

150W Single Output Switching Power Supply

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 200 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 160 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 40 V~ 56 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	31.54 V~ 57.25 V/ 230 VAC 31.99 V~ 57.25 V/ 115 VAC	P
3	CURRENT ADJ. RANGE	1.6A ~ 3.2A	I/P : 230 VAC O/P : FULL LOAD	1.225 A ~ 4.392 A	P
4	OUTPUT VOLTAGE TOLERANCE	V1 : 1 %~ -1 % (Max)	I/P : 100 VAC / 295 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : 0.1 %~ -0.1 %	P
5	LINE REGULATION	V1 : 0.5 %~ -0.5 % (Max)	I/P : 100 VAC ~ 295 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.03 %~ -0.03 %	P
6	LOAD REGULATION	V1 : 0.5 %~ -0.5 % (Max)	I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : 0.09 %~ -0.09 %	P
7	SET UP TIME	230VAC : 3000 ms (Max) 115 VAC : 3000 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 1839 ms 115VAC/ 1839 ms	P
8	RISE TIME	230VAC : 80 ms (Max) 115VAC : 80 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 22 ms 115VAC/ 17 ms	P
9	HOLD UP TIME	230VAC : 50 ms (TYP) 115VAC : 16 ms (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 71 ms 115VAC/ 19 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : <5 %	P
11	DYNAMIC LOAD	V1 : 4800 mVp-p	I/P : 230 VAC O/P : FULL /Min LOAD 90%DUTY/1KHZ Ta : 25°C	808 mVp-p	P

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INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90 VAC~ 295 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	66V~295V	P
			I/P : LOW-LINE-3V= 97V HIGH-LINE=300 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST : OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P : 90 VAC ~ 295 VAC O/P : FULL-MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.95 / 230 VAC(TYP) 0.98 /115 VAC(TYP) 0.93 /277 VAC(TYP)	I/P : 230 VAC I/P : 115 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.974 / 230 VAC PF= 1.000 / 115 VAC PF= 0.94 / 277 VAC	P
4	EFFICIENCY	90 % (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	90.4%	P
5	INPUT CURRENT	230V/ 1 A (TYP) 115V/ 2 A (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 0.76 A/ 230 VAC I = 1.50 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 65 A (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 47 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 1 mA/ 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.83 mA N-FG : 0.41 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	95 %~ 108 %	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	102%/ 230 VAC 102%/ 115 VAC Constant Current Limiting , recover Automatically after fault condition Is removed .	P
2	OVER VOLTAGE PROTECTION	CH1 : 57 V~65 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	62.1V/ 230 VAC 62.1V/ 115 VAC Shut down and latch off o/p voltage Re- power on to recover .	P
3	OVER TEMPERATURE PROTECTION	SPEC : RTH2 : 100 ± 10°C O.T.P. NO DAMAGE	I/P : 230 VAC O/P : FULL LOAD	O.T.P. Active Shut down Re-power ON	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 295 VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE Hiccup Mode	P

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ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : CLG-150-24 1. ROOM AMBIENT BURN-IN : 12 HRS I/P : 230VAC O/P : FULL LOAD Ta=29.1 °C 2. HIGH AMBIENT BURN-IN : 4 HRS I/P : 230VAC O/P : FULL LOAD Ta=54.6 °C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 105 % LOAD Ta : 25°C	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230 VAC O/P : 100 % LOAD Ta= -30 °C	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 55 °C NO DAMAGE	I/P : 295 VAC O/P : FULL LOAD Ta 55 °C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.005 %(0~50°C)	P
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Time : 72min (4) Acceleration : 5G (5) Test Time : 1 hour in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	P

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SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3.75 KVAC/min I/P-FG : 1.88 KVAC/min O/P-FG : 0.5 KVAC/min	I/P-O/P : 4.2 KVAC/min I/P-FG : 2.25 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 2.394 mA I/P-FG : 3.95 mA O/P-FG : 0.550 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ I/P-FG : 500VDC>100MΩ O/P-FG : 500VDC>100MΩ	I/P-O/P : 500 VDC I/P-FG : 500 VDC O/P-FG : 500 VDC Ta : 25°C /70%RH	I/P-O/P : 30 GΩ I/P-FG : 30 GΩ O/P-FG : 30 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta : 25°C / 70%RH	21 mΩ	P
4	APPROVAL	TUV : Certificate NO : R50129714 UL : File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS C	I/P : 230 VAC/50HZ O/P : 100%/75%/50% LOAD Ta : 25°C	PASS	P
2	CONDUCTION	EN55022 、EN55015 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 、EN55015 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT : 1KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	CLG-150-24 : SUPPOSE C105 IS THE MOST CRITICAL COMPONENT I/P : 230VAC O/P : FULL LOAD Ta=25 °C LIFE TIME= 147554 HRS I/P : 230VAC O/P : FULL LOAD Ta=55 °C LIFE TIME= 30618 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 303.7KHRS min			P
3	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 30,000 hours @ Tcase 60°C ; 50,000 hours @ Tcase 50°C			P

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COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated SP11N65C3 : 650V /11A	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on (2) Output Short Ta : 25°C	(1) 584 V (2) 480 V	P
2	Diode Peak Voltage	D106 Rated SSCD110 : 100V / 1A Q101 Rated SF20LC30 20A/300V	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on (2)Output Short Ta : 25°C	(1) 45.2 V (2) 32.8 V (1) 260 V (2) 193 V	P
3	Clamp Diode Peak Voltage	D2 Rated 1N5406 : 600 V/ 3A	I/P : High-Line +3V = 298 V O/P : (1) Dynamic Load 90%Duty/1KHz Ta : 25°C	(1) 518 V	P
4	Input Capacitor Voltage	C 5 Rated NCC : 150 u / 420 V/ 105 °C / KMG	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 412 V (2) 402 V (3) 412 V	P
5	Control IC Voltage Test	U2 Rated Tea1552 : 20 V	I/P : High-Line +3V = 298 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 16.4 V (2) 13.9 V (3) 16.4 V	P