



Test Report: UHP-2500-36

2500W Conduction Cooling with PFC Switching Supply

■ DESIGN VERIFY TEST

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

■ SAFETY & E.M.C. TEST

- Safety Test
- E.M.C. Test

■ RELIABILITY TEST

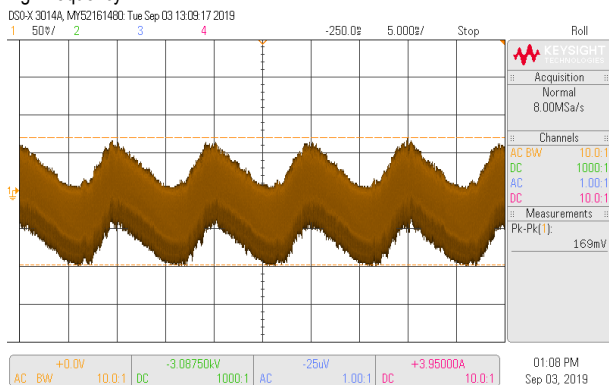
- ENVIRONMENT TEST

DESIGN VERIFY TEST

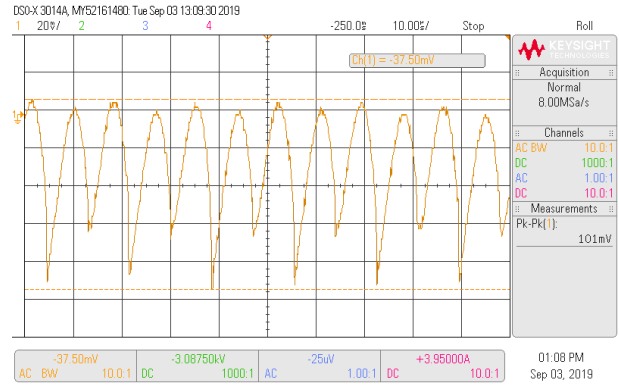
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 36V~ 43.2 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	35.066V~44.362V/230VAC 35.055V~44.436V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 1%~ -1 %	I/P: 180VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.028%~ -0.028%
3	LINE REGULATION (Max)	V1: 0.5%~-0.5 %	I/P: 180VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0.028%~ 0%
4	LOAD REGULATION(Max)	V1: 1%~ -1 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.028%~ -0.028%
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	< 5%
6	RIPPLE & NOISE(Max)	V1: 360 mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1:169 mVp-p

high frequency :



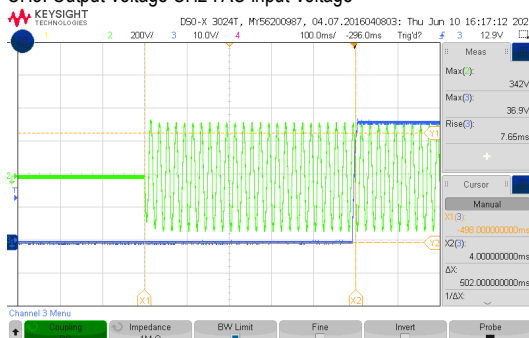
low frequency :



7	SET UP TIME(Max)	230VAC/1500ms 115VAC/1500ms Derating may be needed under low input voltages. Please check the derating curve and Static characteristics for more details	I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 63.8% LOAD Ta : 25°C	230VAC/ 502ms 115VAC/ 876ms
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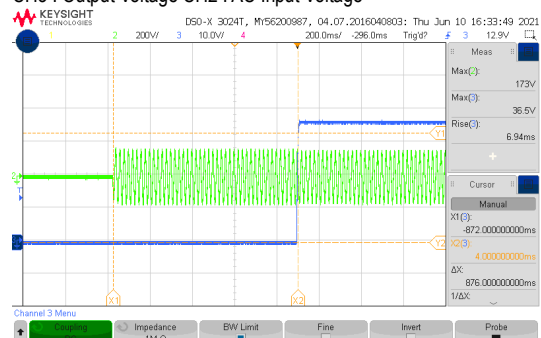
INPUT=230VAC/50HZ @ FULL LOAD

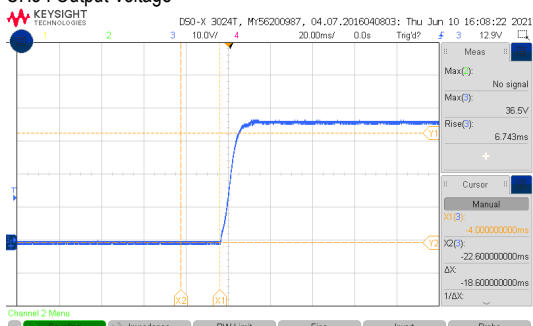
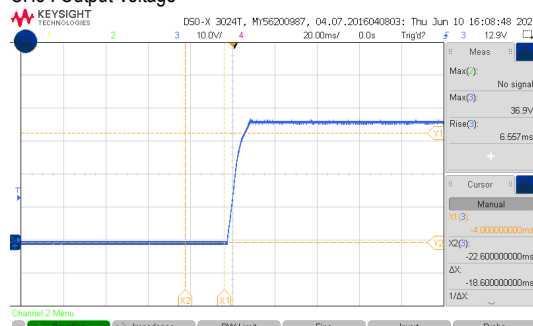
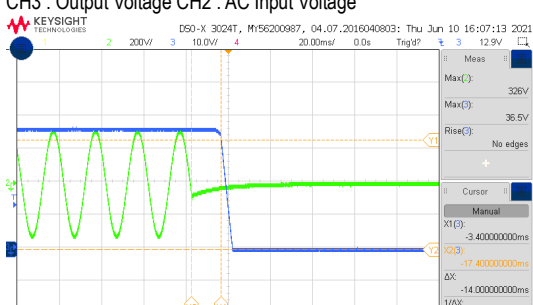
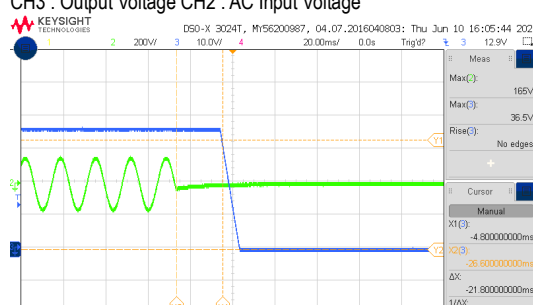
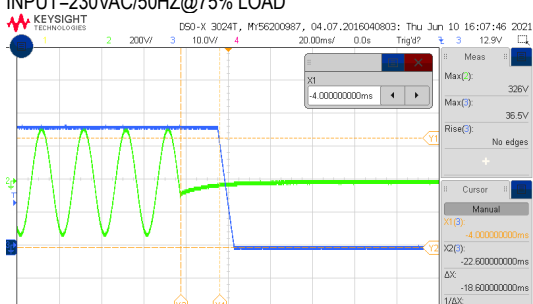

CH3: Output Voltage CH2 : AC Input Voltage

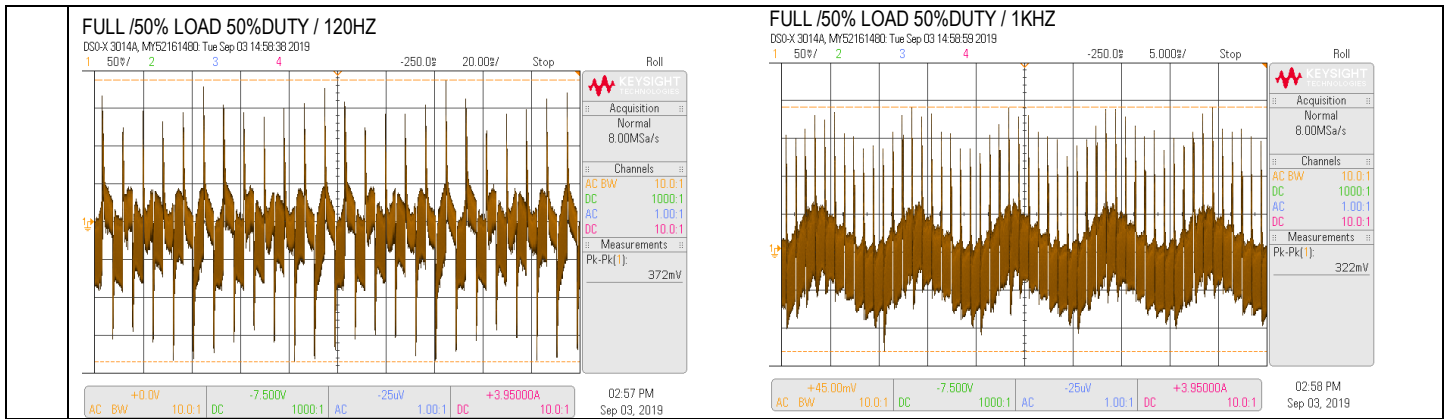


INPUT=115VAC/60HZ @ 63.8% LOAD

CH3: Output Voltage CH2 : AC Input Voltage



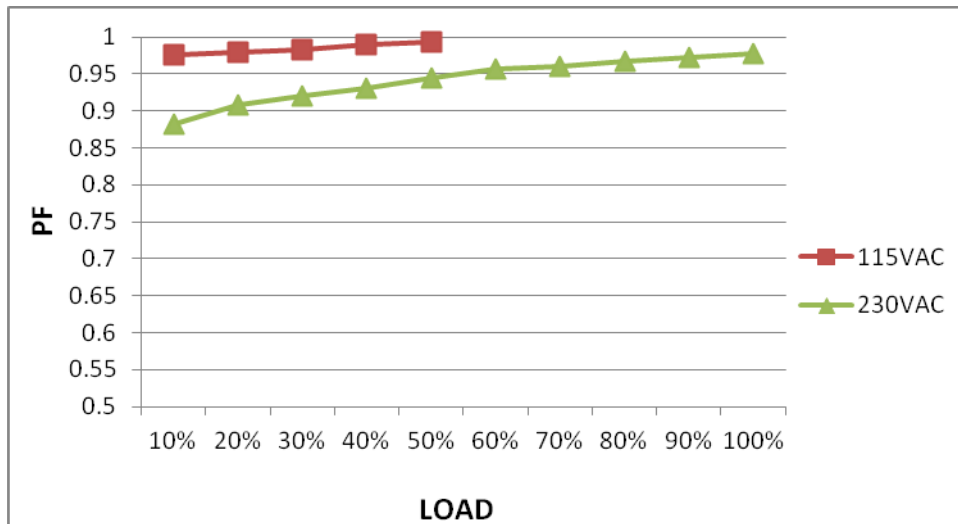
<p>8 RISE TIME (Max)</p>	<p>230VAC/50ms 115VAC/60ms Derating may be needed under low input voltages. Please check the derating curve and Static characteristics for more details</p>	<p>I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 63.8% LOAD Ta : 25°C</p>	<p>230VAC/ 6.74 ms 115VAC/ 6.55 ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD CH3 : Output Voltage</p> 		<p>INPUT=115VAC/60HZ @ 63.8% LOAD CH3 : Output Voltage</p> 	
<p>9 HOLD UP TIME (Typ.)</p>	<p>230、115VAC/10ms at full load 230、115VAC/16ms at 75% load Derating may be needed under low input voltages. Please check the derating curve and Static characteristics for more details</p>	<p>I/P : 230 VAC O/P : FULL LOAD/75% LOAD I/P : 115 VAC O/P : 63.8% LOAD/47.85% LOAD Ta : 25°C</p>	<p>230VAC/ 14 ms at full load 230VAC/ 18.6 ms at 75% load 115VAC/ 21.8 ms at 63.8% load 115VAC/ 28 ms at 47.85% load</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD CH3 : Output Voltage CH2 : AC Input Voltage</p> 		<p>INPUT=115VAC/60HZ @ 63.8% LOAD CH3 : Output Voltage CH2 : AC Input Voltage</p> 	
<p>INPUT=230VAC/50HZ@75% LOAD</p> 		<p>INPUT=115VAC/60HZ@47.85% load</p> 	
<p>10 DYNAMIC LOAD</p>	<p>V1: 3600 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>372mVp-p 322mVp-p</p>



INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P:FULL LOAD / Derating Load Ta:25°C	166V~264V@ FULL LOAD 83V~264V (50%)
			I/P: LOW-LINE-3V=177 V HIGH-LINE+15%=300 V 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:90 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 14.3 A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=11.74A/ 230VAC
4	LEAKAGE CURRENT	< 0.75mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.66 mA N-FG : 0.66 mA
5	POWER FACTOR (Typ.)	0.95/ 230VAC	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF=0.977/230VAC

P.F vs LOAD



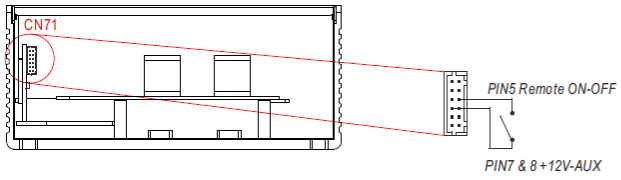
6	EFFICIENCY(Typ.)	95.5%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	95.78%																																	
<p>EFFICIENCY vs LOAD</p> <table border="1"> <caption>Efficiency vs Load Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>115VAC Efficiency (%)</th> <th>230VAC Efficiency (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>88</td><td>88</td></tr> <tr><td>20%</td><td>93</td><td>94</td></tr> <tr><td>30%</td><td>94</td><td>95</td></tr> <tr><td>40%</td><td>94</td><td>95</td></tr> <tr><td>50%</td><td>94</td><td>95</td></tr> <tr><td>60%</td><td>95</td><td>95</td></tr> <tr><td>70%</td><td>95</td><td>95</td></tr> <tr><td>80%</td><td>95</td><td>95</td></tr> <tr><td>90%</td><td>95</td><td>95</td></tr> <tr><td>100%</td><td>95</td><td>95</td></tr> </tbody> </table>					LOAD (%)	115VAC Efficiency (%)	230VAC Efficiency (%)	10%	88	88	20%	93	94	30%	94	95	40%	94	95	50%	94	95	60%	95	95	70%	95	95	80%	95	95	90%	95	95	100%	95	95
LOAD (%)	115VAC Efficiency (%)	230VAC Efficiency (%)																																			
10%	88	88																																			
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70%	95	95																																			
80%	95	95																																			
90%	95	95																																			
100%	95	95																																			
7	INRUSH CURRENT(Typ.)	230V/60A 115V/30A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I=52.6A/ 230VAC T50= 2140 us I=28.2A / 115VAC																																	
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Input current CH2 : AC Input Voltage</p> <p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : AC Input Voltage CH3 : Input current</p>																																					
8	NO LOAD CONSUMPTION	---	I/P : 115VAC I/P : 230VAC O/P : NO LOAD Ta : 25°C	9.68 W/115VAC 6.12 W/230VAC																																	

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 115 %(180VAC~264VAC) 52.5%~57.5%(90VAC) Protection type : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 180VAC I/P: 90VAC O/P:TESTING Ta:25°C	111.45%/ 264VAC 111.45%/ 230VAC 111.45%/180VAC 53.45%/90VAC PROTECTION TYPE : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover

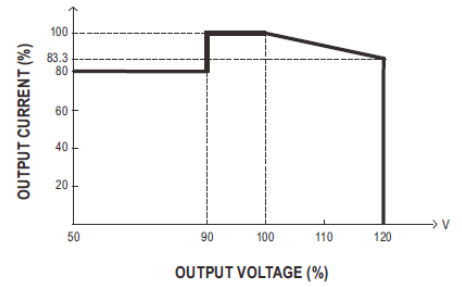
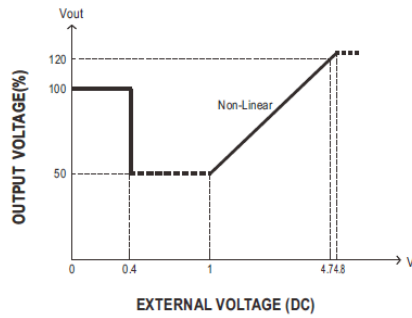
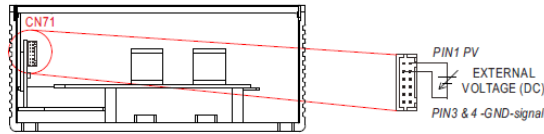
2	OVER VOLTAGE PROTECTION	45V-51V Protection type : Shut down O/P voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P: MIN LOAD Ta: 25°C	47.52V/ 264VAC 47.71V/ 230VAC 47.59V/ 90VAC PROTECTION TYPE : Shut down O/P voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down O/P voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD	O.T.P. Active Protection type : Shut down O/P voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE PROTECTION TYPE : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT								
1	AUXILIARY POWER (AUX)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :										
		<table border="1"> <thead> <tr> <th>AUX</th> <th>TOLERANCE</th> <th>RIPPLE</th> <th>TEST RESULT</th> </tr> </thead> <tbody> <tr> <td>12V / 0.4A</td> <td>10.8~13.2 V</td> <td>150mVp-p</td> <td>11.6V / 102mv</td> </tr> </tbody> </table>			AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.4A	10.8~13.2 V	150mVp-p	11.6V / 102mv
AUX	TOLERANCE	RIPPLE	TEST RESULT									
12V / 0.4A	10.8~13.2 V	150mVp-p	11.6V / 102mv									
2	REMOTE ON/OFF CONTROL	The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.  <table border="1"> <thead> <tr> <th>Remote ON-OFF</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>Short circuit</td> <td>ON</td> </tr> <tr> <td>Open circuit</td> <td>OFF</td> </tr> </tbody> </table> I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result :	Remote ON-OFF	Power Supply Status	Short circuit	ON	Open circuit	OFF				
Remote ON-OFF	Power Supply Status											
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Open circuit	OFF											
		<table border="1"> <thead> <tr> <th>Between ON/OFF and +5V-AUX</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>SW SHORT</td> <td>ON</td> </tr> <tr> <td>SW OPEN</td> <td>OFF</td> </tr> </tbody> </table>			Between ON/OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF		
Between ON/OFF and +5V-AUX	Power Supply Status											
SW SHORT	ON											
SW OPEN	OFF											

3 OUTPUT VOLTAGE PROGRAMMABLE(PV)

1. Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim)
 ※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.



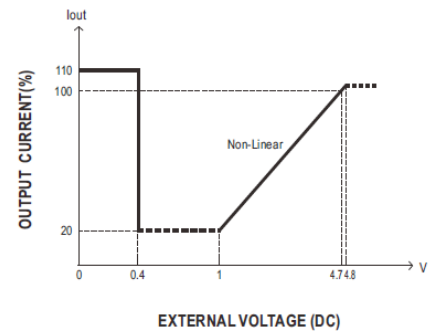
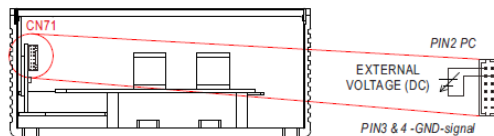
© The rated current should change with the Output Voltage Programming accordingly.

I/P: 230 VAC
 O/P: FULL LOAD
 Ta: 25°C
 TEST RESULT :

MODEL \ PV	≤ 0.4V	1V	4.7V	4.8V
SPEC	36V±5%	18V±5%	43.2V±5%	43.88V±5%
Vout	36.11V	18.02V	43.21V	44.04V

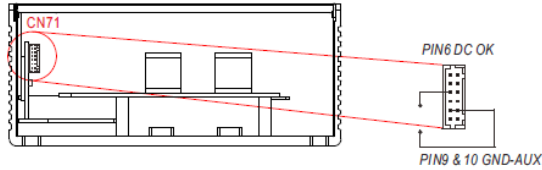
4 OUTPUT CURRENT PROGRAMMABLE (PC)

※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.



I/P: 230 VAC
 O/P: TESTING
 Ta: 25°C

ADJ V	<0.4V	1V	4.7V	4.8V
SPEC	110%±10%	20%±10%	100%±10%	102.2%±10%
TEST	110.3%	20.4%	100%	102.6%

5	DC OK CONTACT RATINGS	<p>DC-OK signal is a TTL level signal. The maximum sourcing current is 10mA.</p>  <p>I/P: 230 VAC O/P: TESTING Ta:25°C</p>	<table border="1"> <tr> <th>DC-OK signal</th> <th>Power Supply Status</th> </tr> <tr> <td>"High" >4.5~5.5V</td> <td>ON</td> </tr> <tr> <td>"Low" <-0.5~0.5V</td> <td>OFF</td> </tr> </table>	DC-OK signal	Power Supply Status	"High" >4.5~5.5V	ON	"Low" <-0.5~0.5V	OFF
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DC-OK signal	Power Supply Status								
"High" >4.5~5.5V	ON(5.06v)								
"Low" <-0.5~0.5V	OFF(-0.09V)								

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q903 Rated : 76A/ 650 V	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =267V</p> <p>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.</p> <p>I/P:Low-Line -3V = 177V</p> <p>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) 509V (2) 505V (3)509V (4) 505V (5) 505V (6) 505V (7) 481V</p> <p>VDS: (1) 489V (2) 497V (3)497V (4) 497V (5) 497V (6) 497V (7) 497V</p>
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 52 Rated : 52A/ 600 V	<p>I/P:High-Line +3V =267 V</p> <p>AC ON/OFF</p> <p>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</p>	<p>VDS: (1) 525V (2) 524V (3)533V (4) 529V (5) 525 (6) 521V (7) 457V</p>

			<p>(6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load.</p> <p>I/P:Low-Line -3V = 177V 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>Ta:25°C</p>	<p>VDS:</p> <p>(1) 521V (2) 528V (3) 525V (4) 529V (5) 521V (6) 521V (7) 457V</p>																																												
3	P.F.C DIODE	D 10 Rated : 10 A/650 V	<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>I/P:Low-Line -3V = 177V 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>Ta:25°C</p>	<p>(1) 465V (2) 409V (3) 457V (4) 441V</p> <p>(1) 449V (2) 396V (3) 453V (4) 453V</p>																																												
4	Diode Peak Voltage	<p>Q101 Rated : 87A/ 150 V</p> <p>Q105 Rated : 87A/ 150 V</p> <p>Q109 Rated : 87A/ 150 V</p> <p>Q113 Rated : 87A/ 150 V</p>	<p>AC ON/OFF</p> <p>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 (9) burst Mode</p> <p>Ta:25°C</p>	<table border="0"> <tr> <td>Q101:</td> <td>Q109:</td> </tr> <tr> <td>VDS:</td> <td>VDS:</td> </tr> <tr> <td>(1) 104.8V</td> <td>(1) 103.4V</td> </tr> <tr> <td>(2) 29.2V</td> <td>(2) 25.4V</td> </tr> <tr> <td>(3) 105.6V</td> <td>(3) 103.4V</td> </tr> <tr> <td>(4) 104V</td> <td>(4) 102.6V</td> </tr> <tr> <td>(5) 106.4V</td> <td>(5) 104.2V</td> </tr> <tr> <td>(6) 104V</td> <td>(6) 102.6V</td> </tr> <tr> <td>(7) 104.8V</td> <td>(7) 101.8V</td> </tr> <tr> <td>(8) 93.5V</td> <td>(8) 93.8V</td> </tr> <tr> <td>(9) 92.7V</td> <td>(9) 91.4V</td> </tr> <tr> <td>Q105:</td> <td>Q113:</td> </tr> <tr> <td>VDS:</td> <td>VDS:</td> </tr> <tr> <td>(1) 105.7V</td> <td>(1) 104.2V</td> </tr> <tr> <td>(2) 21.3V</td> <td>(2) 23.0V</td> </tr> <tr> <td>(3) 92.9V</td> <td>(3) 105V</td> </tr> <tr> <td>(4) 92.9V</td> <td>(4) 105V</td> </tr> <tr> <td>(5) 94.5V</td> <td>(5) 105V</td> </tr> <tr> <td>(6) 92.9V</td> <td>(6) 101.8V</td> </tr> <tr> <td>(7) 108.9V</td> <td>(7) 104.2V</td> </tr> <tr> <td>(8) 92V</td> <td>(8) 92.2V</td> </tr> <tr> <td>(9) 92.9V</td> <td>(9) 93V</td> </tr> </table>	Q101:	Q109:	VDS:	VDS:	(1) 104.8V	(1) 103.4V	(2) 29.2V	(2) 25.4V	(3) 105.6V	(3) 103.4V	(4) 104V	(4) 102.6V	(5) 106.4V	(5) 104.2V	(6) 104V	(6) 102.6V	(7) 104.8V	(7) 101.8V	(8) 93.5V	(8) 93.8V	(9) 92.7V	(9) 91.4V	Q105:	Q113:	VDS:	VDS:	(1) 105.7V	(1) 104.2V	(2) 21.3V	(2) 23.0V	(3) 92.9V	(3) 105V	(4) 92.9V	(4) 105V	(5) 94.5V	(5) 105V	(6) 92.9V	(6) 101.8V	(7) 108.9V	(7) 104.2V	(8) 92V	(8) 92.2V	(9) 92.9V	(9) 93V
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5	Input Capacitor Voltage	C5 Rated: : 180 μ /450 V 105 $^{\circ}$ C/ CLA Series Surge Voltage 495V	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 $^{\circ}$ C	(1) 405V (2) 421V (3) 437V (4) 413V
6	Control IC Voltage Test	PWM IC U800 Rated 8.85V~ 16V(Vz) PFC IC U401 Rated 9.6V~22V MCU IC U701 Rated 2.0V~4V	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 $^{\circ}$ C	U800: (1) 13.08V (2) 12.75V (3) 13.08V (4) 12.67V (5) 12.67V U401: (1) 12.67V (2) 12.59V (3) 12.75V (4) 12.27V (5) 12.43V U701: (1) 3.48V (2) 3.40V (3) 3.48V (4) 3.28V (5) 3.36V
7	TOP SWITCHING STAND BY POWER	U601 Rated : 3.5A/ 800 V	AC ON/OFF I/P:High-Line +3V =267 V O/P: (1)Full Load (2)Remote On/Off I/P:Low-Line -3V =97 V O/P: (1)Full Load (2)Remote On/Off Ta:25 $^{\circ}$ C	U601 (1) 540V/ 789mA (2) 552V/ 805mA (1) 544V/ 772mA (2) 552V/ 789mA
8	Capacitor Voltage	C652 Rated : 100uF/ 25V C682 Rated : 100uF/ 25V	AC ON/OFF 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 $^{\circ}$ C	C652: (1) 14V (2) 14V (3) 13.4V (4) 13.4V C682 (1) 14.4V (2) 14.4V (3) 14.6V (4) 14.4V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:1..25KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.5KVAC/min Ta:25 $^{\circ}$ C	I/P-O/P:9.4 Ma I/P-FG: 9.4mA O/P-FG: 5.8m A 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	I/P-O/P: 3.98GΩ I/P-FG: 4.01GΩ O/P-FG: 3.83GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	23mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55032 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55032 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 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 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-6-2 INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	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 : UHP-2500-36 (AMBIENT TEMPERATURE WITH FORCED AIR COOLING) 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=25 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C		

NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 50 °C
1	BD1	77.4°C	101.0°C
2	ZNR3	63.1°C	85.7°C
3	L1	66.5°C	88.6°C
4	L3	65.9°C	88.6°C
5	D10	76.3°C	101.0°C
6	Q52	68.3°C	92.6°C
7	Q66	66.0°C	90.3°C
8	Q901	68.2°C	93.2°C
9	Q902	68.7°C	93.9°C
10	T1 WIRE	73.7°C	96.5°C
11	T2 WIRE	74.1°C	97.4°C
12	C10	64.7°C	86.5°C
13	T51	69.5°C	92.3°C
14	C968	71.2°C	94.2°C
15	C962	65.0°C	88.6°C
16	D14	77.0°C	101.1°C
17	Q907	61.5°C	85.3°C
18	Q912	63.3°C	81.5°C
19	D980	62.2°C	83.8°C
20	Q105	64.9°C	90.7°C
21	Q113	69.0°C	94.7°C
22	U151	56.7°C	83.6°C
23	U401	74.0°C	96.9°C
24	T601	68.9°C	92.8°C
25	RG61	59.5°C	85.2°C
26	C652	62.7°C	89.0°C
27	U701	45.3°C	71.5°C
28	C116	51.4°C	74.6°C
29	C117	50.2°C	74.8°C
30	RY1	67.3°C	89.1°C
31	RTH4	67.8°C	93.3°C
32	RTH5	68.3°C	94.0°C
33	RT21	76.0°C	99.4°C
34	LF1	78.7°C	102.0°C
35	LF4	72.0°C	97.2°C

2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 110 % LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/180VAC O/P : 100 % LOAD Ta= -35°C /-30°C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C /95 %R.H NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 50°C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C (0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.002 %/°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 : 10 CYCLE 5. Input/Output condition : STATIC
7	THERMAL SHOCK TEST	-30~50°C	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 : 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, 2G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C
9	CAPACITOR LIFE CYCLE	SUPPOSE C116 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) 498983HRS (2) 99930HRS (3) 193310HRS (4) 292876HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 493.9K hrs min. Telcordia SR-332 (Bellcore) ; 48.9K 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	DANIEL GAO	SANFORD SU	VINCENT TSENG

2018.4.30 GP-A50-F010