



Test Report: UHP-200A-4.2

200W Single Output with PFC Function

■ DESIGN VERIFY TEST

- Output Function Test
- Input Function Test
- Protection Function Test
- Component Stress Test

■ SAFETY & E.M.C. TEST

- Safety Test
- E.M.C. Test

■ RELIABILITY TEST

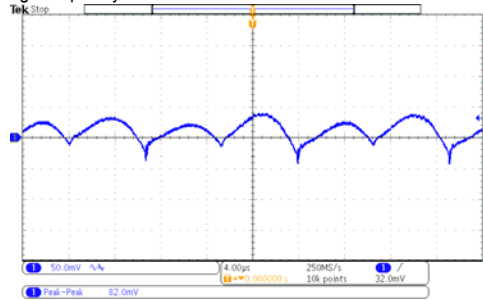
- Environment Test

DESIGN VERIFY TEST

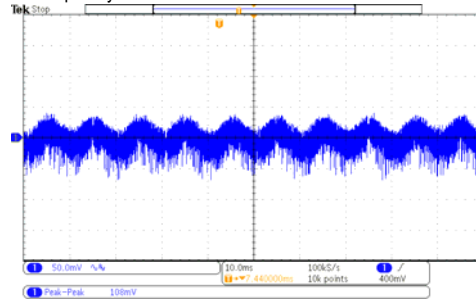
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	4.0V~4.4V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	3.8 V~ 4.5 V
2	OUTPUT VOLTAGE TOLERANCE	-4%~+4%	I/P: 100VAC / 264VAC O/P: FULL / NO LOAD Ta: 25°C	-1.4%~ 1.19%
3	LINE REGULATION	-0.5%~+0.5%	I/P: 180VAC ~ 264VAC O/P: FULL LOAD Ta: 25°C	0%~ 0%
4	LOAD REGULATION	-2.5%~+2.5%	I/P: 230VAC O/P: FULL ~NO LOAD Ta: 25°C	-0.23%~ 0 %
5	DC OK	PSU Turns on: DC ok PSU turns off: DC fail	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	OK
6	OVER/UNDERSHOOT TEST	<± 10 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	<± 2.899%
7	RIPPLE & NOISE (Max)	200mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	108mVp-p

high frequency :



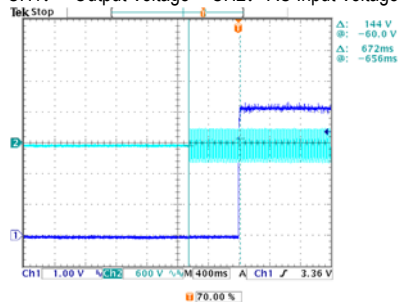
low frequency :



8	SET UP TIME(Max)	230VAC/ 2000ms 115VAC/ 3000ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD/80% LOAD Ta: 25°C	230VAC/ 672 ms 115VAC/ 1448 ms
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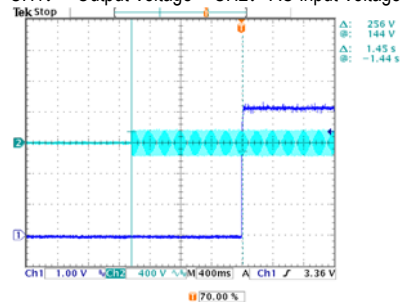
INPUT=230VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage



INPUT=115VAC/60HZ @ 80% LOAD

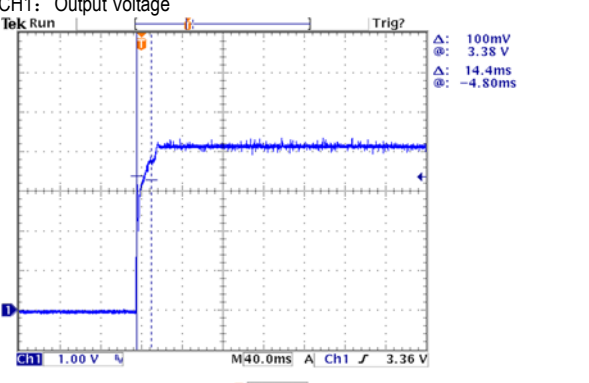
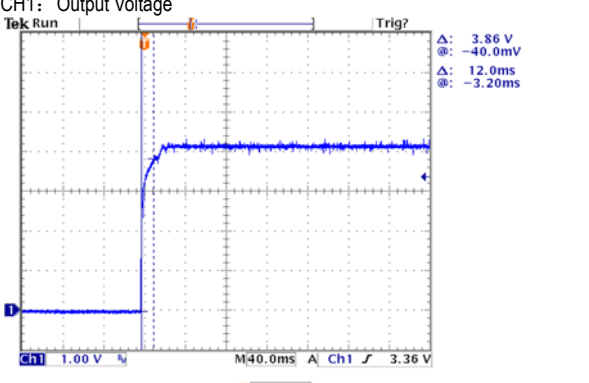
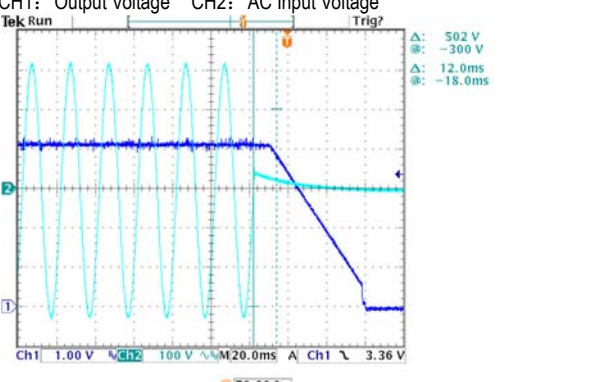
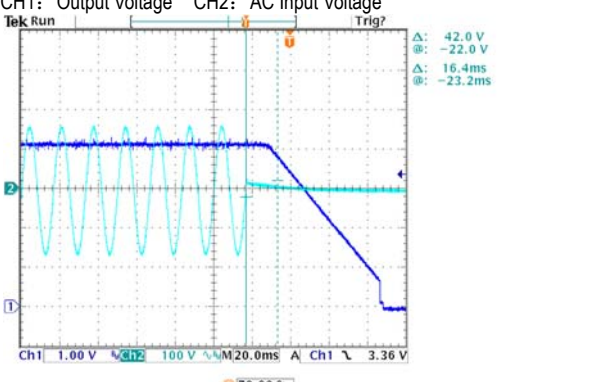
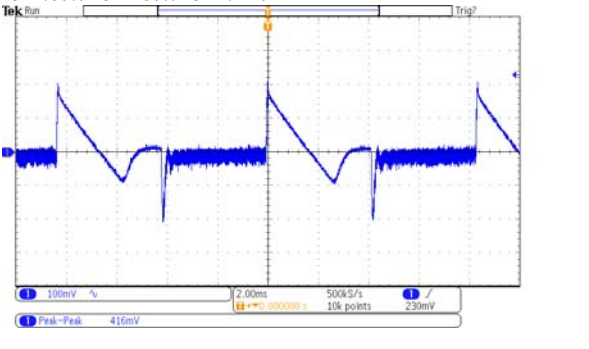
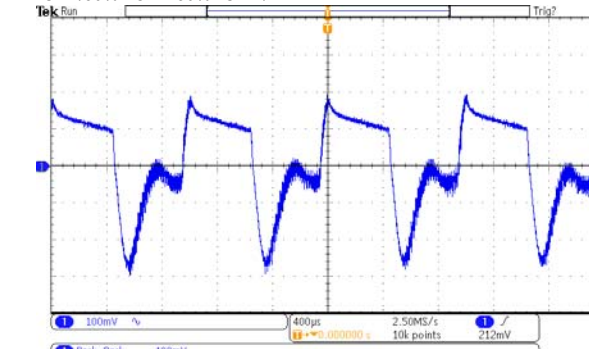
CH1: Output Voltage CH2: AC Input Voltage





200W Single Output with PFC Function

UHP-200A series

<p>9</p> <p>RISE TIME (Max)</p>	<p>230VAC/ 200ms 115VAC/ 200ms</p>	<p>I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD/80% LOAD Ta: 25°C</p>	<p>230VAC/ 14.4 ms 115VAC/ 12.0 ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1: Output Voltage</p>  <p>INPUT=115VAC/60HZ @ 80% LOAD</p> <p>CH1: Output Voltage</p> 			
<p>10</p> <p>HOLD UP TIME(Typ)</p>	<p>230VAC/ 10ms 115VAC/ 10ms</p>	<p>I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD/80% LOAD Ta: 25°C</p>	<p>230VAC/ 12 ms 115VAC/ 16.4ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p>  <p>INPUT=115VAC/60HZ @ 80% LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p> 			
<p>11</p> <p>DYNAMIC LOAD</p>	<p>V1: 840 mVp-p</p>	<p>I/P: 230VAC O/P: (1)FULL/50% LOAD 50%DUTY / 120HZ (2)FULL/50% LOAD 50%DUTY / 1KHZ Ta: 25°C</p>	<p>(1) 416mVp-p (2) 488mVp-p</p>
<p>FULL /50% LOAD 50%DUTY / 120HZ</p>  <p>FULL /50% LOAD 50%DUTY / 1KHZ</p> 			



INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~264VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	97 V~ 264V
			I/P: LOW-LINE-3V=97 V HIGH-LINE+15%=300 V O/P: FULL/NO LOAD ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST: OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 100 VAC ~264 VAC O/P: FULL~NO LOAD Ta: 25°C	TEST: OK
3	AC CURRENT	3.0A/115VAC 2.0A/230VAC	I/P: 115 VAC I/P: 230 VAC O/P: 80% LOAD/FULL LOAD Ta: 25°C	I = 1.69 A/ 115VAC I = 0.84 A/ 230VAC
4	LEAKAGE CURRENT	< 1.0mA / 240VAC	I/P: 264 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.234 mA N-FG: 0.343 mA
5	INRUSH CURRENT(Typ)	230V/85A COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 73.8 A/ 230VAC
INPUT=230VAC/50HZ @ FULL LOAD CH2: Input current CH1: AC Input Voltage 				
6	EFFICIENCY(Typ)	88%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	89.49 %
7	POWER FACTOR	0.97/ 115VAC 0.95/ 230VAC	I/P: 115 VAC I/P: 230 VAC O/P: 80% LOAD/FULL LOAD Ta: 25°C	PF= 0.996 / 115VAC PF= 0.981 / 230VAC

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	110~140%	I/P: 180VAC I/P: 230VAC I/P: 264VAC O/P: TESTING Ta: 25°C	131 %/ 180VAC 131 %/ 230VAC 131 %/ 264VAC Hiccup mode, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	4.6V~6V	I/P: 100VAC I/P: 230VAC I/P: 264VAC O/P: NO LOAD Ta: 25°C	5.45 V/ 100VAC 5.28 V/ 230VAC 5.25 V/ 264VAC Hiccup mode, recovers automatically after fault condition is removed
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 180VAC I/P: 230VAC I/P: 264VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage, recovers automatically after fault condition is removed
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 100VAC I/P: 264VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Power Transistor	Q2 Rated 500V/7A	I/P: High-Line +3V =267V O/P: (1) FULL LOAD Turn on (2) Output Short (3) FULL LOAD continue Ta: 25°C	(1) 420 V (2) 410 V (3) 408 V
2	O/P Diode (MOSFET)	Q100 Rated 30V/100A	I/P: High-Line +3V =267V O/P: (1) FULL LOAD Turn on (2) Output Short (3) FULL LOAD continue Ta: 25°C	(1) 14.7 V (2) 6.56 V (3) 13.2 V
3	Input Capacitor	C5 Rated 100u/ 450V	I/P: High-Line +3V =267 V O/P: (1) FULL LOAD input on/off (2) NO LOAD input on /Off (3) FULL LOAD /NO LOAD Change Ta: 25°C	(1) 390 V (2) 380 V (3) 386 V
4	Control IC	U2 Rated 25V (MAX.)	I/P: High-Line +3V =267 V O/P: ((1) FULL LOAD (2) Output Short (3) O.L.P (4) O.V.P (5) Low Line No Load Vo(min) Ta: 25°C	(1) 15.6 V (2) 15.7 V (3) 15.7 V (4) 15.5 V (5) 14.5 V
5	PFC Power Transistor	Q 1 Rated 710V/15A	I/P: High-Line +3V =267V O/P: (1) FULL LOAD Turn on (2) Output Short (3) FULL LOAD continue Ta: 25°C	(1) 416 V (2) 392 V (3) 410 V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.0 KVAC/min I/P-FG: 2.0 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 0.6 KVAC/min Ta: 25°C	I/P-O/P: 2.345 mA I/P-FG: 2.435 mA O/P-FG: 2.254 mA NO DAMAGE
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/70%RH	I/P-O/P: >9999 MΩ I/P-FG: >9999 MΩ O/P-FG: >9999 MΩ
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta: 25°C	9 mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS B	I/P: 230VAC/50HZ O/P: FULL/50% LOAD Ta: 25°C	PASS
2	CONDUCTION	EN55022	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab
3	RADIATION	EN55022	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab
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
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A
6	SURGE	EN61000-4-5 INDUSTRY L-N: 2KV L,N-PE: 4KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			



RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																				
1	TEMPERATURE RISE TEST	MODEL: UHP-200A-4.2 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=35.0 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=50.6 °C																																																																																																						
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=35.0 °C</th> <th>HIGH AMBIENT Ta=50.6 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>67.4°C</td><td>83.2°C</td></tr> <tr><td>2</td><td>RTH1</td><td>73.9°C</td><td>88.4°C</td></tr> <tr><td>3</td><td>ZNR1</td><td>58.8°C</td><td>74.0°C</td></tr> <tr><td>4</td><td>BD1</td><td>71.6°C</td><td>88.6°C</td></tr> <tr><td>5</td><td>C6</td><td>76.3°C</td><td>89.1°C</td></tr> <tr><td>6</td><td>L1</td><td>89.0°C</td><td>104.8°C</td></tr> <tr><td>7</td><td>C10</td><td>69.5°C</td><td>86.2°C</td></tr> <tr><td>8</td><td>C5</td><td>78.7°C</td><td>93.5°C</td></tr> <tr><td>9</td><td>C7</td><td>76.5°C</td><td>90.8°C</td></tr> <tr><td>10</td><td>U1</td><td>64.6°C</td><td>81.4°C</td></tr> <tr><td>11</td><td>U2</td><td>80.0°C</td><td>96.0°C</td></tr> <tr><td>12</td><td>Q2</td><td>90.0°C</td><td>106.8°C</td></tr> <tr><td>13</td><td>D1</td><td>80.5°C</td><td>97.7°C</td></tr> <tr><td>14</td><td>T1</td><td>83.1°C</td><td>99.0°C</td></tr> <tr><td>15</td><td>C40</td><td>66.8°C</td><td>80.5°C</td></tr> <tr><td>16</td><td>U101</td><td>64.5°C</td><td>80.1°C</td></tr> <tr><td>17</td><td>Q103</td><td>71.3°C</td><td>86.8°C</td></tr> <tr><td>18</td><td>Q102</td><td>77.4°C</td><td>93.9°C</td></tr> <tr><td>19</td><td>Q100</td><td>85.6°C</td><td>98.9°C</td></tr> <tr><td>20</td><td>Q101</td><td>83.8°C</td><td>97.9°C</td></tr> <tr><td>21</td><td>C102</td><td>79.9°C</td><td>95.9°C</td></tr> <tr><td>22</td><td>C104</td><td>80.8°C</td><td>96.0°C</td></tr> <tr><td>23</td><td>C105</td><td>79.5°C</td><td>95.7°C</td></tr> <tr><td>24</td><td>TSW1</td><td>64.5°C</td><td>80.5°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=35.0 °C	HIGH AMBIENT Ta=50.6 °C	1	LF1	67.4°C	83.2°C	2	RTH1	73.9°C	88.4°C	3	ZNR1	58.8°C	74.0°C	4	BD1	71.6°C	88.6°C	5	C6	76.3°C	89.1°C	6	L1	89.0°C	104.8°C	7	C10	69.5°C	86.2°C	8	C5	78.7°C	93.5°C	9	C7	76.5°C	90.8°C	10	U1	64.6°C	81.4°C	11	U2	80.0°C	96.0°C	12	Q2	90.0°C	106.8°C	13	D1	80.5°C	97.7°C	14	T1	83.1°C	99.0°C	15	C40	66.8°C	80.5°C	16	U101	64.5°C	80.1°C	17	Q103	71.3°C	86.8°C	18	Q102	77.4°C	93.9°C	19	Q100	85.6°C	98.9°C	20	Q101	83.8°C	97.9°C	21	C102	79.9°C	95.9°C	22	C104	80.8°C	96.0°C	23	C105	79.5°C	95.7°C	24	TSW1	64.5°C	80.5°C
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 264VAC/100VAC O/P: FULL LOAD/70% LOAD Ta= -35°C	TEST: OK																																																																																																				
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50°C NO DAMAGE	I/P: 264VAC O/P: FULL LOAD Ta=50°C HUMIDITY= 95%R.H	TEST: OK																																																																																																				
4	TEMPERATURE COEFFICIENT	±0.03 %/°C (0~50°C)	I/P: 230 VAC O/P: FULL LOAD	±0.02 %/°C (0~50°C)																																																																																																				



200W Single Output with PFC Function

UHP-200A series

5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature: -45°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
6	THERMAL SHOCK TEST	1. Thermal shock Temperature: -35°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 AC ON/OFF TEST AC on 3 sec/AC off 1 sec TEST	TEST: OK
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency: 10~500Hz (3) Sweep Time: 10min/sweep cycle (4) Acceleration: 5G (5) Test Time: 60min in each axes (X.Y.Z) (6) Ta: 25°C	TEST: OK
8	CAPACITOR LIFE CYCLE	UHP-200A-4.2: SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P: 230VAC O/P: FULL LOAD Ta= 25 °C LIFE TIME (2) I/P: 230VAC O/P: FULL LOAD Ta= 50 °C LIFE TIME (3) I/P: 230VAC O/P: 75% LOAD Ta= 50 °C LIFE TIME (4) I/P: 230VAC O/P: 50% LOAD Ta= 50 °C LIFE TIME	(1) 276077 HRS (2) 28578 HRS (3) 229631 HRS (4) 1137706 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 204K hrs min. MIL-HDBK-217F (25°C)	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	EDISION/ZHUOKB	SKY	LIUWY