

MODEL : SE-350-5

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 70 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 4.5V ~ 5.6V	I/P: 230 VAC I/P:115 VAC O/P:MIN LOAD Ta:25°C	4.378V~5.718V/230VAC 4.378V~5.718V//115VAC	PASS
3	OUTPUT VOLTAGE TOLERANCE	V1: -2 %~ +2 % (Max)	I/P: 180VAC / 264 VAC O/P:FULL/ 0% LOAD Ta:25°C	V1: -0.733%~ +1.493 %	PASS
4	LINE REGULATION	V1: -0.5 %~ +0.5 % (Max)	I/P: 180 VAC ~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 %	PASS
5	LOAD REGULATION	V1: -2 %~ +2 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.733 %~ 0.733 %	PASS
6	SET UP TIME	230VAC/ 1000 ms (Max) 115VAC/ 1000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 237.968 ms 115 VAC/ 166.883 ms	PASS
7	RISE TIME	230VAC/ 50 ms (Max) 115VAC/ 50 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/1.714ms 115 VAC/1.755ms	PASS
8	HOLD TIME	230VAC/ 20 ms (Typ) 115VAC/ 16 ms (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/30.482ms 115 VAC/25.431ms	PASS
9	OVER/UNDERSHOOT TEST	< ±10 %	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: +3.162 % -1.186 %	PASS
10	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230 VAC O/P: (1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 50%DUTY/120HZ Ta:25°C	(1) 700 mVp-p (2) 980 mVp-p	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180 VAC ~ 264 VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	180 V ~ 264 V	PASS
			(1) I/P: LOW-LINE-3V= 177 V HIGH-LINE+15%= 300 V O/P: FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (2) I/P: 230VAC ON: 0.5 Sec . OFF: 0.5 Sec 20MIN (AC POWER ON/OFF NO DAMAGE)	TEST: (1) OK (2) OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 180 VAC ~264 VAC O/P: FULL-MIN LOAD Ta: 25°C	TEST: OK	PASS
3	EFFICIENCY	78 % (Typ)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	79.96 %	PASS
4	INPUT CURRENT	230 V/ 4 A (Typ) 115 V/ 7 A (Typ)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 3.255A/ 230VAC I = 5.506A/ 115VAC	PASS
5	INRUSH CURRENT	230 V/ 60 A 115 V/ 40 A COLD START	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 44.921 A/ 230VAC I = 38.796 A/ 115VAC	PASS

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%~ 135 % RATED OUTPUT POWER	I/P: 264 VAC I/P: 230 VAC I/P: 180 VAC O/P: TESTING Ta: 25°C	125.5 %/264VAC 123.0 %/ 230VAC 121.7 %/ 180 VAC Constant Current Limiting	PASS
2	OVER VOLTAGE PROTECTION	CH1: 5.75 V~ 7.5 V	I/P: 264 VAC I/P: 230 VAC I/P: 180 VAC O/P: MIN LOAD Ta: 25°C	6.61 V/264VAC 6.63 V/ 230VAC 6.63 V/ 180VAC Shut off o/p voltage, Re- power ON to recover	PASS
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1= 85 °C ±5 °C O.T.P. NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	89.5 °C / 230 VAC O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down	PASS
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Constant Current Limiting	PASS

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	FAN ON/OFF CONTROL	$\geq 50^{\circ}\text{C}$ FAN ON $\leq 45^{\circ}\text{C}$ FAN OFF	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	52.0 °C FAN ON 40.3 °C FAN OFF	PASS

ENVIRONMENT TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT		
1	TEMPERATURE RISE TEST	MODEL : SE-350-5 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 14.9 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 51.7 °C			PASS		
		NO	Position	P/N		ROOM AMBIENT Ta= 14.9°C	HIGH AMBIENT Ta= 51.7 °C
		1	LF1	LF-203		26.3°C	58.8°C
		2	BD1	KBJ1008G		44.9°C	72.3°C
		3	C6	680u/200V		36.1°C	64.7°C
		4	Q1	FMH07N90E		63.2°C	97.0°C
		5	T1	TF6313		59.2°C	85.0°C
		6	U1	TL3845P		51.5°C	79.8°C
		7	L100	TR6074		48.4°C	76.6°C
		8	D100	S60SC4MT		90.1°C	119.3°C
		9	RG1	L7812CV		44.8°C	74.9°C
		10	C150	47u/63V		27.7°C	58.8°C
		11	C106	4700u/10V KY		43.8°C	68.1°C
		12	Q2	FMH07N90E		63.9°C	98.9°C
		13	U100	OP HA17358B		40.3°C	68.8°C
		14	D15	BYV26EGP		60.1°C	81.8°C
		15	RTH2	10KΩ 4Φ 1%		45.6°C	74.1°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 115.2% LOAD Ta:25°C	TEST : OK	PASS		
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 264 VAC/180 VAC O/P: 100% LOAD Ta= -20 °C	TEST : OK	PASS		
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	PASS		
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.005 %(0~50°C)	PASS		
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		TEST : OK	PASS		

7.	THERMAL SHOCK TEST	1. Thermal shock Temperature : - 25 °C ~ + 55 °C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC/Full Load 58SEC ON/2SEC OFF	TEST : OK	PASS
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency: 10~500Hz (3) Sweep Time: 10min/sweep cycle (4) Acceleration: 3G (5) Test Time: 1 hour in each axis (X.Y.Z) (6) Ta: 25°C	TEST : OK	PASS
9	CAPACITOR LIFE CYCLE	SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P: 230 VAC O/P: FULL LOAD Ta= 25 °C LIFE TIME= 321636 HRS (2) I/P: 230 VAC O/P: FULL LOAD Ta= 50 °C LIFE TIME= 135210 HRS (3) I/P: 230 VAC O/P: 75% LOAD Ta= 50 °C LIFE TIME= 147967 HRS (4) I/P: 230 VAC O/P: 50% LOAD Ta= 50 °C LIFE TIME= 184750 HRS		PASS
10	MTBF	MIL-HDBK-217F NOTICES 2 PARTS COUNT TOTAL FAILURE RATE: 234.3K HRS		PASS
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life) : 20,000 hours @ Ta 50°C		PASS

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-FG: 1.5 KVAC/min I/P-O/P: 3.0 KVAC/min O/P-FG: 0.5 KVAC/min EN 60950	I/P-FG: 1.8 KVAC/min I/P-O/P: 3.6 KVAC/min O/P-FG: 0.6 KVAC/min Ta: 25°C	I/P-FG: 3.776 mA I/P-O/P: 3.913 mA O/P-FG: 4.99 mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-FG: 500VDC > 100MΩ I/P-O/P: 500VDC > 100MΩ O/P-FG: 500VDC > 100MΩ	I/P-FG: 500 VDC I/P-O/P: 500 VDC O/P-FG: 500 VDC Ta: 25°C	I/P-FG: > 9999 MΩ I/P-O/P: > 9999 MΩ O/P-FG: > 9999 MΩ NO DAMAGE	PASS
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ EN 60950	40 A / 2 min Ta: 25°C	3 mΩ	PASS
4	LEAKAGE CURRENT	< 3.5 mA / 240VAC EN 60950	I/P: 264 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.7986 mA N-FG: 0.8164 mA	PASS

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR: 8KV / Contact: 4KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A	PASS
2	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A	PASS
3	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N: 1KV L,N-PE: 2KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A	PASS

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated FMH07N90E : 900 V 7 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 896 V (2) 804 V (3) 864 V (4) 847 V	PASS
2	Diode Peak Voltage	D 100 Rated S60SC4MT : 40 V 60 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 39.6 V (2) 31.8 V (3) 35.4 V (4) 38.8 V	PASS
3	Control IC Voltage Test	U 1 Rated TL3845P : 30 V	I/P:High-Line +3V =267 V O/P: (1) Output Short (2)O.L.P (3)O.V.P (4)NO LOAD VR 下限 LOW LINE Ta:25°C	(1) 15.2 V (2) 15.4 V (3) 14.0 V (4) 14.0 V	PASS

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SAMPLE	TESTER	APPROVAL
PRODUCT SAMPLE	FRANK	WANGDE