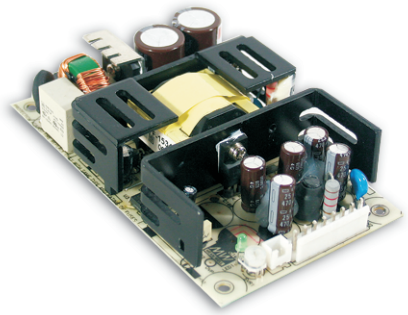
Jameco SKU Number: 2106423

75W Single Output Medical Type

RPS-75 series



■ Features :

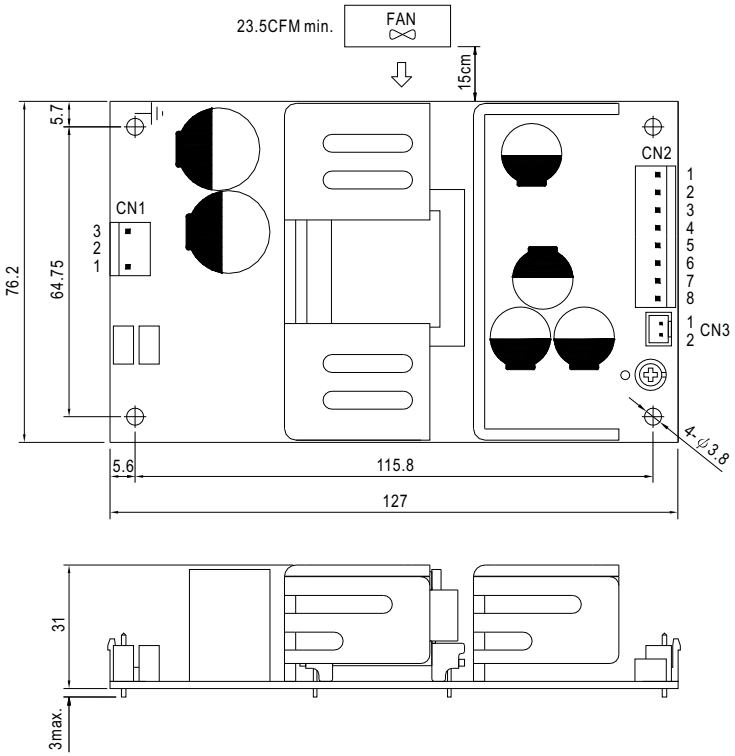
- Universal AC input/Full range
- Low leakage current<200uA
- Protections: Short circuit / Overload / Over voltage
- Free air convection for rated power and 23.5CFM forced air convection for peak load
- UL60601-1/IEC60601-1/EN60601-1 medical safety approved
- No load power consumption<0.75W
- Fixed switching frequency at 65KHz
- 3 years warranty

SPECIFICATION

MODEL		RPS-75-3.3	RPS-75-5	RPS-75-12	RPS-75-15	RPS-75-24	RPS-75-36	RPS-75-48
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	36V	48V
	RATED CURRENT	15A	14A	6.3A	5A	3.2A	2.1A	1.6A
	CURRENT RANGE	0 ~ 20A	0 ~ 18.7A	0 ~ 8.3A	0 ~ 6.7A	0 ~ 4.2A	0 ~ 2.8A	0 ~ 2.1A
	RATED POWER	49.5W	70W	75.6W	75W	76.8W	75.6W	76.8W
	PEAK LOAD (23.5CFM)	66W	94W	99.6W	100.5W	100.8W	100.8W	100.8W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	120mVp-p	150mVp-p	240mVp-p	300mVp-p	300mVp-p
	VOLTAGE ADJ. RANGE	2.9 ~ 3.6V	4.75 ~ 5.5V	11.4 ~ 13.2V	13.5 ~ 16.5V	22.8 ~ 27.6V	34.2 ~ 39.6V	45.6 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.5%	±1.5%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME	500ms, 30ms/230VAC 500ms, 30ms/115VAC at full load						
	HOLD UP TIME (Typ.)	80ms/230VAC 20ms/115VAC at full load						
INPUT	VOLTAGE RANGE	90 ~ 264VAC 127 ~370VDC						
	FREQUENCY RANGE	47 ~ 63Hz						
	EFFICIENCY(Typ.)	73%	78%	82%	83%	85%	86%	86%
	AC CURRENT (Typ.)	1.5A/115VAC 1A/230VAC						
	INRUSH CURRENT (Typ.)	COLD START 25A/115VAC 50A/230VAC						
	LEAKAGE CURRENT	Earth leakage current <200uA / 264VAC, Patient leakage current <100uA/264VAC						
PROTECTION	OVERLOAD	140 ~ 180% rated output power						
		Protection type : Hiccup mode, recovers automatically after fault condition is removed.						
	OVER VOLTAGE	3.8 ~ 4.46V	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V	41.4 ~ 48.6V	55.2 ~ 64.8V
		Protection type : Shut down o/p voltage, re-power to recover						
ENVIRONMENT	WORKING TEMP.	-20 ~ +70℃ (Refer to output load derating curve)						
	WORKING HUMIDITY	20 ~ 90% RH non-condensing						
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH						
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 45℃)						
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes						
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60601-1, TUV EN60601-1, IEC60601-1 approved						
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:1.5KVAC O/P-FG:1.5KVAC						
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC						
	EMI CONDUCTION & RADIATION	Compliance to EN55011 (CISPR11), 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, EN55024, EN60601-1-2, EN61000-6-2, EN61204-3, heavy industry level, EN61204-3 medical level, criteria A						
OTHERS	MTBF	446.8K hrs min. MIL-HDBK-217F (25℃)						
	DIMENSION	127*76.2*31mm (L*W*H)						
	PACKING	0.23Kg; 63pcs/15.5Kg/1.35CUFT						
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. 5. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.							

■ Mechanical Specification

Unit:mm



AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

DC Output Connector (CN2) : JST B8P-VH or equivalent

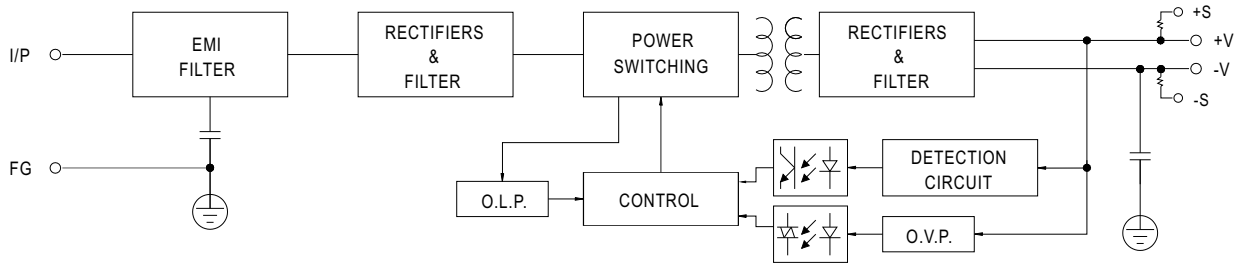
Pin No.	Assignment	Mating Housing	Terminal
1,2,3,4	+V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
5,6,7,8	-V		

Remote Sense(CN3) : JST B2B-XH or equivalent

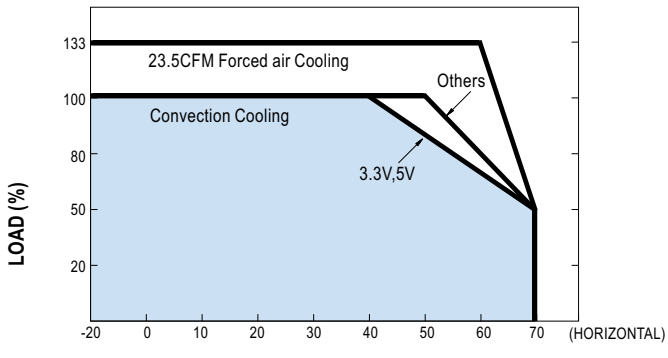
Pin No.	Assignment	Mating Housing	Terminal
1	RS+	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	RS-		

■ Block Diagram

fosc : 65KHz

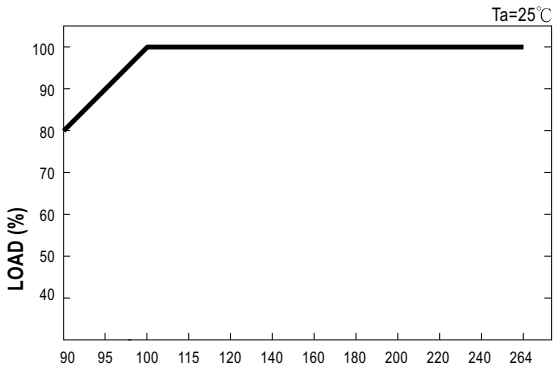


■ Derating Curve



AMBIENT TEMPERATURE (℃)

■ Output Derating VS Input Voltage



INPUT VOLTAGE (VAC) 60Hz

MODEL：RPS-75-3.3

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 51 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 2.9V~ 3.6V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	2.8 V~ 3.8 V/ 230 VAC 2.8 V~ 3.8 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max)	I/P: 100VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.6 %~ -0.6 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 100VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~ 0 %	P
5	LOAD REGULATION	V1: 1.5 %~ -1.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.6 %~ -0.6 %	P
6	SET UP TIME	230VAC: 500 ms (Max) 115 VAC: 500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 344 ms 115VAC/ 297 ms	P
7	RISE TIME	230VAC: 30 ms (Max) 115VAC: 30 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 4 ms 115VAC/ 4 ms	P
8	HOLD UP TIME	230VAC: 80 ms (TYP) 115VAC: 20 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 144 ms 115VAC/ 30 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 660 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	550 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	50V~264V	
			I/P: LOW-LINE-3V= 87 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: 90VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	
3	EFFICIENCY	73% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	73.2 %	
4	INPUT CURRENT	230V/ 1 A (TYP) 115V/ 1.5 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 0.52 A/ 230 VAC I = 0.95 A/ 115 VAC	
5	INRUSH CURRENT	230V/ 50 A (TYP) 115V/ 25 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 48 A/ 230 VAC I = 24 A/ 115 VAC	
6	LEAKAGE CURRENT	< 200 uA / 264 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 124 uA N-FG: 124 uA	
		< 100 uA/264 VAC for patient	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 37 uA N-FG 37 uA	

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	140%~ 180 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	173 %/ 230 VAC 164 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 3.8 V~ 4.46 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	4.3 V/ 230 VAC 4.3 V/ 115 VAC Shunt down Re- power ON	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25℃	NO DAMAGE Hiccup Mode	P

ONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	No load power consumption	<0.75W	I/P: 240 VAC O/P:NO LOAD	0.7W/240VAC	P
2	Remote sense	>0.3V	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	>0.3 V	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</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： RPS-75-5 WITH FAN
1. ROOM AMBIENT BURN-IN：1HRS
I/P: 230VAC O/P: FULL LOAD Ta= 31 ℃
2. HIGH AMBIENT BURN-IN：2.5 HRS
I/P: 230VAC O/P: FULL LOAD Ta= 60.7 ℃
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 31℃</th><th>HIGH AMBIENT Ta= 60.7 ℃</th></tr>
<tr><td>1</td><td>LF2</td><td>TR-719</td><td>52.7℃</td><td>82.3℃</td></tr>
<tr><td>2</td><td>BD1</td><td>US4K80 4A/800V SHI</td><td>49.1℃</td><td>78.4℃</td></tr>
<tr><td>3</td><td>C6</td><td>100U/400V NCC 105℃</td><td>38.6℃</td><td>67.6℃</td></tr>
<tr><td>4</td><td>C36</td><td>100U/50V NCC 105℃ KY</td><td>47.3℃</td><td>76.8℃</td></tr>
<tr><td>5</td><td>T1 COIL</td><td>TF-1532 JSI</td><td>65.2℃</td><td>93.7℃</td></tr>
<tr><td>6</td><td>Q1</td><td>STP9NK70ZFP 7.5A/700V</td><td>31.0℃</td><td>81.1℃</td></tr>
<tr><td>7</td><td>ZD1</td><td>P6KE300A LT</td><td>65.6℃</td><td>96.5℃</td></tr>
<tr><td>8</td><td>D1</td><td>HER308 3A/1KV REC</td><td>55.3℃</td><td>85.1℃</td></tr>
<tr><td>9</td><td>D100</td><td>YG838C04R 30A/40V FUJI</td><td>63.3℃</td><td>90.3℃</td></tr>
<tr><td>10</td><td>C107</td><td>2200U/16V RUB 105℃ ZLH</td><td>48.5℃</td><td>77.1℃</td></tr>
<tr><td>11</td><td>R6</td><td>330Ω/3W R/MO</td><td>70.7℃</td><td>101.1℃</td></tr>
<tr><td>12</td><td>R3</td><td>68KΩ/2W R/MO</td><td>59.9℃</td><td>83.3℃</td></tr>
<tr><td>13</td><td>U1</td><td>NCP1230D165R2 ON</td><td>44.8℃</td><td>73.6℃</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: 146% 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:100 % 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
CONTRO 60℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 60 ℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.01 %(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	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 4 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 1.5 KVAC/min	I/P-O/P: 4.2 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 1.8 KVAC/min Ta:25℃	I/P-O/P: 2.29 mA I/P-FG: 1.75 mA O/P-FG: 1.57 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: 10 GΩ I/P-FG: 30 GΩ O/P-FG: 20 GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO ： TA 50096088 UL: File NO ：E227340			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℃	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 MEDICAL AIR:8KV / Contact:6KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 MEDICAL INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 MEDICAL 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	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	RPS-75-5 WITH FAN : RPSUPPOSE C107 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25℃ LIFE TIME= 833404 HRS I/P: 230VAC O/P:FULL LOAD Ta= 60℃ LIFE TIME= 79497 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 446.8K HRS			P
3	ORT (Ongoing Reliability test)	I/P ： 230VAC O/P ： FULL LOAD TA=50℃ Sample=20pcs TEST TIME=552HRS			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 STP9NK70Z : 700V 7.5A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25℃	(1) 686 V (2) 680 V	P
2	Diode Peak **Voltage**	D100 Rated YG838C03R : 30V 30A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25℃	(1) 27.7 V (2) 24 V	P
3	Clamp Diode Peak **Voltage**	D1 Rated HER308 : 1000V 3A	I/P:High-Line +3V = 267 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25℃	(1) 646 V	P
4	**Input Capacitor Voltage**	C5 Rated :100u / 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 Ta:25℃	(1) 376 V (2) 388 V (3) 388 V	P
5	**Control IC Voltage Test**	U1 Rated 1230D165 : 18 V	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) 15.85 V (2) 9.55 V (3) 15.85 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2006/9/4	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2006/11/9	PRODUCT SAMPLE W0610A12	PASS	VINCENT TSENG	MAX LIN
2007/6/4	PRODUCT SAMPLE W0705E18	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023