



Test Report: UHP-200A-5

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

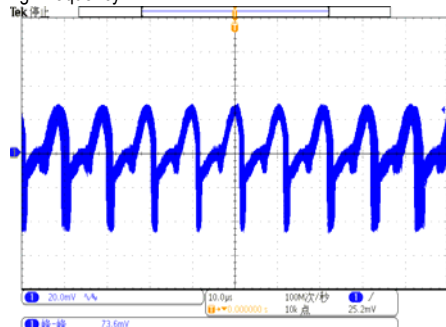
Environment Test

DESIGN VERIFY TEST

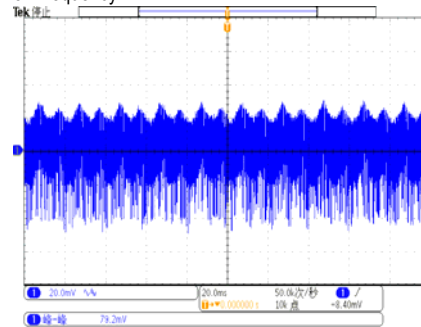
OUTPUT FUNCTION TEST

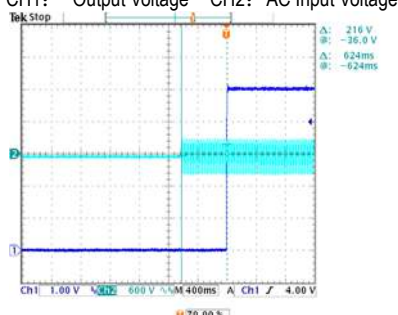
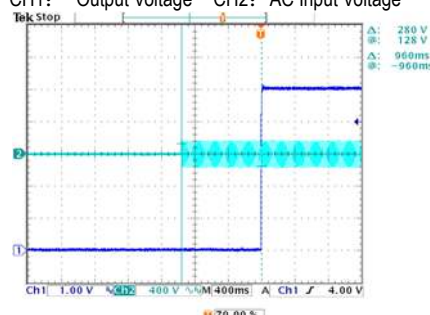
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	4.7V~5.3V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	4.44 V~ 5.57 V
2	OUTPUT VOLTAGE TOLERANCE	-4%~+4%	I/P: 100VAC / 264VAC O/P: FULL / NO LOAD Ta: 25°C	-0.8%~ 1.0%
3	LINE REGULATION	-0.5%~+0.5%	I/P: 180VAC ~ 264VAC O/P: FULL LOAD Ta: 25°C	0%~ 0%
4	LOAD REGULATION	-2.5%~+2.5%	I/P: 230VAC O/P: FULL ~NO LOAD Ta: 25°C	0%~ 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	< ± 1.594%
7	RIPPLE & NOISE (Max)	200mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	79.2 mVp-p

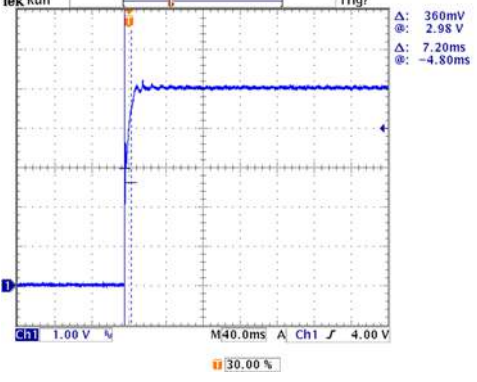
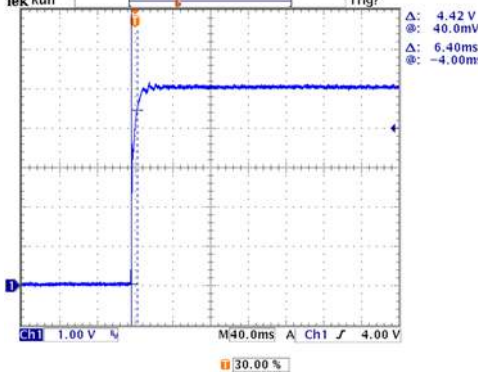
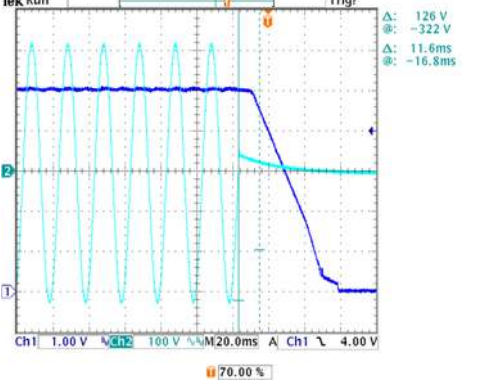
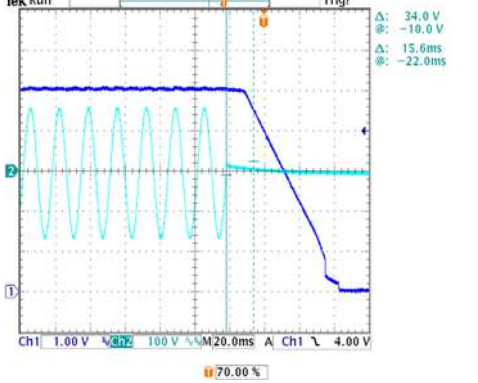
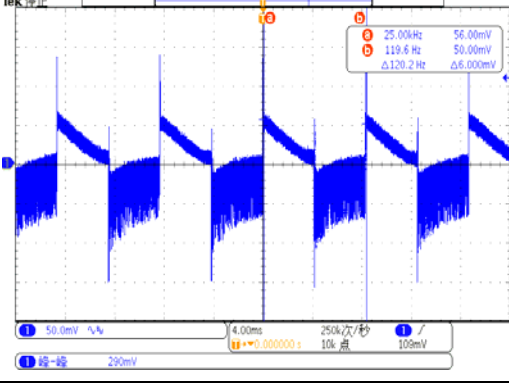
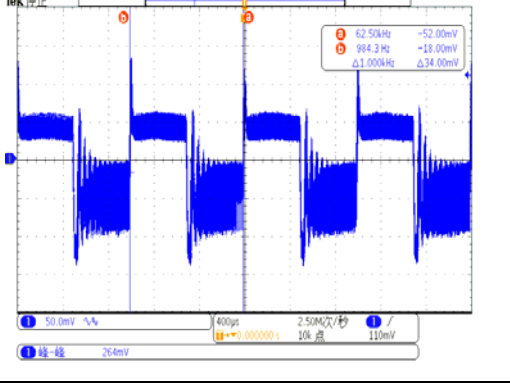
high frequency :



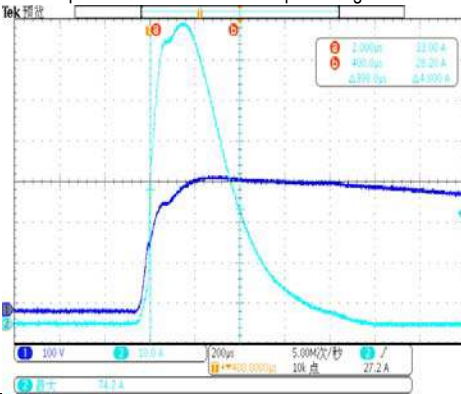
low frequency :



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/ 624 ms 115VAC/ 960 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage		INPUT=115VAC/60HZ @ 80% LOAD CH1: Output Voltage CH2: AC Input Voltage		
				

9	RISE TIME (Max)	230VAC/ 200ms 115VAC/ 200ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD/80% LOAD Ta: 25°C	230VAC/ 7.2 ms 115VAC/ 6.4 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage  INPUT=115VAC/60HZ @ 80% LOAD CH1: Output Voltage 				
10	HOLD UP TIME(Typ)	230VAC/ 10ms 115VAC/ 10ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD/80% LOAD Ta: 25°C	230VAC/ 11.6 ms 115VAC/ 15.6 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage  INPUT=115VAC/60HZ @ 80% LOAD CH1: Output Voltage CH2: AC Input Voltage 				
11	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230VAC O/P: (1)FULL/50% LOAD 50%DUTY / 120HZ (2)FULL/50% LOAD 50%DUTY / 1KHZ Ta: 25°C	(1) 290 mVp-p (2) 264 mVp-p
FULL /50% LOAD 50%DUTY / 120HZ  FULL /50% LOAD 50%DUTY / 1KHZ 				

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 = 1.99 A/ 115VAC I = 0.98 A/ 230VAC
4	LEAKAGE CURRENT	< 1.0mA / 240VAC	I/P: 264 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.206 mA N-FG: 0.208 mA
5	INRUSH CURRENT(Typ)	230V/85A COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 74.2 A/ 230VAC
INPUT=230VAC/50HZ @ FULL LOAD CH2: Input current CH1: AC Input Voltage 				
6	EFFICIENCY(Typ)	88.5%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	90.09 %
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= 0.986 / 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	131.5%/ 180VAC 131.5 %/ 230VAC 131.5 %/ 264VAC Hiccup mode, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	5.6V~7.1V	I/P: 100VAC I/P: 230VAC I/P: 264VAC O/P: NO LOAD Ta: 25°C	6.45 V/ 100VAC 6.56 V/ 230VAC 6.56 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) 428 V (2) 434 V (3) 424 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) 16.7 V (2) 7.21 V (3) 7.96 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) 402 V (2) 392 V (3) 400 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) 15.3 V (2) 16.1 V (3) 15.2 V (4) 15.1 V (5) 15.2 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) 480 V (2) 412 V (3) 412 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: 1.662 mA I/P-FG: 1.372 mA O/P-FG: 2.354 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	6 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-5 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=42.9 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=51.8 °C <table><thead><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=42.9 °C</th><th>HIGH AMBIENT Ta=51.8 °C</th></tr></thead><tbody><tr><td>1</td><td>BD1</td><td>80.6°C</td><td>89.8°C</td></tr><tr><td>2</td><td>C6</td><td>76.4°C</td><td>86.1°C</td></tr><tr><td>3</td><td>L1</td><td>73.9°C</td><td>84.0°C</td></tr><tr><td>4</td><td>C5</td><td>77.5°C</td><td>87.5°C</td></tr><tr><td>5</td><td>C7</td><td>92.5°C</td><td>103.4°C</td></tr><tr><td>6</td><td>U2</td><td>99.3°C</td><td>111.2°C</td></tr><tr><td>7</td><td>U1</td><td>70.1°C</td><td>79.9°C</td></tr><tr><td>8</td><td>Q2</td><td>75.2°C</td><td>85.4°C</td></tr><tr><td>9</td><td>T1</td><td>84.4°C</td><td>95.3°C</td></tr><tr><td>10</td><td>C40</td><td>71.7°C</td><td>81.6°C</td></tr><tr><td>11</td><td>U100</td><td>77.2°C</td><td>87.4°C</td></tr><tr><td>12</td><td>Q103</td><td>80.5°C</td><td>91.0°C</td></tr><tr><td>13</td><td>Q102</td><td>80.7°C</td><td>91.7°C</td></tr><tr><td>14</td><td>Q100</td><td>84.4°C</td><td>95.4°C</td></tr><tr><td>15</td><td>Q101</td><td>83.2°C</td><td>94.1°C</td></tr><tr><td>16</td><td>C104</td><td>86.4°C</td><td>97.0°C</td></tr><tr><td>17</td><td>C105</td><td>84.3°C</td><td>94.9°C</td></tr><tr><td>18</td><td>TSW1</td><td>91.4°C</td><td>102.9°C</td></tr></tbody></table>			NO	Position	ROOM AMBIENT Ta=42.9 °C	HIGH AMBIENT Ta=51.8 °C	1	BD1	80.6°C	89.8°C	2	C6	76.4°C	86.1°C	3	L1	73.9°C	84.0°C	4	C5	77.5°C	87.5°C	5	C7	92.5°C	103.4°C	6	U2	99.3°C	111.2°C	7	U1	70.1°C	79.9°C	8	Q2	75.2°C	85.4°C	9	T1	84.4°C	95.3°C	10	C40	71.7°C	81.6°C	11	U100	77.2°C	87.4°C	12	Q103	80.5°C	91.0°C	13	Q102	80.7°C	91.7°C	14	Q100	84.4°C	95.4°C	15	Q101	83.2°C	94.1°C	16	C104	86.4°C	97.0°C	17	C105	84.3°C	94.9°C	18	TSW1	91.4°C	102.9°C
NO	Position	ROOM AMBIENT Ta=42.9 °C	HIGH AMBIENT Ta=51.8 °C																																																																													
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18	TSW1	91.4°C	102.9°C																																																																													
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	±0.022 %/°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-5: 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