Low Voltage Directive Report

鼎安科技股份有限公司
SUPERIOR PRODUCT CONSULTING,INC
3F,NO.10,ALLEY 6,LANE 235,PAO CHIAO RD.,HSIEN TIEN,TAIPEI,TAIWAN R.O.C.
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TÜV Rheinland Taiwan Ltd.

TÜV

Certificate

of

Appointment

for

Superior Product Consulting, Inc.
3F, No. 10, Alley 6, Lane 235, Pao Chiao Road,
Hsien Tien, Taipei, Taiwan, R.O.C.

has been authorized to carry out Safety tests by order and under supervision of TÜV Rheinland. It has successfully demonstrated capability to conduct measurements and to process test data according to:

European and International Safety Standards as listed in the Scope of Authorization on the attachment to this certificate

An assessment of the facility was conducted according to ISO 17025 by a TÜV Rheinland auditor

The certificate is valid until the next scheduled inspection or up to 15 month, at the discretion of TÜV Rheinland

TÜV Rheinland Taiwan Ltd.
Taipei, 6 November 2001

Dipl.-Ing. A. Klinker

i.A.

David Lee

Attachment to

Certificate
of Appointment

SCOPE OF AUTHORIZATION

for

Superior Product Consulting, Inc.
3F, No. 10, Alley 6, Lane 235, Pao Chiao Road,
Hsien Tien, Taipei, Taiwan, R.O.C.

European Standards

EN 60 950: 1992+A1+A2+A3+A4+A11	EN 60 065:1998 EN 60 065:1993+A11

International Standards

IEC 60 950: 1991+A1+A2+A3+A4	IEC 60 065:1998 IEC 60 065:1985 +A1+A2+A3

Taipei, 6 November 2001

i.A.

David C. M. Lee, Auditor

QUALIFIED INDEPENDENT LABORATORY

This is to confirm that:

Superior Product Consulting Inc.

(Taipei, TAIWAN)

has in the course of current cooperation projects with Nemko shown to be qualified in safety testing of electrical equipment to the following standards:

IEC 60950 / EN 60950

This statement is also supported by our assessment of the laboratory testing equipment, -facilities and -procedures relative to the requirements of EN 45001 and ISO/IEC Guide 25.

NEMKO
IT and Electronics

Jon Ivar Tidemann
Head of dept. Data and Electronics

DECLARATION OF CONFORMITY

According to the Low Voltage Directive 73/23/EEC and the Amendment Directive 93/68/EEC

Type of Product ..... :	**Industrial Panel Computer**
Model Designation ..... :	**Model: OFPC-215XXXXXX series, where X=0-9, A-Z, or blank**
Manufacturer' s Name..... :	**Advantech Co., Ltd.**
Manufacturer' s Address .. :	**4th Fl, No. 108-3, Ming-Chung Rd, Shing-Tien City, Taipei Hsien, Taiwan**

Is herewith confirmed to comply with the requirements set out in the Council Directive 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directive, the following standard was applied:

IEC 60950, 3rd Edition (1999)

EN 60950, 3rd Edition (2000)

Person responsible for making this declaration

Name, Surname ..... :

Position/Title ..... :

CE

(Place) (Date) (Company stamp and signature)

TEST REPORT
IEC 60950
Safety of information technology equipment

Report Reference No..... :	SPCLVD30772
Compiled by (+ signature) ..... :	Eddie Shue Engineer
Reviewed by (+ signature) ..... :	Peter Lai Supervisor
Date of issue..... :	August 25, 2003

This report is based on a blank test report that was prepared by FIMKO using information obtained from the TRF originator (see below).

Testing laboratory name..... :	Superior Product Consulting, Inc.
Address..... :	3F, No.10, Alley 6, Lane 235, Pao Chiao Rd., Hsien Tien, Taipei, Taiwan, R.O.C
Testing location..... :	Same as above
Address..... :	Same as above

Client name ..... :	Advantech Co., Ltd.
Address..... :	4th Fl, No. 108-3, Ming-Chuan Rd, Shing-Tien City, Taipei Hsien, Taiwan.

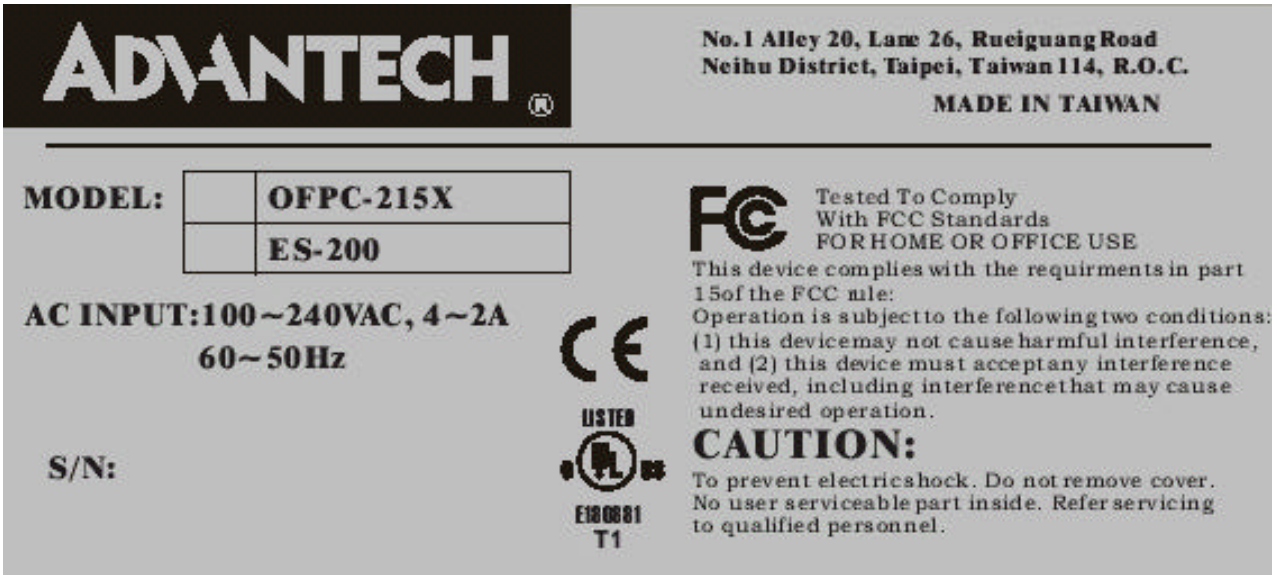
Standard..... :	IEC 60950, 3rd Edition (1999)
	EN 60950, 3rd Edition (2000)
Test procedure ..... :	Informative Test Report
Procedure deviation ..... :	N/A
Non-standard test method ..... :	N/A

Test Report Form/blank test report

Test Report Form No. ..... :	I950___F/00-03
TRF originator. ..... :	FIMKO
Master TRF..... :	dated 00-02

Test item description ..... :	Panel PC
Trademark ..... :	ADVANTECH
Model and/or type reference ..... :	OFPC-215XXXXXX series, where X=0-9, A-Z, or blank
Manufacturer..... :	Same as Applicant
Rating(s)..... :	100-240 Vac, 60-50 Hz, 4-2 A

Copy of marking plate and summary of test results (information/comments):



Particulars: test item vs. test requirements

Equipment mobility	Movable
Operating condition	Continuous
Mains supply tolerance (%)	+10%, -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Class I (earthed).
Mass of equipment (kg)	8.1Kg
Protection against ingress of water	IPXO

Possible test case verdicts:

- test case does not apply to the test object	N / A
- test object does meet the requirement	Pass
- test object does not meet the requirement	Fail

General remarks:

- "(see Enclosure #)" refers to additional information appended to the Report.
- "(see appended table)" refers to a table appended to the Report.
- Throughout this report a point is used as the decimal separator.

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
This report is not valid as a CB Test Report unless appended to a CB Test Certificate issued by a NCB in accordance with IECEE 02.

General product information:

This product is a industrial Panel computer with touch LCD panel. It is specified for use in a Tmra of 50°C maximum.

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		Pass
1.5	**Components**		Pass
1.5.1	Comply with IEC 950 or relevant component standard	(see appended table)	Pass
1.5.2	Evaluation and testing of components	Components, for which no relevant IEC-Standard exist, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950. Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standards.	Pass
	Dimensions (mm) of mains plug for direct plug-in ..... :	Not direct plug-in equipment.	N/A
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N)..... :	Not direct plug-in equipment.	N/A
1.5.3	Thermal controls	There are no thermal controls facilitated in the unit.	N/A
1.5.4	Transformers	Evaluated during separate certification of power supply.	N/A
1.5.5	Interconnecting cables	Interconnecting cables comply with the relevant requirements of this standard.	Pass
1.5.6	Capacitors in primary circuits ..... :	Evaluated during separate certification of power supply.	N/A
1.5.7	Double or reinforced insulation bridged by components	Evaluated during separate certification of power supply.	N/A
1.5.7.1	Bridging capacitors	Evaluated during separate certification of power supply.	N/A
1.5.7.2	Bridging resistors	Evaluated during separate certification of power supply.	N/A
1.5.7.3	Accessible parts	Evaluated as part of the power supply.	Pass
1.5.8	Components in equipment for IT power systems	Not for use on IT systems.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1.6	**Power interface**		Pass
1.6.1	AC power distribution systems	AC power distribution systems are classify as TN.	Pass
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD. (See enclosed test record)	Pass
1.6.3	Voltage limit of hand-held equipment	The unit is not a hand-held equipment.	N/A
1.6.4	Neutral conductor	Neutral insulation is provided in the approval power supply.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

1.7	**Marking and instructions**		Pass
1.7.1	Power rating	Rating marking readily visible to operator.	Pass
	Rated voltage(s) or voltage range(s) (V) ..... :	100 - 240 V	Pass
	Symbol for nature of supply for d.c. ..... :	AC Source.	N/A
	Rated frequency or frequency range (Hz) ..... :	50-60 Hz.	Pass
	Rated current (A) ..... :	2-4 A.	Pass
	Manufacturer' s name/Trademark ..... :	ADVANTECH	Pass
	Type/model ..... :	OFPC-215XXXXX series, where "X"=0-9, A-Z, or blank	Pass
	Symbol of Class II ..... :	Class I equipment.	N/A
	Other symbols ..... :	Additional symbols may be provided and conformed with ISO 7000 or IEC 60417-1.	N/A
	Certification marks ..... :	CE.	Pass
1.7.2	Safety instructions	Safety instruction in English. Other languages will be provided when submitted for national approval. Operating/safety instructions made available to the user.	Pass
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
1.7.4	Supply voltage adjustment ..... :	Equipment is auto-ranging.	N/A
1.7.5	Power outlets on the equipment ..... :	No standard power outlets are provided.	N/A
1.7.6	Fuse identification ..... :	Fuse marking located at the UL and TUV listed power supply.	Pass
1.7.7	Wiring terminals	See below.	Pass
1.7.7.1	Protective earthing and bonding terminals	Evaluated in EN60950 approved power supply.	Pass
1.7.7.2	Terminal for a.c. mains supply conductors	Terminals intended for connection of the primary power neutral conductor indicated by the capital letter N.	Pass
1.7.8	Controls and indicators	Safety clearly not involved.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8.1	Identification, location and marking ..... :	The function of controls affecting safety is obvious regardless of language.	Pass
1.7.8.2	Colours ..... :	A green LED is illuminated when the unit is operating.	Pass
1.7.8.3	Symbols according to IEC 60417 ..... :	The push-push switch is marked with the symbols: (60417-1-IEC-5010).	Pass
1.7.8.4	Markings using figures ..... :	Figures are not used for indicating different positions of controls.	N/A
1.7.9	Isolation of multiple power sources ..... :	There is only one connection to hazardous voltages.	N/A
1.7.10	IT power system	Not intended for use on IT power systems.	N/A
1.7.11	Thermostats and other regulating devices	No thermostats or similar regulating devices.	N/A
1.7.12	Language ..... :	Reviewed only English markings/instructions. May be provided in other languages when the equipment will be applied for other national certificated.	—
1.7.13	Durability	All markings provided on UL Recognized Component labels suitable for surface they are applied upon.	Pass
1.7.14	Removable parts	No marking is located on (a) removable part(s).	Pass
1.7.15	Replaceable batteries	The lithium battery is not located in an Operator Access Area.	N/A
	Language..... :		—
1.7.16	Operator access with a tool..... :	No operator access areas require the use of a tool.	Pass
1.7.17	Equipment for restricted access locations..... :	Equipment not intended for installation in a RESTRICTED ACCESS LOCATION.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2	**PROTECTION FROM HAZARDS**		Pass
2.1	**Protection from electric shock and energy hazards**		Pass
2.1.1	Protection in OPERATOR access areas	The construction of this metal enclosure prevents the accessibility to any parts with only basic insulation to ELV or hazardous voltage with test pin or test finger.	Pass
2.1.1.1	Access to energized parts	The operator has access to bare parts of SELV CIRCUITS. No operator access to energized parts.	Pass
	Test by inspection ..... :	Operator cannot contact with any parts with only basic insulation to ELV or hazardous voltage.	Pass
	Test with test finger ..... :	The test finger was unable to contact bare hazardous parts, basic insulation, or ELV circuits.	Pass
	Test with test pin ..... :	The test pin was unable to contact bare hazardous parts.	Pass
	Test with test probe ..... :	No TNV present.	N/A
2.1.1.2	Battery compartments..... :	No battery components.	N/A
2.1.1.3	Access to ELV wiring	Internal wiring in an ELV circuit is not user accessible.	N/A
	Working voltage (V); distance (mm) through insulation		—
2.1.1.4	Access to hazardous voltage circuit wiring	No internal wiring accessible to the user.	N/A
2.1.1.5	Energy hazards ..... :	No hazardous voltage wiring in operator accessible area.	Pass
2.1.1.6	Manual controls	No shafts or knobs, etc. at ELV, TNV or hazardous voltage.	N/A
2.1.1.7	Discharge of capacitors in the primary circuit	The capacitance of the input circuit is >0.1 uF. See enclosed test record.	Pass
	Time-constant (s); measured voltage (V)..... :	See enclosed test record.	—
2.1.2	Protection in service access areas	No bare parts operating at HAZARDOUS VOLTAGES in a service access area.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.3	Protection in restricted access locations	The unit is not intended to be used in restricted locations.	N/A
2.2	**SELV circuits**		Pass
2.2.1	General requirements	SELV levels are maintained after single fault condition.	Pass
2.2.2	Voltages under normal conditions (V)..... :	All accessible voltages are less than 42.4 Vp or 60 V dc and are classified as SELV.	Pass
2.2.3	Voltages under fault conditions (V)..... :	Evaluated during separate certification of power supply. Under fault conditions voltages never exceed 71V peak and 120Vdc and do not exceed 42.4V peak or 60V dc for more than 0.2 sec.	Pass
2.2.3.1	Separation by double or reinforced insulation (method 1)	UL, TUV listed build-in power supply with fire enclosure used in the unit. The output of the power supply is SELV. Hazardous voltage wiring which may contact SELV parts provided with double or reinforced insulation. See 2.10.5.	Pass
2.2.3.2	Separation by earthed screen (method 2)	Method 1 used.	N/A
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Method 1 used.	N/A
2.2.4	Connection of SELV circuits to other circuits.....:	SELV circuit and all interconnected circuits separated from primary by Reinforced/Double insulation. The SELV circuit does not exceed the SELV limits under normal and fault conditions. SELV circuits are only connected to other secondary circuits.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.3	**TNV circuits**		N/A
2.3.1	Limits		N/A
	Type of TNV circuits..... :		—
2.3.2	Separation from other circuits and from accessible parts		N/A
	Insulation employed ..... :		—
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed ..... :		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed ..... :		—
2.3.5	Test for operating voltages generated externally		N/A
2.4	**Limited current circuits**		Pass
2.4.1	General requirements	The unit is facilitated with UL, TUV listed power supply. This part has been evaluated. On the other hand, the LCC test result of inverter facilitaed on LCD monitor, see enclosed test record.	Pass
2.4.2	Limit values	See enclosed test record	Pass
	Frequency (Hz)..... :	Ditto	—
	Measured current (mA)..... :	Ditto	—
	Measured voltage (V) ..... :	Ditto	—
	Measured capacitance (µF) ..... :	Ditto	—
2.4.3	Connection of limited current circuits to other circuits		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.5	**Limited power sources**		Pass
	Inherently limited output		N/A
	Impedance limited output	See Table 1.5.1 for PTC device.	Pass
	Overcurrent protective device limited output		N/A
	Regulating network limited output under normal operating and single fault condition		N/A
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N/A
	Output voltage (V), output current (A), apparent power (VA)..... :	See enclosed test record.	—
	Current rating of overcurrent protective device (A)		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.6	**Provisions for earthing and bonding**		Pass
2.6.1	Protective earthing	Accessible parts are earthed.	Pass
2.6.2	Functional earthing	The functional earthing (SELV ground) have seperated from hazardous part by Double/Reinforce Insulation and connect to protective earth terminal.	Pass
2.6.3	Protective earthing and protective bonding conductors	See below.	Pass
2.6.3.1	Size of protective earthing conductors	Power supply cord suitable for application and subject to country's national code and regulations to be provided by the manufacturer.	Pass
	Rated current (A), cross-sectional area (mm^2), AWG..... :		—
2.6.3.2	Size of protective bonding conductors	Protective bonding conductors evaluated based on 2.6.3.3.	Pass
	Rated current (A), cross-sectional area (mm^2), AWG..... :		—
2.6.3.3	Rated current (A), type and nominal thread diameter (mm)..... :		Pass
	Resistance (Ω) of earthing conductors and their terminations, test current (A)..... :	See enclosed test record.	Pass
2.6.3.4	Colour of insulation ..... :	Evaluated as part of the power supply. Protective earthing conductor is green with yellow stripe.	Pass
2.6.4	Terminals	Appliance inlet used.	N/A
2.6.4.1	Protective earthing and bonding terminals	Appliance inlet used and the unit meet the test requirement of 2.6.3.3.	N/A
	Rated current (A), type and nominal thread diameter (mm)..... :		—
2.6.4.2	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet used.	Pass
2.6.5	Integrity of protective earthing	See below.	Pass
2.6.5.1	Interconnection of equipment	No interconnection of hazardous voltage.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductors.	Pass
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect protective earth without disconnecting mains; an appliance inlet is used as disconnect device.	Pass
2.6.5.4	Parts that can be removed by an operator	It is not possible to disconnect earth without disconnecting mains and protective earth required makes earlier and breaks later than the supply connectors. No other operator removable parts with safety critical earth connection.	Pass
2.6.5.5	Parts removed during servicing	Connections to protective earthing cannot be removed unless hazardous voltage is removed from the part simultaneously.	Pass
2.6.5.6	Corrosion resistance	No risk of corrosion. Complies with Annex J.	N/A
2.6.5.7	Screws for protective bonding	Metal thickness at least twice the pitch of the screw.	Pass
2.6.5.8	Reliance on telecommunication network		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.7	**Overcurrent and earth fault protection in primary circuits**		Pass
2.7.1	Basic requirements	Protective devices are integrated in the equipment.	Pass
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not covered in 5.3	The protective devices are well dimensioned and mounted.	Pass
2.7.3	Short-circuit backup protection	The equipment is pluggable Type A.	Pass
2.7.4	Number and location of protective devices ..... :	One fuse in the "LIVE" phase.	Pass
2.7.5	Protection by several devices	Only one protective device is provided.	N/A
2.7.6	Warning to service personnel..... :	No service work necessary.	N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles	There is no interlock provided.	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Interlocks with moving parts		N/A
2.8.6	Overriding an interlock		N/A
2.8.7	Switches and relays in interlock systems		N/A
2.8.7.1	Contact gaps (mm) ..... :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test (V)		N/A
2.8.8	Mechanical actuators		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.9	**Electrical insulation**		Pass
2.9.1	Properties of insulating materials	Electric strength test was conducted after the humidity treatment. See 2.9.2.	Pass
2.9.2	Humidity conditioning	Humidity treatment performed to 120 hrs in condition: 91-95%, 40 °C. See enclosed test record.	Pass
2.9.3	Requirements for insulation	Electric strength test was conducted after the humidity treatment. No flash over or breakdown of insulation. (see sub-clause 2.10, 4.5.1 and 5.2)	Pass
2.9.4	Insulation parameters	Both parameters were considered.	Pass
2.9.5	Categories of insulation	The adequate level of safety insulation is provided and maintained to comply with the requirements of this standard.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.10	**Clearances, creepage distances and distances through insulation**		Pass
2.10.1	General	Pollution degree 2 applicable.	Pass
2.10.2	Determination of working voltage	Considered in UL, TUV listed power supply.	Pass
2.10.3	Clearances	All critical clearance distances are covered in power supply evaluation.	Pass
2.10.3.1	General	Considered in approved power supply.	Pass
2.10.3.2	Clearances in primary circuit	Considered in approved power supply.	Pass
2.10.3.3	Clearances in secondary circuits	Considered in approved power supply.	Pass
2.10.3.4	Measurement of transient levels	Transient levels below Overvoltage Category II limits based on 2.10.3.4.	Pass
2.10.4	Creepage distances	Considered in approved power supply.	Pass
	CTI tests..... :		—
2.10.5	Solid insulation	Investigated during separate certification of power supply.	N/A
2.10.5.1	Minimum distance through insulation	Considered in approved power supply.	Pass
2.10.5.2	Thin sheet material	Considered in approved power supply.	Pass
	Number of layers (pcs)..... :		—
	Electric strength test		—
2.10.5.3	Printed boards	PWB is not used as reinforced or supplementary insulation.	N/A
	Distance through insulation		N/A
	Electric strength test for thin sheet insulating material		—
	Number of layers (pcs)..... :		N/A
2.10.5.4	Wound components		N/A
	Number of layers (pcs)..... :		N/A
	Two wires in contact inside component; angle between 45° and 90°		N/A
2.10.6	Coated printed boards		N/A
2.10.6.1	General		N/A
2.10.6.2	Sample preparation and preliminary inspection		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.6.3	Thermal cycling		N/A
2.10.6.4	Thermal ageing (°C) ..... :		N/A
2.10.6.5	Electric strength test		—
2.10.6.6	Abrasion resistance test		N/A
	Electric strength test		—
2.10.7	Enclosed and sealed parts ..... :		N/A
	Temperature $T_1=T_2 + T_{mra} – T_{amb}$ +10K (°C)..... :		N/A
2.10.8	Spacings filled by insulating compound..... :		N/A
	Electric strength test		—
2.10.9	Component external terminations		N/A
2.10.10	Insulation with varying dimensions		N/A
3	**WIRING, CONNECTIONS AND SUPPLY**		Pass
3.1	**General**		Pass
3.1.1	Current rating and overcurrent protection	All internal wiring used in the distribution of primary power protected against overcurrent and short circuit by suitably rated protective devices.	Pass
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts which could damage insulation.	Pass
3.1.3	Securing of internal wiring	All wiring is reliably routed or separated and secured. The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	Pass
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved. All internal wirings are UL Recognized and rated minimum 300 Vac.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.5	Beads and ceramic insulators	The equipment does not have any beads or similar insulators.	N/A
3.1.6	Screws for electrical contact pressure	Electrical screw connection is not used.	N/A
3.1.7	Non-metallic materials in electrical connections	No contact pressure through insulating material.	Pass
3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used fro electrical connections. Machine screws only.	N/A
3.1.9	Termination of conductors	All conductors are reliable secured.	Pass
	10 N pull test	Considered.	Pass
3.1.10	Sleeving on wiring		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

3.2	**Connection to a.c. mains supplies**		Pass
3.2.1	Means of connection ..... :	The unit is provided with an appliance inlet.	Pass
3.2.2	Multiple supply connections	Single mains supply.	N/A
3.2.3	Permanently connected equipment	The equipment is not permanently connected.	N/A
	Number of conductors, diameter (mm) of cable and conduits ..... :		—
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320. Appliance inlet can be inserted without difficulty and so placed that, after insertion of the connector, the equipment is not supported by the connector for any position of normal use on a flat surface.	Pass
3.2.5	Power supply cords	Power supply cord suitable for application and subject to country's national code and regulations to be provided by the manufacturer.	Pass
	Type..... :		—
	Rated current (A), cross-sectional area (mm^2), AWG..... :		—
3.2.6	Cord anchorages and strain relief	Appliance inlet is used.	N/A
	Mass of equipment (kg), pull (N) ..... :		—
	Longitudinal displacement (mm) ..... :		—
3.2.7	Protection against mechanical damage	No parts under this unit likely to damage the power supply cord. No sharp edges.	Pass
3.2.8	Cord guards	The equipment dose not use a non-detachable power supply cord.	N/A
	D (mm); test mass (g) ..... :		—
	Radius of curvature of cord (mm)..... :		—
3.2.9	Supply wiring space	Equipment provided with an appliance inlet.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.3	**Wiring terminals for connection of external conductors**		N/A
3.3.1	Wiring terminals	Equipment with detachable power supply cord, connected on appliance inlet.	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Rated current (A), cord/cable type, cross-sectional area (mm^2)..... :		N/A
3.3.5	Rated current (A), type and nominal thread diameter (mm)..... :		N/A
3.3.6	Wiring terminals design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.4	**Disconnection from the a.c. mains supply**		Pass
3.4.1	General requirement	The appliance inlet is considered to be the disconnect device.	Pass
3.4.2	Disconnect devices	The equipment is provided with an appliance coupler.	Pass
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	No parts remain energized when the disconnect device is removed.	N/A
3.4.5	Switches in flexible cords	No isolating switch in the cord set.	N/A
3.4.6	Single-phase equipment	Disconnect device disconnects all poles simultaneously.	Pass
3.4.7	Three-phase equipment	The unit is single-phase equipment.	N/A
3.4.8	Switches as disconnect devices	A switch is not considered the disconnect device.	N/A
3.4.9	Plugs as disconnect devices	The appliance inlet is considered to be the disconnect device.	N/A
3.4.10	Interconnected equipment	No interconnection of hazardous voltages or energy levels.	N/A
3.4.11	Multiple power sources	The equipment only receives power from one source.	N/A

3.5	**Interconnection of equipment**		Pass
3.5.1	General requirements		Pass
3.5.2	Types of interconnection circuits.....:	Interconnection circuits are SELV CIRCUITS.	Pass
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4	PHYSICAL REQUIREMENTS		Pass
4.1	**Stability**		Pass
	Angle of 10°	The unit with frame intends to screw with other facilities.	N/A
	Test: force (N) .....:	Equipment is not a floor-standing unit.	N/A
4.2	**Mechanical strength**		Pass
4.2.1	General	See below.	Pass
4.2.2	Steady force test, 10 N	10N were applied to components. No energy or other hazards.	Pass
4.2.3	Steady force test, 30 N	The equipment does not have any internal enclosures.	N/A
4.2.4	Steady force test, 250 N	250N were applied to other outer enclosure. No energy or other hazards.	Pass
4.2.5	Impact test	500g steel sphere ball fall, from 1.3m height onto outer enclosure. The test was done with all enclosure. No safety relevant damaged.	Pass
4.2.6	Drop test	Unit is not hand-held, direct plug-in, or transportable.	N/A
4.2.7	Stress relief	Enclosure is metal.	N/A
4.2.8	Cathode ray tubes	The equipment does not have any CRT.	N/A
	Picture tube separately certified..... :		N/A
4.2.9	High pressure lamps	The equipment does not have any high pressure lamps.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ..... :	Not wall mounted equipment.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.3	**Design and construction**		Pass
4.3.1	Edges and corners	All edges and corners are judged to be sufficiently well rounded so as not to constitute a hazard.	Pass
4.3.2	Handles and manual controls; force (N)..... :		N/A
4.3.3	Adjustable controls	The equipment does not have a voltage selector. The equipment is auto-ranging.	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances over supplementary or reinforced insulation is likely to occur.	Pass
4.3.5	Connection of plugs and sockets	The equipment does not have any interchangeable plugs/sockets.	N/A
4.3.6	Direct plug-in equipment	Not direct plug-in equipment.	N/A
	Torque (Nm)..... :		—
4.3.7	Heating elements in earthed equipment	The equipment does not have any heating elements.	N/A
4.3.8	Batteries	Battery is protected against charging current by multiple components within the system clock integrated circuit package. See Critical Components List.	Pass
4.3.9	Oil and grease	The insulation of the internal wiring is not exposed to oil, grease, etc.	N/A
4.3.10	Dust, powders, liquids and gases	The equipment does not produce dust or employ powders, liquids or gases.	N/A
4.3.11	Containers for liquids or gases	The equipment does not contain liquids.	N/A
4.3.12	Flammable liquids..... :	The equipment does not use any flammable liquids.	N/A
	Quantity of liquid (l)..... :		N/A
	Flash point (°C) ..... :		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13	Radiation; type of radiation ..... :	The equipment does not generate ionizing radiation or contain flammable liquids or gases.	N/A
	Equipment using lasers		N/A
4.4	**Protection against hazardous moving parts**		N/A
4.4.1	General	Equipment does not have any hazardous moving parts.	N/A
4.4.2	Protection in operator access areas	Equipment does not have any hazardous moving parts.	N/A
4.4.3	Protection in restricted access locations	Equipment does not have any hazardous moving parts.	N/A
4.4.4	Protection in service access areas	Unintentional contact with hazardous moving parts by service personnel is unlikely.	N/A
4.5	**Thermal requirements**		Pass
4.5.1	Temperature rises	See appended table	Pass
	Normal load condition per Annex L..... :		N/A
4.5.2	Resistance to abnormal heat	No parts at hazardous voltage are directly mounted on thermoplastic parts.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.6	**Openings in enclosures**		Pass
4.6.1	Top and side openings	Foreign objects entering the enclosure will not contact bare parts at hazardous voltage or energy. (No hazardous parts within 5° projection).	Pass
	Dimensions (mm) ..... :	Left Side: Provided with 20 slots openings for fan, each measures 19.95 mm by 1.95 mm. Provided with several circle openings, each measured 2.9 mm diameter cover area 62.6 mm by 31 mm	—
4.6.2	Bottoms of fire enclosures	Bottom side: Provided with 15 circle openings located right and left side, measured 2.9 mm diameter covered area 22.9 mm by 12.6 mm.	N/A
	Construction of the bottom..... :		—
4.6.3	Doors or covers in fire enclosures	The equipment does not have any doors or covers.	N/A
4.6.4	Openings in transportable equipment	Unit not transportable.	N/A
4.6.5	Adhesives for constructional purposes	Adhesives not used for securement of internal barriers or screens.	N/A
	Conditioning temperature/time..... :		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.7	**Resistance to fire**		Pass
4.7.1	Reducing the risk of ignition and spread of flame	Method 1: Selection and application of components and materials which minimize the possibility of ignition and spread of flame.	Pass
4.7.2	Conditions for a fire enclosure	With having the following components: - approved power supply - wiring - integrated circuit - DC Fan - Lithium Battery - Hard Disk Drive - CD-ROM The fire enclosure is required.	Pass
4.7.2.1	Parts requiring a fire enclosure	A fire enclosure covers all parts.	Pass
4.7.2.2	Parts not requiring a fire enclosure	Fire enclosure covers all parts.	Pass
4.7.3	Materials		Pass
4.7.3.1	General	See below.	Pass
4.7.3.2	Materials for fire enclosures	The fire enclosure is metal.	N/A
4.7.3.3	Materials for components and other parts outside fire enclosures	Fire enclosure covers all parts.	N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better. Internal wiring is UL Recognized, marked VW-1 or FT-1 and strapped by individual cable ties (where needed). See Table 1.5 for material information.	Pass
4.7.3.5	Materials for air filter assemblies	The equipment does not have any air filters.	N/A
4.7.3.6	Materials used in high-voltage components	No high-voltage components.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		**Pass**
5.1	**Touch current and protective conductor current**		Pass
5.1.1	General	See below.	Pass
5.1.2	Equipment under test (EUT)	Equipment designed for connection to only one power source.	Pass
5.1.3	Test circuit	Single phase equipment intended for connection to TN system.	Pass
5.1.4	Application of measuring instrument	Test made to 10X20 cm metal foil in contact with accessible non-conductive part.	Pass
5.1.5	Test procedure		Pass
5.1.6	Test measurements	See appended test record.	Pass
	Test voltage (V) .....:	264 Vac.	—
	Measured current (mA) .....:	See enclosed test record.	—
	Max. allowed current (mA) .....:	3.5 mA. (Class I movable)	—
5.1.7	Equipment with touch current exceeding 3.5 mA .....:	Touch current is < 3.5 mA.	Pass
5.1.8	Touch currents to and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network		N/A
	Test voltage (V) .....:		—
	Measured current (mA) .....:		—
	Max. allowed current (mA) .....:		—
5.1.8.2	Summation of touch currents from telecommunication networks.....:		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
5.2	**Electric strength**		Pass
5.2.1	General	Based on the electric strength test the use of the insulating materials within the equipment is satisfactory. (See enclosed test report)	Pass
5.2.2	Test procedure	No insulation breakdown detected during the test. (see enclosed test record)	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
5.3	**Abnormal operating and fault conditions**		Pass
5.3.1	Protection against overload and abnormal operation	(see enclosed test record)	Pass
5.3.2	Motors	Approval DC Fan. All disk drive motors evaluated as part of component evaluation.	Pass
5.3.3	Transformers	Evaluated as part of power supply.	Pass
5.3.4	Functional insulation..... :	Functional insulation between the phases before the fuse complies with method (a), other operation insulation complies with method (C). Considered in approved SPS.	Pass
5.3.5	Electromechanical components	The equipment does not have any electromechanical components in the secondary.	N/A
5.3.6	Simulation of faults	Faults in primary and secondary components and functional insulation were already considered during the approval of the SPS. See enclosed test record for abnormal operation tests.	Pass
5.3.7	Unattended equipment	The equipment does not have any thermostats, temperature limiters, or thermal cut-outs.	N/A
5.3.8	Compliance criteria for abnormal operating and fault conditions	No fire, emission of molten metal or deformation was noted during the tests. Electric strength tests performed after abnormal and fault tests.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		N/A
6.1	**Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment**		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Test voltage (V) ..... :		—
	Current in the test circuit (mA) ..... :		—
6.1.2.2	Exclusions ..... :		N/A
6.2	**Protection of equipment users from overvoltages on telecommunication networks**		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A
6.3	**Protection of telecommunication wiring system from overheating**		N/A
	Max. output current (A) ..... :		—
	Current limiting method ..... :		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A	**ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
A.1	**Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)**		N/A
A.1.1	Samples, material..... :		—
	Wall thickness (mm)..... :		—
A.1.2	Conditioning of samples; temperature (°C)..... :		N/A
A.1.3	Mounting of samples..... :		N/A
A.1.4	Test flame		N/A
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.2	**Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)**		N/A
A.2.1	Samples, material..... :		—
	Wall thickness (mm)..... :		—
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
A.3	**High current arcing ignition test (see 4.7.3.2)**		N/A
A.3.1	Samples, material ..... :		—
	Wall thickness (mm)..... :		—
A.3.5	Compliance criteria		N/A
	Sample 1 number of arcs to ignition (pcs)..... :		—
	Sample 2 number of arcs to ignition (pcs)..... :		—
	Sample 3 number of arcs to ignition (pcs)..... :		—
	Sample 4 number of arcs to ignition (pcs)..... :		—
	Sample 5 number of arcs to ignition (pcs)..... :		—
A.4	**Hot wire ignition test (see 4.7.3.2)**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A.4.1	Samples, material..... :		—
	Wall thickness (mm)..... :		—
A.4.5	Compliance criteria		N/A
	Sample 1 ignition time (s)..... :		—
	Sample 2 ignition time (s)..... :		—
	Sample 3 ignition time (s)..... :		—
	Sample 4 ignition time (s)..... :		—
	Sample 5 ignition time (s)..... :		—
A.5	**Hot flaming oil test (see 4.6.2)**		N/A
A.6	**Flammability tests for classifying materials V-0, V-1 or V-2**		N/A
A.6.1	Samples, material..... :		—
	Wall thickness (mm)..... :		—
A.6.5	Compliance criteria		N/A
A.6.6	Permitted re-test		N/A
A.7	**Flammability test for classifying foamed materials HF-1, HF-2 or HFB**		N/A
A.7.1	Sample, material ..... :		—
	Wall thickness (mm)..... :		—
A.7.4	Compliance criteria		N/A
A.7.5	Compliance criteria, HF-2		N/A
A.7.6	Compliance criteria, HF-1		N/A
A.7.7	Compliance criteria, HBF		N/A
A.7.8	Permitted re-test, HF-1 or HF-2		N/A
A.7.9	Permitted re-test, HBF		N/A
A.8	**Flammability test for classifying materials HB**		N/A
A.8.1	Samples, material..... :		—
	Sample thickness (mm) ..... :		—
A.8.2	Conditioning of samples; temperature (°C)..... :		N/A
A.8.4	Test procedure		N/A
A.8.5	Compliance criteria		N/A
A.8.6	Permitted re-test		N/A
A.9	**Flammability test for classifying materials 5V**		N/A
A.9.1	Samples, material..... :		—
	Sample thickness (mm) ..... :		—
A.9.4	Test procedure, test bars		N/A
A.9.5	Test procedure, test plaques		N/A
A.9.6	Compliance criteria		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A.9.7	Permitted re-test		N/A
A.10	**Stress relief conditioning (see 4.2.7)**		N/A
	Temperature (°C) ..... :		—
B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)**		Pass
B.1	**General requirements**	Certified DC Fan used.	Pass
	Position .....:	Above CPU	—
	Manufacturer .....:	See appended Table 1.5.1	—
	Type .....:	Ditto	—
	Rated values .....:	Ditto	—
B.2	**Test conditions**		N/A
B.3	**Maximum temperatures**		N/A
B.4	**Running overload test**		N/A
B.5	**Locked-rotor overload test**		N/A
	Test duration (days) .....:		—
	Electric strength test: test voltage (V) .....:		—
B.6	**Running overload test for DC motors in secondary circuits**		N/A
B.7	**Locked-rotor overload test for DC motors in secondary circuits**		N/A
B.7.1	Test procedure		N/A
B.7.2	Alternative test procedure; test time (h).....:		N/A
B.7.3	Electric strength test		N/A
B.8	**Test for motors with capacitors**		N/A
B.9	**Test for three-phase motors**		N/A
B.10	**Test for series motors**		N/A
	Operating voltage (V) .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict

C	**ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		N/A
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
	Method of protection ..... :		—
C.1	**Overload test**		N/A
C.2	**Insulation**		N/A
	Protection from displacement of windings..... :		N/A

G	**ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES**		N/A
G.1	**Summary of the procedure for determining minimum clearances**		N/A
G.2	**Determination of mains transient voltage (V) :**		N/A
G.3	**Determination of telecommunication network transient voltage (V)..... :**		N/A
G.4	**Determination of required withstand voltage (V)..... :**		N/A
G.5	**Measurement of transient levels (V)..... :**		N/A
G.6	**Determination of minimum clearances..... :**		N/A

H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		N/A
	Ionizing radiation		N/A
	Measured radiation (mR/h) .....:		—
	Measured high-voltage (kV) .....:		—
	Measured focus voltage (kV) .....:		—
	CRT markings .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		N/A
	Metal used .....:		—
K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)**		N/A
K.1	**Making and breaking capacity**		N/A
K.2	**Thermostat reliability; operating voltage (V). :**		N/A
K.3	**Thermostat endurance test; operating voltage (V) ..... :**		N/A
K.4	**Temperature limiter endurance; operating voltage (V) ..... :**		N/A
K.5	**Thermal cut-out reliability**		N/A
K.6	**Stability of operation**		N/A
M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		N/A
M.2	**Method A**		N/A
M.3	**Method B**		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (f)..... :		—
M.3.1.2	Voltage (V) ..... :		—
M.3.1.3	Cadence; time (s), voltage (V) ..... :		—
M.3.1.4	Single fault current (mA)..... :		—
M.3.2	Tripping device and monitoring voltage ..... :		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V)..... :		N/A
U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		N/A
	Separate test report		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	**TABLE: list of critical components**				Pass
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
Power supply	FSP Group Inc.	FSP180-50PLA	100-240V a.c, 4A	EN 60950 IEC 60950	UL, Nemko
LCD Panel	CHI MEI Optoelectronics Corp.	M150X2-T05	TFT type, SVGA 15 inch	--	--
Inverter	Hwa-ywen Technology Crop.	QF132v1.1X	I/p: 13.2 V, 1.63 A, max. O/p: 720 Vrms, 6.2 mA	--	--
- Transformer	FINE	TF505C	Class A	--	--
- Fuse	Bussmann	3216FF	3 A, 63 V	--	UL
	Bel	C1Q	3 A, 63 V		
	Littlefuse	429	3 A, 63 V		
RTC Battery	MATSUSHITA ELECTRIC INDUSTRIAL CO LTD	BR2032	3Vdc, 195mAh Max Abnormal Charging Current 5 mA	UL1642	UL
	Toshiba	CR2032	3 V, 220 mAh. Max. Abnormal Charging Current 10mA	UL 1642	UL
	Rayovac	BR2032	3 V, 195 mAh. Max. Abnormal Charging Current 4 mA	UL 1642	UL
Polyswitch (FS1, FS2, FS3, FS4, FS5)	Raychem Corp., Electronics OEM division Circuit Protection Product	SMD100-2018	15V d.c., 1.03A at 25°C	UL1434	UL
LCD Panel	CRT Confidential	CLAA150XA03	TFT type, SVGA 15.0 inch	--	--
HDD Drive (Optional)	--	--	5Vdc, 0.52A max.	EN 60950	TÜV, UL, CSA
FDD Drive (Optional)	--	--	5Vdc, 1A max.	EN 60950	TÜV, UL, CSA

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Clause	Requirement + Test	Result - Remark	Verdict

CD-ROM Drive (Optional)	--	--	5Vdc, 1.5A max.	EN 60950	TÜV, UL, CSA
System Fan	Bi-Sonic Technology Corp.	BS402012H	12Vdc, 0.16A	IEC 60950	TUV, UL, CSA
DC Fan for CPU	Bi-Sonic Technology Corp.	BP601012H	12Vdc, 0.21A	IEC 60950	TÜV, UL
[1]) an asterisk indicates a mark which assures the agreed level of surveillance					

1.6.2	**TABLE: electrical data (in normal conditions)**					Pass
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status
						See enclosed test record
supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

2.10.3 and 2.10.4	**TABLE: clearance and creepage distance measurements**					N/A
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Primary to ground						
Primary to secondary						

2.10.5	**TABLE: distance through insulation measurements**				N/A
distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	di (mm)	
supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	**TABLE: temperature rise measurements**		Pass
	test voltage (V) .....:	See enclosed test record.	—
	t1 (°C) .....:	--	—
	t2 (°C) .....:	--	—

temperature rise dT of part/at:	dT (K)	required dT (K)
See enclosed test record		

temperature rise dT of winding:	R_1 (Ω)	R_2 (Ω)	dT (K)	required dT (K)	insulation class

supplementary information:

4.5.2	**TABLE: ball pressure test of thermoplastics**		N/A
	allowed impression diameter (mm) .....:		—

part	test temperature (°C)	impression diameter (mm)

supplementary information:

5.2	**TABLE: electric strength tests and impulse tests**		Pass

test voltage applied between:	test voltage (V)	breakdown Yes / No
See enclosed test record		

supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

5.3	**TABLE: fault condition tests**					Pass
	ambient temperature (°C) ..... :				25° C	—
	model/type of power supply ..... :				See Table 1.5.1	—
	manufacturer of power supply ..... :				ditto.	—
	rated markings of power supply ..... :				ditto.	—
component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
						See enclosed test record
supplementary information:						

A.6.5	**TABLE: flammability test for classifying materials V-0, V-1 or V-2**	N/A
sample No. / ref.	afterflame time (s) t_1 or t_2	afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$
1/A		
2/A		
3/A		
4/A		
5/A		
6/B		
7/B		
8/B		
9/B		
10/B		

A.6.6	**TABLE: flammability re-test for classifying materials V-0, V-1 or V-2**	N/A
sample No.	afterflame time (s) t_1 or t_2	afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$
11		
12		
13		
14		
15		

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.7.4, A.7.5, A.7.6 and A.7.7	**TABLE: flammability test for classifying foam materials HF-1, HF-2 or HBF**			N/A
sample No. / ref.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
1/A				
2/A				
3/A				
4/A				
5/A				
6/B				
7/B				
8/B				
9/B				
10/B				

A.7.8	**TABLE: flammability re-test for classifying foam materials HF-1 or HF-2**			N/A
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment
11				
12				
13				
14				
15				

A.7.9	**TABLE: flammability re-test for classifying foam materials HBF**			N/A
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
11				
12				
13				
14				
15				

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.8.5	**TABLE: flammability test for classifying materials HB**		N/A
sample No.	flaming/glowing rate mm/min	flaming/glowing distance from reference mark (mm)	
1			
2			
3			

A.8.6	**TABLE: flammability re-test for classifying materials HB**		N/A
sample No.	flaming/glowing rate mm/min	flaming/glowing distance from reference mark (mm)	
4			
5			
6			

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.9.6	**TABLE: flammability test for classifying materials 5V**				N/A
sample	test bars		test plaques		
No./ref.	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
1/A			A		
2/A			B		
3/A			C		
4/A			D		
5/A					
6/B			A		
7/B			B		
8/B			C		
9/B			D		
10/B					

A.9.7	**TABLE: flammability re-test for classifying materials 5V**				N/A
sample	test bars		test plaques		
No.	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
11			A		
12			B		
13			C		
14			D		
15					
supplementary information:					

ENCLOSURE No. 1

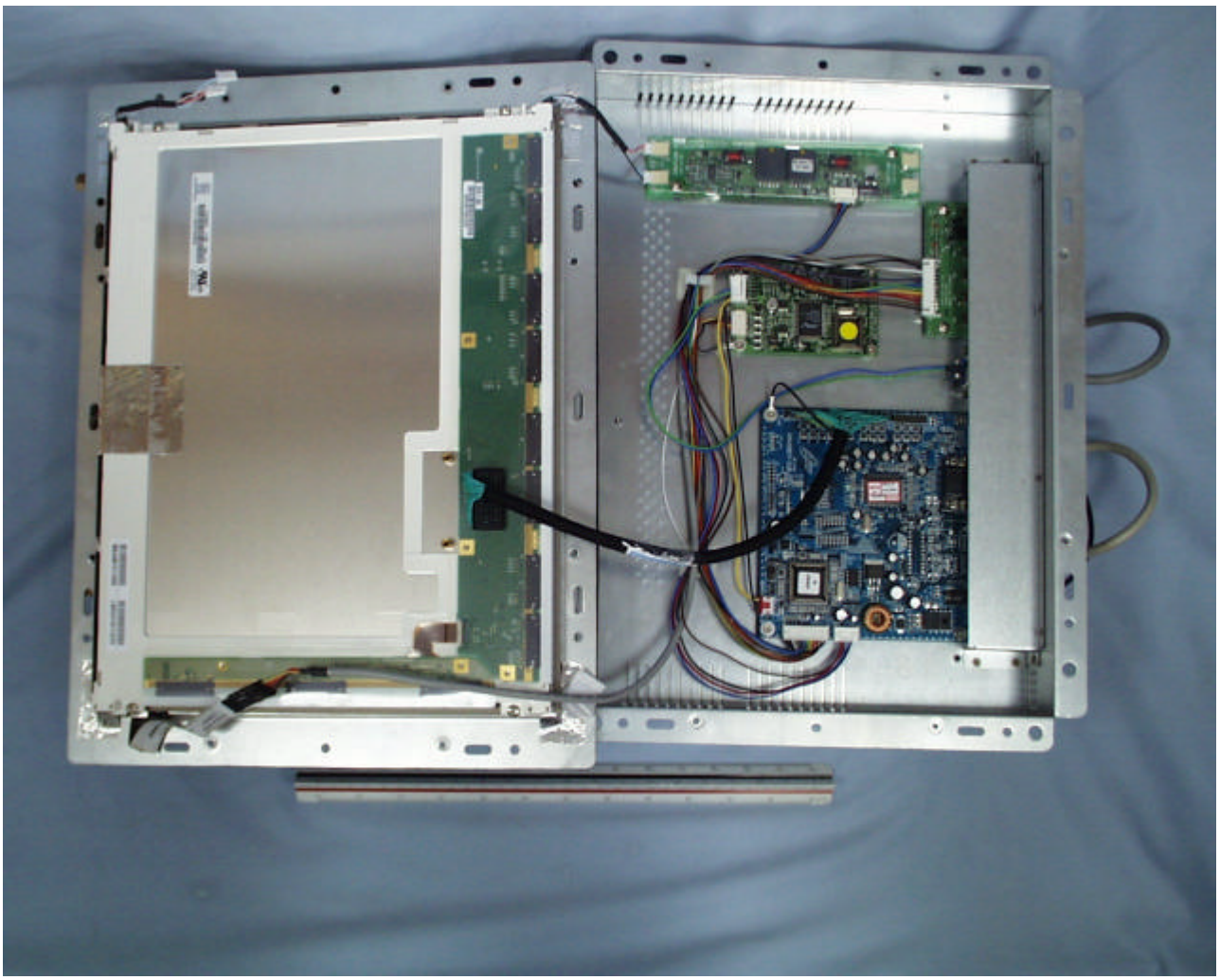
Photographs

(Total 5 Pages including this Cover Page)

OFPC-215XXXXXX

OFPC-215XXXXXX

OFPC-215XXXXXX



OFPC-215XXXXXX

ENCLOSURE No. 2

Additional Test Data

(Total 36 Pages including this Cover Page)

Measuring and Test Instruments

Applied For Safety Inspection

Company/Test Institute: Superior Product Consulting, Inc.

Address of Test Site: 3Fl.,No. 10, Alley 6,Lane 235, Pao Chiao Road, Hsin Tien City, Taipei, Taiwan, R.O.C.

Person responsible for

Maintenance & Calibration : Terry wang/ Team Leader

Division/Department : Test Lab.

Date and Signature : Terry Wang 7/28/03

REV: A **DATE:JUL,28, 2003**

Item	Kind of Instrument Precision Class SPC Property No.	Manufacturer	Model Serial No.	Range Used &Function	Calibrated until
1	AC Power Meter SPC029	YOKOGAWA	2433	20A	22, JUN. 2004
			68LD0039	600V	23, JUN. 2003
2	AC Power Meter SPC009	YOKOGAWA	2433	20A	22, JUN. 2004
			61LD0248	600V	23, JUN. 2003
4	LEAKAGE CURRENT METER SPC103	SIMPSON	228	0-100mA	13, APR. 2004
			20433		14, APR. 2003
5	PUSH/PULL SCALE SPC004	IMADA	FB-30	30KG	23, JUN. 2004
			207330		24, JUN. 2003
8	DC ELECTRONIC LOAD SPC069	PRODIGIT	3301A	60V/60A	04, MAR. 2004
			80201A011		05, MAR. 2003
9	CALIPER SPC019	MITUTOYO	500-321	150mm	10, FEB. 2004
			7217225		11, FEB. 2003
10	TEMP. RECORDER SPC014	YOKOGAWA	UR180	-200℃ TO	17, OCT. 2003
			48YP0718	400℃	18, OCT. 2002
11	TEMP. RECORDER SPC012	YOKOGAWA	UR180	-200℃ TO	19, NOV. 2003
			48YP0719	400℃	20, NOV. 2002
12	TEMP. RECORDER SPC033	YOKOGAWA	UR180	-200℃ TO	14, AUG. 2003
			42YS0028	400℃	15, AUG. 2002
13 *	TEMP. RECORDER SPC099	FLUKE	52	-200℃ TO	24, JUL. 2004
			4795005	760℃	25, JUL. 2003
14	DIGITIZING OSCILLOSCOPE SPC047	TEKTRONIX	TDS410	150MHz	08, JAN. 2004
			B010359	100MS/s	09, JAN. 2003
15	DUAL DISPLAY MULTIMETER SPC018	FLUKE	45	750Vac	10, FEB. 2004
			5120082	10A	11, FEB. 2003
17 *	THERMO-HYGROMETER SPC067	ISUZU	3-3122	-15℃- +40℃	22, JUN. 2004
			80660571	0-100% RH	23, JUN. 2003
18	DC ELECTRONIC LOAD SPC028	PRODIGIT	3301	60V/60A	01, MAY. 2004
			205010035	250V/10A	02, MAY. 2003
19	DC ELECTRONIC LOAD SPC035	PRODIGIT	3301	60V/60A	01, MAY. 2004
			210010074	250V/10A	02, MAY. 2003
20	AC/DC CURRENT PROBE SPC047	TEKTRONIX	A622	70Arms	01, MAY. 2004
			06-14-94	100Apk	02, MAY. 2003
22 *	DC ELECTRONIC LOAD SPC089	PRODIGIT	3321	60V/60A	23, JUL. 2004
			607020097		24, JUL. 2003
23 *	DIGITIZING POWER METER SPC059	PRODIGIT	4011	600V/20A	25, JUL. 2004
			964011133		26, JUL. 2003
25 *	DIGITIZING MUTIMETER SPC060	GOOD WILL	GDM-8055	750Vac	22, JUN. 2004
			6040254	2A 20MΩ	23, JUN. 2003
27	POWER ANALYSER SPC063	AVPOWER	PA2100	650Vrms	10, APR. 2004
			621-0597	20A	11, APR. 2003
28	DC ELECTRONIC LOAD SPC066	PRODIGIT	3301A	60V/60A	16, OCT. 2003
			70601A022	250V/10A	17, OCT. 2002

File E_____

Project SPC LVD 30778

SPC PROJECT NO 30773

Item	Kind of Instrument Precision Class SPC Property No.	Manufacturer	Model Serial No.	Range Used &Function	Calibrated until
29	TEST FINGER	UL	SM471	UL1950	21, MAR. 2004
	SPC039		S002	FIG. 19	22, MAR. 2002
30	BALL PRESSURE	UL	S1598	UL1950	21, MAR. 2004
	SPC041		S004	FIG. 21	22, MAR. 2002
31	IMPACT BALL	UL	—	50mm	21, MAR. 2004
	—		S003	500g	22, MAR. 2002
32	TEST PIN	UL	S2962	UL1950	21, MAR. 2004
	SPC040		S001	FIG. 20	22, MAR. 2002
33	DC ELECTRONIC LOAD	PRODIGIT	3301A	60V/60A	16, AUG. 2003
	SPC077		80701A043		17, AUG. 2002
34	DC ELECTRONIC LOAD	PRODIGIT	3301A	60V/60A	28, AUG. 2003
	SPC079		80701A042		29, AUG. 2002
35	DC ELECTRONIC LOAD	PRODIGIT	3302A	60V/30A	16, AUG. 2003
	SPC080		808020375		17, AUG. 2002
36	DC ELECTRONIC LOAD	PRODIGIT	3302	60V/30A	16, OCT. 2003
	SPC081		808020378		17, OCT. 2002
37	DC ELECTRONIC LOAD	ZENTECH	2600R	60V/60A	16, AUG. 2003
	SPC078		809055	300V/10A	17, AUG. 2002
38	TEMP. RECORDER	YOKOGAWA	UR1800	-200℃ TO	11, FEB. 2004
	SPC082		4370GE038	400	12, FEB. 2003
39	TEMP. RECORDER	YOKOGAWA	UR1800	-200℃ TO	07, JAN. 2004
	SPC083		4370GE037	400	08, JAN. 2003
40	TEMP. RECORDER	YOKOGAWA	UR1800	-200℃ TO	07, JAN. 2004
	SPC090		4370GE046	400	08, JAN. 2003
41	DC ELECTRONIC LOAD	PRODIGIT	3302A	60V/30A	16, OCT. 2003
	SPC091		811020578		17, OCT. 2002
42	DC ELECTRONIC LOAD	PRODIGIT	3302A	60V/30A	16, OCT. 2003
	SPC088		811020580		17, OCT. 2002
43	DC ELECTRONIC LOAD	PRODIGIT	3301A	60V/60A	13, NOV. 2003
	SPC098		80901A045		14, NOV. 2002
44	TEST FINGER	UL	FIGURE 19	UL1950	21, MAR. 2004
	SPC070		2346	FIG. 19	22, MAR. 2002
45	DC ELECTRONIC LOAD	PRODIGIT	3301A	60V/60A	16, OCT. 2003
	SPC092		80901A046		17, OCT. 2002
46	DIGITIZING OSCILLOSCOPE	TEKTRONIX	TDS360	200MHz	26, AUG. 2003
	SPC093		B019983	1GS/s	27, AUG. 2002
47	DUAL DISPLAY MULTIMETER	FLUKE	45	750Vac	07, JAN. 2004
	SPC094		7079032	10A	08, JAN. 2003
48	HI-POT TESTER	ZENTECH	ZT9072A	10mA	28, AUG. 2003
	SPC095		809549	5KV	29, AUG. 2002
49	GROUNDING TESTER	ZENTECH	ZT9570	12V	26, NOV. 2003
	SPC096		807786	40A	27, NOV. 2002
50	LEAKAGE CURRENT METER	SIMPSON	228	0-100mA	17, OCT. 2003
	SPC097		20988		18, OCT. 2002
51	DIGITIZING POWER METER	PRODIGIT	4011	600V/20A	11, FEB. 2004
	SPC094		984011034		12, FEB. 2003
52	CALIPER	MITUTOYO	CD-6"CS	150mm	19, NOV. 2003
	SPC084		0305366		20, NOV. 2002
53	TEMP. RECORDER	YOKOGAWA	UR1800	-200℃ TO	19, NOV. 2003
	SPC072		4370GC179	400	20, NOV. 2002
54	AC POWER METER	YOKOGAWA	2433	20A	07, JAN. 2004
	SPC101		68LD0040	600V	08, JAN. 2003
56	TEMP. RECORDER	YOKOGAWA	UR1800	-200℃ TO	11, FEB. 2004
	SPC104		12W732059	400	12, FEB. 2003
57	TEMP. RECORDER	FLUKE	52	-200℃ TO	06, MAR. 2004
	SPC106		73990047	760℃	07, MAR. 2003
58	DIGITIZING POWER METER	CHYNG HONG	CP-350	500V/50A	09, MAR. 2004
	SPC107		355952		10, MAR. 2003
59	DIGITIZING POWER METER	CHYNG HONG	CP-350	500V/50A	09, MAR. 2004
	SPC105		355953		10, MAR. 2003
60	Temperature/Humidity Test Chamber	KAO TIEH	KT-7005-A	25°C to 40°C	07, OCT. 2003
	SPC005		72867	93%R.H. to 95%R.H.	08, OCT. 2002

File E

Project spc LVD 3076

SPC PROJECT NO 3076

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30175 Page 3 of 34

TEST RECORD NO. _____ Vol.____ Sec.____ Issued:_____

TEST PROGRAM DETAILS:

The manufacturer submitted

( ) a sample representing production of _____

(X) representative production samples of _____

Model(s) ES-200

( ) employing the alternate _____

(X) The following tests were conducted in accordance with
(X) the Standard for Safety of Information Technology Equipment.
(X) CSA C22.2, No. 60950/UL60950, Third Edition.
( ) IEC 60950, Third Edition ( ) Including Amendments _____
( ) Including National Deviations from _____

( ) VDE 0805/05.90
( ) AS 3260
( ) EN 41 003
( ) TS 001-1990
( ) _____

Only the following tests were deemed necessary.

(X) Tests were conducted by (co. name & location) **Superior Product Consulting, Inc, Taipei, Taiwan, R.O.C.**
( ) and witnessed by a member of the UL staff.

(X) Tests were conducted under ~~WTDP/CTDP/COMPASS Program/TCL~~/CAP.
( ) Tests noted by the initials "UL" were conducted at UL/witnessed by UL staff member.

( ) The following tests were conducted by _____ under the Memorandum of Understanding (MOU)/CB Scheme _____;
(CB Certificate No. _____; Tracking No. _____)

_____ _____

_____ _____

_____ _____

SPC PROJECT NO.: 30175

File _____ Project SPC LVD 30776 Page 4 of 34

The test methods and results of the following tests have been reviewed and found to be in accordance with the requirements in the Standards noted above. Test results are valid only for the tested equipment.

( ) The following D3 Deviations from UL 1950, Second Edition, were used for testing: _____, _____, _____, _____, _____, _____, _____, _____, _____.

( ) The card cage contained _____ boards and had _____ empty slots.

( ) The CPU was Model _____.

( ) The unit was configured as follows: _____

"Maximum normal load" was defined as follows: Hard Disk and CD-ROM were seeking, USB Port load 0.5A.

( ) Horizontal scanning frequency: _____ KHz

Vertical scanning frequency: _____ Hz

The unit weighs approximately 4.1 kg and was considered ~~Direct Plug-In/building-in/Transportable/ handheld~~/ movable/ ~~fixed/ stationary~~ with exposed/ ~~unexposed~~ SELV/ ~~secondary low voltage/ TNV~~ circuits.

( ) The unit was considered rack-mountable.

(X) Tmra 50 °C.

(X) Unless otherwise indicated, all tests were conducted on Model _____ 64-2000

( ) Tests performed on Model _____ were considered to be representative of Model(s) _____

TB:bd - UL 60950, 3rd Data Sheets
Document: 005.Eng

Form Issued: 10-02-00
Revised: 00-00-00

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 5/34
Tested by: Judy Dong Date 8/5/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 43.59.

1.6.2 - INPUT TEST:
SINGLE-PHASE

METHOD

The unit was connected to a variable voltage as indicated and then operated normally under the conditions noted below until well warmed. The input current and average power were measured.

(X) RESULTS

Operating Condition	Input Condition Volts	Input Condition Hz	Input Current, A Rated	Input Current, A Measured	Average Power Watts
Max. Normal Load	90	50	—	1.69	151
"	90	60	—	1.69	149
"	100	50	4	1.50	148
"	100	60	4	1.51	148
"	>40	50	≥	0.63	141
"	>40	60	≥	0.63	141
"	>64	50	—	0.58	141
"	>64	60	—	0.58	141

The steady-state input current ~~did~~/did not exceed the rated current at the rated voltage by more than 10% under the maximum normal load.

Comments: (X) ***Test on model:*** ES-200

Power Supply For Model = FSP, Type FSP (II) 180-50 PLS

TB:bd - UL 60950, 3rd Data Sheets
Document: 010.Eng

Form Issued: 10-02-00
Revised: 00-00-00

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 3077G Page 6/34
Tested by: Judy Jeng Date 8/8/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 46,

2.1.1.7 - CAPACITANCE DISCHARGE TEST:

METHOD

The unit was connected to >64 V ac, 60 Hz/~~dc.~~ A storage oscilloscope was connected across the external point of disconnection of the mains supply. With all switches in the unit initially set to the "OFF" position, the unit was disconnected from the supply source. The voltage at the time of disconnection, V_o, and the voltage, V_{tc}, at 1.0/~~10.0~~ second~~(s)~~ was/~~were~~ recorded.

(X) A photograph or printout of the scope waveform was provided.

( ) The test was repeated with the primary fuse removed.

( ) The test was repeated with all switches in all possible positions.

RESULTS

Measurement Locations	Fuse In/Out	Switch Position	V_o (V pk)	37% V_o (V pk)	V_{tc} (V pk)	time at 37% Vo (second)
Line - Neutral	In	N/A	380	140.6	4	0.004

The voltage across-line capacitors did/~~did not~~ decay to less than 37 percent of its original value in 1.0/~~10.0~~ second~~(s).~~

. . . . . .

NOTES TO LAB:

1. Discharge through the test probe should be minimized. One possible action is to use a high impedance probe.

2. *X-Cap.* (_____) _____ uF; (_____) _____ uF
   X-Cap. (_____) _____ uF; (_____) _____ uF

3. *Bleeder resistor* (_____) _____ Ω

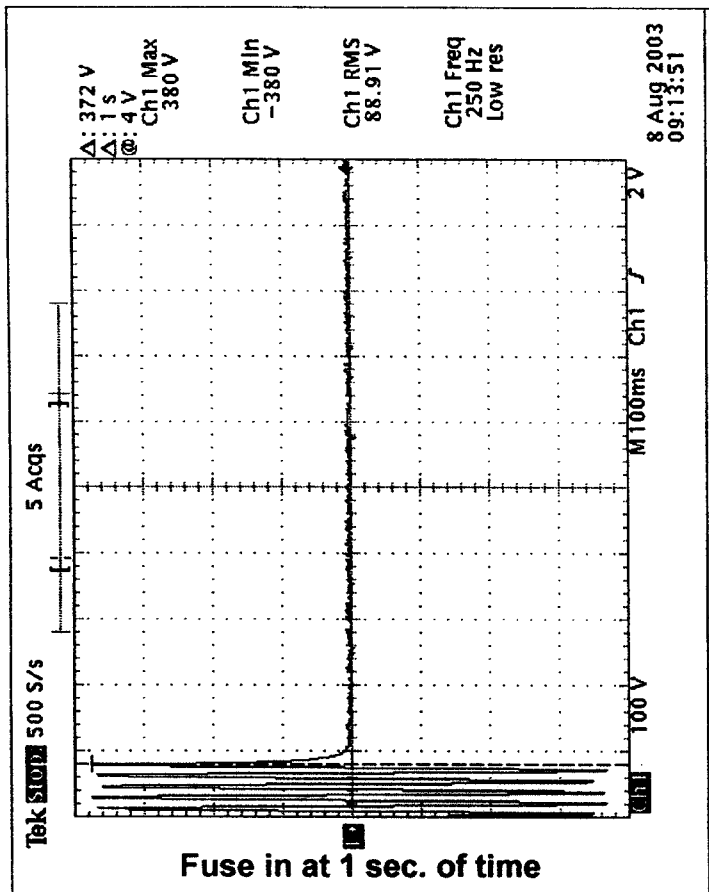
Power Supply For Model= Fsp, Type Fsp180 - 5aPLA

SPC PROJECT NO.: 3077

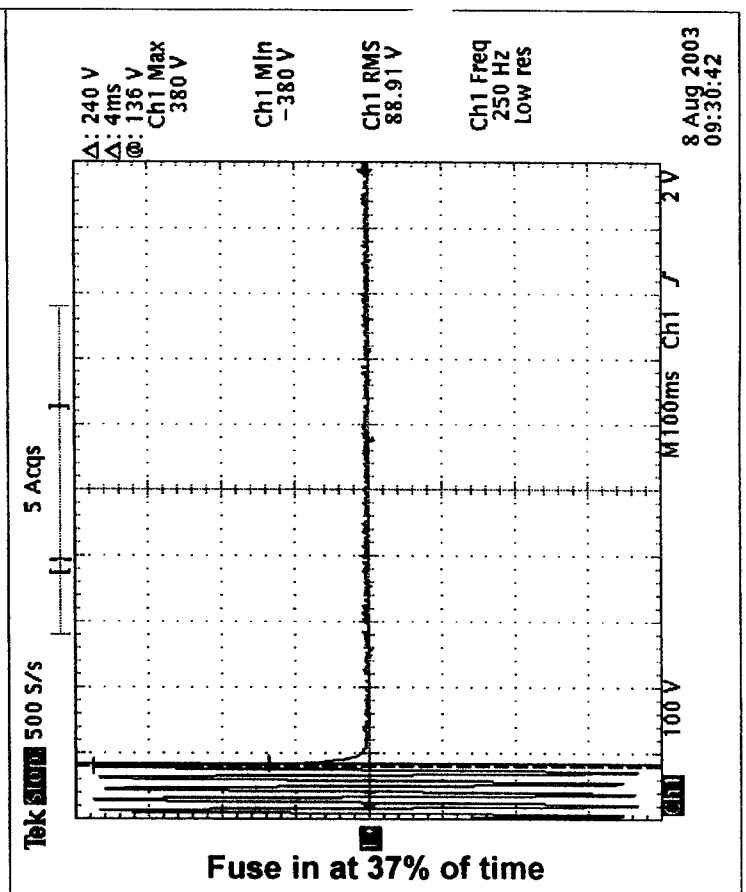
File:
Project: SPC LVD 9776
SPC PROJECT NO.: 30776
Sample #: 1/1

Tested by (signature) Judy Jeng
Tested by (print) Judy Jeng
Test date 8/8/03

Instrument Code / Range: 46.



Fuse in at 1 sec. of time



Fuse in at 37% of time

File # (TJ) Project SPC LVD 30776 Page 8/34
Tested by: Andy Jung Date 8/11/03
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

2.5 - LIMITED POWER SOURCE MEASUREMENTS:

(X) METHOD (Inherently Limited)

A sample of the ~~power~~ Power supply/~~transformer~~, Model ES-200 /~~Operator Accessible Connector~~ was connected to 264 V ac, 60 Hz/~~dc~~. After each of the following output measurements, the values were compared with the appropriate tables:

A. The open circuit voltage (U_{oc}), with all load circuits disconnected.

B. The output current (I_{sc}) after 60 seconds of operation with the load adjusted to maintain the I_{sc} current limit (8.0 A or $150/U_{oc}$, as applicable). Output circuits other than the circuit under test were unloaded during the I_{sc} measurements.

C. The maximum output Volt-Ampere (VA), after 60 seconds of operation with the load adjusted to maintain the VA limit (5 x U_{oc}, or 100, as applicable). Output circuits other than the circuit under test were unloaded during the VA measurement.

(X) If a regulating network limited the output in compliance with Table 2B under normal operating conditions, then measurements (A), (B), and (C) were repeated under single fault conditions. The faults were placed in any part of the regulating network, including power supply pulse width modulation circuitry.

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 9/14
Tested by: Judy Jung Date 8/11/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 4359

RESULTS

Output Tested	Measured From	Measured To	Single Fault Condition	U_{oc}	Maximum I_{sc}	VA	Limit VA
USB 1	Output(+)	Output(-)	Normal	4.72	1.70	6.71	>3.6
USB 2	=	=	=	4.70	1.70	6.69	>3.5
Keyboard	Pin 4	=	=	4.89	1.20	4.75	>4.45
Mouse	Pin 4	=	=	4.85	1.25	4.93	>4.25

(X) ~~The following~~/All output(s) complied with the limited power source requirements:

Comments: ( ) ***Test on model:***

TB:bd - UL 60950, 3rd Data Sheets
Document: 010.Eng

Form Issued: 10-02-00
Revised: 00-00-00

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC L-VD 30[illegible] Page 10/34
Tested by: Jacky Jang Date 8/12/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 49.

2.6.3.3, 2.6.1 - EARTHING TEST II:

METHOD II - For circuit under test with a current rating exceeding 16 A.

Using a maximum 12 V ac\~~dc~~ power source, a current of >5, 40 A, was passed between the equipment earthing terminal and the part in the equipment that is required by 2.6.1 to be earthed listed below for a period of 1, 2 minutes. The voltage drop from the earthing terminal to the accessible metal part required to be earthed was recorded.

RESULTS II

Accessible Conductive Part	Current (Amps)	Voltage Drop (Volts)
Earth Pin of AC Inlet to Chassis	>5	0.22
=	40	0.35

The voltage drop ~~did~~/did not exceed 2.5 V from any accessible conductive part and earth.

Comments: ( ) ***Test on model:***

. . . . . .

NOTES TO ENGINEER:

1. The test current was two times the current rating of the circuit under test.

2. The time was as specified in Subclause 2.6.3.3.

SPC PROJECT NO.: 30[illegible]

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC EVD 30776 Page 11/34
Tested by: Judy Jung Date 8/4/03~8/8/03
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

2.9.1, 2.9.2, 5.2.2 -- HUMIDITY TEST:

METHOD

A humidity chamber was maintained ~~within 1°C of temperature "t" between 20 and 30°C~~/at a temperature of 40 °C. The unit and any other separate components were brought to a temperature between t°C and t°C + 4°C. They were then placed in the chamber and held at a relative humidity of 93 ± 2 percent/ ~~percent~~ for a period of ~~48 hours~~/ 120 hours. Prior to conditioning, parts of the unit (covers) which could be removed without the use of tools were removed and separately placed in the chamber. During conditioning, cable entrances and/or a conduit opening were left open. -During this treatment, the unit was not energized.

While still in the humidity chamber, but after all parts have been placed back on the unit, a dielectric potential was applied and maintained for a period of one minute between the points indicated below. During this test, all switching devices (switches, relays, triacs, etc.) in the primary circuit were closed.

	Location From	To	Potential Used, (V)	
A	Primary	Secondary	( ) _____ ac	(X) 4242 dc
B	Primary	Earth	( ) _____ ac	(X) 3313 dc
C	_____	_____	( ) _____ ac	( ) _____ dc
D	_____	_____	( ) _____ ac	( ) _____ dc

SPC PROJECT NO.: _____

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPCLVD 30776 Page 12/34
Tested by: Judy Jung Date 8/4/03 ~ 8/8/03
(Printed Name) (Signature)

Sample # 4 Instr Code/Range: 60, 48,

RESULTS

The chamber temperature was 40 °C.

The relative humidity was 93 ± 2 percent.

(X) There was no indication of dielectric breakdown.

( ) There was breakdown between the following points.

Location	Voltage	Breakdown Time

NOTES TO LAB:

1. If circuit capacitance causes false breakdowns, a dc potential equal to 1.414 times the ac potential may be applied.

2. Components providing a dc path in parallel with the insulation being tested may be disconnected prior to testing.

NOTES TO ENGINEER:

1. National Deviations for Singapore require the Humidity Test to be conducted per Clause 10.2 of IEC60065. The humidity treatment is to be conducted for 120 hrs (5 days) at 40°C, relative humidity 90 to 95%, to comply with this deviation.

SPC PROJECT NO.: 30[illegible]

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30778 Page 13/34
Tested by: Judy Jung Date 8/12/03
(Printed Name) (Signature)

Sample # 1 Instr Code/Range: 15,59.

4.3.8 - LITHIUM BATTERY REVERSE CURRENT MEASUREMENT TEST:

METHOD

With the lithium battery removed from the circuit, the sample was connected to ≥64 V ac, 60 Hz/~~dc~~. A dc ammeter replaced the battery in the circuit and the normal reverse (charging) current was measured. The reverse current protection component was shorted and the abnormal reverse (charging) current was measured.

RESULTS

Battery Type	Normal Reverse (Charging) Current (mA)	Abnormal Condition	Abnormal Reverse Current (mA)
RAYOVAC, Type BR2032	0.001	D16 short	2.952
=	0.001	R114 short	0.001

Comments: _____

NOTES TO LAB:

1. CAUTION: Risk of explosion. Remove battery before performing this test.
2. Notify engineer if maximum abnormal charging current exceeds 5 mA.

SPC PROJECT NO.: _____

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 14/34
Tested by: Andy Jung Date 8/6/03
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

4.5.1, 1.4.12, 1.4.13 - HEATING TEST:

METHOD

The sample was connected to a source of supply, as noted below, and operated until temperatures became stable. Temperatures were measured using the thermocouple method. ( )Rise in temperature of windings of motors and transformers were additionally determined by the change-of-resistance method.

( ) Before starting the Heating Test, each special non-detachable power supply cord connection was pulled with a force of 5 N (1.12 lbs) for one minute. During the Heating Test, the temperature of its connections were recorded. (Maximum 60°C rise per 3.3.2.)

The sample operated under normal load as follows:

(X) Continuous operation, until steady conditions were established.

( ) Rated intermittent operation of _____ on _____ off, until steady conditions were established.

( ) Rated short-time operation of _____.

(X) The test conditions were as follows:

Max. Normal load

Tmra was 50 °C.

( ) #Note:
Cooling fan CFM (min): _____.

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 15 of 34
Tested by: Judy Jung Date 8/6/03 ~ 8/7/03
Printed Name Signature

Sample # 1/1 Instr Code/Range: 38, 59, 43.

RESULTS

Test	Operating Condition	Input Conditions Volts	Hz	Duration
A	Max. Normal load	90	60	2.5hrs
B	=	264	50	2 hrs
C	= (Blocked Grening)	240	60	2 hrs
D	= (Stalled fan)	240	60	1.5hrs
E				
F				

Thermocouple Locations	Maximum Temperature °C Test A	Test B	Test C	Test D	Test E	Test F
1. LF1 coil	68	67	70	68		
2. T1 coil	64	65	70	67		
3. T2 coil	46	46	57	48		
4. PCB near U14	46	48	60	58		
5. PCB near CPU	46	48	60	57		
6. HDD Body	41	39	47	50		
7. CD-ROM	36	37	41	41		
8. Enclosure	33	30	35	36		
9. Ambient	26	24	26	26		

Note: (X) Test on model: ES-200 (CH4 to CH8)
Power Supply For Model= FSP, Type FSP180-50PLA (CH1 to CH3)

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File No. _____ Project No. SPCLVD3077 SPC Project No. 30776 Page 16 of 34

HEATING (TEMPERATURE) TEST

Prepared by: Judy Qiu

Thermocouple Locations (refer to Heating Test)	dT (K) Test A 90 V 60 Hz	Test B 264 V 50 Hz	Test C ___ V ___ Hz	Test D ___ V ___ Hz	Test E ___ V ___ Hz	Test F ___ V ___ Hz	Required dT (K)
1.	42	43					55
2.	38	41					60
3.	>0	22					60
4.	>0	>4					55
5.	>0	>4					55
6.	15	15					—
7.	10	13					—
8.	7	6					>0
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
Room ambient	26 °C	24 °C	°C	°C	°C	°C	---
Test on model:	ES-200						

Max. ambient temperature (Tmra).....: 50 °C (Manufacturer's specification)

Insulating winding component s(Transformer):

☐ Class A (T).. 75K - 10K - (____ – 25)K = ____ K

☒ Class B (T 1, 2).. 95K - 10K - (50 – 25)K = 60 K

☐ Class F (T): 115K - 10K - (____ – 25)K = ____ K

☐ Class H (T): 140K - 10K - (____ – 25)K = ____ K

*變壓器使用Triple wire且用UL R/C (OBJY2) Insulation System時, 須確認是否只有Class 120 °(E)?

☐ Class E (T).....: 90K - 10K - (____ – 25)K = ____ K

Components:

☒ PCB (105 °C)..... (105 – 50)K = 55 K

☒ Choke (105 °C)..... (105 – 50)K = 55 K

☐ Choke (°C)..... (____ – ____)K = ____ K

☐ Choke (°C)..... (____ -10 – ____)K = ____ K

* 如Choke之溫度等級(Class)於120°C以上, 必須量測PCB之溫度。 (NEMKO, 計算choke時減 10, 用thermocouples)

☐ Electrolyte cap. (85°C)..... (85°C – ____)K = ____ K

☐ Electrolyte cap. (105°C)... (105°C – ____)K = ____ K

☐ Inlet (65 /70/75°C)..... (____ – ____)K = ____ K

☐ X-Cap (85/100°C)..... (____ – ____)K = ____ K

☐ Y-Cap (85/100°C)..... (____ – ____)K = ____ K

☐ Opto-coupler (85/100°C)... (____ – ____)K = ____ K

User Touchable Surface:

☐ Plastic..... 70K – (____ – 25)K = ____ K

☒ Metal..... 45K – (50 – 25)K = >0 K

Notes:

1. For plastic Enclosure (Stress Relief Test)
   ☐ The oven temperature is ____°C (ΔT ____ + 10°C + max ambient ____°C) or ☐ 70°C
2. 如果Heat Sink量測得之溫度超過PCB之限制值, 則必須量測PCB之溫度。

SPC PROJECT NO.: 30776

Data Sheet

File Project SPC LVP 30776 Page 17/34

Tested by: Judy Jung Date 8/6/03

(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 38.59.43

Advantech Inc.

264V/50HZ

Model= ES-200

Power Supply For Model= Fsp Type. FSP180-50PLA

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTANTS, INC.
Data Sheet

To _____ Project SPC LVD 30776. Page 18/34
sted by: Judy Jung Date 8/6/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 38.59.43

Adamtech Inc.,

90V/60HZ

Model = ES-200

Power Supply For Model = Fsp, Type FSP180-50PLA

SPC PROJECT NO.: 30776

Data Sheet

le _____ Project SPC LVD 30776 Page 19/34

sted by: Judy Jung Date 8/1/03

(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 38, 54, 48, 43,

Advantech Inc.

Blocked Opening

Model= ES- >00

Power Supply For Model= FSP, Type FSP180-~~FL00~~PLA (II)

CH1
CH2
CH5
CH4
CH3
CH6
CH7
CH8
CH9

SPC PROJECT NO.: 30776

Data Sheet

le _____ Project SPC LVD 30776 Page 20/34

sted by: Andy Jung Date 8/7/03

(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 38, 56, 48, 43

Advantech Inc,

Sealed fan

Model= ES-200

Power Supply For Model= FSP Type FSP180-50PLA

File _____ Project SPC LVD 30776 Page 21/34
Tested by: Judy Jung Date 8/8/03
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

5.1, ANNEX D - TOUCH CURRENT TEST:
(Single-Phase/Polyphase; TN/TT System)

METHOD

The equipment was connected to 266 V ac, 60 Hz. The equipment was placed on an insulating surface and all connections to external equipment were disconnected to prevent stray leakage paths. The unit protective earthing connection was broken during the test. ( ) An isolating transformer was used.

The tests were conducted using the measuring instrument for touch current tests (meter), described in Annex D of UL 60950, Third Edition. Terminal B of the measuring instrument was connected to the earthed (neutral) conductor of the supply (see Figure 5A or 5B).

Primary power switches (i.e., "ON/OFF" switches and voltage selector switches) which can be operated during normal use, were opened and closed in all possible combinations.

For an accessible non-conductive part, the test was made to metal foil having dimensions of 10 by 20 cm in contact with the part. If the area of the foil is smaller than the surface under test, the foil was moved so as to test all parts of the surface. Where adhesive metal foil was used, the adhesive was conductive. Precautions were taken to prevent the metal foil from affecting the heat dissipation of the equipment.

Accessible conductive parts that are incidentally connected to other parts were tested both as connected and disconnected parts.

(X) For equipment having a protective earthing connection or a functional earthing connection, terminal A of the measuring instrument was connected via measurement switch "s" to the equipment earthing terminal of the EUT, with the earthing conductor switch "e" open.

( ) The test was conducted on all equipment, with terminal A of the measuring network connected via measurement switch "s" to each unearthed or non-conductive accessible part and each unearthed accessible circuit, in turn, with the earthing conductor switch "e" closed.

Measuring instrument used:

(X) Annex D.1 (X) Simpson Meter 228
( ) _____

( ) Annex D.2 ( ) Simpson Meter 229-2
( ) _____

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 22/34
Tested by: Judy Jung Date 8/8/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 59.50.

(X) For single-phase equipment, the test circuit of Fig. 5A was used.

The test was made in all combinations to the normal and reverse polarity of the supply circuit (Polarity Switch P1).

Terminal A of Measuring Instrument Connected to:	Switch "e" Position	Touch Current (mA r.m.s.) Polarity P1/Primary Switch Condition Normal/On	Normal/Off	Reverse/On	Reverse/Off
Earth	open	0.68	—	0.55	—

The touch current ~~did~~/did not exceed 3.5 mA r.m.s.

( ) For three-phase equipment, the test circuit of Fig. 5B was used.

Any components used for EMC purposes and connected between line and earth were disconnected one at a time; for this purpose, groups of components in parallel connection through a single connection were treated as single components. Each time a line-to-earth component was disconnected, the sequence of switch operations was repeated.

Terminal A of Measuring Instrument Connected to:	Switch "e" Position	Component Disconnected	Touch Current (mA r.m.s.) Polarity P1/Primary Switch Condition Normal/On	Normal/Off	Reverse/On	Reverse/Off

The touch current did/did not exceed _____ mA r.m.s.

Note: Y-Cap. (_____) _____ *pF;* (_____) _____ *pF*

Y-Cap. (_____) _____ *pF;* (_____) _____ *pF*

Bridging-Cap. (_____) _____ *pF;* (_____) _____ *pF*

Power Supply For Model: FSP, Type FSP180-50PLA

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Document: 010.Eng

Form Issued: 10-02-00
Revised: 00-00-00

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30078 Page 23/34
Tested by: Judy Jing Date 8/12/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 48,

5.2.2 - ELECTRIC STRENGTH TEST:

METHOD

While the unit was in a well heated condition, an ac or dc potential was gradually increased from zero to the test potential given below. The voltage was applied and maintained for a period of one minute between the points indicated. All switches, relays, contactors, triacs or equivalent in the test circuit were closed or shunted.

Product/ Component	Unit	Unit			
From	Primary	Primary			
To	Secondary	Earth			
Insl. Type (O, B, S, R)	R	B			
( ) Working Voltage	—	—			
Test Voltage	4244	3313			
ac/dc	dc	dc			

RESULTS

Breakdown?	No	No			
If yes,					
Voltage					
Location					
Time					

(X) There was no indication of breakdown.

Comments: Power Supply For Model: Fsp, Type Fsp180-50PLA

TB:bd - UL 60950, 3rd Data Sheets
Document: 010.Eng

Form Issued: 10-02-00
Revised: 00-00-00

SPC PROJECT NO.: 30078

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 24/34
Tested by: Judy Jung Date 8/1/03
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

5.3.1 - 5.3.8.2 - ABNORMAL OPERATION TESTS:

METHOD

The unit was operated continuously under the abnormal condition(s) noted below.

(X) The unit was placed on a tissue paper covered softwood surface and covered with cheesecloth.

( ) The following unreliable controls, thermostats and/or thermal cutouts were short-circuited: _____

_____

( ) If a wire or printed wiring board trace in the primary circuit opened, the gap was electrically shorted and the test continued until ultimate results occurred.

( ) If a trace in a secondary circuit designed to intentionally open in a reliable manner operated during the test, the test was repeated two times (three times total).

	Test No.	
( )	____	Mechanical movement disabled.
( )	____	Misloaded unit.
( )	____	Drive motor stalled or overloaded (i.e., paper jam).
(X)	1	Stalled fan or blower.
( )	____	Disconnected fan or blower.
( )	____	Foreseeable misuse of operating devices (knobs, levers, keys, etc.).
(X)	2	Blocked ventilation openings.
( )	____	Disabled timer switch.
( )	____	Contact(s) malfunctioned.
( )	____	Thermostat(s) malfunctioned.
( )	____	Thermal cutout(s) malfunctioned.
( )	____	Solenoid plunger locked.
( )	____	Clutch - continuous operation.
( )	____	Voltage mismatch.
( )	____	_____

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 25/34
Tested by: Gordy Jung Date 8/12/03
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

(X) At the end of the test, an Electric Strength (ES) potential was applied as indicated below for one minute.

ES Code	Location From	Location To		Potential Used (V)			
A	Primary	Secondary	( )	_____	ac (X)	4242	dc
B	Primary	Earth	( )	_____	ac (X)	3313	dc

The following key and corresponding comments may be used to describe the final results.

Comments Key:

NB - No indication of dielectric breakdown
YB - Dielectric breakdown (indicate time and location)
NC - Cheesecloth remained intact
YC - Cheesecloth charred or flamed
NT - Tissue paper remained intact
YT - Tissue paper charred or flamed

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 26/34
Tested by: Andy Jung Date 8/21/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 43,38,54,48

RESULTS

Test	Component	Abnormal Condition	Input V/Hz	Duration	ES Code
1	Unit	stalled fan	>40/60	1.5hrs	A.B

Comments: Temp. was stable, Input Current = 0.62A, Temp. See Heating Test Results for details, NB, NC, NJ

2	Unit	Blocked Opening	>40/60	2hrs	A.B

Comments: Temp. was stable, Input Current = 0.62A, Temp. See Heating Test Results for details, NB, NC, NJ

Comments: _____

Comments: _____

Comments: _____

Comments: _____

Power Supply For Model = Fsp, Type Fsp180-50PLA

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project Spc LVD 30776 Page 27/34
Tested by: Judy Jung Date 8/8/07
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

5.3.6 - OVERLOAD OF OPERATOR ACCESSIBLE CONNECTOR TEST:

METHOD

The sample was covered with one layer of cheesecloth and placed on a pinewood board covered with one layer of tissue paper. The sample had a complete enclosure.

The sample was connected to 264 V ac, 60 Hz/~~dc~~.

(X) The voltage potential was measured on the connector pins. Circuits that measured 0 V were not tested.

( ) The impedance was measured between each accessible connector pin that had greater than 0 V and its power supply voltage source. Where there was 10,000 ohm or more of series impedance between the output connector pin and the power supply voltage source of 125 V or less, the circuit was not tested. Where there was 20,000 ohm or more of series impedance between the output connector pin and the power supply voltage source was greater than 125 V, but not greater than 250 V, the circuit was not tested.

(X) A suitable variable resistor was connected between the connector pin tested and ground. The maximum available current was measured at each pin. If the current was less than or equal to 12.5 mA, the circuit was not tested. When the maximum available current was greater than 12.5 mA, the load was adjusted for maximum available current and maintained for one hour.

( ) Output circuits, which exceeded LPS limits in Clause 2.5 testing, were subjected to this test for at least one hour. The non-LPS output was loaded to draw the maximum current.

The maximum available current was considered to be the lower of (1) the short-circuit current, (2) that current just below the trip point of any overcurrent or overtemperature protective device, or (3) that current that was just below the point at which the power supply circuitry limited the output current. The trip point of overcurrent protective devices was considered to be 110 percent of their current rating.

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPCLVD 30776 Page 18/34
Tested by: Judy Jung Date 8/8/03
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

If the circuit was interrupted by the opening of an unreliable component, the test was repeated twice (three times total) using new components as necessary. If a wire or printed wiring board trace in the primary circuit opened, the gap was electrically shorted and the test continued until ultimate results occurred.

( ) If a trace in a secondary circuit designed to intentionally open in a repeatable manner operated during the test, the test was repeated two time (three times total).

If after one hour there was no indication of an abnormal condition, but it appeared possible that a condition of risk would result, the test was continued for 7 hours.

(X) At the end of the test, an Electric Strength (ES) potential was applied as indicated below for one minute.

ES Code	Location From	Location To	Potential Used (V)	
A	Primary	Secondary	( ) _____ ac	(X) 4242 dc
B	Primary	Earth	( ) _____ ac	(X) 3313 dc

The following key and corresponding comments may be used to describe the final results.

Comments Key:

NB - No indication of dielectric breakdown
YB - Dielectric breakdown (indicate time and location)
NC - Cheesecloth remained intact
YC - Cheesecloth charred or flamed
NT - Tissue paper remained intact
YT - Tissue paper charred or flamed
A - Circuit measures 10 KS or more series impedance
B - Circuit measures less than 12.5 mA
C - Circuit measures 0 Volts
D - Other. Please explain.

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 29/34
Tested by: Judy Jung Date 8/8/03
(Printed Name) (Signature)

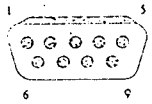
Sample # 1/1 Instr Code/Range: 47.48.

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
RS-232 1	1	OL	—	—	C
:	2	OL	—	—	C
:	3	OL	—	—	C
:	4	OL	—	—	C
:	5	OL	—	—	C
:	6	OL	—	—	C
:	7	OL	—	—	C
:	8	OL	—	—	C
:	9	OL	—	—	C
RS-232 2	1	OL	—	—	C
:	2	OL	—	—	C
:	3	OL	—	—	C
:	4	OL	—	—	C
:	5	OL	—	—	C
:	6	OL	—	—	C
:	7	OL	—	—	C
:	8	OL	—	—	C
:	9	OL	—	—	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

RS-232



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SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SpcLVD 30776 Page 30/34
Tested by: Judy Jung Date 8/8/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 47, 48.

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
RS-232 3	1	∞	-	-	C
"	2	∞	-	-	C
"	3	∞	-	-	C
"	4	∞	-	-	C
"	5	∞	-	-	C
"	6	∞	-	-	C
"	7	∞	-	-	C
"	8	∞	-	-	C
"	9	∞	-	-	C
RS-232 4	1	∞	-	-	C
"	2	∞	-	-	C
"	3	∞	-	-	C
"	4	8.11	19.5	*1hr	NB, NC, NJ
"	5	∞	-	-	C
"	6	∞	-	-	C
"	7	8.11	19.2	*1hr	NB, NC, NJ
"	8	∞	-	-	C
"	9	∞	-	-	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 3/34
Tested by: Jody Jung Date 8/8/03
(Printed Name) (Signature)

Sample # 4 Instr Code/Range: 47.68

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
USB 1	1	5.01	~~5.01~~ 1350	1hr	NB, NC, NT
"	2	0	-	-	C
"	3	0	-	-	C
"	4	0	-	-	C
USB 2	1	5.01	1360	1hr	NB, NC, NT
"	2	0	-	-	C
"	3	0	-	-	C
"	4	0	-	-	C
RJ-45	1	0	-	-	C
"	2	0	-	-	C
"	3	0	-	-	C
"	4	0	-	-	C
"	5	0	-	-	C
"	6	0	-	-	C
"	7	0	-	-	C
"	8	0	-	-	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

USB

RJ-45

TB:bd - UL 60950, 3rd Data Sheets
Document: 010.Eng

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Revised: 00-00-00

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SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 32/34
Tested by: Grady Dong Date 8/8/03
(Printed Name) (Signature)

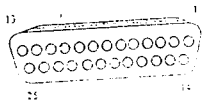
Sample # 1 Instr Code/Range: 4148

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
Printer	1	4.95	4.96	—	B
=	2	3.28	72.81	1hr	NB, NC, NJ
=	3	3.28	72.74	1hr	NB, NC, NJ
=	4	3.28	73.47	1hr	NB, NC, NJ
=	5	3.28	72.75	1hr	NB, NC, NJ
=	6	3.28	68.24	1hr	NB, NC, NJ
=	7	3.28	72.98	1hr	NB, NC, NJ
=	8	3.28	74.05	1hr	NB, NC, NJ
=	9	3.28	73.74	1hr	NB, NC, NJ
=	10	4.95	4.81	—	B
=	11	4.95	4.82	—	B
=	12	4.95	4.84	—	B
=	13	4.95	4.83	—	B
=	14	4.95	4.82	—	B
=	15	4.95	4.83	—	B
=	16	4.95	4.84	—	B
=	17	Ø	—	—	C
=	18	Ø	—	—	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

Printer



SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPC LVD 30776 Page 33/34
Tested by: Judy Jung Date 8/8/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 47, 48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
Printer	19	∞	—	—	C
2	20	∞	—	—	C
2	21	∞	—	—	C
2	22	∞	—	—	C
2	23	∞	—	—	C
2	24	∞	—	—	C
2	25	∞	—	—	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

SPC PROJECT NO.: 30776

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

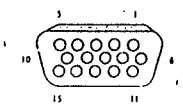
File _____ Project SPC LVD 30776 Page 34/34
Tested by: Andy Jung Date 8/8/03
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 47,48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
VGA	1	0	–	–	C
"	2	0	–	–	C
"	3	0	–	–	C
"	4	0	–	–	C
"	5	0	–	–	C
"	6	0	–	–	C
"	7	0	–	–	C
"	8	0	–	–	C
"	9	0	–	–	C
"	10	0	–	–	C
"	11	0	–	–	C
"	12	3.13	0.69	–	B
"	13	0	–	–	C
"	14	0	–	–	C
"	15	3.13	0.69	–	B

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)



VGA

TB:bd - UL 60950, 3rd Data Sheets
Document: 010.Eng

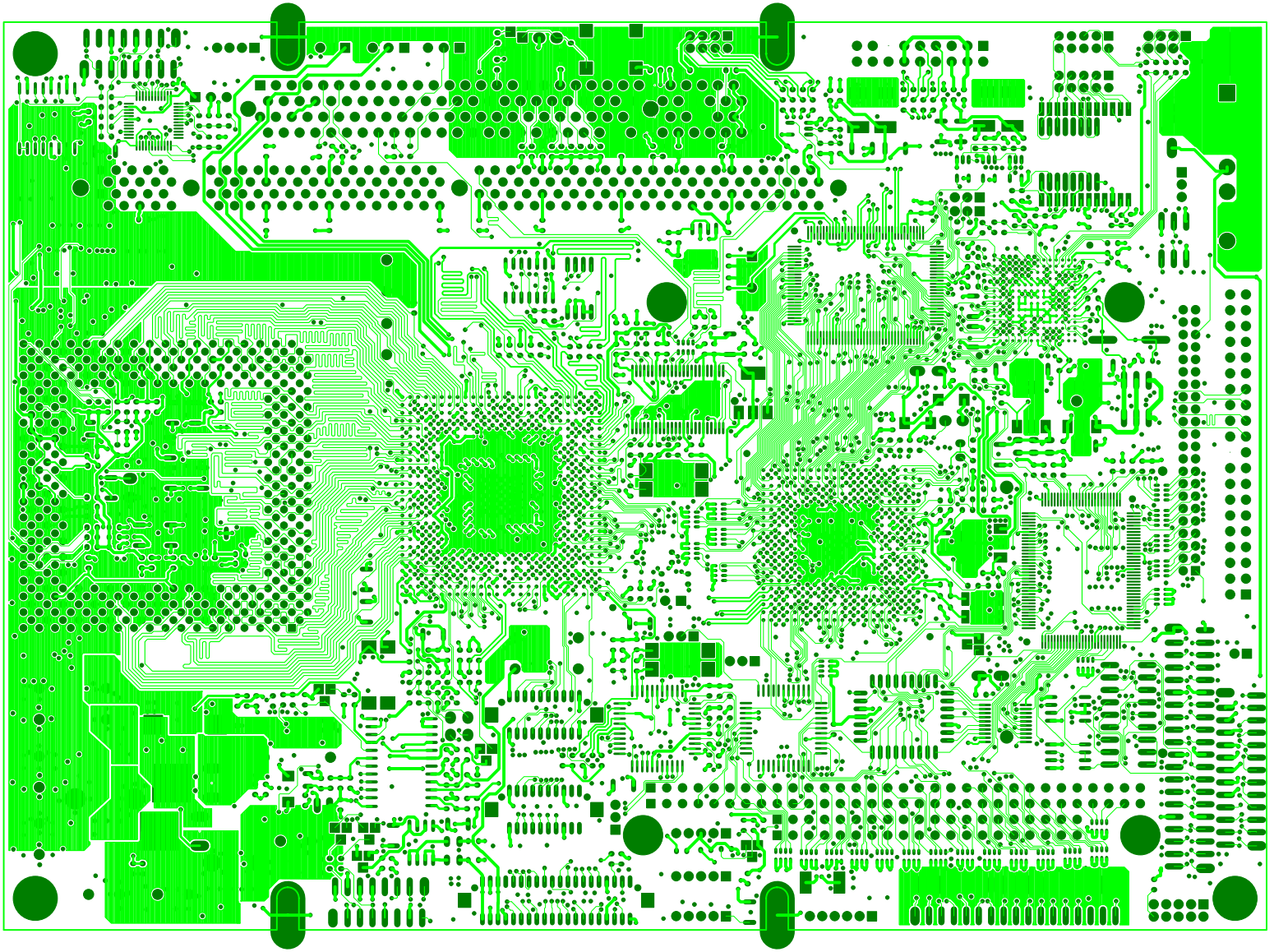
Form Issued: 10-02-00
Revised: 00-00-00

SPC PROJECT NO.: 30776

ENCLOSURE No. 3

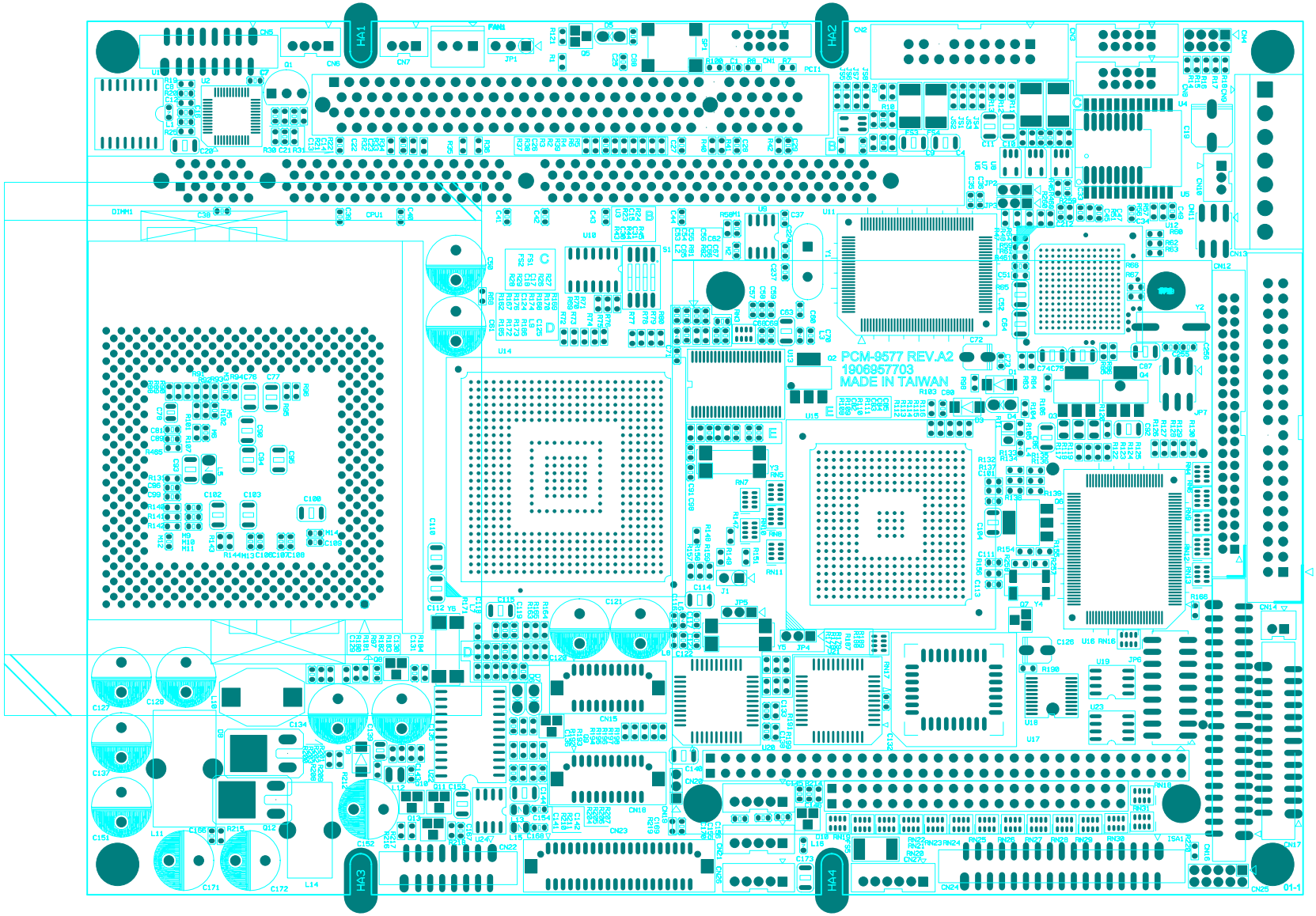
Component Layouts

(Total 5 Pages including this Cover Page)

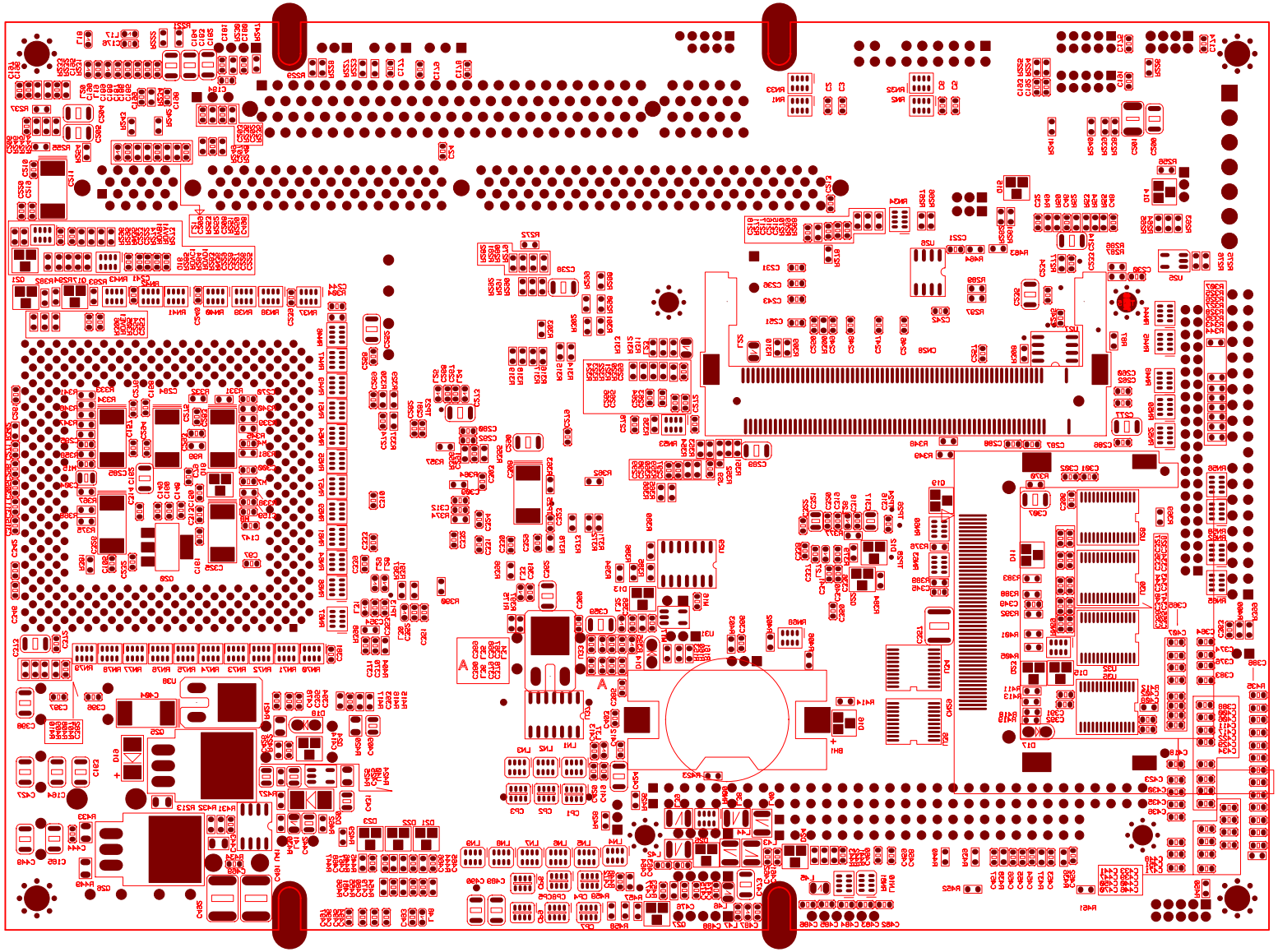


ADVANTECH

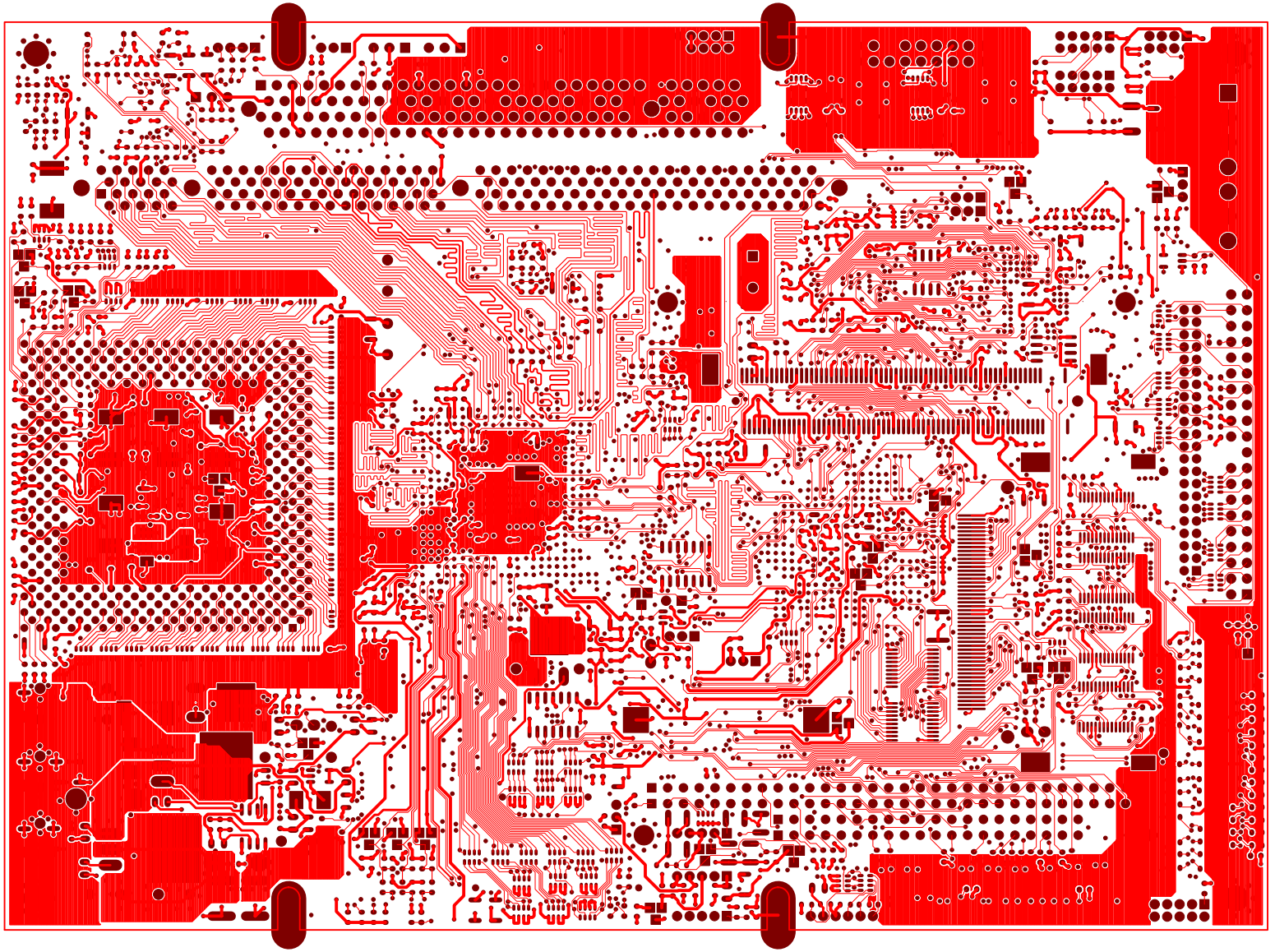
Project name	REV	LAYER STACK
A01602_PCM9577	A1	COMPONENT SIDE



ADVANTECH		
Project name	REV	LAYER STACK
A01602_PCM9577	A1	ASSEMBLY TOP



ADVANTECH		
Project name	REV	LAYER STACK
A01602_PCM9577	A1	ASSEMBLY BOT



ADVANTECH

Project name	REV	LAYER STACK
A01602_PCM9577	A1	SOLDER SIDE

ENCLOSURE No. 4

Schematics

(Total 27 Pages including this Cover Page)

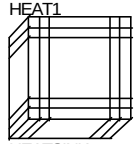
PCM-9577 REV.A1 01-2 Date: 2002/09/19

PCB 1906957701 PCM-9577 A1 01-2 L:6 C:G 1.6mm ES

PG25: U33, U38 & Q12 MOSFET(SO-8 =>TO-252) For More Power Cap.
PG26: V5VSB DEL D2, Lower Voltage Drop

PG17: U11 TO U26 EEDI, EEDO PIN SWAP: ES1 netname mistake
PG17: U11 PIN 64 CONNECT TO EXTSMI# For Latecy Mode
PG14: U15 UV3-, UV3+ PIN SWAP : ES1 netname mistake
PG14: DEL RN14,RN15 ; JS1~JS8 0->22 OHM : Resistor unnecessary

PG20: DEL PHONE & MIC_R From CODEC to MiniPCI, Analog Signal not Reserved
PG11: FAN1 PIN1, PIN3 SWAP & 2.0->2.54 WAFER For Intel Standard
PG07: R462 ADD FOR VGA HSYNC & VSYNC SEPERATE, For CRT
PG13: DEL R393 CF, 2nd IDE Connector, Resistor unnecessary

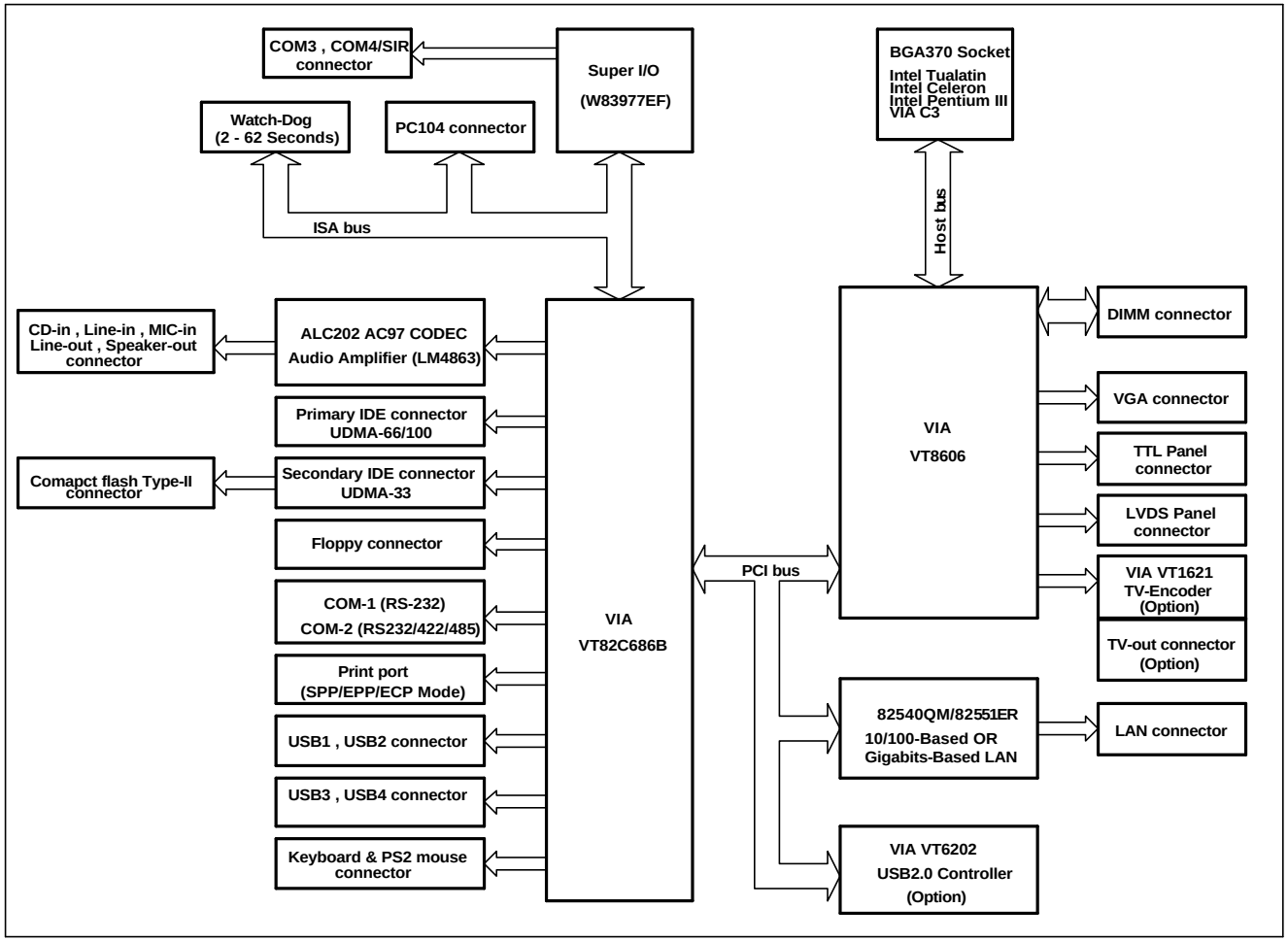


PCB1

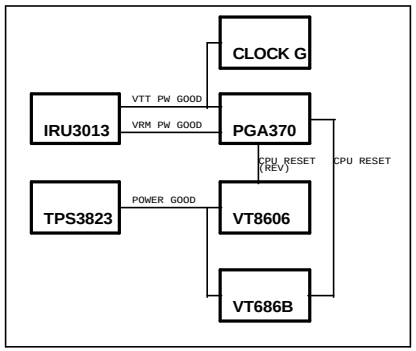
PCB

1906957701

Title: **History Page**		
Size: A	Document Number: **PCM-9577 REV.A1 01-2**	Rev: A1
Date: Friday, October 11, 2002	Sheet 1 of 26	



PG01: History Page
PG02: Block Diagram
PG03: Socket 370 Part1
PG04: Socket 370 Part2
PG05: VT8606 Host Signal
PG06: VT8606 Memory Signal
PG07: VT8606 Panel & VGA Interface
PG08: VT8606 LVDS & ZV Port
PG09: VT8606 Power
PG10: VT8606 & VT82C686B PCI Interface
PG11: VT82C686B PM, RTC & GPIO
PG12: VT82C686B ISA Bus & BIOS
PG13: VT82C686B IDE & AC97 Interface
PG14: VT82C686B Floppy, USB & KB/MS
PG15: VT82C686B 2S1P
PG16: W83977EF COM3, COM4 & IR
PG17: VT6202 USB2.0 Controller
PG18: 82551ER/82540QM 10/100M or 1G LAN
PG19: PCI Slot
PG20: MiniPCI Connector
PG21: AC97 CODEC ALC202
PG22: WatchDog
PG23: VT1621 TV-Out
PG24: ICS9248-39 Clock Generator
PG25: IRU3013 DC-DC Core Power
PG26: DC-DC 3.3V I/O VSTB Power



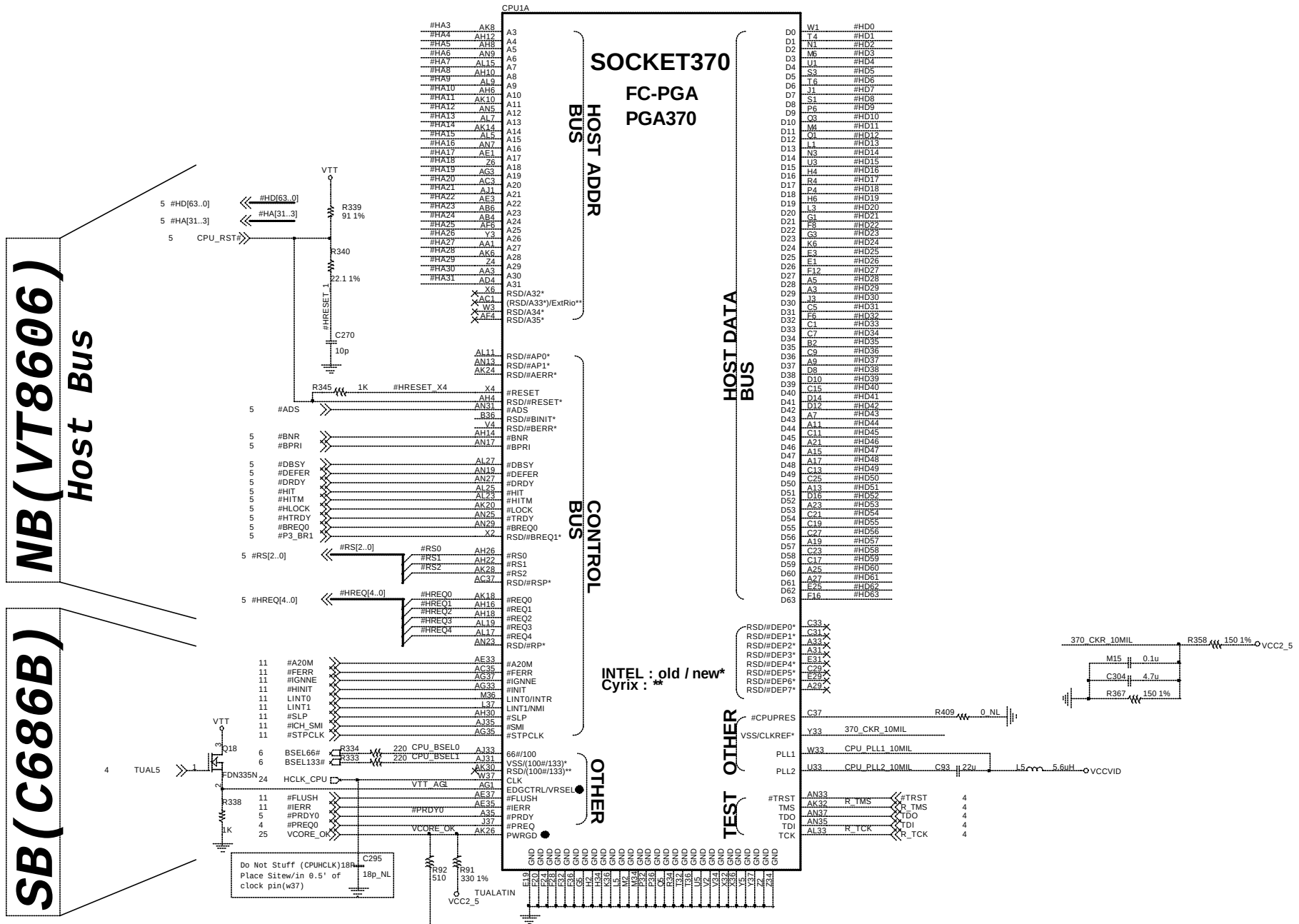
MAP1

DEVICE	IDSEL	INTERRUPT	PCI CLOCK	DMA#
PCI SLOT	AD31	INT# B	PCICLK 3	2,3,X
LAN	AD21	INT# D	PCICLK 4	1
USB	AD22	INT# C	PCICLK 2	0
Mini-PCI	AD23	INT# B	PCICLK 0	3,X

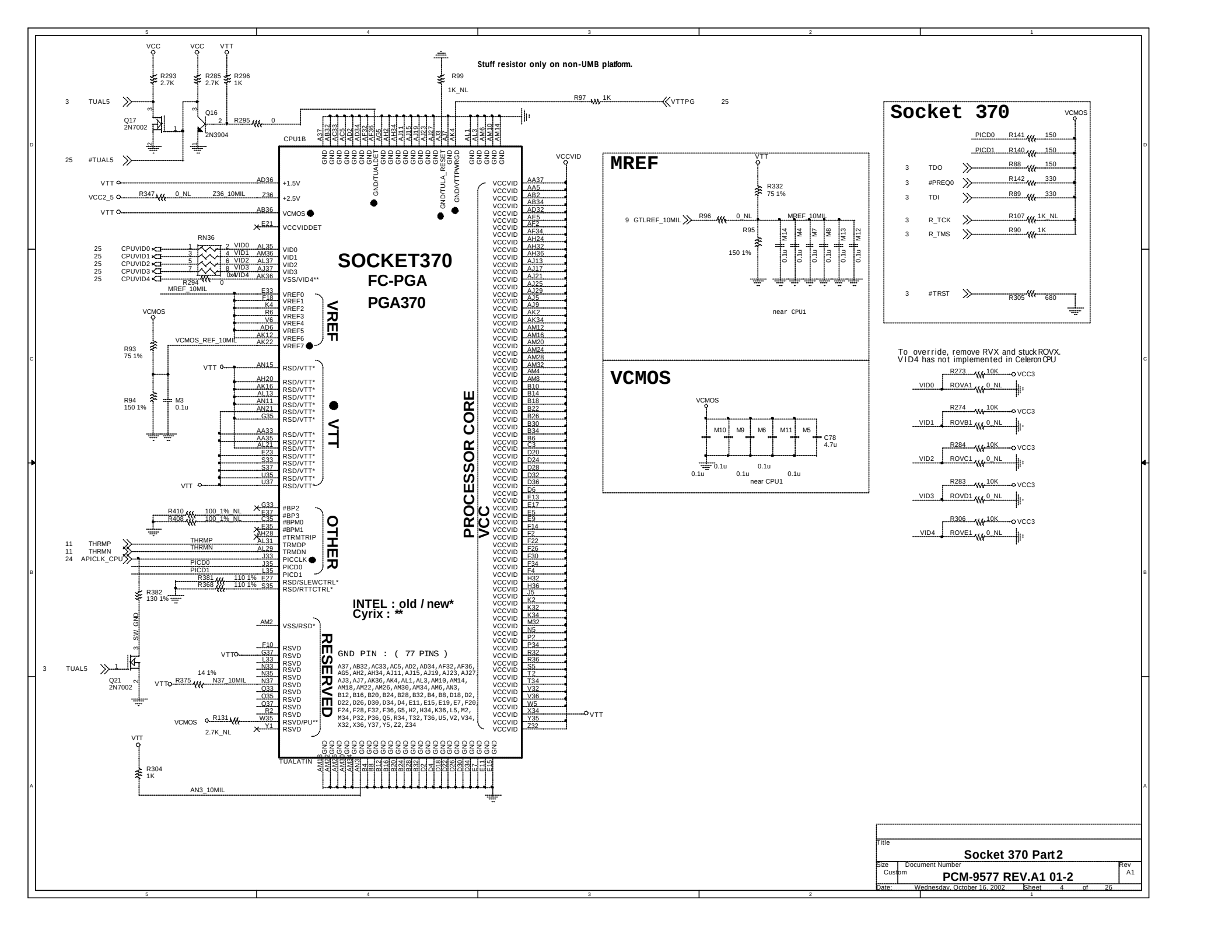
Title: **Block Diagram**

Size: Custom | Document Number: **PCM-9577 REV.A1 01-2** | Rev: A1

Date: Monday, September 23, 2002 | Sheet 2 of 26



Title	Socket 370 Part1
Size: Custom	Document Number: PCM-9577 REV.A1 01-2
Rev: A1	
Date: Wednesday, October 16, 2002	Sheet 3 of 26


Stuff resistor only on non-UMB platform.
SOCKET370
FC-PGA
PGA370
CPU1B
PROCESSOR CORE
VCC
VREF
VTT
OTHER
RESERVED
INTEL : old / new*
Cyrix : **
GND PIN : (77 PINS)
A37,AB32,AC33,AC5,AD2,AD34,AF32,AF36,
AG5,AH2,AH34,AJ11,AJ15,AJ19,AJ23,AJ27,
AJ3,AJ7,AK36,AK4,AL1,AL3,AM10,AM14,
AM18,AM22,AM26,AM30,AM34,AM6,AN3,
B12,B16,B20,B24,B28,B32,B4,B8,D18,D2,
D22,D26,D30,D34,D4,E11,E15,E19,E7,F20,
F24,F28,F32,F36,G5,H2,H34,K36,L5,M2,
M34,P32,P36,Q5,R34,T32,T36,U5,V2,V34,
X32,X36,Y37,Y5,Z2,Z34
MREF
VCMOS
near CPU1
Socket 370
To override, remove RVX and stuck ROVX.
VID4 has not implemented in Celeron CPU
Title
Socket 370 Part2
Size
Custom
Document Number
PCM-9577 REV.A1 01-2
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A1
Date:
Wednesday, October 16, 2002
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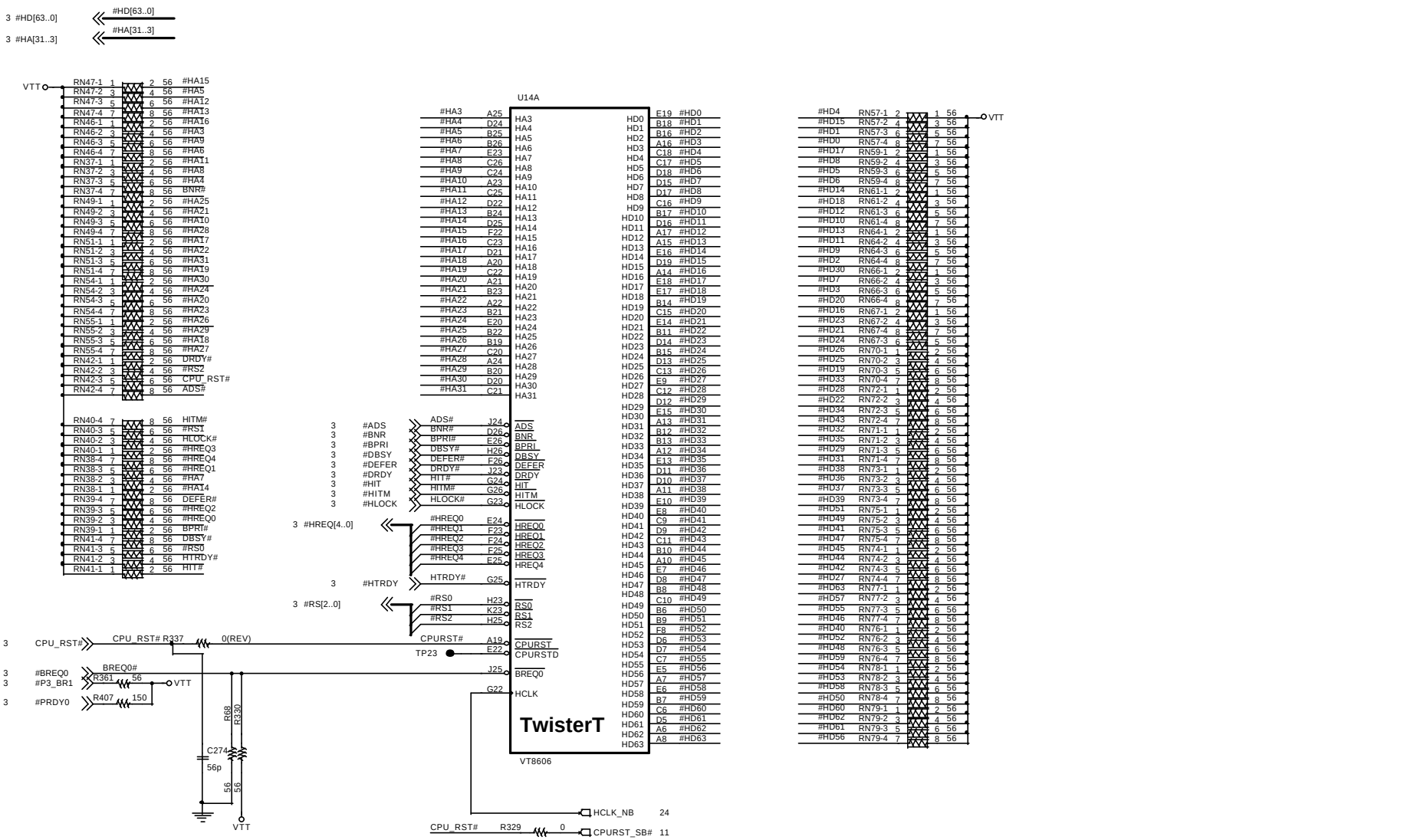
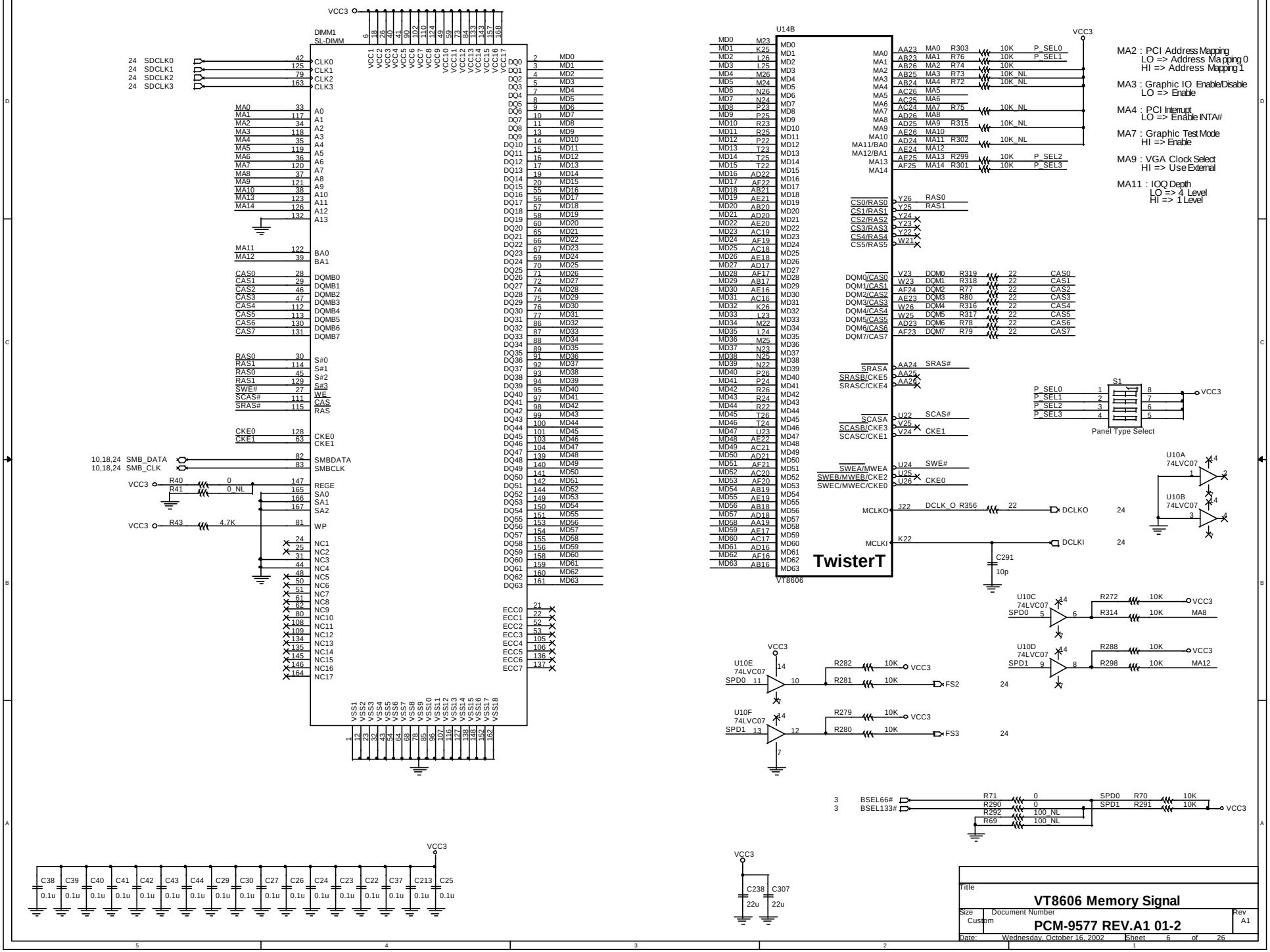
26



Title	CPU and VT8606 Host Signal
Size	Custom
Document Number	PCM-9577 REV.A1 01-2
Rev	A1
Date:	Wednesday, October 16, 2002
Sheet	5 of 26


DIMM1
SL-DIMM
VCC3
24 SDCLK0
24 SDCLK1
24 SDCLK2
24 SDCLK3
CLK0
CLK1
CLK2
CLK3
MA0
MA1
MA2
MA3
MA4
MA5
MA6
MA7
MA8
MA9
MA10
MA13
MA14
MA11
MA12
BA0
BA1
CAS0
CAS1
CAS2
CAS3
CAS4
CAS5
CAS6
CAS7
DQMB0
DQMB1
DQMB2
DQMB3
DQMB4
DQMB5
DQMB6
DQMB7
RAS0
RAS1
RAS0
RAS1
SWE#
SCAS#
SRAS#
S#0
S#1
S#2
S#3
WE
CAS
RAS
CKE0
CKE1
CKE0
CKE1
10,18,24 SMB_DATA
10,18,24 SMB_CLK
SMBDATA
SMBCLK
R40
R41
0
0_NL
REGE
SA0
SA1
SA2
R43
4.7K
WP
NC1
NC2
NC3
NC4
NC5
NC6
NC7
NC8
NC9
NC10
NC11
NC12
NC13
NC14
NC15
NC16
NC17
DQ0
DQ1
DQ2
DQ3
DQ4
DQ5
DQ6
DQ7
DQ8
DQ9
DQ10
DQ11
DQ12
DQ13
DQ14
DQ15
DQ16
DQ17
DQ18
DQ19
DQ20
DQ21
DQ22
DQ23
DQ24
DQ25
DQ26
DQ27
DQ28
DQ29
DQ30
DQ31
DQ32
DQ33
DQ34
DQ35
DQ36
DQ37
DQ38
DQ39
DQ40
DQ41
DQ42
DQ43
DQ44
DQ45
DQ46
DQ47
DQ48
DQ49
DQ50
DQ51
DQ52
DQ53
DQ54
DQ55
DQ56
DQ57
DQ58
DQ59
DQ60
DQ61
DQ62
DQ63
ECC0
ECC1
ECC2
ECC3
ECC4
ECC5
ECC6
ECC7
VSS1
VSS2
VSS3
VSS4
VSS5
VSS6
VSS7
VSS8
VSS9
VSS10
VSS11
VSS12
VSS13
VSS14
VSS15
VSS16
VSS17
VSS18
U14B
VT8606
TwisterT
MA0
MA1
MA2
MA3
MA4
MA5
MA6
MA7
MA8
MA9
MA10
MA11/BA0
MA12/BA1
MA13
MA14
R303
R76
R74
R73
R72
R75
R315
R302
R299
R301
10K
10K_NL
P_SEL0
P_SEL1
P_SEL2
P_SEL3
MA2 : PCI Address Mapping
LO => Address Mapping 0
HI => Address Mapping 1
MA3 : Graphic IO Enable/Disable
LO => Enable
MA4 : PCI Interrupt
LO => Enable INTA#
MA7 : Graphic Test Mode
HI => Enable
MA9 : VGA Clock Select
HI => Use External
MA11 : IOQ Depth
LO => 4 Level
HI => 1 Level
CS0/RAS0
CS1/RAS1
CS2/RAS2
CS3/RAS3
CS4/RAS4
CS5/RAS5
RAS0
RAS1
DQM0/CAS0
DQM1/CAS1
DQM2/CAS2
DQM3/CAS3
DQM4/CAS4
DQM5/CAS5
DQM6/CAS6
DQM7/CAS7
DQM0
DQM1
DQM2
DQM3
DQM4
DQM5
DQM6
DQM7
R319
R318
R77
R80
R316
R317
R78
R79
22
CAS0
CAS1
CAS2
CAS3
CAS4
CAS5
CAS6
CAS7
SRASA
SRASB/CKE5
SRASC/CKE4
SRAS#
SCASA
SCASB/CKE3
SCASC/CKE1
SCAS#
CKE1
SWEA/MWEA
SWEB/MWEB/CKE2
SWEC/MWEC/CKE0
SWE#
CKE0
MCLKO
MCLKI
DCLK_O R356
DCLKO
DCLKI
24
C291
10p
S1
Panel Type Select
U10A
U10B
U10C
U10D
U10E
U10F
74LVC07
SPD0
SPD1
R272
R314
R288
R298
R282
R281
R279
R280
MA8
MA12
FS2
FS3
BSEL66#
BSEL133#
R71
R290
R292
R69
R70
R291
SPD0
SPD1
C38
C39
C40
C41
C42
C43
C44
C29
C30
C27
C26
C24
C23
C22
C37
C213
C25
0.1u
C238
C307
22u
Title
VT8606 Memory Signal
Size
Custom
Document Number
PCM-9577 REV.A1 01-2
Rev
A1
Date:
Wednesday, October 16, 2002
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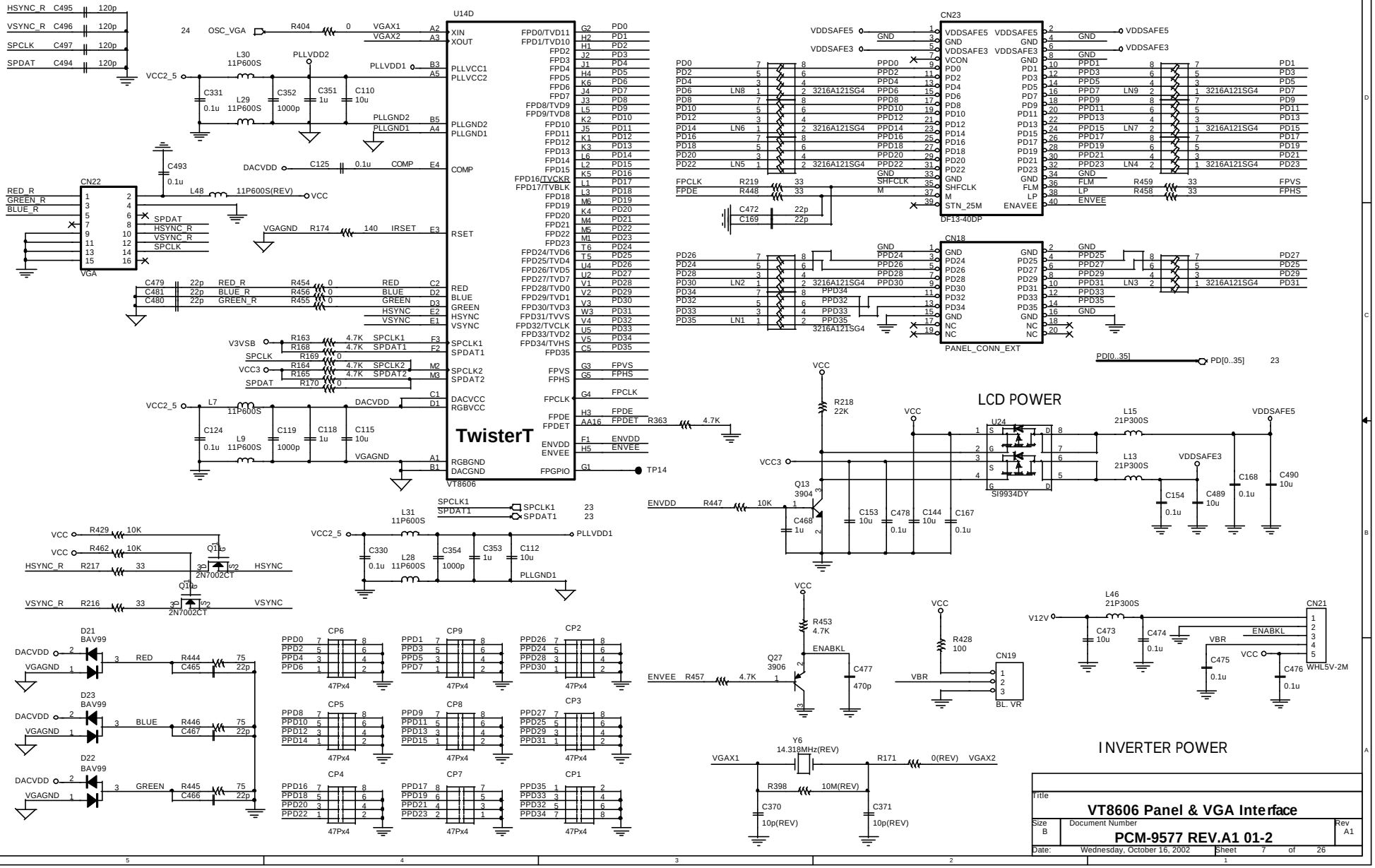
26


U14D
TwisterT
VT8606
CN23
CN18
PANEL_CONN_EXT
DF13-40DP
CN22
VGA
LCD POWER
INVERTER POWER
Title
VT8606 Panel & VGA Interface
Size
B
Document Number
PCM-9577 REV.A1 01-2
Rev
A1
Date:
Wednesday, October 16, 2002
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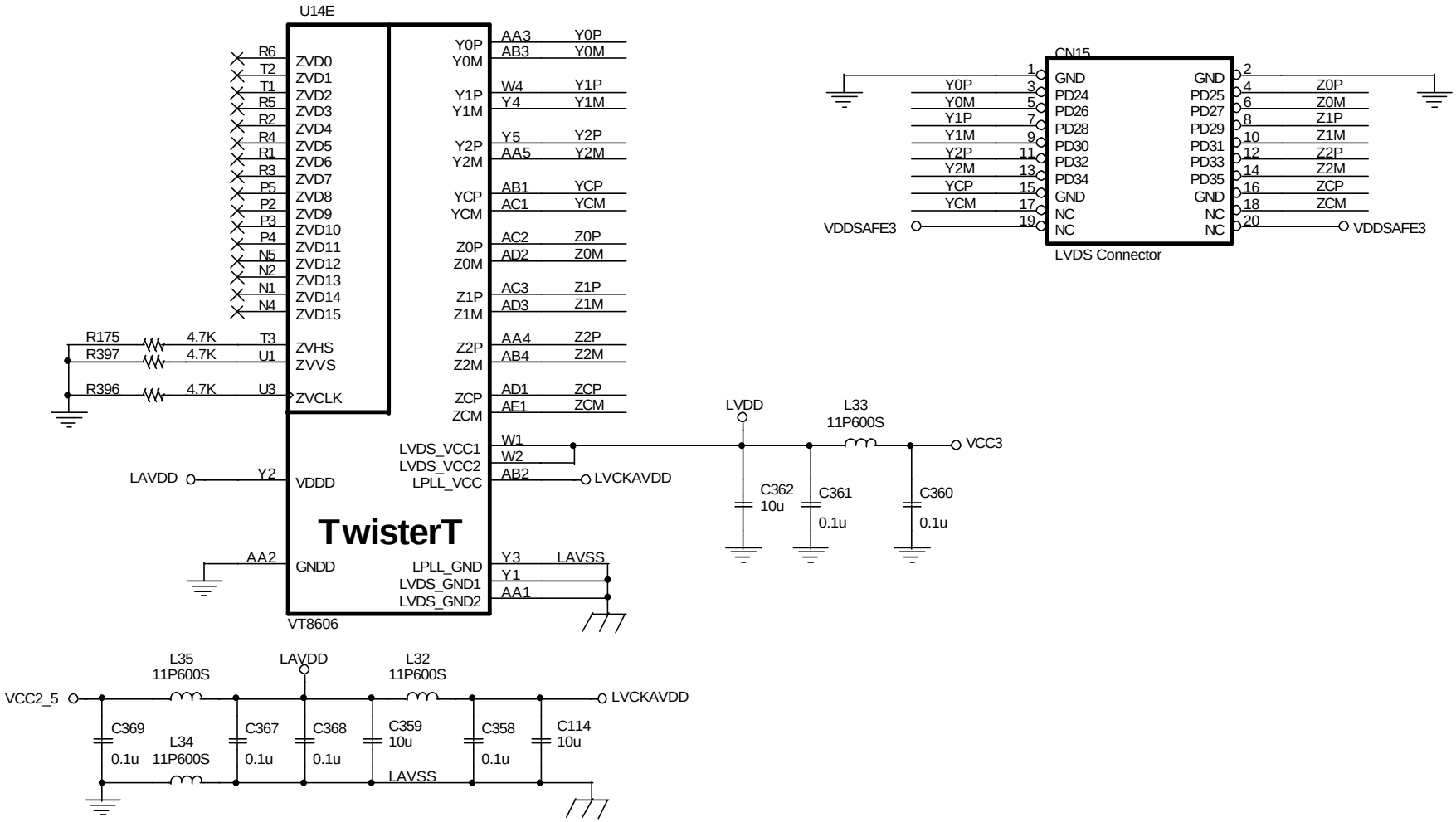
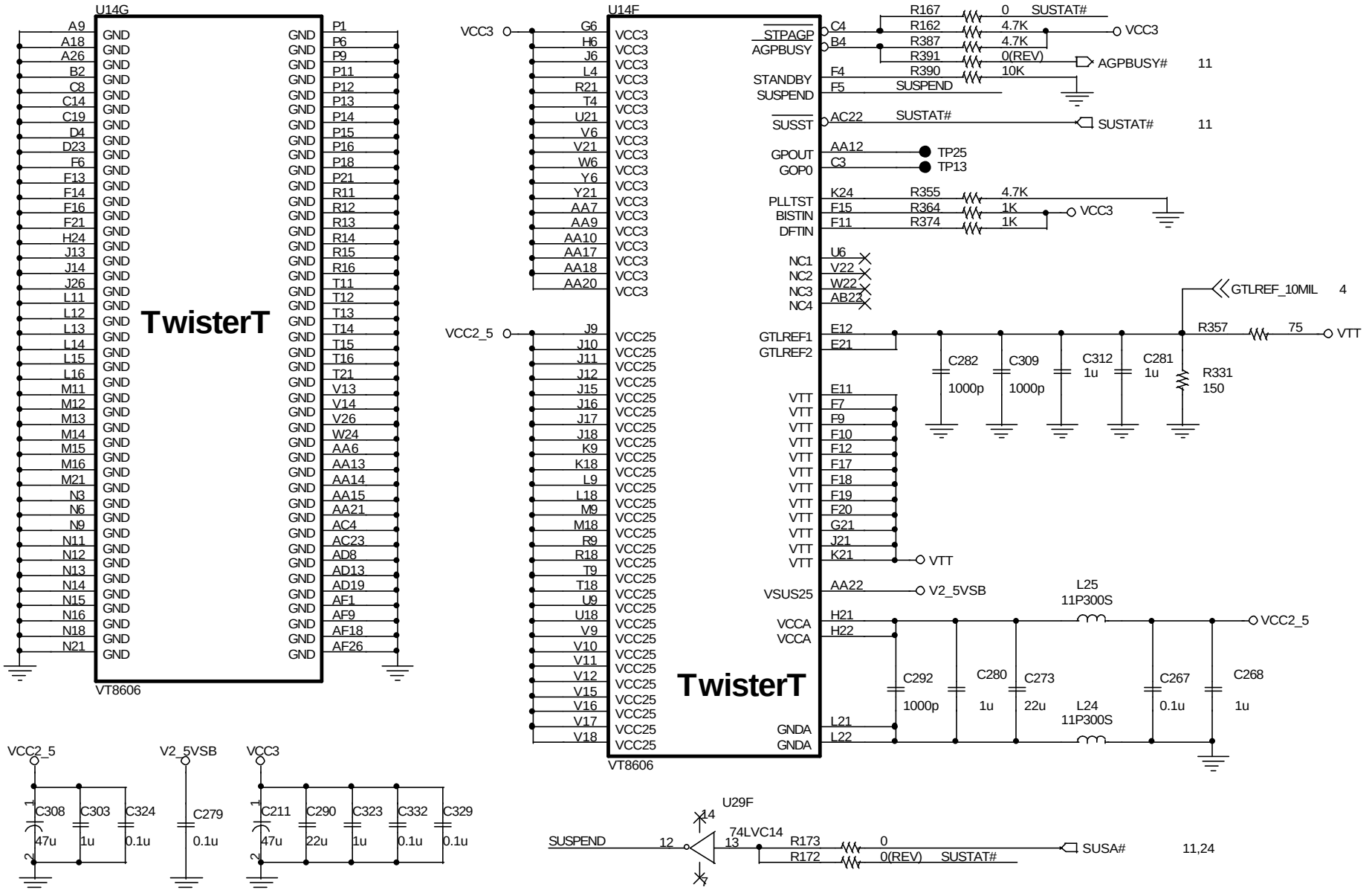
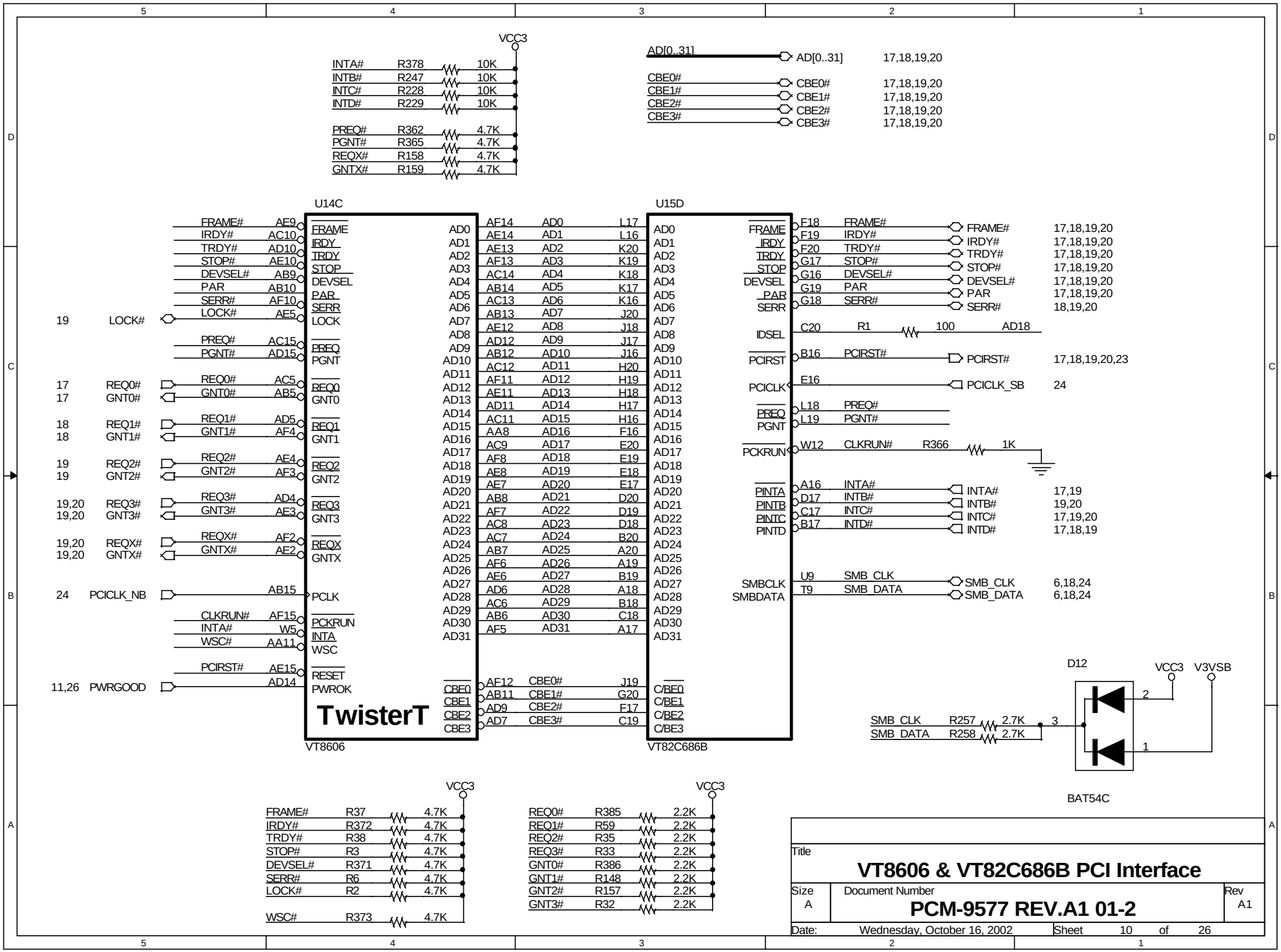
26

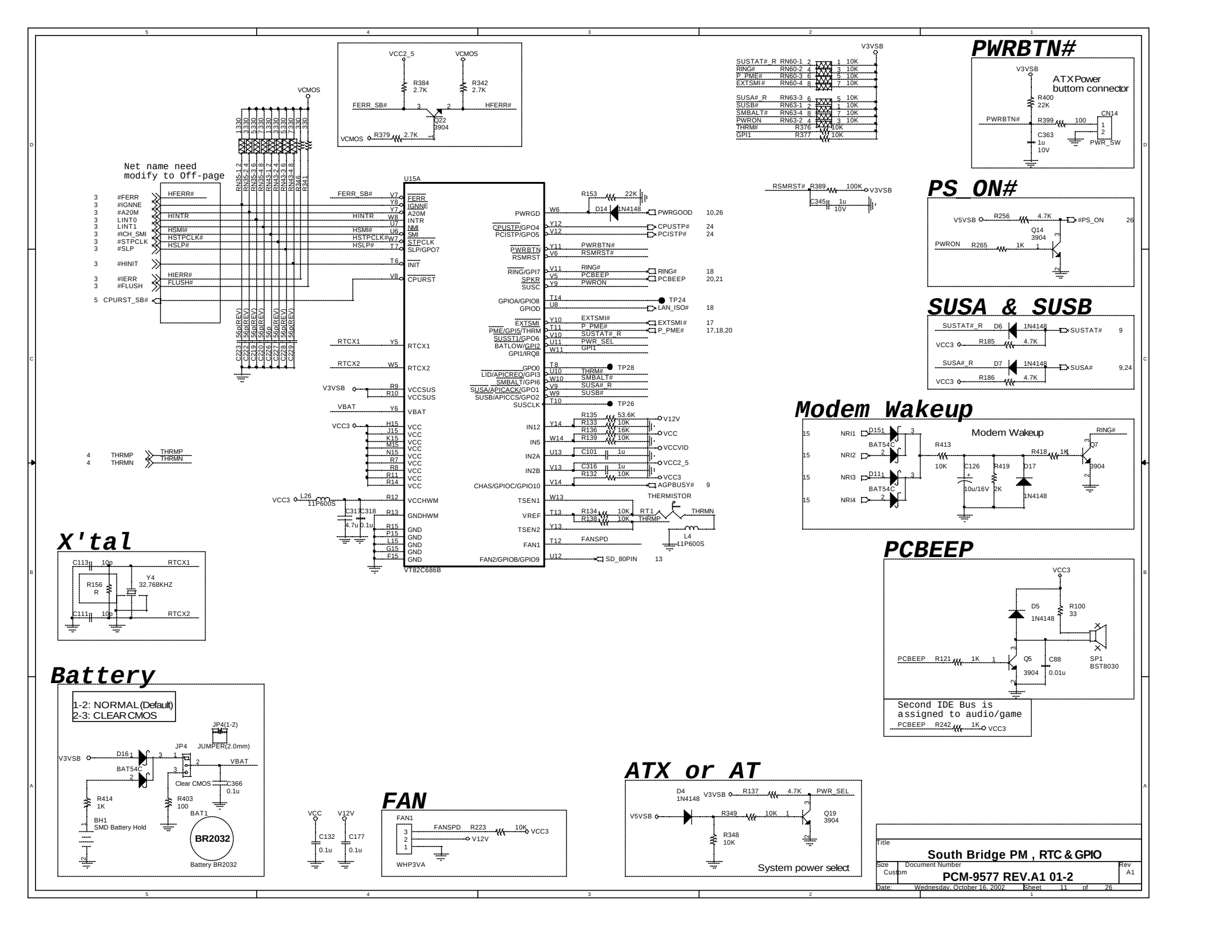


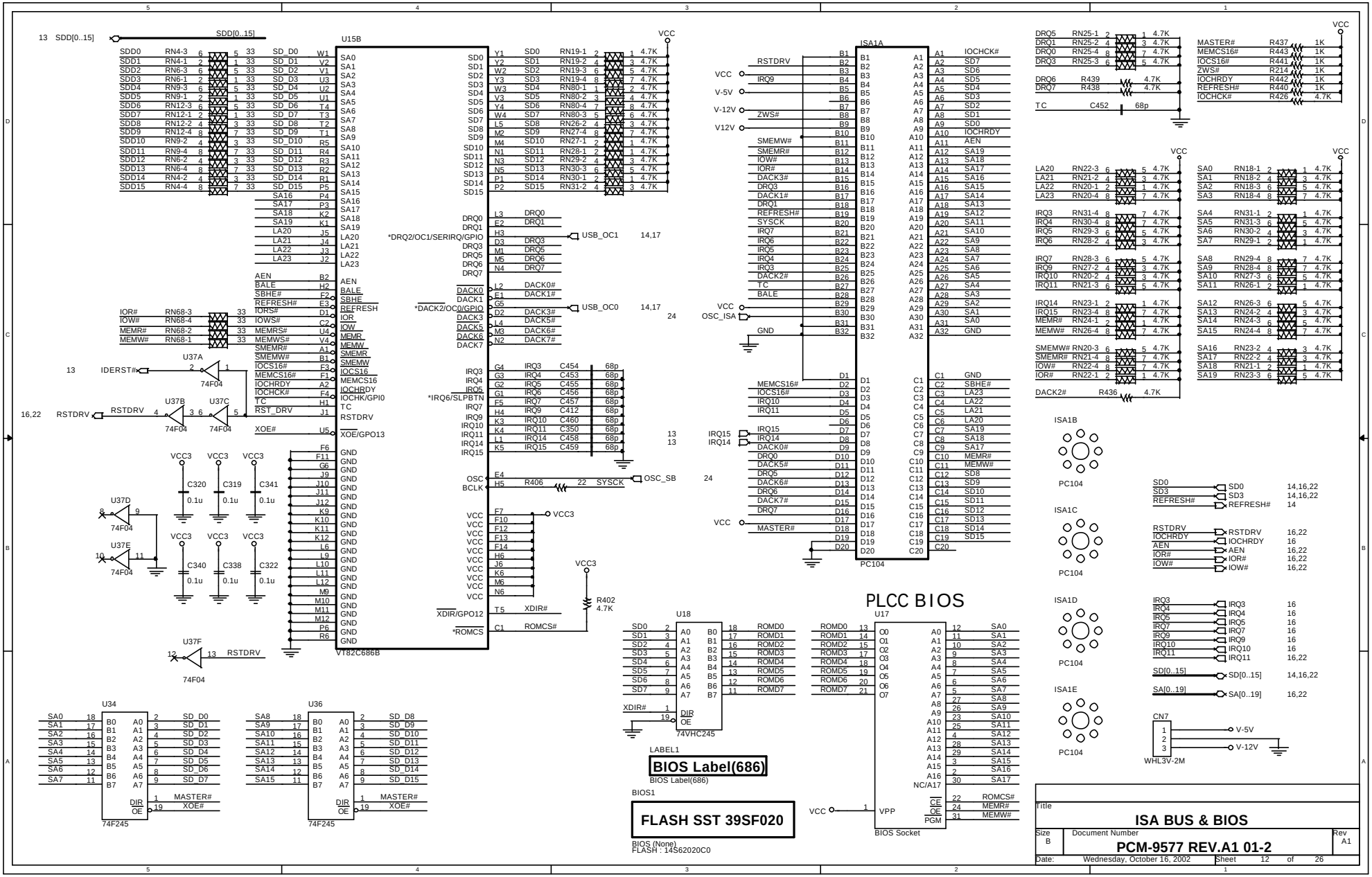
Title	**VT8606 LVDS & ZV Port**	
Size A	Document Number **PCM-9577 REV.A1 01-2**	Rev A1
Date: Wednesday, October 16, 2002	Sheet 8 of 26	



Title	North Bridge VT8606 Power	
Size A	Document Number PCM-9577 REV.A1 01-2	Rev A1
Date: Wednesday, October 16, 2002	Sheet 9 of 26	


VCC3
INTA# R378 10K
INTB# R247 10K
INTC# R228 10K
INTD# R229 10K
PREQ# R362 4.7K
PGNT# R365 4.7K
REQX# R158 4.7K
GNTX# R159 4.7K
AD[0..31]
AD[0..31] 17,18,19,20
CBE0# CBE0# 17,18,19,20
CBE1# CBE1# 17,18,19,20
CBE2# CBE2# 17,18,19,20
CBE3# CBE3# 17,18,19,20
U14C
FRAME# AE9 FRAME
IRDY# AC10 IRDY
TRDY# AD10 TRDY
STOP# AE10 STOP
DEVSEL# AB9 DEVSEL
PAR AB10 PAR
SERR# AF10 SERR
19 LOCK# LOCK# AE5 LOCK
PREQ# AC15 PREQ
PGNT# AD15 PGNT
17 REQ0# REQ0# AC5 REQ0
17 GNT0# GNT0# AB5 GNT0
18 REQ1# REQ1# AD5 REQ1
18 GNT1# GNT1# AF4 GNT1
19 REQ2# REQ2# AE4 REQ2
19 GNT2# GNT2# AF3 GNT2
19,20 REQ3# REQ3# AD4 REQ3
19,20 GNT3# GNT3# AE3 GNT3
19,20 REQX# REQX# AF2 REQX
19,20 GNTX# GNTX# AE2 GNTX
24 PCICLK_NB AB15 PCLK
CLKRUN# AF15 PCKRUN
INTA# W5 INTA
WSC# AA11 WSC
PCIRST# AE15 RESET
11,26 PWRGOOD AD14 PWROK
TwisterT
VT8606
AD0 AF14 AD0 L17
AD1 AE14 AD1 L16
AD2 AE13 AD2 K20
AD3 AF13 AD3 K19
AD4 AC14 AD4 K18
AD5 AB14 AD5 K17
AD6 AC13 AD6 K16
AD7 AB13 AD7 J20
AD8 AE12 AD8 J18
AD9 AD12 AD9 J17
AD10 AB12 AD10 J16
AD11 AC12 AD11 H20
AD12 AF11 AD12 H19
AD13 AE11 AD13 H18
AD14 AD11 AD14 H17
AD15 AC11 AD15 H16
AD16 AA8 AD16 F16
AD17 AC9 AD17 E20
AD18 AF8 AD18 E19
AD19 AE8 AD19 E18
AD20 AE7 AD20 E17
AD21 AB8 AD21 D20
AD22 AF7 AD22 D19
AD23 AC8 AD23 D18
AD24 AC7 AD24 B20
AD25 AB7 AD25 A20
AD26 AF6 AD26 A19
AD27 AE6 AD27 B19
AD28 AD6 AD28 A18
AD29 AC6 AD29 B18
AD30 AB6 AD30 C18
AD31 AF5 AD31 A17
CBE0 AF12 CBE0# J19
CBE1 AB11 CBE1# G20
CBE2 AD9 CBE2# F17
CBE3 AD7 CBE3# C19
U15D
AD0 AD0
AD1 AD1
AD2 AD2
AD3 AD3
AD4 AD4
AD5 AD5
AD6 AD6
AD7 AD7
AD8 AD8
AD9 AD9
AD10 AD10
AD11 AD11
AD12 AD12
AD13 AD13
AD14 AD14
AD15 AD15
AD16 AD16
AD17 AD17
AD18 AD18
AD19 AD19
AD20 AD20
AD21 AD21
AD22 AD22
AD23 AD23
AD24 AD24
AD25 AD25
AD26 AD26
AD27 AD27
AD28 AD28
AD29 AD29
AD30 AD30
AD31 AD31
C/BE0 C/BE0
C/BE1 C/BE1
C/BE2 C/BE2
C/BE3 C/BE3
FRAME FRAME F18 FRAME# FRAME# 17,18,19,20
IRDY IRDY F19 IRDY# IRDY# 17,18,19,20
TRDY TRDY F20 TRDY# TRDY# 17,18,19,20
STOP STOP G17 STOP# STOP# 17,18,19,20
DEVSEL DEVSEL G16 DEVSEL# DEVSEL# 17,18,19,20
PAR PAR G19 PAR PAR 17,18,19,20
SERR SERR G18 SERR# SERR# 18,19,20
IDSEL C20 R1 100 AD18
PCIRST PCIRST B16 PCIRST# PCIRST# 17,18,19,20,23
PCICLK PCICLK E16 PCICLK_SB 24
PREQ PREQ L18 PREQ#
PGNT PGNT L19 PGNT#
PCKRUN W12 CLKRUN# R366 1K
PINTA PINTA A16 INTA# INTA# 17,19
PINTB PINTB D17 INTB# INTB# 19,20
PINTC PINTC C17 INTC# INTC# 17,19,20
PINTD PINTD B17 INTD# INTD# 17,18,19
SMBCLK U9 SMB_CLK SMB_CLK 6,18,24
SMBDATA T9 SMB_DATA SMB_DATA 6,18,24
VT82C686B
D12
VCC3 V3VSB
SMB_CLK R257 2.7K
SMB_DATA R258 2.7K
BAT54C
VCC3
FRAME# R37 4.7K
IRDY# R372 4.7K
TRDY# R38 4.7K
STOP# R3 4.7K
DEVSEL# R371 4.7K
SERR# R6 4.7K
LOCK# R2 4.7K
WSC# R373 4.7K
VCC3
REQ0# R385 2.2K
REQ1# R59 2.2K
REQ2# R35 2.2K
REQ3# R33 2.2K
GNT0# R386 2.2K
GNT1# R148 2.2K
GNT2# R157 2.2K
GNT3# R32 2.2K
Title
VT8606 & VT82C686B PCI Interface
Size A
Document Number
PCM-9577 REV.A1 01-2
Rev A1
Date: Wednesday, October 16, 2002
Sheet 10 of 26


PWRBTN#
ATX Power buttom connector
PS_ON#
SUSA & SUSB
Modem Wakeup
PCBEEP
X'tal
Battery
FAN
ATX or AT
Net name need modify to Off-page
U15A
VT82C686B
Second IDE Bus is assigned to audio/game
1-2: NORMAL (Default)
2-3: CLEAR CMOS
System power select
South Bridge PM , RTC & GPIO
PCM-9577 REV.A1 01-2
Wednesday, October 16, 2002


U15B
VT82C686B
SDD[0..15]
SD_D0
SD_D1
SD_D2
SD_D3
SD_D4
SD_D5
SD_D6
SD_D7
SD_D8
SD_D9
SD_D10
SD_D11
SD_D12
SD_D13
SD_D14
SD_D15
RN4-3
RN4-1
RN6-3
RN6-1
RN9-3
RN9-1
RN12-3
RN12-1
RN12-2
RN12-4
RN9-2
RN9-4
RN6-2
RN6-4
RN4-2
RN4-4
VCC
GND
IDERST#
RSTDRV
XOE#
XOE/GPO13
XDIR/GPO12
ROMCS#
*ROMCS
USB_OC1
USB_OC0
OSC_SB
SYSCK
*DRQ2/OC1/SERIRQ/GPIO
*DACK2/OC0/GPIO
*IRQ6/SLPBTN
U37A
U37B
U37C
U37D
U37E
U37F
74F04
C320
C319
C341
C340
C338
C322
0.1u
U34
U36
74F245
ISA1A
PC104
ISA1B
ISA1C
ISA1D
ISA1E
IOCHCK#
SD7
SD6
SD5
SD4
SD3
SD2
SD1
SD0
AEN
SA19
SA18
SA17
SA16
SA15
SA14
SA13
SA12
SA11
SA10
SA9
SA8
SA7
SA6
SA5
SA4
SA3
SA2
SA1
SA0
IOCHRDY
SBHE#
LA23
LA22
LA21
LA20
IRQ15
IRQ14
IRQ12
IRQ11
IRQ10
IRQ9
IRQ7
IRQ6
IRQ5
IRQ4
IRQ3
DRQ0
DACK0#
DACK5#
DACK6#
DACK7#
DRQ7
DRQ6
DRQ5
DACK2#
DACK3#
TC
BALE
REFRESH#
SMEMW#
SMEMR#
IOW#
IOR#
MEMW#
MEMR#
MEMCS16#
IOCS16#
MASTER#
U18
74VHC245
ROMD0
ROMD1
ROMD2
ROMD3
ROMD4
ROMD5
ROMD6
ROMD7
XDIR#
U17
PLCC BIOS
BIOS Socket
LABEL1
BIOS Label(686)
BIOS1
FLASH SST 39SF020
BIOS (None)
FLASH : 14S62020C0
CN7
V-5V
V-12V
WHL3V-2M
SD[0..15]
SA[0..19]
MASTER#
MEMCS16#
IOCS16#
ZWS#
IOCHRDY
REFRESH#
IOCHCK#
R437
R443
R441
R214
R442
R440
R426
R439
R438
R452
68p
R436
R402
4.7K
1K
R406
22
SYSCK
Title
ISA BUS & BIOS
Size
B
Document Number
PCM-9577 REV.A1 01-2
Rev
A1
Date:
Wednesday, October 16, 2002
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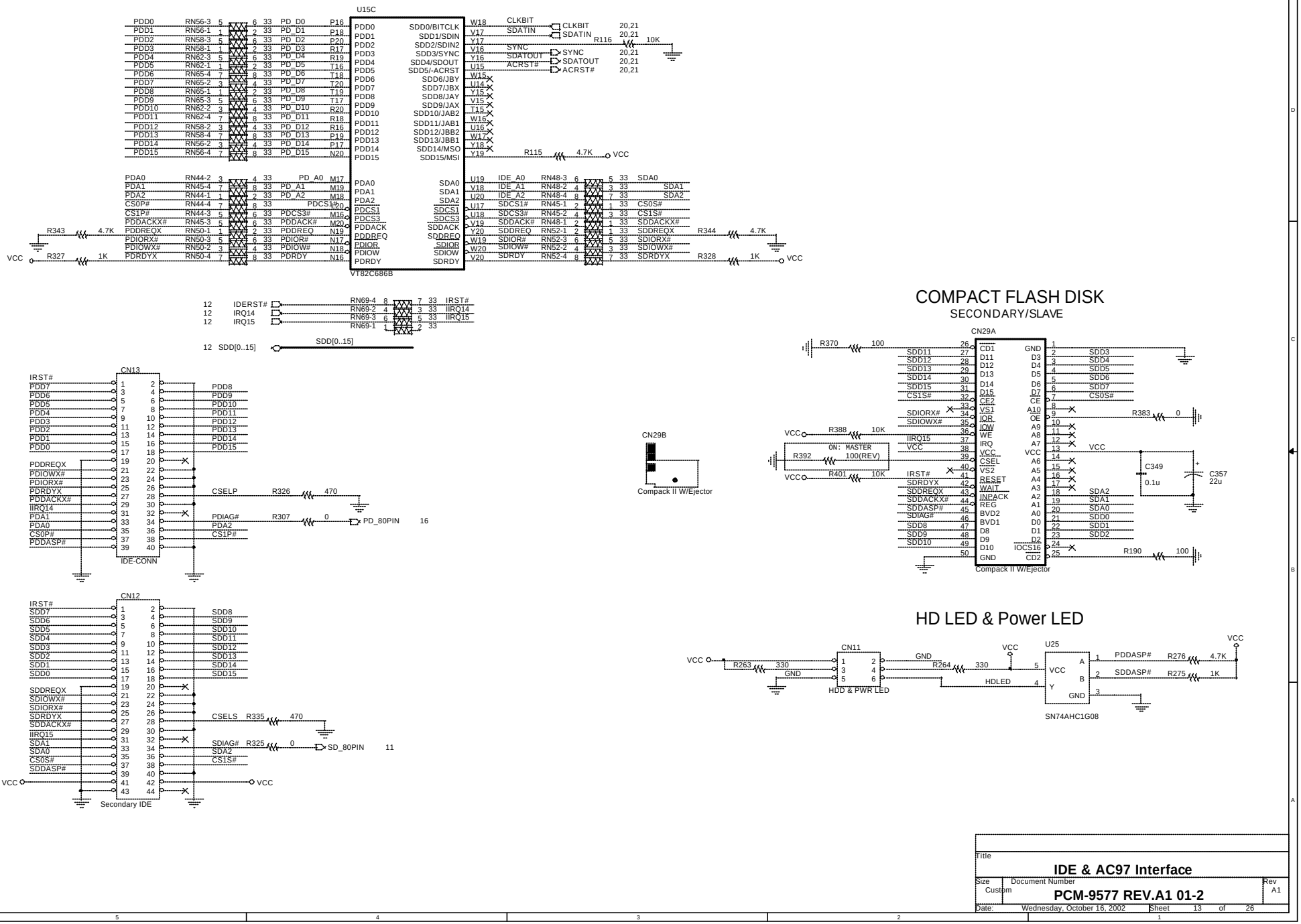
12
of
26


U15C
VT82C686B
PDD0 PDD1 PDD2 PDD3 PDD4 PDD5 PDD6 PDD7 PDD8 PDD9 PDD10 PDD11 PDD12 PDD13 PDD14 PDD15
RN56-3 RN56-1 RN58-3 RN58-1 RN62-3 RN62-1 RN65-4 RN65-2 RN65-1 RN65-3 RN62-2 RN62-4 RN58-2 RN58-4 RN56-2 RN56-4
PD_D0 PD_D1 PD_D2 PD_D3 PD_D4 PD_D5 PD_D6 PD_D7 PD_D8 PD_D9 PD_D10 PD_D11 PD_D12 PD_D13 PD_D14 PD_D15
P16 P18 P20 R17 R19 T16 T18 T20 T19 T17 R20 R18 R16 P19 P17 N20
SDD0/BITCLK SDD1/SDIN SDD2/SDIN2 SDD3/SYNC SDD4/SDOUT SDD5/-ACRST SDD6/JBY SDD7/JBX SDD8/JAY SDD9/JAX SDD10/JAB2 SDD11/JAB1 SDD12/JBB2 SDD13/JBB1 SDD14/MSO SDD15/MSI
W18 V17 Y17 V16 Y16 U15 W15 U14 Y15 V15 T15 W16 U16 W17 Y18 Y19
CLKBIT SDATIN SYNC SDATOUT ACRST#
CLKBIT SDATIN SYNC SDATOUT ACRST#
20,21
R116 10K
R115 4.7K VCC
PDA0 PDA1 PDA2 CS0P# CS1P# PDDACKX# PDDREQX PDIORX# PDIOWX# PDRDYX
RN44-2 RN45-4 RN44-1 RN44-4 RN44-3 RN45-3 RN50-1 RN50-3 RN50-2 RN50-4
PD_A0 PD_A1 PD_A2 PDCS1# PDCS3# PDDACK# PDDREQ PDIOR# PDIOW# PDRDY
M17 M19 M18 N20 M16 M20 N19 N17 N18 N16
PDA0 PDA1 PDA2 PDCS1 PDCS3 PDDACK PDDREQ PDIOR PDIOW PDRDY
SDA0 SDA1 SDA2 SDCS1 SDCS3 SDDACK SDDREQ SDIOR SDIOW SDRDY
U19 V18 U20 U17 U18 V19 Y20 W19 W20 V20
IDE_A0 IDE_A1 IDE_A2 SDCS1# SDCS3# SDDACK# SDDREQ SDIOR# SDIOW# SDRDY
RN48-3 RN48-2 RN48-4 RN45-1 RN45-2 RN48-1 RN52-1 RN52-3 RN52-2 RN52-4
SDA0 SDA1 SDA2 CS0S# CS1S# SDDACKX# SDDREQX SDIORX# SDIOWX# SDRDYX
R343 4.7K
R327 1K VCC
R344 4.7K
R328 1K VCC
12 IDERST# IRQ14 IRQ15
RN69-4 RN69-2 RN69-3 RN69-1
IRST# IIRQ14 IIRQ15
12 SDD[0..15]
SDD[0..15]
CN13
IRST# PDD7 PDD6 PDD5 PDD4 PDD3 PDD2 PDD1 PDD0 PDDREQX PDIOWX# PDIORX# PDRDYX PDDACKX# IIRQ14 PDA1 PDA0 CS0P# PDDASP#
PDD8 PDD9 PDD10 PDD11 PDD12 PDD13 PDD14 PDD15
CSELP R326 470
PDIAG# R307 0 PD_80PIN 16
PDA2 CS1P#
IDE-CONN
CN12
IRST# SDD7 SDD6 SDD5 SDD4 SDD3 SDD2 SDD1 SDD0 SDDREQX SDIOWX# SDIORX# SDRDYX SDDACKX# IIRQ15 SDA1 SDA0 CS0S# SDDASP#
SDD8 SDD9 SDD10 SDD11 SDD12 SDD13 SDD14 SDD15
CSELS R335 470
SDIAG# R325 0 SD_80PIN 11
SDA2 CS1S#
VCC VCC
Secondary IDE
CN29B
Compack II W/Ejector
COMPACT FLASH DISK
SECONDARY/SLAVE
CN29A
R370 100
SDD11 SDD12 SDD13 SDD14 SDD15 CS1S# SDIORX# SDIOWX# IIRQ15 VCC IRST# SDRDYX SDDREQX SDDACKX# SDDASP# SDIAG# SDD8 SDD9 SDD10
CD1 D11 D12 D13 D14 D15 CE2 VS1 IOR IOW WE IRQ VCC CSEL VS2 RESET WAIT INPACK REG BVD2 BVD1 D8 D9 D10 GND
GND D3 D4 D5 D6 D7 CE A10 OE A9 A8 A7 VCC A6 A5 A4 A3 A2 A1 A0 D0 D1 D2 IOCS16 CD2
SDD3 SDD4 SDD5 SDD6 SDD7 CS0S# SDA2 SDA0 SDD0 SDD1 SDD2
R383 0
R388 10K VCC
R392 ON: MASTER 100(REV)
R401 10K VCC
C349 0.1u
C357 22u
R190 100
Compack II W/Ejector
HD LED & Power LED
CN11
VCC R263 330 GND
GND R264 330 HDLED
HDD & PWR LED
U25
VCC A B Y GND
PDDASP# R276 4.7K
SDDASP# R275 1K
SN74AHC1G08
Title
IDE & AC97 Interface
Size Custom
Document Number PCM-9577 REV.A1 01-2
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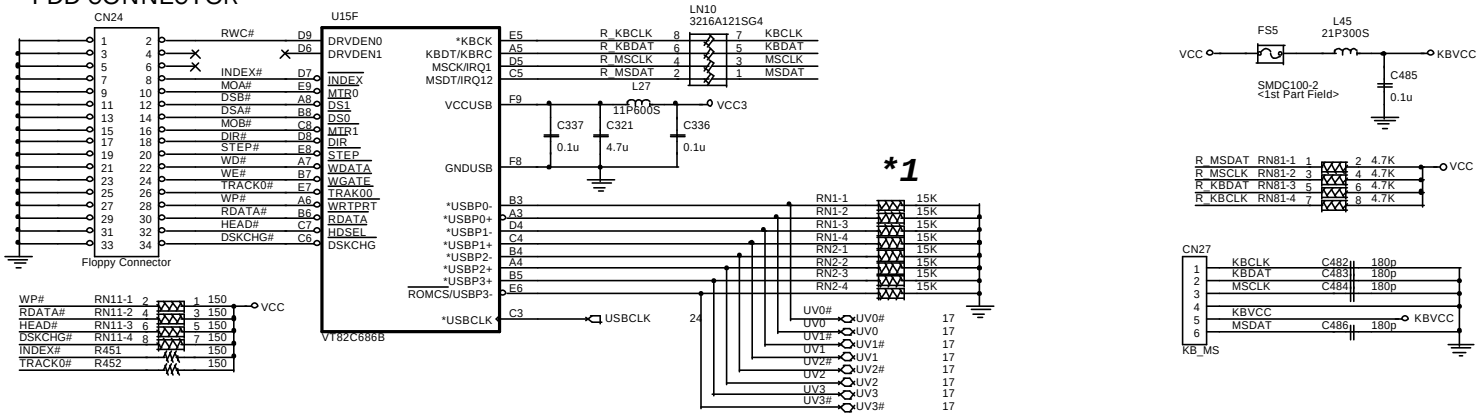
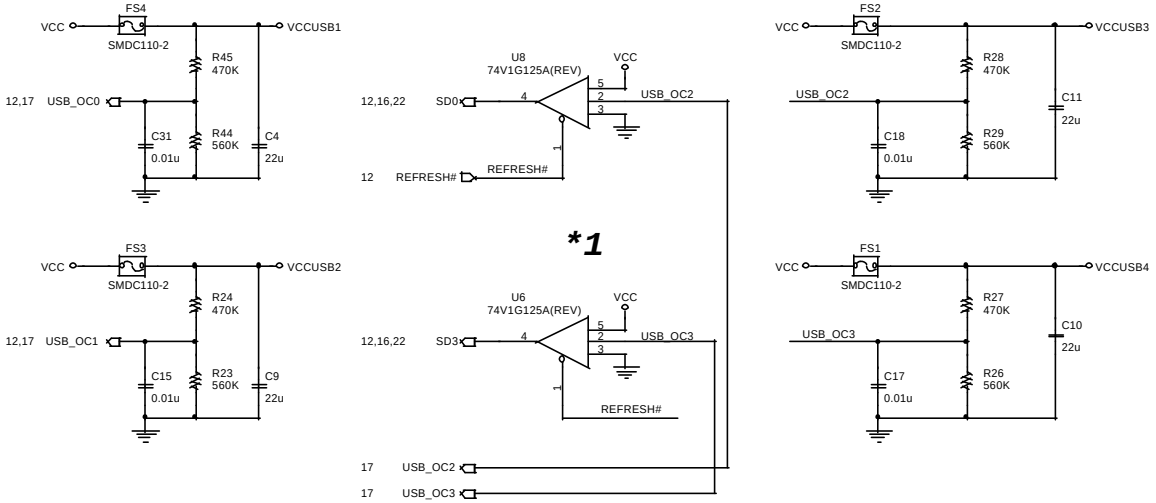
FDD CONNECTOR





1*2 : Common Connector
1 : VIA SB USB1.1
2 : VIA 6202 USB2.0

Title	Floppy , USB & KB/MS	
Size: Custom	Document Number: PCM-9577 REV.A1 01-2	Rev: A1
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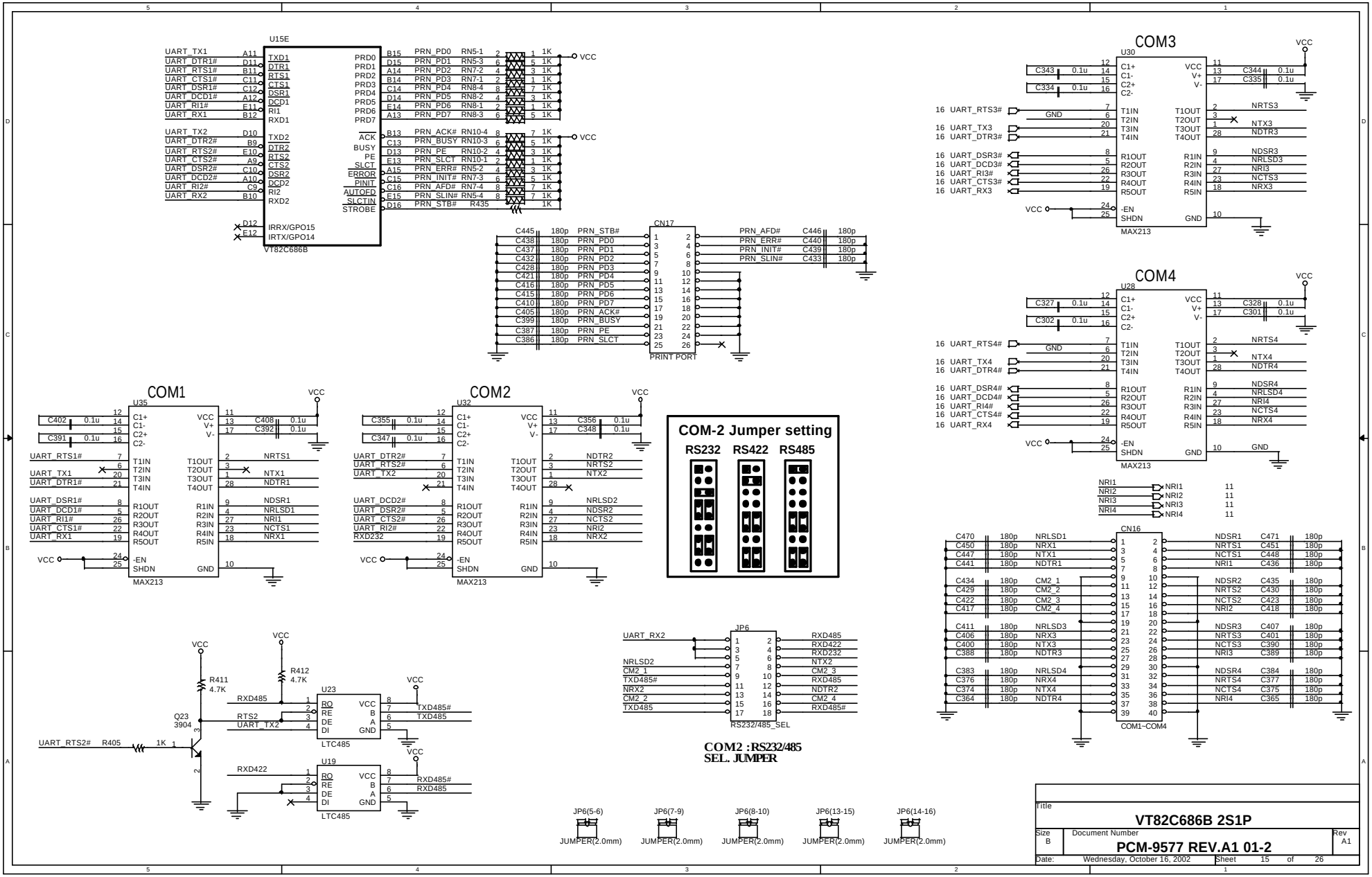
U15E
VT82C686B
CN17
PRINT PORT
COM3
U30
MAX213
COM4
U28
MAX213
COM1
U35
MAX213
COM2
U32
MAX213
COM-2 Jumper setting
RS232 RS422 RS485
CN16
COM1–COM4
JP6
RS232/485_SEL
COM2 :RS232/485
SEL. JUMPER
U23
LTC485
U19
LTC485
Q23
3904
JP6(5-6)
JP6(7-9)
JP6(8-10)
JP6(13-15)
JP6(14-16)
JUMPER(2.0mm)
Title
VT82C686B 2S1P
Size B
Document Number
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Rev A1
Date: Wednesday, October 16, 2002
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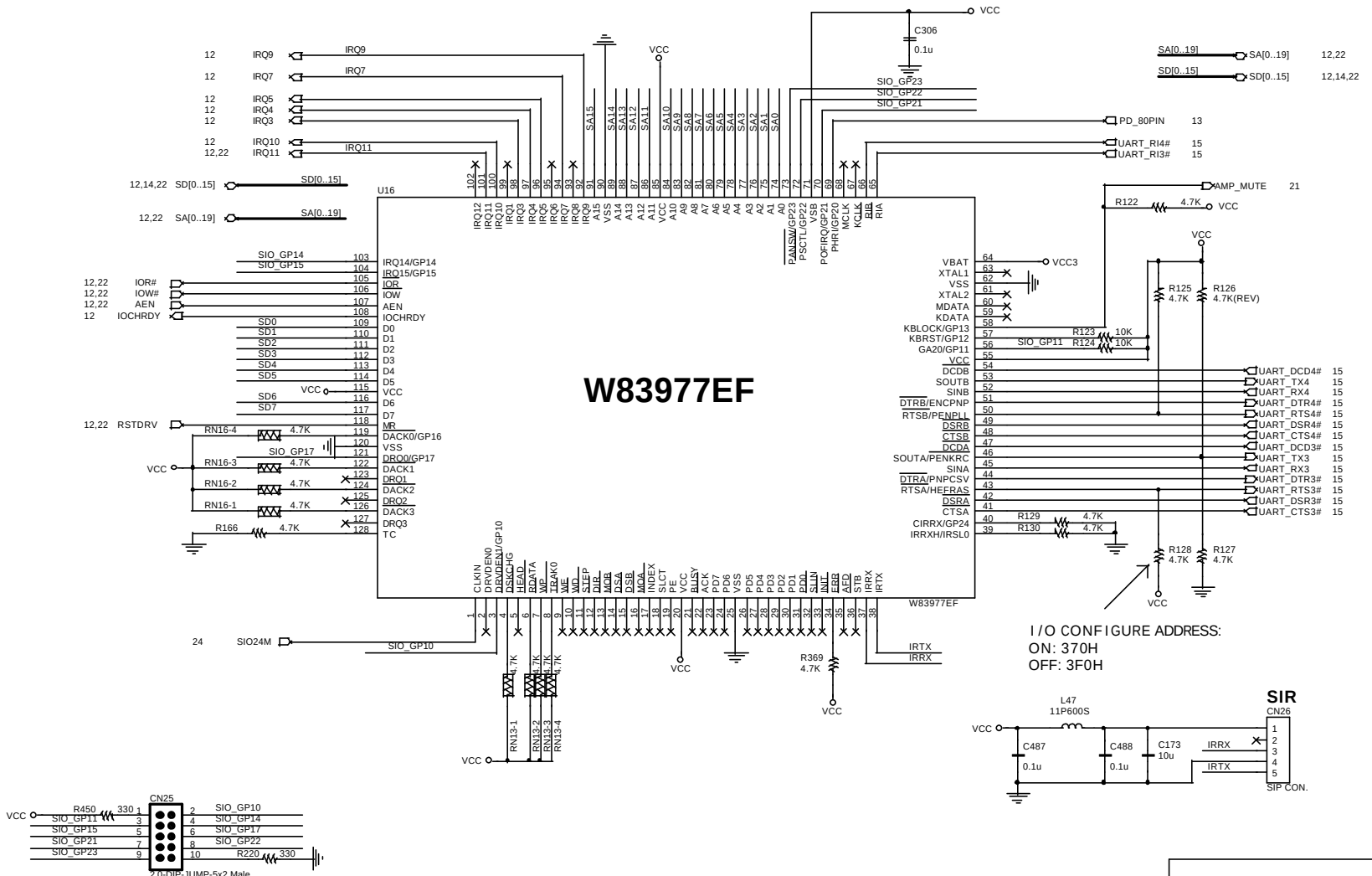

Title	COM3 , COM4 & IR		
Size B	Document Number PCM-9577 REV.A1 01-2		Rev A1
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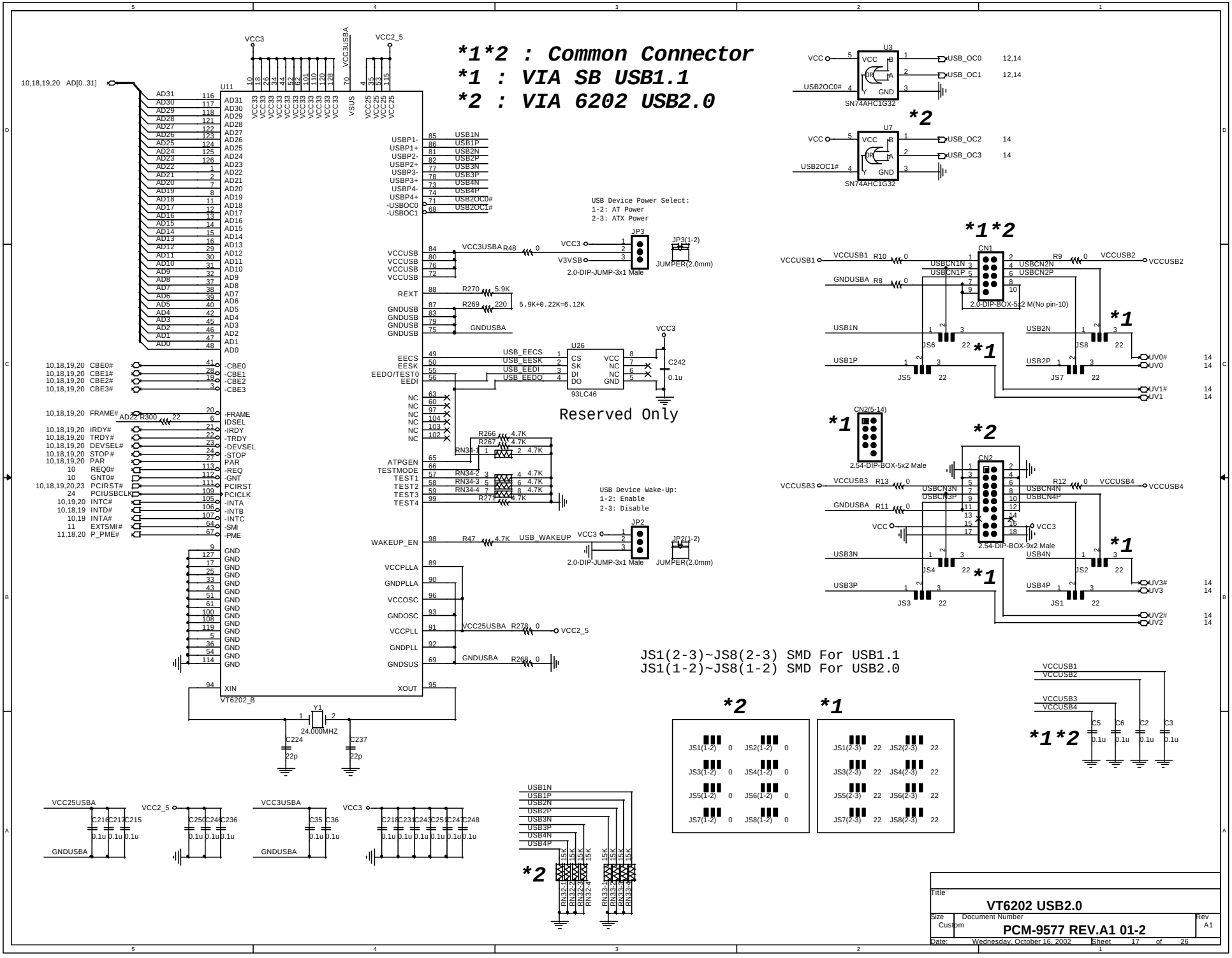
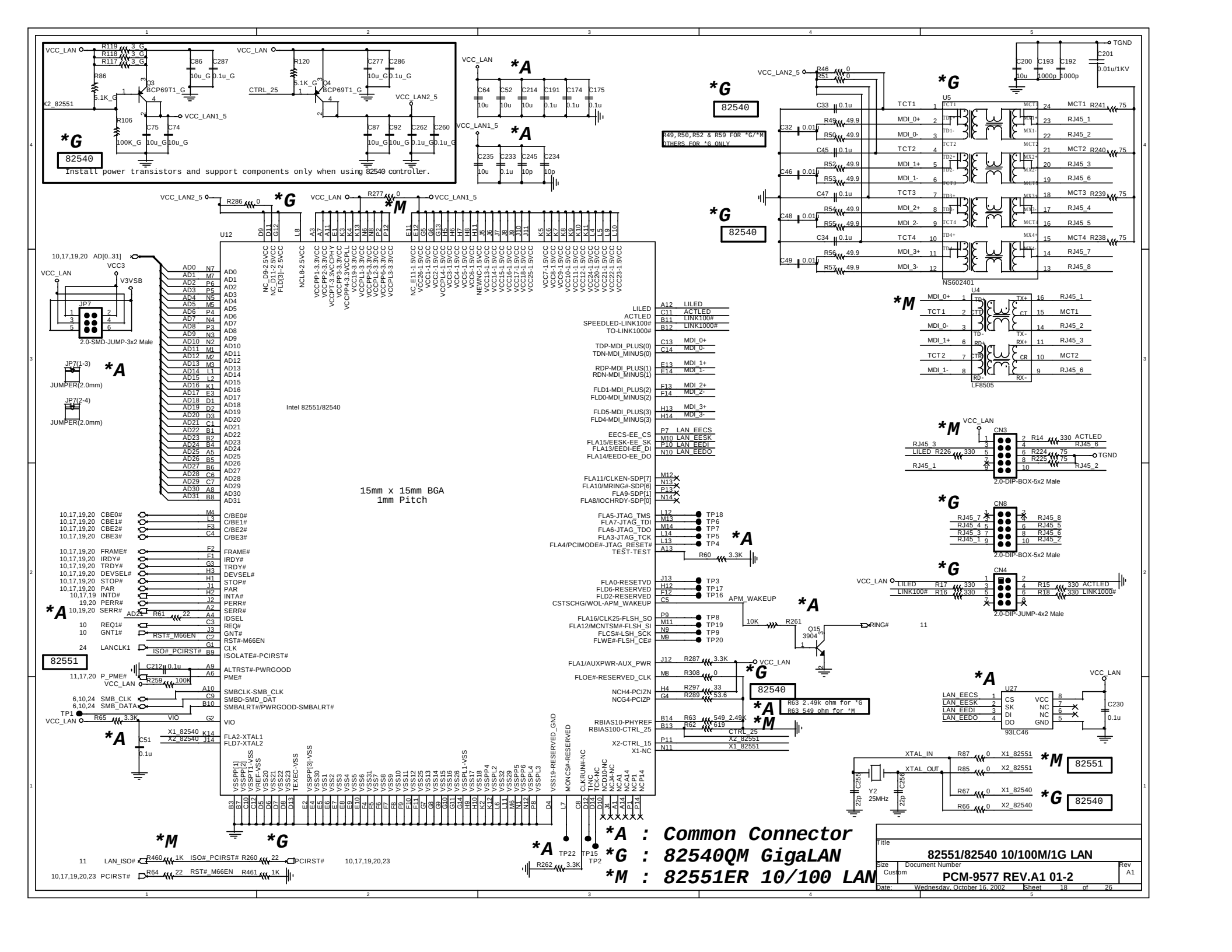

*1*2 : Common Connector
*1 : VIA SB USB1.1
*2 : VIA 6202 USB2.0
VT6202_B
Reserved Only
USB Device Power Select:
1-2: AT Power
2-3: ATX Power
USB Device Wake-Up:
1-2: Enable
2-3: Disable
JS1(2-3)~JS8(2-3) SMD For USB1.1
JS1(1-2)~JS8(1-2) SMD For USB2.0
SN74AHC1G32
2.0-DIP-BOX-5x2 M(No pin-10)
2.54-DIP-BOX-5x2 Male
2.54-DIP-BOX-9x2 Male
93LC46
2.0-DIP-JUMP-3x1 Male
JUMPER(2.0mm)
24.000MHZ
PCM-9577 REV.A1 01-2
VT6202 USB2.0
Wednesday, October 16, 2002


*G
82540
Install power transistors and support components only when using 82540 controller.
*A
*M
*G : 82540QM GigaLAN
*M : 82551ER 10/100 LAN
Intel 82551/82540
15mm x 15mm BGA
1mm Pitch
82551
R49,R50,R52 & R59 FOR *G/*M
OTHERS FOR *G ONLY
R63 2.49k ohm for *G
R63 549 ohm for *M
U12
U5
U4
NS602401
LF8505
93LC46
Q15
3904
Y2
25MHz
JP7
JUMPER(2.0mm)
2.0-SMD-JUMP-3x2 Male
2.0-DIP-BOX-5x2 Male
2.0-DIP-JUMP-4x2 Male
Title
82551/82540 10/100M/1G LAN
Size
Custom
Document Number
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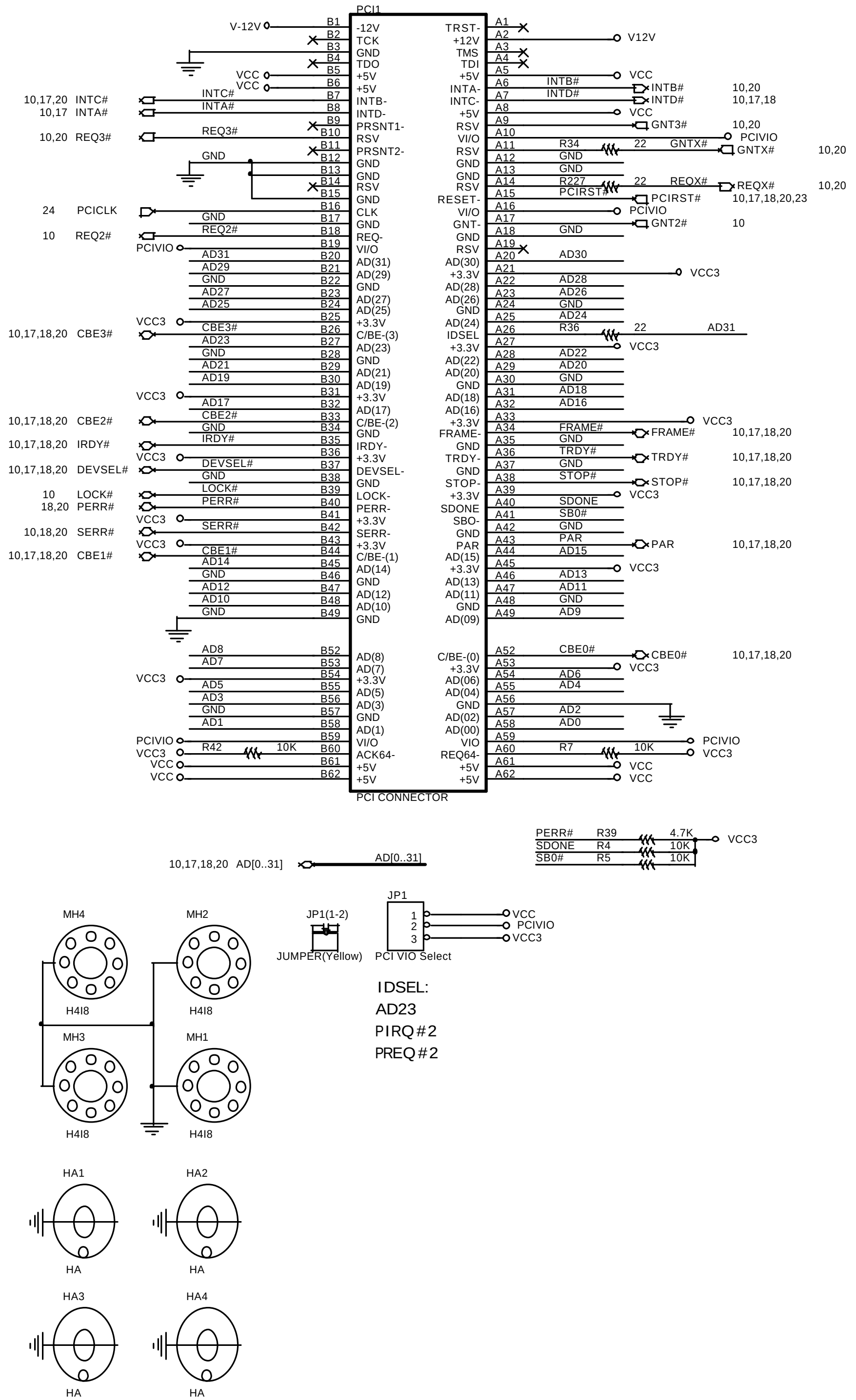

Title
PCI Slot

Size: Custom
Document Number: PCM-9577 REV.A1 01-2
Rev: A1
Date: Wednesday, October 16, 2002
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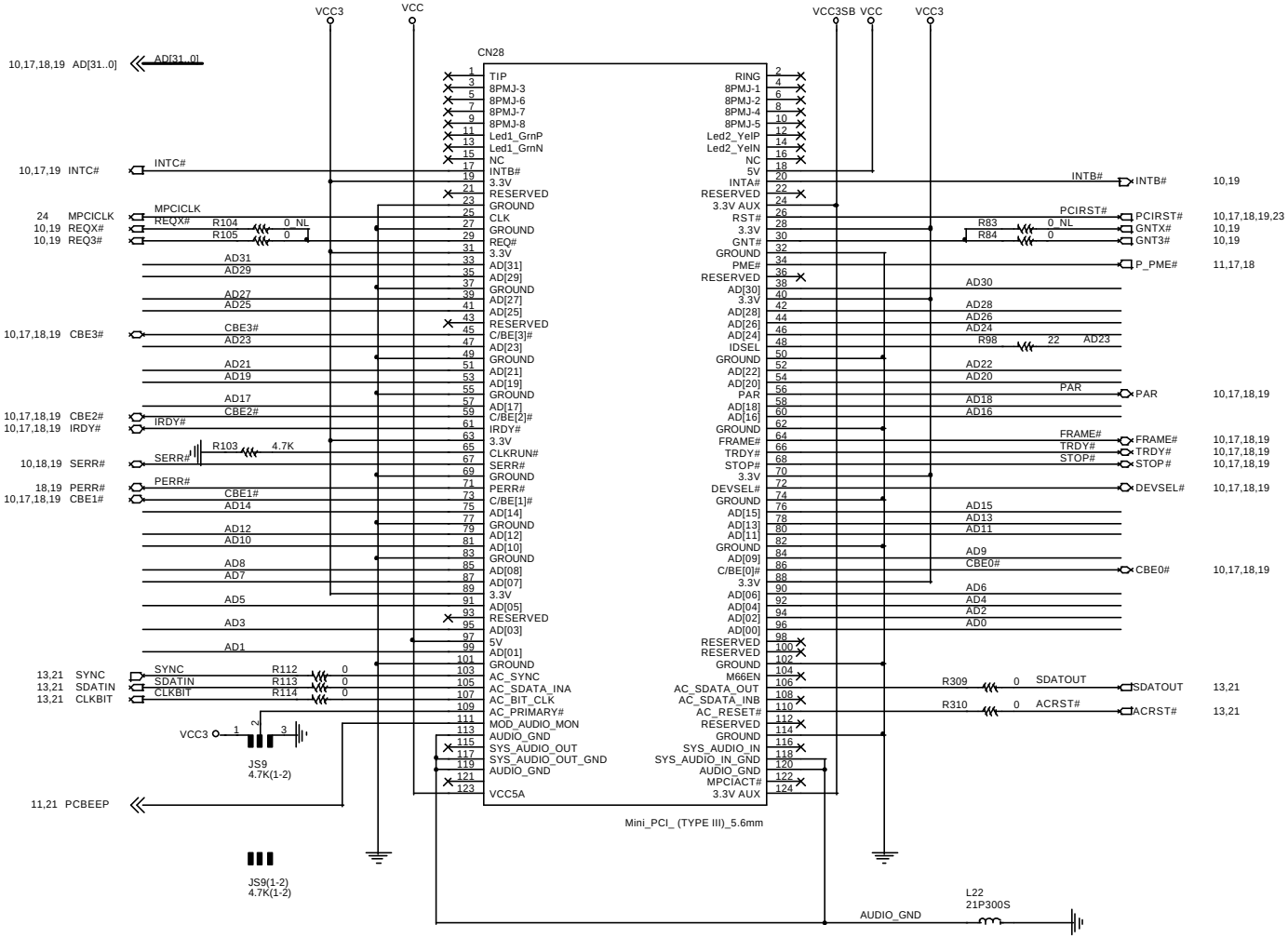
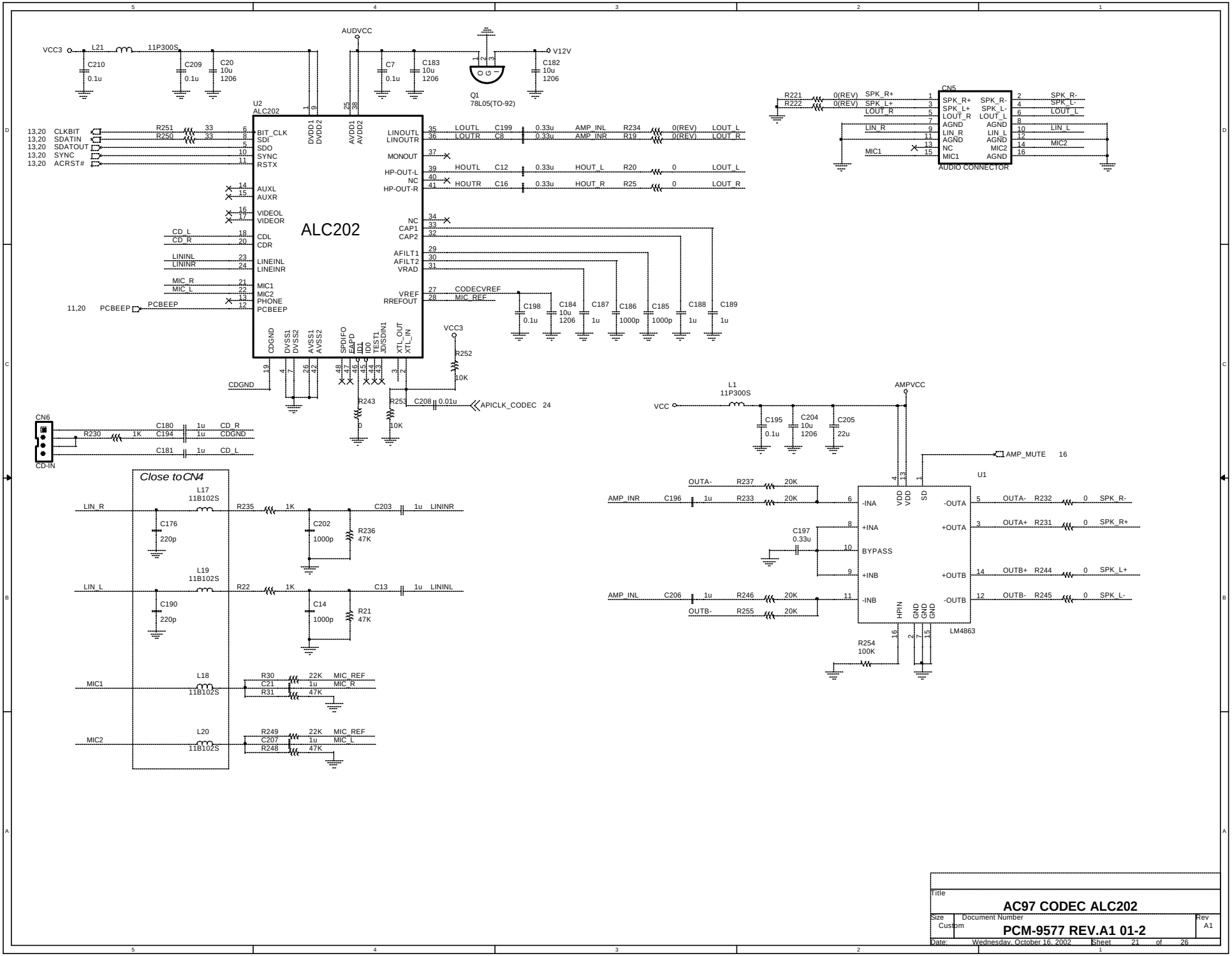
LAYOUT GUIDELINE
1.MiniPCI PIN1,PIN2(TIP,RING) MUST BE ISOLATED
2.PLACE PHONE JACK NEAR TO MiniPCI
3.SIGNALS(TIP.RING) TRACE WIDTH



Title	MINI PCI		
Size	Document Number		Rev
	PCM-9577 REV.A1 01-2		A1
Date:	Wednesday, October 16, 2002	Sheet 20 of 26	


AUDVCC
VCC3
L21
11P300S
C210
0.1u
C209
0.1u
C20
10u
1206
C7
0.1u
C183
10u
1206
Q1
78L05(TO-92)
V12V
C182
10u
1206
U2
ALC202
ALC202
13,20 CLKBIT
13,20 SDATIN
13,20 SDATOUT
13,20 SYNC
13,20 ACRST#
R251 33
R250 33
BIT_CLK
SDI
SDO
SYNC
RSTX
AUXL
AUXR
VIDEOL
VIDEOR
CD_L
CD_R
CDL
CDR
LININL
LININR
LINEINL
LINEINR
MIC_R
MIC_L
MIC1
MIC2
PHONE
PCBEEP
11,20 PCBEEP
PCBEEP
DVDD1
DVDD2
AVDD1
AVDD2
LINOUTL
LINOUTR
MONOUT
HP-OUT-L
NC
HP-OUT-R
LOUTL C199 0.33u AMP_INL R234 0(REV) LOUT_L
LOUTR C8 0.33u AMP_INR R19 0(REV) LOUT_R
HOUTL C12 0.33u HOUT_L R20 0 LOUT_L
HOUTR C16 0.33u HOUT_R R25 0 LOUT_R
NC
CAP1
CAP2
AFILT1
AFILT2
VRAD
VREF
RREFOUT
CODECVREF
MIC_REF
C198 0.1u
C184 10u 1206
C187 1u
C186 1000p
C185 1000p
C188 1u
C189 1u
CDGND
DVSS1
DVSS2
AVSS1
AVSS2
SPDIFO
EAPD
ID1
ID0
TEST1
JDVSDIN1
XTL_OUT
XTL_IN
VCC3
R252
10K
R243 0
R253 10K
C208 0.01u
APICLK_CODEC 24
R221 0(REV) SPK_R+
R222 0(REV) SPK_L+
LOUT_R
LIN_R
MIC1
CN5
SPK_R+ SPK_R-
SPK_L+ SPK_L-
LOUT_R LOUT_L
AGND AGND
LIN_R LIN_L
AGND AGND
NC MIC2
MIC1 AGND
SPK_R-
SPK_L-
LOUT_L
LIN_L
MIC2
AUDIO CONNECTOR
CN6
CD-IN
R230 1K
C180 1u CD_R
C194 1u CDGND
C181 1u CD_L
Close to CN4
L17
11B102S
LIN_R
C176
220p
R235 1K
C202
1000p
R236
47K
C203 1u LININR
L19
11B102S
LIN_L
C190
220p
R22 1K
C14
1000p
R21
47K
C13 1u LININL
L18
11B102S
MIC1
R30 22K MIC_REF
C21 1u MIC_R
R31 47K
L20
11B102S
MIC2
R249 22K MIC_REF
C207 1u MIC_L
R248 47K
L1
11P300S
VCC
AMPVCC
C195
0.1u
C204
10u
1206
C205
22u
AMP_MUTE 16
U1
OUTA- R237 20K
AMP_INR C196 1u R233 20K
C197
0.33u
AMP_INL C206 1u R246 20K
OUTB- R255 20K
-INA
+INA
BYPASS
+INB
-INB
VDD
VDD
SD
-OUTA
+OUTA
+OUTB
-OUTB
HPIN
GND
GND
GND
OUTA- R232 0 SPK_R-
OUTA+ R231 0 SPK_R+
OUTB+ R244 0 SPK_L+
OUTB- R245 0 SPK_L-
LM4863
R254
100K
Title
AC97 CODEC ALC202
Size
Custom
Document Number
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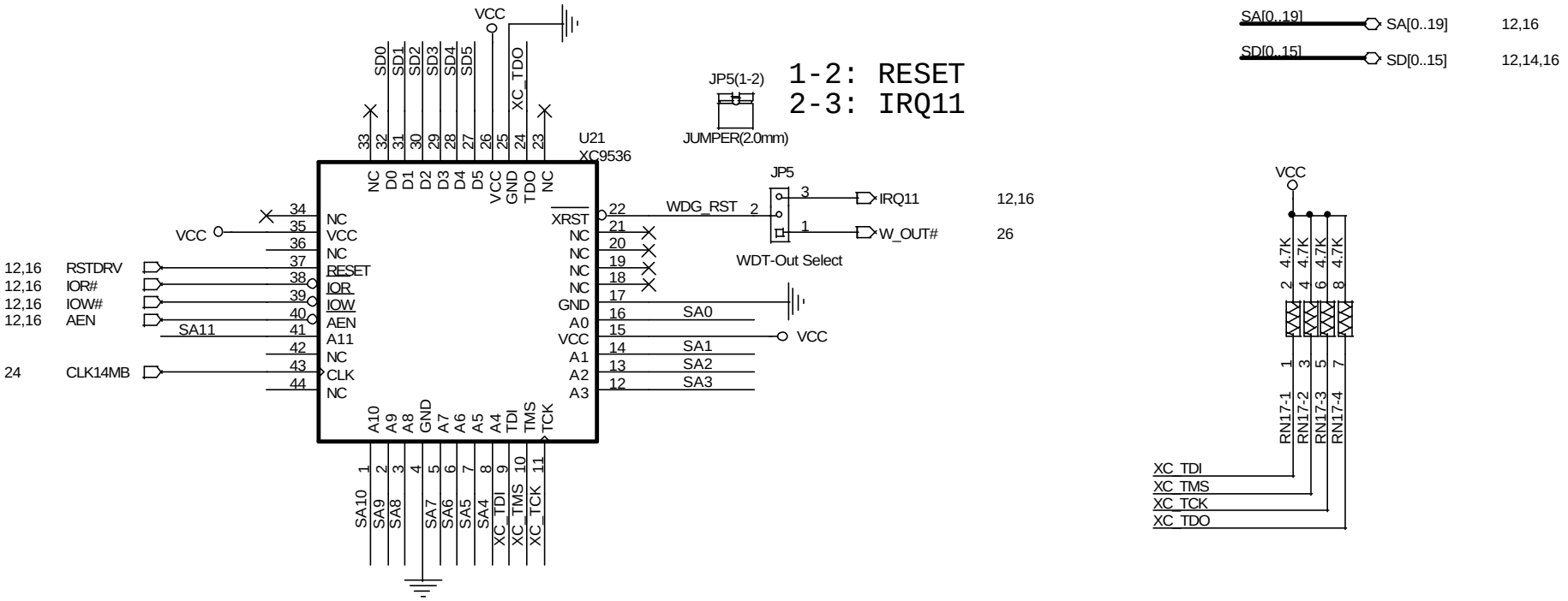
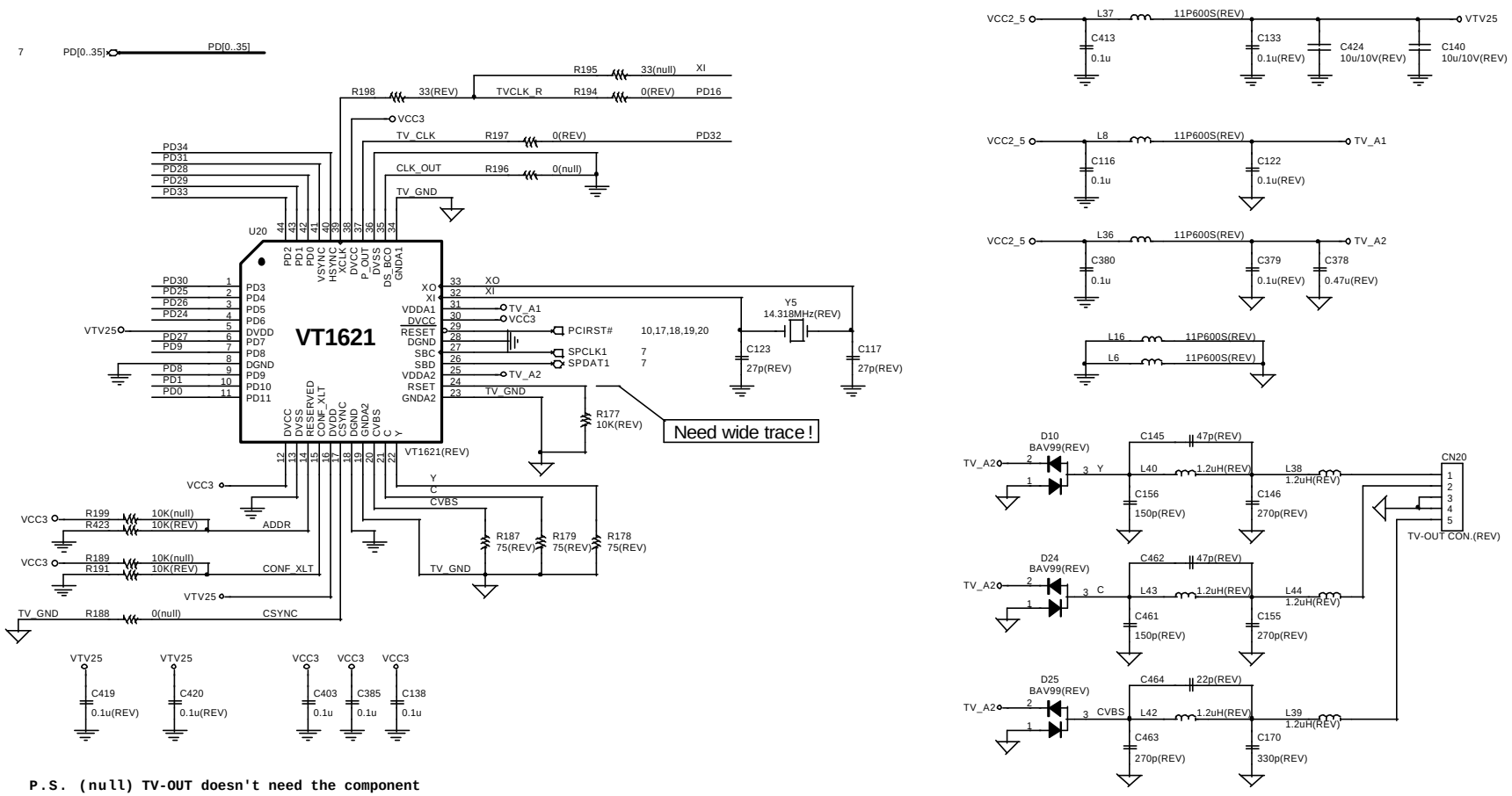


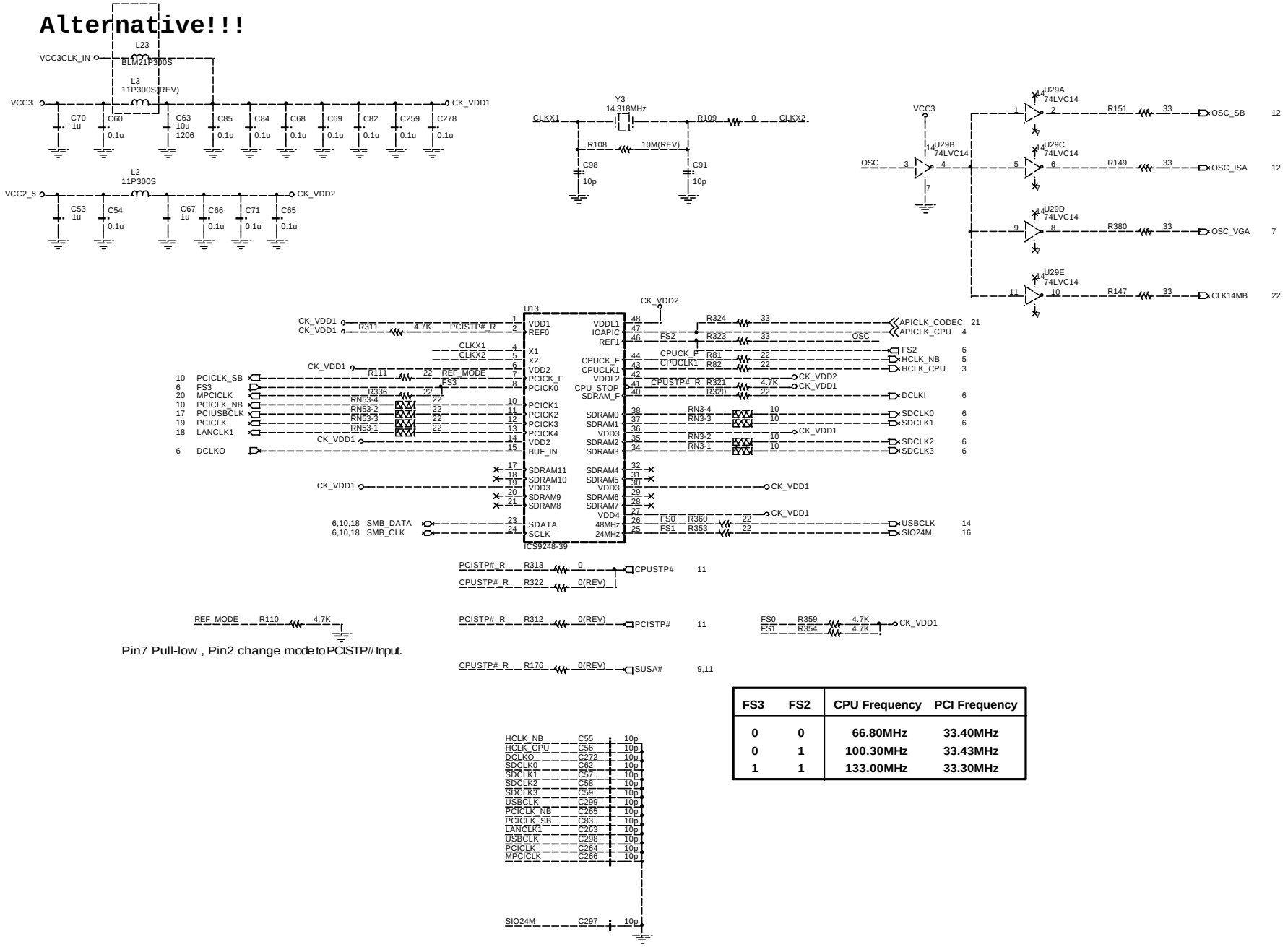
Title	**WatchDog**	
Size: A	Document Number: **PCM-9577 REV.A1 01-2**	Rev: A1
Date: Wednesday, October 16, 2002	Sheet 22 of 26	



P.S. (null) TV-OUT doesn't need the component

Title	TV-OUT	
Size: Custom	Document Number: PCM-9577 REV.A1 01-2	Rev: A1
Date: Wednesday, October 16, 2002	Sheet 23 of 26	

Alternative!!!



Pin7 Pull-low , Pin2 change mode to PCISTP# Input.

FS3	FS2	CPU Frequency	PCI Frequency
0	0	66.80MHz	33.40MHz
0	1	100.30MHz	33.43MHz
1	1	133.00MHz	33.30MHz

Title: Clock Generator

Size: Custom | Document Number: PCM-9577 REV.A1 01-2 | Rev: A1

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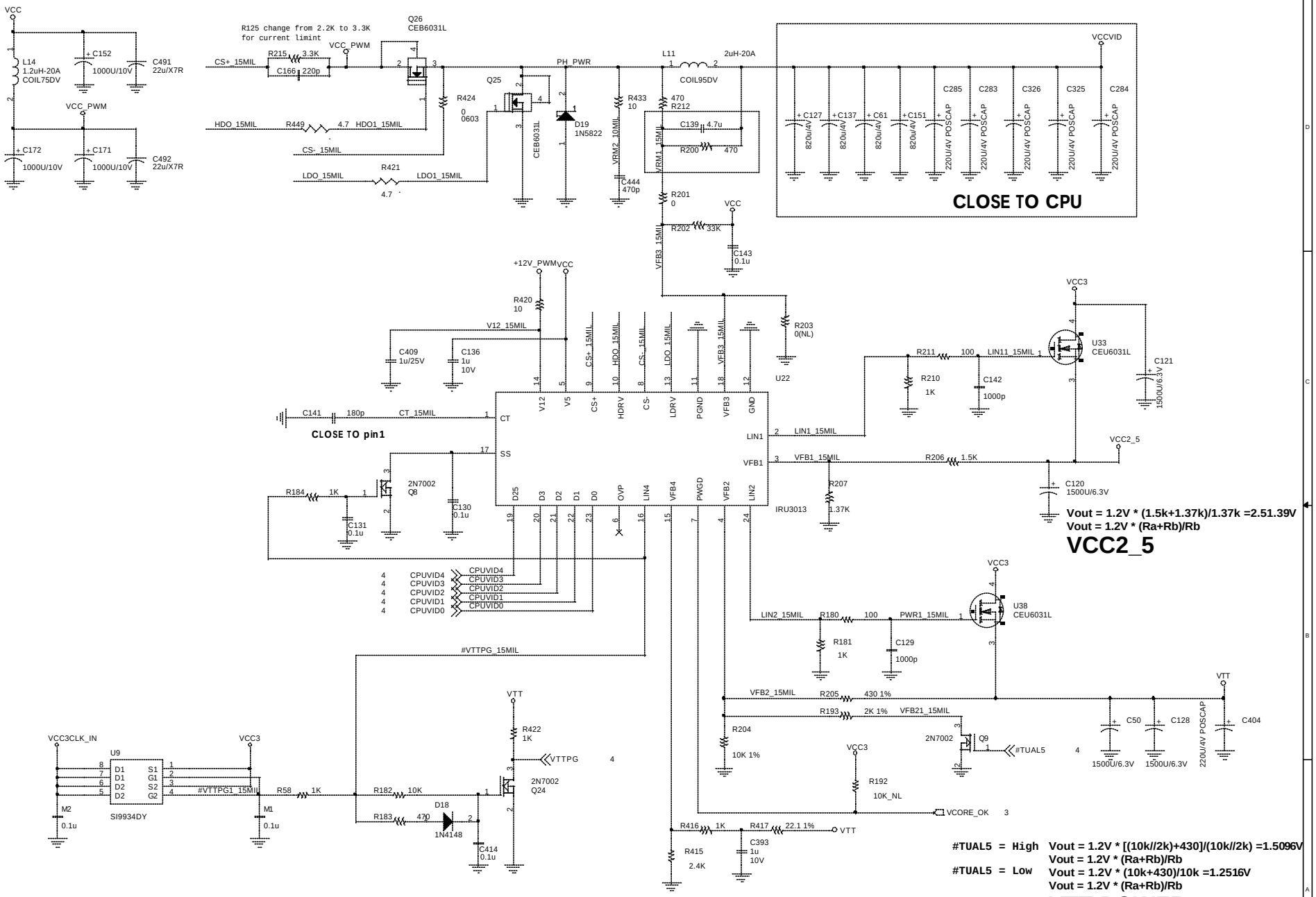
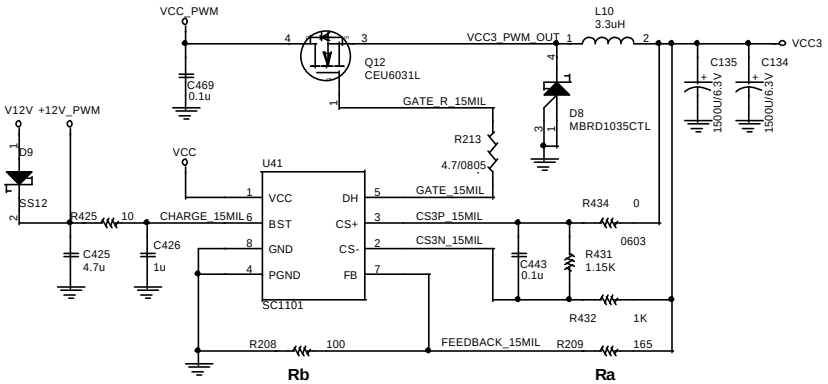
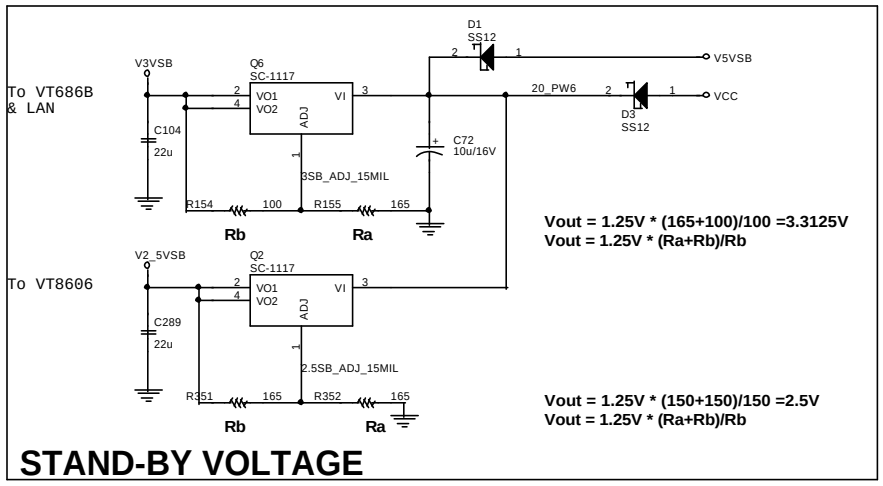

VCC
L14
1.2uH-20A
COIL75DV
C152
1000U/10V
C491
22u/X7R
VCC_PWM
C172
1000U/10V
C171
1000U/10V
C492
22u/X7R
R125 change from 2.2K to 3.3K
for current limint
Q26
CEB6031L
VCC_PWM
CS+_15MIL
R215 3.3K
C166 220p
HDO_15MIL
R449 4.7
HDO1_15MIL
CS-_15MIL
LDO_15MIL
R421
4.7
LDO1_15MIL
R424
0
0603
Q25
CEB6031L
D19
1N5822
PH_PWR
L11
2uH-20A
COIL95DV
R433
10
R212
470
C139 4.7u
R200
470
VRM2_10MIL
VRM1_15MIL
C444
470p
R201
0
R202 33K
C143
0.1u
VFB3_15MIL
VCC
VCCVID
C127
820u/4V
C137
820u/4V
C61
820u/4V
C151
820u/4V
C285
220U/4V POSCAP
C283
220U/4V POSCAP
C326
220U/4V POSCAP
C325
220U/4V POSCAP
C284
220U/4V POSCAP
CLOSE TO CPU
+12V_PWM
VCC
R420
10
V12_15MIL
C409
1u/25V
C136
1u
10V
CS+_15MIL
HDO_15MIL
CS-_15MIL
LDO_15MIL
VFB3_15MIL
R203
0(NL)
U22
V12
V5
CS+
HDRV
CS-
LDRV
PGND
VFB3
GND
CT
SS
LIN1
VFB1
D25
D3
D2
D1
D0
OVP
LIN4
VFB4
PWGD
VFB2
LIN2
IRU3013
C141
180p
CT_15MIL
CLOSE TO pin1
R184
1K
2N7002
Q8
C130
0.1u
C131
0.1u
LIN1_15MIL
VFB1_15MIL
R211
100
LIN11_15MIL
R210
1K
C142
1000p
R206
1.5K
R207
1.37K
VCC3
U33
CEU6031L
C121
1500U/6.3V
VCC2_5
C120
1500U/6.3V
Vout = 1.2V * (1.5k+1.37k)/1.37k =2.51.39V
Vout = 1.2V * (Ra+Rb)/Rb
VCC2_5
CPUVID4
CPUVID3
CPUVID2
CPUVID1
CPUVID0
LIN2_15MIL
R180
100
PWR1_15MIL
U38
CEU6031L
R181
1K
C129
1000p
#VTTPG_15MIL
VFB2_15MIL
R205
430 1%
R193
2K 1%
VFB21_15MIL
R204
10K 1%
2N7002
Q9
#TUAL5
R192
10K_NL
VCORE_OK
C50
C128
C404
1500U/6.3V
1500U/6.3V
220U/4V POSCAP
VTT
VCC3CLK_IN
U9
SI9934DY
M2
0.1u
M1
0.1u
#VTTPG1_15MIL
R58
1K
R182
10K
R183
470
D18
1N4148
C414
0.1u
R422
1K
VTTPG
2N7002
Q24
R416
1K
R417
22.1 1%
R415
2.4K
C393
1u
10V
#TUAL5 = High
Vout = 1.2V * [(10k//2k)+430]/(10k//2k) =1.5096V
Vout = 1.2V * (Ra+Rb)/Rb
#TUAL5 = Low
Vout = 1.2V * (10k+430)/10k =1.2516V
Vout = 1.2V * (Ra+Rb)/Rb
VTT POWER
Title
DC-DC COREPOWER
Size
Custom
Document Number
PCM-9577 REV.A1 01-2
Rev
A1
Date:
Wednesday, October 16, 2002
Sheet
25
of
26



Vout = 1.25V * (165+100)/100 =3.3125V
Vout = 1.25V * (Ra+Rb)/Rb

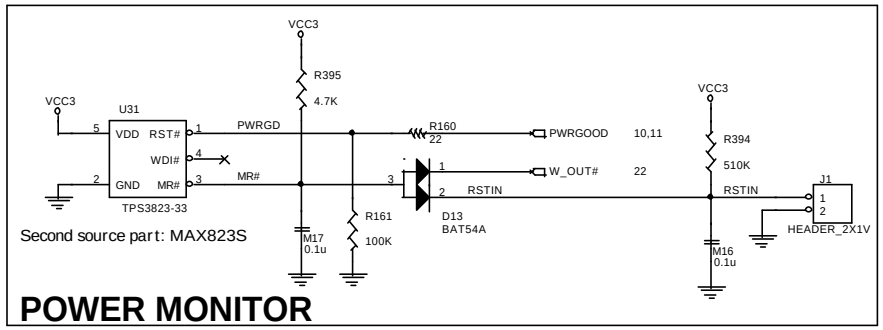
VCC TO 3.3V CONVERTER



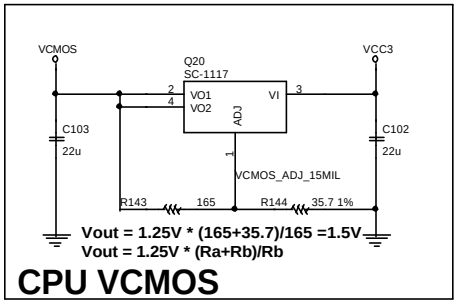
Vout = 1.25V * (165+100)/100 =3.3125V
Vout = 1.25V * (Ra+Rb)/Rb

Vout = 1.25V * (150+150)/150 =2.5V
Vout = 1.25V * (Ra+Rb)/Rb

STAND-BY VOLTAGE

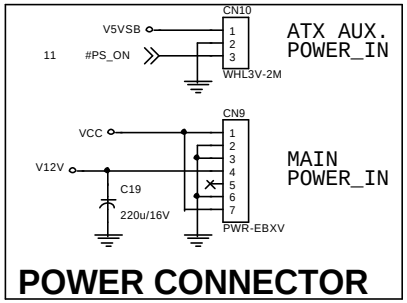


POWER MONITOR

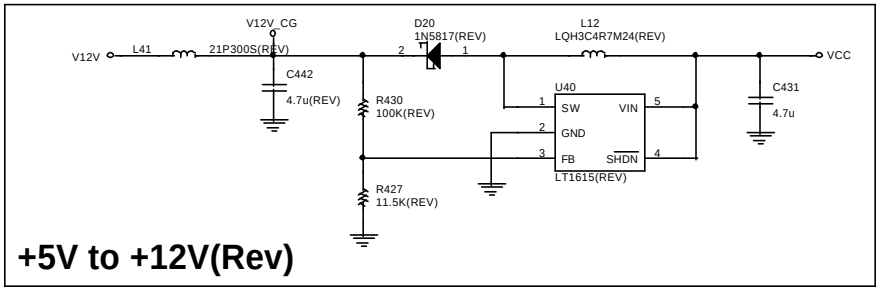


Vout = 1.25V * (165+35.7)/165 =1.5V
Vout = 1.25V * (Ra+Rb)/Rb

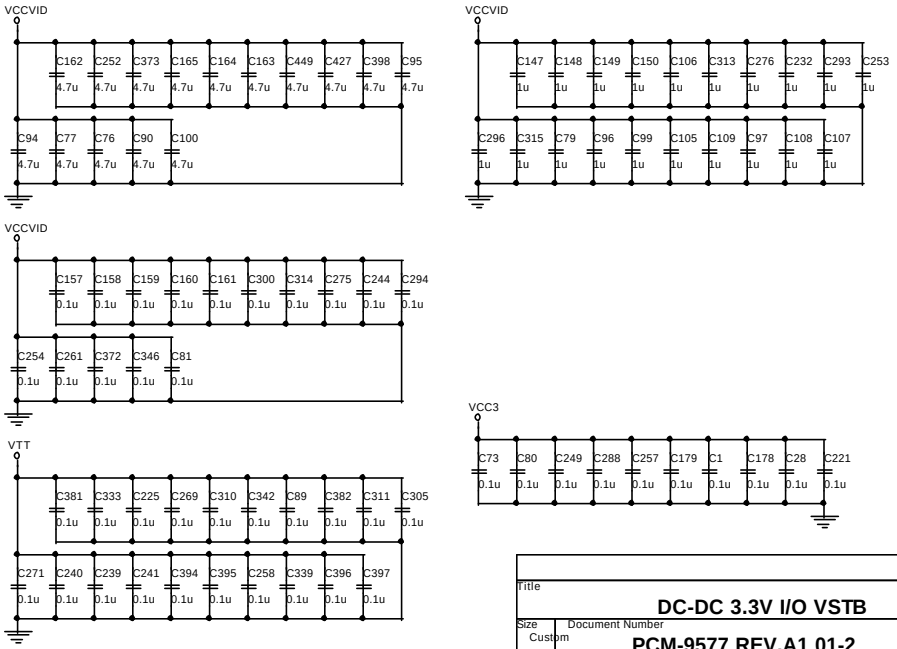
CPU VCMOS



POWER CONNECTOR



+5V to +12V(Rev)



Title	DC-DC 3.3V I/O VSTB	
Size: Custom	Document Number: PCM-9577 REV.A1 01-2	Rev: A1
Date: Wednesday, October 16, 2002	Sheet 26 of 26	

ENCLOSURE No 5

User Manual & Instructions

(Total 3 Pages including this Cover Page)

1. Safety instructions

Important Safety Information

SAFETY INSTRUCTIONS

1. Please read these safety instructions carefully.
2. Please keep this User‘ s Manual for later reference.
3. Please disconnect this equipment from AC outlet before cleaning. Don‘ t use liquid or sprayed detergent for cleaning. Use moisture sheet or clothe for cleaning.
4. For pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.
5. Please keep this equipment from humidity.
6. Lay this equipment on a reliable surface when install. A drop or fall could cause injury.
7. Do not leave this equipment in an environment unconditioned, storage temperature above 50°C, it may damage the equipment.
8. The openings on the enclosure are for air convection hence protect the equipment from overheating. DO NOT COVER THE OPENINGS.
9. Make sure the voltage of the power source when connect the equipment to the power outlet.
10. Place the power cord such a way that people can not step on it. Do not place anything over the power cord. The power cord must be rated for the product and for the voltage and current marked on the product’ s electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not use for long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.
13. Never pour any liquid into ventilation openings, this could cause fire or electrical shock.
14. Never open the equipment. For safety reason, qualified service personnel should only open the equipment.
15. If one of the following situations arises, get the equipment checked by service personnel:
    a. The Power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.

d. The equipment has not work well or you can not get it work according to user‘ s manual.
e. The equipment has dropped and damaged.
f. If the equipment has obvious sign of breakage

16. Never open the equipment. For safety reason, qualified service personnel should only open the equipment.

17. **CAUTION:** THE COMPUTER IS PROVIDED WITH A BATTERY-POWERED REAL-TIME CLOCK CIRCUIT. THERE IS A DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH SAME OR EQUIVLENT TYPE RECOMMENDED BY THE MANUFACTURE. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER’ S INSTRUCTIONS.

ENCLOSURE No. 6

Licenses and Information for Critical Components

(Total 11 Pages including this Cover Page)

1. Certificate and Specification for power supply.
2. Certificate and Specification for DC fan
3. Certificate and Specification for lithium battery

Zertifikat *Certificate*

TÜV

Zertifikat Nr. *Certificate No.*	Blatt *Page*
R 50017920	0001

Ihr Zeichen *Client Reference*	Unser Zeichen *Our Reference*	Ausstellungsdatum	*Date of Issue (day/mo/yr)*
91-0583/91-0608/PSE	ZTW1-RNK- 10004821 001	30.09.2002	

Genehmigungsinhaber *License Holder*
FSP Group Inc.
No.22, Jiangou E. Road
Taoyuan 330
Taiwan, R.O.C.

Fertigungsstätte *Manufacturing Plant*
Shenzhen Huili Elec. Co., Ltd.
Blk. C, Bldg. 7, County 73, Baoan
Shenzhen, Guangdong
P.R. China

Prüfzeichen *Test Mark*

TÜV Rheinland Product Safety | BAUART GEPRÜFT / TYPE APPROVED

Geprüft nach *Tested acc. to*
EN 60950:2000

Zertifiziertes Produkt (Geräteidentifikation) *Certified Product (Product Identification)*

Lizenzentgelte - Einheit *License Fee - Unit*

Einbau-Schaltnetzteil (Switching Power Supply)

Bezeichnung (Type Designation)	: FSPxxx-yPLz	10
xxx steht für (stands for)	: 240, 220, 200, 180, 160 oder(or) 150	1
y steht für (stands for)	: 50 oder (or) 60	1
z steht für (stands for)	: A, A1, A(SI), A(ST), F oder (or) F1	1
Nennspannung (Rated Voltage)	: siehe Anlage (see appendix)	
Nennstrom (Rated Current)	: siehe Anlage (see appendix)	
Schutzklasse (Protection Class)	: I	
max. Umgebungstemperatur (max. Ambient Temperature)	: siehe Anlage (see appendix)	
Verschmutzungsgrad (Pollution Degree)	: 2	

Fortsetzung Blatt (continued on page) 02

TÜV Rheinland Product Safety GmbH — TÜV Rheinland — Zertifizierungsstelle

13

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde. Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.
This certificate is based on our Testing and Certification Regulation. The product fulfills above-mentioned-requirements, the production is subject to surveillance.

Zertifizierungsstelle

TÜV Rheinland Product Safety GmbH, Am Grauen Stein, D-51105 Köln
Tel.:(+49/221)8 06 - 13 71 Fax:(+49/221)8 06 - 39 35 e-mail: Althoff@dc.tuv.com

Dipl.-Ing. A. Klinker

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
NO 17068

IEC SYSTEM FOR CONFORMITY TESTING TO STANDARDS FOR SAFETY OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE AUX NORMES DE SECURITE DE L'EQUIPMENT ELECTRIQUE (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICATE D'ESSAI OC

Product
Produit

Power supply for building-in

Name and address of the applicant
Nom et adresse du demandeur

FSP Group Inc.
No. 22, Jianguo E. Rd.
Taoyuan Hsien
TAIWAN R.O.C.

Name and address of the manufacturer
Nom et adresse du fabricant

FSP Group Inc.
No. 22, Jianguo E. Rd.
Taoyuan Hsien
TAIWAN R.O.C.

Name and address of the factory
Nom et adresse de l'usine

Refer page 3 of 3

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

4A 100-240V 50-50Hz or 5A 100-240V 60-50Hz, Cl. I
DC-outputs: Refer page 2 of 3

Trade mark (if any)
Marque de fabrique (si elle existe)

FSP Group Inc.

Model/type Ref.
Ref. de type

FSP-*PL**

Additional information (if necessary)
Information complémentaire (si necéssaire)

The first three symbols "*" in type designation can be 240, 220, 200, 180, 160 or 150, denoting total output power. The next symbol "*" can be 50 or 60. The last symbol "*" can be A, A1, A(SI), A(ST), F or F1 for different chassis type**

A sample of the product was tested and found to be in conformity with
Un échantilléon de ce produit a été essayé et a été considéré conforme à la

IEC 60950, 3rd Edition, 1999

as shown in the Test Report Ref. No. which forms part of this certificate
comme indiqué dans le Rapport d'essais numéro de référance qui constitute un partie de ce certificat

200237163

This CB Test Certificate is issued by the National Certification Body
Ce Certificate d'essai OC est établi par l'Organisme National de Certification

Nemko
P.O.BOX 73 BLINDERN
N-0314 OSLO, NORWAY

Date: 23 September 2002

Signature: [signature]
Position: Project Engineer

Issue 1993-06 / N - version

CB TEST CERTIFICATE

Ref. No. NO 17068

DC-output ratings for the different models covered by FSP...-.PL.:

1) FSP200-50PLA: 16A +3.3V, 12A +5V, 12A +12V, 2A +5Vsb, 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 180W. Total 200W max.

2) FSP180-50PLA: 16.8A +3.3V, 12A +5V, 10A +12V, 2A +5Vsb, 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 160W. Total 180W max.

3) FSP150-50PLA: 8A +3.3V, 12A +5V, 10A +12V, 2A +5Vsb, 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 136W. Total 150W max.

4) FSP200-50PLA1: 16A +3.3V, 12A +5V, 12A +12V, 2A +5Vsb, 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 180W. Total 200W max.

5) FSP180-50PLA: 16.8A +3.3V, 12A +5V, 10A +12V, 2A +5Vsb, 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 160W. Total 180W max.

6) FSP150-50PLA1: 8A +3.3V, 12A +5V, 10A +12V, 2A +5Vsb, 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 136W. Total 150W max.

7) FSP220-60PLA(SI): 17A +3.3V, 12A +5V, 12A +12V, 2A +5Vsb, 0.2A -5V (optional), 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 200W. Total 220W max.

8) FSP180-60PLA(SI): 17A +3.3V, 12A +5V, 12A +12V, 2A +5Vsb, 0.2A -5V (optional), 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 160W. Total 180W max.

9) FSP240-60PLA(ST): 17A +3.3V, 16A +5V, 12A +12V, 2A +5Vsb, 0.2A -5V (optional), 0.8A -12V
+3.3V & +5V = Max. 85W. +3.3V & +5V & +12V = Max. 219W. Total 240W max.

10) FSP220-60PLA(ST): 17A +3.3V, 12A +5V, 12A +12V, 2A +5Vsb, 0.2A -5V (optional), 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 200W. Total 220W max.

11) FSP180-60PLA(ST): 17A +3.3V, 12A +5V, 12A +12V, 2A +5Vsb, 0.2A -5V (optional), 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 160W. Total 180W max.

12) FSP200-50PLF: 16A +3.3V, 12A +5V, 12A +12V, 2A +5Vsb, 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 180W. Total 200W max.

13) FSP180-50PLF: 15A +3.3V, 10A +5V, 12A +12V, 2A +5Vsb
+3.3V & +5V = Max. 70W. +3.3V & +5V & +12V = Max. 170W. Total 180W max.

14) FSP160-60PLF1: 16.8A +3.3V, 12A +5V, 8A +12V, 2A +5Vsb, 0.2A -5V (optional), 0.8A -12V
+3.3V & +5V = Max. 61W. +3.3V & +5V & +12V = Max. 145W. Total 160W max.

Oslo, 23 September 2002

Issued by

Nemko

Lars Hjerpseth
Principal Engineer

Nemko AS
P.O. Box 73, Blindern
N-0314 Oslo, Norway

Office address
Gaustadalléen 30
Oslo

Telephone
+47 22 96 03 30
Enterprise number:

Fax
+47 22 96 05 50
974404532

Online Certifications Directory

GPWV2.E89061
Fans, Electric - Component

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Fans, Electric - Component

Guide Information

BI-SONIC TECHNOLOGY CORP E89061
2ND FL
137 LANE 235 PAO-CHIAO RD
HSIN-TIEN
TAIPEI HSIEN, TAIWAN

Models 3E-115B, -115B-20, -115B-25, -115B-28, -115S, -115S-20, -115S-25, -115S-28, -230B, -230B-20, -230B-25, -230B-28, -230S, -230S-20, -230S-25, -230S-28, 3E-DVB, -DVB-20, -DVB-25, -DVB-28, -DVS, -DVS-20, -DVS-25, -DVS-28, 4E-115B, -115B-17, -115B-21, -115B-25, -115S, -115S-17, -115S-21, -115S-25, -230B, -230B-17, -230B-21, -230B-25, -230S, -230S-17, -230S-21, -230S-25, 4E-DVB, -DVB-17, -DVB-21, -DVB-25, -DVS, -DVS-17, -DVS-21, -DVS-25.

Models 273-239, BP402005H, BP402012H, BP402012L, BP402012M, BP602512H, BP602512L, BP602512M, BP602524H, BP602524L, BP602524M, BP802512H, BP802512L, BP802512M, BP802524H, BP802524L, BP802524M, BP922512H, BP922512L, BP922512M, BP922524H, BP922524L, BP922524M, BP1202512H, BP1202512L, BP1202512M, BP1202524L, BP1202524M, SP402005H, SP402012L, SP402012M, SP602512H, SP602512L, SP602512M, SP602524H, SP602524L, SP602524M, SP802512H, SP802512L, SP802512M, SP802524H, SP802524L, SP802524M, SP922512H, SP922512L, SP922512M, SP922524H, SP922524L, SP922524M, SP1202512H, SP1202512L, SP1202512M, SP1202524L, SP1202524M.

Model JED03150R.

Models 273-246, 273-248, BP300705H, BP300712H, BP350705M, BP400705H, BP400705L, BP400705M, BP400705V, BP400712H, BP400712L, BP400712M, BP400712V, BP400905M, BP400912M, BP401012M, BP401205H, BP401212H, BP401212M, BP401205M, BP402005M, BP402024H, BP402024L, BP402024M, BP402024V, BP451012M, BP501012H, BP501012L, BP501012M, BP501012V, BP501212H, BP501212L, BP501212M, BP601012M, BP601512H, BP501212V, BP601512M, BP601524H, BP602524H, BP602524L, BP602524M, BP602524V, BP802524H, BP802524L, BP802524M, BP802524V, BP922524H, BP922524L, BP922524M, BP922524V, BP1202524H, BP1202524L, BP1202524M, BP1202524V, BP1202548H, BP1202548L, BP1202548M, BS300705H, BS300712H, BS350705M, BS400705H, BS400705L, BS400705M, BS400705V, BS400712H, BS400712L, BS400712M, BS400712V, BS400905M, BS400912M, BS401012H, BS401012L, BS401012M, BS401012V, BS401205H, BS401205M, BS401212H, BS402024H, BS402024L, BS402024M, BS402024V, BS451012M, BS501012H,

BS501012L, BS501012M, BS501012V, BS601012H, BS601012L, BS601012M, BS601012V,BS601512H, BS601512M, BS601524H, BS602524H, BS602524L, BS602524M, BS602524V, BS802524H, BS802524L, BS802524M, BS802524V, BS922524H, BS922524L, BS922524M, BS922524V, BS1202524H, BS1202524L, BS1202524M, BS1202524V, CPU-4012HS-4D, CPU-5012MS-5ECG, SP300705H, SP300712H, SP350705M, SP400705H, SP400705L, SP400705M, SP400705V, SP400712H, SP400712L, SP400712M, SP400712V, SP400905M, SP400912M, SP401012M, SP401205H, SP401205M, SP401212H, SP401212M, SP402005M, SP402024H, SP402024L, SP402024M, SP402024V, SP451012M, SP501012H, SP501012L, SP501012M, SP501012V, SP501212M, SP601012M, SP601512H, SP601512M, SP601524H, SP602524H, SP602524L, SP602524M, SP602524V, SP802524H, SP802524L, SP802524M, SP802524V, SP922524H, SP922524L, SP922524M, SP922524V, SP1202524H, SP1202524L, SP1202524M, SP1202524V, SP1202548H, SP1202548L, SP1202548M.

Models 5E-115B, 5E-230B; Models 4C-115, 4C-DV, 8P-115, 9P-115, 12P-115 may be followed by any letter, number or blank.

Models 273-24G, 273-248, 5P-115B, 5P-230B, CPU-4012HS-4D, CPU-5012MS-5ECG.

Models 273-238, BP1203812H, BP1203812L, BP1203812M, BP1203824L, BP1203824M, BP1203848LBP1203848M, SP1203812H, SP1203812L, SP1203812M, SP1203824L, SP1203824M, SP1203848LSP1203848M may be followed by CW or blank.

Models BP400805M, BP400812M, BP501512H, BP501512M, BS501512H, BS501512M, SP400805M, SP400812M, SP501512H, SP501512M.

Models 273-199, BP803012H, SP803012H.

Model 4E-DVB-1.

Models 5E-200B, 5E-200B(S).

Model 273-240A, BP401005H, BP401005M, BP401012H, BP401012M, BS401005H, BS401005M, BS401012H, BS401012M, SP401005H, SP401005M, SP401012H, SP401012M.

Model 5E-DVB-1.

AC fan, Models 4E-DVB, 4E-DVB-1(S) .

DC fans Models BP601012H, BP601012HH, BP601012M, BS601012H, BS601012HH, BS601012M, SP601012H, SP601012HH, SP601012M.

Models BP701512H-02, BP701512L-02, BP701512M-02, BP701524H-02, BP701524L-02, BP701524M-02, BS701512H-02, BS701512L-02, BS701512M-02, BS701524H-02, BS701524L-02, BS701524M-02.

Models BP602512H-03, BP602512HH-03, BP602512HL-03, BP602512HM-03, BP602512L-03, BP602512M-03, BP602524H-03, BP602524HH-03, BP602524HL-03, BP602524HM-03, BP602524L-03, BP602524M-03, BS602512H-03, BS602512HH-03, BS602512HL-03, BS602512HM-03, BS602512L-03, BS602512M-03, BS602524H-03, BS602524HH-03, BS602524HL-03, BS602524HM-03, BS602524L-03, BS602524M-03, SP602512H-03, SP602512HH-03, SP602512HL-03, SP602512HM-03, SP602512L-03, SP602512M-03, SP602524H-03, SP602524HH-03, SP602524HL-03, SP602524HM-03, SP602524L-03, SP602524M-03.

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BBCV2.MH12828
Lithium Batteries - Component

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Lithium Batteries - Component

Guide Information

TOSHIBA BATTERY CO LTD
4-10 MINAMI-SHINAGAWA 3-CHOME
SHINAGAWA-KU
TOKYO 140-0004, JAPAN

MH12828

Model No.	Max Abnormal Charging Current mA (a)	User Replaceable
Primary Lithium/manganese dioxide coin cells.		
CR1216	2.5	Yes (b)
CR1616	2.5	Yes (b)
CR2032	10.0	Yes (b)
CR2016	8.0	Yes (b)
CR2025	8.0	Yes (b)
CR2032	10.0	Yes (b)
CR2430	5.0	Yes (b)
CR2450	5.0	Yes (b)
CR1616	2.5	Yes (b)
CR1220	10.0	Yes (b)
Lithium/manganese dioxide cells or batteries.		
CR2	20.0	Yes (b)
Lithium/thionyl chloride cells(d) and battery packs.		
ER3	15	No
ER3S	20	No
ER4	15	No

Online Certifications Directory

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Lithium Batteries - Component

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Lithium Batteries - Component

Guide Information

MATSUSHITA ELECTRIC INDUSTRIAL CO LTD
MATSUSHITA ELECTRIC CORP OF AMERICA
1 PANASONIC WAY
SECAUCUS, NJ 07094 USA

MH12210

Model No.	Max Abnormal Charging Current mA (a)	User Replaceable
Lithium/polycarbon monofluoride cylindrical cells (d).		
BR-1/2A	5.0	Yes(b)
BR-2/3AA	5.0	Yes(b)
BR-2/3A	10.0	Yes(b)
BR-A	15.0	No
BR-AG	15.0	No
BR-2/3AG	10.0	Yes(b)
BR-AH	15.0	No
BR-2/3AH	10.0	Yes(b)
BR-C	20.0	No
Lithium/polycarbon monoflouride coin cells and pin type cells (d,i).		
BR425, BR-425	0.1	Yes(b)
BR435, BR-435	0.2	Yes(b)
BR1216, BR-1216	3.0	Yes(b)
BR1220, BR-1220	3.0	Yes(b)
BR1225, BR-1225	3.0	Yes(b)
BR1225A, BR-1225A	3.0	Yes(b)

BR1616, BR-1616	4.0	Yes(b)
BR1632, BR-1632	4.0	Yes(b)
BR1632A, BR-1632A	4.0	Yes(b)
BR2016, BR-2016	4.0	Yes(b)
BR2020, BR-2020	5.0	Yes(b)
BR2032, BR-2032	5.0	No
BR2320, BR-2320	5.0	Yes(b)
BR2325, BR-2325	5.0	Yes(b)
BR2330, BR-2330	5.0	No
BR2330A, BR-2330A	5.0	No
BR2450A, BR-2450A	5.0	No
BR2477A, BR-2477A	5.0	No
BR2777A, BR-2777A	5.0	No
BR3032, BR-3032	5.0	Yes(b)
Lithium/manganese dioxide coin cells (d).		
CR1025, CR-1025	2.0	Yes(b)
CR1212, CR-1212	2.0	Yes(b)
CR1216, CR-1216	3.0	Yes(b)
CR1220, CR-1220	3.0	Yes(b)
CR1612, CR-1612	3.0	Yes(b)
CR1616, CR-1616	4.0	Yes(b)
CR1620, CR-1620	4.0	Yes(b)
CR1632, CR-1632,	4.0	Yes(b)
CR2004, CR-2004	4.0	Yes (b)
CR2005, CR-2005	4.0	Yes (b)
CR2012, CR-2012	4.0	Yes(b)
CR2016, CR-2016	4.0	Yes(b)
CR2025, CR-2025	5.0	Yes(b)
CR2032, CR-2032	5.0	Yes(b)
CR2320, CR-2320	5.0	No
CR2330, CR-2330	10.0	Yes(b)
CR2354, CR-2354	10.0	Yes(b)

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Lithium Batteries - Component

Guide Information

RAYOVAC CORP
601 RAYOVAC DR
MADISON, WI 53711 USA

MH12542

Model No.	Max Abnormal Charging Current mA (a)	User Replaceable
Lithium/polycarbon monofluoride cells.		
BR1225	3.0	Yes(b)
BR1225E	6.0	No
BR1225HT	3.0	No
BR1225R	3.0	No
BR1632	4.0	No
BR1632R	4.0	No
BR2016	4.0	No
BR2032	4.0	No
BR2032R	4.0	No
BR2032U	4.0	Yes(b)
BR2320	5.0	No
BR2325	5.0	No
BR2325R	5.0	No
BR2335	5.0	No
BR2335R	5.0	No
FB1225(c)	3.0	No
FB2325(c)	5.0	No

Lithium/polycarbon monofluoride batteries.		
FB2335(c)	10.0	No
Lithium/manganese dioxide cells.		
CR2016	4.0	Yes(b)
CR2025	5.0	Yes(b)
Lithium/manganese dioxide cylindrical cells.		
CR-2/3A	20	Yes(b)
Lithium/manganese dioxide coin cells(d).		
CR1025	2.0	Yes(b)
CR1216	3.0	Yes(b)
CR1220	3.0	Yes(b)
CR1616	4.0	Yes(b)
CR1620	4.0	Yes(b)
CR2012	4.0	Yes(b)
CR2016	4.0	Yes(b)
CR2025	5.0	Yes(b)
CR2032	5.0	Yes(b)
CR2320	5.0	No
Lithium/manganese dioxide cylindrical cells and batteries(e).		
CR2	20.0	Yes(b)
CR-2/3A	25.0	Yes(b)
CR123A	25.0	Yes(b)
2CR5	25.0	Yes(b)

(a)These cells and batteries are not rechargeable. The circuit containing the cells or batteries must contain a protective component which prevents charging. The circuitry must also contain a current limiting component which will protect the cell or battery, in the event the protective component fails, from a charging current in excess of the maximum abnormal charging current listed.

(b)These cells and batteries are acceptable for use in applications where they are intended to be replaced by the user.

(c)These batteries may have an optional suffix to denote cell orientation or number of cells in series.

(d)These cells can be used in series or parallel up to a maximum of four cells of the same model number.

(e)These cells can be used in series with a maximum of two cells of the same model number or in