

MODEL : SE-450-36

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 200 mVp-p (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	V1 : 88 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 32.4 V ~ 39.6 V	I/P : 230 VAC I/P : 115VAC O/P : MIN LOAD Ta : 25°C	28.995V~40.561V /230Vac 28.989V~40.554V/115VAC	PASS
3	OUTPUT VOLTAGE TOLERANCE	V1 : -1 %~ +1 % (Max)	I/P : 200VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : -0.119 %~ +0.102 %	PASS
4	LINE REGULATION	V1 : -0.2 %~ +0.2 % (Max)	I/P : 200 VAC ~ 264VAC O/P : FULL LOAD Ta : 25°C	V1 : -0.033 %~+0.05 %	PASS
5	LOAD REGULATION	V1 : -0.5 %~ +0.5 % (Max)	I/P : 230 VAC O/P : FULL -MIN LOAD Ta : 25°C	V1 : -0.119%~+0.033 %	PASS
6	SET UP TIME	230VAC/ 1500 ms (Max) 115VAC/ 1500 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230 VAC/ 115.3 ms 115 VAC/ 81.0 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/ 6.5 ms 115 VAC/ 7.9 ms	PASS
8	HOLD UP TIME	230VAC/ 16 ms (Typ) 115VAC/ 12 ms (Typ)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 26.9 ms 115 VAC/ 22.1 ms	PASS
9	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : ±1.648 %	PASS
10	DYNAMIC LOAD	V1 : 3600 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) 380 mVp-p (2) 790 mVp-p	PASS

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180 VAC~ 264 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	170 V~ 264 V	PASS
			I/P : LOW-LINE-3V= 177 V HIGH-LINE+15%= 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 : 180 VAC ~264 VAC O/P : FULL-MIN LOAD Ta : 25°C	TEST : OK	PASS
3	EFFICIENCY	86 % (Typ)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	87.1 %	PASS
4	INPUT CURRENT	230 V/ 6 A (Typ) 115 V/ 10 A (Typ)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 3.54 A/ 230VAC I = 6.07 A/ 115VAC	PASS
5	INRUSH CURRENT	230 V/ 55 A (Typ) 115 V/ 35 A (Typ) COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 37.1 A/ 230VAC I = 28.0 A/ 115VAC	PASS

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%-150% RATED OUTPUT POWER	I/P : 264 VAC I/P : 230 VAC I/P : 200 VAC O/P : TESTING Ta : 25°C	129 %/264VAC 122 %/ 230VAC 114 %/200 VAC Shut down Re-power ON	PASS
2	OVER VOLTAGE PROTECTION	CH1 : 45 V~ 52 V	I/P : 264 VAC I/P : 230 VAC I/P : 180 VAC O/P : MIN LOAD Ta : 25°C	48.5 V/ 264VAC 48.3 V/ 230VAC 48.5 V/ 180VAC Shut down Re-power ON	PASS
3	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 90±5 °C O.T.P. NO DAMAGE	I/P : 230 VAC O/P : FULL LOAD	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 Shut down Re-power ON	PASS

### CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE SENSE	S+ / S- >0.3V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	0.32 V	PASS

**ENVIRONMENT TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : SE-450-24 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 33.6 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=51.4 °C			<b>PASS</b>
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230 VAC O/P : 115 % LOAD Ta : 25°C	TEST : OK	<b>PASS</b>
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230 VAC O/P : 115 % LOAD Ta= 40.6 °C	TEST : OK	<b>PASS</b>
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	<b>PASS</b>
5	TEMPERATURE COEFFICIENT	± 0.05 % (0-50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.006 % (0-50°C)	<b>PASS</b>
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10-500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 2G (5) Test Time : 1 hour in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	<b>PASS</b>

**M.T.B.F & LIFE CYCLE CALCULATION**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SE-450-24 : SUPPOSE C 105 IS THE MOST CRITICAL COMPONENT I/P : 230 VAC O/P : FULL LOAD Ta=25 °C LIFE TIME=826569.8 HRS I/P : 230 VAC O/P : FULL LOAD Ta=50 °C LIFE TIME=174966 HRS			<b>PASS</b>
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 200K HRS			<b>PASS</b>

**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	I/P-FG : 1.6 KVAC/min I/P-O/P : 3.1 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-FG : 5.22 mA I/P-O/P : 6.22 mA O/P-FG : 4.07 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 : 1477 MΩ I/P-O/P : 3570 MΩ O/P-FG : 1354 MΩ NO DAMAGE	PASS
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	25A / 1min Ta : 25°C	5 mΩ	PASS
4	LEAKAGE CURRENT	< 2.5 mA / 240VAC	I/P : 264 VAC O/P : NO LOAD Ta : 25°C	L-FG : 1.00 mA N-FG : 1.03 mA	PASS

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor ( D to S) or (C to E) Peak Voltage	Q 1/2 Rated IRFP460 : 500 V / 20 A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz Ta : 25°C	Q1 Q2 (1) 324 V (1) 386 V (2) 0 V (2) 0 V (3) 324 V (3) 386 V (4) 232 V (4) 332 V	PASS
2	Diode Peak Voltage	D 100 Rated S20LC30 : 300 V / 20 A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz Ta : 25°C	(1) 189 V (2) 0 V (3) 132 V (4) 123 V	PASS
3	Clamp Diode Peak Voltage	D15/16 Rated 31DF6 : 600 V / 3 A	I/P : High-Line +3V = 267 V O/P : (1)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (2)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz Ta : 25°C	D15 D16 (1) 360 V (1) 362 V (2) 370 V (2) 370 V	PASS
4	Control IC Voltage Test	U 1 Rated TL3843P : 30 V	I/P : High-Line +3V =267 V O/P : (1) Output Short (2)O.L.P Ta : 25°C	(1) 21.1 V (2) 19.6 V	PASS

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008.11.7	RD SAMPLE	PASS	SKY	LIUWY

2003/12/12 A50-F023



450W Single Output Switching Power Supply

**SE-450** series

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