

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	Power Supply for Building-in
<b>Model:</b>	VLT150-ZXXX-YY (see model differences - Model designation may be provided with an optional prefix of "LF" designating RoHS compliance)
<b>Rating:</b>	INPUT - 100-240 VAC, 47-63 Hz, 4A MAX.  OUTPUT: Single output models: 3.3VDC - 48VDC Multi output models: V1/V2/V3/V4 = 3.3VDC TO 48VDC  Maximum Output power 150 W with forced cooling and 80 W with natural convection.
<b>Applicant Name and Address:</b>	EOS POWER INDIA PVT LTD UNIT 57 SDF-II SEEPZ ANDHERI (E) MUMBAI MH 400096 INDIA

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 Underwriters Laboratories Inc. ('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.

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### 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

VLT150-ZXXX is a family of Auto-range Switch Mode Power Supply with an input rating of 4.0 A max, 100-240V ac. The power supply has 1 or 4 output configuration and the maximum output power is restricted to 150 W with forced cooling and 80 W with natural convection cooling.

### Model Differences

Primary circuitry and safety critical components in all models are identical.

1. Total Power does not exceed 150 W with forced cooling and 80 W with natural convection.
2. The output voltage remains between 3.3VDC to 48VDC.

Various model numbers are defined as shown below:

VLT150-ZXXXYY

Where: Z = 1 or 4 for number of outputs.

X = Any numeric from 0-9.

Y = Any alphanumeric character or blank and denotes minor output voltage variation and /or minor SELV circuit variation.

- Model designation may be provided with an optional prefix of "LF" designating RoHS compliance )

### Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : pluggable A
- 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 : Class I (earthed)
- Considered current rating (A) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : > 2000 (3048 m)
- Altitude of test laboratory (m) : < 2000
- Mass of equipment (kg) : < 18
- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: 50°C
- The means of connection to the mains supply is: Pluggable A
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Building-in, PCB Header provided for input connection.
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- The power supply was tested with external cooling fan of 300 lfm placed 10 cm from the Transformer T1 side blowing over the power supply.

#### **Engineering Conditions of Acceptability**

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

- The following Production-Line tests are conducted for this product: Electric Strength

- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 250 Vrms, 360 Vpk , Primary-SELV: 250 Vrms, 360 Vpk
- 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
- Proper bonding to the end-product main protective earthing termination is: Required
- An investigation of the protective bonding terminals has: Not been conducted
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C): T1 and T2 Class 155(F)
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The maximum continuous power supply output (Watts) relied on forced air cooling from: An external cooling fan of 300 LFM placed 10 cm from the Transformer T1 side blowing toward the power supply.
- The equipment is suitable for direct connection to: AC mains supply

**Additional Information**

This report was created as a result of a physical file transfer from E136019-A12.

Project 11CA02398 -

1. This project is to upgrade the report E150565-A37 from 1st edition to 2nd edition & addition of alternate components (6-1 to 6-4 - Fuse, 9-2 , 9-5, 9-7, 9-11 to 9-17 - X cap, 10-1, 10-5 to 10-19 - Y cap, 22-5 to 22-17 - Opto, Transformer & inductor alternate part numbers - attached the drawings).

2. The input frequency changed from 50-60 Hz to 47-63Hz.

**Additional Standards**

The product fulfills the requirements of: CSA C22.2 No. 60950-1-07

**Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)

Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
Fuses - Operator caution statement	"CAUTION: For continued protection against risk of fire, replace only with same type and rating of fuse".
<b>Special Instructions to UL Representative</b>	
N/A	

<b>Production-Line Testing Requirements</b>							
<b><u>Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.</u></b>							
Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s	
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<b><u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u></b>							
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<b><u>Electric Strength Test Exemptions - This test is not required for the following models:</u></b>							
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<b><u>Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:</u></b>							
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<b><u>Sample and Test Specifics for Follow-Up Tests at UL</u></b>							
Model	Component	Material	Test	Sample(s)	Test Specifics		
N/A	--	--	--	--	--		

**TABLE: List of Critical Components**

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
1. PCB	Various	Various	130°C, V-1 min.	ZPMV2	UR
2. Metal based Single layer printed wiring boards employing ceramic base laminate	Various	Various	130°C, V-1 min.	ZPMV2	UR
3. Heatsink secondary (two provided)	Various	Various	L-shape Aluminium, 1.7mm thick, overall approx 60 mm x 46 mm x 20mm	-	--
4. Black cover (two provided over heat sink)	Various	Various	L-shape Aluminium, 1.6mm thick	-	--
5. Input Connector (J1)	Various	Various	5A, V-2	ECBT2	UR
6. FUSE (F1)	LITTELFUSE WICKMANN WERKE	392	4A, 250 Vac, Time Lag.	JDYX2 (E67006)	UR
6-1. FUSE (F1) - alternate	LITTELFUSE WICKMANN WERKE	Cat no. TE5 Type 392	4A, 250 Vac, Time Lag.	JDYX2 (E67006)	UR
6-2. FUSE (F1) - alternate	CONQUER ELECTRONICS CO LTD	Type MST	T4A / 250V	JDYX2, JDYX8 (E82636)	UR, cUR
6-3. FUSE (F1) - alternate	EVER ISLAND ELECTRIC CO LTD & WALTER ELECTRIC	Type 2010+	T4A / 250V	JDYX2, JDYX8 (E220181)	UR
6-4. FUSE (F1) - alternate	SKYGATE CO LTD	Type HTS	T4A / 250V	JDYX2, JDYX8, (E195833),	UR, cUR
7. MOV (MV1) after fuse	Various	Various	300 V (cover with r/c sleeving)	VZCA2	UR
8. Thermistor (RT1,RT2)	Various	Various	NTC, rated trip current 5A, 2.5 ohm. (cover with r/c sleeving)	XGPU2	UR
9. X-Capacitor (C1)	KEMET ELECTRONICS ITALIA SRL	R46 Series 1.40.00#	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E97797)	UR
9-1. X-Capacitor (C1),	VISHAY	Type F1772#	0.33 uF max, 250 V. X1 or X2 type. Marked with	FOWX2 (	UR

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
Alternate	CAPACITORS BELGIUM N V		VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	E100682)	
9-2. X-Capacitor (C1), Alternate	VISHAY CAPACITORS BELGIUM N V	Type F-1778	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOKY2, (E 76297)	UR
9-3. X-Capacitor (C1), Alternate	Okaya Electric Industries Co. Ltd.	Type XA/PA+	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E47474)	UR
9-4. X-Capacitor (C1), Alternate	KEMET ELECTRONICS OY	Type PHE 830M/840	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 ( E73869)	UR
9-5. X-Capacitor (C1), Alternate	KEMET ELECTRONICS OY	Type PHE 844 or PHE820M or Type PHE830M or Type PHE840E#	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOKY2, FOWX2 (E73869)	UR, cUR
9-6. X-Capacitor (C1), Alternate	PILKOR ELECTRONICS CO LTD	Type PCX2 335M	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 ( E165646)	UR
9-7. X-Capacitor (C1), Alternate	PILKOR ELECTRONICS CO LTD	Type PCX2 337/338/339	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOKY2, FOWX2 (E165646)	UR
9-8. X-Capacitor (C1), Alternate	Carli Electronics Co. Ltd	Type MPX	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E120045)	UR
9-9. X-Capacitor (C1), Alternate	VISHAY CAPACITORS BELGIUM N V	Type MKP 336-2 - 1	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 ( E112471)	UR
9-10. X-Capacitor (C1), Alternate	PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA	Type ECQUL	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E62674)	UR

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
9-11. X-Capacitor (C1), Alternate	Murata Mfg Co Ltd.	KX Series	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOKY2, FOWX2 ( E37921)	UR
9-12. X-Capacitor (C1), Alternate	Murata Mfg Co Ltd.	KY / KH /KS series	0.33 uF max, 250 V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOKY2, FOWX2 (E37921)	UR
9-13. X-Capacitor (C1), Alternate	EPCOS ELECTRONIC COMPONENTS S A	Type B3292 or B81130	0.47uF max, 250V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2, FOWX8 (E97863)	UR, cUR
9-14. X-Capacitor (C1), Alternate	SHENZHEN XINGUANGDIAN ELECTRONICS CO LTD	Type XGD-X2	0.33uF max, 250V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E254330)	UR
9-15. X-Capacitor (C1), Alternate	VISHAY CAPACITORS BELGIUM N V	336-1, 336-2 Or 336-8	.47uF max, 250V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E112471)	UR
9-16. X-Capacitor (C1), Alternate	TENTA ELECTRIC INDUSTRIAL CO LTD	Type MEX	0.47uF max, 250V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2, FOWX8 (E222911)	UR, cUR
9-17. X-Capacitor (C1), Alternate	ISKRA MIS D D	KEB1530, -2, -3/ KNB1540, -2, -3/ KNB1560, -2, -3	0.47uF max, 250V. X1 or X2 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2, FOWX8 (E145156)	UR, cUR
10-1. Y2-Capacitor (C2,C4) - alternate	MURATA MFG CO LTD	KH series	4700pF, 250V. Y1 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOKY2, FOWX2 (E37921)	UR
10-2. Y2-Capacitor (C2,C4) (Alternate)	Vishay Electronic GMBH	WYO series	4700pF, 250V. Y1 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 FOWX8 (E183844)	UR, cUR
10-3. Y2-Capacitor (C2,C4) ( Alternate)	VISHAY ELECTRONIC GMBH	30LV/30LVS	4700pF, 250V. Y1 type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E99264)	UR
10-4. Y2-Capacitor (C2,C4) ( Alternate)	MURATA MFG CO LTD	Type KY	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or	FOKY2, FOWX2 (E37921)	UR



Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
			ENEC 13 or ENEC 14.		
10-5. Y2-Capacitor (C2,C4) ( Alternate)	PANASONIC CORPORATION,	TypeNS-A Type TS	4700 pf max. 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E62674)	UR
10-6. Y2-Capacitor (C2,C4) ( Alternate)	Vishay Electronic GMBH,	Type 440L	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E99264)	UR
10-7. Y2-Capacitor (C2,C4) ( Alternate)	MERITEK ELECTRONICS CORP	Type MEY or MEX	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14	FOWX2 (E197475)	UR
10-8. Y2-Capacitor (C2,C4) ( Alternate)	VISHAY ELECTRONIC GMBH	Type 30LV or 30LVS	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2, FOKY2 (E99264)	UR
10-9. Y2-Capacitor (C2,C4) ( Alternate)	WALSIN TECHNOLOGY CORP	Type, AC#	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14	FOWX2 (E146544)	UR
10-10. Y2-Capacitor (C2,C4) ( Alternate)	MURATA MFG CO LTD	Type KY	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 , (E37921)	UR
10-11. Y2-Capacitor (C2,C4) ( Alternate)	ISKRA MIS D D	KNB2520, -2, -3/ KNB2530, -2, -3	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 ,FOWX8 (E145156)	UR, cUR
10-12. Y2-Capacitor (C2,C4) ( Alternate)	Vishay Electronic GMBH	Type WKO	4700pf max. ,250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2, FOWX8 (E183844)	UR, cUR
10-13. Y2-Capacitor (C2,C4) ( Alternate)	SAMWHA CAPACITOR CO LTD	Type SC,	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E97754)	UR
10-14. Y2-Capacitor (C2,C4) ( Alternate)	ARCOTRONICS SPA	Type KJY	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2, FOWX8 (E97797)	UR, cUR
10-15. Y2-Capacitor	Walsin Technology	Type AC#	5000pf max, 250V. Y2 Type. Marked with VDE or	FOWX2, FOWX8	UR, cUR

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
(C2,C4) ( Alternate)	Corp		SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	(E146544)	
10-16. Y2-Capacitor (C2,C4) ( Alternate)	TDK-EPC CORP	Type CS## / CY	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E37861)	UR
10-17. Y2-Capacitor (C2,C4) ( Alternate)	Walsin Technology corp	Type AH #	4700 pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2, FOWX8 (E146544)	UR, cUR
10-18. Y2-Capacitor (C2,C4) ( Alternate)	SAMWHA CAPACITOR CO LTD	SD Series	4700pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (97754)	UR
10-19. Y2-Capacitor (C2,C4) ( Alternate)	TDK-EPC CORP	Type , CSXX, CY	5000pf max, 250V. Y2 Type. Marked with VDE or SEV or ENEC 02 or ENEC 03 or ENEC 10 or ENEC 13 or ENEC 14.	FOWX2 (E37861)	UR
11. Bulk Capacitor (C3)	Various	Various	120µF/ 400V, 105°C (cover with r/c insulating tape to provide Basic Insulation)	--	--
12. Capacitor (C7,C28) (pri)	Various	Various	cover with r/c insulating tape to provide Basic Insulation	--	--
13. DM EMI Choke (L1)	Eos Power India Pvt Ltd	22-0000000001204 Or LF000000005717	Toroidal type construction, core OD 12.7 mm, Coil: Copper Magnet wire, rated 155°C.	--	--
14. DM EMI Choke (L7)	Eos Power India Pvt Ltd	22-0000000001734 Or LF000000000522	Toroidal type construction, core OD 12.7 mm, Coil: Copper Magnet wire, rated 155°C.	--	--
15. CM EMI Choke (L11)	Eos Power India Pvt Ltd	22-05-36085-003 Or LF000000005573	Toroidal type construction, core OD 17 mm, Coil: Copper Magnet wire, rated 155°C minimum.	--	--
16. Boost Choke (L2)	Eos Power India Pvt Ltd	22-0000000001725 Or LF000000002866	Magnetic wires rated 155°C wound on a coil former min. V-2	--	--

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
17. Boost Choke (L3)	Eos Power india Pvt L:td	22-05-36094-0052 Or LF00000002868	Magnetic wires rated 155°C wound on a coil former min. V-2	--	--
18. Boost PFC coil (L6)	Eos Power India Pvt Ltd	22-000000001205 Or LF00000002988	Magnetic wires rated 155°C wound on a coil former min. V-2	--	--
19. Transformer (T1 and T2)	Eos Power India Pvt Ltd	p/n 22-XXXX or CEL-22- LF0000000XXXX	Class 155 (F) transformer insulation system, cat no designated SA 155 (File no – E150789 )	OBJY2	UR
19-1. Insulation system	EOS POWER INDIA PVT LTD	SA 155	File – E150789, Table I	OBJY2	UR
19-2. Bobbin (T1 & T2)	SUMITOMO BAKELITE CO LTD	PM9750/ PM9630	Phenolic, rated V-0	QMFZ2, QMFZ8 (E41429)	UR, cUR
19-3. Insulating Tape (for T1 and T2)	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350 or 1298	Min.3000 V ac Dielectric strength, 1 layer, 0.025 mm thick	OANZ2 (E17385)	UR
19-4. Insulating Tape, Alternate	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350 or 1298	Min.3000 V ac Dielectric strength, 2 layer, 0.050 mm thick.	OANZ2 (E17385)	UR
19-5. Insulating Tape, Alternate	PRS Permacel/ PRS Solutions Pvt Ltd	P256 or P422	Min.3000 V ac Dielectric strength, 1 layer, 0.025 mm thick.	OANZ2 (E227572)	UR
19-6. Insulating Tape, Alternate	NITTO DENKO AUTOMOTIVE NEW JERSEY INC	P256 or P422	Min.3000 V ac Dielectric strength, 2 layer, 0.050 mm thick.	OANZ2 (E20392)	UR
20. Diode Bridge (,D1, D10)	Various	Various	3A, 600 V min.	-	--
21. Primary Mosfet (Q3)	Various	Various	12A,500V min	-	--
22. Optocoupler (IC9,IC10,IC11)	INFINEON	SFH615	Min.3600 V a.c. Dielectric strength	FPQU2	UR
22-1. Optocoupler (IC9,IC10,IC11)	TOSHIBA CORP, SEMICONDUCTOR	Type TLP734 or TLP634	Min.3600 V a.c. Dielectric strength	FPQU2 (E67349)	UR

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
(Alternate)	CO DISCRETE SEMICONDUCTOR DIV				
22-2. Optocoupler (IC9,IC10,IC11)(Alternate)	Fairchild Semiconductor Corp.	CNY17G-1 or CNY17G-2 or CNY17G-3	Min.3600 V a.c. Dielectric strength	FPQU2 (E90700)	UR
22-3. Optocoupler (IC9,IC10,IC11)(Alternate)	Fairchild Semiconductor Corp.	Type TCDT110 or TCDT112	Min.3600 V a.c. Dielectric strength	FPQU2, FPQU8 (E52744)	UR
22-4. Optocoupler (IC9,IC10,IC11)(Alternate)	NEC	2561 Series	Min.3600 V a.c. Dielectric strength	FPQU2	UR
22-5. Optocoupler (IC9,IC10,IC11)(Alternate)	SHARP CORP ELECTRONIC COMPONENTS AND DEVICES GROUP	PC817, PC123	Min 5000	FPQU2 (E64380)	UR
22-6. Optocoupler (IC9,IC10,IC11)(Alternate)	FAIRCHILD SEMICONDUCTOR CORP	Type MOC MOC8102T/MOC 8106T	Minimum 3750 V ac	FPQU2 (E90700)	UR
22-7. Optocoupler (IC9,IC10,IC11)(Alternate)	TOSHIBA CORP, SEMICONDUCTOR CO DISCRETE SEMICONDUCTOR DIV.,	TLP634/ TLP633 /  CNY17/ Type P535	Minimum 4000 V ac  Minimum 4400Vac	FPQU2 (E67349)	UR
22-8. Optocoupler (IC9,IC10,IC11)(Alternate)	QT-BRIGHTTEK CORP	CNY17-2	Minimum 5000 V ac	FPQU2 (E338132)	UR
22-9. Optocoupler (IC9,IC10,IC11)(Alternate)	QT-BRIGHTTEK CORP	CNY17-3	Minimum 5000 V ac	FPQU2 (E338132)	UR
22-10. Optocoupler (IC9,IC10,IC11)(Alternate)	ISOCOM LTD	CNX82A	Minimum 5000 V ac	FPQU2 (E250824)	UR

Object/part or Description	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
e)					
22-11. Optocoupler (IC9,IC10,IC11)(Alternative)	QT-BRIGHTTEK CORP	CNY17F-2	Minimum 5000 V ac	FPQU2 (E338132)	UR
22-12. Optocoupler (IC9,IC10,IC11)(Alternative)	VISHAY SEMICONDUCTOR GMBH	TCLT1003, TCLT1007	Min.5000V a.c. Dielectric strength	FPQU2, FPQU8 (E76222)	UR, cUR
22-13. Optocoupler (IC9,IC10,IC11)(Alternative)	VISHAY INFRARED COMPONENTS INC	System H, J CNY17	Min. 4420 VAC Dielectric Strength.	FPQU2, FPQU8 (E52744)	UR, cUR
22-14. Optocoupler (IC9,IC10,IC11)(Alternative)	ISOCOM LTD	CNY17F-X	Min.5000V a.c. Dielectric strength	FPQU2, FPQU8 (E250824)	UR, cUR
22-15. Optocoupler (IC9,IC10,IC11)(Alternative)	LITE-ON TECHNOLOGY CORP	LTV-816/826/846	Min.5000 V a.c. Dielectric strength	FPQU2, FPQU2 (E113898)	UR
22-16. Optocoupler (IC9,IC10,IC11)(Alternative)	FAIRCHILD SEMICONDUCTOR CORP	CNY17 /CNY17F series or MOC810X	Min.4170 V a.c. Dielectric strength	FPQU2 (E90700)	UR
22-17. Optocoupler (IC9,IC10,IC11)(Alternative)	VISHAY INFRARED COMPONENTS INC	SFH61 series	Min 4420 Vac dielectric strength	FPQU2 (E52744)	UR
23. RTV	Various	Various	V-2 min. The glue is used to secure for following C55,D1,L6,L,7,L11,T1,T2,C71,C2,C4	QMFZ2	UR
24. Connectors and Receptacles (sec)	Various	Various	Recognized component Connectors and Receptacles or copper alloy pins housed in body of Recognized component plastic (QMFZ2), rated min. V-2.	ECBT2, RTRT2	UR
25. Wiring, internal primary	Various	Various	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; min 300V, 105°C	AVLV2	UR
26. Wiring - Internal Secondary	Various	Various	FEP, PTFE, PVC, TFE, neoprene, polyamide or marked VW-1; min 30 V, 80 °C, routed away from primary circuits	AVLV2	UR

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Object/part or Description	Manufacturer/trademark	type/model	technical data	CCN	Marks of Conformity
27. Insulating Tubing/Sleeving	Various	Various	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; 300°C, 125V	UZFT2, YDPU2, YDRY2, YDTU2	UR
28. Label/Label Materials	Various	Various	Ink stamped, silk screened, molded in or self adhesive suitable for surface to which applied, rated 40°C	PGDQ2 or PGJI2	UR

## Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	VLT150 series
Photographs	3-02	VLT150 series
Photographs	3-03	VLT150 series
Photographs	3-04	VLT150 series
Photographs	3-05	VLT150 series
Photographs	3-06	VLT150 series
Diagrams	4-01	Transformers and Inductors diagram
Schematics + PWB	5-01	VLT150 series Schematics
Schematics + PWB	5-05	VLT 150 PWB layout
Manuals		
Miscellaneous		