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REPORT

on

Light-emitting-diode Drivers

ENERGY RECOVERY PRODUCTS (ZHUHAI) CO LTD
ZHUHAI, GUANGDONG 519060, CHINA

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DESCRIPTION

PRODUCT COVERED:

USL, CNL- LED Driver, Class P, PKMPPW-XXXX-VV-**ZZZZZZ-YYYYYY** Series.

MODEL NOMENCLATURE:

TABLE I*Series:	PKM	PPW	-	XXXX	-	VV	-	ZZZZZZ	-	YYYYYY
Group:	1	2	-	3	-	4	-	5	-	6

Group	Description
1	Series name = PKM
2	Represents output power, When YYYYY = "HBL", PP = "15" if 10 W < output Power ≤ 16 W = "30" if 20 W < output Power ≤ 30 W = "40" if 30 W < output Power ≤ 40 W = "50" if 40 W < output Power ≤ 50 W = "65" if 50 W < output Power ≤ 65 W
	Represents output power, When YYYYY = blank, PP = "15" if 10 W < output Power ≤ 15 W = "20" if 15 W < output Power ≤ 20 W = "30" if 20 W < output Power ≤ 30 W = "40" if 30 W < output Power ≤ 40 W = "50" if 40 W < output Power ≤ 50 W
3	Represents output current, When YYYYY = "HBL", XXXX = any 4 digit number not more than 1500 (mA) when output power ≤ 60 W; = any 4 digit number not more than 1233 (mA) when 60 W < output power ≤ 65 W
	Represents output current, When YYYYY = blank, XXXX = any 4 digit number not more than 1400 (mA);
4	Represents output voltage, , When YYYYY = "HBL", VV = any 2 digit number between 24 and 40 (Vdc) when output power ≤ 60 W; = any 2 digit number between 40 and 55 (Vdc) when 60 W < output power ≤ 65 W
	Represents output voltage, , When YYYYY = blank, VV = any 2 digit number between 10 and 55 (Vdc);
*5	Represents type of I/O connection, **ZZZZZZ** **= may be replaced by 1-6 digits of any combination of alphanumeric characters in addition to the following or blank:** = "TD", "T", "TD-X", **"TN" or "TN-X" where "T" denotes** Push-In Terminals **and** **"D", denotes isolated wiring circuit provided** **"N" denotes non-isolated wiring circuit provided** = "SD", "S", "SD-X", **"SN" or "SN-X" where "S" denotes I/O lead** wires exit at cover **and** **"D", denotes isolated wiring circuit provided** **"N", denotes non-isolated wiring circuit provided** = "NS", "NS-X", **"NN" or "NN-X" where "S" denotes** Lead wires exit at front and rear **of enclosure** **1st "N", denotes isolated wiring circuit provided** **2nd "N", denotes non-isolated wiring circuit provided**
	Represents type of I/O connection, When **YYYYYY** = "HBL", **ZZZZZZ** = "TD", **"TN", where "T" denotes** Push-In Terminals **and** **"D", denotes isolated wiring circuit provided** **"N" denotes non-isolated wiring circuit provided**
6	**Represents customer code for market purposes only, YYYYYY** = "HBL" or blank or any combination of alphanumeric characters

ELECTRICAL RATINGS:

Model No.	Rated Input [ ] CC [ ] CV				Rated Output [X] CC [ ] CV			
	Voltage Vac	Freq. Hz	Max Current (A)	Max Power (W)	Voltage Vdc	[ ] Hz	Max Current (mA)	Max Power (W)
***PKM65W-1500-40-TD-HBL, PKM65W-1500-40-TN-HBL**	120-277	50/60	0.70	84	24-40	-	1500	60
PKM65W-1233-55-TD-HBL, **PKM65W-1233-55-TN-HBL**	120-277	50/60	0.70	84	40-55	-	1233	65
PKM50W-1200-40-TD-HBL, PKM50W-1200-40-TN-HBL	**120-277**	**50/60**	**0.70**	**84**	**24-40**	**-**	**1200**	**50**
PKM30W-0757-40-TD-HBL, PKM30W-0757-40-TN-HBL	**120-277**	**50/60**	**0.70**	**84**	**24-40**	**-**	**757**	**30**
PKM50W-1400-55-TD, PKM50W-1400-55-SD, PKM50W-1400-55-NS	120-277	50/60	0.53	63.6	10-55	-	1400	50
PKM30W-1050-55-TD, PKM30W-1050-55-SD, PKM30W-1050-55-NS, PKM30W-1050-55-TN	**120-277**	**50/60**	**0.53**	**63.6**	**10-55**	**-**	**1050**	**30**

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

USL – Products designated USL have been investigated using US requirements as noted in the Test Record.

CNL – Products designated CNL have been investigated using Canadian requirements as noted in the Test Record.
*

DIFFERENCES BETWEEN MODELS:

All products covered in this report utilize the same PWB design. The different output voltages and power levels are achieved by means of changes in component values in both primary and secondary circuits.
*
Models where **ZZZZZZ**="TD" is identical to models where **ZZZZZZ**="T" except **for** Model **designation.**
*
Models where **ZZZZZZ**="SD" is identical to models where W="S" except **for** Model **designation.**

Product characteristics-

Model No. [x] applies to all models **where "ZZZZZZ"= TD, T, TD-X or SD, S, SD-X or NS, NS-X -** see **Model Nomenclature**	Input Type	Branch Circuit (Mains)	
	Output Type	Class 2 (a) LED Class 2 (b)	
	Environmental Conditions	Dry, Damp	
	Additionally evaluated to UL 8750 Supplements	[ ] SA- SREC	[ ] Evaluation per SA3.2 [ ] Evaluation per SA4
		[ ] SB- Type HL	
		[ ] SC- Type TL	Tref max/ Measured Tref- xx/ yy ° C
		[X] SE- Class P	
		[X] SF- Wired control Circuits(c)	0-10V Dimming: Class 2 (a) LED Class 2 (b) [X] Evaluated per SF3.1 [ ] per exception 1 [ ] per exception 2 [ ] Not Isolated
		[X] SG- Temperature value @ Tc	@90 ° C
		[ ] SH- Phase cut dimming	
		[ ] SI- Type IC LED driver	
		[ ] SK- Double Insulated LED equipment	

Model No. [x] applies to all models where "ZZZZZZ"= "TN", "TN-X", "SN", "SN-X", "NN" or "NN-X" - see Model Nomenclature	**Input Type**	**Branch Circuit (Mains)**	
	Output Type	**Class 2 (a) LED Class 2 (b)**	
	Environmental Conditions	**Dry, Damp**	
	Additionally evaluated to UL 8750 Supplements	**[ ] SA- SREC**	**[ ] Evaluation per SA3.2 [ ] Evaluation per SA4**
		[ ] SB- Type HL	
		[ ] SC- Type TL	**Tref max/ Measured Tref- xx/ yy ° C**
		[X] SE- Class P	
		[X] SF- Wired control Circuits(c)	**[X] Evaluated per SF3.1 [ ] per exception 1 [X] per exception 2 [ ] Not Isolated**
		[X] SG- Temperature value @ Tc	**@90 ° C**
		[ ] SH- Phase cut dimming	
		[ ] SI- Type IC LED driver	
		[ ] SK- Double Insulated LED equipment	

a- As defined in UL 8750, Clause 7.12.1
b- As defined in CAN/CSA-C22.2 No. 250.13, Annex A
c- Supplement SF has a future effective date: 2021-11-02

@ see table below for TC Location

Model	ILL. Number
PKMPPW-XXXX-VV-ZZZZZZ-HBL	27
PKMPPW-XXXX-VV-TD/T/TD-X/TN/TN-X	28
PKMPPW-XXXX-VV-SD/S/SD-X/SN/SN-X	29
PKMPPW-XXXX-VV-NS/NS-X/NN/NN-X	30

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.

Compliance with applicable Canadian requirements is confirmed based on the UL Mark for Canada for the component (i.e. c-UL coverage, which is identified by the UL CCN followed by 7, 8 or 9). Alternatively, the description may include 'CN' immediately after the UL CCN. CN indicates that UL Evaluation Staff have verified that the component meets applicable Canadian requirements for the component based on its CSA approval. 'CN' is always noted in conjunction with the UL CCN indicating UL Certification per applicable US requirements for the component.

Product markings & information on an instruction sheet 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	Environmental considerations	See product characteristics table- §
X	Electrical Ratings	See electrical ratings table- §
X	Input & Output Types	See product characteristics table- §
X	Class 2 outputs	See product characteristics table- 'Class 2' marked on the device.
X	Polarity of supply connections	Applies to Input, Output- §
X	Push-in terminals	For **ZZZZZZ** ="TD", "T", **"TN" or "TN-X"** only: The installation instructions contain the following information: a) For releasing the wire from the terminal connection, b) The intended wire size(s), c) Whether the terminal is intended for both solid and stranded or just solid wire, d) The length to strip the insulation from conductors, and e) The terminal relationship to the internal circuitry.
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); POUR LES CONNEXIONS, UTILISER DES CONDUCTEURS D'ALIMENTATION CONVENANT 90 °C"," or equivalent. Device marked 'Use only within an enclosure; DOIT ÊTRE INSTALLÉ DANS UNE ENCEINTE' or equivalent §̂
X	Wired Control Circuits	*See product characteristics table- **For all models:** 1. Identification of the terminals or lead wires for control circuits-§ 2. Identification of the intended industry or proprietary protocols-§ 3. Installation instructions 4. **[X] Device wired control circuit marked 'Class 2'** **For models where ZZZZZZ="TN", "TN-X", "SN", "SN-X", "NN" or "NN-X" only:** **6. [X] Notice: This control circuit is not isolated - see installation instructions" or equivalent- §, #** **7. [X] "CAUTION: More than one power supply present; ATTENTION: presence de plusieurs alimentations électriques")" or equivalent-§**
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- §
X	Harmonic Emissions ¥	Information to be provided in an instruction sheet or the like for LED drivers evaluated per CSA 250.13 (clause 8.13). Manufacturer indication regarding LED driver load types where the driver meets the harmonic emissions requirements of ANSI C82.77-10.
X	Grounding	"CASE MUST BE GROUNDED"

x- Denotes applicable product markings

§- For Components (built-in products) this information may be provided on the product, or on an instruction sheet or the like.

¥- This marking criteria is related to LED drivers evaluated per CSA 250.13. It has a future effective date of 2022-05-25.

Model PKM65W-1500-40-TD-HBL – FIGS. 1 - 3

Also represents Models PKM65W-1233-55-TD-HBL, PKM50W-1200-40-TD-HBL, PKM30W-0757-40-TD-HBL.

Model PKM50W-1400-55-TD – FIGS. 4 - 6

Also represents Models PKM30W-1050-55-TD

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	-	-	-	Galvanized sheet steel, 0.6 mm thick min. Two-part construction, secured together by snap fit. **Provided with two openings for Terminal Blocks; one opening for Data Socket and an optional opening for Enclosure Plug.** PKM65W-1500-40-TD-HBL: I1 PKM50W-1400-55-TD: I2	I1 I2
2	Heat Sink for Q2 and D4	-	-	-	Optional. Aluminum. Two provided. Riveted to Enclosure cover. Fully wrapped by Insulation Tape. See ILL.3 for D4 heatsink dimensions. See ILL. 4 for Q2 heatsink dimensions.	I3 I4
3	Terminal Block Housing	QMFZ2	E I DUPONT DE NEMOURS & CO INC	FR530(l)(+)(f1), FR530L(l)(+)(f1)	Two provided, to shroud both terminal blocks J1 and J2. PET. Rated 5VA, 155°C, 0.9 mm thick min. Mechanically fitted on PWB. ILL. 5 for J1 dimensions ILL. 6 for J2 dimensions	I5 I6
4	Printed Wiring Board Spacer	QMFZ2	Various	Various	Three Provided. Silicone rubber, min. rated V-1, 130°C. Each measured 12 x 5 x 2 mm thick. Secured on bottom of Printed Wiring	
5	Enclosure plug	QMFZ2	Various	Various	**Optional**. Silicone (SIR). Rated V-0, 150°C. Secured to Enclosure cover opening by interference fit. See ILL. 7 for dimensions.	I7
6	Insulation Sheet	QMFZ2	Various	Various	PET film, 0.18 mm thick minimum, provided as insulation between PWB assembly and metal enclosure.	I8
7	Insulation Tape	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350T-1 (b)	PET tape, 130°C, 0.05 mm thick per layer, one layers provided. Cover the surface of Heat Sink.	
7.1	Alternate	OANZ2	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD (E246950)	JY25-A (b)	Same as above except PET film type.	
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No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
8	Potting compound-thermoplastic	QMFZ2	DONGGUAN ZHAOSHUN SILICONE TECHNOLOGY CO LTD (E329120)	ZS-GF	Silicone (SI), rated V-0, 150°C. Fills the case so to completely cover all electrical components and the circuit board.	
8.1	Alternate	QMFZ2	DONGGUAN CITY JIA DI NEW MATERIALS CO LTD (E485392)	JD-505	Potting Silicone Material, min. V-0, min. 150 °C. Fully filled in enclosure.	-
8.2	Alternate	QMFZ2	GUANGDONG HAOMING ORGANIC SILICON MATERIAL CO LTD (E318202)	HM-9180	Potting Silicone Material, min. V-0, min. 150 °C. Fully filled in enclosure.	-
9	Printed Wiring Board Assembly	-	-	-	PKM65W-1500-40-TD-HBL: Fig 7, 8 PKM50W-1400-55-TD: Fig 9, 10	

PWB Assembly Model PKM65W-1500-40-TD-HBL – **FIGS**. 7, 8

Also **represents Models** PKM65W-1233-55-TD-HBL, PKM50W-1200-40-TD-HBL, PKM30W-0757-40-TD-HBL.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F) IG (I) LL
1	Input Terminal Block (J1)	XCFR2, XCFR8	DONGGUANSHI CHANGHE ELECTRONICS CO LTD (E256644)	CS200-00-350-04P-01Y-247	Push-in type. 4 poles, void 1-pin. Rated 300 V, 10 A, 120C, suitable for factory/field wiring of 16-24 AWG copper solid/stranded conductors. Maintained minimum 3.2 mm through air and 6.4 mm over surface spacing between terminals of opposite polarity, and between terminals and metal enclosure. Surrounded by Terminal Block Housing.	
2	Output/Dimming Terminal Block (J2)	XCFR2, XCFR8	Various	Various	Located in the Class 2 circuit. Push-in type. Rated min. 100 V, 2 A, 105°C, acceptable for field wiring 16-24 AWG, Copper conductor. Do not have brown color Pole. Surrounded by Terminal Block Housing.	
3	Functional Grounding Lead	AVLV2, AVLV8	Various	Various	26 AWG, rated 300 V, 105 C with green insulation. Soldered to PWB and other end press fitted between Enclosure parts.	
4	Printed Wiring Board	ZPMV2, ZPMV8	Various	Various	Rated min. V-1, 130 C. Suitable for support of live parts. Secured in Enclosure by physical fit.	I9
5	Fuse	JDYX8, JDYX8	DONGGUAN REOMAX ELECTRONICS TECHNOLOGY (E340427)	SST	Rated 300 V, 2 A, connected in series with ungrounded supply	
6	Alternate - Fuse	JDYX, JDYX7	Various	Various	Same as above	
7	Capacitor (C1)	FOWX2, FOWX8	Various	Various	Rated 310 V min., 130 C min, 0.22 uF max. Located Primary to Ground.	
8	Capacitor (C5, C6)	FOWX2, FOWX8	Various	Various	Class Y1. Rated 400 V min., 130 C min, 1500 pF max. Located Primary to Ground.	
9	Capacitor (C27)	FOWX2, FOWX8	Various	Various	Class Y1. Rated 400 V min., 130 C min, 4700 pF max. Bridging Primary to secondary.	
10	Optical Isolator (IC2, IC6, IC22)	FPQU2, FPQU8	Various	Various	Rated 3750 V isolation voltage, 110°C minimum. IC2, IC6: Bridging primary to secondary. IC22: Bridging secondary to Wired Control circuit.	

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
11	Varistor (MV1, MV2)	VZCA2, VZCA8	Various	Various	SPD Type 5, minimum voltage rating 320 Vac, minimum temperature rating 105°C.	
12	Electrical Tubing	YDPU2, YDPU8	Various	Various	Rated min. 300 V, 125 C Covered the pigtail lead of C11	
13	Insulation Tape	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350T-1 (b)	PET tape, **130°C**, 0.05 mm thick per layer, one layers provided. Cover C11 measured 21 mm from top Cover bottom and front face of Terminal Block (J1, J2)	
13.1	Alternate	OANZ2	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD (E246950)	JY25-A (b)	Same as above except PET film type.	
*14	Thermal Pad	QMFZ2	**Various**	**Various**	Silicone (SIR), rated V-0, 105°C. Two provided, secured between Heatsink and Q2, D4 body. For Q2: Overall 8 mm by 8 mm, 2.5 mm thick. For D4: Overall 8 mm by 8 mm, 2.5 mm thick.	
15	Data socket (J6)	-	-	-	2.5mm jack socket. 4 pins. Constructed of R/C (QMFZ2) material, rated HB min., 90°C min. Soldered to PWB.	I10
16	Electrolytic Capacitor (C11, C17, C160, C34, C157, C167)	-	-	-	Electrolytic type, 105C C11: max 2700uF,63V C17,C160: 22uF, 50V C34: 270uF, 16V C157: 10uF, 100V C167: 33uF, 120V	
17	Electronic Component List	-	-	-	See I11 for **details**.	I11

Winding devices – See below for details.

No.	Item	CCN	Manufacturer (File Number)	Part Number	Rating	(F)IG (I)LL
1	Line Filter (L1)	-	-	-	Refer to Ill. 12 for details	I12
1.1	Core	N/A	N/A	N/A	Ferrite.	
1.2	Coil	OBMW2	Various	Various	Insulated Winding Wire, 130°C min	
1.3	Bobbin	QMFZ2	Various	Various	Phenolic, 0.71 mm thick minimum, rated 150°C	
2	Line Filter (L3)	-	-	-	Refer to Ill. 13 for details	I13
2.1	Core	N/A	N/A	N/A	Ferrite, 7.4 mm OD x 4 mm thick	
2.2	Coil	OBJT2	Various	Various	Insulated Winding Wire, 130°C min	

Winding devices – See below for details.

No.	Item	CCN	Manufacturer (File Number)	Part Number	Rating	(F)IG (I)LL
3	Transformer (T1)	-	-	-	Refer to Ill. 14 for details	I14
3.0	Electrical insulation system (EIS)	OBJY2, OBJY8	ENERGY RECOVERY PRODUCTS (ZHUHAI) CO LTD (E472467)	ERP-130	Class 130(B). Table IX.	
3.1	Core	-	-	-	Ferrite, 25 by 32 by 11 mm overall. Outer wrapped with 2 layers of Insulation Tape.	
* 3.2	Bobbin	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	PM-9630, **PM-9820**	Phenolic, 0.71 mm thick minimum, rated 155°C.	
3.3	Primary Winding	OBMW2	Various	Various	ANSI Type MW79/80/82/83, rated 155°C. Provided with 2 layers of Insulation Tape with a continuous 0.8 mm minimum wide bent up edge to maintain spacing between primary and secondary winding. See table below for details.	
3.4	Secondary Winding	OBMW2	Various	Various	ANSI Type MW79/80/82/83, rated 155°C. Provided with 2 layers of Insulation Tape with a continuous 0.8 mm minimum wide bent up edge to maintain spacing between primary and secondary winding. See table below for details.	
3.5	Tape	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350F-1 (b)	Polyester film tape, rated 130°C minimum, 0.025 mm thick per layer. Minimum 2 layers.	
3.6	Primary Crossover Lead Insulation	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350F-1 (b)	Same as above.	
3.7	Tubing	YDPU2, YDPU8	GREAT HOLDING INDUSTRIAL CO LTD (E156256)	TFT	Rated 300 V, 200oC. For Leads out at D-E only.	
3.8	Varnish	OBOR2	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD (E228349)	T-4260(a)	Rated minimum 130°C. For ANSI type MW28/80/76.	

Model Difference for Model PKM65W-1500-40-TD-HBL, PKM65W-1233-55-TD-HBL, PKM50W-1200-40-TD-HBL, PKM30W-0757-40-TD-HBL

Component	Model PKM65W-1500-40-TD-HBL	Model PKM65W-1233-55-TD-HBL
R16	RES,0603,11.5K,1%	RES,0603,10K,1%
R17	RES,1206,0.24-OHM,1/2W	RES,1206,0.3-OHM,1%,1W,LOW TCR
R178	RES,0805,86.6K,1%	RES,0805,118K-OHM,1%
R184	RES,0402,28.7K,1%	RES,0402,22.1K,1%
R201	RES,0402,9.31K,1%	RES,0402,15K,1%
R212	RES,0603,140K,1%	RES,0603,169K,1%
C159	CAP,X7R,0603,1000pF,50V,10%	CAP,NPO,0603,680pF,50V,2%
Z29	DIODE,ZENER,SOD123,27V,50uA	DIODE,ZENER,SOD123,33V,0.5W,2%

Component	Model PKM65W-1500-40-TD-HBL	Model PKM50W-1200-40-TD-HBL
R16	RES,0603,11.5K,1%	RES,0603,9.31K,1%
R150	RES,0603,10K,1%	RES,0603,0-OHM,1%
R202	RES,2W,15-OHM,1%	RES,2W,10-OHM,1%
R212	RES,0603,140K,1%	/
C4	CAP,MPP,0.47uF,450V,10% ,12.5L X 11.7H X 4.6W X10P	CAP,MPP,0.33uF,450V,10%,12.3LX12HX4.4X10P,110C
C170	CAP,X7R,0603,1uF,25V,MUL,10%	CAP,X7R,0603,1uF,25V,MUL,10%
Q2	TRANSISTOR,5X6,11A,700V,0.4OHM	MOSFET,Power FLAT 5X6,650V,11A,0.36 Ohm

Component	Model PKM65W-1500-40-TD-HBL	Model PKM30W-0757-40-TD-HBL
R202	RES,2W,15-OHM,1%	RES,2W,10-OHM,1%
C1	CAP,X2,0.22UF,310VAC,10%,13LX14HX8WX10P	CAP,X2,0.15UF,310VAC,10%,13LX12HX6WX10P,AI taping
C4	CAP,MPP,0.47uF,450V,10% ,12.5L X 11.7H X 4.6W X10P	CAP,MPP,0.15uF,450V,10%,12.3L X 7.8H X 3.8W X10P
C11	CAP,AE,2700uF,63V,16X40,105C,20%,10KHr	CAP,AE,2200uF,63V,16X35,105C,20%,10KHr
C170	CAP,X7R,0603,1uF,25V,MUL,10%	CAP,X7R,0603,1uF,25V,MUL,10%

PWB Assembly Model PKM50W-1400-55-TD – FIG. 9, 10
Also represent Model PKM30W-1050-55-TD, PKM30W-1050-55-TD-X

Identical to model PKM65W-1500-40-TD-HBL except followings:

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
2	Output/Dimming /NTC Terminal Block (J2)	XCFR2, XCFR8	Various	Various	Located in the Class 2 circuit. Push-in type. Rated min. 100 V, 2 A, 105°C, acceptable for field wiring 16-24 AWG, Copper conductor. Surrounded by Terminal Block Housing. Model PKM50W-1400-55-TD: have a brown color Pole. Model PKM50W-1400-55-TD-X: Do not have brown color Pole.	
16	Electrolytic Capacitor (C11, C17, C160, C34, C157, C20, C166, C167)	-	-	-	Electrolytic type, 105C C11: Max 2700uF, 63V C17, C160: 22uF, 50V C34: 270uF, 16V C157: 10uF, 100V C20: 10uF ,50V C166, C167: 33uF, 120V	
17	Electronic Component List	-	-	-	Model PKM50W-1400-55-TD: I15 Model PKM30W-1050-55-TD: I16	I15 I16

LED Driver, Model PKM50W-1400-55-SD – FIG. 11 - 13

General - The general design, shape and arrangement shall be as illustrated except where variations are specifically described. Also represent Models PKM50W-1400-55-SD-X, PKM30W-1050-55-SD, PKM30W-1050-55-SD-X.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Enclosure	-	-	-	Galvanized sheet steel, 0.6 mm thick min. Two-part construction, secured together by snap fit. **Provided with two openings for Bushing; one opening for Data Socket and an optional opening for Enclosure Plug. See ILL. For detailed dimensions.**	I17
2	Heat Sink for Q2 and D4	-	-	-	Optional. Aluminum. Two provided. Riveted to Enclosure cover. Fully wrapped by Insulation Tape. See ILL.3 for D4 heatsink dimensions. See ILL. 4 for Q2 heatsink dimensions.	I3 I4
3	Bushing	-	-	-	Two provided. Thermo-Plastic-Rubber (TPR), 13.8 mm diameter, min. 1.2 mm thick. Mechanically fitting on the openings for leads out.	
4	Printed Wiring Board Spacer	QMFZ2	Various	Various	Three Provided. Silicone rubber, min. rated V-1, 130°C. Each measured 12 x 5 x 2 mm thick. Secured on bottom of Printed Wiring	
5	Enclosure plug	QMFZ2	Various	Various	**Optional**. Silicone (SIR). Rated V-0, 150°C. Secured to Enclosure cover opening by interference fit. See ILL. 7 for dimensions.	I7
6	Insulation Sheet	QMFZ2	Various	Various	PET film, 0.18 mm thick minimum, provided as insulation between PWB assembly and metal enclosure.	I18
7	Insulation Tape	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350T-1 (b)	PET tape, 130°C, 0.05 mm thick per layer, one layers provided. Cover the surface of Heat Sink.	
7.1	Alternate	OANZ2	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD (E246950)	JY25-A (b)	Same as above except PET film type.	
8	Potting compound-thermoplastic	QMFZ2	DONGGUAN ZHAOSHUN SILICONE TECHNOLOGY CO LTD (E329120)	ZS-GF	Silicone (SI), rated V-0, 150°C. Fills the case so to completely cover all electrical components and the circuit board.	
8.1	Alternate	QMFZ2	DONGGUAN CITY JIA DI NEW MATERIALS CO LTD (E485392)	JD-505	Potting Silicone Material, min. V-0, min. 150 °C. Fully filled in enclosure.	
*						

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
8.2	Alternate	QMFZ2	GUANGDONG HAOMING ORGANIC SILICON MATERIAL CO LTD (E318202)	HM-9180	Potting Silicone Material, min. V-0, min. 150 °C. Fully filled in enclosure.	
9	Printed Wiring Board Assembly	-	-	-	See Figure 14, 15 for Detail	

PWB Assembly Model PKM50W-1400-55-SD – FIG. 14, 15
Also represent Model PKM30W-1050-55-SD, PKM30W-1050-55-SD-X

Identical to model PKM50W-1400-55-TD except followings:

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F) IG (I) LL
1	Input Terminal Block (J1)	XCFR2, XCFR8	DONGGUANSHI CHANGHE ELECTRONICS CO LTD (E256644)	CS200-00-350-04P-01Y-247	Not provided	
2	Output/Dimming /NTC Terminal Block (J2)	XCFR2, XCFR8	Various	Various	Not provided	
16	Electrolytic Capacitor (C11, C17, C160, C34, C157, C20, C166, C167)	-	-	-	Electrolytic type, 105C C11: Max 2700uF,63V C17, C160: 22uF, 50V C34: 270uF, 16V C157: 10uF, 100V C20: 10uF,50V C166, C167: 33uF, 120V	
17	Electronic Component List	-	-	-	PKM50W-1400-55-SD: I19 PKM30W-1050-55-SD: I20	I19 I20
18	Input/Output Leads	AVLV2, AVLV8	Various	Various	18 AWG, rated 300 V, 105 C, min. 152 mm long	
*19	Diming/NTC Leads	AVLV2, AVLV8	Various	Various	**Min. 24** AWG, rated 300 V, 105 C, min. 152 mm long. Model PKM50W-1400-55-SD: have a brown color lead. Model PKM30W-1050-55-SD-X: do not have brown color lead	

LED Driver, Model PKM50W-1400-55-NS – FIG. 16 - 18

General - The general design, shape and arrangement shall be as illustrated except where variations are specifically described. Also represent Models PKM50W-1400-55-NS-X, PKM30W-1050-55-NS, PKM30W-1050-55-NS-X.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Enclosure	-	Various	Various	Galvanized sheet steel, 0.6 mm thick min. Two-part construction, secured together by snap fit. **Provided with one opening for Data Socket and an optional opening for Enclosure Plug. See ILL. For detailed dimensions.**	I21
2	Heat Sink for Q2 and D4	-	-	-	Optional. Aluminum. Two provided. Riveted to Enclosure cover. Fully wrapped by Insulation Tape. See ILL.3 for D4 heatsink dimensions. See ILL. 4 for Q2 heatsink dimensions.	I3 I4
*3	Bushing	-	-	-	Made of SIR rubber. 2 provided for conductor Protection. Each bushing secured to Enclosure by physical fit. Input: See ILL. 22 for details. Output: See ILL. 23 for details.	I22 I23
4	Printed Wiring Board Spacer	QMFZ2	Various	Various	Three Provided. Silicone rubber, min. rated V-1, 130°C. Each measured 12 x 5 x 2 mm thick. Secured on bottom of Printed Wiring	
5	Enclosure plug	QMFZ2	Various	Various	**Optional**. Silicone (SIR). Rated V-0, 150°C. Secured to Enclosure cover opening by interference fit. See ILL. 7 for dimensions.	I7
6	Insulation Sheet	QMFZ2	Various	Various	PET film, 0.18 mm thick minimum, provided as insulation between PWB assembly and metal enclosure.	I24
7	Tape	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350T-1 (b)	PET tape, 130°C, 0.05 mm thick per layer, one layers provided. Cover the surface of Heat Sink.	
7.1	Alternate	OANZ2	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD (E246950)	JY25-A (b)	Same as above except PET film type.	
8	Potting compound-thermoplastic	QMFZ2	DONGGUAN ZHAOSHUN SILICONE TECHNOLOGY CO LTD (E329120)	ZS-GF	Silicone (SI), rated V-0, 150°C. Fills the case so to completely cover all electrical components and the circuit board.	
8.1	Alternate **#1**	QMFZ2	DONGGUAN CITY JIA DI NEW MATERIALS CO LTD (E485392)	JD-505	Potting Silicone Material, min. V-0, min. 150 °C. Fully filled in enclosure.	

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
8.2	Alternate #2	QMFZ2	GUANGDONG HAOMING ORGANIC SILICON MATERIAL CO LTD (E318202)	HM-9180	Potting Silicone Material, min. V-0, min. 150 °C. Fully filled in enclosure.	
9	Printed Wiring Board Assembly				See Figure 19, 20 for Detail	

PWB Assembly Model PKM50W-1400-55-NS – FIG. 19, 20
Also represent Model PKM30W-1050-55-NS, PKM30W-1050-55-NS-X

Identical to model PKM50W-1400-55-TD except followings:

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Input Terminal Block (J1)	XCFR2, XCFR8	DONGGUANSHI CHANGHE ELECTRONICS CO LTD (E256644)	CS200-00-350-04P-01Y-247	Not provided	
2	Output/Dimming Terminal Block (J2)	XCFR2, XCFR8	Various	Various	Not provided	
16	Electrolytic Capacitor (C11, C17, C160, C34, C157, C20, C166, C167)	-	-	-	Electrolytic type, 105C C11: Max 2700uF,63V C17, C160: 22uF, 50V C34: 270uF, 16V C157: 10uF, 100V C20: 10uF,50V C166, C167: 33uF, 120V	
17	Electronic Component List	-	-	-	PKM50W-1400-55-NS: I25 PKM30W-1050-55-NS: I26	I25 I26
18	Input/Output Leads	AVLV2, AVLV8	Various	Various	18 AWG, rated 300 V, 105 C, min. 152 mm long	
*19	Diming/NTC Leads	AVLV2, AVLV8	Various	Various	**Min.** 24 AWG, rated 300 V, 105 C, min. 152 mm long. Model PKM50W-1400-55-NS: have a brown color lead. Model PKM30W-1050-55-D-X: do not have brown color lead	

LED Driver, Model PKM65W-1500-40-TN-HBL – FIG. 21 THRU 24
(Also represents Models PKM60W-1500-40-TN-HBL; PKM65W-1233-55-TN-HBL, PKM50W-1200-40-TN-HBL, PKM30W-0757-40-TN-HBL)

LED Driver, Model PKM50W-1400-55-TN
(Also represents PKM50W-1400-55-NS-X, PKM30W-1050-55-NS, PKM30W-1050-55-NS-X, PKM50W-1400-55-NN, PKM50W-1400-55-NN-X, PKM30W-1050-55-NN, PKM30W-1050-55-NN-X)

Models PKM65W-1500-40-TN-HBL and PKM50W-1400-55-TN are identical to Models PKM65W-1500-40-TD-HBL and PKM50W-1400-55-TN respectively except as described below.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Enclosure	-	-	-	Galvanized sheet steel, 0.6 mm thick min. Two-part construction, secured together by snap fit. **Provided with two openings for Terminal Blocks; one opening for Data Socket and an optional opening for Enclosure Plug.** For PKM65W-1500-40-TN-HBL: See ILL.1; For PKM50W-1400-55-TN: See ILL. 2.	I1 I2
1.1	Alternate Enclosure	-	-	-	Only for models where Data socket (J6) is not provided. Same as above except not provided with Data Socket opening. See ILL for detailed dimensions.	I1A
9	Printed Wiring Board Assembly	-	-	-	For Model PKM65W-1500-40-TN-HBL, see FIG. 24 for details. For Model PKM50W-1400-55-TN, see page 18 for details.	F24

PWB Assembly for Model PKM65W-1500-40-TN-HBL – FIG.24
Also represents Model PKM65W-1233-55-TN-HBL, PKM50W-1200-40-TN-HBL, PKM30W-0757-40-TN-HBL. Identical to PWB Assembly for Model PKM65W-1500-40-TD-HBL except as described below.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
4	Printed Wiring Board Assembly	ZPMV2 ZPMV8	Various	Various	Rated V-1 minimum, 130°C minimum, suitable for direct support of live parts. 1.6 mm thick minimum, overall 56 mm by 103 mm. Physically located within base of Enclosure The foil pattern of Printed Wiring Board shall not be changed from that shown in ILL.	I9A
10	Optical Isolator IC22)	FPQU2 FPQU8	Various	Various	Not provided.	
*						

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
15	**Data socket (J6)**	**-**	**-**	**-**	**Optional. 2.5mm jack socket. 4 pins. Constructed of R/C (QMFZ2) material, rated HB min., 90°C min. Soldered to PWB.**	I10
17	Electronic Component List	--	--	--	See ILL. for details.	I11A

Winding Devices – See below for details.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
2	Transformer (T1)	--	--	--	Provided with Thermal pad-T1 for heatsinking to Enclosure cover. Outer wrapped with 2 layers of Insulation Tape. See ILL. for construction details.	I14A
2.0	Electrical Insulation System	OBJY2	ENERGY RECOVERY PRODUCTS (ZHUHAI) CO LTD (E472467)	ERP-130	Class 130(B). Table IX.	
2.1	Bobbin	QMFZ2	SUMITOMO BAKELITE CO LTD (E41429)	Sumikon PM-9820, PM-9630	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.	
2.2	Primary Coils (N1,N3,N5,N6)	OBMW2	Various	Various	ANSI Type MW28/MW75, min. rated 130°C. Provided with 2 layers of Insulation Tape with a continuous 0.8 mm minimum wide bent up edge to maintain spacing between primary and secondary winding. See table below for details.	
2.3	Secondary Coils (N2,N4,N8,N9)	OBMW2	Various	Various	ANSI Type MW28/MW75, rated min 130°C. Provided with 2 layers of Insulation Tape with a continuous 0.8 mm minimum wide bent up edge to maintain spacing between primary and secondary winding. See table below for details.	
2.4	Insulation Tape	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350F-1 (b)	PET tape, 0.025 mm thick per layer, 2 layers provided.	
2.5	Primary Crossover Lead Insulation	OANZ2	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350F-1 (b)	PET tape, 0.025 mm thick per layer, 2 layers provided.	
2.6	Varnish	OBOR2	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD (E228349)	T-4260(a)	Rated minimum 130°C.	

Component differences between Models PKM65W-1500-40-TN-HBL, PKM65W-1233-55-TN-HBL, PKM50W-1200-40-TN-HBL, PKM30W-0757-40-TN-HBL.

Component	Model PKM65W-1500-40-TN-HBL	Model PKM65W-1233-55-T-HBL
R16	RES,0603,11.5K,1%	RES,0603,10K,1%
R17	RES,1206,0.24-OHM,1/2W	RES,1206,0.3-OHM,1%,1W,LOW TCR
R178	RES,0805,86.6K,1%	RES,0805,118K-OHM,1%
R184	RES,0402,28.7K,1%	RES,0402,22.1K,1%
R201	RES,0402,9.31K,1%	RES,0402,15K,1%
R212	RES,0603,140K,1%	RES,0603,169K,1%
C159	CAP,X7R,0603,1000pF,50V,10%	CAP,NPO,0603,680pF,50V,2%
Z29	DIODE,ZENER,SOD123,27V,50uA	DIODE,ZENER,SOD123,33V,0.5W,2%
Component	Model PKM65W-1500-40-TN-HBL	Model PKM50W-1200-40-TN-HBL
R16	RES,0603,11.5K,1%	RES,0603,9.31K,1%
R150	RES,0603,10K,1%	RES,0603,0-OHM,1%
R202	RES,2W,15-OHM,1%	RES,2W,10-OHM,1%
R212	RES,0603,140K,1%	-
C4	CAP,MPP,0.47uF,450V,10%, 12.5L X 11.7H X 4.6W X10P	CAP,MPP,0.33uF,450V,10%, 12.3L X 12H X 4.4 X 10P, 110C
C170	CAP,X7R,0603,1uF,25V,MUL,10%	CAP,X7R,0603,1uF,25V,MUL,10%
Q2	TRANSISTOR,5X6,11A,700V,0.4OHM	MOSFET,Power FLAT 5X6,650V,11A,0.36 Ohm
Component	Model PKM65W-1500-40-TN-HBL	Model PKM30W-0757-40-TN-HBL
R202	RES,2W,15-OHM,1%	RES,2W,10-OHM,1%
C1	CAP,X2,0.22UF,310VAC,10%, 13LX14HX8WX10P	CAP,X2,0.15UF,310VAC,10%, 13LX12HX6WX10P,AI taping
C4	CAP,MPP,0.47uF,450V,10%, 12.5L X 11.7H X 4.6W X10P	CAP,MPP,0.15uF,450V,10%, 12.3L X 7.8H X 3.8W X10P
C11	CAP,AE,2700uF,63V,16X40,105C,20%,10KHr	CAP,AE,2200uF,63V,16X35,105C,20%,10KHr
C170	CAP,X7R,0603,1uF,25V,MUL,10%	CAP,X7R,0603,1uF,25V,MUL,10%

PWB Assembly for Model PKM50W-1400-55-TN
Also represents Models PKM30W-1050-55-TN, PKM30W-1050-55-TN-X; PKM50W-1400-55-TN; PKM30W-1050-55-TN, PKM30W-1050-55-TN-X;

Identical to PWB Assembly for Model PKM65W-1500-40-TN-HBL except as described below.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
2	Output/Dimming /NTC Terminal Block (J2)	XCFR2, XCFR8	Various	Various	Located in the Class 2 circuit. Push-in type. Rated min. 100 V, 2 A, 105°C, acceptable for field wiring 16-24 AWG, Copper conductor. Surrounded by Terminal Block Housing. Model PKM50W-1400-55-TD: have a brown color Pole. Model PKM50W-1400-55-TD-X: Do not have brown color Pole.	
16	Electrolytic Capacitor (C11, C17, C160, C34, C157, C20, C166, C167)	-	-	-	Electrolytic type, 105C C11: Max 2700uF, 63V C17, C160: 22uF, 50V C34: 270uF, 16V C157: 10uF, 100V C20: 10uF ,50V C166, C167: 33uF, 120V	
15	Data socket (J6)	-	-	-	Optional. 2.5mm jack socket. 4 pins. Constructed of R/C (QMFZ2) material, rated HB min., 90°C min. Soldered to PWB.	I10
17	Electronic Component List	-	-	-	Model PKM50W-1400-55-TN: ILL.15A Model PKM30W-1050-55-TN: ILL.16A	I15A I16A

LED Driver, Model PKM50W-1400-55-SN
(Also represents Models PKM50W-1400-55-SN, PKM50W-1400-55-SN-X, PKM30W-1050-55-SN, PKM30W-1050-55-SN-X.)

Model PKM50W-1400-55-SN is identical to Model PKM50W-1400-55-SD except as described below.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Enclosure	-	-	-	Galvanized sheet steel, 0.6 mm thick min. Two-part construction, secured together by snap fit. **Provided with two openings for Bushing; one opening for Data Socket and an optional opening for Enclosure Plug. See ILL. For detailed dimensions.**	I17
1.1	Alternate Enclosure	-	-	-	For models where Data Socket (J6) is not provided. Same as above except not provided with Data Socket opening. See ILL for detailed dimensions.	I.1A
9	Printed Wiring Board Assembly	-	-	-	See below for details.	

PWB Assembly for Model PKM50W-1400-55-SN
(Also represents PWB Assembly for Models PKM50W-1400-55-SN, PKM30W-1050-55-SN, PKM30W-1050-55-SN-X.)

Identical to PWB Assembly for Model PKM50W-1400-55-SD except as described below.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
2	Output/Dimming /NTC Terminal Block (J2)	XCFR2, XCFR8	Various	Various	Located in the Class 2 circuit. Push-in type. Rated min. 100 V, 2 A, 105°C, acceptable for field wiring 16-24 AWG, Copper conductor. Surrounded by Terminal Block Housing. Model PKM50W-1400-55-TD: have a brown color Pole. Model PKM50W-1400-55-TD-X: Do not have brown color Pole.	
16	Electrolytic Capacitor (C11, C17, C160, C34, C157, C20, C166, C167)	-	-	-	Electrolytic type, 105C C11: Max 2700uF, 63V C17, C160: 22uF, 50V C34: 270uF, 16V C157: 10uF, 100V C20: 10uF ,50V C166, C167: 33uF, 120V	

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
15	Data socket (J6)	-	-	-	Optional. 2.5mm jack socket. 4 pins. Constructed of R/C (QMFZ2) material, rated HB min., 90°C min. Soldered to PWB.	I10
17	Electronic Component List	-	-	-	Model PKM50W-1400-55-SN: ILL.19A Model PKM30W-1050-55-SN: ILL.20A	I19A I20A

LED Driver, Model PKM50W-1400-55-NN
(Also represents Models PKM50W-1400-55-NN-X, PKM30W-1050-55-NN, PKM30W-1050-55-NN-X.)

Identical to Model PKM50W-1400-55-NS except as described below.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Enclosure	-	-	-	Galvanized sheet steel, 0.6 mm thick min. Two-part construction, secured together by snap fit.	I21
1.1	Alternate Enclosure	-	-	-	For models where Data Socket (J6) is not provided. Same as above except not provided with Data Socket opening. See ILL for detailed dimensions.	I1A
9	Printed Wiring Board Assembly				See below for details.	

PWB Assembly for Model PKM50W-1400-55-NN
(Also represents Models PKM50W-1400-55-NN, PKM30W-1050-55-NN, PKM30W-1050-55-NN-X.)

Identical to PWB Assembly for Model PKM50W-1400-55-NS except as described below.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
15	Data socket (J6)	-	-	-	Optional. 2.5mm jack socket. 4 pins. Constructed of R/C (QMFZ2) material, rated HB min., 90°C min. Soldered to PWB.	I10
17	Electronic Component List	-	-	-	Model PKM50W-1400-55-NN: ILL.25A Model PKM30W-1050-55-NS: ILL.26A	I25A I26A