



Test Report: OWA-200U-12

200W Single Output Moistureproof Adaptor

■ DESIGN VERIFY

TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

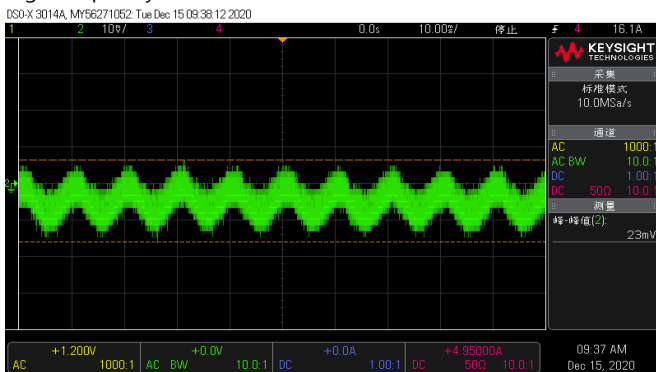
■ SAFETY & E.M.C.

DESIGN VERIFY TEST

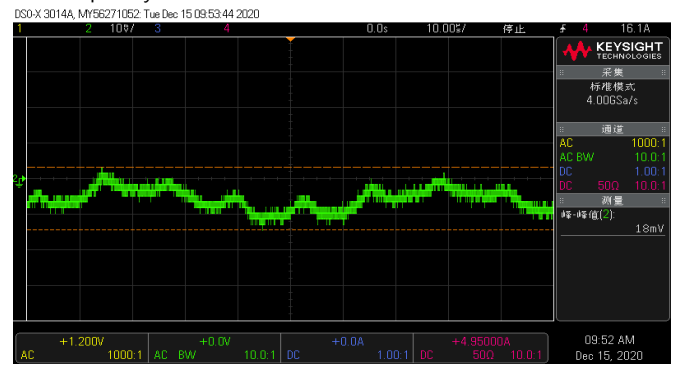
OUTPUT FUNCTION TEST

N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	V1: -5% ~ 5% (Max)	I/P:110VAC /264AC O/P:FULL~MIN LOAD Ta:25°C	V1: 0.4%~ 2.9 %
2	LINE REGULATION	V1: -0.5% ~0.5% (Max)	I/P:110VAC~264AC O/P:FULL LOAD Ta:25°C	V1: 0.1 %~ 0.11 %
3	LOAD REGULATION	V1: -5% ~ 5% (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 1.52 %~ 1.62 %
4	OVER/UNDERSHOOT TEST	< +5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: 0.9 %
5	RIPPLE & NOISE	V1: 150mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1:23mVp-p / 100% load

high frequency :



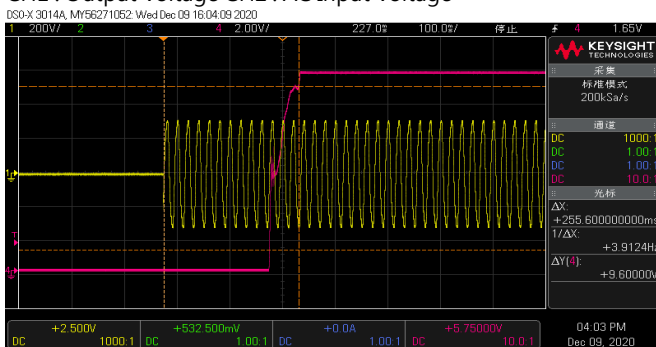
low frequency :



6	SET UP TIME (Max)	230VAC/500ms 115VAC/500ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C 使用 LEDH MODE TEST	230VAC/ 255.6 ms 115 VAC/394 ms
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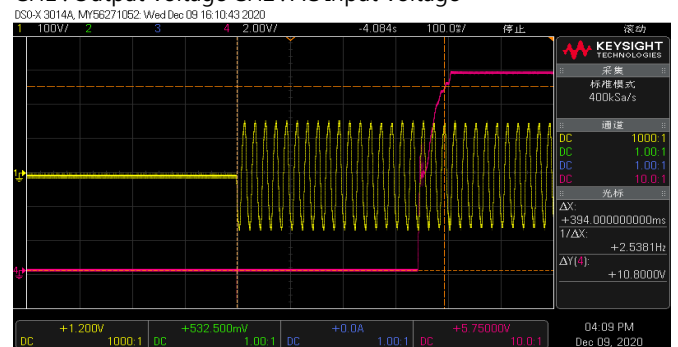
INPUT=230VAC/50HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage

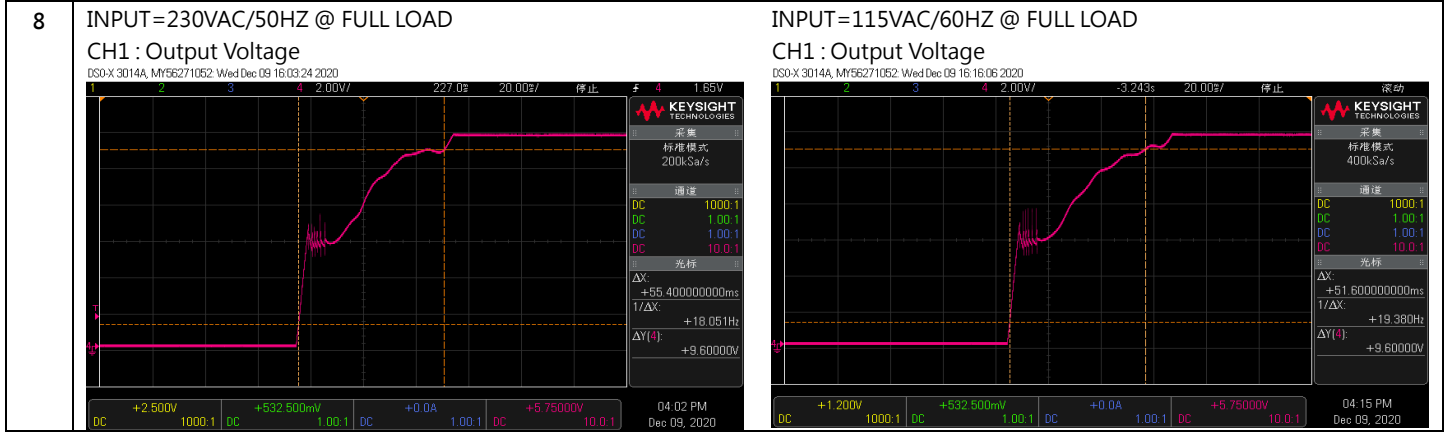


INPUT=115VAC/60HZ @ FULL LOAD

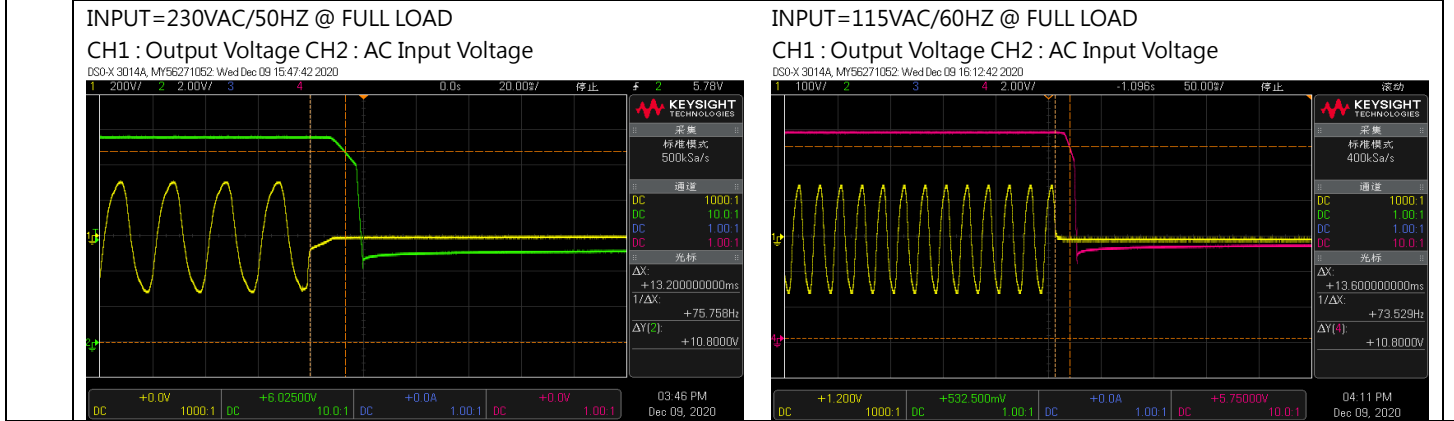
CH1 : Output Voltage CH2 : AC Input Voltage



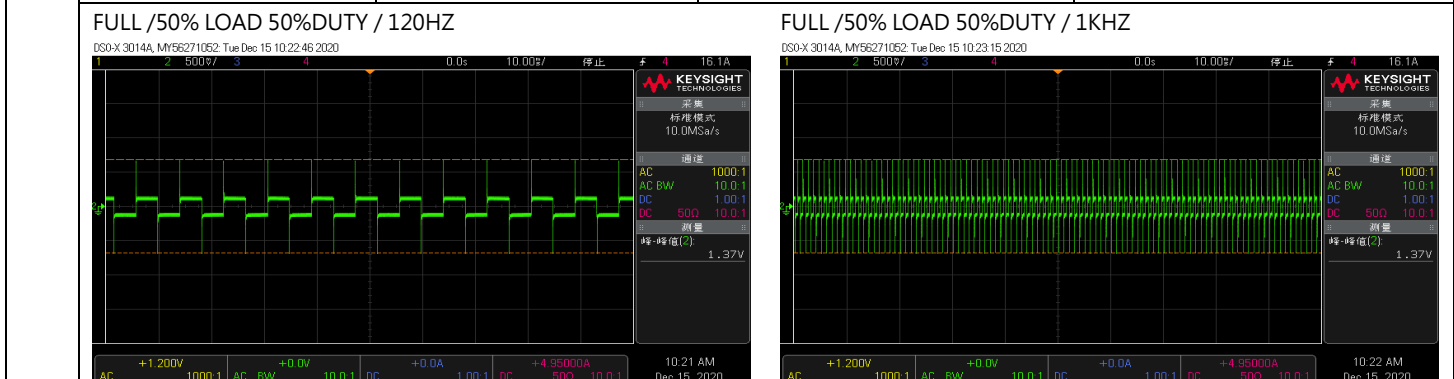
7	RISE TIME (Max)	230VAC/80ms 115VAC/80ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C 使用 LEDH MODE TEST	230VAC/ 55.4 ms 115 VAC/ 51.6 ms
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9	HOLD UP TIME (Typ)	230VAC/10ms 115VAC/10ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C 使用 LEDH MODE TEST	230VAC/ 13.2 ms 115 VAC/ 13.6 ms
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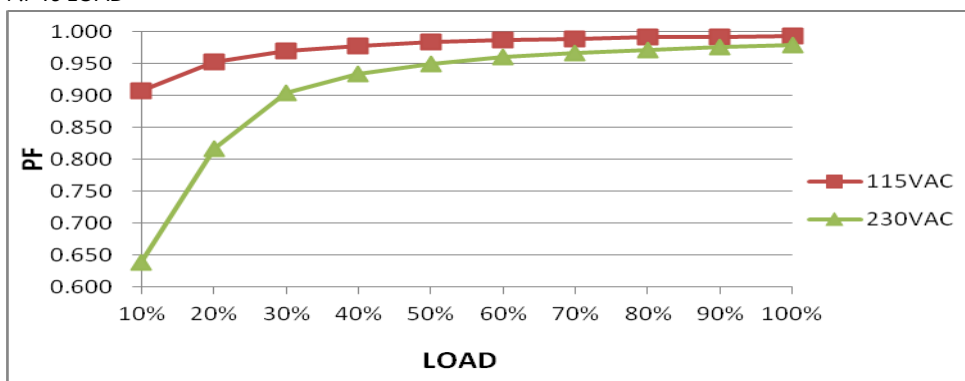
10	DYNAMIC LOAD	V1: 2400mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	1370mVp-p FULL /50% LOAD 50%DUTY / 120HZ 1370 mVp-p FULL /50% LOAD 50%DUTY / 1KHZ
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INPUT FUNCTION TEST

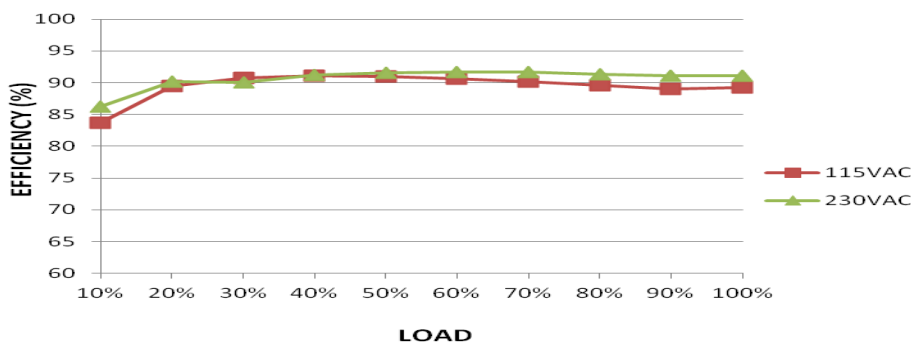
N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~264VAC 142VDC~ 370VDC	(1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 50% LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 50% LOAD (PLEASE CHECK DERATING CURVE) Ta:25°C	(1) 100 V~264VAC (2) 242Vdc~370Vdc/FULL LOAD 142Vdc~370Vdc/50% LOAD (3) 242Vdc~370Vdc/FULL LOAD 142Vdc~370Vdc/50% LOAD
			I/P: LOW-LINE-3V=97 VAC HIGH-LINE+15%=300 VAC O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) 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: 110 VAC ~264VAC O/P:FULL~MIN LOAD Ta:25°C	OK
3	INPUT CURRENT (TYP)	230 VAC/1.1A 115 VAC/2.2A	I/P: 230 VAC/115 VAC O/P:FULL LOAD Ta:25°C	I =0.854A/ 230VAC I =1.740A/ 115VAC
	NO LOAD POWER CONSUMPTION	<0.15W	I/P: 230 VAC O/P:NO LOAD Ta:25°C	0.1192W/230VAC
4	POWER FACTOR(TYP)	0.96/230 VAC FULL LOAD 0.97/115 VAC FULL LOAD	I/P: 230 VAC/115VAC/ O/P:FULL LOAD Ta:25°C	PF=0.979/230V/100%LOAD PF=0.993/115V/100%LOAD

P.F vs LOAD



5	EFFICIENCY (TYP)	88.5%/115VAC 91%/230VAC	I/P: 115/ 230VAC O/P: 100%Load Ta:25°C	91.05 %/230VAC 89.3%/115VAC
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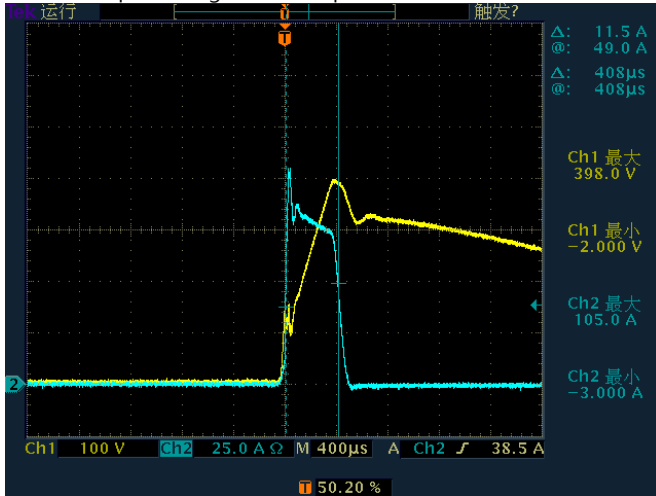
EFFICIENCY vs LOAD



6	INRUSH CURRENT (TYP)	230 V/ 180A 115VV/ 90A (twidh=450us measured at 50% Ipeak) COLD START at 230VAC (twidh=300 us measured at 50% Ipeak) COLD START at 115VAC	I/P: 230 VAC 115VAC O/P:FULL LOAD Ta:25°C	I=105A/ 230VAC T50=408us I=24.7A/ 115VAC T50=440us
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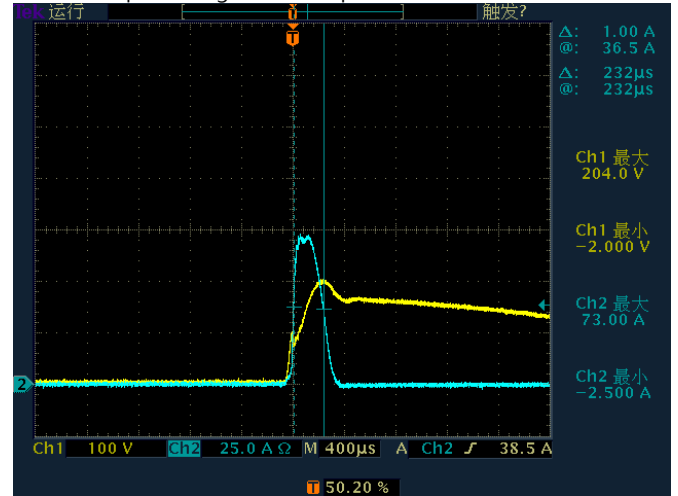
INPUT=230VAC/50HZ @ FULL LOAD

CH1 : AC Input Voltage CH2 : Input current



INPUT=115VAC/ 60HZ @ FULL LOAD

CH1 : AC Input Voltage CH2 : Input current



ROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	105 %~150%	I/P: 267VAC I/P: 230VAC I/P: 110VAC O/P:TESTING Ta:25°C	137.7%/ 267VAC 137.7%/ 230VAC 137.7%/110VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	V1: 13 V~ 18 V	I/P: 267VAC I/P: 230VAC I/P: 110VAC O/P:TESTING Ta:25°C	17.08V/ 267VAC 17.05V/ 230VAC 17.15 V/ 110VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 267 VAC I/P: 110 VAC O/P:FULL LOAD	O.T.P. Active PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 267VAC I/P: 110 VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q 73 Rated 11A/600V	AC ON/OFF I/P:High-Line +3V =267V VDS: O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load.	VDS: (1) 435V (2) 447V (3) 431V (4) 431V (5) 435V (6) 427V (7) 447V

			<p>I/P:Low-Line -3V = 97V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C</p>	<p>VDS: (1) 431V (2) 435V (3) 431V (4) 431V (5) 427V (6) 427V (7) 443V</p>
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated 22A/600V	<p>I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load.</p> <p>I/P:Low-Line -3V =97V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C</p>	<p>VDS: (1) 483V (2) 479V (3) 479V (4) 487V (5) 483V (6) 483V (7) 467V</p> <p>VDS: (1) 467V (2) 467V (3) 463V (4) 467V (5) 463V (6) 467V (7) 467V</p>
3	P.F.C DIODE	D5 Rated 9 A/ 600V	<p>I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p>	<p>(1) 479V (2) 427V (3) 479V (4) 483V</p>

			<p>I/P:Low-Line -3V = 97V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25°C</p>	<p>(1) 427V (2) 427V (3) 427V (4) 427V</p>												
4	Diode Peak Voltage	<p>Q101 Rated 100A/40V Q100 Rated 100A/40V</p>	<p>AC ON/OFF I/P:High-Line +3V =267 V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Ta:25°C</p>	<p>Q101: VDS: (1) 29.4V (2) 6.04V (3) 29.8V (4) 29.8V (5) 29.4V (6) 29.4V (7) 28.6V (8) 28.6 V Q104: VDS: (1) 29.4V (2) 10.62V (3) 30.2V (4) 30.6V (5) 30.6V (6) 29.8V (7) 27.4V (8) 27.0 V</p>												
5	Input Capacitor Voltage	C5 Rated: 100μ / 450V	<p>I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25°C</p>	<p>(1) 423V (2) 419V (3) 423V (4) 419V</p>												
6	Control IC Voltage Test	<p>U2 Rated 0.3V~20V U1 Rated -0.3V~35V</p>	<p>AC ON/OFF I/P:High-Line +3V =267 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25°C</p>	<table border="0"> <tr> <td>U2</td> <td>U1</td> </tr> <tr> <td>(1) 16.5V</td> <td>(1) 16.5V</td> </tr> <tr> <td>(2) 16.7V</td> <td>(2) 16.7V</td> </tr> <tr> <td>(3) 16.9V</td> <td>(3) 16.7V</td> </tr> <tr> <td>(4) 16.7V</td> <td>(4) 16.5V</td> </tr> <tr> <td>(5) 16.7V</td> <td>(5) 16.5V</td> </tr> </table>	U2	U1	(1) 16.5V	(1) 16.5V	(2) 16.7V	(2) 16.7V	(3) 16.9V	(3) 16.7V	(4) 16.7V	(4) 16.5V	(5) 16.7V	(5) 16.5V
U2	U1															
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(2) 16.7V	(2) 16.7V															
(3) 16.9V	(3) 16.7V															
(4) 16.7V	(4) 16.5V															
(5) 16.7V	(5) 16.5V															

SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4.2KVAC/min	I/P-O/P: 4.5 KVAC/min Ta:25°C	I/P-O/P: 1.347mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C	I/P-O/P:9999MΩ NO DAMAGE
3	LEAKAGE CURRENT	<0.25mA / 240VAC <0.125mA /120VAC	I/P: 120/240 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.0027 mA N-FG:0.0025 mA

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONDUCTION	EN55032 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab
2	RADIATION	EN55032 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab
3	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																																								
1	TEMPERATURE RISE TEST	MODEL : OWA-200U-12 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=27 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=49 °C																																																																																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=27°C</th> <th>HIGH AMBIENT Ta=49°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>RTH1</td><td>65.0°C</td><td>81.2°C</td></tr> <tr><td>2</td><td>ZNR1</td><td>52.9°C</td><td>72.8°C</td></tr> <tr><td>3</td><td>U3</td><td>54.0°C</td><td>75.2°C</td></tr> <tr><td>4</td><td>C1</td><td>56.8°C</td><td>76.4°C</td></tr> <tr><td>5</td><td>LF2</td><td>58.1°C</td><td>80.1°C</td></tr> <tr><td>6</td><td>C6</td><td>57.7°C</td><td>79.9°C</td></tr> <tr><td>7</td><td>R18</td><td>58.4°C</td><td>80.9°C</td></tr> <tr><td>8</td><td>BD1</td><td>59.5°C</td><td>81.4°C</td></tr> <tr><td>9</td><td>L2</td><td>57.5°C</td><td>80.1°C</td></tr> <tr><td>10</td><td>Q1</td><td>58.9°C</td><td>81.2°C</td></tr> <tr><td>11</td><td>D5</td><td>63.0°C</td><td>85.3°C</td></tr> <tr><td>12</td><td>U1</td><td>57.4°C</td><td>79.6°C</td></tr> <tr><td>13</td><td>U2</td><td>61.1°C</td><td>83.8°C</td></tr> <tr><td>14</td><td>Q71</td><td>59.4°C</td><td>82.2°C</td></tr> <tr><td>15</td><td>Q72</td><td>60.4°C</td><td>83.3°C</td></tr> <tr><td>16</td><td>C35</td><td>57.5°C</td><td>80.4°C</td></tr> <tr><td>17</td><td>Q50</td><td>59.4°C</td><td>82.0°C</td></tr> <tr><td>18</td><td>T1</td><td>71.5°C</td><td>95.1°C</td></tr> <tr><td>19</td><td>C5</td><td>57.4°C</td><td>79.4°C</td></tr> <tr><td>20</td><td>U101</td><td>69.9°C</td><td>93.8°C</td></tr> <tr><td>21</td><td>Q100</td><td>69.9°C</td><td>94.9°C</td></tr> <tr><td>22</td><td>Q101</td><td>66.4°C</td><td>91.0°C</td></tr> <tr><td>23</td><td>C115</td><td>57.2°C</td><td>80.5°C</td></tr> <tr><td>24</td><td>C105</td><td>61.2°C</td><td>85.6°C</td></tr> <tr><td>25</td><td>C106</td><td>60.9°C</td><td>85.4°C</td></tr> <tr><td>26</td><td>C107</td><td>59.4°C</td><td>84.1°C</td></tr> <tr><td>27</td><td>RTH5</td><td>58.6°C</td><td>81.1°C</td></tr> <tr><td>28</td><td>LF100</td><td>57.0°C</td><td>82.0°C</td></tr> <tr><td>29</td><td>TC</td><td>55.4°C</td><td>78.3°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=27°C	HIGH AMBIENT Ta=49°C	1	RTH1	65.0°C	81.2°C	2	ZNR1	52.9°C	72.8°C	3	U3	54.0°C	75.2°C	4	C1	56.8°C	76.4°C	5	LF2	58.1°C	80.1°C	6	C6	57.7°C	79.9°C	7	R18	58.4°C	80.9°C	8	BD1	59.5°C	81.4°C	9	L2	57.5°C	80.1°C	10	Q1	58.9°C	81.2°C	11	D5	63.0°C	85.3°C	12	U1	57.4°C	79.6°C	13	U2	61.1°C	83.8°C	14	Q71	59.4°C	82.2°C	15	Q72	60.4°C	83.3°C	16	C35	57.5°C	80.4°C	17	Q50	59.4°C	82.0°C	18	T1	71.5°C	95.1°C	19	C5	57.4°C	79.4°C	20	U101	69.9°C	93.8°C	21	Q100	69.9°C	94.9°C	22	Q101	66.4°C	91.0°C	23	C115	57.2°C	80.5°C	24	C105	61.2°C	85.6°C	25	C106	60.9°C	85.4°C	26	C107	59.4°C	84.1°C	27	RTH5	58.6°C	81.1°C	28	LF100	57.0°C	82.0°C	29	TC	55.4°C	78.3°C
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21	Q100	69.9°C	94.9°C																																																																																																																									
22	Q101	66.4°C	91.0°C																																																																																																																									
23	C115	57.2°C	80.5°C																																																																																																																									
24	C105	61.2°C	85.6°C																																																																																																																									
25	C106	60.9°C	85.4°C																																																																																																																									
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29	TC	55.4°C	78.3°C																																																																																																																									
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 133 % LOAD Ta : 25°C	TEST : OK																																																																																																																								
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/110VAC O/P : 100 % LOAD Ta= -45 °C	TEST : OK																																																																																																																								

4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45 °C NO DAMAGE	I/P : 264VAC O/P : FULL LOAD Ta= 45 °C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	+ 0.03 %/(0°C~50°C)	I/P : 230 VAC O/P : FULL LOAD	+ 0.012 %/°C(0~50°C)
6	STORAGE TEMPERATURE TEST	-40~85°C	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 : 10CYCLE 5. Input/Output condition : STATIC	
7	THERMAL SHOCK TEST	-40~45°C	1. Thermal shock Temperature : -45°C~ +50°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test	
8	VIBRATION TEST	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 6G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C	
9	CAPACITOR LIFE CYCLE	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=45 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=45 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=45 °C LIFE TIME		(1) 248353HRS (2) 53454HRS (3) 149898HRS (4) 295122HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2680.8K hrs min. Telcordia SR-332 (Bellcore) ; 268.5K hrs min. MIL-HDBK-217F (25°C)		
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 50,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/HUANGMK	WENF	LINKX

2018.4.30

GP-A50-F010