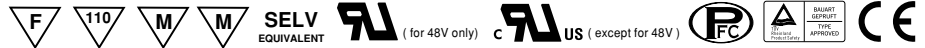




■ Features :

- Universal AC input / Full range
- Fully isolated plastic case with terminal block style of I/O
- Built-in constant current limiting circuit
- Adjustable output voltage and current level
- Protections: Short circuit/Over load/Over voltage/Over temperature
- Built-in active PFC function, comply with EN61000-3-2 class C (Pin $\geq$ 25W)
- Cooling by free air convection
- 100% full load burn-in test
- High reliability
- Suitable for LED lighting and moving sign applications (Note.2)
- Compliance to worldwide safety regulations for lighting
- 2 years warranty

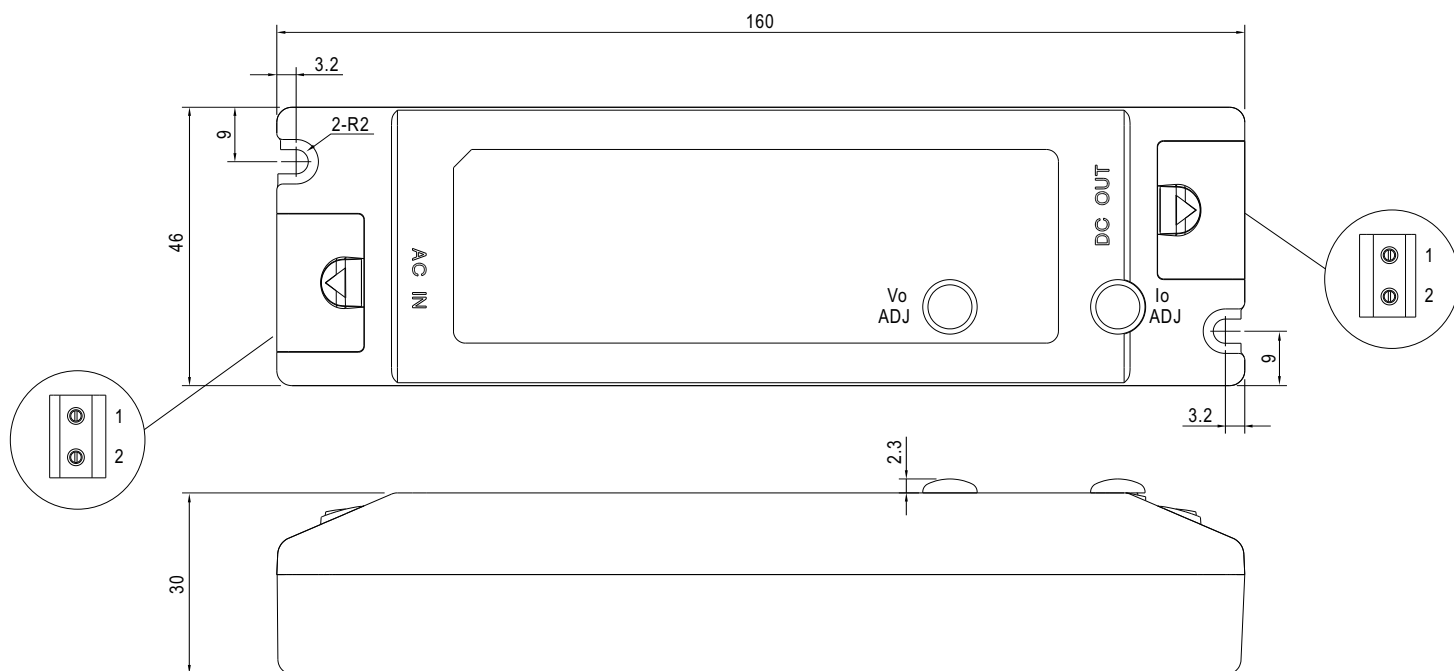
SPECIFICATION



MODEL		PLC-30-9	PLC-30-12	PLC-30-15	PLC-30-20	PLC-30-24	PLC-30-27	PLC-30-36	PLC-30-48
OUTPUT	DC VOLTAGE	9V	12V	15V	20V	24V	27V	36V	48V
	CONSTANT CURRENT REGION Note.6	6.3 ~ 9V	8.4 ~ 12V	10.5 ~ 15V	14 ~ 20V	16.8 ~ 24V	18.9 ~ 27V	25.2 ~ 36V	33.6 ~ 48V
	RATED CURRENT	3.3A	2.5A	2A	1.5A	1.25A	1.12A	0.84A	0.63A
	CURRENT RANGE	0 ~ 3.3A	0 ~ 2.5A	0 ~ 2A	0 ~ 1.5A	0 ~ 1.25A	0 ~ 1.12A	0 ~ 0.84A	0 ~ 0.63A
	RATED POWER	29.7W	30W	30W	30W	30W	30.24W	30.24W	30.24W
	RIPPLE & NOISE (max.) Note.2	2.6Vp-p	2Vp-p	2.6Vp-p	2.6Vp-p	2.4Vp-p	2.3Vp-p	3.6Vp-p	3.7Vp-p
	VOLTAGE ADJ. RANGE Note.5	8.55 ~ 9.9V	11.4 ~ 13.2V	14.5 ~ 16.5V	19 ~ 22V	22.8 ~ 26.4V	25.65 ~ 29.7V	34.2 ~ 39.6V	45.6 ~ 52.8V
	CURRENT ADJ. RANGE Note.5	2.475 ~ 3.399A	1.875 ~ 2.575A	1.5 ~ 2.06A	1.125 ~ 1.545A	0.938 ~ 1.288A	0.84 ~ 1.1536A	0.63 ~ 0.865A	0.473 ~ 0.649A
	VOLTAGE TOLERANCE Note.3	±10%							
	LINE REGULATION	±3.0%							
	LOAD REGULATION	±5.0%							
SETUP TIME	1500ms / 230VAC 3000ms / 115VAC at full load								
INPUT	VOLTAGE RANGE Note.4	90 ~ 264VAC 127 ~ 370VDC							
	FREQUENCY RANGE	47 ~ 63Hz							
	POWER FACTOR	PF ≥ 0.9 at 75 ~ 100% load, 115VAC / 230VAC							
	EFFICIENCY(Typ.)	80%	82.5%	83.5%	84%	84%	84.5%	85%	85.5%
	AC CURRENT	0.4A/115VAC 0.2A/230VAC							
	INRUSH CURRENT(max.)	40A/230VAC							
	LEAKAGE CURRENT	<0.5mA / 240VAC							
PROTECTION	OVER CURRENT	100 ~ 110%							
		Protection type : Constant current limiting, recovers automatically after fault condition is removed							
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed.							
	OVER VOLTAGE	10 ~ 14V	14 ~ 16V	17 ~ 22V	23 ~ 26V	27 ~ 34V	31 ~ 35V	40 ~ 50V	53 ~ 63V
		Protection type : Shut down o/p voltage, re-power on to recover							
OVER TEMPERATURE	95℃ ±10℃ (TSW1)								
	Protection type : Shut down o/p voltage, re-power on to recover								
ENVIRONMENT	WORKING TEMP.	-30 ~ +50℃ (Refer to output load derating curve)							
	WORKING HUMIDITY	20 ~ 95% RH non-condensing							
	STORAGE TEMP., HUMIDITY	-40 ~ +80℃, 10 ~ 95% RH							
	TEMP. COEFFICIENT	±0.06%/℃ (0 ~ 50℃)							
	VIBRATION	10 ~ 500Hz, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes							
SAFETY & EMC	SAFETY STANDARDS	UL1310 Class 2, TUV EN61347-1, EN61347-2-13, CAN/CSA C22.2 No. 223-M91(except for 48V) approved							
	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC							
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25℃ / 70% RH							
	EMI CONDUCTION & RADIATION	Compliance to EN55015							
	HARMONIC CURRENT	Compliance to EN61000-3-2 Class C (Pin ≥ 25W), Class D (>70% load) ; EN61000-3-3							
OTHERS	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN61547, light industry level, criteria A							
	MTBF	625.5Khrs min. MIL-HDBK-217F (25℃)							
	DIMENSION	160*46*30mm (L*W*H)							
	PACKING	0.2Kg; 70pcs/15Kg/0.96CUFT							

Mechanical Specification

Case No. 990A Unit:mm



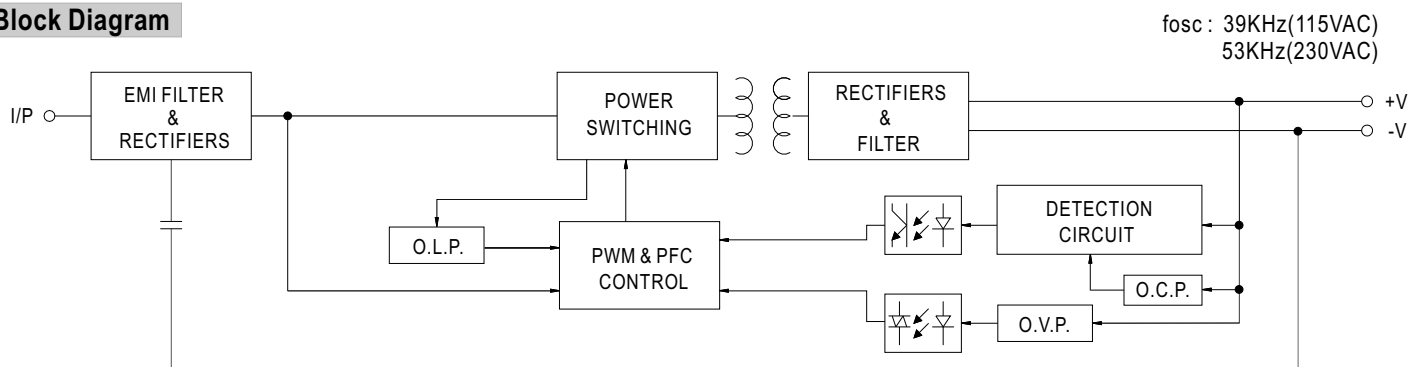
Terminal Pin No. Assignment (TB1):
SWITCLAB MB310-75002

Terminal Pin No. Assignment (TB2):
SWITCLAB MB310-75002

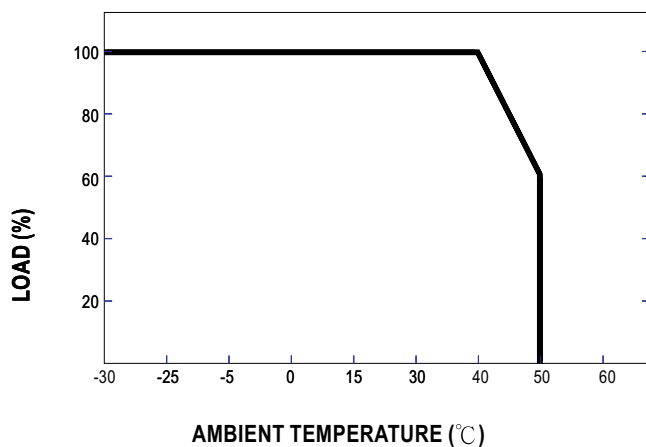
Pin No.	Assignment
1	AC/N
2	AC/L

Pin No.	Assignment
1	+V
2	-V

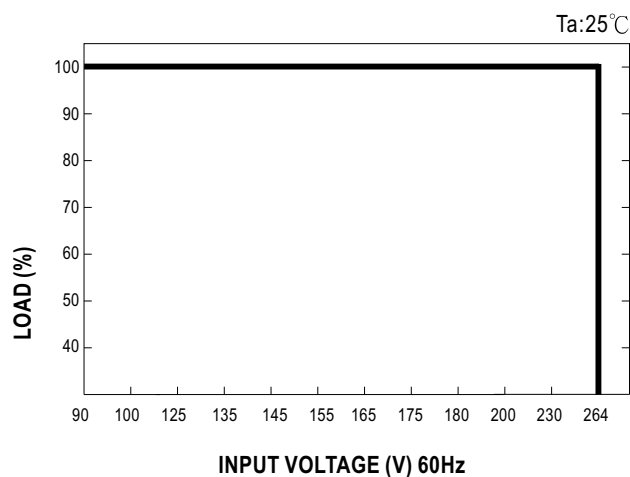
Block Diagram



Derating Curve



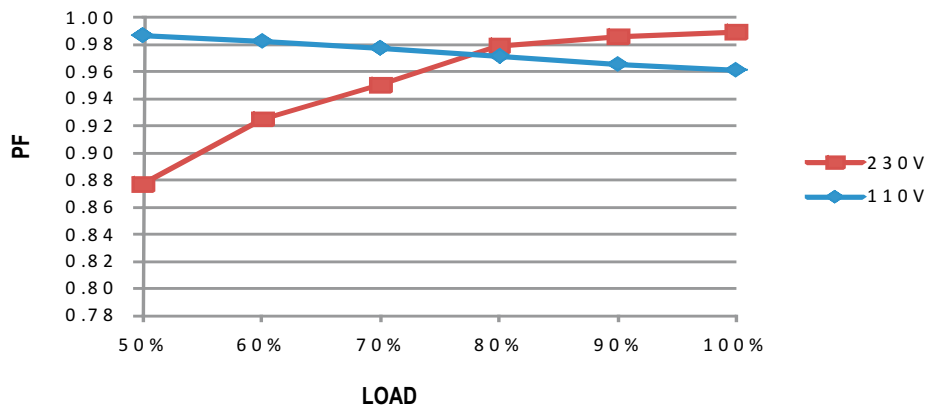
Static Characteristics



Power Factor Characteristic

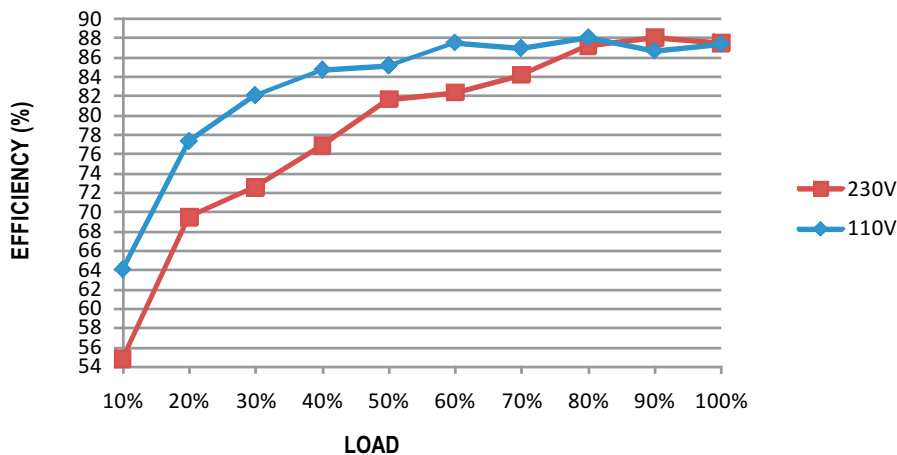
Power factor will be higher than 0.9 when output loading is 75% or higher.

Constant Current Mode



EFFICIENCY vs LOAD (48V Model)

PLC-30 series possess superior working efficiency that up to 85.5% can be reached in field applications.

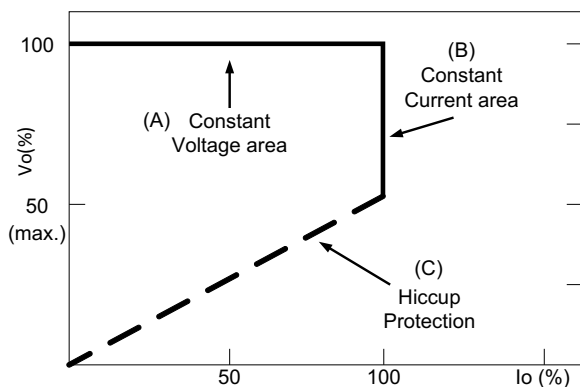


DRIVING METHODS OF LED MODULE

There are two major kinds of LED drive method "direct drive" and "with LED driver".

A typical LED power supply may either work in "constant voltage mode (CV) or constant current mode (CC)" to drive the LEDs.

Mean Well's LED power supply with CV+ CC characteristic can be operated at both CV mode [with LED driver, at area (A)] and CC mode [direct drive, at area (B)].



Typical LED power supply I-V curve

MODEL : PLC-30-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 2.4 Vp-p (Max)	I/P : 230VAC O/P : 100% LOAD Ta : 25°C	V1 : 1.53 Vp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 22.8 V~ 26.4 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	22.18 A~ 27.74 V/ 230 VAC 22.13 A~ 27.74 V/ 115 VAC	P
3	OUTPUT CURRENT ADJUST RANGE	CH1 : 0.938A~1.288A	I/P : 230 VAC I/P : 115 VAC Ta : 25°C	0.697 A~ 1.373 A/ 230 VAC 0.687 A~ 1.373 A/ 115 VAC	P
4	OUTPUT VOLTAGE TOLERANCE	V1 : 10 %~ -10% (Max)	I/P : 100 VAC / 264 VAC O/P : 100% LOAD / MIN LOAD Ta : 25°C	V1 : 0.69 %~ 0.69 %	P
5	LINE REGULATION	V1 : 3 %~ -3 % (Max)	I/P : 100VAC ~ 264 VAC O/P : 100% LOAD Ta : 25°C	V1 : 0 %~ -0.25 %	P
6	LOAD REGULATION	V1 : 5 %~ -5 % (Max)	I/P : 230 VAC O/P : 100% LOAD ~MIN LOAD Ta : 25°C	V1 : 0.024 %~ 0.07 %	P
7	SET UP TIME	230VAC : 1500 ms (Max) 115 VAC : 3000 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : 100% LOAD Ta : 25°C	230VAC/ 1144 ms 115VAC/ 2288 ms	P
8	OVER/UNDERSHOOT TEST	< ±10%	I/P : 230 VAC O/P : 100% LOAD Ta : 25°C	TEST : < 10 %	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P : TESTING O/P : 100% LOAD Ta : 25°C	72.1V~264V	P
			I/P : LOW-LINE-3V= 87V HIGH-LINE+15%=272 V O/P : 100% LOAD /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 ~ 264 VAC O/P : 100% LOAD ~MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.90 / 230 VAC(TYP) 0.90 / 115 VAC(TYP) ≥ 0.9 at 75 ~ 100% load	I/P : 230 VAC I/P : 115 VAC O/P : 100% LOAD Ta : 25°C	0.983 /230VAC 100% LOAD 0.983 /115 VAC 100% LOAD 0.964 /230 VAC 75% LOAD 0.988 /115 VAC 75% LOAD	P
4	EFFICIENCY	84% (TYP)	I/P : 230 VAC O/P : 100% LOAD Ta : 25°C	86.6 %	P
5	INPUT CURRENT	230V/ 0.2 A (TYP) 115V/ 0.4 A (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : 100% LOAD Ta : 25°C	I = 0.159 A/ 230 VAC I = 0.32 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 40 A (TYP) COLD START	I/P : 230 VAC O/P : 100% LOAD Ta : 25°C	I = 18.789 A/ 230 VAC	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	100 %~ 110 %	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	105 %/ 230 VAC 105 %/ 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1 : 27 V~ 34 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	30.8 V/ 230 VAC 30.8 V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 95 ± 10°C O.T.P NO DAMAGE	I/P : 230 VAC O/P : 100% LOAD	O.T.P. Active Shunt down Re-power ON	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 264 VAC O/P : 100% LOAD Ta : 25°C	NO DAMAGE Hiccup Mode	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																											
1	TEMPERATURE RISE TEST	MODEL : PLC-30-24 1. ROOM AMBIENT BURN-IN : 17 HRS I/P : 230VAC O/P : 100% LOAD Ta= 24.7 °C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : 100% LOAD Ta= 40.8 °C <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 24.7°C</th><th>HIGH AMBIENT Ta= 40.8°C</th></tr><tr><td>1</td><td>Q1</td><td>P9NK70ZFP 7.5A/700A</td><td>71.1°C</td><td>84.0°C</td></tr><tr><td>2</td><td>D2</td><td>1N4007 1A/1KV</td><td>81.7°C</td><td>94.3°C</td></tr><tr><td>3</td><td>LF1</td><td>TR-572</td><td>54.0°C</td><td>66.3°C</td></tr><tr><td>4</td><td>U1</td><td>TDA4863</td><td>63.8°C</td><td>76.3°C</td></tr><tr><td>5</td><td>BD1</td><td>UD2KB80</td><td>59.8°C</td><td>72.2°C</td></tr><tr><td>6</td><td>C48</td><td>47U/35V 105°C ZLH</td><td>65.9°C</td><td>78.0°C</td></tr><tr><td>7</td><td>C7</td><td>474/450V 105°C</td><td>64.5°C</td><td>77.0°C</td></tr><tr><td>8</td><td>T1 COIL</td><td>TF-1596</td><td>85.9°C</td><td>96.8°C</td></tr><tr><td>9</td><td>TSW1</td><td>NTC200K 5%</td><td>68.2°C</td><td>81.3°C</td></tr><tr><td>10</td><td>L1</td><td>TR-751</td><td>60.6°C</td><td>72.9°C</td></tr><tr><td>11</td><td>C106</td><td>560U/35V 105°C ZLH</td><td>69.1°C</td><td>80.7°C</td></tr><tr><td>12</td><td>D100</td><td>FMX-12SL 10A/200V</td><td>68.1°C</td><td>79.4°C</td></tr><tr><td>13</td><td>LF100</td><td>TR-574</td><td>51.5°C</td><td>63.2°C</td></tr><tr><td>14</td><td>CASE</td><td>UP CASE</td><td>51.9°C</td><td>65.3°C</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 24.7°C	HIGH AMBIENT Ta= 40.8°C	1	Q1	P9NK70ZFP 7.5A/700A	71.1°C	84.0°C	2	D2	1N4007 1A/1KV	81.7°C	94.3°C	3	LF1	TR-572	54.0°C	66.3°C	4	U1	TDA4863	63.8°C	76.3°C	5	BD1	UD2KB80	59.8°C	72.2°C	6	C48	47U/35V 105°C ZLH	65.9°C	78.0°C	7	C7	474/450V 105°C	64.5°C	77.0°C	8	T1 COIL	TF-1596	85.9°C	96.8°C	9	TSW1	NTC200K 5%	68.2°C	81.3°C	10	L1	TR-751	60.6°C	72.9°C	11	C106	560U/35V 105°C ZLH	69.1°C	80.7°C	12	D100	FMX-12SL 10A/200V	68.1°C	79.4°C	13	LF100	TR-574	51.5°C	63.2°C	14	CASE	UP CASE	51.9°C	65.3°C	P
NO	Position	P/N	ROOM AMBIENT Ta= 24.7°C	HIGH AMBIENT Ta= 40.8°C																																																																												
1	Q1	P9NK70ZFP 7.5A/700A	71.1°C	84.0°C																																																																												
2	D2	1N4007 1A/1KV	81.7°C	94.3°C																																																																												
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13	LF100	TR-574	51.5°C	63.2°C																																																																												
14	CASE	UP CASE	51.9°C	65.3°C																																																																												
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 115 % 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 40°C NO DAMAGE	I/P : 272 VAC O/P : 100% LOAD Ta= 40°C HUMIDITY= 95 %R.H	TEST : OK	P																																																																											
5	TEMPERATURE COEFFICIENT	± 0.06 %(0~50°C)	I/P : 230 VAC O/P : 100% LOAD	± 0.027 %(0~50°C)	P																																																																											
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Time : 72min (4) Acceleration : 2G (5) Test Time : 1 hour in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	P																																																																											

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3.75KVAC/min	I/P-O/P : 4.2KVAC/min Ta : 25°C	I/P-O/P : 2.1 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ	I/P-O/P : 500 VDC Ta : 25°C /70% RH	I/P-O/P : 29.7 GΩ NO DAMAGE	P
3	APPROVAL	TUV : Certificate NO : R50103804 UL : File NO : E186843			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS C CLASS D	I/P : 230 VAC/50HZ O/P : 100% LOAD/70%LOAD Ta : 25°C	PASS	P
2	CONDUCTION	EN55015 CLASS B	I/P : 230 VAC (50HZ) O/P : 100% LOAD /50% LOAD Ta : 25°C	PASS Test by certified Lab	P
3	RADIATION	EN55015 CLASS B	I/P : 230 VAC (50HZ) O/P : 100% LOAD Ta : 25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR : 8KV / Contact : 4KV	I/P : 230 VAC/50HZ O/P : 100% 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 : 100% LOAD Ta : 25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N : 1KV L,N-PE : 2KV	I/P : 230 VAC/50HZ O/P : 100% 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	PLC-30-24 : SUPPOSE C106 IS THE MOST CRITICAL COMPONENT I/P : 230VAC O/P : 100% LOAD Ta= 25 °C LIFE TIME= 144427 HRS I/P : 230VAC O/P : 100% LOAD Ta= 50 °C LIFE TIME= 69825 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 625.5K HRS			P

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 STP9NK70ZFP : 700V 7.5A	I/P : High-Line +3V = 267 V O/P : (1) 100% LOAD Turn on (2) Output Short Ta : 25°C	(1) 652 V (2) 440 V	P
2	Diode Peak Voltage	D100 Rated FMX-12SL : 10A/200V	I/P : High-Line +3V = 267 V O/P : (1) 100% LOAD Turn on (2) Output Short Ta : 25°C	(1) 121 V (2) 113 V	P
3	Clamp Diode Peak Voltage	D2 Rated IN4007 : 1000V 1A	I/P : High-Line +3V = 267 V O/P : (1) Dynamic Load 90%Duty/1KHz Ta : 25°C	(1) 396 V	P
4	Control IC Voltage Test	U1 Rated TDA4863G : 22V	I/P : High-Line +3V = 267 V O/P : (1) 100% LOAD Turn on /Off (2) Min load Turn on /Off (3) 100% /Min load Change Ta : 25°C	(1) 14.7 V (2) 14.6 V (3) 14.7 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2009/6/16	W0905C35	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023