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Project 02ME17432

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REPORT

on

CORD CONNECTED
CLASS 2 POWER UNITS

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DESCRIPTION

PRODUCT COVERED:

USL, CNL - Class 2 power units, Model Family GT221097(CC)-YZ-X.X, where CC designates versions with constant current output, I_o; Y = maximum output power, P_o; Z = base open circuit output voltage, V_o, and X.X = optional deviation subtracted from base output (voltage/current) to provide output (voltage/current) in 0.1 volt/amps increments.

GENERAL:

The units covered by this Report are intended to be cord connected Class 2 power units, however, a power supply cord is not part of this evaluation.

The units consist of a transformer (and other related electronic circuitry) housed in a thermoplastic enclosure.

ELECTRICAL RATING:

Input: 100-240 V ac, 50-60 Hz, 1.6 A maximum

Output:

YZ	P _o	V _o	Max I _o
2003	20	3.3	5.0
3005	30	5	5.0
4509	45	9	5.0
5012	50	12	4.17
5015	50	15	3.3
5018	50	18	2.8
5024	50	24	2.1
5048	50	48	1.1

Each output current can vary up to its maximum rated current provided the rated output power is not exceeded.

@ Watts rating for informational purposes only. May or may not be provided on label.

Single output units are available with output voltages of 2 Vdc, min, to 48 Vdc in 0.1 V increments.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE'S USE):

CNL indicates investigation to Canadian National Standard C22.2 No. 223.1987, with the exception of Model GT221097-5048-X.X.

USL indicates investigation to United States Standard UL 1310.

The equipment is considered movable, Class II with functional earth, pluggable, used detachable power cord.

The suitability of the printed wiring board trace as part of the protective earthing path was not evaluated.

The equipment was submitted by the manufacturer for use in a maximum air ambient of 40°C.

CONSTRUCTION DETAILS:

The units shall be constructed in accordance with the following items. See also Sec. Gen., Construction Details.

Markings - See Sec. Gen., Markings.

MODEL GT-21097(CC)-YZ-X.X

FIG. 1 (M02-04881)

General - Figure 1 shows overall external top and bottom views.

1. Enclosure - R/C QMFZ2, Teijin Chemicals, Type LN-1250#, rated 94V-0. Overall measures 118 by 32 by 60 mm, minimum 2.0 mm thick. Constructed of two parts secured together by ultrasonic welding.

Alternate - Same as above, except GE Plastics, Type GE-100 or C6200, overall 118 by 39 by 60 mm, minimum 2.0 mm thick.

2. Appliance Inlet - Listed or R/C AXUT2, rated minimum 250 V, 10 A. Secured to Printed Wiring Boards by soldering.
3. Output Cable - R/C AVLV2, Style No. 1185, AWM, No. 18 AWG, VW-1, 80°C, 300 V, one end is soldered to Printed Wiring Boards, the other end is molded with connector barrel type.

Alternate - Same as above, except cable Style No. SPT-1, 18 AWG, VW-1, 105°C.

Alternate - Same as above, except cable, Style No. 2464, AWM, No. 20 AWG, VW-1, minimum 80°C, 300 V.

4. Output Cable Strain Relief - Molded on the Output Cable, Fig. 1, Item 3, through the Enclosure, Fig. 1, Item 1, opening overall 11 by 8 mm.

MODEL GT-21097(CC)-YZ-X.X

FIG. 2 (M02-04879)

FIG. 3 (M02-04880)

General - Figure 2 shows internal, top views of unit, with and without heat sink. Figure 3 shows bottom views of pc board, with and without bottom shield.

1. Fuse (F1, F2) - Listed JDYX, rated 250 V, 1.6 A, fuse body and leads entirely sleeved with R/C sleeving and/or tubing, see Section General for appropriate types. Fuse current and voltage rating are permanently marked adjacent to fuse, soldered to printed wiring boards.
2. Line Choke (LF1) - Rating 130°C. Open-type construction. Ferrite core, size 24.3 by 24.3 by 4 mm, coil of copper-magnet wire on three-flange bobbin, R/C QMFZ2, phenolic, rated minimum 94V-1, and 100°C, minimum 0.71 mm thick.
3. Line Choke (LF2) - Rating 130°C. Optional. Toroidal-type construction. Ferrite core, size 13.2 mm OD, 6.4 mm ID, 6.7 mm thick, coil of copper magnet wire-wound on the core.
4. X-Capacitor (C24) - (Optional). (Line-to-Line) R/C FOWX2 or FOKY2, marked X1 to indicate compliance with IEC 384-14, rated minimum 250 V, maximum 0.47 μ F.
5. Y-Capacitors (CY1, CY2, CY3) - (Optional). (Line-to-Ground) R/C FOWX2 or FOKY2, marked Y2 to comply with IEC 384-14, rated minimum 250 V, maximum 4700 pF.
6. Bulk Capacitor (C22) - Rated 150 μ F maximum, 400 V, minimum 95°C. Electrolytic type, provided with integral pressure relief.
7. Bleeder Resistors (R11, R16) - SMD type, rated 470 kilohm or 1 M Ω , 1/8 W.
8. Bridge Diode (BD1) - Rated 600 V, minimum 2 A.

9. Transformer (T1) - R/C (OBJY2), (Xepex, designation XPB-5 or SPB-5) Class B insulation system. Open-type construction. Core: Ferrite core. Overall 28.6 by 19.6 by 19 mm thick. Coil: Copper magnet wire-wound concentrically on two-flanged bobbin. Bobbin: R/C QMFZ2, phenolic, minimum 0.71 mm thick. Leads exit directly through integral flanges in bobbin and are mechanically secured and soldered to pins that are molded into bobbin.

<u>Location</u>	<u># Layer</u>	<u>Total Thickness (mm)</u>	<u>Material</u>
Outer wrap	2 layer	Minimum 0.050	polyester tape
Pri/Sec	1 layer	Minimum 0.075	polyester tape, Secondary triple wire, R/C (OCDT2), Furukawa Electric, Type TEX-E.
Pri/Core	Bobbin	0.71 mm	R/C QMFZ2, phenolic
Sec/Core	Bobbin	0.71 mm	R/C QMFZ2, phenolic. Primary leadouts sleeved with tubing.

Manufacturers P/N 04-B273 (For models with outputs 5 - 9 V)

Manufacturers P/N 04-B167 (For models with outputs 9 - 13 V)

Manufacturers P/N 04-B173 (For models with outputs 14 - 17 V)

Manufacturers P/N 04-B172 (For models with outputs 18 - 21 V)

Manufacturers P/N 04-B171 (For models with outputs 22 - 48 V)

10. Transistor (Q3) - Rated minimum 600 V, 8.5 A. Secured to Heat Sink, Fig. 2, Item 12, by metal clamp, the body of transistor covered with tubing, see Section General for Insulation Tubing.
11. Heat Sink (for Q3) - Aluminum, size maximum 110 by 53 by 25 mm, 1.5 mm thick. Secured to printed wiring boards by soldering, provides ground continuity between pc board grounds. R/C (OANZ2), polyester tape, one layer adhesive to the heat sink between the heat sink and primary parts C24, LF2 and primary edge of printed wiring boards providing basic insulation distance
12. Optical Isolator (U2) - R/C FPQU2, (Philips, Type CNX82A), rated isolation 3000 V ac. (Meet reinforced requirement, internal creepage minimum 5 mm distance, and insulation thickness minimum 0.4 mm.)

13. Earthing - R/C AVL2, No. 18 AWG, green/yellow lead; one lead mechanically secured then soldered to earthing terminal of Appliance Inlet, Fig. 1, Item 2. Other end terminates into the trace of the printed wiring board, directly connected to L2 to heat sink.
14. Printed Wiring Board - See Section General. Refer to Ill. 1 for trace pattern and slot location.
15. Inductor (L2) - Optional. Toroidal-type construction. Ferrite core, size 10 mm OD, 8 mm ID, 2.4 mm thick, coil of copper magnet wire, 0.8 mm minimum wound on the core.
16. Bottom Shield and Insulator - R/C QMFZ2 insulator, manufactured by Toshiba, P/N TSE21B2U, 0.5 mm thick with 0.1 mm thick copper layer, overall measuring approximately 90 mm x 50 mm with 5.0 mm margin of insulator provided all sides.