



Test Report issued under
the responsibility of:



TEST REPORT
IEC 60950-1
Information technology equipment - Safety -
Part 1: General requirements

Report Reference No: E141988-A36-CB-4

Date of issue: 2016-06-29

Total number of pages: 68

CB Testing Laboratory: UL Japan, Inc.

Address: 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan

Applicant's name: KAGA COMPONENTS CO LTD

Address: 20 KANDAMATSUNAGACHO

Address: CHIYODA-KU

TOKYO 101-0023 JAPAN

Test specification:

Standard: IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013

Test procedure: CB Scheme

Non-standard test method: N/A

Test Report Form No.: IEC60950_1F

Test Report Form originator: SGS Fimko Ltd

Master TRF: Dated 2014-02

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Test item description	Component - Switching Power Supply
Trade Mark	TRACO POWER
Manufacturer	TRACO ELECTRONIC AG SIHLBRUGGSTRASSE 111 CH-6340 BAAR SWITZERLAND
Model/Type reference	TMS25105, TMS25112, TMS25115, TMS25124, TMS25212, TMS25215, TMS25105F, TMS25112F, TMS25115F, TMS25124F, TMS25212F, TMS25215F, TMS25105C, TMS25112C, TMS25115C, TMS25124C, TMS25212C, TMS25215C
Ratings	TMS25105, TMS25105F and TMS25105C Input: 115-230 Vac, 50/60 Hz, 0.36-0.26 A Output: 5 Vdc, 4.2 A (115 Vac Input) / 4.6 A (230 Vac Input) TMS25112, TMS25112F and TMS25112C Input: 115-230 Vac, 50/60 Hz, 0.36-0.26 A Output: 12 Vdc, 1.8 A (115 Vac Input) / 2.0 A (230 Vac Input) TMS25115, TMS25115F and TMS25115C Input: 115-230 Vac, 50/60 Hz, 0.36-0.26 A Output: 15 Vdc, 1.5 A (115 Vac Input) / 1.6 A (230 Vac Input) TMS25124, TMS25124F and TMS25124C Input: 115-230 Vac, 50/60 Hz, 0.36-0.26 A Output: 24 Vdc, 0.9 A (115 Vac Input) / 1.0 A (230 Vac Input) TMS25212, TMS25212F and TMS25212C Input: 115-230 Vac, 50/60 Hz, 0.37-0.26 A Output: ±12 Vdc, 0.9 A (115 Vac Input) / 1.0 A (230 Vac Input) TMS25215, TMS25215F and TMS25215C Input: 115-230 Vac, 50/60 Hz, 0.37-0.26 A Output: ±15 Vdc, 0.75 A (115 Vac Input) / 0.8 A (230 Vac Input)

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory	Testing location / address: UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan
<input type="checkbox"/> Associated CB Test Laboratory	Testing location / address
	Tested by (name + signature): Toshiyuki Suzuki, Project Handler <i>Toshiyuki Suzuki</i>
	Approved by (name + signature).....: Masatomo Takiyama, Reviewer <i>M. Takiyama</i>
<input type="checkbox"/> Testing Procedure: TMP/CTF Stage 1	Testing location / address: Tested by (name + signature): Approved by (name + signature).....:
<input type="checkbox"/> Testing Procedure: WMT/CTF Stage 2	Testing location / address: Tested by (name + signature): Witnessed by (name + signature) ...: Approved by (name + signature).....:
<input type="checkbox"/> Testing Procedure: SMT/CTF Stage 3 or 4	Testing location / address: Tested by (name + signature): Approved by (name + signature).....: Supervised by (name + signature) ..:
<input type="checkbox"/> Testing Procedure: RMT	Testing location / address: Tested by (name + signature): Approved by (name + signature).....: Supervised by (name + signature) ..:

List of Attachments	
National Differences (27 pages)	
Enclosures (76 pages)	
Summary Of Testing	
Unless otherwise indicated, all tests were conducted at UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan.	
Tests performed (name of test and test clause)	Testing location / Comments
Input: Single-Phase (1.6.2)	

Durability of Marking (1.7.11)
Energy Hazard Measurements (2.1.1.5, 2.1.2, 1.2.8.10)
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)
Humidity (2.9.1, 2.9.2, 5.2.2)
Determination of Working Voltage; Working Voltage Measurement (2.10.2)
Thin Sheet Material (2.10.5.9, 2.10.5.10, 2.10.5.6)
Heating (4.5.1, 1.4.12, 1.4.13)
Ball Pressure (4.5.5, 4.5)
Touch Current (Single-Phase; TN/TT System) (5.1, Annex D)
Electric Strength (5.2.2)
Component Failure (5.3.1, 5.3.4, 5.3.7)
Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)
Power Supply Output Short-Circuit/Overload (5.3.7)

Summary of Compliance with National Differences:

Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: CA, DE, DK, EU, FI, GB, KR, SE, SI, US

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2: 2013

Copy of Marking Plate - Refer to Enclosure titled Marking Plate for copy.

Test item particulars :

Equipment mobility	for building-in (Component-type)
Connection to the mains	for building-in (Component-type)
Operating condition	continuous
Access location	operator accessible
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	+10%, -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Not classified. To be determined in the end product.
Considered current rating of protective device as part of the building installation (A)	20
Pollution degree (PD)	PD 2
IP protection class	IP X0
Altitude of operation (m)	Up to 2000
Altitude of test laboratory (m)	Approx. 10 to 20
Mass of equipment (kg)	< 0.5 kg

Possible test case verdicts:

- test case does not apply to the test object : N / A
- test object does meet the requirement : P(Pass)
- test object does not meet the requirement : F(Fail)

Testing:

Date(s) of receipt of test item	2006-12-13
Date(s) of Performance of tests	2007-03-14

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.

Manufacturer's Declaration per Sub Clause 4.2.5 of IEC 60950-1:

Yes

The application for obtaining a CB Test Certificate includes more than one factory and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided

When differences exist, they shall be identified in the General Product Information section.

Name and address of Factory(ies): KAGA COMPONENTS CO LTD
 NIIGATA PLANT
 1194-3 MOKKOSHIN-MACHI
 HIGASHI-KU NIIGATA-SHI
 NIIGATA-KEN 950-0807
 JAPAN

DONGGUAN POWERTEK ELECTRONICS CO LTD
CHILING INDUSTRIAL ESTATE HOUJIE ZHEN DONGGUAN
CITY GUANGDONG CHINA

GENERAL PRODUCT INFORMATION:

Report Summary

All applicable tests according to the referenced standard(s) have been carried out.

Product Description

These models covered in this report were component power supply intended for use in Information Technology Equipment.

Model Differences

There are three different input/output terminal types. Those with "F" suffix have flat tab terminals extending above enclosure. Those with "C" suffix have terminal blocks beside enclosure. Those without "F" or "C" suffix have terminal pins protruding below enclosure.

Models TMS251xx, TMS251xxF and TMS251xxC are single(+) output DC power supply unit.

Models TMS252xx, TMS252xxF and TMS252xxC are dual(\pm) output DC power supply unit.

The "xx" in model designation indicate output voltage of power supply unit.

Each model is identical, except for output ratings, minor differences in the secondary circuit components and the number of turns of secondary winding in the Transformer (T1).

Transformer (T1) type mounted on each model is as follows.

- TMS25105, TMS25105F and TMS25105C: B25-05
- TMS25112, TMS25112F and TMS25112C: B25-12
- TMS25115, TMS25115F and TMS25115C: B25-15
- TMS25124, TMS25124F and TMS25124C: B25-122
- TMS25212, TMS25212F and TMS25212C: B25-122
- TMS25215, TMS25215F and TMS25215C: B25-153

Additional Information

Maximum normal load: Rated output load.

(CB Only)

This report is a reissue of CBTR Ref. No. E141988-A36-CB-3, CB Test Certificate Ref. Nos. JP-10709-UL and JP-10710-UL due to the following modifications:

1. Upgrade of standard from IEC 60950-1, 2nd edition + Amendment 1 to IEC60950-1, 2nd edition + Amendment 1 + Amendment 2.
2. Deletion of Models KB25-05S, KB25-12S, KB25-15S, KB25-24S, KB25-122D, KB25-153D, KB25F-05S, KB25F-12S, KB25F-15S, KB25F-24S, KB25F-122D, KB25F-153D, KB25C-05S, KB25C-12S, KB25C-15S, KB25C-24S, KB25C-122D and KB25C-153D.
3. Deletion of manufacture, "KAGA COMPONENTS CO LTD".
4. Update of address of Applicant and Manufacturer.
5. Change of Manufacturer of Thermistor (TH1), from "Ishizuka Electronics Corp" to "SEMITEC Corp".
6. Change of Manufacturer of X-Capacitor (C1, C2) from "Panasonic Electronic Devices Japan Co., Ltd." to "Panasonic Corp. Automotive & Ind. System Company Device Solutions Business Division".
7. Change of Manufacturer of Control IC (IC1), from "Semiconductor Co., Panasonic Corp." to "Panasonic

Semiconductor Solutions Co., Ltd."

8. The word "Various" was changed to "Interchangeable".

Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, it has been determined that the product continues to comply with the standard.

The following national differences to IEC 60950-1 were also evaluated and the results were attached to this Test Report as Enclosure:

China - See Enclosure ID 7-09, for China National Difference (GB 4943.1-2011)

Japan - See Enclosure ID 7-10, for Japan Nation Differences (J60950-1(H22))

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40 °C
- The product is intended for use on the following power systems: TN
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).

Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The end-product Electric Strength Test is to be based upon a maximum working voltage of:
(TMS25105 series) Primary-Earthed Dead Metal: 278 Vrms, 532 Vpk Primary-SELV: 278 Vrms, 532 Vpk (TMS25112 series) Primary-Earthed Dead Metal: 286 Vrms, 532 Vpk Primary-SELV: 283 Vrms, 532 Vpk (TMS25115 series) Primary-Earthed Dead Metal: 281 Vrms, 524 Vpk Primary-SELV: 281 Vrms, 524 Vpk (TMS25124, TMS25212 series) Primary-Earthed Dead Metal: 287 Vrms, 532 Vpk Primary-SELV: 301 Vrms, 544 Vpk (TMS25215 series) Primary-Earthed Dead Metal: 284 Vrms, 532 Vpk Primary-SELV: 301 Vrms, 548 Vpk
- A suitable disconnect device shall be provided in the end product. --
- A suitable protective device (overcurrent protection) shall be provided in the end product. --
- The evaluation of IT power systems shall be conducted in the end product. --
- The following secondary output circuits are SELV: All model's output circuits --
- The maximum investigated branch circuit rating is: 20 A --
- The investigated Pollution Degree is: 2 --
- Proper bonding to the end-product main protective earthing termination is: Required --
- The following secondary output circuits are at non-hazardous energy levels: All model's output circuits --
- The following end-product enclosures are required: Fire , Electrical --
- An investigation of the protective bonding terminals has: Not been conducted --
- The power supply terminals and/or connectors are: Suitable for factory wiring only --
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B), L1 (130°C) --

Abbreviations used in the report:

- normal condition	N.C.	- single fault condition	S.F.C
- operational insulation	OP	- basic insulation	BI
- basic insulation between parts of opposite polarity:	BOP	- supplementary insulation	SI
- double insulation	DI	- reinforced insulation	RI

Indicate used abbreviations (if any)