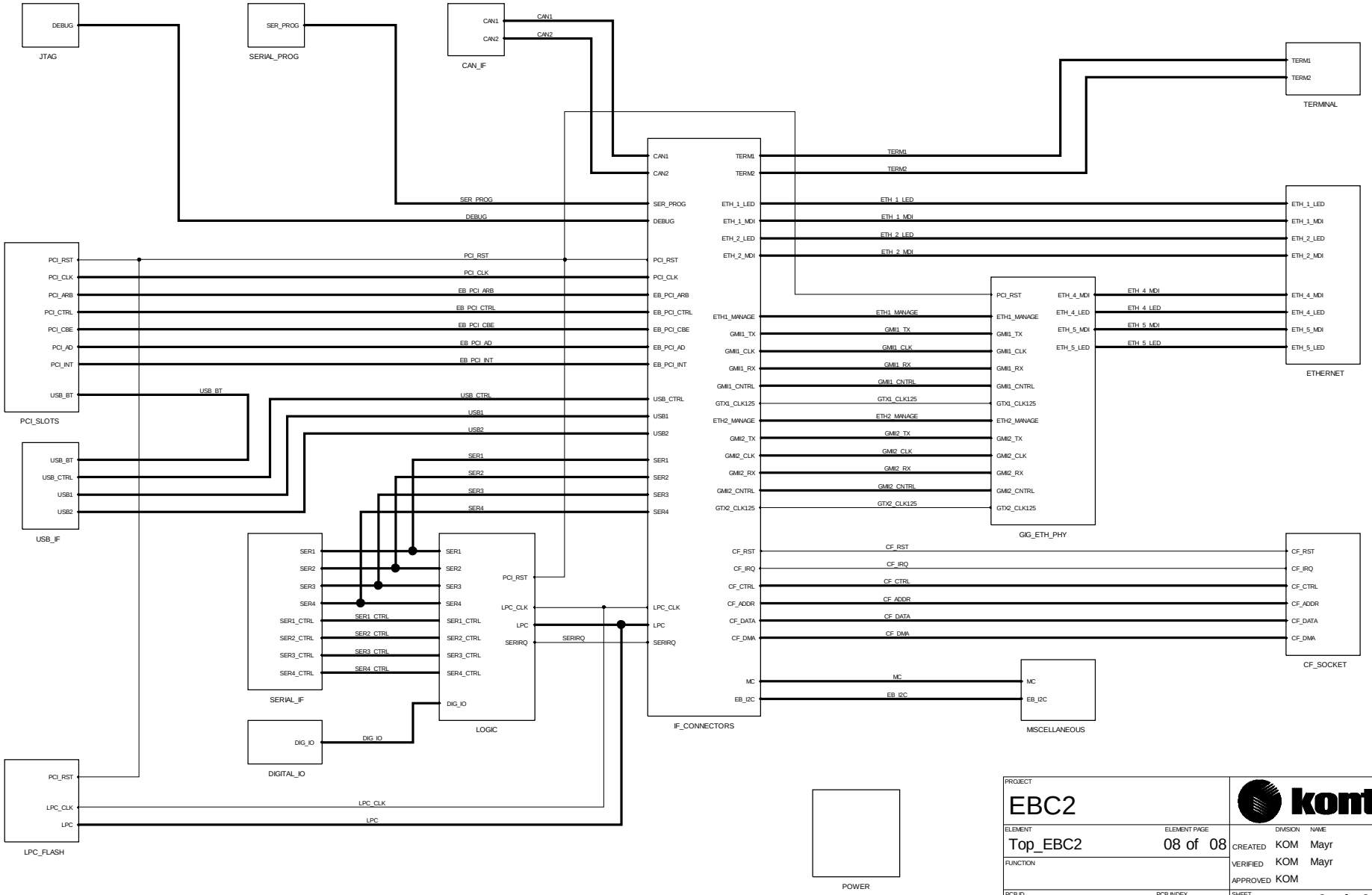
Signal	Function	E2Brain module	EBC2
MC0	RESET	Input for Reset	Output on Reset Push Button Switch
MC1	ABORT	Input for Abort	Output on Abort Push Button Switch
MC2	DEG	Input, maskable interrupt capable	Input available on J4 Pinrow
MC3	FAL	Input, maskable interrupt capable	Input available on J4 Pinrow
MC4	BOOT	Input for boot indication	Boot Jumper J12 output (open: Boot from E2Brain flash; set: Boot from LPC socket)
MC5	ENUM	Input, maskable interrupt capable	Input available on J4 Pinrow
MC6	LED1	Output: Boot LED/GP LED	Input for green PCB LED
MC7	LED2	Output: Watchdog LED	Input for yellow PCB LED
MC8	AGENT	Input for PCI Master or Agent Mode	Not mounted 0Ohm resistor for a PCI Master configuration of the E2Brain module
MC9	HEALTHY	Output signal	Output available on J4 Pinrow
MC10	IREADY	Output signal	Output available on J4 Pinrow
MC11	LED3	Output: GP LED	Input for red PCB LED

PCI Configuration

Device	IDSEL	REQ/GNT	Interrupt PCI Device	Interrupt E2Brain module
PCI Slot 1	AD28	0	INTA#	INTA#
			INTB#	INTB#
			INTC#	INTC#
			INTD#	INTD#
PCI Slot 2	AD27	1	INTA#	INTD#
			INTB#	INTA#
			INTC#	INTB#
			INTD#	INTC#
Mini PCI socket	AD26	2	INTA#	INTC#
			INTB#	INTD#

PROJECT: EBC2			kontron	
ELEMENT: Top_EBC2	ELEMENT PAGE: 07 of 08		DIVISION	NAME	DATE
FUNCTION:		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 7 of 39			REV: 00/2

TOP HIERARCHY EBC2



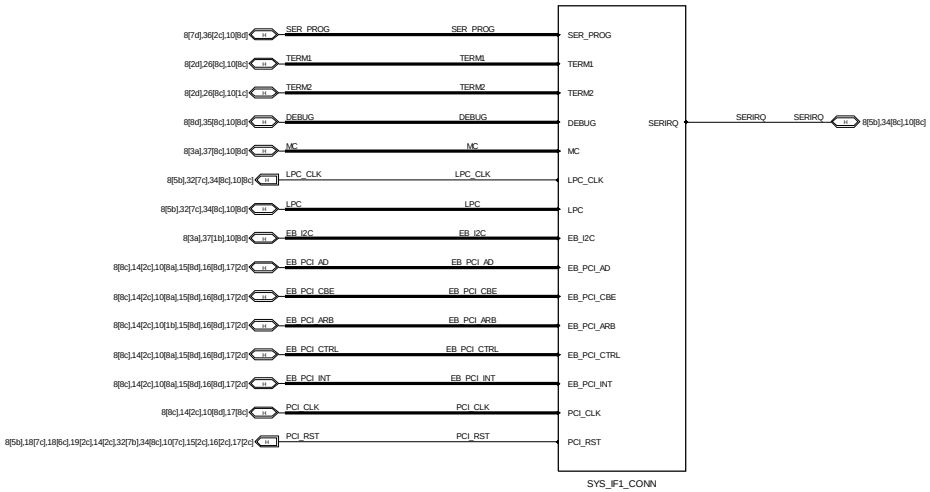
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ELEMENT	Top_EBC2	ELEMENT PAGE	08 of 08
FUNCTION			
PCB ID	31.253-1010.1	PCB INDEX	00

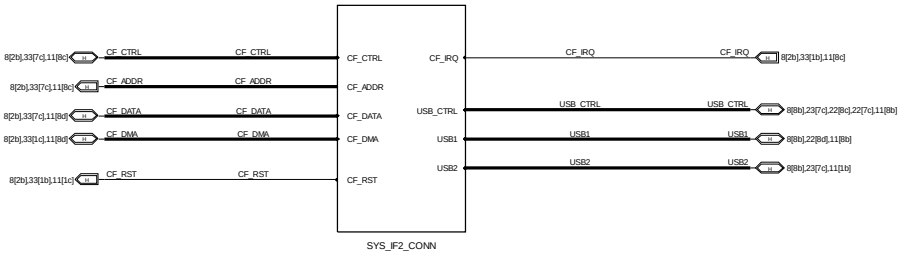
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CREATED	KOM	Mayr	02.2005
VERIFIED	KOM	Mayr	02.2005
APPROVED	KOM		

SHEET 8 of 39 REV 00/2

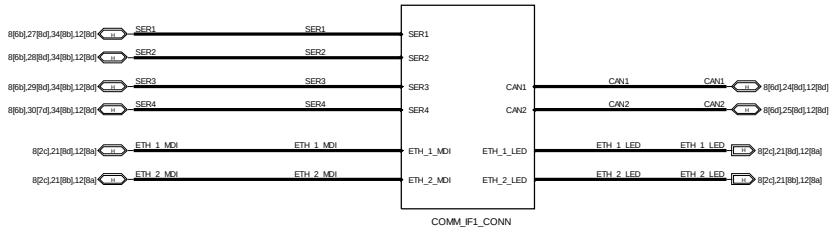
E2BRAIN INTERFACE CONNECTORS

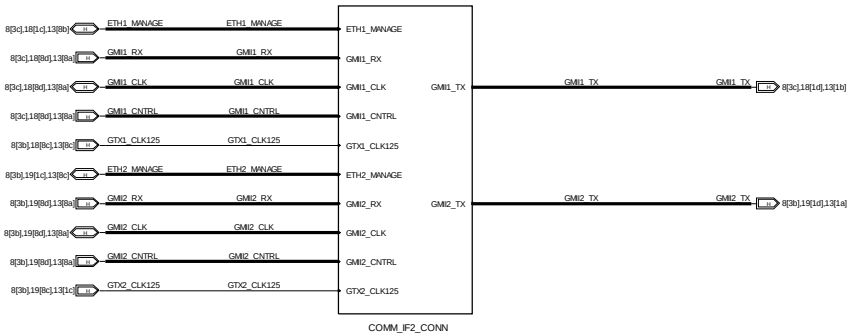
System Interface





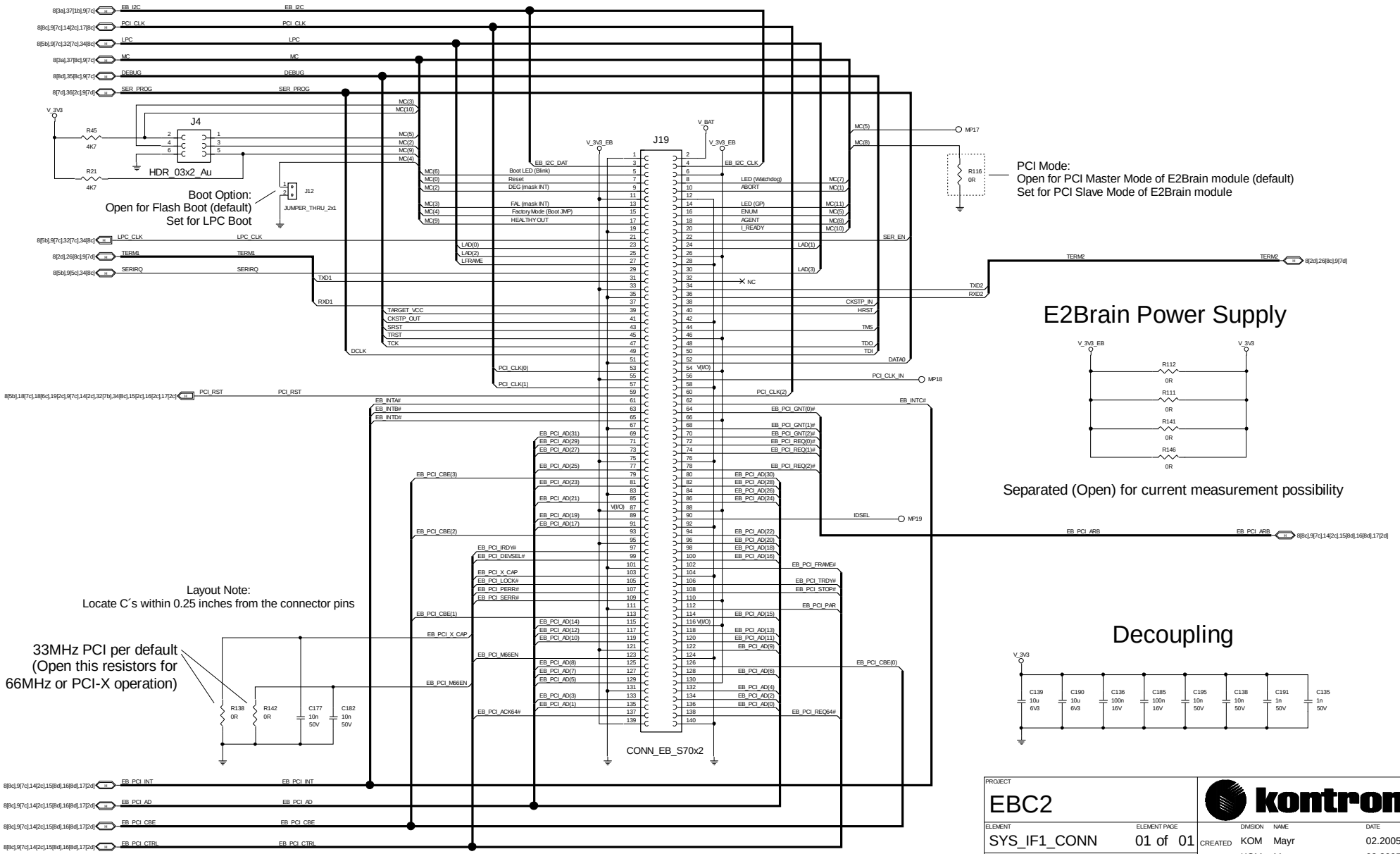
Communication Interface





PROJECT: EBC2					kontron
ELEMENT: IF_CONNECTORS	ELEMENT PAGE: 01 of 01		DIVISION	NAME	DATE
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		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 9 of 39			REV: 00/2

System Interface 1 Connector

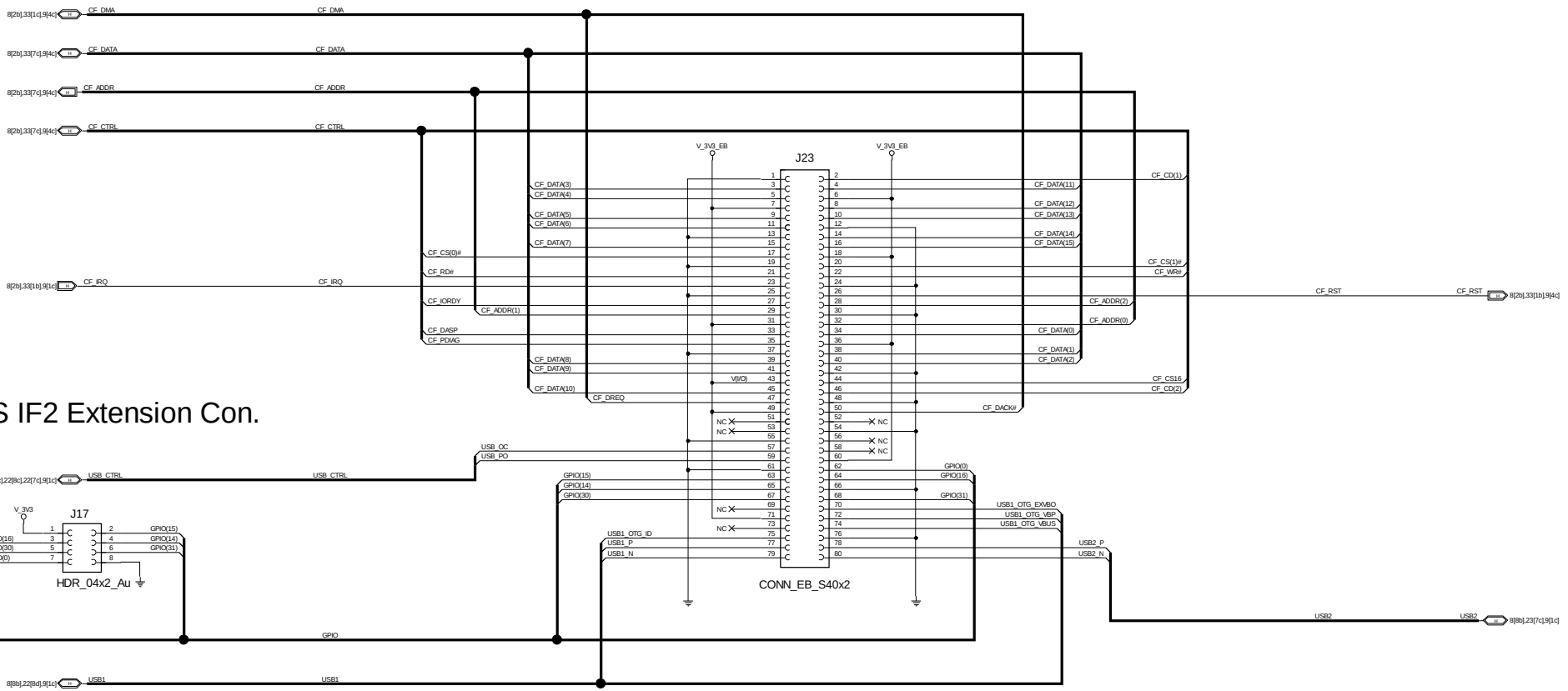


PROJECT	EBC2			kontron
ELEMENT	SYS_IF1_CONN	ELEMENT PAGE	01 of 01	
FUNCTION				
PCB ID	31.253-1010.1	PCB INDEX	00	

	DIVISION	NAME	DATE
CREATED	KOM	Mayr	02.2005
VERIFIED	KOM	Mayr	02.2005
APPROVED	KOM		

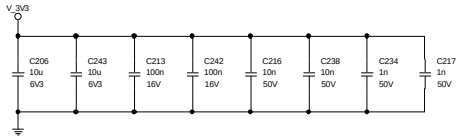
SHEET 10 of 39 REV 00/2

System Interface 2 Connector



SYS IF2 Extension Con.

Decoupling



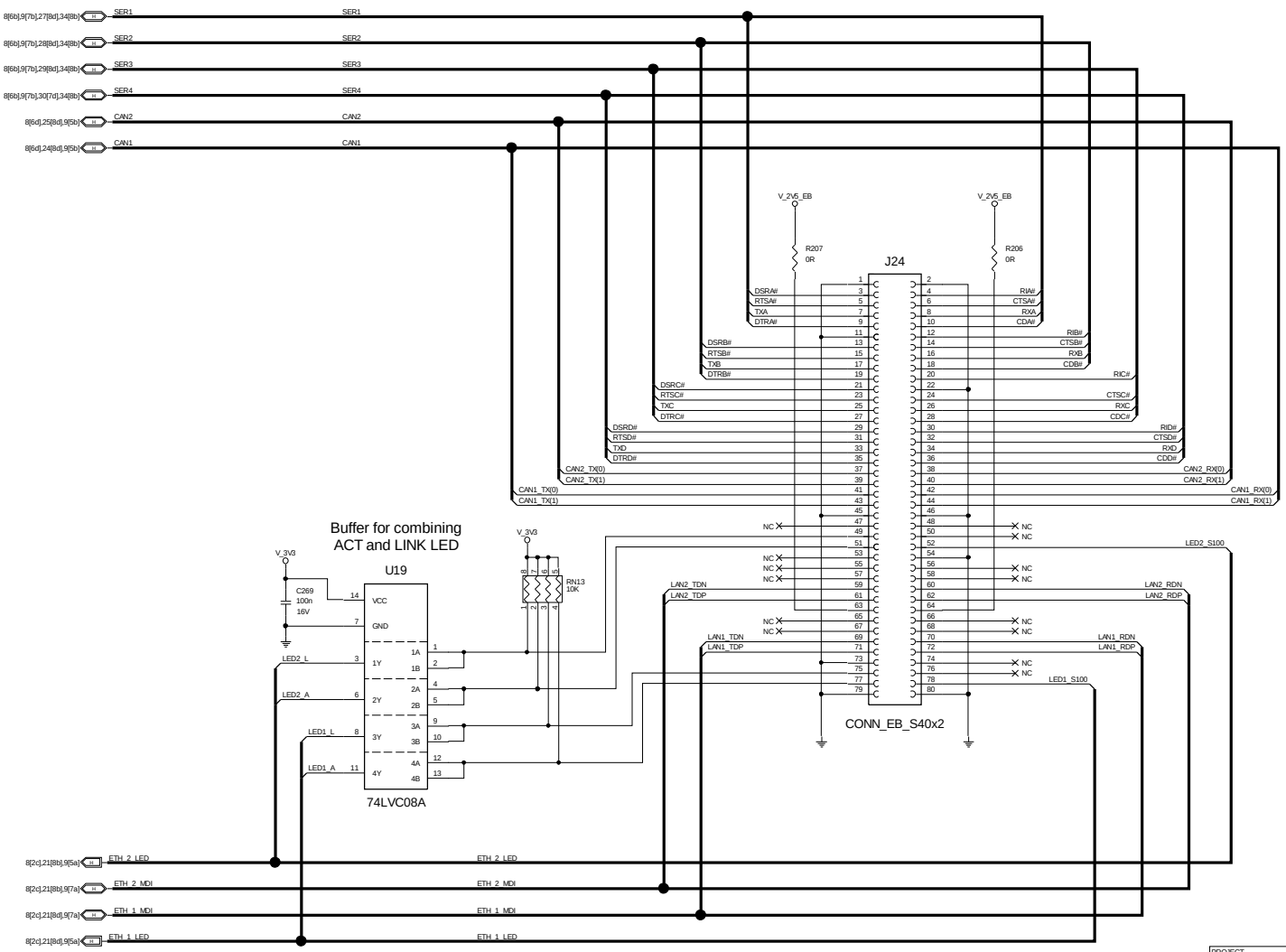
E2Brain Power Supply



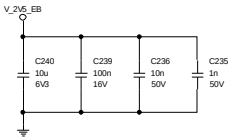
Separated (Open) for current measurement possibility

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PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 11 of 39			REV: 00/2

Communication Interface 1 Connector

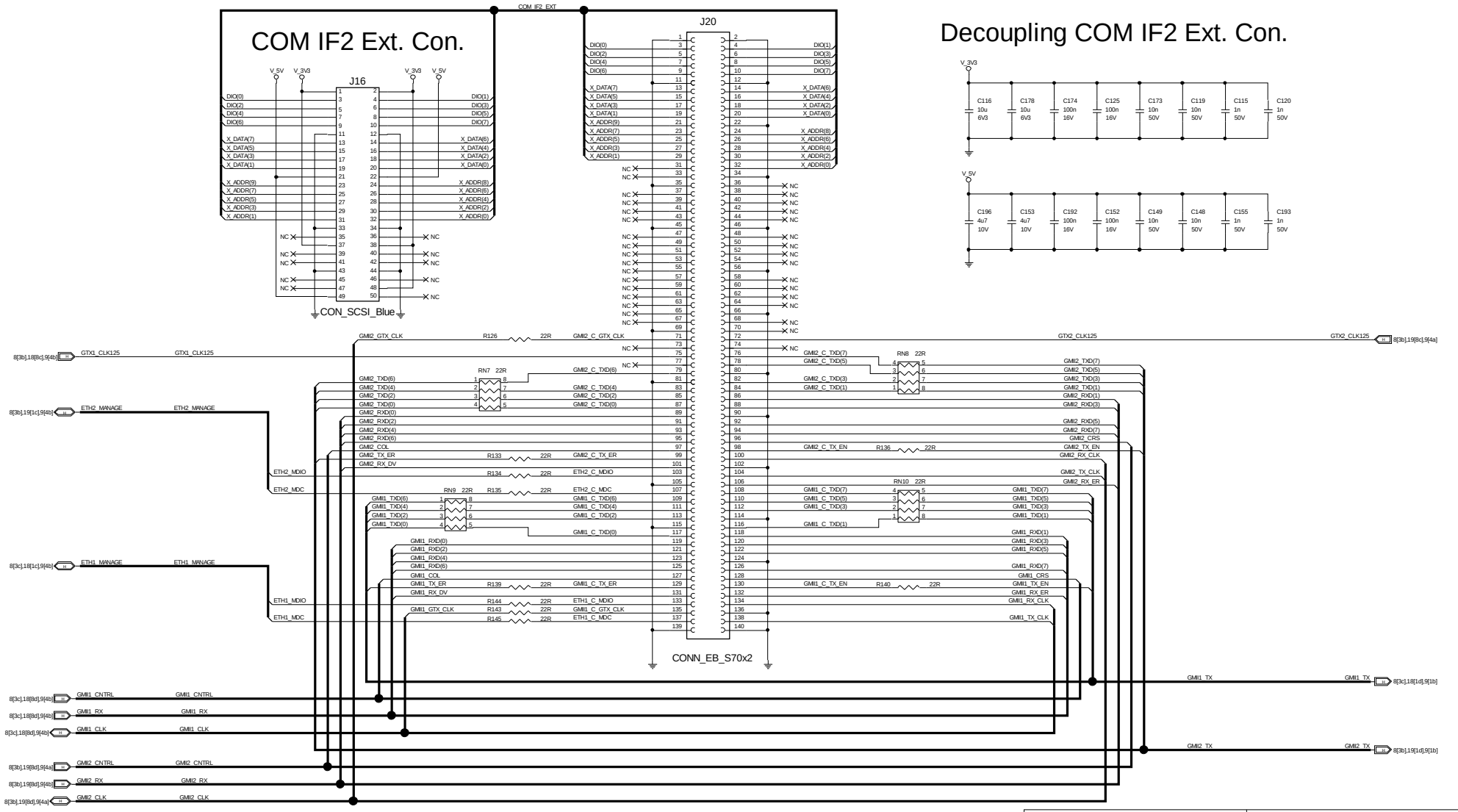


Decoupling 2.5V



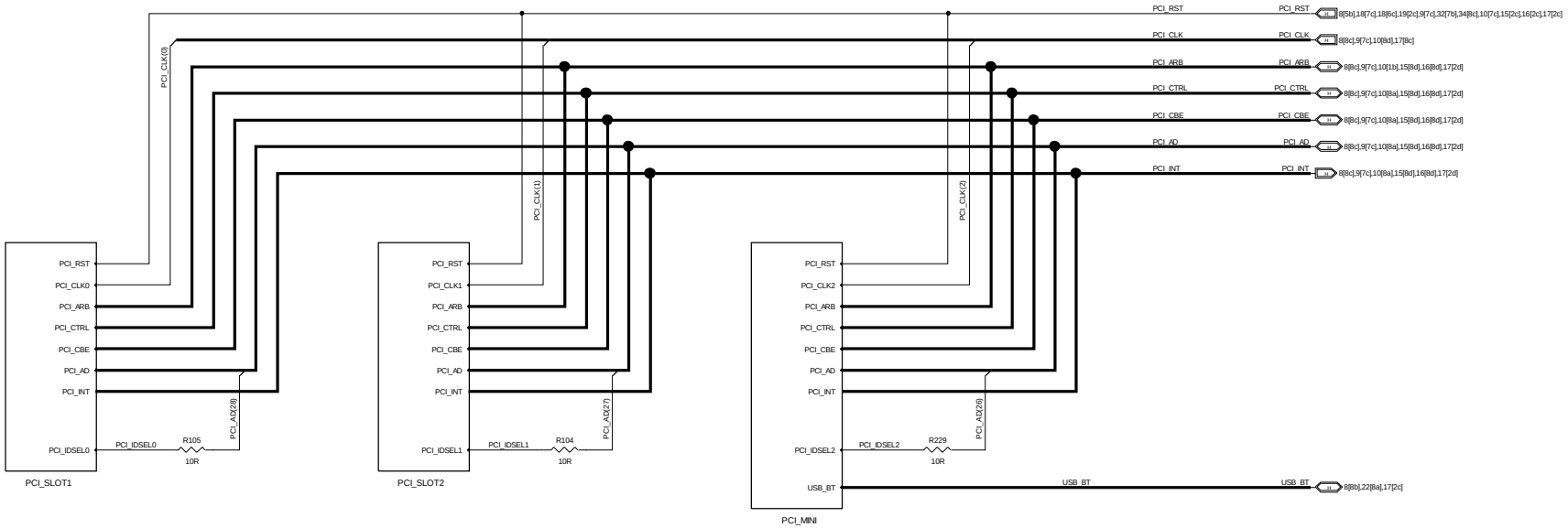
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ELEMENT	COMM_IF1_CONN	ELEMENT PAGE	01 of 01		
FUNCTION				DIVISION / NAME / DATE	
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PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	12 of 39
				REV	00/2

Communication Interface 2 Connector



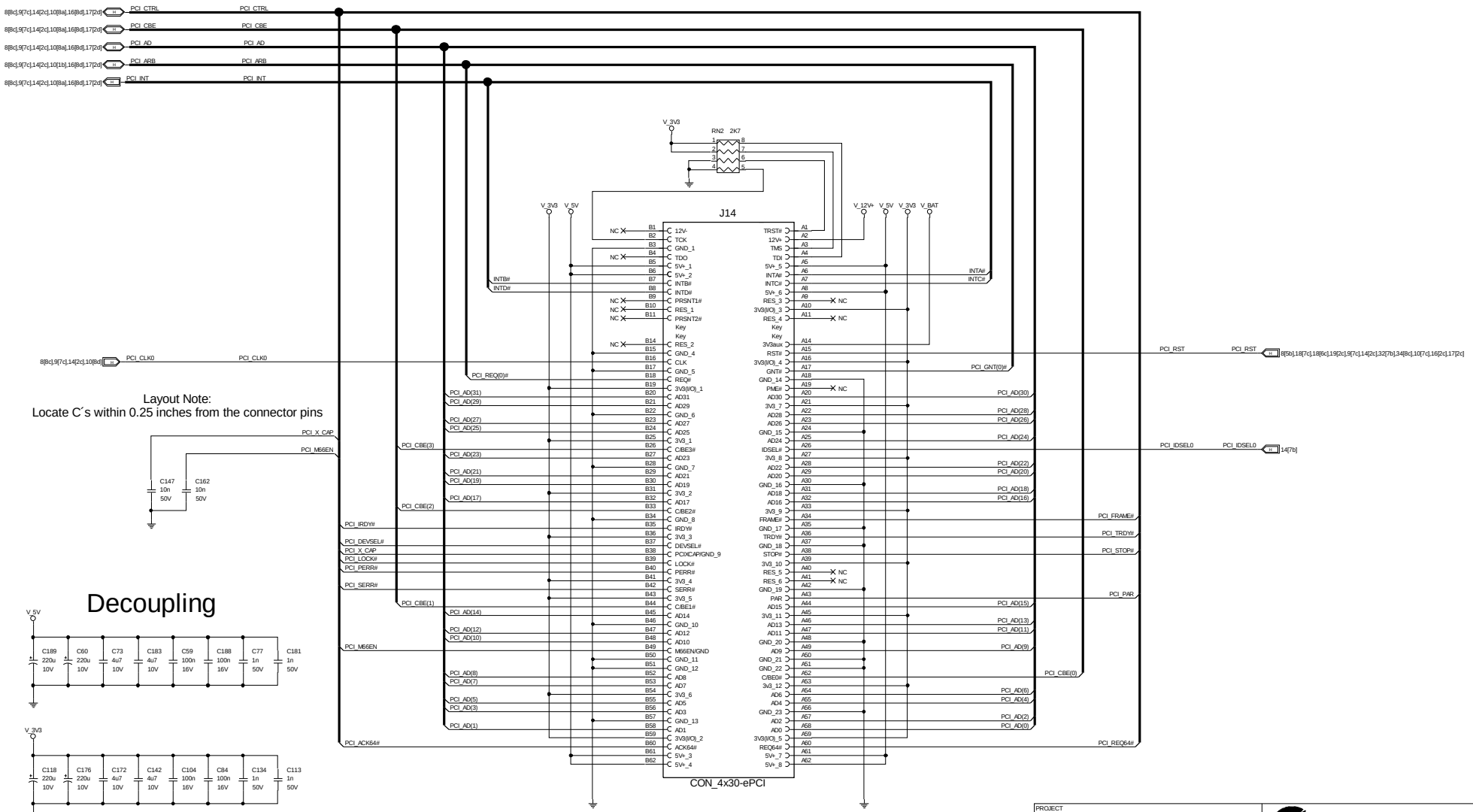
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FUNCTION				DIVISION / NAME / DATE	
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				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	13 of 39
				REV	00/2

PCI CONNECTORS/SLOTS



PROJECT	EBC2				kontron
ELEMENT	PCI_SLOTS	ELEMENT PAGE	01 of 01	DIVISION / NAME / DATE	
FUNCTION				CREATED KOM Mayr 02.2005	
				VERIFIED KOM Mayr 02.2005	
				APPROVED KOM	
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	14 of 39
REV	00/2				

PCI CONNECTOR/SLOT 1

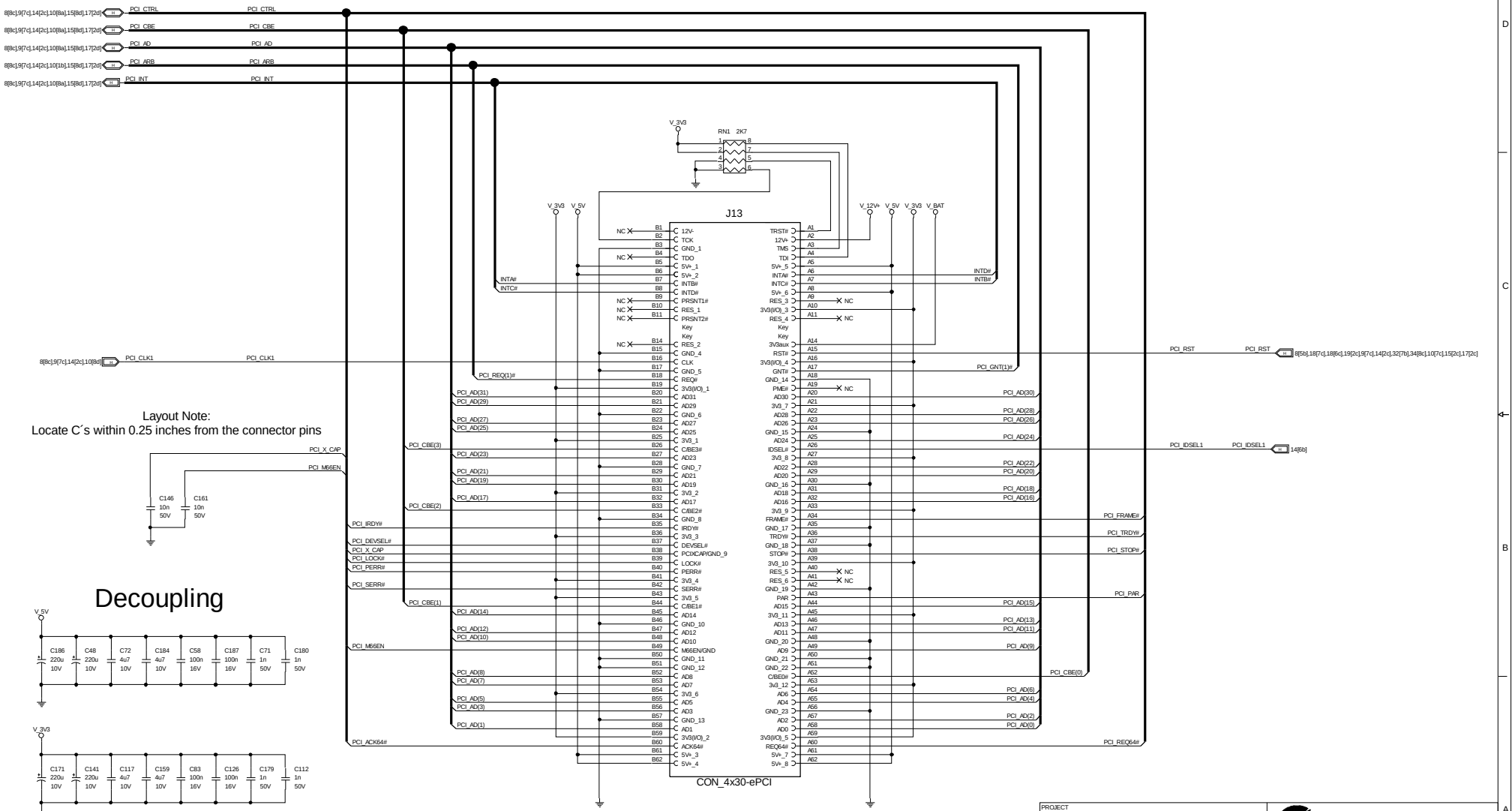


Layout Note:
Locate C´s within 0.25 inches from the connector pins

Decoupling

PROJECT: EBC2				kontron
ELEMENT: PCI_SLOT1	ELEMENT PAGE: 01 of 01		DIVISION	NAME / DATE
FUNCTION:		CREATED	KOM	Mayr 02.2005
		VERIFIED	KOM	Mayr 02.2005
		APPROVED	KOM	
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 15 of 39		REV: 00/2

PCI CONNECTOR/SLOT 2

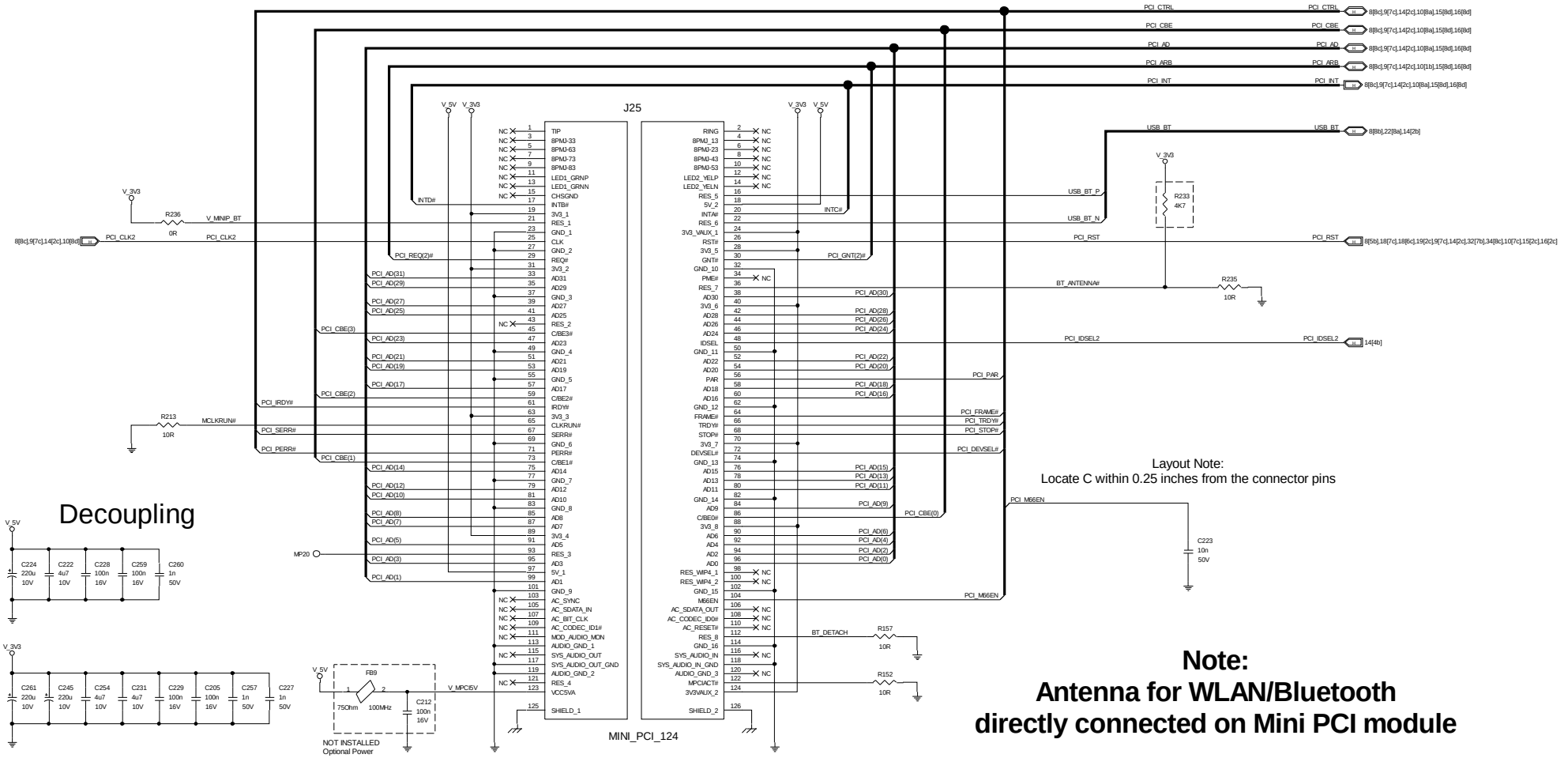


Layout Note:
Locate C´s within 0.25 inches from the connector pins

Decoupling

PROJECT: EBC2			kontron	
ELEMENT: PCI_SLOT2	ELEMENT PAGE: 01 of 01		DIVISION	NAME / DATE
FUNCTION:		CREATED	KOM	Mayr 02.2005
		VERIFIED	KOM	Mayr 02.2005
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PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 16 of 39		REV: 00/2

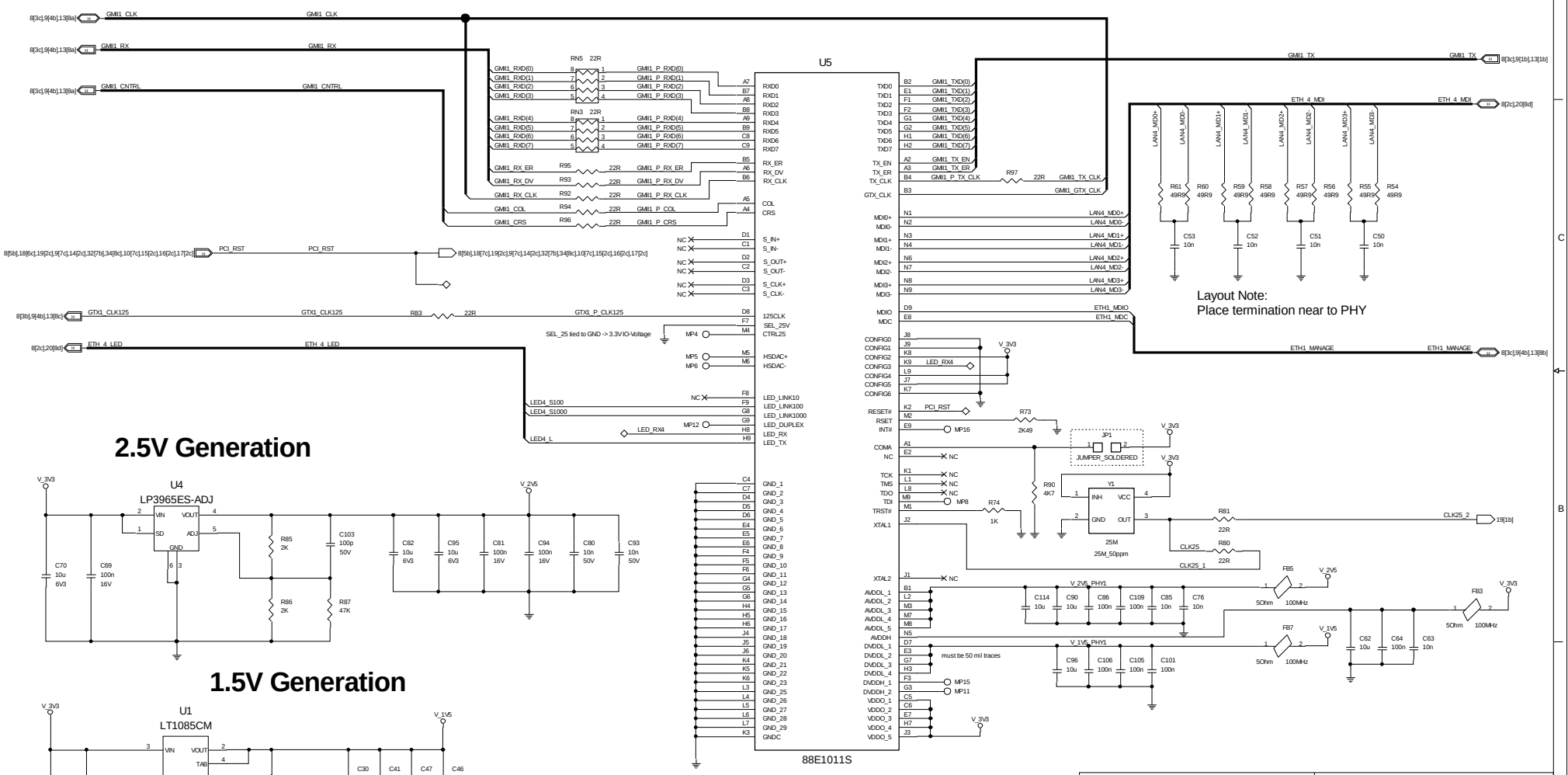
MINI_PCI Extension



Note:
Antenna for WLAN/Bluetooth directly connected on Mini PCI module

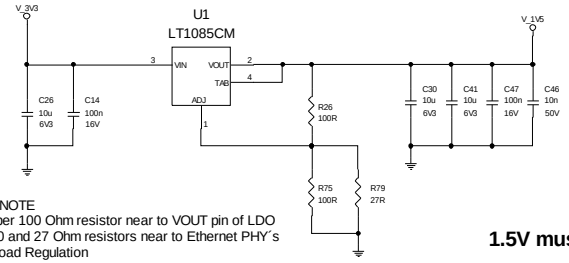
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ELEMENT: PCI_MINI	ELEMENT PAGE: 01 of 01		DIVISION	NAME	DATE
FUNCTION: MINI-PCI		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 17 of 39			REV: 00/2

GIGABIT ETHERNET PHY1



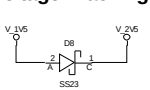
2.5V Generation

1.5V Generation



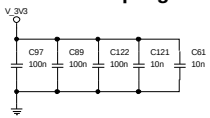
LAYOUT NOTE
Place upper 100 Ohm resistor near to VOUT pin of LDO
Place 100 and 27 Ohm resistors near to Ethernet PHY´s
-> Best Load Regulation

Voltage Tracking



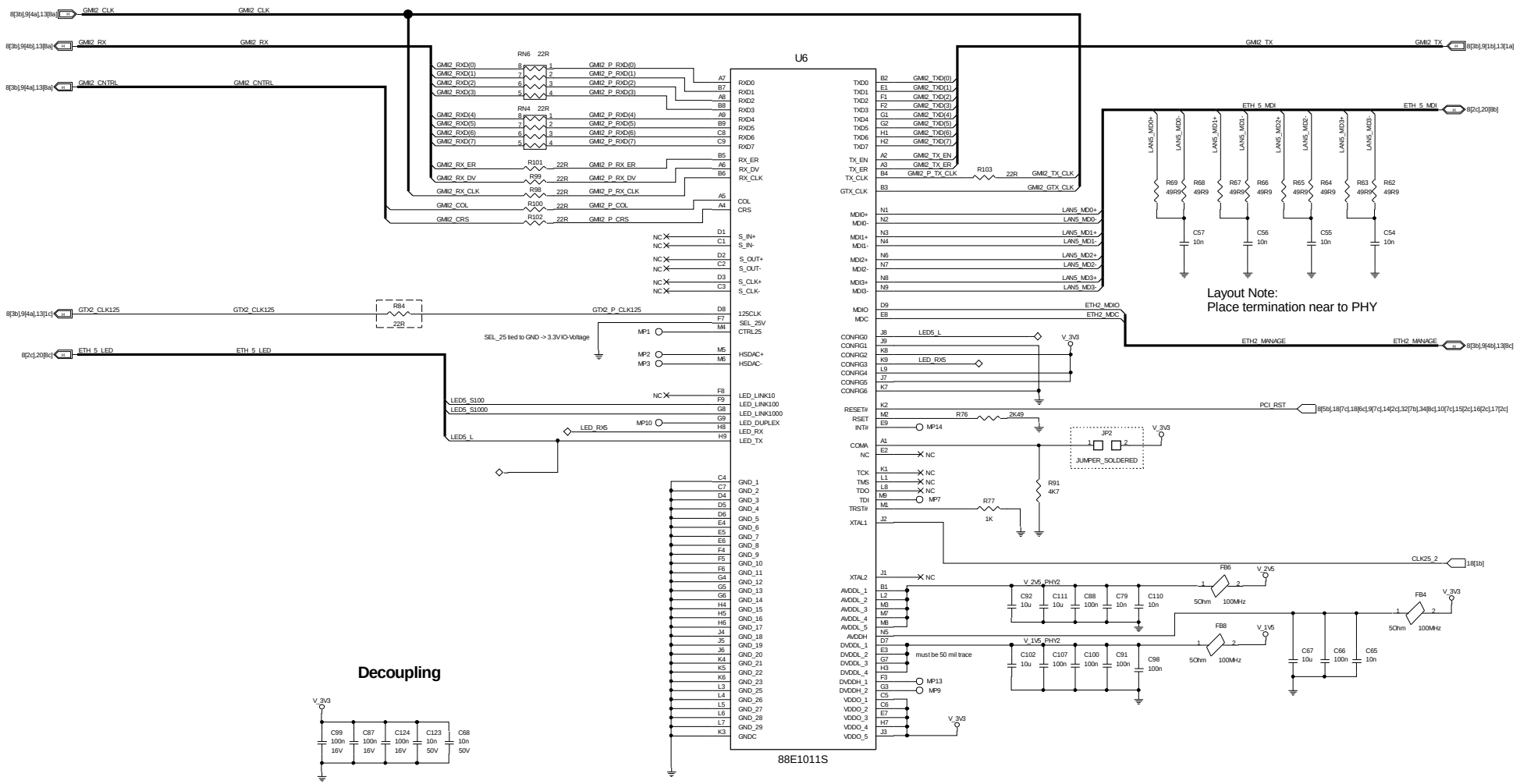
1.5V must never be more than 0.5V greater than 2.5V

Decoupling



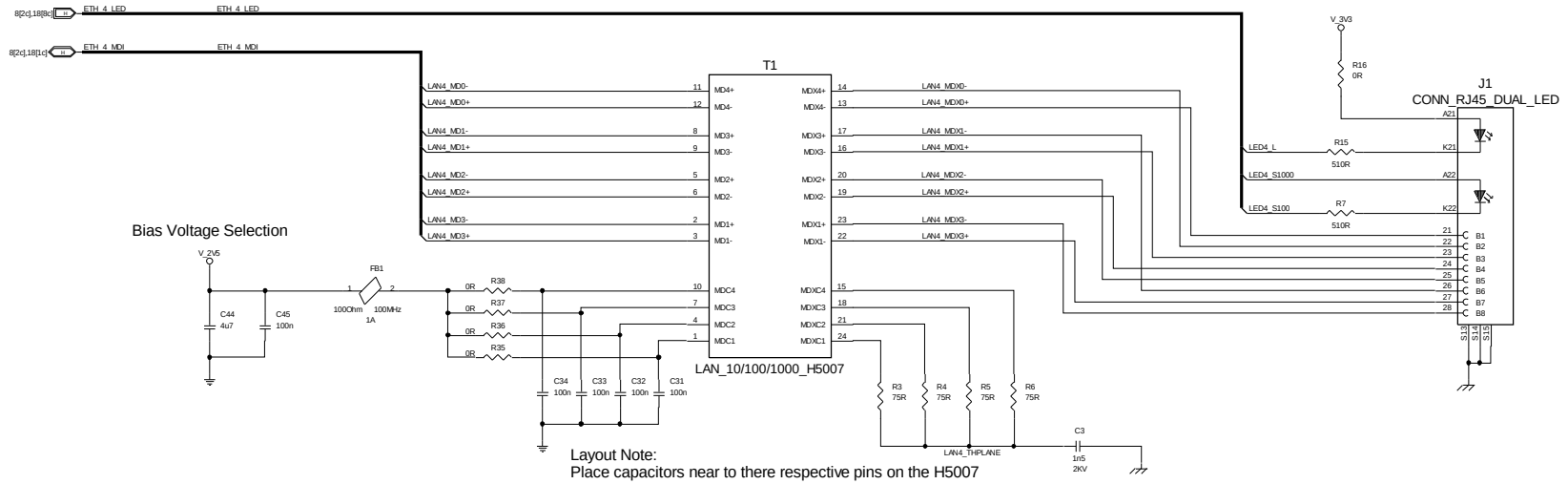
PROJECT: EBC2			kontron
ELEMENT: GIG_ETH_PHY	ELEMENT PAGE: 01 of 02		
FUNCTION:		DIVISION / NAME / DATE	
		CREATED: KOM Mayr 02.2005	
		VERIFIED: KOM Mayr 02.2005	
		APPROVED: KOM	
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 18 of 39	REV: 00/2

GIGABIT ETHERNET PHY2

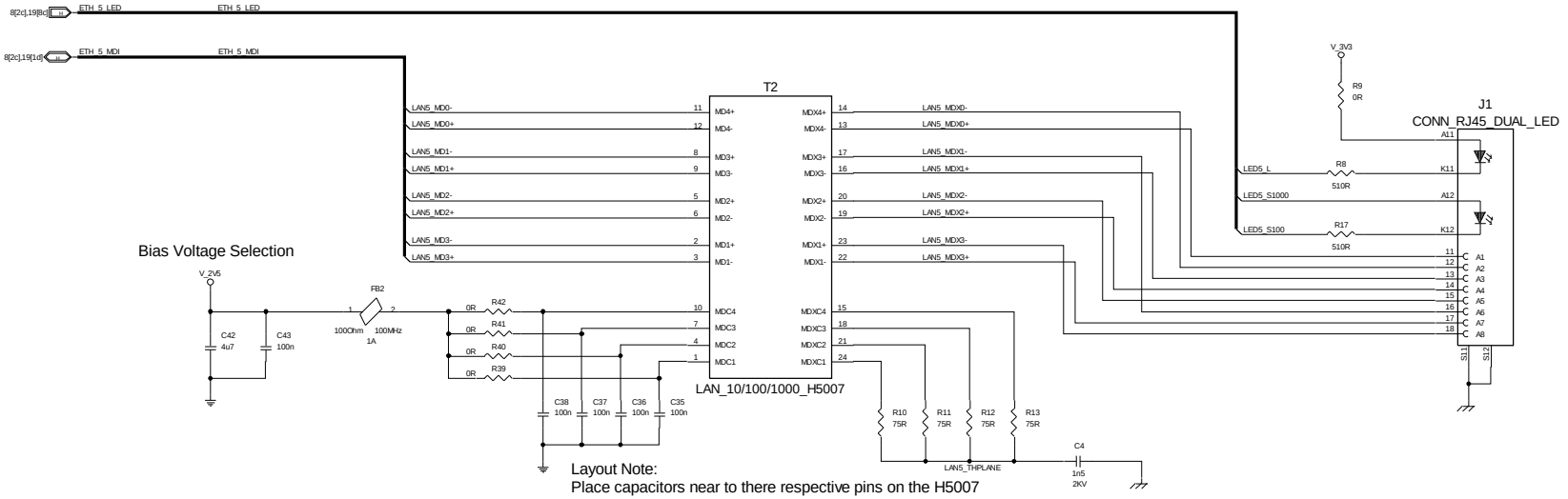


PROJECT	EBC2		kontron
ELEMENT	GIG_ETH_PHY	ELEMENT PAGE: 02 of 02	
FUNCTION			
		DIVISION / NAME / DATE	
CREATED		KOM Mayr	02.2005
VERIFIED		KOM Mayr	02.2005
APPROVED		KOM	
PCB ID	31.253-1010.1	PCB INDEX 00	
SHEET	19 of 39		REV 00/2

GIGABIT ETHERNET INTERFACES



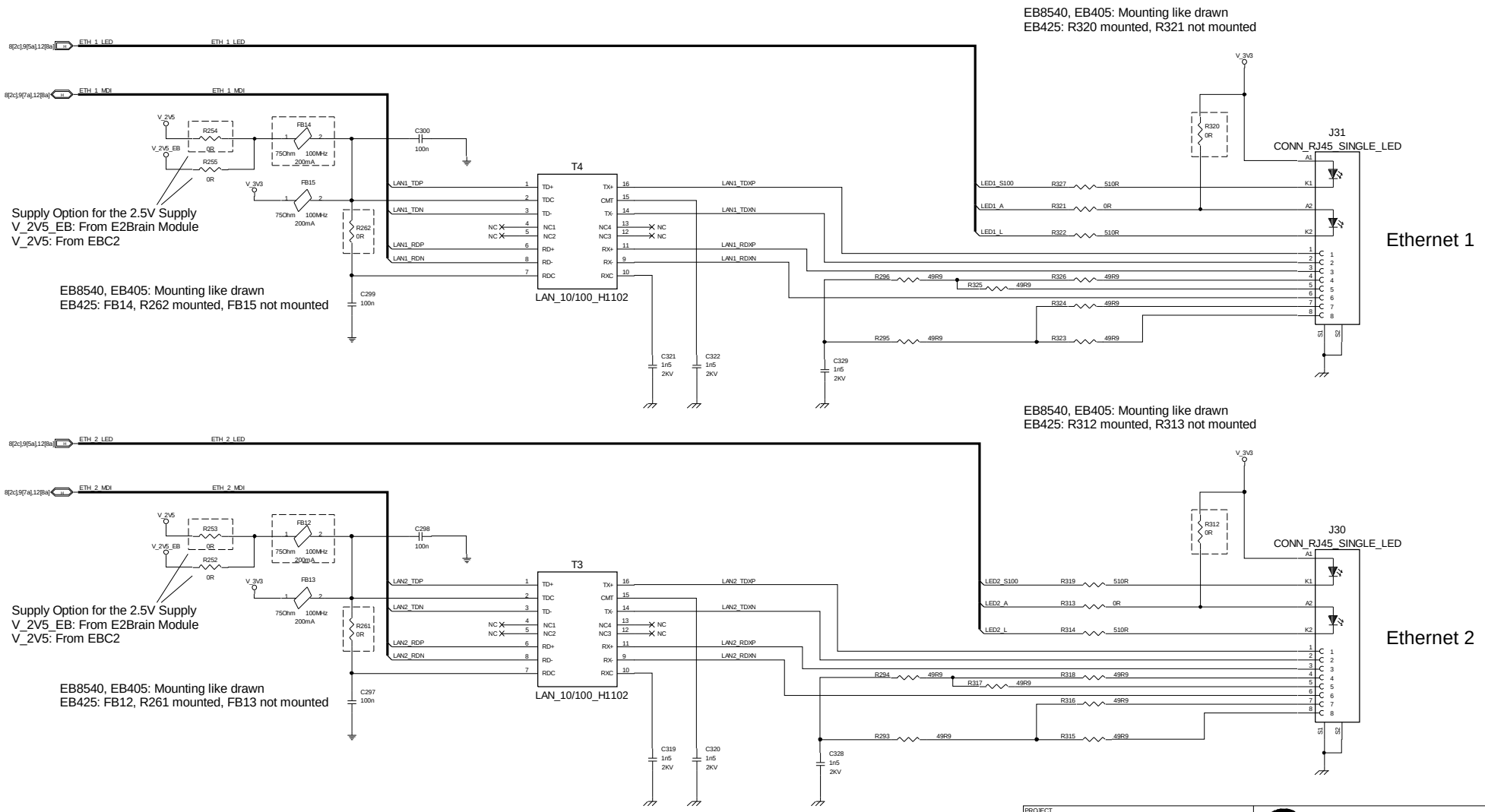
Ethernet 4



Ethernet 5

PROJECT: EBC2			kontron		
ELEMENT: ETHERNET	ELEMENT PAGE: 01 of 02		DIVISION	NAME	DATE
FUNCTION:		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 20 of 39			REV: 00/2

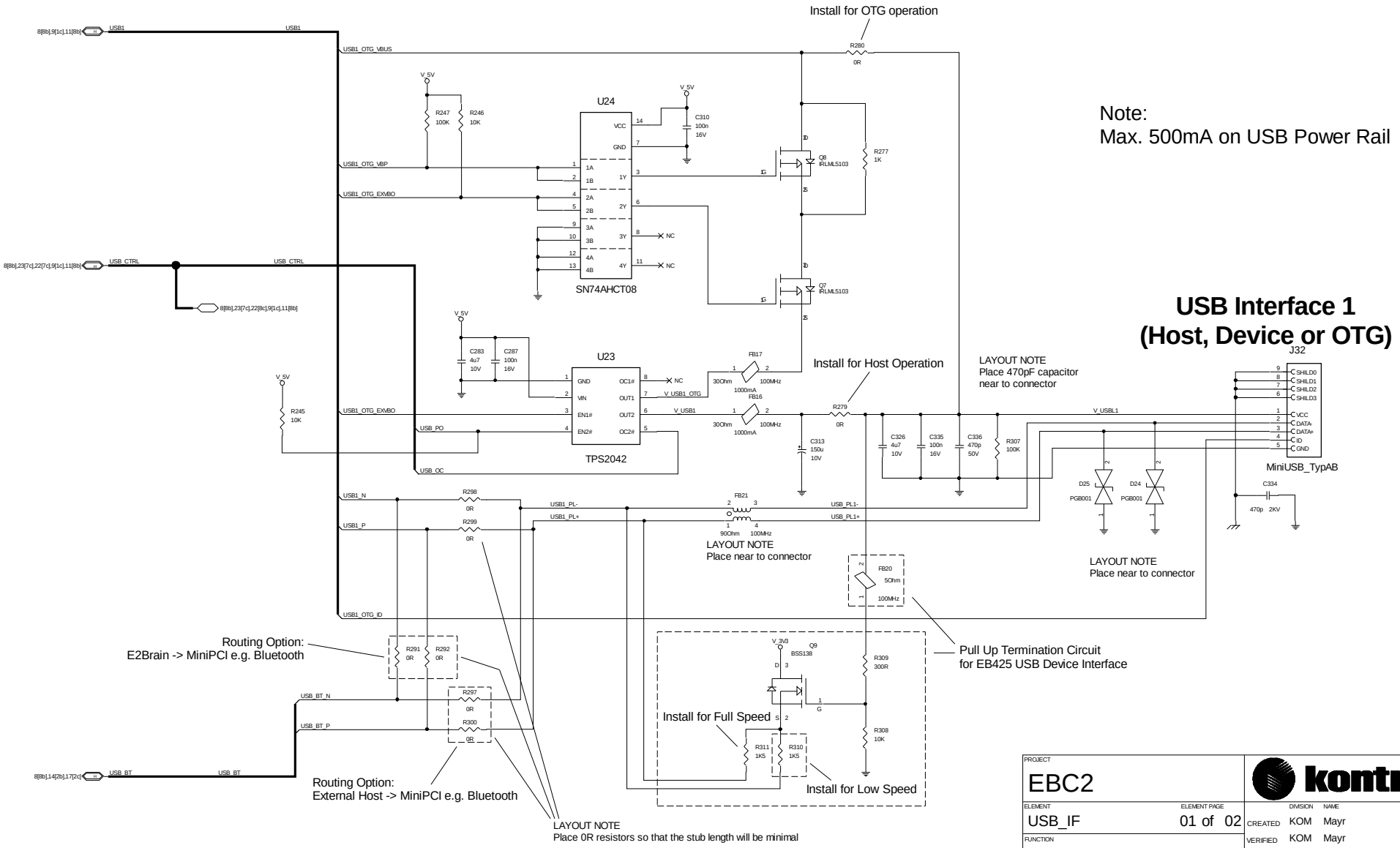
FAST ETHERNET INTERFACES



Note:
Fast Ethernet 3 reserved for future use

PROJECT	EBC2				kontron
ELEMENT	ETHERNET	ELEMENT PAGE	02 of 02	DIVISION / NAME / DATE	
FUNCTION				CREATED KOM Mayr 02.2005	
				VERIFIED KOM Mayr 02.2005	
				APPROVED KOM	
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	21 of 39
				REV	00/2

USB Interface 1

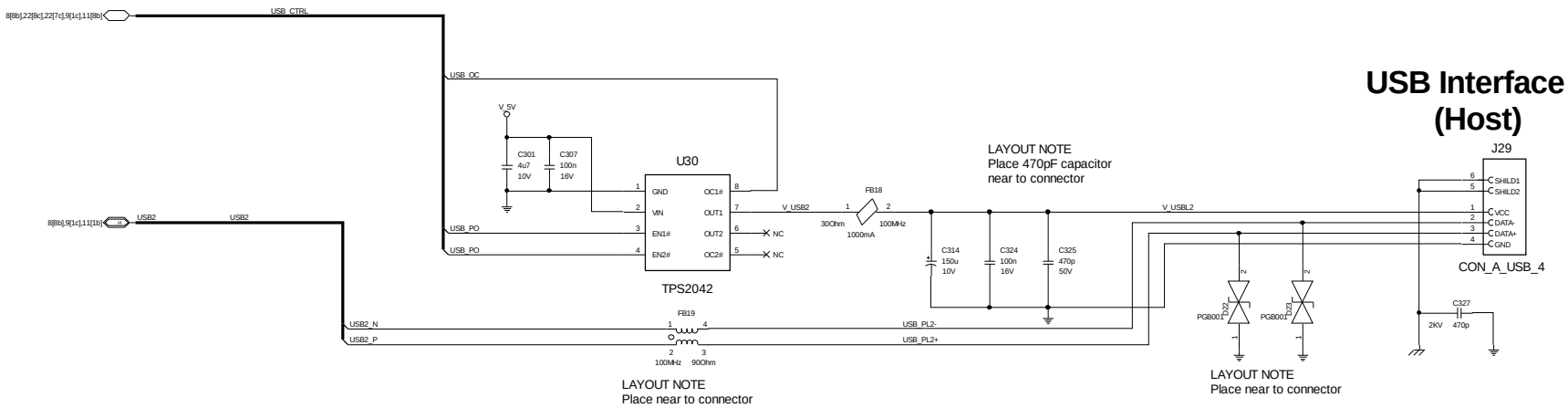


Note:
Max. 500mA on USB Power Rail

USB Interface 1
(Host, Device or OTG)

PROJECT	EBC2			kontron	
ELEMENT	USB_IF	ELEMENT PAGE	01 of 02	DIVISION / NAME / DATE	
FUNCTION				CREATED KOM Mayr 02.2005	
				VERIFIED KOM Mayr 02.2005	
				APPROVED KOM	
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	22 of 39
REV	00/2				

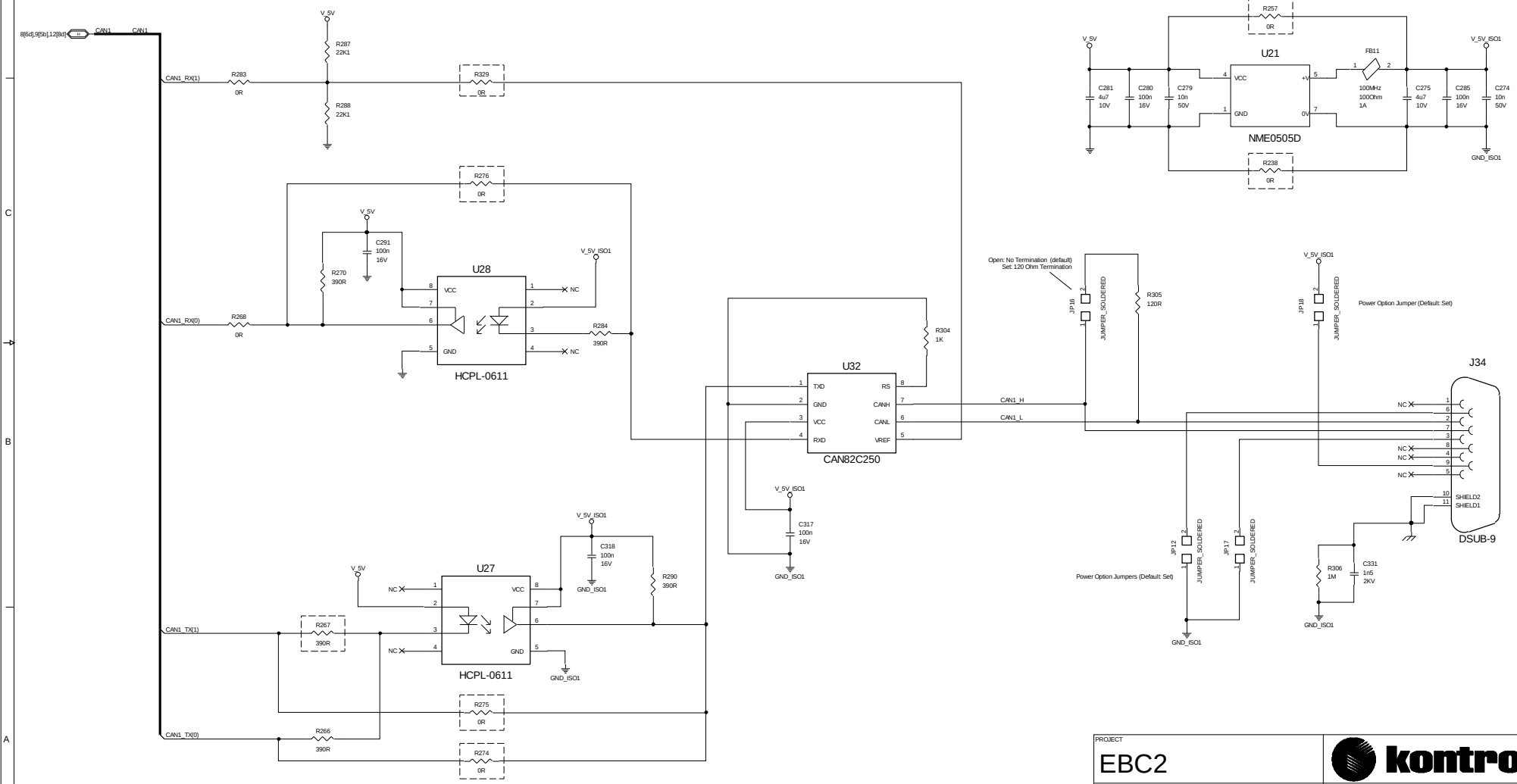
USB Interface 2



Note:
Max. 500mA on USB Power Rail

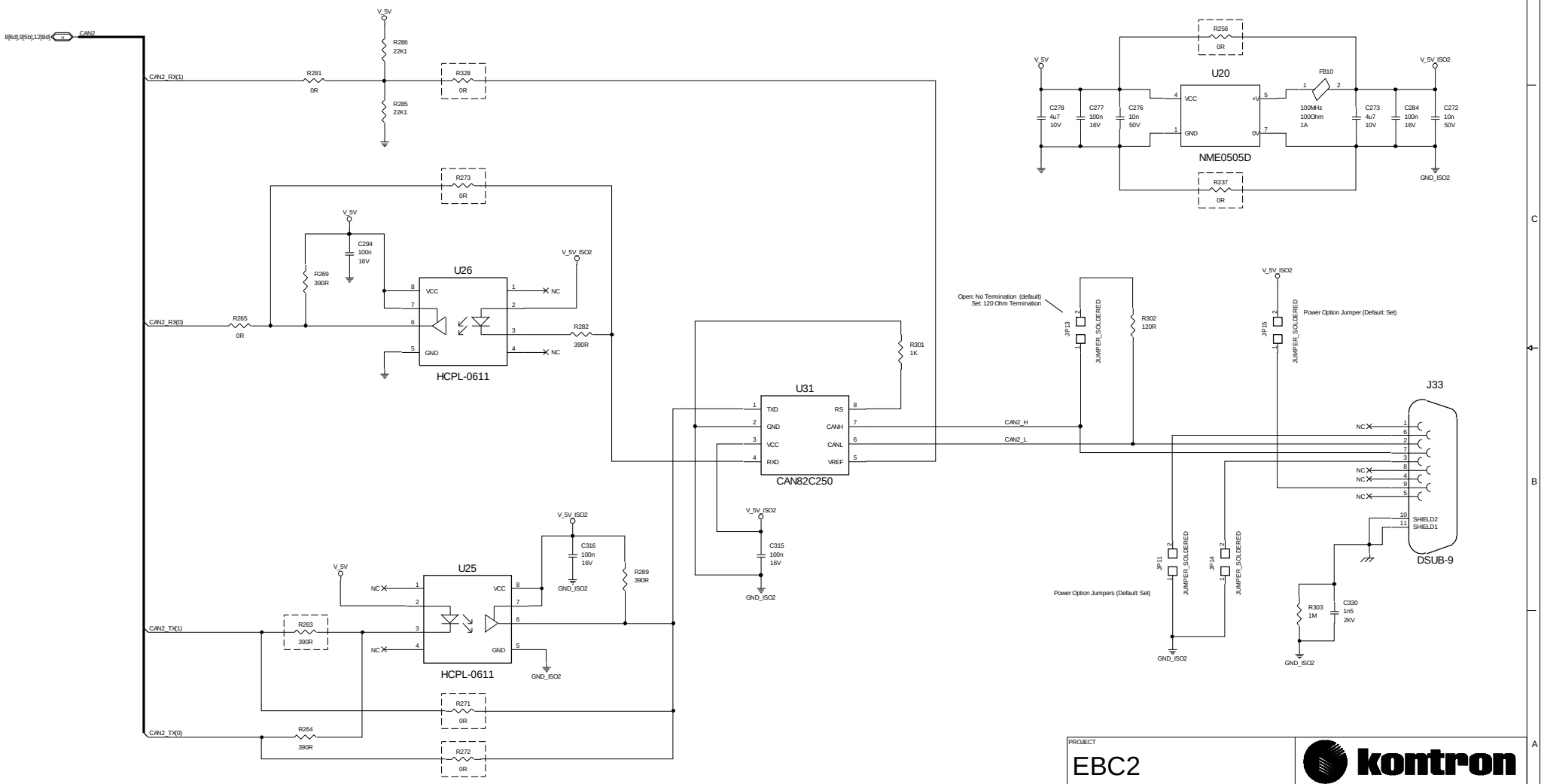
PROJECT: EBC2			kontron	
ELEMENT: USB_IF	ELEMENT PAGE: 02 of 02		DIVISION	NAME	DATE
FUNCTION:		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	@APP_DEPT	@APP_ENGINEER	@APP_DATE
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 23 of 39			REV: 00/2

CAN INTERFACE 1



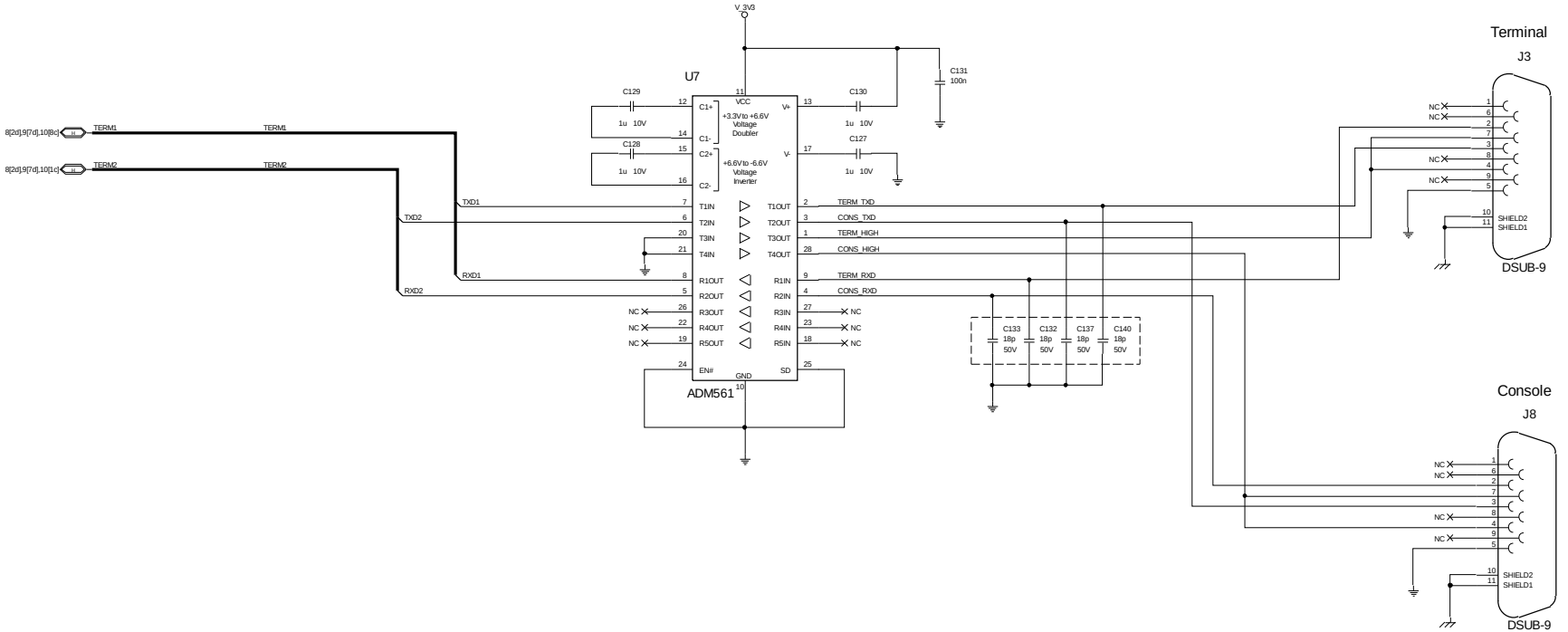
PROJECT	EBC2				kontron
ELEMENT	CAN_IF	ELEMENT PAGE	01 of 02	DIVISION / NAME / DATE	
FUNCTION				CREATED KOM Mayr 02.2005	
				VERIFIED KOM Mayr 02.2005	
				APPROVED KOM	
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	24 of 39
REV	00/2				

CAN INTERFACE 2



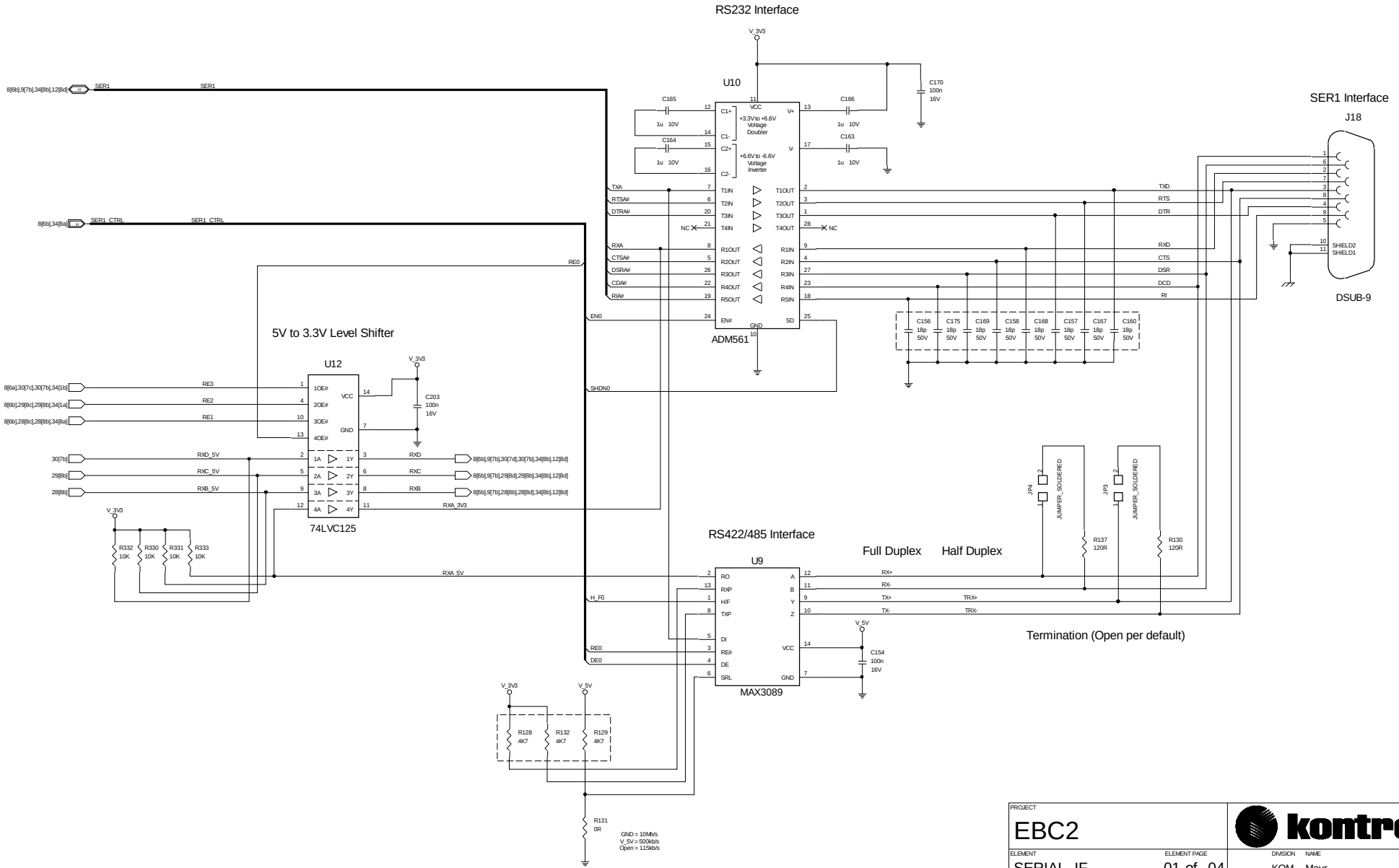
PROJECT	EBC2				kontron
ELEMENT	CAN_IF	ELEMENT PAGE	02 of 02		DIVISION / NAME / DATE
FUNCTION				CREATED	KOM Mayr 02.2005
				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	25 of 39
				REV	00/2

RS232 TERMINAL INTERFACES



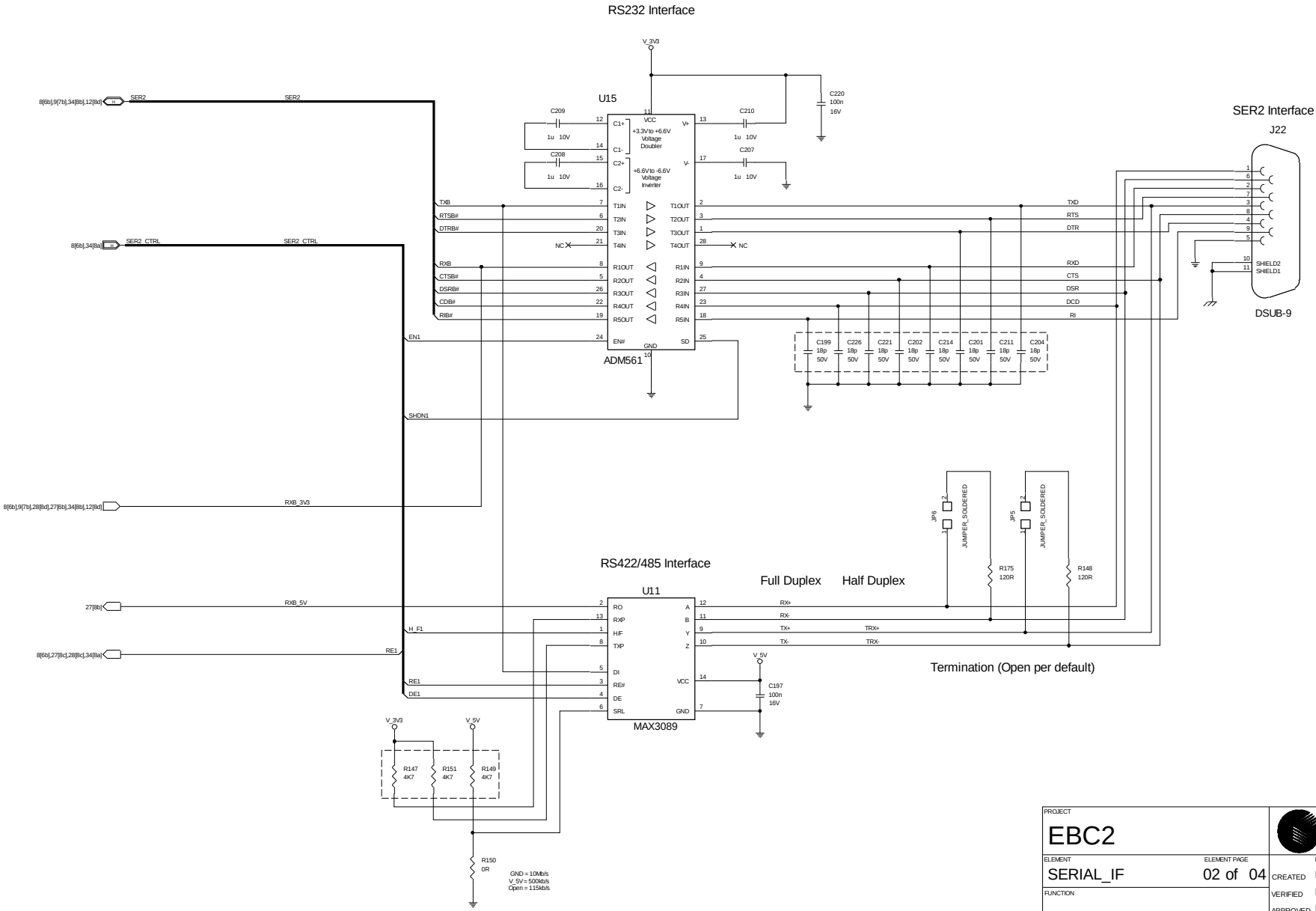
PROJECT	EBC2				kontron
ELEMENT	TERMINAL	ELEMENT PAGE	01 of 01		
FUNCTION				DIVISION / NAME / DATE	
			CREATED	KOM Mayr	02.2005
			VERIFIED	KOM Mayr	02.2005
			APPROVED	KOM	
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	26 of 39
REV	00/2				

RS232 or RS422/485 Serial Interface SER1



PROJECT	EBC2				kontron
ELEMENT	SERIAL_IF	ELEMENT PAGE	01 of 04	DIVISION / NAME / DATE	
FUNCTION				CREATED KOM Mayr 02.2005	
				VERIFIED KOM Mayr 02.2005	
				APPROVED KOM	
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET 27 of 39	REV 00/2

RS232 or RS422/485 Serial Interface SER2

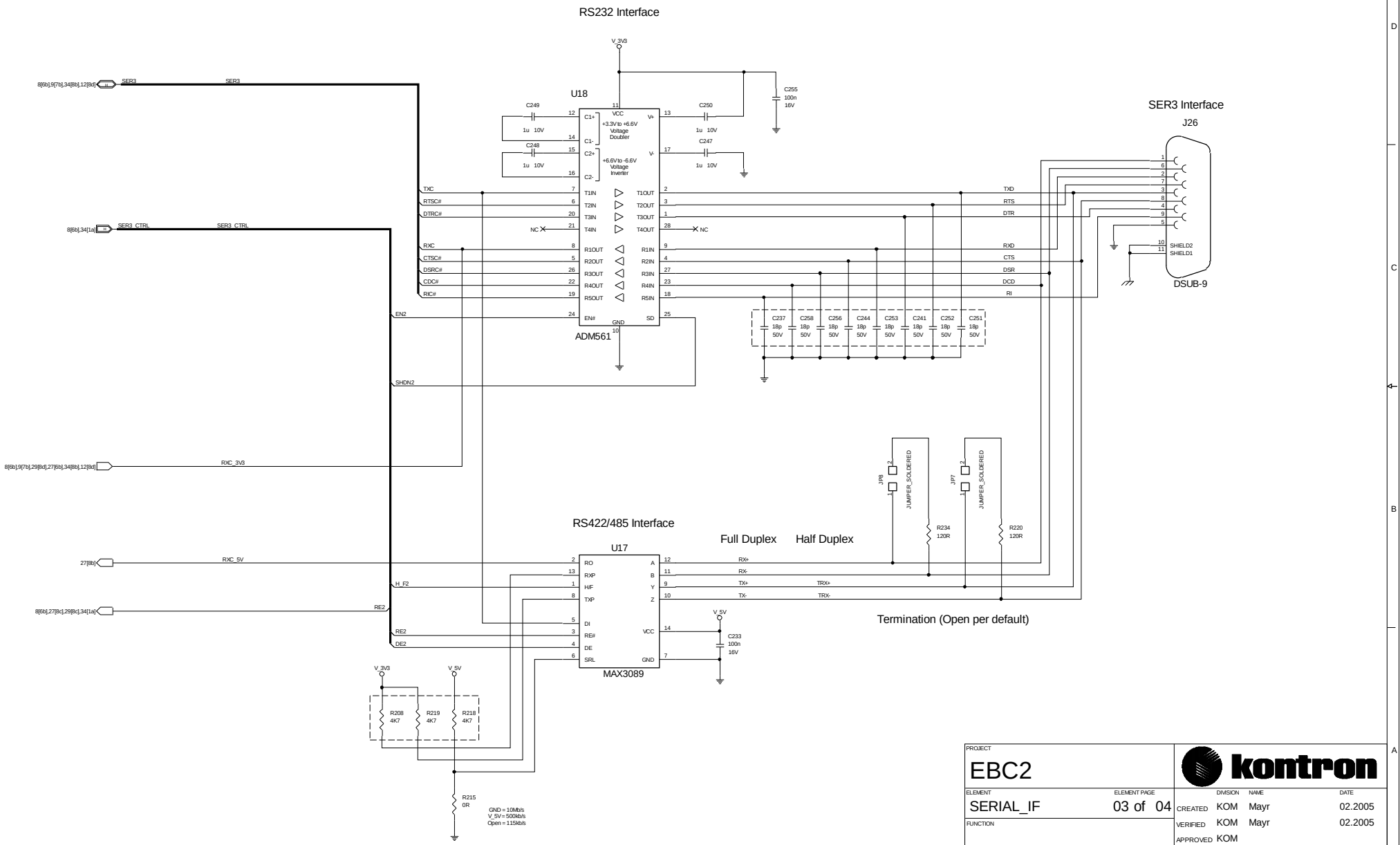


PROJECT	EBC2		kontron
ELEMENT	SERIAL_IF	ELEMENT PAGE 02 of 04	
FUNCTION			
PCB ID	31.253-1010.1	PCB INDEX 00	

	DIVISION	NAME	DATE
CREATED	KOM	Mayr	02.2005
VERIFIED	KOM	Mayr	02.2005
APPROVED	KOM		

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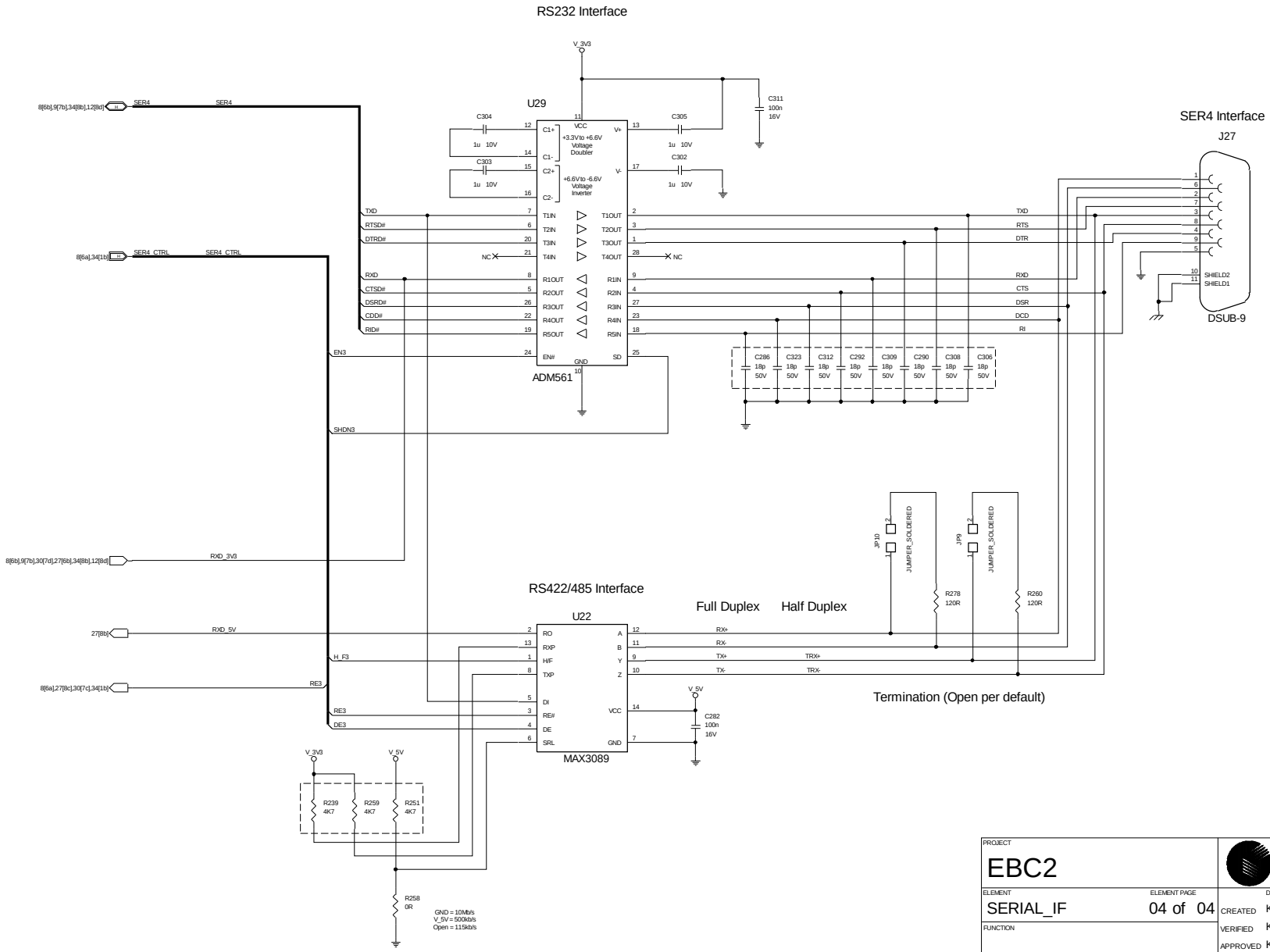
RS232 or RS422/485 Serial Interface SER3



PROJECT	EBC2		kontron
ELEMENT	SERIAL_IF	ELEMENT PAGE 03 of 04	
FUNCTION			
PCB ID	31.253-1010.1	PCB INDEX 00	
SHEET	29 of 39	REV 00/2	

	DIVISION	NAME	DATE
CREATED	KOM	Mayr	02.2005
VERIFIED	KOM	Mayr	02.2005
APPROVED	KOM		

RS232 or RS422/485 Serial Interface SER4

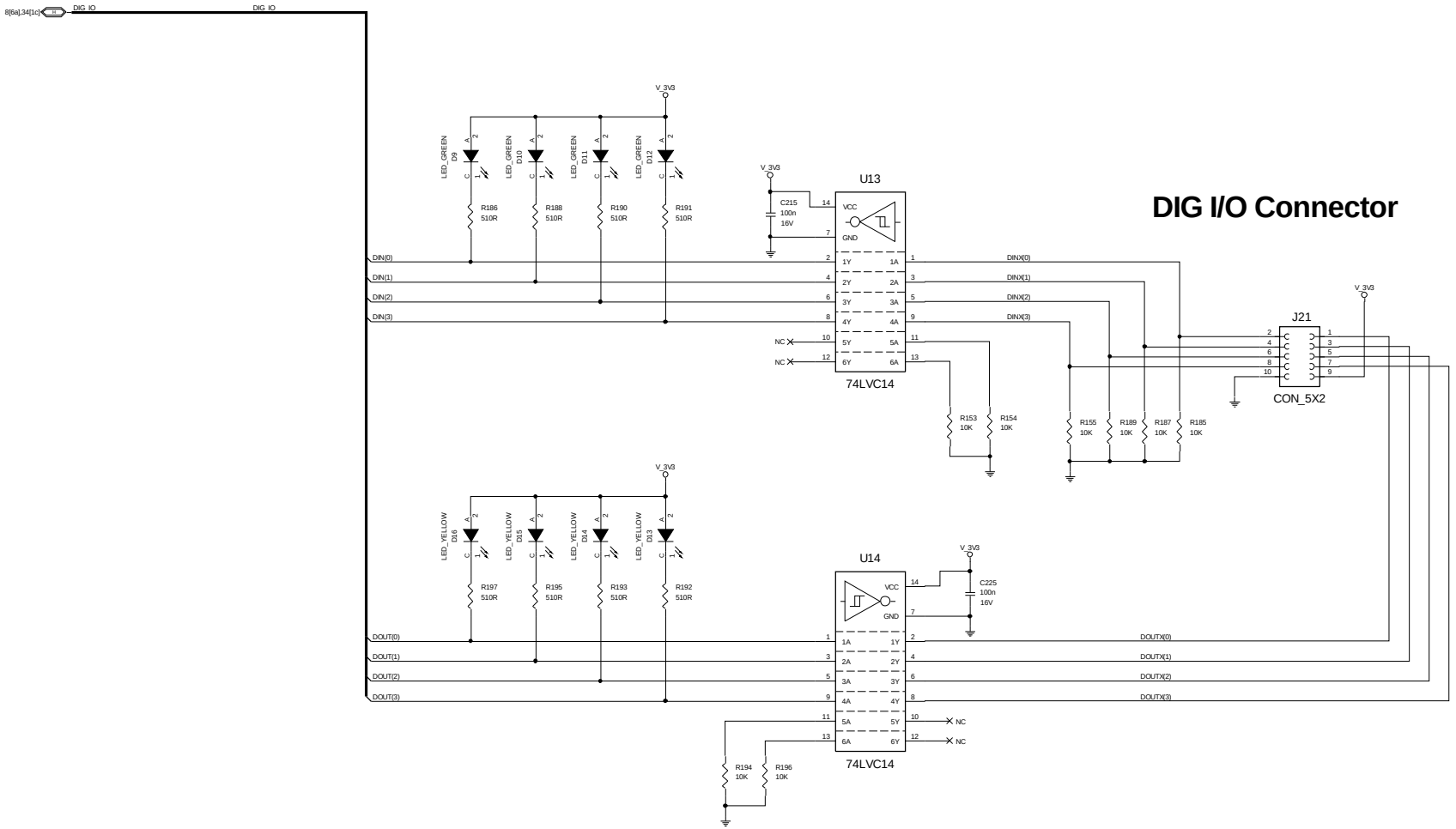


PROJECT	EBC2		kontron
ELEMENT	SERIAL_IF	ELEMENT PAGE: 04 of 04	
FUNCTION			
PCB ID	31.253-1010.1	PCB INDEX: 00	

	DIVISION	NAME	DATE
CREATED	KOM	Mayr	02.2005
VERIFIED	KOM	Mayr	02.2005
APPROVED	KOM		

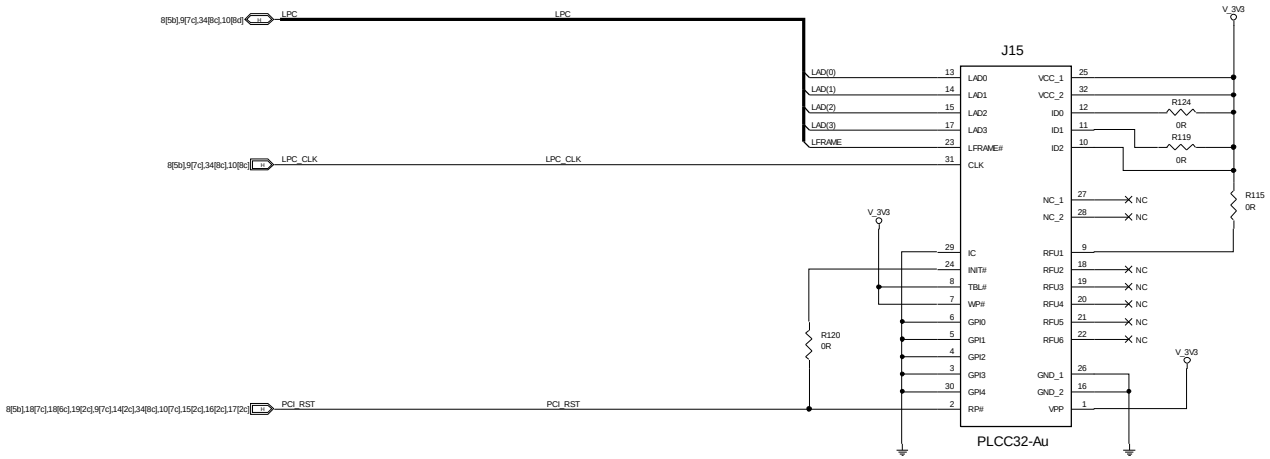
SHEET: 30 of 39 — REV: 00/2

Digital Input/Output

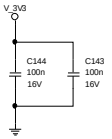


PROJECT	EBC2				
ELEMENT	DIGITAL_IO	ELEMENT PAGE	01 of 01		
FUNCTION				DIVISION / NAME / DATE	
				CREATED	KOM Mayr 02.2005
				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	31 of 39
				REV	00/2

LPC FLASH SOCKET



Decoupling

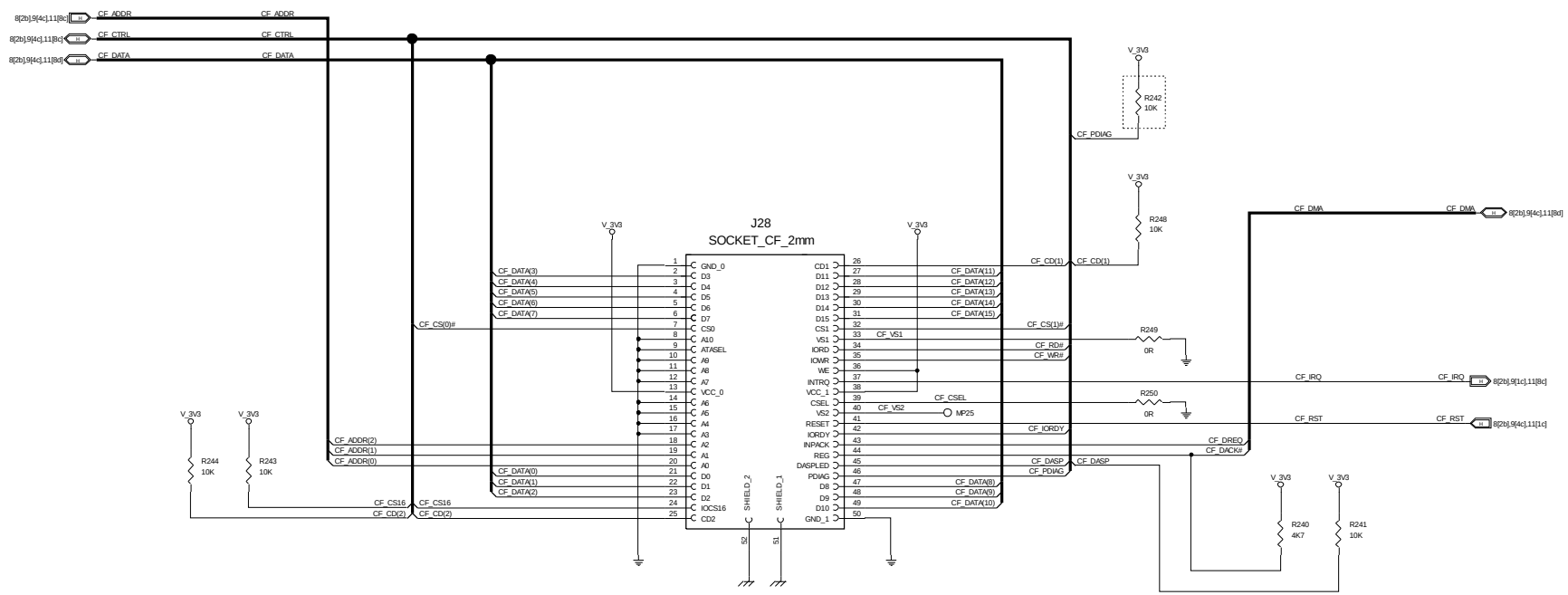


PROJECT	EBC2				
ELEMENT	LPC_FLASH	ELEMENT PAGE	01 of 01		
FUNCTION					
PCB ID	31.253-1010.1	PCB INDEX	00		

	DIVISION	NAME	DATE
CREATED	KOM	Mayr	02.2005
VERIFIED	KOM	Mayr	02.2005
APPROVED	KOM		

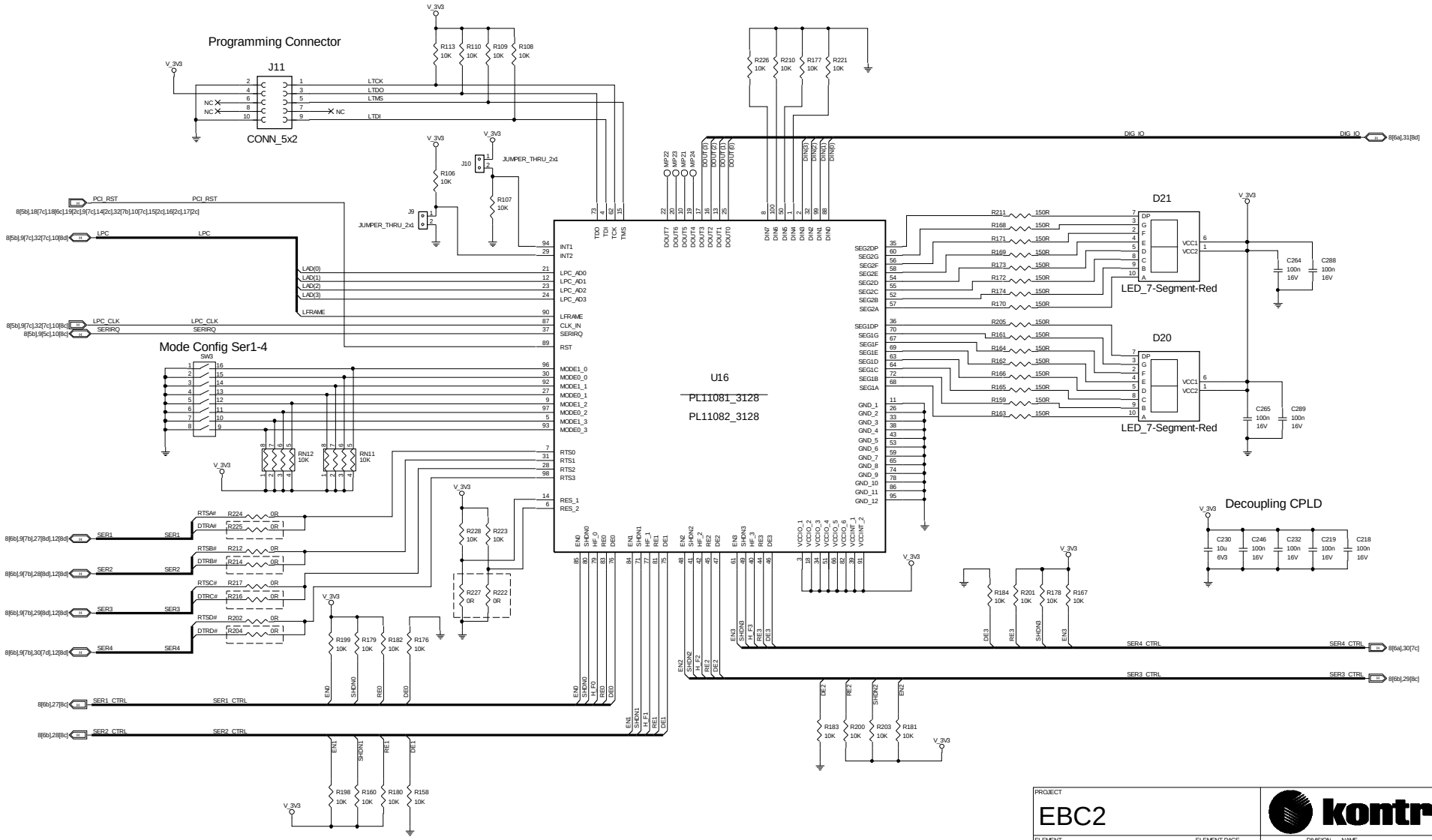
SHEET 32 of 39 REV 00/2

COMPACT FLASH SOCKET



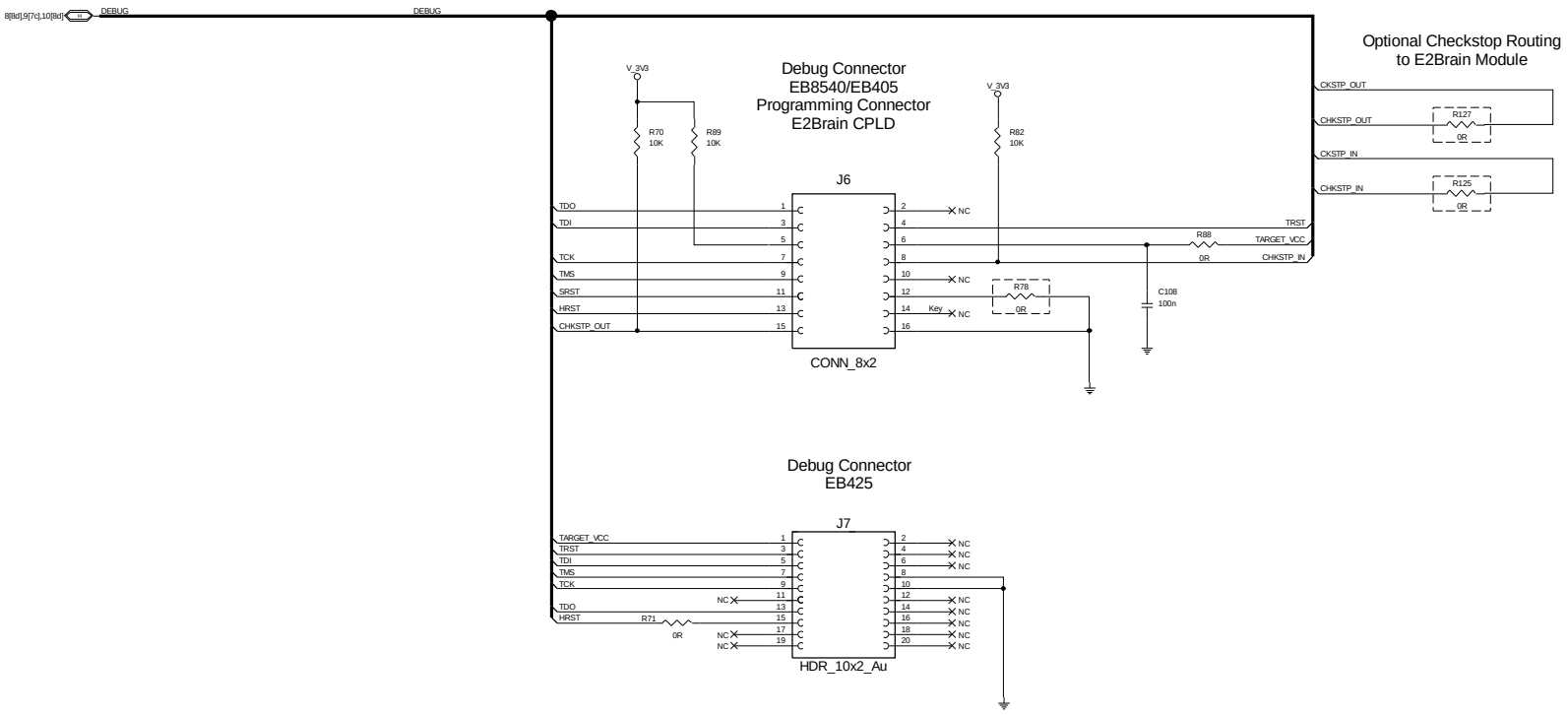
PROJECT	EBC2				kontron
ELEMENT	CF_SOCKET	ELEMENT PAGE	01 of 01		
FUNCTION					
			DIVISION	NAME	DATE
		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	33 of 39
REV	00/2				

Onboard CPLD Logic



PROJECT	EBC2			kontron	
ELEMENT	LOGIC	ELEMENT PAGE	01 of 01	DIVISION / NAME / DATE	
FUNCTION				CREATED	KOM Mayr 02.2005
				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	34 of 39
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DEBUGGING AND PROGRAMMING CONNECTORS



PROJECT	EBC2				
ELEMENT	JTAG	ELEMENT PAGE	01 of 01		
FUNCTION					
PCB ID	31.253-1010.1	PCB INDEX	00		

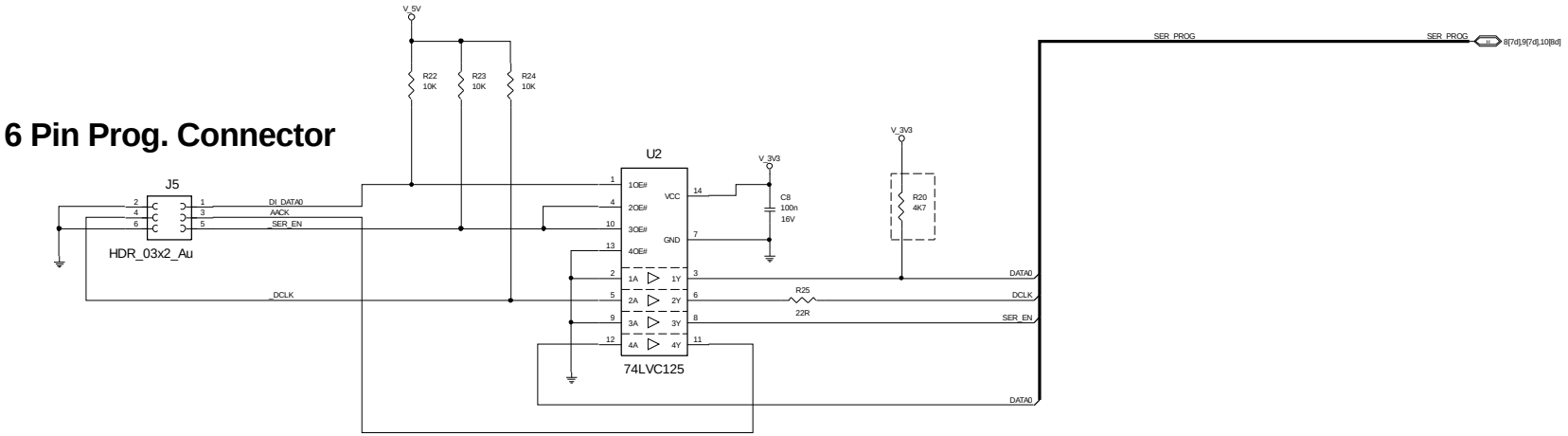
kontron

	DIVISION	NAME	DATE
CREATED	KOM	Mayr	02.2005
VERIFIED	KOM	Mayr	02.2005
APPROVED	KOM		

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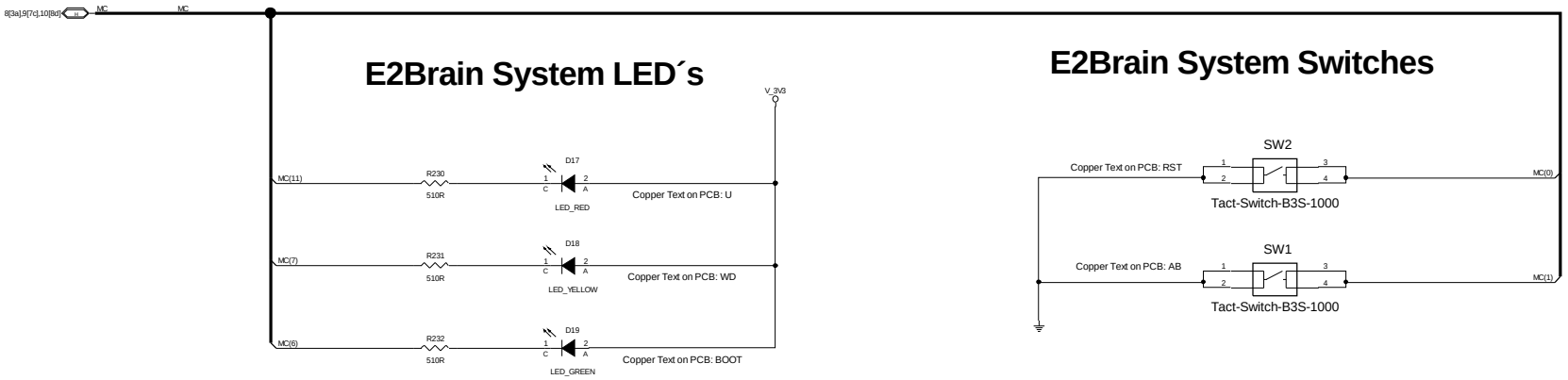
Programming for ATMEL FPGA Configuration EEPROM

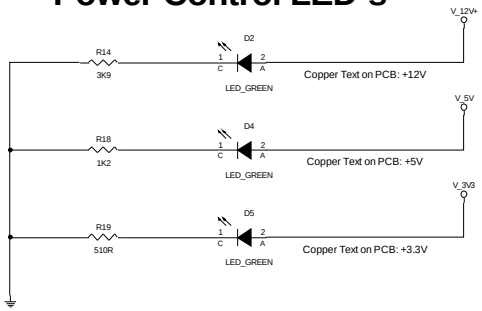
6 Pin Prog. Connector

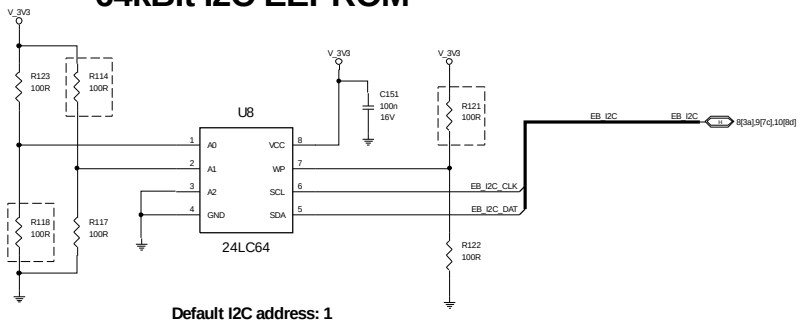


PROJECT: EBC2					kontron
ELEMENT: SERIAL_PROG	ELEMENT PAGE: 01 of 01		DIVISION	NAME	DATE
FUNCTION:		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 36 of 39			REV: 00/2

Monitor and Control Utilities

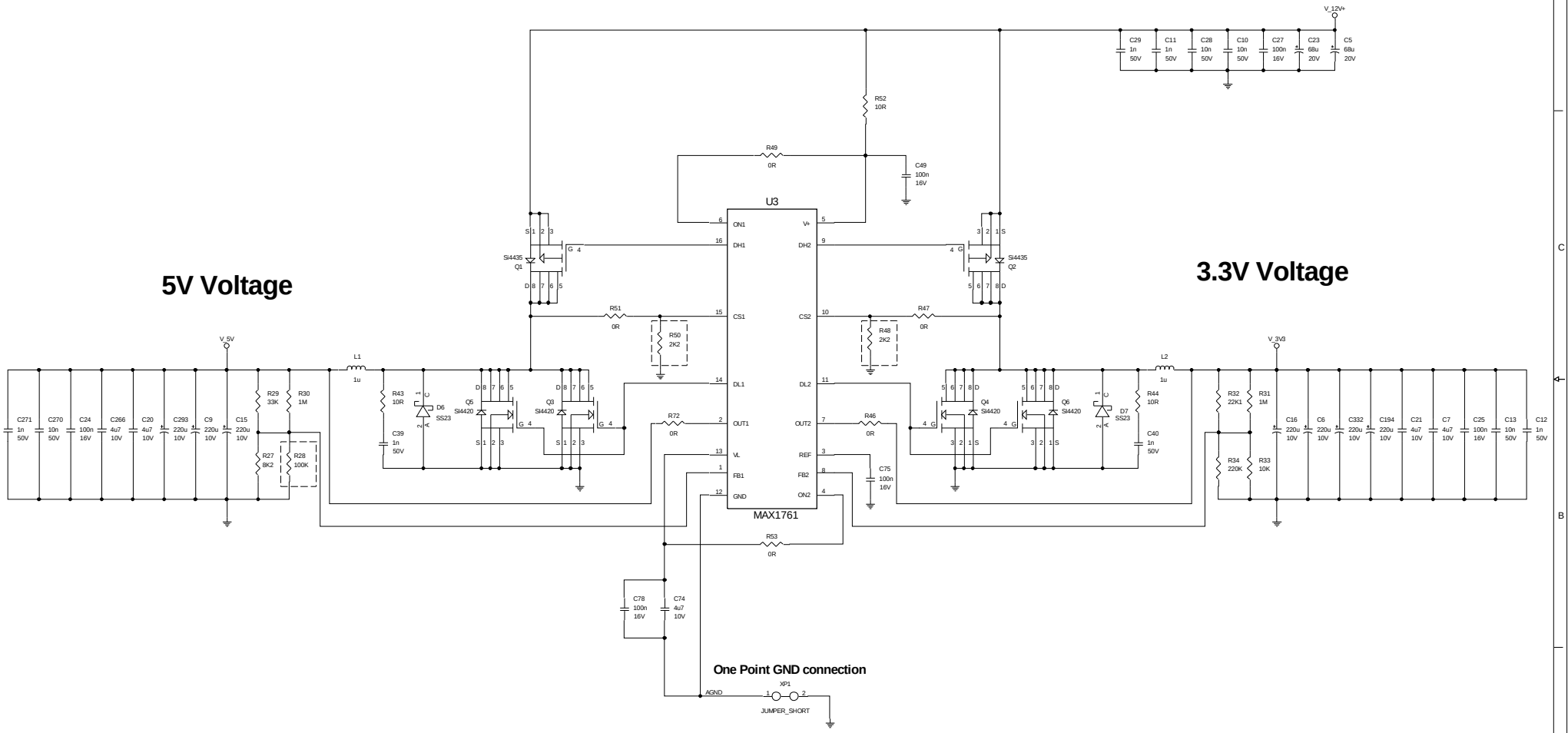






PROJECT	EBC2				kontron
ELEMENT	MISCELLANEOUS	ELEMENT PAGE	01 of 01	DIVISION / NAME / DATE	
FUNCTION				CREATED	KOM Mayr 02.2005
				VERIFIED	KOM Mayr 02.2005
				APPROVED	KOM
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET	37 of 39
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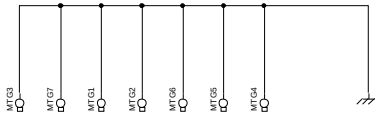
ONBOARD DC/DC CONVERTER



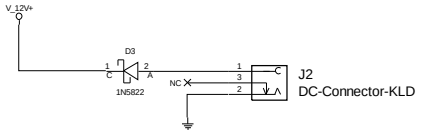
PROJECT	EBC2				kontron
ELEMENT	POWER	ELEMENT PAGE	01 of 02	DIVISION / NAME / DATE	
FUNCTION				CREATED KOM Mayr 02.2005	
				VERIFIED KOM Mayr 02.2005	
				APPROVED KOM	
PCB ID	31.253-1010.1	PCB INDEX	00	SHEET 38 of 39	REV 00/2

Miscellany Power Supply

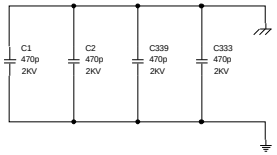
Mounting Holes



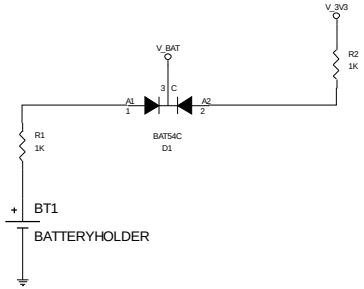
12V supply from external power supply



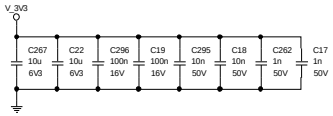
High Voltage GND/Shield Capacitors

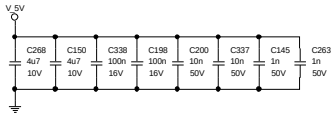


Backup supply circuit

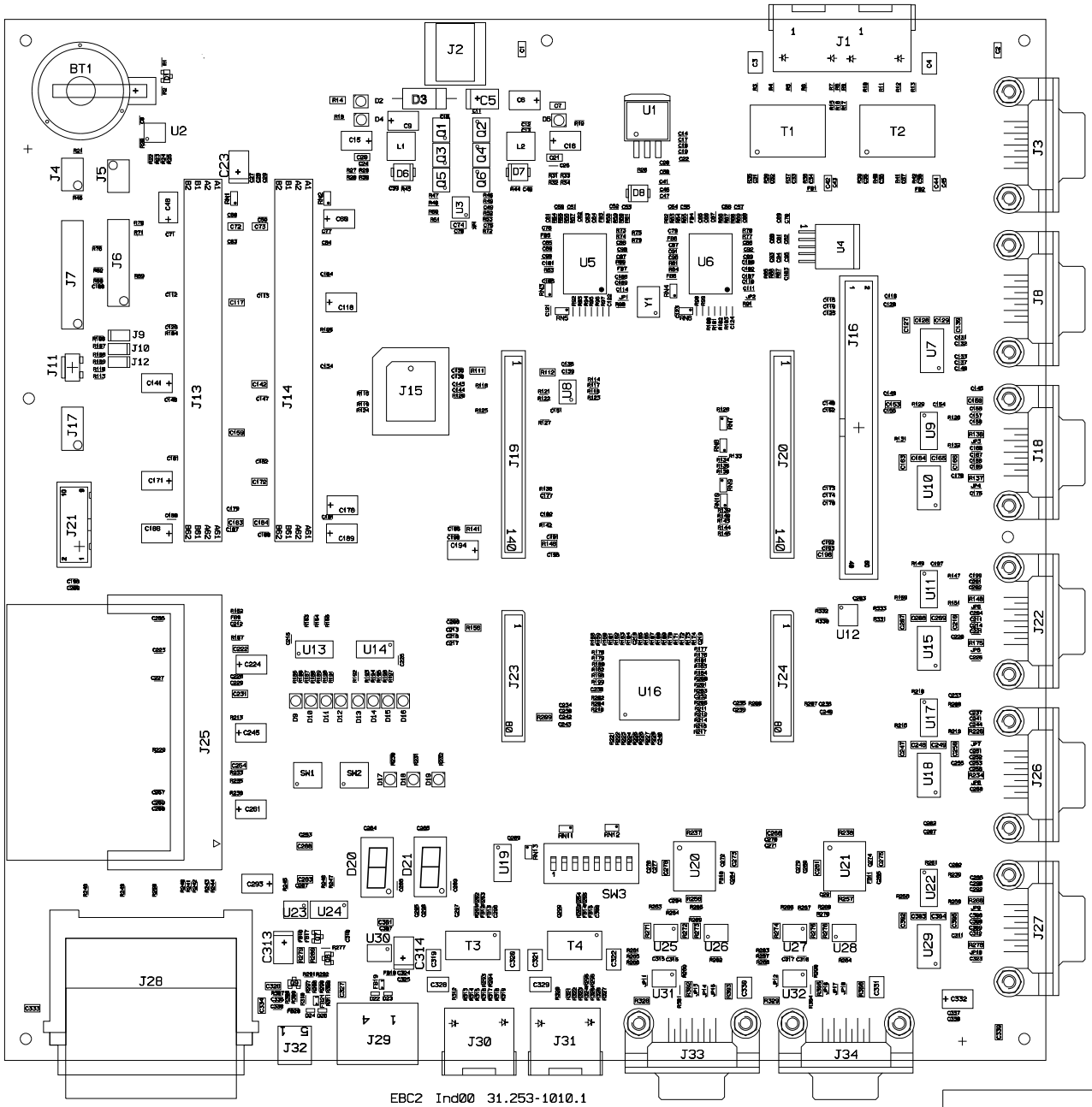


Board Decoupling



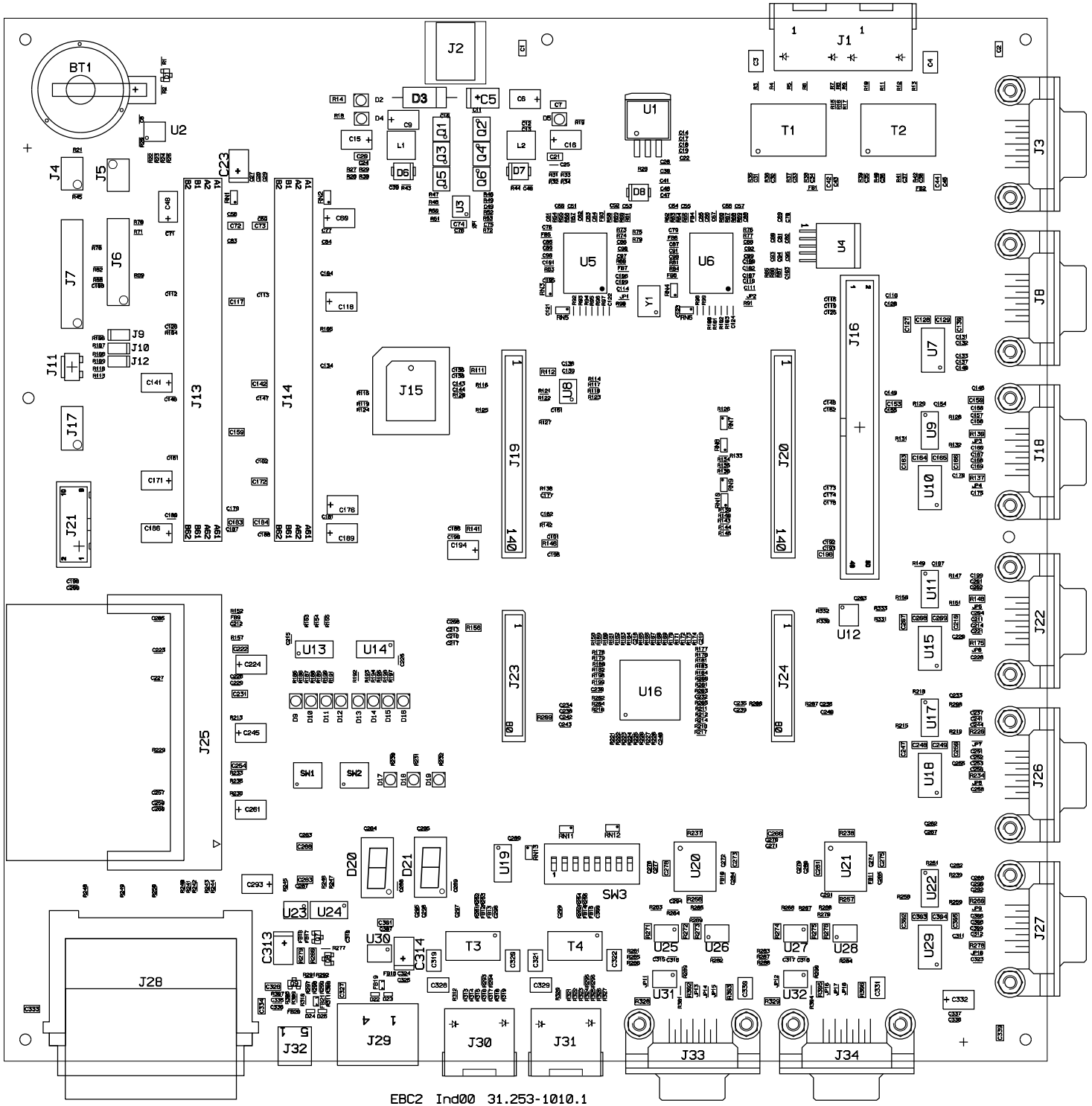


PROJECT: EBC2			kontron		
ELEMENT: POWER	ELEMENT PAGE: 02 of 02		DIVISION	NAME	DATE
FUNCTION:		CREATED	KOM	Mayr	02.2005
		VERIFIED	KOM	Mayr	02.2005
		APPROVED	KOM		
PCB ID: 31.253-1010.1	PCB INDEX: 00	SHEET: 39 of 39			REV: 00/2



EBC2 Ind00 31.253-1010.1

kontron Modular Computers	Name: EBC-2		LP-No.: 31.253-1010.1
	Date:	06.12.2004	Index: 00
	Scale:		Page 1 of 1



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EBC2 Ind00 31.253-1010.1

kontron Modular Computers	Name: EBC2		LP-No.: 31.253-1010.1
	Date:	01.12.2004	Index: 00
	Scale:		Page 1 of 1