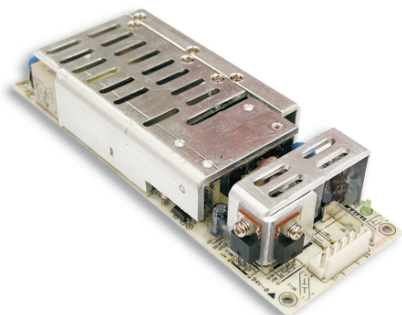


**■ Features :**

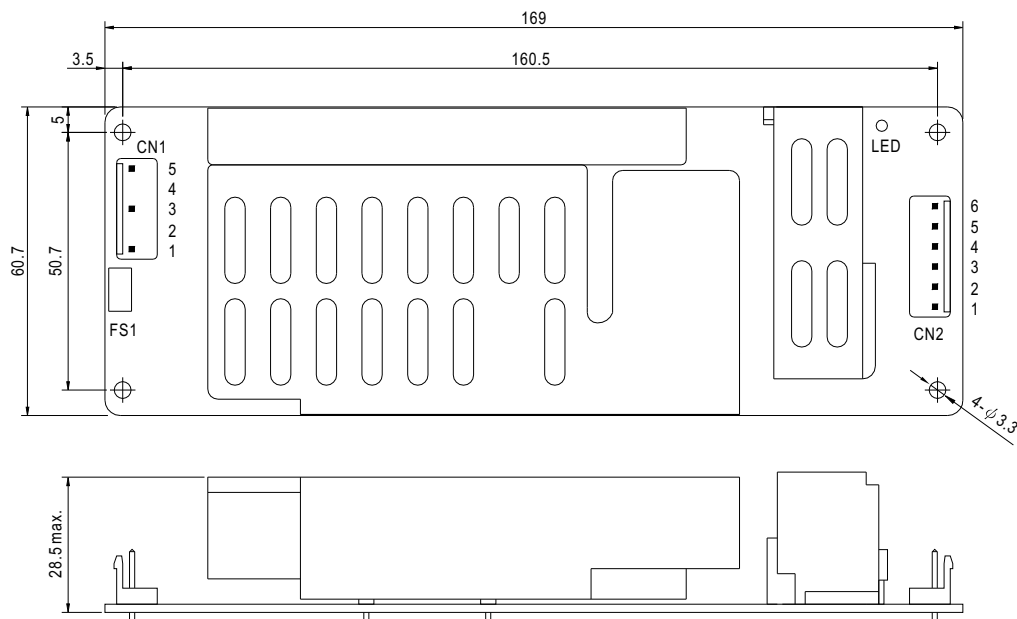
- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- High power density 8.4w/in³
- 100% full load burn-in test
- No load power consumption<1W@240VAC
- ZCS/ZVS technology to reduce power dissipation
- 3 years warranty

**SPECIFICATION**

MODEL		ASP-150-12	ASP-150-15	ASP-150-20	ASP-150-24	ASP-150-48
OUTPUT	DC VOLTAGE	12V	15V	20V	24V	48V
	RATED CURRENT	11A	9.5A	7.5A	6.3A	3.2A
	CURRENT RANGE	0 ~ 11A	0 ~ 9.5A	0 ~ 7.5A	0 ~ 6.3A	0 ~ 3.2A
	RATED POWER	132W	142.5W	150W	151.2W	153.6W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	180mVp-p	200mVp-p	240mVp-p	240mVp-p
	VOLTAGE ADJ. RANGE	11 ~ 13.2V	14 ~ 17V	17 ~ 22V	22 ~ 27V	45.6 ~ 52.8V
		Fixed. Can be modified between the range above by factory				
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%
INPUT	SETUP, RISE TIME	3000ms, 80ms at full load				
	HOLD UP TIME (Typ.)	50ms/230VAC 16ms/115VAC at full load				
	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 63Hz				
	POWER FACTOR (Typ.)	PF ≥ 0.95/230VAC PF ≥ 0.98/115VAC at full load				
	EFFICIENCY (Typ.)	88%	88%	90%	90%	89%
	AC CURRENT (Typ.)	2A/115VAC 1A/230VAC				
PROTECTION	INRUSH CURRENT (Typ.)	COLD START 80A/230VAC				
	LEAKAGE CURRENT	<2mA / 240VAC				
	OVERLOAD	105 ~ 135% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE	13.7 ~ 16.2V	17.5 ~ 20.25V	22.5 ~ 28V	27.5 ~ 32.4V	53.3 ~ 64.8V
ENVIRONMENT		Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE	90°C ±15°C (RTH2) detect on heatsink of power transistor Protection type : Shut down o/p voltage, re-power on to recover				
	WORKING TEMP.	-20 ~ +60°C (Refer to output load derating curve)				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH				
SAFETY & EMC (Note 4)	TEMP. COEFFICIENT	±0.05%/°C (0 ~ 50°C)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes				
	SAFETY STANDARDS	UL60950-1, CB(IEC60950-1) approved				
	WITHSTAND VOLTAGE	I/P-O/P:4.25KVDC I/P-FG:1.5KVAC O/P-FG:0.5KVAC				
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH				
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B				
OTHERS	HARMONIC CURRENT	Compliance to EN61000-3-2,-3				
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, light industry level, criteria A				
	MTBF	149.3Khrs min. MIL-HDBK-217F (25°C)				
	DIMENSION	169*60.7*28.5mm (L*W*H)				
NOTE	PACKING	0.32Kg; 48pcs/15.8Kg/0.79CUFT				
		1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.				

Mechanical Specification

Unit:mm



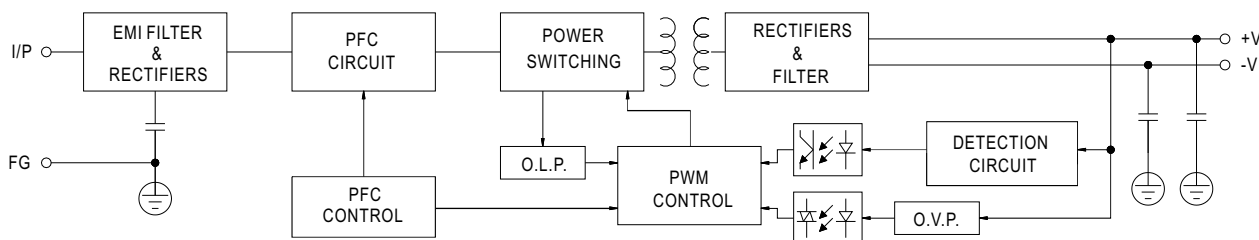
AC Input Connector (CN1) : JST B5P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/L	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2,4	No Pin		
3	AC/N		
5	FG $\perp$		

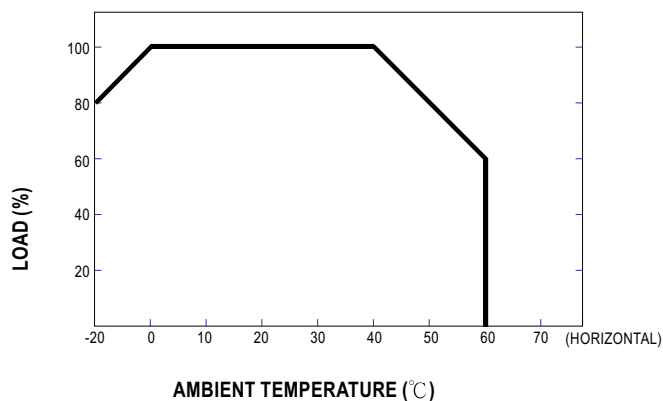
DC Output Connector (CN2) : JST B6P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,3	-V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
4,5,6	+V		

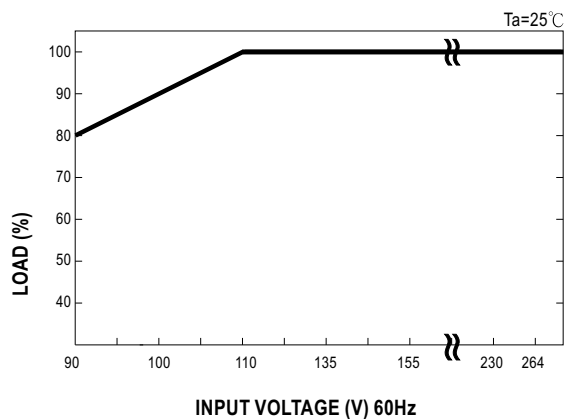
Block Diagram



Derating Curve



Output Derating VS Input Voltage



MODEL : ASP-150-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 240 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 60 mVp-p (Max))	P
2	OUTPUT VOLTAGE TOLERANCE	V1 : 1 %~ -1 % (Max)	I/P : 110VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : 0.2 %~ -0.2 %	P
3	LINE REGULATION	V1 : 0.5 %~ -0.5 % (Max)	I/P : 110VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0 %~ 0 %	P
4	LOAD REGULATION	V1 : 0.5 %~ -0.5 % (Max)	I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : 0.18 %~ -0.18 %	P
5	SET UP TIME	230VAC : 3000 ms (Max) 115VAC : 3000 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 2629 ms 115VAC/ 2629 ms	P
6	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/ 10 ms 115VAC/ 11 ms	P
7	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/ 21.1 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : <5 %	P
9	DYNAMIC LOAD	V1 : 2400 mVp-p	I/P : 230 VAC O/P : FULL /Min LOAD 90%DUTY/1KHZ Ta : 25°C	219 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	60V~264V	P
			I/P : LOW-LINE-3V= 107 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 : 90 VAC ~ 264 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)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.959 / 230 VAC PF= 0.997 / 115 VAC	P
4	EFFICIENCY	90% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	91.5 %	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 = 0.77 A/ 230 VAC I = 1.49 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 80 A (TYP) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 65 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P : 254 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.8 mA N-FG : 0.8 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~135%	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	123 %/ 230 VAC 121 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1 : 27.5V~ 32.4V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	28.5 V/ 230 VAC 28.5 V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC : RTH2 : 90 ± 10°C O.T.P. NO DAMAGE	I/P : 230 VAC O/P : FULL 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 : FULL LOAD Ta : 25°C	NO DAMAGE Hiccup Mode	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	NO LOAD POWER CONSUMPTION	<1W	I/P : 240 VAC O/P : NO LOAD	0.67 W/240VAC	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : ASP-150-24 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 26.7 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 43.2 °C <table><thead><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 26.7°C</th><th>HIGH AMBIENT Ta= 43.2 °C</th></tr></thead><tbody><tr><td>1</td><td>LF3</td><td>TR-689</td><td>54.4°C</td><td>68.5°C</td></tr><tr><td>2</td><td>BD1</td><td>GBU4J 4A/600V</td><td>59.3°C</td><td>74.3°C</td></tr><tr><td>3</td><td>L2 COIL</td><td>TF-1356</td><td>67.8°C</td><td>82.8°C</td></tr><tr><td>4</td><td>C11</td><td>684/400V</td><td>65.4°C</td><td>81.1°C</td></tr><tr><td>5</td><td>L1 COIL</td><td>TR-623</td><td>67.3°C</td><td>82.7°C</td></tr><tr><td>6</td><td>D1</td><td>MUR460 4A/600V</td><td>79.0°C</td><td>95.8°C</td></tr><tr><td>7</td><td>Q2</td><td>2SK3683 19A/500V</td><td>72.2°C</td><td>88.7°C</td></tr><tr><td>8</td><td>C5</td><td>150U/400V NCC 105°C</td><td>72.1°C</td><td>88.1°C</td></tr><tr><td>9</td><td>D11</td><td>SB1100 1A/100V</td><td>77.2°C</td><td>91.5°C</td></tr><tr><td>10</td><td>Q1</td><td>SPA11N65C3 11A/820V</td><td>74.2°C</td><td>92.4°C</td></tr><tr><td>11</td><td>D2</td><td>IN4007 1A/1KV</td><td>93.4°C</td><td>110.2°C</td></tr><tr><td>12</td><td>T1 COIL</td><td>IN5406 3A/600V</td><td>92.8°C</td><td>106.4°C</td></tr><tr><td>13</td><td>C105</td><td>1000U/35V RUB 105°C ZLH</td><td>60.5°C</td><td>77.2°C</td></tr><tr><td>14</td><td>Q101</td><td>IRF3415 150V/45A</td><td>63.8°C</td><td>85.0°C</td></tr><tr><td>15</td><td>C42</td><td>10U/50V NCC 105°C KY</td><td>68.5°C</td><td>83.9°C</td></tr></tbody></table>			NO	Position	P/N	ROOM AMBIENT Ta= 26.7°C	HIGH AMBIENT Ta= 43.2 °C	1	LF3	TR-689	54.4°C	68.5°C	2	BD1	GBU4J 4A/600V	59.3°C	74.3°C	3	L2 COIL	TF-1356	67.8°C	82.8°C	4	C11	684/400V	65.4°C	81.1°C	5	L1 COIL	TR-623	67.3°C	82.7°C	6	D1	MUR460 4A/600V	79.0°C	95.8°C	7	Q2	2SK3683 19A/500V	72.2°C	88.7°C	8	C5	150U/400V NCC 105°C	72.1°C	88.1°C	9	D11	SB1100 1A/100V	77.2°C	91.5°C	10	Q1	SPA11N65C3 11A/820V	74.2°C	92.4°C	11	D2	IN4007 1A/1KV	93.4°C	110.2°C	12	T1 COIL	IN5406 3A/600V	92.8°C	106.4°C	13	C105	1000U/35V RUB 105°C ZLH	60.5°C	77.2°C	14	Q101	IRF3415 150V/45A	63.8°C	85.0°C	15	C42	10U/50V NCC 105°C KY	68.5°C	83.9°C	P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 116 % LOAD Ta : 25°C	TEST : OK	P																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230 VAC O/P : 80 % LOAD Ta= -20 °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 : FULL LOAD Ta= 40°C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																
5	TEMPERATURE COEFFICIENT	± 0.05 %(0-50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.02 %(0-50°C)	P																																																																																
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	P																																																																																

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 4.25KVDC/min I/P-FG : 1.5KVAC/min O/P-FG : 0.5KVAC/min	I/P-O/P : 5.1K KVDC/min I/P-FG : 1.8 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 0.002 mA I/P-FG : 2.57 mA O/P-FG : 0.54 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	I/P-O/P : 30 GΩ I/P-FG : 30 GΩ O/P-FG : 30 GΩ NO DAMAGE	P
3	APPROVAL	TUV : Certificate NO : UL : File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 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 AIR : 8KV / Contact : 4KV	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 : 1KV L,N-PE : 2KV	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	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME= 256965 HRS I/P : 230VAC O/P : FULL LOAD Ta= 40 °C LIFE TIME= 89556 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 149.3KHRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated SPP11N65C3 : 820V 11A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Full Load (3)Output Short Ta : 25℃	(1) 580 V (2) 580 V (3) 468 V	P
2	Diode Peak Voltage	Q100 Rated IRF3415 : 150V 43A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Full Load (3)Output Short Ta : 25℃	(1) 119 V (2) 121 V (3) 87 V	P
3	Clamp Diode Peak Voltage	D2 Rated 1N5406 : 600V 3A	I/P : High-Line +3V = 267 V O/P : (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta : 25℃	(1) 488 V (2) 492 V	P
4	Input Capacitor Voltage	C5 Rated : 150u / 400V/ 105℃	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change (4)Burn in 1hour Ta : 25℃	(1) 398 V (2) 390 V (3) 398 V (4) 398 V	P
5	Control IC Voltage Test	U2 Rated TEA1552 : 20V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25℃	(1) 18.3 V (2) 15 V (3) 18.5 V	P
6	Power Transistor (D to S) or (C to E) Peak Voltage	Q2 Rated 2SK3683 : 500V 19A	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Full Load (3)Output Short Ta : 25℃	(1) 414 V (2) 400 V (3) 334 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/12/1	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2006/1/25	PRODUCT SAMPLE W0512C45	PASS	VINCENT TSENG	MAX LIN
2006/7/21	PRODUCT SAMPLE W0607A27	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023