

File E343741
Project 4788968709

May 28, 2019

REPORT

on

Drivers for Light-emitting-diode Arrays, Modules and Controllers - Component

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Zhuhai, China

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DESCRIPTION

PRODUCT COVERED:

USL, CNL- LED Driver, see electrical ratings table for models.

ELECTRICAL RATINGS:

Model No.	Input				Output [X] CC [] CV		
	Voltage (Vac)	Frequency (Hz)	Max Current (A)	Max Power (W)	Voltage (Vdc)	Max. Current (mA)	Max. Power (W)
CNBPPW-XXXX-VV-YYYY-ZZZZ	120/277	50/60	0.5	56	42	1200	50.4

Where:

"PP" - represents output power code. If $1W < P_{out} \leq 10W$, PP='10'; $10W < P_{out} \leq 20W$, PP='20'; $20W < P_{out} \leq 30W$, PP='30'; $30W < P_{out} \leq 40W$, PP='40'; $40W < P_{out} \leq 50.4W$, PP='50'

"XXXX" - represents regulated output current in mA. E.g. '1200' means 1200mA; '0100' means 100 mA.

"VV" - represents maximum output voltage in V. E.g. '42' means 42 V.

"YYYY" and "ZZZZ" - represents customer code for marketing purpose only. It could up to 5 digits with any combination of alphanumeric characters or blank.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

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

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

DIFFERENCES BETWEEN MODELS:

All products under each series utilize the same PWB design, enclosure constructions and input/output connection scheme (via Leads Wires). The different output power levels are achieved by means of changes in component values of Resistor, R70, located in secondary circuit.

Product characteristics-

				Additionally evaluated to UL 8750 Supplements noted below:							
Model No.	Input type	Output type	Rated for	<input type="checkbox"/> SA-SREC	<input type="checkbox"/> SB-Type HL	<input type="checkbox"/> SC-Type TL	<input checked="" type="checkbox"/> SE-Class P	<input checked="" type="checkbox"/> SF-Wired control Circuits(c)	<input checked="" type="checkbox"/> SG-Temperature value @ Tc	<input type="checkbox"/> SH-Phase cut dimming	<input type="checkbox"/> SI-Type IC LED driver
Applies to all models - see electrical ratings	Branch Circuit (Mains)	Class 2 (a), LVLE (b1) LED Class 2 (b2)	Damp	No	No	No	Yes	Not Isolated	Tref max-Tc 90°C	No	No

a- As defined in UL 8750, Clause 7.12.1

b1- As defined in UL 8750, Section 8.16

b2- As defined in CAN/CSA-C22.2 No. 250.13, Annex A

c- Supplement SF has a future effective date: 2020-05-01

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" under the CCN column in the component description tables indicates that the component meets applicable Canadian requirements for the component. Such components will either have a UL certification Mark for Canada (C-UL) or a CSA certification Mark. "CN" is always noted in conjunction with the CCN indicating UL Certification per applicable US requirements for the component.

Product identification, ratings & markings noted below are to be provided on the product. See comment area for cases where some of this information can be provided on a separate specification sheet, installation instruction or the like.

	Description	Comment
x	Company name (as identified in Online directory) or File number	
X	Model designation-	
x	Factory ID, when more than one factory	
X	Date Code	
X	Class 2 outputs	See product characteristics table- 'Class 2' marked on the device. WARNING - Risk of Fire or Electric Shock. Do not interconnect output terminations
X	Electrical Ratings	See electrical ratings table- note 1
X	Input Type	See product characteristics table- note 1
X	Output Type	See product characteristics table- note 1
X	Environmental considerations	See product characteristics table- note 1
X	Polarity of supply connections	Applies to Input, Output- note 1
X	Class P LED drivers	See product characteristics table- optional marking 'Class P' on LED driver. If marking is provided, then the LED driver is marked "For Connections Use Wire Rated for at Least 90°C (194°F)" or equivalent. Device marked 'Use only within an enclosure'
X	Wired Control Circuits	See product characteristics table- 1. Identification of the terminals or lead wires for control circuits. 2. Identification of the intended industry or proprietary protocols. 3. Installation instructions 4. Notice: This control circuit is not isolated - see installation instructions" or equivalent. 5. For built in products all above markings may be included in the installation instructions. 6. Device wired control circuit marked 'Class 2'
X	Temperature Measurement Point (Tc)	See product characteristics table- Tc point location marking on device. The Tref max values may be marked on the device in the following format: 90°C. This information may alternately appear in a specification sheet. See F-5 for Tc location.
X	Grounding	"Case must be grounded" or equivalent.

Note 1- For built in products this marking may be included on a separate specification sheet, installation instruction or the like.

Model CNBPPW-XXXX-VV-YYYYY-ZZZZZ - FIG. 1 - 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	Enclosure	-	Various	Various	Sheet aluminum alloy, 0.60 mm thick min. Two-part construction, secured together by snap-fit. See ILL. 1 (unit:mm) for detailed dimension.	I1
2	Enclosure (Plastic part)	QMFZ2, CN	SABIC INNOVATIVE PLASTICS US L L C (E121562)	NH7010HF	Made by PPHOX "Noryl", 2 mm thick min. rated min. 5VA, min. 105 C (HAI: 1, HWI:2, CTI:3). Secured to Enclosure by screws. See ILL.2 (unit:mm) for detailed dimension.	I2
3	End Cap	QMFZ2, CN	SABIC INNOVATIVE PLASTICS US L L C (E121562)	NH7010HF	Made by PPHOX "Noryl", 2 mm thick min. rated min. 5VA, min. 105 C (HAI: 1, HWI:2, CTI:3). Mechanical fitting to Enclosure. See ILL.3 and ILL.4 (unit:mm) for detailed dimension for End cap at input side and output side respectively.	I3 I4
4	Input Lead Wire	AVLV2, CN	Various	Various	Min. 18 AWG X 2, rated min. 300 V, min. 105 °C, min. 152 mm long. Neutral is white colour.	
5	Output Lead Wire	AVLV2, CN	Various	Various	Min. 18 AWG X 2, rated min. 300 V, min. 105 °C, min. 152 mm long.	
6	Dimming Lead Wire	AVLV2, CN	Various	Various	Min. 22 AWG X 2, rated min. 300 V, min. 105 °C, min. 152 mm long.	
7	Insulation Liner	QMFZ2	Various	Various	PET film, 0.18 mm thick minimum, 105 °C, two-part construction. Folding edges at two ends secured by Tape (item 8). 2 layer of Tape (item 8) applied on the film. Provided as insulation between PWB assembly and metal enclosure. See ILL. 5 (unit:mm) for detailed dimension.	I5
8	Tape	OANZ2	Various	Various	PET tape, 0.05 mm thick per layer. Rated 105 C min.	
9	Potting Compound	QMFZ2, CN	DONGGUAN ZHAOSHUN SILICONE NEW MATERIAL TECHNOLOGY CO LTD (E329120)	ZS-GF Series	Silicone. Rated V-0, 150°C, grey in color. Fully covered all the components inside housing.	
9.1	Alternate Potting Compound	QMFZ2, CN	Shenzhen City Jia Di New Materials Co., Ltd.(E485392)	JD-505	Silicone Rubber (SIR). Fills the case so to completely cover all electrical components and the circuit board. RTI 150 C.	

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F) IG (I) LL
Main Board						
10	Printed Wiring Board	ZPMV2, CN	Various	Various	Rated min. V-1, 130°C. Suitable for support of live parts. See ILL. 6 for trace layouts.	I6
11	Fuse (F1)	JDYX2, CN	CONQUER ELECTRONICS CO LTD (E82636)	MST	Rated 300 V, 1.6 A, connected in series with ungrounded supply.	
11.1	Alternate Fuse (F1)	JDYX, CN	Various	Various	Same as above.	
12	Varistor (MV1, MV2)	VZCA2, CN	Various	Various	SPD Type 5, minimum voltage rating 300 Vac, minimum temperature rating 105°C. Pigtail Lead covered by Electrical Tubing.	
13	Electrical Tubing	YDPU2, CN	Various	Various	Rated min. 300 V, 125 C	
14	X Capacitor (C1)	FOWX2, CN	Various	Various	Type X2, rated 310 V min., 110 C min, 0.15 uF max. Located across the line.	
15	Y Capacitor (C18, C104)	FOWX2, CN	Various	Various	Class Y1, rated 5k V min., 110 C min, 1.0 uF max. Bridging Primary to Secondary.	
16	Optical Isolator (IC6)	FPQU2, CN	Various	Various	Rated Isolation voltage 3.75 kV min., with minimum operating temperature 110 °C.	
17	Thermistor (RT3)	XGPU2, CN	Various	Various	Rated 3 A, 10 Ω at 25 C, max. Operating temperature 170 °C min	
18	Bridge Diode (D3A)	-	-	-	Rated min. 1000 V, 2 A.	
19	Diode (D8, D9, D87)	-	-	-	D8, D9: Rated min. 150 V, 3 A. D87: Rated min. 800 V, 0.8A.	
20	Capacitor (C2, C38)	-	-	-	Rated 450 V min., 0.22 uF max.	
21	MOSFET (Q1, Q7, Q11)	-	-	-	Q1: Rated min. 700 V, 11 A. Q7, Q11: Rated min. 700 V, 4 A.	
22	IC (IC1)	-	-	2101-S08-MP44014GS-Z	SMD type. Consists of 8 pins.	

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
Daughter Board I						
23	Printed Wiring Board	ZPMV2, CN	Various	Various	Soldered to Main Board. Located in Primary. Rated min. V-1, 130°C. Suitable for support of live parts. See ILL. 7 for trace layouts.	I7
24	Optical Isolator (IC4A, IC12A)	FPQU2, CN	Various	Various	Rated Isolation voltage 3.75 kV min., with minimum operating temperature 110 °C	
25	Electrolytic Capacitors (C9, C14)	-	-	-	C9, C14: Rated 350 V min., 105 °C min, 15 uF max.	
26	Diode (D18)	-	-	-	Rated min. 800 V, 2 A.	
27	IC (U1)	-	-	2601-BMD301AR	SMD type. Consists of 47 pins.	
28	IC (IC2)	-	-	2101-SO16-HR1001B-C859	SMD type. Consists of 16 pins.	
29	IC (IC14)	-	-	2101-TSSOP14-STM32L021D4P7	SMD type. Consists of 14 pins.	
30	IC (IC19)	-	-	2101-UFDFPN8-ST25DV04K	SMD type. Consists of 8 pins.	
31	Tape	OANZ2	Various	Various	PET tape, 0.05 mm thick per layer. Rated 105 C min. One layer provided. Provide insulation Between Daughter Board Components on to Main Board L2, T1	
32	Internal Lead Wire	AVLV2, CN	Various	Various	Min. 32 AWG X 2, rated min. 30 V, min. 105 °C, 48 mm long. Connected to Daughter board II. Completely enclosed in Housing. Not subject to movement.	
33	ANTENNA wire	-	-	-	RF, ANTENNA, 2.4GHZ, UFL, WIRE WHIP, 150MM, 14 WL+YELLO SHRINK TUBE	
Daughter Board II						
34	Printed Wiring Board	ZPMV2, CN	Various	Various	Connected to Daughter Board I by Internal Lead Wire. Rated min. V-1, 130°C. See ILL. 8 for trace layouts.	I8
35	Tape	OANZ2	Various	Various	PET tape, 0.05 mm thick per layer. Rated 105 C min. One layer provided to cover the Printed Wiring Board. Provide insulation between Daughter Board II and Enclosure.	

Wound devices - See below for details:

No.	Item	CCN	Manufacturer (File Number)	Part Number	Rating	(F) IG (I) LL
1	Line Filter (L1)	-	-	-	-	
1.1	Core	-	-	-	Ferrite. Overall 12 mm OD x 6 mm ID x 6.5 mm thick.	
1.2	Coil (N1, N2)	OBMW2	Various	Various	Enamel copper wire, 130 °C min., Fully covered with Tape. 0.25 mm diameter x 1P, 65 turns for each winding.	
1.3	Tape	OANZ2	Various	Various	PET tape, 0.025 mm thick per layer, 1 layers provided for outer wrap.	
2	Inductor (L3)	-	-	-	-	-
2.1	Core	-	-	-	Ferrite. Overall 11.2 mm OD x 5.8 mm ID x 4 mm thick.	-
2.2	Coil	OBMW2	Various	Various	Enamel copper wire, 130 °C min., Fully covered with Tape. 0.29 mm diameter x 1P, 110 turns.	-
2.3	Tape	OANZ2	Various	Various	PET tape, 0.025 mm thick per layer, 1 layers provided for outer wrap.	-
3	Line Filter (L5)	-	-	-	-	-
3.1	Core	-	-	-	Ferrite. Overall 7 mm OD x 4 mm ID x 4 mm thick.	-
3.2	Coil (N1, N2)	OBJT2	Various	Various	Insulated Winding Wire, 130 °C min. 0.3 mm diameter x 1 P, 5 turns for each winding.	-
4	Inductor (L2)	-	-	-	-	-
4.1	Core	-	-	-	Ferrite. Overall 17.2 x 11.2 x 14 mm (L x W x H).	-
4.2	Coil (N1, N2)	OBMW2	Various	Various	Enamel copper wire, 130 °C min., windings separated from each other by bobbin. N1: 0.1 mm diameter x 6P, 110 turns. N2: 0.12 mm diameter x 1P, 22 turns.	-
4.3	Bobbin	QMFZ2	Various	Various	Phenolic, Rated 0.71 mm thick min., rated V-0, 130 C.	-
4.4	Tape	OANZ2	Various	Various	PET tape, 0.025 mm thick per layer, 3 layers provided for outer wrap.	-

No.	Item	CCN	Manufacturer (File Number)	Part Number	Rating	(F) IG (I) LL
5	Inductor (L7)	-	-	-	-	-
5.1	Core	-	-	-	Ferrite. Overall 8 mm OD x 4 mm ID x 4 mm thick.	-
5.2	Coil (N1)	OBJT2	Various	Various	Insulated Winding Wire, 130 °C min. 0.5 mm diameter x 1 P, 4 turns.	-
5.3	Coil (N2)	OBMW2	Various	Various	Enamel copper wire, 130 °C min., windings separated from each other by bobbin. N1: 0.5 mm diameter x 1P, 4 turns.	-

No.	Item	CCN	Manufacturer (File Number)	Part Number	Rating	(F) IG (I) LL
6	Transformer (T1)	-	-	-	Refer to Ill. 9 for details. Manufactured by the manufacturer in item 6.0.	I9
	Electrical Insulation System for T1	OBJY2	DONGGUAN ZHONGKAI ELECTRONIC CO LTD (E349803)	Tai Hu 130-TM	Class 130(B). Table IX.	
	Alternate Electrical Insulation System for T1	OBJY2	ENERGY RECOVERY PRODUCTS (ZHUHAI) CO LTD (E472467)	ERP-130	Class 130(B). Table IX.	
	Alternate Electrical Insulation System for T1	OBJY2	YUDU COUNTY ASET ELECTRONIC TECHNOLOGY CO LTD (E354764)	130-TM	Class 130(B). Table IX.	
6.1	Core	-	-	-	Ferrite, 18.2 by 11.2 by 13 mm overall. Wrapped by Tape (item 6.4) to provide spacing between windings to Core.	-
6.2	Bobbin	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	Sumikon PM- 9820	Phenolic, 0.71 mm thick minimum, rated V-0, 150 °C. Three-flange type. Min. 0.8 mm bent-up tape on bobbin provided spacing between primary and secondary windings.	-
6.3	Primary and Secondary Winding	OBMW2	Various	Various	ANSI type MW28/35/36/37/38/73/74/75/79/80/82 /83/85. Rated min. 130°C.	-
6.4	Tape	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350T-1 (b)	PET tape, 0.025 mm thick per layer, 2 layers provided.	-
6.5	Primary Crossover Lead Insulation	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350T-1 (b)	Min. 2 layer tape (ITEM 6.6) provided.	-
6.6	Tubing	YDPU2, CN	GREAT HOLDING INDUSTRIAL CO LTD (E156256)	TFT	Rated min. 300 V, 200 C, min. Provided at leads out	-
6.7	Varnish	OBOR2	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD (E228349)	T-4260 (a)	Rated 130 °C min. Suitable for ANSI type MW28/80/76.	-

Winding devices (Cont'd):

Transformer (T1)				
Winding	Location	Pin	Diameter, mm x strand	Number of Turns
N1	PRI	4-1	0.14 x 1	75
N2	PRI	2-3	0.14 x 1	6
N3A	PRI	7-C	0.1 x 13	10
N3B	PRI	C-8	0.1 x 13	10
N4	SEC	5-A	0.2 x 1	3
N5	SEC	A-6	0.2 x 1	2
N6	SEC	D-B	0.2 x 1	2