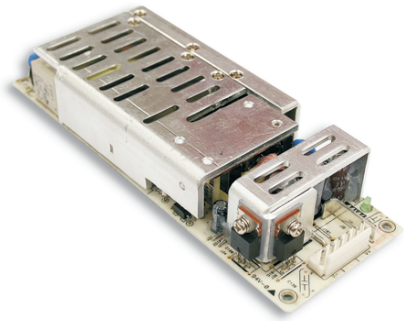
JAMECO ELECTRONICS

Jameco SKU Number: 2100865

MEAN WELL

150W Single Output with PFC Function

ASP-150 series



Features :

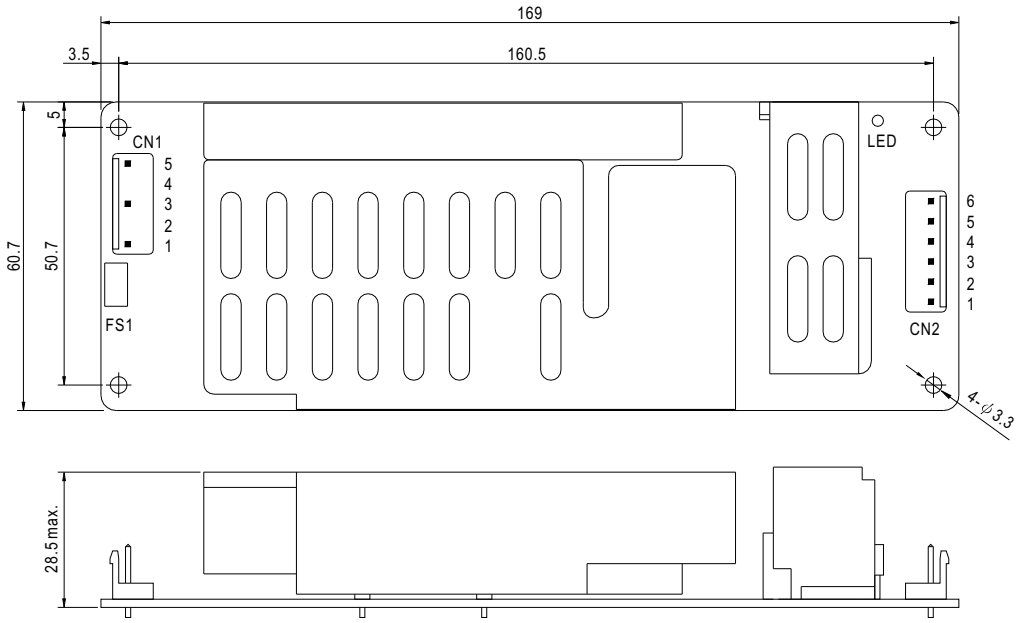
- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- High power density 8.4w/in^3
- 100% full load burn-in test
- No load power consumption<1W@240VAC
- ZCS/ZVS technology 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%
	SETUP, RISE TIME	3000ms, 80ms at full load				
	HOLD UP TIME (Typ.)	50ms/230VAC 16ms/115VAC at full load				
INPUT	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				
	INRUSH CURRENT (Typ.)	COLD START 80A/230VAC				
	LEAKAGE CURRENT	<2mA / 240VAC				
PROTECTION	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
		Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE	90℃ ±15℃(RTH2) detect on heatsink of power transistor				
		Protection type : Shut down o/p voltage, re-power on to recover				
ENVIRONMENT	WORKING TEMP.	-20 ~ +60℃ (Refer to output load derating curve)				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.05%/℃ (0 ~ 50℃)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes				
SAFETY & EMC (Note 4)	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℃/ 70% RH				
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B				
	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				
OTHERS	MTBF	149.3Khrs min. MIL-HDBK-217F (25℃)				
	DIMENSION	169*60.7*28.5mm (L*W*H)				
	PACKING	0.32Kg; 48pcs/15.8Kg/0.79CUFT				
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ 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



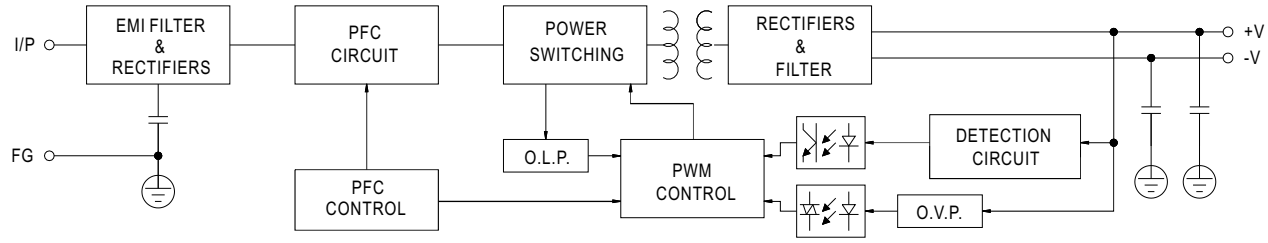
AC Input Connector (CN1) : JST B5P-VH or equivalent

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 ⏚		

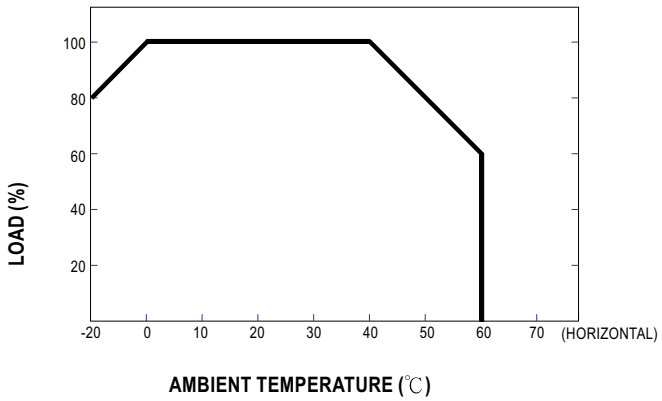
DC Output Connector (CN2) : JST B6P-VH or equivalent

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

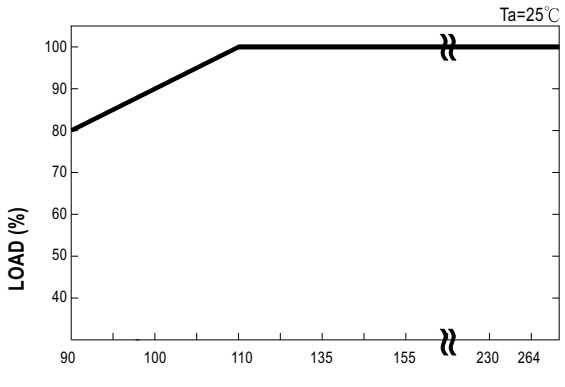


■ Derating Curve



AMBIENT TEMPERATURE (℃)

■ Output Derating VS Input Voltage



INPUT VOLTAGE (V) 60Hz

MODEL：ASP-150-12

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1： 150 mVp-p (Max)	I/P： 230VAC O/P：FULL LOAD Ta：25℃	V1： 91 mVp-p (Max))	P
2	OUTPUT VOLTAGE TOLERANCE	V1： 2 %~ -2 % (Max)	I/P： 110VAC / 264 VAC O/P：FULL/ MIN LOAD Ta：25℃	V1： 0.31 %~ -0.31 %	P
3	LINE REGULATION	V1： 0.5 %~ -0.5 % (Max)	I/P： 110VAC ~ 264 VAC O/P：FULL LOAD Ta：25℃	V1： 0.05 %~ -0.05 %	P
4	LOAD REGULATION	V1： 1 %~ -1 % (Max)	I/P： 230 VAC O/P：FULL ~MIN LOAD Ta：25℃	V1： 0.31 %~ -0.31 %	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℃	230VAC/ 1015 ms 115VAC/ 968 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℃	230VAC/ 7 ms 115VAC/ 7 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℃	230VAC/ 75 ms 115VAC/ 22.4 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	TEST： <5 %	P
9	DYNAMIC LOAD	V1： 1200 mVp-p	I/P： 230 VAC O/P：FULL /Min LOAD 90%DUTY/1KHZ Ta：25℃	203 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℃	64 V~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℃	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℃	PF= 0.954 / 230 VAC PF= 0.997 / 115 VAC	P
4	EFFICIENCY	88% (TYP)	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	88.5 %	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℃	I = 0.7 A/ 230 VAC I = 1.35 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 80 A (TYP) COLD START	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I = 75 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P： 254 VAC O/P：Min LOAD Ta：25℃	L-FG： 0.7 mA N-FG： 0.7 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℃	125 %/ 230 VAC 122 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1： 13.7V~ 16.2V	I/P： 230 VAC I/P： 115 VAC O/P：MIN LOAD Ta：25℃	15 V/ 230 VAC 15 V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC： RTH2： 90 ± 10℃ 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℃	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	0.57 W/240VAC	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： ASP-150-12
1. ROOM AMBIENT BURN-IN：1 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 26.7 ℃
2. HIGH AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 43.2 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 26.7 ℃</th><th>HIGH AMBIENT Ta= 43.2 ℃</th></tr>
<tr><td>1</td><td>LF3</td><td>TR-689</td><td>54.9℃</td><td>74.9℃</td></tr>
<tr><td>2</td><td>BD1</td><td>GBU4J 4A/600V</td><td>65.8℃</td><td>80.7℃</td></tr>
<tr><td>3</td><td>L2 COIL</td><td>TF-1356</td><td>69.0℃</td><td>88.5℃</td></tr>
<tr><td>4</td><td>C11</td><td>684/400V</td><td>69.6℃</td><td>90.1℃</td></tr>
<tr><td>5</td><td>L1 COIL</td><td>TR-623</td><td>69.9℃</td><td>91.2℃</td></tr>
<tr><td>6</td><td>D1</td><td>MUR460 4A/600V</td><td>83.9℃</td><td>104.0℃</td></tr>
<tr><td>7</td><td>Q2</td><td>2SK3683 19A/500V</td><td>75.7℃</td><td>94.9℃</td></tr>
<tr><td>8</td><td>C5</td><td>150U/400V NCC 105℃</td><td>75.7℃</td><td>94.2℃</td></tr>
<tr><td>9</td><td>D11</td><td>SB1100 1A/100V</td><td>80.8℃</td><td>96.6℃</td></tr>
<tr><td>10</td><td>Q1</td><td>SPA11N65C3 11A/820V</td><td>82.1℃</td><td>102.1℃</td></tr>
<tr><td>11</td><td>D2</td><td>IN5406 3A/600V</td><td>102.6℃</td><td>120.7℃</td></tr>
<tr><td>12</td><td>T1 COIL</td><td>TF-1378</td><td>90.2℃</td><td>107.2℃</td></tr>
<tr><td>13</td><td>C105</td><td>2200U/16V RUB 105℃ ZLH</td><td>67.9℃</td><td>84.4℃</td></tr>
<tr><td>14</td><td>Q101</td><td>P75NF75 75V/80A</td><td>75.1℃</td><td>91.6℃</td></tr>
<tr><td>15</td><td>C42</td><td>10U/50V NCC 105℃ KY</td><td>74.0℃</td><td>92.4℃</td></tr>
</table>
</td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P： 230 VAC
O/P： 115 % LOAD
Ta：25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 230 VAC
O/P： 80% LOAD
Ta= -20 ℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 40℃
NO DAMAGE</td><td>I/P： 272 VAC
O/P：FULL LOAD
Ta= 40℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.05 %(0~50℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>± 0.02 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">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℃</td><td>TEST：OK</td><td>P</td></tr>
</table>

SAFETY TEST

NO	TEST ITEM	SPECICATION	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： 5.1KVDC/min I/P-FG： 1.8 KVAC/min O/P-FG： 0.6 KVAC/min Ta：25℃	I/P-O/P： 0.002 mA I/P-FG： 2.51 mA O/P-FG： 0.45 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℃	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	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL/50% LOAD Ta：25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	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℃	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℃	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℃	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT I/P： 230VAC O/P：FULL LOAD Ta= 25 ℃ LIFE TIME= 109811 HRS I/P： 230VAC O/P：FULL LOAD Ta= 40 ℃ LIFE TIME= 38866 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) 705 V (2) 634 V (3) 620 V	P
2	Diode Peak Voltage	Q100 Rated STP75NF75 ： 75V 80A	I/P：High-Line +3V = 267 V O/P： (1)Full Load Turn on (2) Full Load (3)Output Short Ta：25℃	(1) 67 V (2) 66 V (3) 53 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) 528 V (2) 528 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) 394 V (2) 380 V (3) 394 V (4) 394 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) 18.1 V (2) 15.1 V (3) 18.1 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) 400 V (2) 400 V (3) 384 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