1394 Design Schematic (TSBKPCI)

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Rev M
EVM-0007M

TEXAS INSTRUMENTS

1394 Solutions Leader

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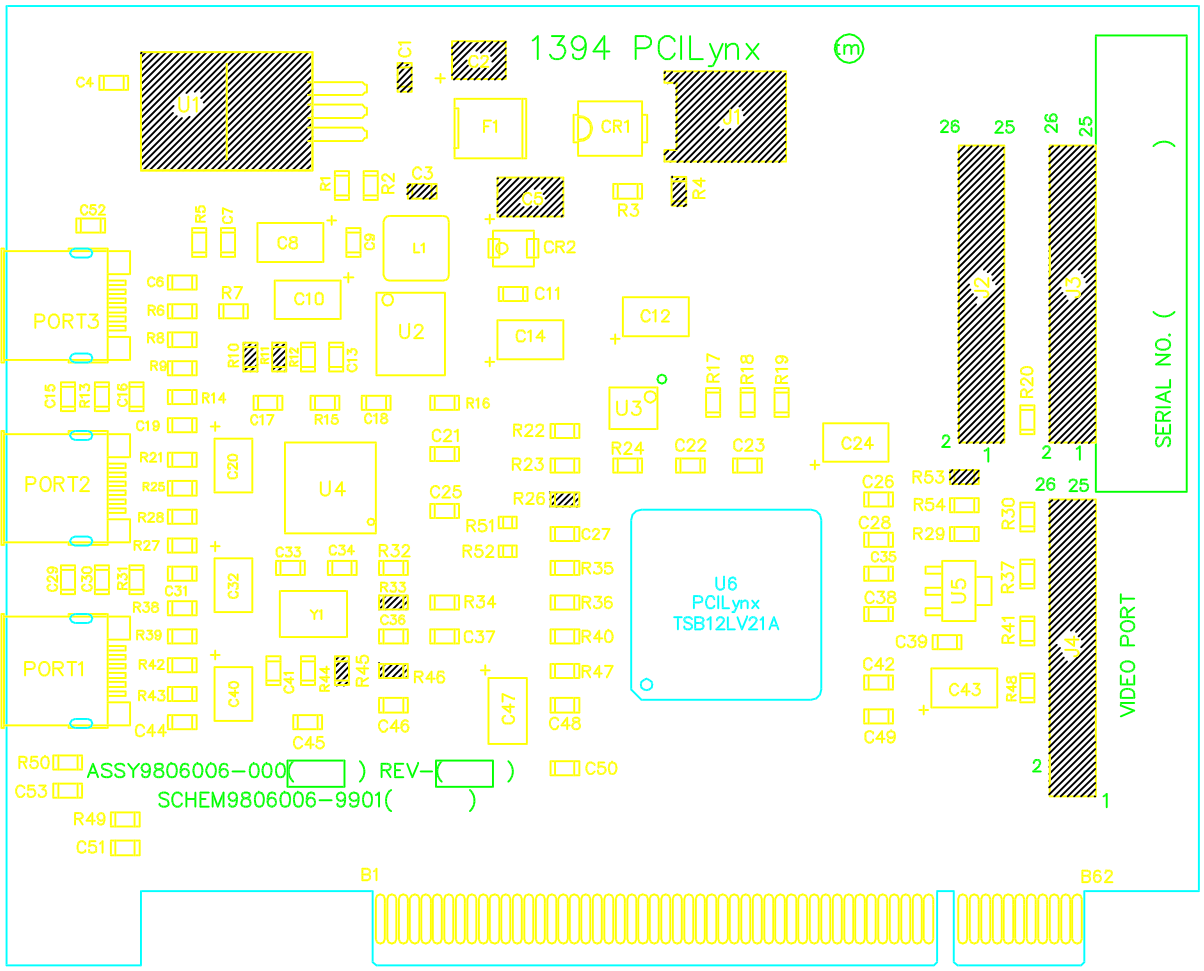
TSBKPCI Designer Kit

- Interfacing TSB12LV21A to TSB21LV03A
- Interfacing Serial EEPROM to TSB12LV21A
- Minimal Implementation of PCILynx Architecture (PCI to 1394 Card Example)
- Lynxsoft™ Application Software Included

DESIGNED AND MANUFACTURED FOR:

TEXAS INSTRUMENTS BY SOLECTRON TEXAS



INDICATES THIS COMPONENT NOT POPULATED FOR THIS DASH NUMBER.

TSBKPCI "LITE CARD"
ASSY 9806006-0003 REV 'K'
(SWITCHER V REG)
PWB 9806007-0001 REV 'C'

Revised 11/6/1997

These are things to keep in mind when looking at the TSBKPCI reference design schematic, revision “M” implementing the TSB12LV21A and TSB21LV03A.

1. Page 2 shows the circuitry for a 3 port - 200Mbps cable physical layer chip (TSB21LV03A) using an external 24.576MHz crystal for the clock reference. On this schematic page note that isolation mode pin 62 (ISO-) is tied high.

R12 and R15 enable the GPIO D0 line to program the state of the configuration manager capable input, or contenderbit , on the PHY.

The termination resistors R6, 8, 9, 14, 21, 25, 27, 28, 38, 39, 42, and 43 should be 55Ohms not 56.2 as shown on the schematic.

2. Page 3 shows the connections for the J2, J3, and J4 connectors for connecting the auxiliary local bus signals and the GPIO signals for use off this board.

3. Page 4 shows the connections to the TSB12LV21A PCILynx, link layer chip. On this schematic page note that to disable isolation mode pin 136 (LINK_ISO#) should be tied high (correctly called a 3.3 VVcc pin in the PCILynx data sheet for this reason).

R54 and R53 are not needed with TSB12LV21A, they allow optional GPIO3 control over the Vsync of the ZV port.

4. Page 5 contains the voltage regulator to provide 3.0V power to the TSB21LV03 PHY chips, a regulator to provide 3.3V power to the PCILynx chip, and the connections to the serial EEPROM.

5. This schematic does not implement isolation. As shown, Link ground is the same as PHY ground. The cable shield is tied directly to chassis ground. Once the card is inserted into a card slot, link ground is tied to chassis ground. This is not compliant with the 1394-1995 standard, but is believed to reduce EMI emissions.

TI 1394 Applications Engineering

This TSBKPCI host adaptor was designed and manufactured for Texas Instruments by Solectron Texas.

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*** ADVANCE INFORMATION ***

NOTE:

These schematics have not been verified or tested and contain advance information concerning a technology in development. Function, specification, and pin assignment are all subject to change without notice."

REVISIONS

REV	ECN NO / CLASS / DRAFTER / DATE	DATE	APPROVED
*	Tuesday, June 10, 1997		
A			
B	Connect CMC_LKON to GPIO_DATA0	June 20,1996	
C	Add pulldn resistor to CTL0 & CTL1	Sept 23,1996	
D	Add R's to ZV_VSYNC & chge shield gnd	Oct 1,1996	
E	Add Rev A PCI Lynx	Oct 30, 1996	
F	Change R50,C52,C53 to ZERO ohm resistors	Dec 26, 1996	
F	Change C14 to a 3.3UF 50 Volt Cap	Dec 26, 1996	
G	Add Rev 02 PCI Lynx	Feb 11,1997	
H	Replace 3.3V Reg w/Adj to run at 3.0V	Mar 07,1997	
J	REV02 PCILynx with Adj Reg at 3.0V	Mar 07,1997	
K	Update PWB artwork for ADJ REG, Short	Mar 17,1997	
	cable shield to logic gnd, remove AV conn		
L	Update PWB: connector shield to chassis gnd	Jun 17,1997	
	connector pin 2 to logic gnd		
M	Change to Rev. A Phy (TSB21LV03A), change	Oct 08,1997	
	value of R34, R51, R52 to 1K ohm		

BUILD OPTIONS

-0004	LINEAR PHY POWER REGULATOR BUS POWER FROM PCI CONNECTOR (+12V)
-0003	SWITCHING PHY POWER REGULATOR BUS POWER FROM PCI CONNECTOR (+12V)
-0002	LINEAR PHY POWER REGULATOR BUS POWER FROM SPECIAL POWER CONNECTOR
-0001	SWITCHING PHY POWER REGULATOR BUS POWER FROM SPECIAL POWER CONNECTOR

Assy Rev.	PCILynx Rev.	PCILynx Part Number
*	00	TSB12LV21PGF
A	00	TSB12LV21PGF
B	00	TSB12LV21PGF
C	00	TSB12LV21PGF
D	00	TSB12LV21PGF
E	01	PTSB12LV21APGF
F	00	TSB12LV21PGF
G	02	TSB12LV21APGF PTSB121V21APGF
H	00	TSB12LV21PGF
J	02	TSB12LV21APGF
K	02	TSB12LV21APGF
L	02	TSB12LV21APGF
M	02	TSB12LV21APGF

Tuesday, June 10, 1997 7:30:32 am

-1 QTY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE II DESCRIPTION	NOTES

NEXT ASSY	USED ON
APPLICATION	

DWN	
CHK	
ENGR-DSGN	
ENGR-MGR	
QA	
MFG	
PROD SAF	
RLSE	

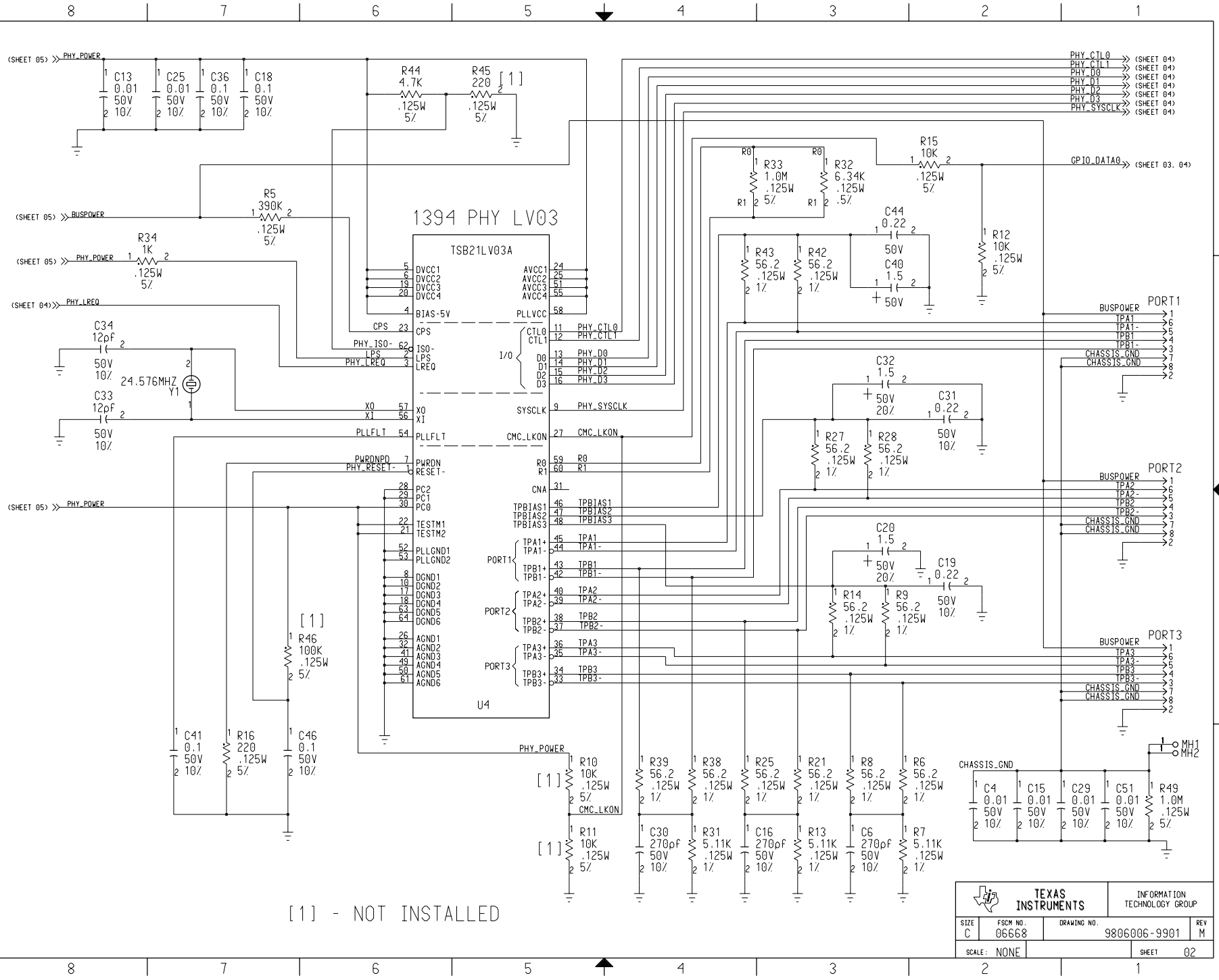
TEXAS INSTRUMENTS

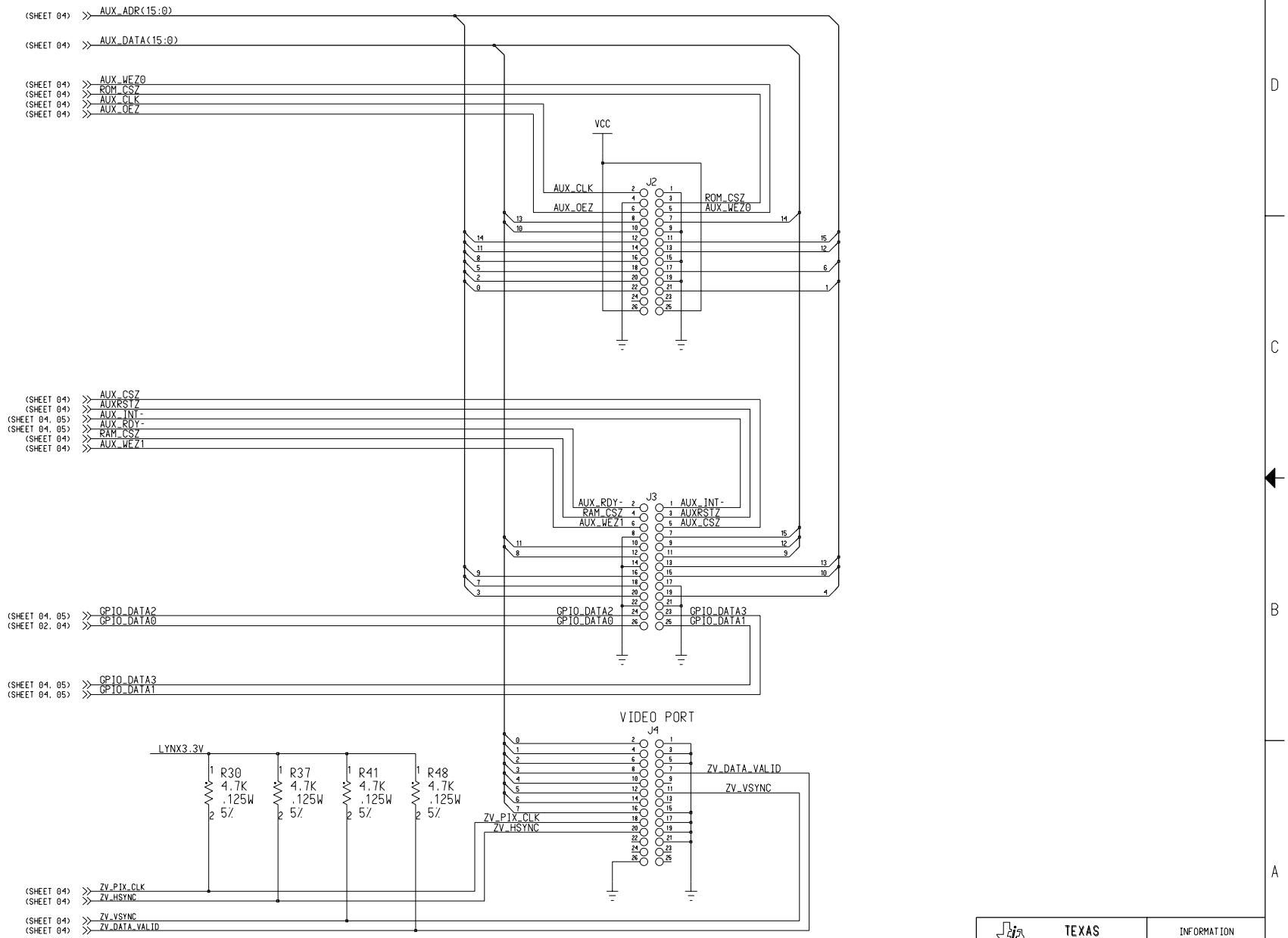
CMS SYSTEMS DESIGN ENGINEERING

LOGIC DIAGRAM
PCILynx

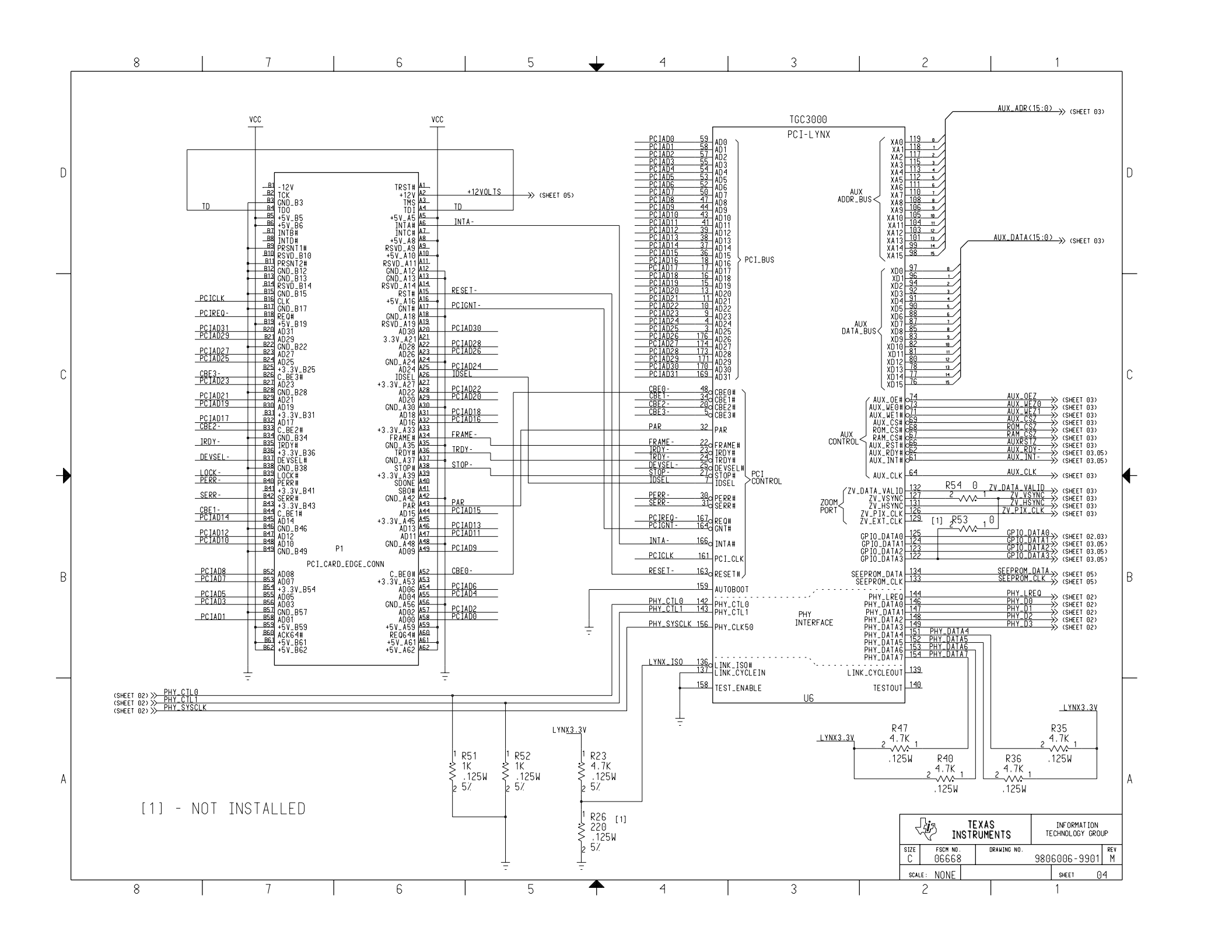
SIZE	FSCM NO.	DRAWING NO.
C	06668	9806006-9901

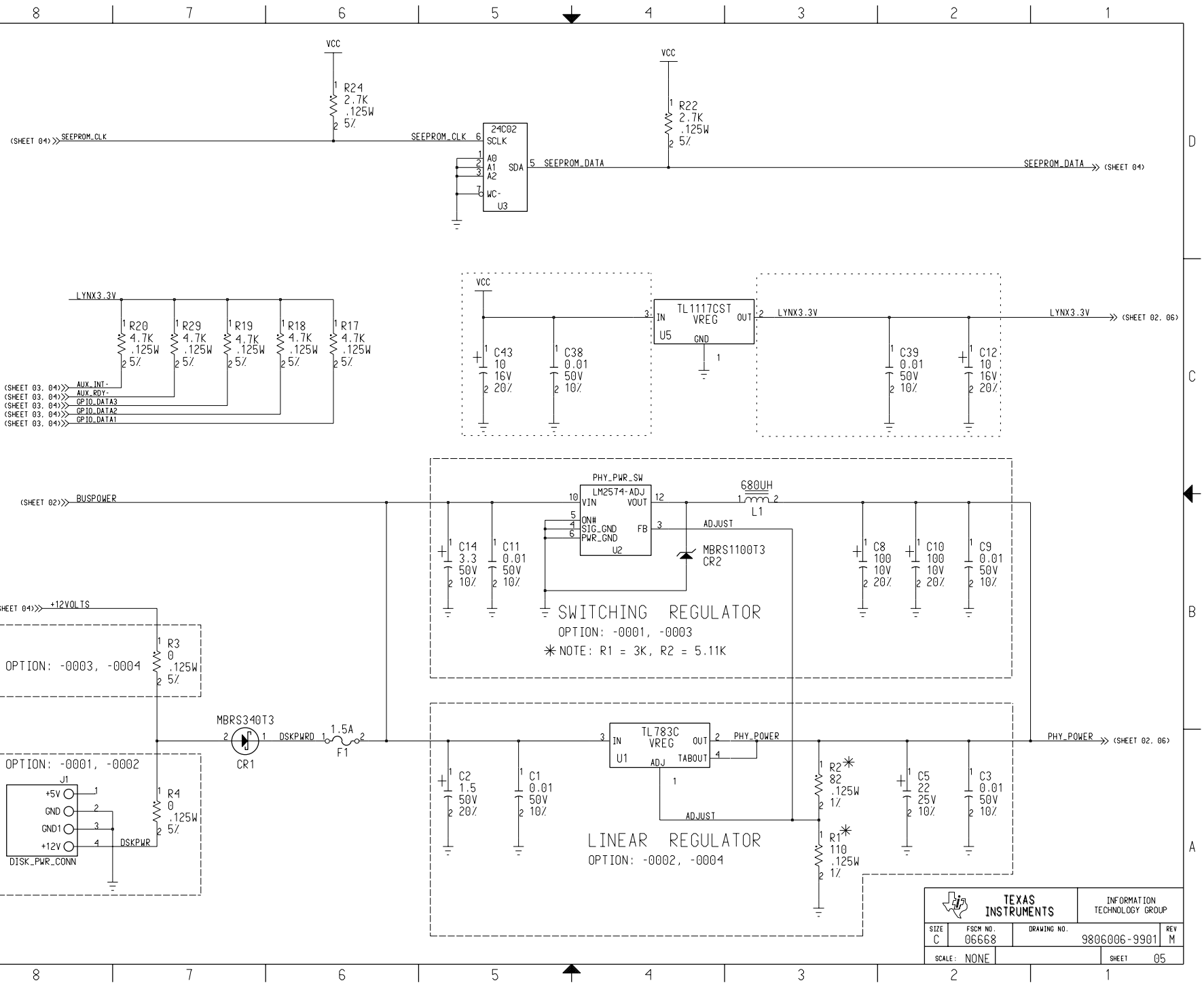
SCALE NONE SHEET 01 OF 6

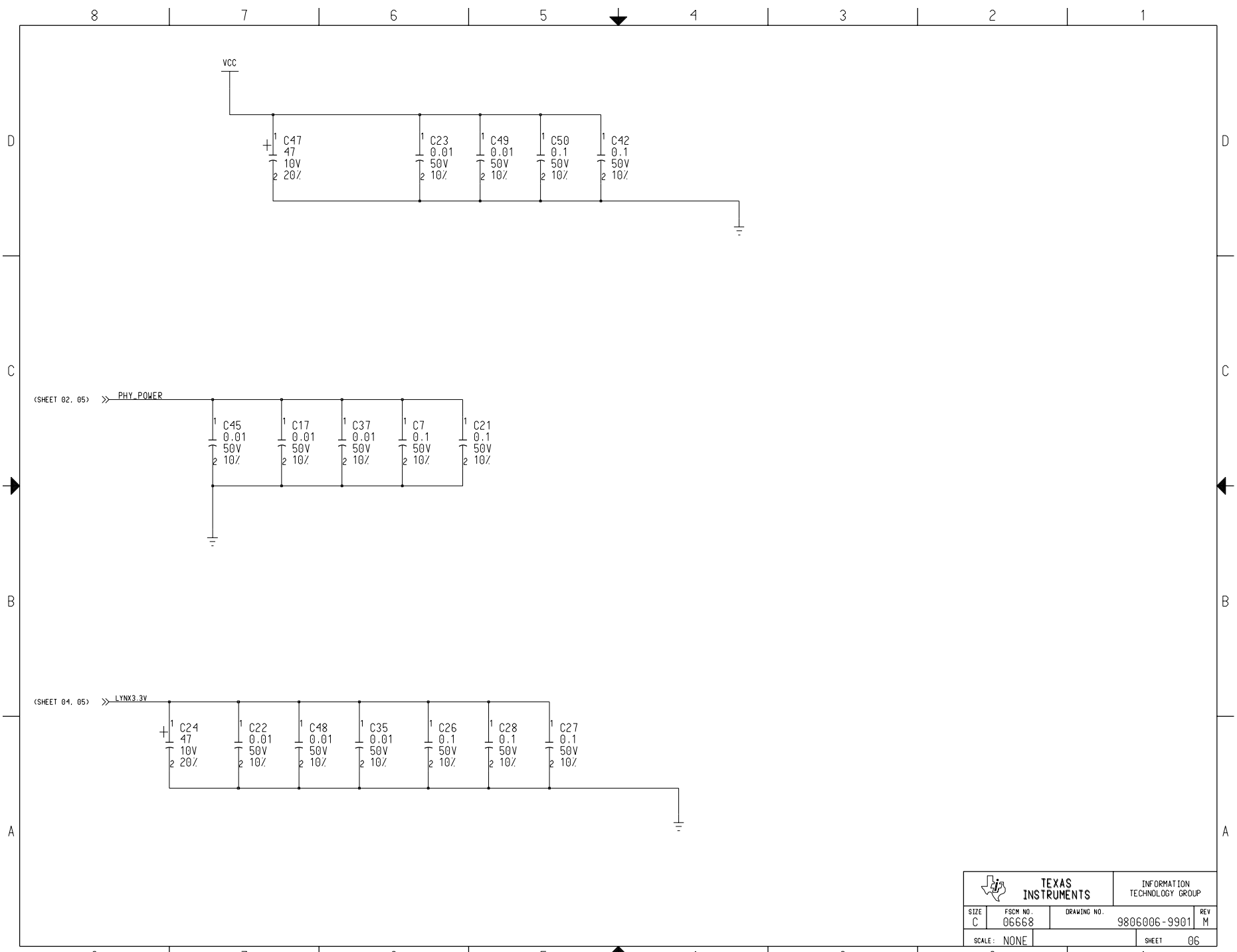

1394 PHY LV03
TSB21LV03A
U4
[1] - NOT INSTALLED
TEXAS INSTRUMENTS
INFORMATION TECHNOLOGY GROUP
SIZE C
FSCM NO. 06668
DRAWING NO. 9806006-9901
REV M
SCALE: NONE
SHEET 02



TEXAS INSTRUMENTS			INFORMATION TECHNOLOGY GROUP
SIZE C	FSCM NO. 06668	DRAWING NO. 9806006-9901	REV M
SCALE: NONE			SHEET 03


TGC3000
PCI-LYNX
P1
PCI_CARD_EDGE_CONN
PCI_BUS
PCI CONTROL
PHY INTERFACE
AUX ADDR_BUS
AUX DATA_BUS
AUX CONTROL
ZOOM PORT
U6
AUX_ADR(15:0) (SHEET 03)
AUX_DATA(15:0) (SHEET 03)
+12VOLTS (SHEET 05)
LYNX3.3V
R51 1K .125W 5%
R52 1K .125W 5%
R23 4.7K .125W 5%
R26 [1] 220 .125W 5%
R47 4.7K .125W
R40 4.7K .125W
R36 4.7K .125W
R35 4.7K .125W
R54 0
R53 0
[1] - NOT INSTALLED
TEXAS INSTRUMENTS
INFORMATION TECHNOLOGY GROUP
SIZE C
FSCM NO. 06668
DRAWING NO. 9806006-9901
REV M
SCALE: NONE
SHEET 04


VCC
R24
2.7K
.125W
5%
(SHEET 04) SEEPROM_CLK
SEEPROM_CLK
24C02
SCLK
A0
A1
A2
WC-
SDA
U3
SEEPROM_DATA
R22
2.7K
.125W
5%
SEEPROM_DATA (SHEET 04)
LYNX3.3V
R20 4.7K .125W 5%
R29 4.7K .125W 5%
R19 4.7K .125W 5%
R18 4.7K .125W 5%
R17 4.7K .125W 5%
(SHEET 03, 04) AUX_INT-
(SHEET 03, 04) AUX_RDY-
(SHEET 03, 04) GPIO_DATA3
(SHEET 03, 04) GPIO_DATA2
(SHEET 03, 04) GPIO_DATA1
VCC
C43 10 16V 20%
C38 0.01 50V 10%
TL1117CST
VREG
IN
OUT
GND
U5
LYNX3.3V
LYNX3.3V (SHEET 02, 06)
C39 0.01 50V 10%
C12 10 16V 20%
PHY_PWR_SW
LM2574-ADJ
VIN
VOUT
ON#
SIG_GND
PWR_GND
FB
U2
680UH
L1
ADJUST
MBRS1100T3
CR2
C14 3.3 50V 10%
C11 0.01 50V 10%
C8 100 10V 20%
C10 100 10V 20%
C9 0.01 50V 10%
SWITCHING REGULATOR
OPTION: -0001, -0003
✳NOTE: R1 = 3K, R2 = 5.11K
(SHEET 02) BUSPOWER
(SHEET 04) +12VOLTS
OPTION: -0003, -0004
R3
0
.125W
5%
MBRS340T3
CR1
DSKPWRD
1.5A
F1
OPTION: -0001, -0002
J1
+5V
GND
GND1
+12V
DSKPWR
DISK_PWR_CONN
R4
0
.125W
5%
TL783C
VREG
IN
OUT
ADJ
TABOUT
U1
PHY_POWER
PHY_POWER (SHEET 02, 06)
C2 1.5 50V 20%
C1 0.01 50V 10%
R2✳ 82 .125W 1%
R1✳ 110 .125W 1%
ADJUST
C5 22 25V 10%
C3 0.01 50V 10%
LINEAR REGULATOR
OPTION: -0002, -0004
TEXAS INSTRUMENTS
INFORMATION TECHNOLOGY GROUP
SIZE C
FSCM NO. 06668
DRAWING NO. 9806006-9901
REV M
SCALE: NONE
SHEET 05


VCC
C47
47
10V
20%
C23
0.01
50V
10%
C49
0.01
50V
10%
C50
0.1
50V
10%
C42
0.1
50V
10%
(SHEET 02, 05)
PHY_POWER
C45
0.01
50V
10%
C17
0.01
50V
10%
C37
0.01
50V
10%
C7
0.1
50V
10%
C21
0.1
50V
10%
(SHEET 04, 05)
LYNX3.3V
C24
47
10V
20%
C22
0.01
50V
10%
C48
0.01
50V
10%
C35
0.01
50V
10%
C26
0.1
50V
10%
C28
0.1
50V
10%
C27
0.1
50V
10%
TEXAS INSTRUMENTS
INFORMATION TECHNOLOGY GROUP
SIZE C
FSCM NO. 06668
DRAWING NO. 9806006-9901
REV M
SCALE: NONE
SHEET 06

TSBKPCI "1394 Lite Card" P/N 9806006-3 (Switcher Vreg) Rev M assy / Rev D PWB (made for Texas Instruments by Solectron Texas)

**** Change from Rev L - update to TSB21LV03A PHY and associated parts***

DESCRIPTION	Supplier	Part Number	Pkg	Qty	Reference Designator
RES, 56.2, 1%	KOA	RK73H2BT56R2	1206	12	R6 R8 R9 R14 R21 R25 R27 R28 R38
					R39 R42 R43
RES, 220, 5%	KOA	RM73B2BT221J	1206	1	R16
RES, 4.7K, 5%	KOA	RM73B2BT472J	1206	15	R17 R18 R19 R20 R23 R29 R30 R35
					R36 R37 R40 R41 R44 R47 R48
RES, 0, n/a	KOA	RM73Z2BT	1206	5	R3 R50 R54 C52 C53 - (NO LOAD R4 & R53)
RES, 1.0M, 5%	KOA	RM73B2BT105J	1206	2	R49 **R33**
RES, 6.34K, 0.5%	KOA	RK73H2BT6341D	1206	1	R32
RES, 390K, 5%	KOA	RM73B2BT394J	1206	1	R5
CAP, 0.01, 10%	KEMET	C1206C103K5RAC	1206	18	C4 C9 C11 C13 C15 C17 C22
					C23 C25 C29 C35 C37 C38 C39 C45
					C48 C49 C51 - (NO LOAD C1 C3)
CAP, 47, 20%	KEMET	T491D476M010AS	2816	2	C24 C47
CAP, 1.5uF, 50V	KEMET	T491C155M050AS	2313	3	C20 C32 C40 - (NO LOAD C2)
CAP, 3.3uF, 50V	KEMET	T491D335M050AS	2816	1	C14 - (NO LOAD C5)
RES, 5.11K	KOA	RK73H2BT5111F	1206	4	R2 R7 R13 R31
FUSE, 1.5A	RayChem	SMD150-2	3820fuse	1	F1
CAP, 0.1, 10%	KEMET	C1206C104K5RAC	1206	11	C7 C18 C21 C26 C27 C28 C36 C41 C42
					C46 C50
CAP, 0.22, 10	AVX	12065C224KAT4A	1206	3	C19 C31 C44
XTAL, 24.576MHZ	FOX	FE 24.576 20PF	xtal_fe	1	Y1
1394 R/A Flat Header	Molex	53462-0611	socket_6	3	PORT1 PORT2 PORT3
RES, 10K, 5%	KOA	RM73B2BT103J	1206	2	R12 R15
CAP, 12PF, 10%	KEMET	C1206C120K5GAC	1206	2	C33 C34
CAP, 270PF, 10%	KEMET	C1206C271J5GAC	1206	3	C6 C16 C30
PCI BRACKET	GLOBE	G5025	spec.	1	
HEX HEAD SCREW	MEDALIST	SEMS, 4-40 X 1/4		2	
PCI-Lynx ASIC Rev 2	TI	TSB12LV21APGF	qfp-176	1	U6
TSB21LV03A	**TI**	**TSB21LV03A**	qfp64	1	U4
Volt Reg, ADJ	Nat'l	LM2574HVM-ADJ	soic14w	1	U2
680uH, 20%	TDK	SLF7032T-681MR18	ind_slf7032	1	L1
2K-Bit Serial EEprom	Natl Semi	CAT24WC02J	soic8	1	U3
RES, 2.7K	KOA	RM73B2BT272J	1206	2	R22 R24
CAP, 10, 20%, 16V	Kemet	T491D106K016AS	2816	2	C12 C43
CAP, 100, 20%, 10V	Kemet	T495X107M010AS	2816	2	C8 C10
LT1117CST-3.3	Linear Tech	LT1117CST-3.3	sot_223	1	U5
DIODE, MBRS1100T3	Motorola	MBRS1100T3	1815j	1	CR2
DIODE, MBRS340T3	Motorola	MBRS340T3	2824	1	CR1
RES, 1.0K	**KOA**	**RM73B2AT102J**	**805**	**2**	**R51 R52**
RES, 1.0K	**KOA**	**RM73B2BT102J**	**1206**	**1**	**R34**
RES, 3.0K	**KOA**	**RK73B2BT302J**	**1206**	**1**	**R1**