

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Complementary CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Product:	DC to DC Converter
Model:	xxSB-50Txyy Series , xxSB-30Txyy Series and xxSB-40Uxyy. Refer to Additional Information for model nomenclature. , wherex, y may be any alphanumeric suffixes denoting non-safety related differences.
Rating:	<p>Ratings are provided for reference only: 0RSB-50T12yy, SRSB-50T12yy, 07SB-50T12yy, S7SB-50T12yy I/P: 36 Vdc - 75 Vdc; 1.10 A-0.53 A O/P: 12 Vdc, 5 A</p> <p>Models 0RSB-50T05yy, SRSB-50T05yy, 07SB-50T05yy, S7SB-50T05yy I/P: 36 Vdc - 75 Vdc; 1.05 A-0.52 A O/P: 5 Vdc, 12 A</p> <p>Models 0RSB-50T03yy, SRSB-50T03yy, 07SB-50T03yy, S7SB-50T03yy I/P: 36 Vdc - 75 Vdc; 1.24 A-0.6 A O/P: 3.3 Vdc, 15 A</p> <p>Models 0RSB-50T02yy, SRSB-50T02yy, 07SB-50T02yy, S7SB-50T02yy, I/P: 36 Vdc - 75 Vdc; 1.50 A-0.65 A O/P: 2.5 Vdc, 18 A</p> <p>Models 0RSB-50TV8yy, SRSB-50TV8yy, 07SB-50TV8yy, S7SB-50TV8yy, I/P: 36 Vdc - 75 Vdc; 1.2 A-0.58 A O/P: 1.8 Vdc, 20 A</p> <p>Models 0RSB-50TV5yy, SRSB-50TV5yy, 07SB-50TV5yy, S7SB-50TV5yy, I/P: 36 Vdc - 75 Vdc; 1.1 A-0.53 A O/P: 1.5 Vdc, 20 A</p> <p>Models 0RSB-50TV2yy, SRSB-50TV2yy, 07SB-50TV2yy, S7SB-50TV2yy, I/P: 36 Vdc - 75 Vdc; 1.05 A-0.50 A O/P: 1.2 Vdc, 14 A</p>

Models 0RSB-30T12yy, SRSB-30T12yy, 07SB-30T12yy, S7SB-30T12yy,
I/P: 36 Vdc - 75 Vdc; 0.92 A-0.45 A
O/P: 12 Vdc, 3 A

Models 0RSB-30T05yy, SRSB-30T05yy, 07SB-30T05yy, S7SB-30T05yy,
I/P: 36 Vdc - 75 Vdc; 1.05 A-0.9748 A
O/P: 5 Vdc, 7 A

Models 0RSB-30T03yy, SRSB-30T03yy, 07SB-30T03yy, S7SB-30T03yy,
I/P: 36 Vdc - 75 Vdc; 1.05 A-0.50 A
O/P: 3.3 Vdc, 10 A

Models 0RSB-30T02yy, SRSB-30T02yy, 07SB-30T02yy, S7SB-30T02yy,
I/P: 36 Vdc - 75 Vdc; 0.86 A-0.41 A
O/P: 2.5 Vdc, 10 A

Models 0RSB-30TV80, SRSB-30TV80, 07SB-30TV80, S7SB-30TV80,
0RSB-30TV8L, SRSB-30TV8L, 07SB-30TV8L, S7SB-30TV8L
I/P: 36 Vdc - 75 Vdc; 0.81 A-0.41 A
O/P: 1.8 Vdc, 13 A

Models 0RSB-30TV5yy, SRSB-30TV5yy, 07SB-30TV5yy, S7SB-30TV5yy
I/P: 36 Vdc - 75 Vdc; 0.7 A-0.34 A
O/P: 1.5 Vdc, 13 A

Models 0RSB-30TV2yy, SRSB-30TV2yy, 07SB-30TV2yy, S7SB-30TV2yy,
I/P: 36 Vdc - 75 Vdc; 0.65 A-0.32 A
O/P: 1.2 Vdc, 15 A

Models 07SB-40U03yy, 07SB-40U03yy, 0RSB-40U03yy, 0RSB-40U03yy:
I/P: 18Vdc - 75Vdc; 3.0A
O/P: 3.3Vdc, 10 A

Models 0RSB-40U12yy, 0RSB-40U12yy, 0RSB-40U12yy, SRSB-40U12yy, SRSB-40U12yy, SRSB-40U12yy:
I/P: 18Vdc - 75Vdc, 3.5A
O/P: 12Vdc, 3.5A

Applicant Name and Address:

BEL FUSE INC
206 VAN VORST ST
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UNITED STATES

Issue Date: 2006-12-06
2018-08-30

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Report Reference #

E235017-A19-UL

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Mengis Tesfay - Handler

Reviewed by: Scott Shepler

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The units are DC/DC Converters for building-in. These units are provided with input and output pins for mounting on printed wiring boards.

The subject equipment only provides BASIC insulation between the input and output.

Model Differences

A) Models 0RSB-50T120, SRSB-50T120, 07SB-50T120, S7SB-50T120, 0RSB-50T12L, SRSB-50T12L, 07SB-50T12L, S7SB-50T12L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria.

B) Models 0RSB-50T050, SRSB-50T050, 07SB-50T050, S7SB-50T050, 0RSB-50T05L, SRSB-50T05L, 07SB-50T05L, S7SB-50T05L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (A) except for derated output power.

C) Models 0RSB-50T033, SRSB-50T033, 07SB-50T033, S7SB-50T033, 0RSB-50T03L, SRSB-50T03L, 07SB-50T03L, S7SB-50T03L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (A) except for derated output power and minor changes to the secondary (SELV) circuit.

D) Models 0RSB-50T025, SRSB-50T025, 07SB-50T025, S7SB-50T025, 0RSB-50T02L, SRSB-50T02L, 07SB-50T02L, S7SB-50T02L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (A) except for derated output power.

E) Models 0RSB-50TV80, SRSB-50TV80, 07SB-50TV80, S7SB-50TV80, 0RSB-50TV8L, SRSB-50TV8L, 07SB-50TV8L, S7SB-50TV8L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (A) except for derated output power.

F) Models 0RSB-50TV50, SRSB-50TV50, 07SB-50TV50, S7SB-50TV50, 0RSB-50TV5L, SRSB-50TV5L, 07SB-50TV5L, S7SB-50TV5L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (A) except for derated output power.

G) Models 0RSB-50TV20, SRSB-50TV20, 07SB-50TV20, S7SB-50TV20, 0RSB-50TV2L, SRSB-50TV2L, 07SB-50TV2L, S7SB-50TV2L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (A) except for derated output power.

H) Models 0RSB-30T120, SRSB-30T120, 07SB-30T120, S7SB-30T120, 0RSB-30T12L, SRSB-30T12L, 07SB-30T12L, S7SB-30T12L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria.

I) Models 0RSB-30T050, SRSB-30T050, 07SB-30T050, S7SB-30T050, 0RSB-30T05L, SRSB-30T05L, 07SB-30T05L, S7SB-30T05L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (H) except for derated output power.

J) Models 0RSB-30T033, SRSB-30T033, 07SB-30T033, S7SB-30T033, 0RSB-30T03L, SRSB-30T03L, 07SB-30T03L, S7SB-30T03L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (H) except for derated output power.

K) Models 0RSB-30T025, SRSB-30T025, 07SB-30T025, S7SB-30T025, 0RSB-30T02L, SRSB-30T02L, 07SB-30T02L, S7SB-30T02L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (H) except for derated output power and minor changes to the secondary (SELV) circuit.

L) Models 0RSB-30TV80, SRSB-30TV80, 07SB-30TV80, S7SB-30TV80, 0RSB-30TV8L, SRSB-30TV8L,

07SB-30TV8L, S7SB-30TV8L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (H) except for derated output power and minor changes to the secondary (SELV) circuit.

M) Models 0RSB-30TV50, SRSB-30TV50, 07SB-30TV50, S7SB-30TV50, 0RSB-30TV5L, SRSB-30TV5L, 07SB-30TV5L, S7SB-30TV5L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (H) except for derated output power and minor changes to the secondary (SELV) circuit.

N) Models 0RSB-30TV20, SRSB-30TV20, 07SB-30TV20, S7SB-30TV20, 0RSB-30TV2L, SRSB-30TV2L, 07SB-30TV2L, S7SB-30TV2L are all identical except for model designations, Active (High/Low) and ROHS compliance criteria. These models are identical to models noted in item (H) except for derated output power and minor changes to the secondary (SELV) circuit.

O) Model xRSB-40U03y, where x may be 0 for through hole or S for surface mount and y may be L for active low pin length of 0.150", 3 for active high pin length 0.150", A for active low pin length 0.150" or B for active low pin length 0.110".

P) Models 07SB-40U03A and 07SB-40U03L are identical except for minor differences in input on/off threshold ('A' or 'L' suffix).

Q) Models 07SB-40U03A and 07SB-40U03L are similar to Model xRSB-40U03y series except for changes made to product based on environmental requirements ('7' or 'R' in 2nd placeholder).

R) Models xRSB-40U12y, where x may be 0 for through hole or S for surface mount and y may be 0 for active high pin length 0.150", L for active low pin length of 0.150" or B for active low pin length 0.110", is similar to xRSB-40U03y series except for ratings.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : No direct connection
- Operating condition : continuous
- Access location : No direct connection
- Over voltage category (OVC) : N/A
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Special Application - TNV-2
- Considered current rating of protective device as part of the building installation (A) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : maximum 2000
- Altitude of test laboratory (m) : less than 2000
- Mass of equipment (kg) : 0.014 (0RSB-40U03A series), 0.013 (0RSB-50T12L series)
- 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).
- Devices have been subjected to Thermal Cycling at 140°C based on the PWB rating (130°C) + 10°C.

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 85°C (with up to 400 CFM cooling), otherwise 25°C without cooling. Models xRSB-40U03y, 07SB-40U03A and 07SB-40U03L evaluated for a 25°C ambient.
- This product is Complimentary Recognized to QQJQ2/QQJQ8. See E235017-A6008 for full report. Classifications of ES1, ES2, and PS3.

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- Temperatures shall be monitored in the end use evaluation. Temperatures measured on the PWB shall not exceed 130°C.
- These units were evaluated for basic insulation from input to output.
- Tma 25°C suitable without forced cooling. Tma 85°C suitable only with minimum 400 CFM forced cooling. Temperature test shall be considered in the end-product investigation. Model xRSB-40U03y evaluated for 25°C ambient. Units were additionally tested in ovens at specified ambient and resistive loading to test the min./max. range of the derating curves.
- The following Production-Line tests are conducted for this product: Electric Strength
- The following secondary output circuits are SELV: ALL
- The following secondary output circuits are at non-hazardous energy levels: ALL
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Electrical, Fire
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 75Vdc

Additional Information

The product fulfills the requirements of: UL 62368-1, 2nd Edition, 2014-12-01, CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12.

No tests conducted under this investigation due to reissue of CB Test Report Ref. No. E235017-A19-CB-4. All required tests were carried out under the original investigation

This report is a reissue of CBTR Ref. No.: E235017-A19-CB-4, dated 2012-10-29, CB Test Certificate Ref. No. US-20046-UL, dated 2012-10-29, Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, has been determined that the product continues to comply with the standard.

No test was considered necessary due to adding one more suffix indicating non-safety issue and remove model 07SB-40U03A, 07SB-40U03L as the model names are covered in series model number

No test was considered necessary due to change of NCB and CBTL and upgrade standard.

No test was considered necessary due to change Applicant and manufacturer's address.

The recommended ambient (Tma): 85°C.

No direct connection to mains.

Model Nomenclature for Models xxSB-50Txxx and xxSB-30Txxx Series, where:

1st x may be S for SMT or 0 for Through Hole

2nd x may be R for RoHS or 7 for non-RoHS

3rd, 4th and in some cases 5th x represents output Voltage, where V2 = 1.2Vdc, V5 = 1.5Vdc, V8 = 1.8Vdc, 02 or 025 = 2.5Vdc, 03 or 033 = 3.3Vdc, 05 = 5Vdc and 12 = 12Vdc.

5th x when not representing output voltage (as described above) may be any alphanumeric suffixes denoting non-safety related differences.

The marking plate is representative of all models covered by this report.

Additional Standards

The product fulfills the requirements of: The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013; UL 62368-1, 2nd Edition, 2014-12-01, CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12.

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Model	Model Number
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number

Special Instructions to UL Representative

N/A