



Test Report: UHP-1500-48

1500W 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

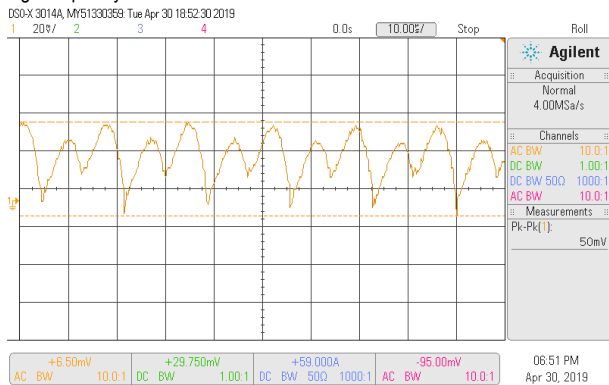
- ENVIRONMENT TEST

DESIGN VERIFY TEST

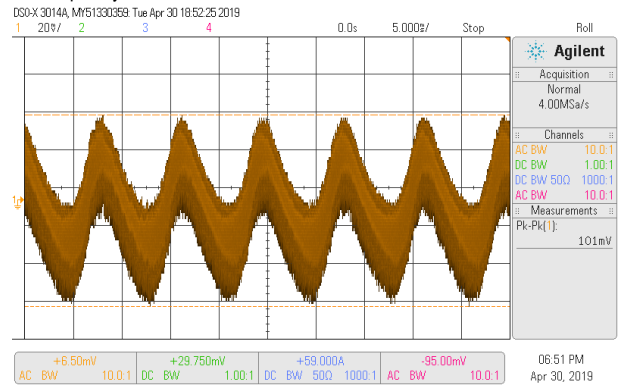
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48 V~ 57.6 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	46.69V~59.17 V/230VAC 46.69V~59.17 V /115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 1%~ -1 %	I/P:180VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.13%~ - 0.13%
3	LINE REGULATION (Max)	V1: 0.5%~ -0.5 %	I/P: 180VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0.1%~ -0.1 %
4	LOAD REGULATION(Max)	V1: 0.5%~ - 0.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.1%~ -0.1%
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	< 5 %
6	RIPPLE & NOISE(Max)	V1: 350mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 101mVp-p

high frequency :



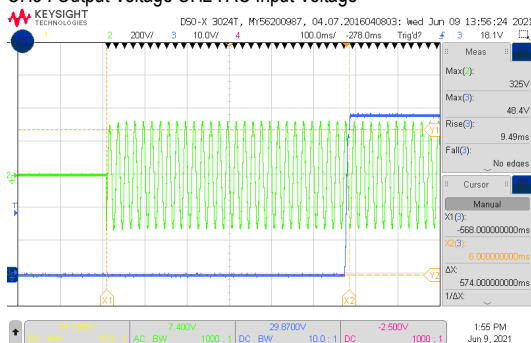
low frequency :



7	SET UP TIME(Max)	230VAC/1800ms 115VAC/1800ms 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 : 71% LOAD Ta : 25°C	230VAC/ 574ms 115VAC/ 900 ms
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INPUT=230VAC/50HZ @ FULL LOAD

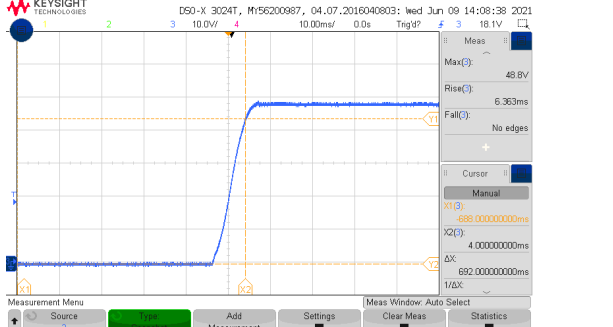
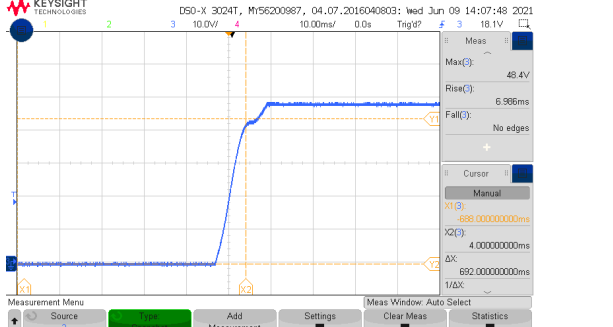
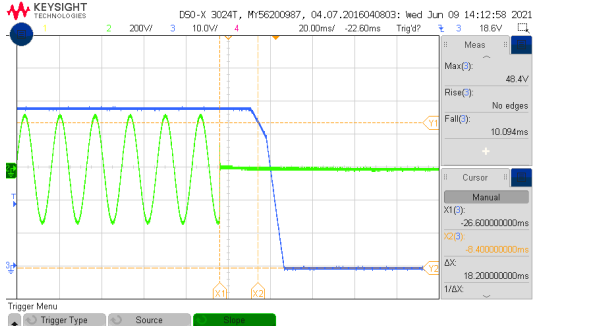
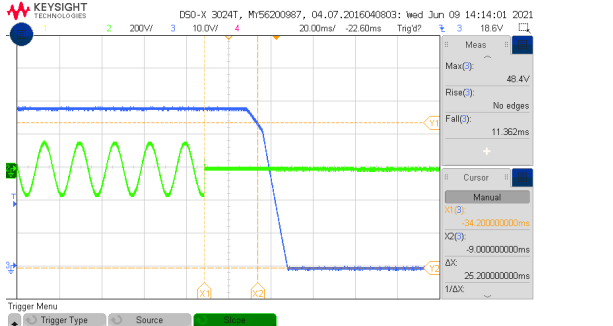
CH3 : Output Voltage CH2 : AC Input Voltage

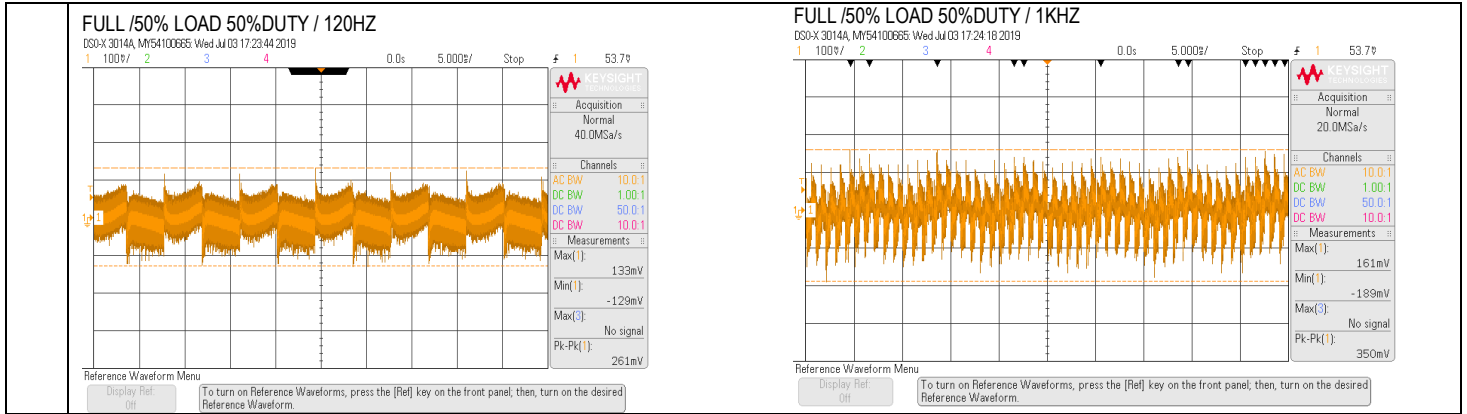


INPUT=115VAC/60HZ @ 71% LOAD

CH3 : Output Voltage CH2 : AC Input Voltage



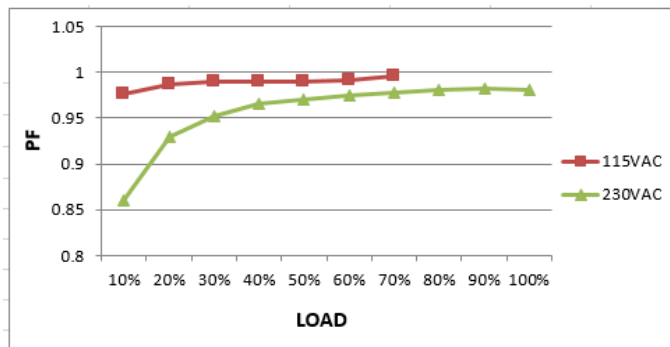
<p>8 RISE TIME (Max)</p>	<p>230VAC/60ms 115VAC/60ms</p> <p>Derating may be needed under low input voltages. Please check the derating curve and Static characteristics for more details</p>	<p>I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25°C</p>	<p>230VAC/ 6.36 ms 115VAC/ 6.98 ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH3 : Output Voltage</p> 		<p>INPUT=115VAC/50HZ @ 71% LOAD</p> <p>CH3 : Output Voltage</p> 	
<p>9 HOLD UP TIME (Typ.)</p>	<p>230、115VAC/10ms at full load 230、115VAC/16ms at 75% load</p> <p>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 : 71% LOAD/53.2% LOAD Ta : 25°C</p>	<p>230VAC/ 18.2 ms at full load 230VAC/ 24.8 ms at 75% load 115VAC/ 25.2 ms at 71% load 115VAC/ 36.2 ms at 53.2% load</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH3 : Output Voltage CH2 : AC Input Voltage</p> 		<p>INPUT=115VAC/60HZ @ 71% LOAD</p> <p>CH3 : Output Voltage CH2 : AC Input Voltage</p> 	
<p>INPUT=230VAC/50HZ@75% LOAD</p> 		<p>INPUT=115VAC/60HZ@53.2% load</p> 	
<p>10 DYNAMIC LOAD</p>	<p>V1: 4800 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>261mVp-p 350mVp-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	159V~264 V/ FULL LOAD 76V~264 V/ Derating Load
			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/ 8A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 7.07A/ 230 VAC
4	LEAKAGE CURRENT	< 0.75mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.56 mA N-FG : 0.56 mA
5	POWER FACTOR (Typ.)	0.95/ 230VAC	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.982/230 VAC

P.F vs LOAD



6	EFFICIENCY(Typ.)	96%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	96.08%
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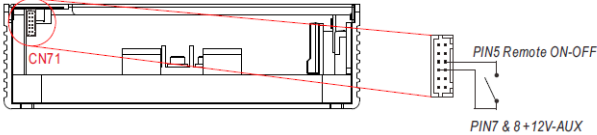
EFFICIENCY vs LOAD				
7	INRUSH CURRENT(Typ.)	230V/60A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=44.9A/ 230VAC T50= 1020 us I=22.7 A/ 115VAC
INPUT=230VAC/50HZ @ FULL LOAD CH1: AC Input Voltage CH2: Input current		INPUT=115VAC/60HZ @ FULL LOAD CH1: AC Input Voltage CH2: Input current		
8	NO LOAD CONSUMPTION	---	I/P : 115VAC I/P : 230VAC O/P : NO LOAD Ta : 25°C	10.59 W/115VAC 7.16 W/230VAC

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 125 %(180VAC~264VAC) 60%~70%(90VAC) Protection type : Constant current limiting, unit will shutdown after 5 sec, re-power on to recover.	I/P: 264VAC I/P: 230VAC I/P: 180VAC I/P: 90VAC O/P: TESTING Ta:25°C	110.4%/ 264VAC 110.4%/ 230VAC 108.8%/180VAC 64.7%/90VAC PROTECTION TYPE : Constant current limiting, unit will shutdown after 5 sec, re-power on to recover.
2	OVER VOLTAGE PROTECTION	60V~67V 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	63.04V/ 264VAC 63.04V/ 230VAC 63.06V/ 90VAC PROTECTION TYPE : Shut down O/P voltage, re-power on to recover

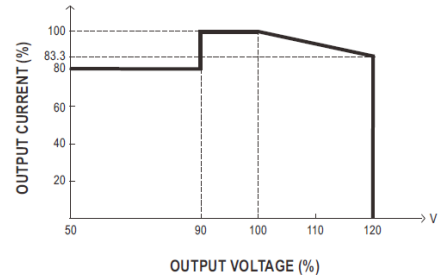
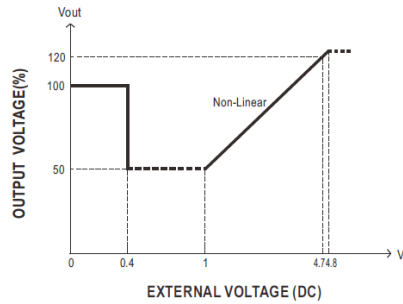
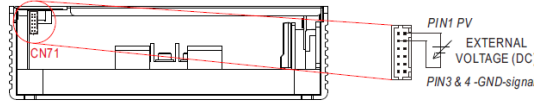
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down O/P voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD	O.T.P. Active Protection type : Shut down O/P voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type : Constant current limiting, unit will shutdown after 5 sec, 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, unit will shutdown after 5 sec, 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" style="margin-left: 20px;"> <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>11.31V/38mVp-p</td> </tr> </tbody> </table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.4A	10.8~13.2 V	150mVp-p	11.31V/38mVp-p						
AUX	TOLERANCE	RIPPLE	TEST RESULT													
12V / 0.4A	10.8~13.2 V	150mVp-p	11.31V/38mVp-p													
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.  I/P: 230 VAC O/P: FULL LOAD Ta:25°C Test Result : <table border="1" style="margin-left: 20px;"> <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	<table border="1" style="margin-left: 20px;"> <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>	Remote ON-OFF	Power Supply Status	Short circuit	ON	Open circuit	OFF	
Between ON/OFF and +5V-AUX	Power Supply Status															
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Remote ON-OFF	Power Supply Status															
Short circuit	ON															
Open circuit	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.

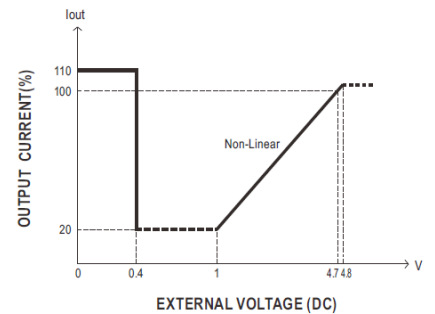
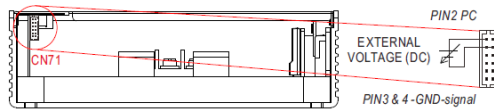


I/P: 230 VAC
 O/P: FULL LOAD
 Ta: 25°C
 TEST RESULT :

MODEL \ PV	≤ 0.4V	1V	4.7V	5V
SPEC	48V±5%	24V±5%	57.6V±5%	60V±5%
Vout	48.07V	23.96V	57.53V	58.58V

4 OUTPUT CURRENT PROGRAMMABLE (PC)

2. Output Current Programming (or, PC / remote current programming / dynamic current trim)
 ※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.

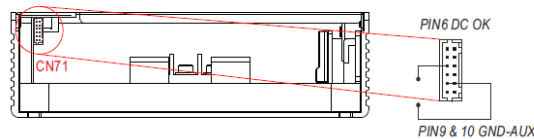


I/P: 230 VAC
 O/P: TESTING
 Ta: 25°C

ADJ V	<0.4V	1V	4.7V	5V
SPEC	110%±5%	20%±5%	100%±5%	100%±5%
TEST	109.36%	20.09%	99.58%	102.25%

5 DC-OK SIGNAL

DC-OK signal is a TTL level signal. The maximum sink current is 10mA and the maximum external voltage is 5.6V.



DC-OK signal	Power Supply Status
"High" >4.4~5.5V	ON
"Low" <-0.5~0.5V	OFF

I/P: 230 VAC
 O/P: TESTING
 Ta: 25°C

DC-OK signal	Power Supply Status
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			"High" >4.4~5.5V	5.18V
			"Low" <-0.5~-0.5V	-0.045V

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q903 Rated 22A/ 650V	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =267V</p> <p>VDS:</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.</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:</p> <p>(1) 466V (2) 466V (3)462V (4) 466V (5) 466V (6) 470V (7) 442V</p> <p>VDS:</p> <p>(1) 465V (2) 469V (3) 469V (4) 465V (5)456V (6) 460V (7)448V</p>
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 52 Rated 31A/ 600V	<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 (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load.</p> <p>I/P:Low-Line -3V = 177V</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/</p>	<p>VDS:</p> <p>(1) 400V (2) 416V (3)396V (4) 424V (5) 404V (6) 404V (7) 404V</p> <p>VDS:</p> <p>(1) 412V (2)436V (3)408V (4)412V (5) 408V (6) 404V (7)408V</p>

			<p>Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C</p>																																									
3	P.F.C DIODE	D 10 Rated 6 A/ 650V	<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 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 Ta:25°C</p>	<p>(1) 364V (2) 376V (3) 356V (4) 376V (1) 368V (2) 388V (3) 368V (4) 376V</p>																																								
4	Diode Peak Voltage	<p>Q101 Rated 150V/87A Q105 Rated 150V/87A Q109 Rated 150V/87A Q113 Rated 150V/87A</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 (9) burst Mode Ta:25°C</p>	<table border="0"> <tr> <td>Q101: VDS:</td> <td>Q109: VDS:</td> </tr> <tr> <td>(1) 108.2V</td> <td>(1) 114.6V</td> </tr> <tr> <td>(2) 115.4V</td> <td>(2) 117V</td> </tr> <tr> <td>(3) 113.8V</td> <td>(3) 116.2V</td> </tr> <tr> <td>(4) 113.8V</td> <td>(4)115.4V</td> </tr> <tr> <td>(5)116.2V</td> <td>(5) 116.2V</td> </tr> <tr> <td>(6) 113V</td> <td>(6) 114.6V</td> </tr> <tr> <td>(7) 105V</td> <td>(7) 108.2V</td> </tr> <tr> <td>(8) 104.2V</td> <td>(8) 106.6V</td> </tr> <tr> <td>(9) 106.6V</td> <td>(9) 109V</td> </tr> <tr> <td>Q105: VDS:</td> <td>Q113: VDS:</td> </tr> <tr> <td>(1) 118.6V</td> <td>(1) 118.6V</td> </tr> <tr> <td>(2) 118.6V</td> <td>(2) 120.3V</td> </tr> <tr> <td>(3) 117V</td> <td>(3) 117V</td> </tr> <tr> <td>(4) 117.8V</td> <td>(4)117.8V</td> </tr> <tr> <td>(5)19.49V</td> <td>(5)119.4V</td> </tr> <tr> <td>(6) 117V</td> <td>(6) 117V</td> </tr> <tr> <td>(7)111.4V</td> <td>(7)111.4V</td> </tr> <tr> <td>(8) 107.4V</td> <td>(8) 107.4V</td> </tr> <tr> <td>(9) 112.2V</td> <td>(9) 111.4V</td> </tr> </table>	Q101: VDS:	Q109: VDS:	(1) 108.2V	(1) 114.6V	(2) 115.4V	(2) 117V	(3) 113.8V	(3) 116.2V	(4) 113.8V	(4)115.4V	(5)116.2V	(5) 116.2V	(6) 113V	(6) 114.6V	(7) 105V	(7) 108.2V	(8) 104.2V	(8) 106.6V	(9) 106.6V	(9) 109V	Q105: VDS:	Q113: VDS:	(1) 118.6V	(1) 118.6V	(2) 118.6V	(2) 120.3V	(3) 117V	(3) 117V	(4) 117.8V	(4)117.8V	(5)19.49V	(5)119.4V	(6) 117V	(6) 117V	(7)111.4V	(7)111.4V	(8) 107.4V	(8) 107.4V	(9) 112.2V	(9) 111.4V
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5	Input Capacitor Voltage	C5 Rated: 220u/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)392 V (2) 384V (3) 408V (4) 392V</p>																																								
6	Control IC Voltage Test	<p>PWM IC U800 Rated 8.85 V~ 16V PFC IC U401 Rated 10.6V~ 21 V</p>	<p>AC ON/OFF I/P:High-Line +3V =267 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P</p>	<table border="0"> <tr> <td>U800:</td> <td>U151:</td> </tr> <tr> <td>(1) 12.91V</td> <td>(1) 12.19V</td> </tr> <tr> <td>(2) 12.35V</td> <td>(2) 11.86V</td> </tr> <tr> <td>(3) 12.51V</td> <td>(3) 11.86V</td> </tr> <tr> <td>(4) 12.83V</td> <td>(4) 11.86V</td> </tr> <tr> <td>(5) 12.51V</td> <td>(5) 11.86V</td> </tr> </table>	U800:	U151:	(1) 12.91V	(1) 12.19V	(2) 12.35V	(2) 11.86V	(3) 12.51V	(3) 11.86V	(4) 12.83V	(4) 11.86V	(5) 12.51V	(5) 11.86V																												
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(4) 12.83V	(4) 11.86V																																											
(5) 12.51V	(5) 11.86V																																											

		O/P IC U151 Rated 8V~ 24V MCU IC U701 Rated -0.3V~ 4V	(4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25°C	U401: (1) 13.15V (2) 12.75V (3) 12.75V (4) 12.75V (5) 12.75-V	U701: (1) 3.28V (2) 3.16V (3) 3.16V (4) 3.16V (5) 3.16V
8	TOP SWITCHING STAND BY POWER	U601 Rated 11.5A/ 800V	AC ON/OFF I/P:High-Line +3V =267 V O/P: (1)Full Load (2)Remote On/Off I/P:Low-Line -3V =177 V O/P: (1)Full Load (2)Remote On/Off Ta:25°C	U601 (1) 501V (2) 529V (1) 509V (2) 521V	
9	Capacitor Voltage	C652 Rated : 25V C682 Rated : 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°C	C652: (1) 14.37V (2) 14.21V (3) 13.72V (4) 13.64V C682 (1) 15.41V (2) 14.85V (3) 14.93V (4) 15.01V	

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min I/P-FG: 2KVAC/min O/P-FG:1..25KVAC/min	I/P-O/P: 4.12KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.5KVAC/min Ta:25°C	I/P-O/P: 9.12mA I/P-FG: 7.97mA O/P-FG: 8.27mA 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: 12.5GΩ I/P-FG: 12.4GΩ O/P-FG: 1.41GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	13mΩ

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			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL : UHP-1500-48 (AMBIENT TEMPERATURE WITH CONDUCTION 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= 45 °C		

		NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 45 °C
		1	BD2	70.3°C	89.6°C
		2	ZNR2	53.3°C	74.4°C
		3	LF2	57.8°C	79.4°C
		4	LF3	64.1°C	85.3°C
		5	T51	66.5°C	88.7°C
		6	T52	63.5°C	85.7°C
		7	L1	66.4°C	88.7°C
		8	L2	67.5°C	91.0°C
		9	L3	65.3°C	90.3°C
		10	C960	63.4°C	88.0°C
		11	Q51	67.0°C	87.9°C
		12	Q65	63.5°C	84.2°C
		13	C417	55.9°C	77.5°C
		14	C6	54.3°C	75.6°C
		15	C967	60.1°C	82.9°C
		16	T1-1 COIL	63.4°C	86.9°C
		17	T2-1 COIL	65.4°C	90.1°C
		18	C114	52.6°C	73.4°C
		19	C123	53.6°C	74.3°C
		20	RTH4	57.3°C	78.7°C
		21	RTH5	59.2°C	80.7°C
		22	RTH21	58.4°C	80.9°C
		23	Q102	55.6°C	77.1°C
		24	Q106	57.8°C	80.0°C
		25	Q111	55.4°C	77.5°C
		26	Q113	54.6°C	76.1°C
		27	Q901	71.8°C	98.7°C
		28	Q904	65.7°C	90.8°C
		29	D14	69.6°C	92.5°C
		30	T601	67.1°C	89.8°C
		31	C652	65.0°C	87.2°C
		32	RG61	61.3°C	83.0°C
		33	RG50	64.9°C	87.3°C
		34	U800	56.8°C	77.8°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)		I/P : 230 VAC O/P : 106 % 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 (0-45°C)		I/P : 230 VAC O/P : FULL LOAD	± 0.011 %/°C (0-45°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	-30~45°C	1. Thermal shock Temperature : -35°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 C123 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) 495610HRS (2) 118034HRS (3) 167543HRS (4) 256578HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 535.4K hrs min. Telcordia SR-332 (Bellcore) ; 56.7K 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