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REPORT

on

COMPONENT - DRIVERS FOR LIGHT-EMITTING-DIODE ARRAYS, MODULES AND CONTROLLERS

***SOLUM CO LTD**
***REPUBLIC OF KOREA**

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DESCRIPTION

PRODUCT COVERED:

USR, CNR- Component LED Driver, see electrical ratings table for models.

USR - United States Recognized Component
CNR - Canada Recognized Component

ELECTRICAL RATINGS:

Model No.	Input			Output		
	Voltage (Vac)	Frequency (Hz)	Current (A), Power (W)	Voltage (Vdc)	Frequency (Hz)	Current (A)
PSDV151104A	120-277	50/60	2.0 A, 170 W	50-100	N/A	1.5 A

TECHNICAL CONSIDERATIONS (NOT FOR UL FIELD REPRESENTATIVE USE):

USR - Indicates investigation to the United States Standards for Light Emitting Diode (LED) Light Equipment for Use in Lighting Products, UL 8750, the first edition.

CNR - Indicates investigation to the Canadian Standard for Light emitting Diode (LED) Equipment for Lighting Applications, CAN/CSA-C22.2 No. 250.13, the second edition.

These products been evaluated for the following characteristics.

Model No.	Input type	Output type	Product is rated	Type HL (a)	Type TL (b)
PSDV151104A	Branch Circuit (Mains)	Output type-CC Output is Isolated	Damp	No	No

a- Evaluated per UL 8750 requirements for Type HL LED drivers

b- Evaluated per UL 8750 requirements for Type TL LED drivers

Conditions of Acceptability:

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by UL LLC.

1. Rated output loading for this product was achieved using LED loads. The need for other consideration should be considered in end-use product.
2. During the normal temperature test of the end product, the temperature at Tc (Case surface above transformer (TM101)) is to be monitored. The absolute value at Tc cannot exceed 85 °C, this value was designated by manufacturer based on calculated values. (Calculated value by test: 89.2 °C, this value was calculated based on temperatures observed during testing and temperature ratings of the integral components including the electrical insulation system)
3. This product utilizes a UL Recognized OBJY2 Class 130 (B) electrical insulation system.
4. This product is intended for building in. The enclosure for this product has no openings. Acceptability of the LED driver with respect to mounting, spacing, casualty, temperature and segregation is to be determined as part of the end device evaluation.
5. This product is provided with 18 AWG, stranded leads, rated 105 °C, 300 V minimum for input connections and 24 AWG, stranded leads, rated 105 °C, 300 V minimum for output connections. Acceptability of the input lead wire being smaller than 18 AWG is to be determined as part of the end product evaluation. Acceptability of the leads relative to strain relief and secureness, is to be determined as part of the end device evaluation.
6. The product is intended to be operated in a maximum 20 A branch circuit.
7. This product is provided with an internal green grounding lead that is between the internal board bonded directly and rear metal case mechanically secured by a screw. The need for bonding the dead metal enclosure shall be considered in the end product.
8. The input and output connections have been invested for factory wiring only, connection to supply mains shall be determined in the end product.
9. This product is dimmable using a low voltage 0-10 V proprietary interface.
10. Outer Case has not been invested for final enclosure, the suitable enclosure shall be provided in the end-use product.

Conditions of Acceptability (CONT'D):

11. The product has been judged on the basis of the required spacings as indicated in the standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products, UL 8750 in addition to the standard for Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment, UL 840, and Light Emitting Diode (LED) Equipment for Lighting Applications, CSA C22.2 No. 250.13.
12. The unit employs input surge suppression protection suitable for use in Type 3 SPD application. The suitability of the use shall be determined in the end-product application.
13. This product marked suitable for dry and damp locations. Additional considerations will be necessary as these LED drivers are integrated into wet rated end devices (i.e. input and output supply connection means, accessibility of the output based on maximum voltage restrictions for wet rated Class 2 circuits, acceptability of markings, etc.).
14. Output wires shall be completely enclosed in the end product. It shall be considered in the end product.
15. A potting compound inside the enclosure was used to embed all internal parts and input/output leads fully. The Strain Relief test was not considered necessary in the evaluation.

CONSTRUCTION DETAILS:

Corrosion Protection - Ferrous metal parts are protected against corrosion by plating or painting.

Soldered Connections - All soldered connections are mechanically secured before soldering.

Printed Wiring Boards - Suitable for the solder time and temperature used by the manufacturer.

"CN" indicates the component has been evaluated to Canadian requirements and the component shall have a Canadian UL certification Mark (C-UL) or UL certification Mark and CSA certification Mark when the Applicant's basic product bearing C-UL certification Mark.

Product markings-

1. Recognized company name, File number or trademark (If authorized).
2. Model designation.
3. Factory ID or code, when more than one factory.
4. Date Code: see below table,

Mean Digit	Plant	Year	Month	Date	Model Code	Serial No
Example	C1 or C2	00~99	1..9,A, B, C	01,02,..31	1~9,A~Z:	0001~9999

5. Optional - Electrical Ratings- see electrical ratings table.
6. Optional - Output Type- see product characteristics table.
7. Optional - Environmental considerations- see product characteristics table.
8. Optional - Polarity of the Input and Output Connections.
9. Optional - Temperature Measurement Point (Tc).

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Model PSDV151104A - FIGS. 1 THRU 5

General - The general design, shape and arrangement shall be as illustrated except where variations are specifically described.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Case body	-	Various	Various	Aluminum alloy sheet metal, min. 1.5 mm thick, overall measured 207.0 mm by 60.0 mm by 32.0 mm (L x W x H).	F1, I1
2	Side Cover (Input)	-	Various	Various	Aluminum alloy sheet metal, min. 1.5 mm thick, overall measured 60.0 mm by 32.0 mm by 16.0 mm (L x W x H), mechanically secured to Case Body by screws.	I2
3	Side Cover (Output)	-	Various	Various	Same as above.	I3
4	Input Lead Wire	AVLV2, CN	Various	Various	Min. 18 AWG, stranded leads, rated min. 300 V, min. 105 °C, min. 152 mm long.	
5	Output Lead Wire (LED)	AVLV2, CN	Various	Various	Min. 20 AWG, rated min. 300 V, min. 105 °C.	
6	Output Lead Wire (Dimming)	AVLV2, CN	Various	Various	Min. 24 AWG, rated min. 300 V, min. 105 °C.	
7	Input/Output/Dimming Grommet	QMFZ2	Various	Various	Rated min. 130 °C, min. 1.2 mm thickness.	
8	Grounding Lead Wire	AVLV2, CN	Various	Various	Min. 18 AWG, rated min. 300 V, min. 105 °C. Green or with yellow strip, between the internal board bonded directly and rear metal case mechanically secured by a screw.	
9	Insulation sheet	QMFZ2	TORAY INDUSTRIES INC (E86511)	Lumirror (#)	Polyethylene Terephthalate (PET), Rated 105 °C, VTM-2, double layers, min. 0.18 mm total thickness, fully wrap internal LED Driver against Case, see ILL. 4 for detailed dimension and shape.	I4
	Alternate	QMFZ2	SKC CO LTD (E74359)	SH71S, SG00L, SR50, SR53	Same as above.	
10	Printed Wiring Board	ZPMV2, CN	Various	Various	Rated min. 130 °C, V-0. Overall approx. 201.0 mm by 53.0 mm (L x W), 1.6 mm thick. Suitable for support of live parts.	I5
11	Fuse (FS101)	JDYX2, CN	LITTELFUSE WICKMANN WERKE (E67006)	369 +	Rated 5.0 A, 300 V, connected in series with ungrounded supply.	
12	Potting compound	QMFZ2	DOW CORNING CORP (E40195)	170#	Silicone (RTV), 105 °C, furnished as two liquid components. Completely surrounds circuit board in case.	

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Model PSDV151104A - FIGS. 1 THRU 5 (CONT'D)

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
13	Varistor (VX101S)	VZCA2, CN	SHANDONG AMOTECH ELECTRONIC CO LTD (E365478)	INR 14D751	SPD Type 4 for use in Type 3 SPD applications, voltage rating min. 460 Vac.	
	Alternate	VZCA2	AMOTECH CO LTD (E332687)	INR14D751	Same as above.	
14	Thermistor (NT101S)	XGPU2, CN	Various	Various	Limiting NTC device, rated min. 240 V, max 5.0 A.	
15	Capacitor (CX101S)	FOKY2 or FOWX2, CN	Various	Various	Located across the line, rated min. 305 Vac, min. 105 °C, max. 330 nF.	
16	Capacitor (CX102S)	FOKY2 or FOWX2, CN	Various	Various	Located across the line, rated min. 305 Vac, min. 105 °C, max. 220 nF.	
17	Bridge Diode (BD101)	-	Various	Various	Rated min. 600 V, max. 25 A.	
18	Film Capacitor (CP171)	-	Various	Various	Rated min. 500 V, min. 105 °C, max. 1000 nF.	
19	Electrolytic Capacitor (CP151)	-	Various	Various	Rated min. 500 V, min. 105 °C, max. 100 uF.	
20	FET (QP101)	-	Various	Various	Rated min. 600 V, max. 15 A.	
21	Rectifier Diode (DP172)	-	Various	Various	Rated min. 600 V, max. 10 A.	
22	FETs (QM102, QM103)	-	Various	Various	Rated min. 600 V, max. 7.5 A.	
23	Film Capacitor (CM104)	-	Various	Various	Rated min. 2000 V, min. 105 °C, max. 3.3 nF.	
24	Rectifier Diode (DQ01)	-	Various	Various	Rated min. 100 V, max. 3 A.	
25	IC (UP101)	-	Various	Various	Type SEM3040.	
26	IC (UQ01)	-	Various	Various	Type LNK302DG-TL.	
27	Capacitor (CY106S)	FOWX2, CN	Various	Various	Rated 3.3 nF, min. 400 V, min. 125 °C. Class Y1. Bridging Primary to Secondary.	
28	Capacitor (CY201S)	FOWX2, CN	Various	Various	Rated 3.3 nF, min. 400 V, min. 125 °C. Class Y1. Located Secondary to F.G.	
29	Diodes (DM201, DM202)	-	Various	Various	Rated min. 300 V, max. 20 A.	

Model PSDV151104A - FIGS. 1 THRU 5 (CONT'D)

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F) I G (I) L L
30	IC (UM202) - Secondary	-	Various	Various	Type TSM103WAIDT.	
31	Electrolytic Capacitors (CM201, CM202) - Secondary	-	Various	Various	Rated min. 160 V, min. 105 °C, max. 100 uF.	
32	Electrolytic Capacitors (CM203, CM207) - Secondary	-	Various	Various	Rated min. 50 V, min. 105 °C, max. 22 uF.	
33	Optical Isolator (PC101S)	FPQU2 , CN	Various	Various	Rated min. 3000 Vac isolation, 110 °C max. operating temperature.	

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Winding devices - See below for details.

No.	Item	CCN	Manufacturer (File Number)	Part Number	Description / Technical Data	(F)IG (I)LL
1	Line Filter (LX101S)- Primary				Refer to Ill. 6 for details.	I6
1.1	Core	-	N/A	N/A	Ferrite, toroidal type, overall approx. 16.0 mm by 10.0 mm by 7.0 mm (OD x ID x H).	
1.2	Coil	OBMW2	Various	Various	Two provided, Enameled copper wire, each rated min. 130 °C.	
1.3	Core Cover	QMFZ2	Various	Various	Rated min. 105 °C, 0.4 mm thick.	
1.4	Coil Separator	QMFZ2	Various	Various	Rated min. 105 °C, 0.75 mm thick.	
1.5	Base	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	PM-9630	Phenolic (PF), rated min. 155 °C, min. 0.51 mm thick.	
	Alternate	QMFZ2	CHANG CHUN PLASTICS CO LTD (E59481)	T375HF	Phenolic Molding Compound (PMC), min. 0.43 mm thick, rated V-0, 150 °C.	
1.6	Tube	YDPU2	Various	Various	Rated min. 200 °C, 300 V, VW-1, located at pins #3 and #4.	
2	Line Filter (LX102S)- Primary				Refer to Ill. 7 for details.	I7
2.1	Core	-	N/A	N/A	Ferrite, toroidal type, overall approx. 16.0 mm by 10.0 mm by 7.0 mm (OD x ID x H).	
2.2	Coil	OBMW2	Various	Various	Two provided, Enameled copper wire, each rated min. 130 °C.	
2.3	Core Cover	QMFZ2	Various	Various	Rated min. 105 °C, 0.4 mm thick.	
2.4	Coil Separator	QMFZ2	Various	Various	Rated min. 105 °C, 0.75 mm thick.	
2.5	Base	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	PM-9630	Phenolic (PF), rated min. 155 °C, min. 0.51 mm thick.	
	Alternate	QMFZ2	CHANG CHUN PLASTICS CO LTD (E59481)	T375HF	Phenolic Molding Compound (PMC), min. 0.43 mm thick, rated V-0, 150 °C.	
	Alternate	QMFZ2	HEXION GMBH (E61040)	PF2736(a)(b)	Phenolic (PF), min. 0.46 mm thick, rated V-0, 150 °C.	
2.6	Tube	YDPU2	Various	Various	Rated min. 200 °C, 300 V, VW-1, located at pins #3 and #4.	

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Winding devices - See below for details. (CON'T)

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
3	Line Filters (LX103S)- Primary, (L01)- Secondary				Refer to Ill. 8 for details.	I8
3.1	Core	-	N/A	N/A	Ferrite, toroidal type, overall approx. 8.1 mm by 4.1 mm by 3.1 mm (OD x ID x H).	
3.2	Coil	OBMW2 and, OBJY2 or AVLV2	Various	Various	Two provided, Enameled copper wire and, triple insulated wire or Teflon wire, each rated min. 130 °C.	
3.3	Base	QMFZ2	CHANG CHUN PLASTICS CO LTD (E59481)	T375HF	Phenolic Molding Compound (PMC), min. 0.43 mm thick, rated V-0, 150 °C.	
	Alternate	QMFZ2	HEXION GMBH (E61040)	PF2736(a)(b)	Phenolic (PF), min. 0.81 mm thick, rated V-0, 150 °C.	
3.4	Tube	YDPU2	Various	Various	Rated min. 200 °C, 300 V, VW-1, located at pins #2 and #4.	
4	Choke Coil (LQ01) - Primary				Refer to Ill. 9 for details.	I9
4.1	Core	-	N/A	N/A	Ferrite, drum type, overall approx. 6.5 mm by 3.1 mm by 7.5 mm (OD x ID x H).	
4.2	Coil	OBMW2	Various	Various	One provided, Enameled copper wire, rated min. 130 °C.	
4.3	Base	QMFZ2	CHANG CHUN PLASTICS CO LTD (E59481)	T375HF	Phenolic Molding Compound (PMC), min. 0.43 mm thick, rated V-0, 150 °C.	
	Alternate	QMFZ2	HEXION GMBH (E61040)	PF2736(a)(b)	Phenolic (PF), min. 0.46 mm thick, rated V-0, 150 °C.	
4.4	Tube	YDPU2	Various	Various	Rated min. 125 °C, 600 V, VW-1, intended to around a body.	

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Winding devices - See below for details. (CON'T)

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
5	PFC (LP01)- Primary				Refer to Ill. 10 for details.	I10
5.1	Core	N/A	N/A	N/A	Ferrite, PQ type, overall approx. 26.5 mm by 16.7 mm by 10.7 mm (L x W x H).	
5.2	Coil	OBMW2 and OBJT2	Various	Various	Two provided, one is Enameled copper wire and another is triple insulated wire, each rated min. 130 °C.	
5.3	Bobbin	QMFZ2	HEXION GMBH (E61040)	PF2736(a)(b)	Phenolic (PF), 0.46 mm thick min., rated V-0, 150 °C.	
	Alternate	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	PM-9820	Phenolic (PF), rated min. 150 °C, min. 0.51 mm thick.	
5.4	Insulation Tape / Core Fixing Tape	OANZ2	Various	Various	Rated min. 130 °C.	
5.5	Barrier Tape	OANZ2	Various	Various	Rated min. 130 °C.	
5.6	Varnish	OBOR2	Various	Various	Rated min. 130 °C.	
6	Transformer (PM101) - Primary				Refer to Ill. 11 for details.	I11
6.1	Core	N/A	N/A	N/A	Ferrite, EE type, overall approx. 10.3 mm by 11.0 mm by 4.7 mm (L x W x H).	
6.2	Coil	OBMW2	Various	Various	Three provided, Enameled copper wire, each rated min. 130 °C.	
6.3	Base	QMFZ2	CHANG CHUN PLASTICS CO LTD (E59481)	T375HF	Phenolic Molding Compound (PMC), min. 0.43 mm thick, rated V-0, 150 °C.	
	Alternate	QMFZ2	HEXION GMBH (E61040)	PF2736(a)(b)	Phenolic (PF), min. 0.46 mm thick, rated V-0, 150 °C.	
	Alternate	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	PM-9820	Phenolic (PF), rated min. 150 °C, min. 0.51 mm thick.	
6.4	Insulation Tape / Core Fixing Tape	OANZ2	Various	Various	Rated min. 130 °C.	
	Tube	QMFZ2 or YDPU2	Various	Various	Rated min. 200 °C, 150 V, VW-1, located at pin #3.	
6.5	Varnish	OBOR2	Various	Various	Rated min. 130 °C.	

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Winding devices - See below for details. (CON'T)

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
7	Transformer (TM101)- isolated primary to secondary		-	-	Refer to Ills. 12 and 13 detailed construction and insulation system (Class 130 (B) information).	
7.1	Electrical insulation system	OBJY2	LITE-ON TECHNOLOGY CORP (E140167)	LSE-B11	Rated Class 130 (Class B).	I12
	Alternate	OBJY2	CLOVER HI-TECH CO LTD (E167514)	SC-04B	Same as above.	I13
7.2	Core	-	-	-	Ferrite, EFD type, measured overall Approx.. 38.2 mm by 42.0 mm by 11.8 mm (L x W x H).	
7.3	Bobbin	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	PM-9820	Phenolic (PF), rated min. 150 °C, min. 0.65 mm thick.	
7.4	Cap	QMFZ2	Belong to electrical insulation system	Belong to electrical insulation system	Rated min. 130 °C.	
7.5	Coil	OBMW2 and OBJT2	Belong to electrical insulation system	Belong to electrical insulation system	Enameled copper wire and Triple Insulated Winding Wire, each rated min. 130 °C.	
7.6	Core fixing tape	OANZ2	Belong to electrical insulation system	Belong to electrical insulation system	Polyethylene terephthalate film tape, rated min. 130 °C, min. 0.025 mm thick per layer.	
7.7	Tube	YDPU2	Belong to electrical insulation system	Belong to electrical insulation system	Rated min. 130 °C.	
7.8	Varnish	OBOR2	Belong to electrical insulation system	Belong to electrical insulation system	Rated min. 130 °C.	