



# Test Report: NPF-200-12

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200W Constant Voltage+Constant Current LED Driver

## ■ 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

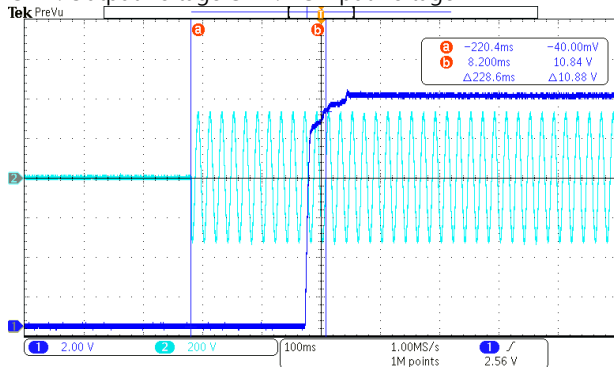
ENVIRONMENT TEST

■ **DESIGN VERIFY TEST**

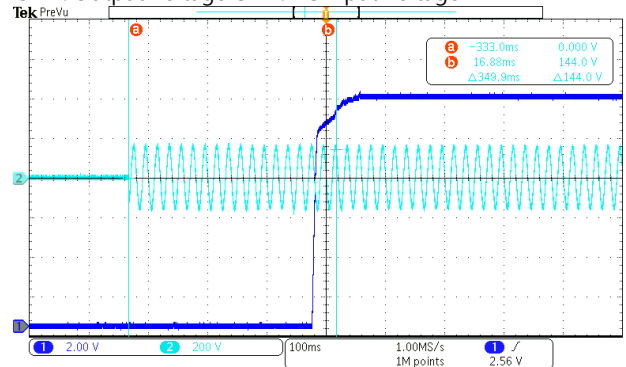
**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25°C <b>LEDH MODE TEST</b>	1.4%~1.53%
2	CONSTANT CURRENT AND OUTPUT VOLTAGE REGION	CH1: 6V~ 12 V	I/P: 230 VAC O/P:FULL LOAD Ta:25°C <b>LEDH MODE TEST</b>	5.4V~ 11.2V /230VAC
3	OUTPUT VOLTAGE TOLERANCE	V1: -4% ~ 4% (Max)	I/P:110 /305 VAC O/P:FULL~MIN LOAD Ta:25°C	V1: -0.66%~0.5%
4	LINE REGULATION	V1: -0.5 % ~0.5% (Max)	I/P:110 /305 VAC O/P:FULL LOAD Ta:25°C	V1: -0.08%~0%
5	LOAD REGULATION	V1: -2% ~ 2% (Max)	I/P:110 /305 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.5%~0.58%
6	OVER/UNDERSHOOT TEST	< +5%	I/P:110 /305 VAC O/P:FULL LOAD Ta:25°C	TEST: 3.08%
7	CURREN RIPPLE	V1: -5% ~ 5% (Max)	I/P:110VAC /305AC O/P:FULL/ MIN LOAD Ta:25°C	V1: 3.72%
8	SET UP TIME (Max)	230VAC/ 500ms 115VAC/ 500ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C <b>LEDH MODE TEST</b>	230VAC/ 228.6ms 115 VAC/349.9 ms

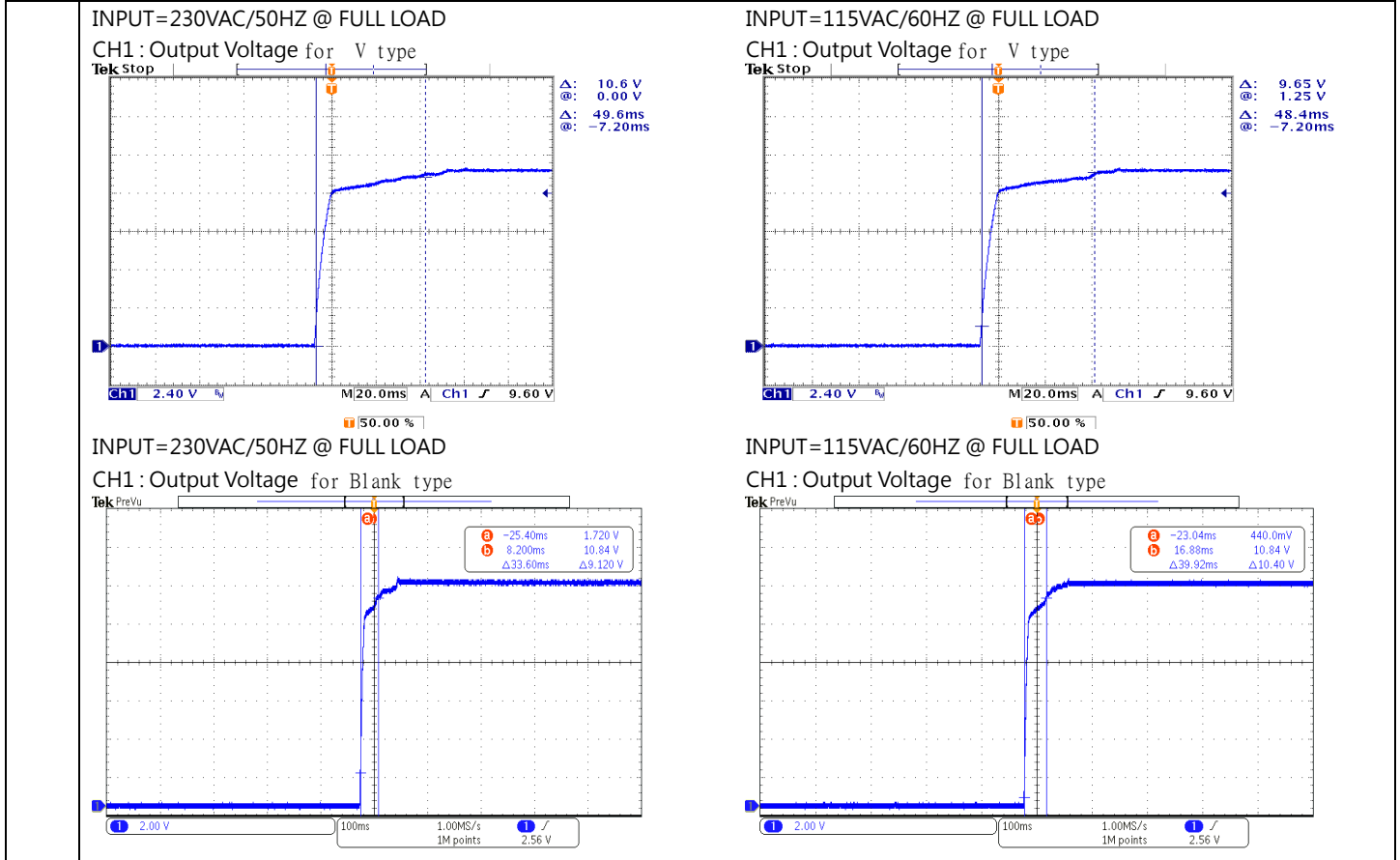
INPUT=230VAC/50HZ @ FULL LOAD  
CH1 : Output Voltage CH2 : AC Input Voltage



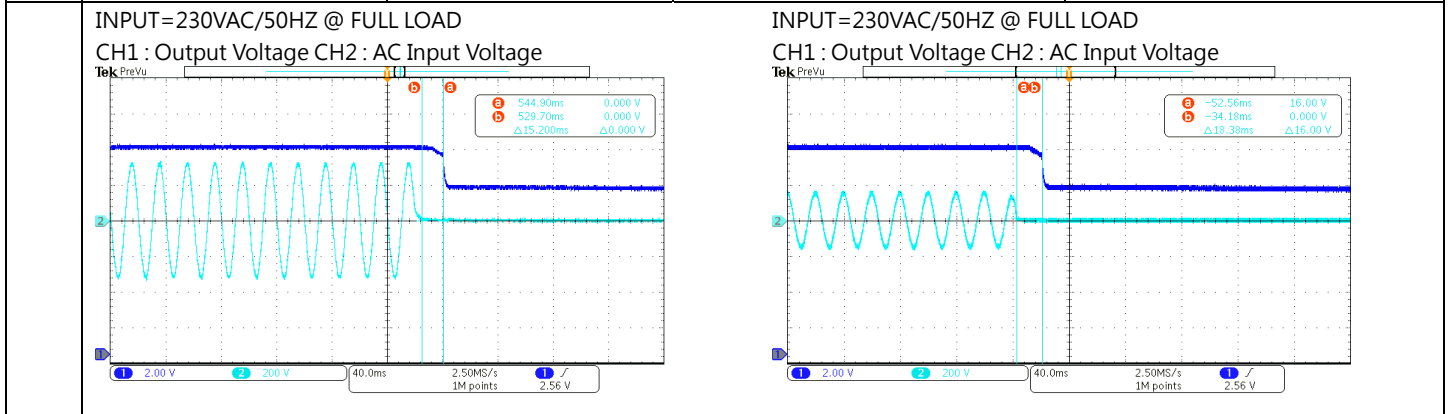
INPUT=115VAC/60HZ @ FULL LOAD  
CH1 : Output Voltage CH2 : AC Input Voltage



9	RISE TIME (Max)	230VAC/ 80ms for Blank type 115VAC/ 80ms for Blank type 230VAC/ 200ms for V type 115VAC/ 200ms for V type	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C <b>LEDH MODE TEST</b>	230VAC/33.6 ms for Blank type 115 VAC/39.92 ms for Blank type 230VAC/49.6 ms for V type 115 VAC/48.4 ms for V type
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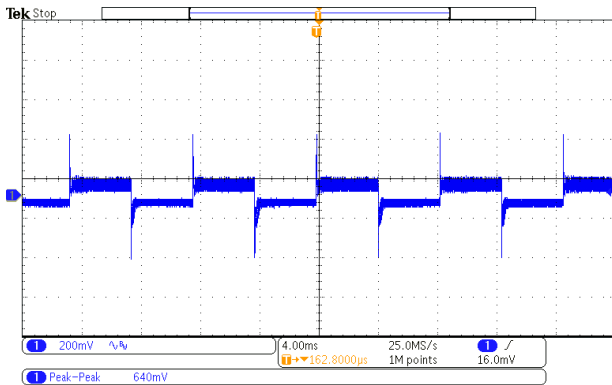


10	HOLD UP TIME	230VAC/ 10ms 115VAC/ 10ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C <b>LEDH MODE TEST</b>	230VAC/15.2 ms 115 VAC/18.38ms
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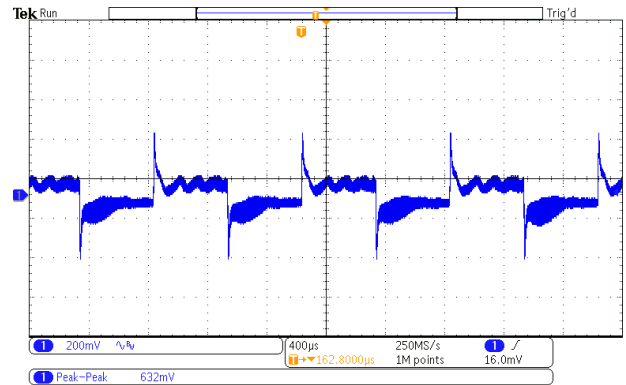


11	DYNAMIC LOAD	V1: 1200mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	640mVp-p FULL /50% LOAD 50%DUTY / 120HZ 632mVp-p FULL /50% LOAD 50%DUTY / 1KHZ
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FULL /50% LOAD 50%DUTY / 120HZ

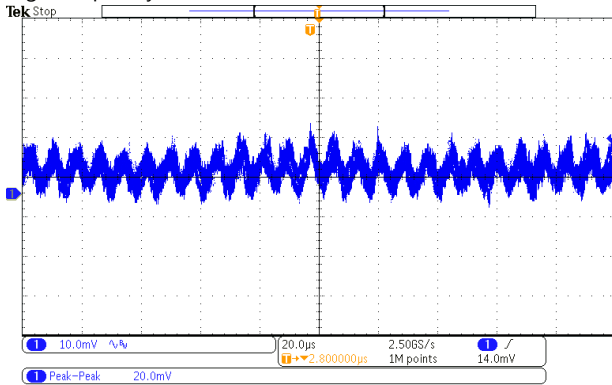


FULL /50% LOAD 50%DUTY / 1KHZ

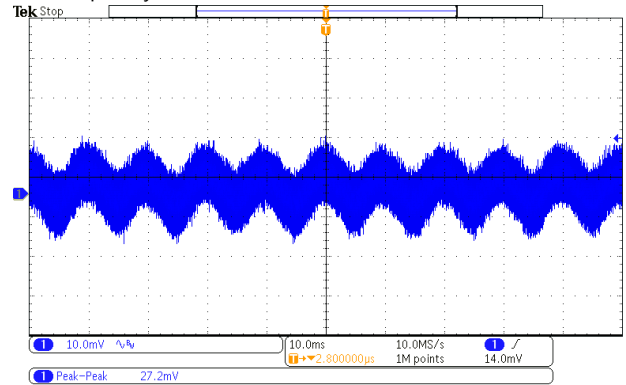


12	RIPPLE & NOISE (Max)	V1: 150 mVp-p	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	V1: 27.2mVp-p
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high frequency :

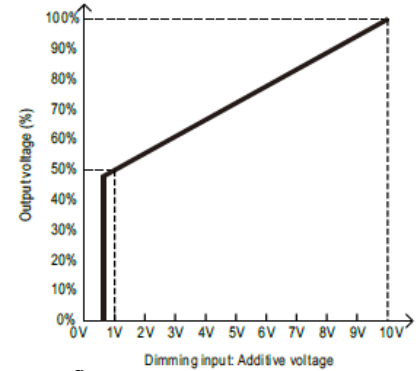
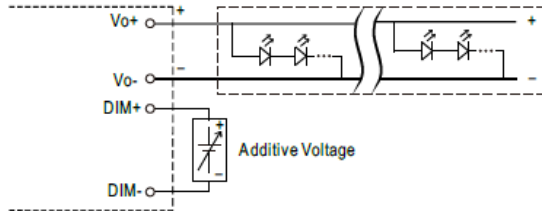


low frequency :

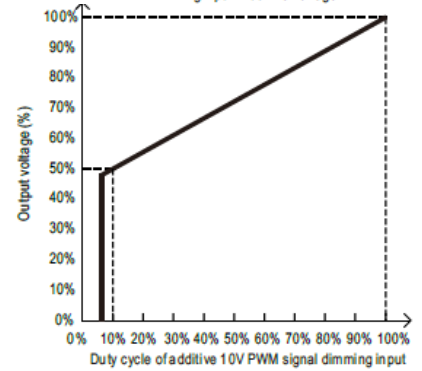
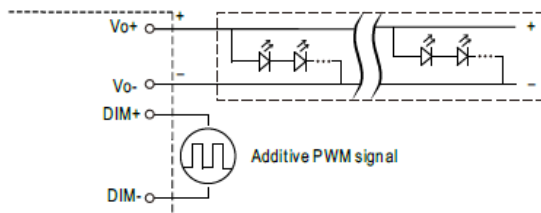


13	DIMMING OPERATION (forV-Type)	<p>※ 3 in 1 dimming function to adjust output voltage level</p> <ul style="list-style-type: none"> <li>• Output constant voltage can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance.</li> <li>• Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.</li> <li>• Dimming source current from power supply: 100μA (typ.)</li> </ul>		
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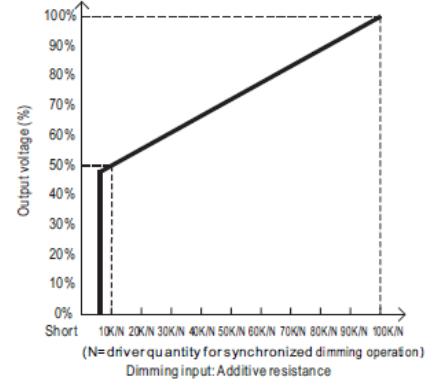
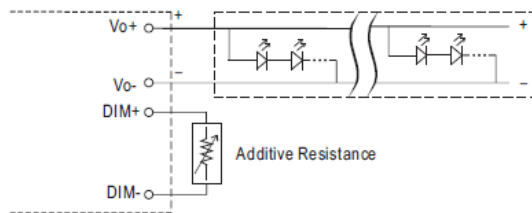
◎ Applying additive 0 ~ 10VDC



◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



◎ Applying additive resistance:



Note : 1. Min. dimming level is about 50% of output voltage and the output voltage is not defined when  $V_{out} < 50\%$   
 2. The output voltage could drop down to 0V when dimming input is about 0k or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P : 230 VAC O/P : DIMMING TEST

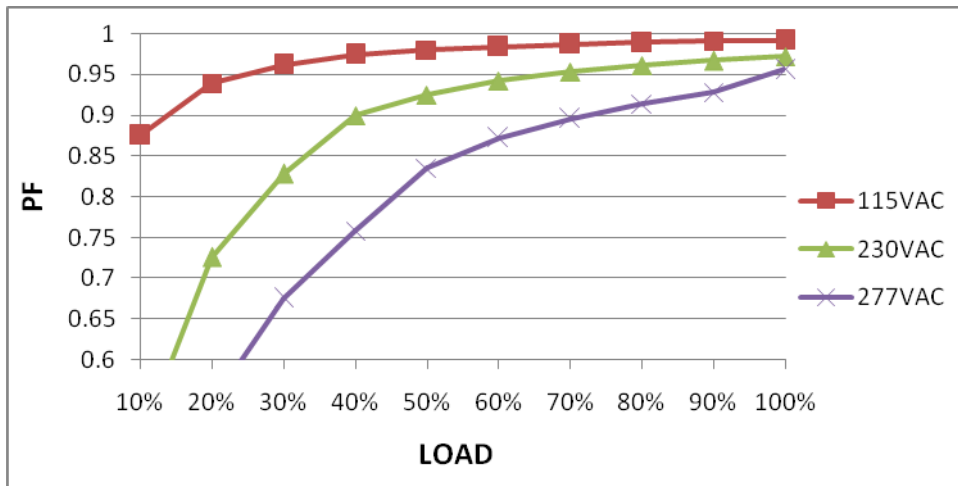
	v	SHORT	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Voltage	0.00000 V	6.01	6.58	7.23	7.86	8.64	9.22	9.94	10.63	11.42	11.98	12.01
	%	0.00%	50.08 %	54.83 %	60.25%	65.50%	72.00 %	76.83 %	82.83 %	88.58 %	95.17 %	99.83%	100.08 %
2	PWM	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Voltage (100Hz)	0.00000 V	6.03	6.57	7.21	7.85	8.62	9.23	9.96	10.62	11.51	11.99	12.10
	%	0.00%	50.25 %	54.75 %	60.08%	65.42%	71.83 %	76.92 %	83.00 %	88.50 %	95.92 %	99.92%	100.83 %
3	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Voltage	0.00000 V	6.07	6.71	7.39	8.22	8.89	9.54	10.21	10.83	11.45	11.90	12.01
	%	0.00%	50.59 %	55.92 %	61.58%	68.50%	74.08 %	79.50 %	85.08 %	90.25 %	95.42 %	99.17%	100.08 %

TEST RESULT : OK

### INPUT FUNCTION TEST

N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305 VAC 142VDC~431VDC	(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) 97V~308VAC (2)242Vdc~431Vdc/FULL LOAD 142Vdc~431Vdc/50% LOAD (3) 242Vdc~431Vdc/FULL LOAD 142Vdc~431Vdc/50% LOAD
			I/P: LOW-LINE-3V=97 VAC HIGH-LINE+10V=315 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 ~305VAC O/P:FULL~MIN LOAD Ta:25°C	OK
3	INPUT CURRENT (TYP)	277VAC/ 0.9A 230 VAC/1.1A 115 VAC/2.2A	I/P: 277VAC/230 VAC/115 VAC O/P:FULL LOAD Ta:25°C	I= 0.64A/277VAC I = 0.77A/ 230VAC I = 1.55A/ 115VAC
4	STANDBY POWER CONSUMPTION	<0.5W for V-type only	I/P : 230 VAC O/P : Output voltage dim to off Ta : 25°C	0.4225W
5	POWER FACTOR(TYP)	0.96/230 VAC FULL LOAD 0.97/115 VAC FULL LOAD 0.94/277 VAC FULL LOAD	I/P: 230 VAC/115VAC/277VAC O/P:FULL LOAD Ta:25°C	PF= 0.972/230V/100%LOAD PF=0.992/115V/100%LOAD PF=0.96/277V/100%LOAD

P.F vs LOAD



6	EFFICIENCY (TYP)	92%	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	92.77 %																																												
<p>EFFICIENCY vs LOAD</p> <table border="1"> <caption>Efficiency vs Load Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>115VAC (%)</th> <th>230VAC (%)</th> <th>277VAC (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>80</td><td>85</td><td>88</td></tr> <tr><td>20%</td><td>88</td><td>90</td><td>91</td></tr> <tr><td>30%</td><td>90</td><td>91</td><td>92</td></tr> <tr><td>40%</td><td>91</td><td>91</td><td>92</td></tr> <tr><td>50%</td><td>91</td><td>91</td><td>92</td></tr> <tr><td>60%</td><td>91</td><td>91</td><td>92</td></tr> <tr><td>70%</td><td>91</td><td>91</td><td>92</td></tr> <tr><td>80%</td><td>91</td><td>91</td><td>92</td></tr> <tr><td>90%</td><td>91</td><td>91</td><td>92</td></tr> <tr><td>100%</td><td>91</td><td>91</td><td>92</td></tr> </tbody> </table>					LOAD (%)	115VAC (%)	230VAC (%)	277VAC (%)	10%	80	85	88	20%	88	90	91	30%	90	91	92	40%	91	91	92	50%	91	91	92	60%	91	91	92	70%	91	91	92	80%	91	91	92	90%	91	91	92	100%	91	91	92
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7	INRUSH CURRENT (TYP)	230 V/65A  (twidth=550us measured at 50% Ipeak) COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 57A/ 230VAC  T50= 429.8 us																																												
<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : AC Input Voltage CH4 : Input current</p> <table border="1"> <caption>Oscilloscope Peak Data</caption> <thead> <tr> <th>Point</th> <th>Time (s)</th> <th>Current (A)</th> </tr> </thead> <tbody> <tr><td>1</td><td>600.0ns</td><td>19.40 A</td></tr> <tr><td>2</td><td>430.4µs</td><td>28.60 A</td></tr> <tr><td>3</td><td>429.8µs</td><td>19.200 A</td></tr> </tbody> </table>					Point	Time (s)	Current (A)	1	600.0ns	19.40 A	2	430.4µs	28.60 A	3	429.8µs	19.200 A																																
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8	TOTAL HARMONIC DISTORTION	THD<20%(@load ≧ 60%/115VC,230VAC; @load ≧ 75%/277VAC)	I/P : 115/230VAC O/P : 60% LOAD Ta : 25°C  I/P : 277VAC O/P : 75% LOAD Ta : 25°C	THD : 14.41%/ 60% Load/115VAC THD : 16.03%/ 60% Load/230VAC  THD : 16.92%/75% Load/277VAC																																												
<p>THD vs LOAD</p> <table border="1"> <caption>THD vs Load Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>115VAC (%)</th> <th>230VAC (%)</th> <th>277VAC (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>25</td><td>40</td><td>20</td></tr> <tr><td>20%</td><td>22</td><td>25</td><td>28</td></tr> <tr><td>30%</td><td>20</td><td>18</td><td>26</td></tr> <tr><td>40%</td><td>18</td><td>18</td><td>22</td></tr> <tr><td>50%</td><td>16</td><td>16</td><td>20</td></tr> <tr><td>60%</td><td>15</td><td>15</td><td>18</td></tr> <tr><td>70%</td><td>14</td><td>14</td><td>16</td></tr> <tr><td>80%</td><td>13</td><td>13</td><td>15</td></tr> <tr><td>90%</td><td>12</td><td>12</td><td>14</td></tr> <tr><td>100%</td><td>11</td><td>11</td><td>13</td></tr> </tbody> </table>					LOAD (%)	115VAC (%)	230VAC (%)	277VAC (%)	10%	25	40	20	20%	22	25	28	30%	20	18	26	40%	18	18	22	50%	16	16	20	60%	15	15	18	70%	14	14	16	80%	13	13	15	90%	12	12	14	100%	11	11	13
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### ROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	95%~108%	I/P: 305VAC I/P: 230VAC I/P: 110VAC O/P:TESTING Ta:25°C	101.7%/ 305VAC 101.3%/ 230VAC 101.2%/100VAC PROTECTION TYPE : Hiccup mode or Constant current limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	V1: 13V~18V	I/P: 305VAC I/P: 230VAC I/P: 110VAC O/P:MIN LOAD Ta:25°C	14.43V/ 305VAC 14.43V/ 230VAC 14.44V/ 110VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 305 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: 305VAC I/P: 110 VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Hiccup mode or Constant current limiting, recovers automatically after fault condition is removed

### COMPONENT STRESS TEST

N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor ( D to S) or (C to E) Peak Voltage	Q73 Rated 11 A/ 600V	AC ON/OFF  I/P:High-Line +3V =308V 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. (8) LEDmax (9)LEDmin	VDS: (1) 468V (2) 498V (3) 472V (4) 476V (5) 468V (6) 474V (7) 501V (8) 464V (9) 476V





			<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.  (8) LEDmax  (9)LEDmin</p> <p>Ta:25°C</p>	<p>VDS:  (1) 476V  (2) 480V  (3) 505V  (4) 460V  (5) 452V  (6) 492V  (7) 497V  (8) 448V  (9) 460V</p>
2	P.F.C Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q1 Rated 26A/ 600V	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =308 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) LEDmax  (9)LEDmin</p> <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.  (8) LEDmax  (9)LEDmin</p> <p>Ta:25°C</p>	<p>VDS:  (1) 522V  (2) 468V  (3) 513V  (4) 525V  (5) 513V  (6) 508V  (7) 472V  (8) 532V  (9) 535V</p> <p>VDS:  (1) 515V  (2) 472V  (3) 519V  (4) 513V  (5) 508V  (6) 513V  (7) 527V  (8) 511V  (9) 508V</p>



3	P.F.C DIODE	D5 Rated 9A/600V	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =308 V</p> <p>O/P: (1)Full Load (1) 492V (2)Output Short (2) 436V (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (3) 508V (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (4) 513V (5) LEDmax (5) 505V (6)LEDmin (6) 508V</p> <p>I/P:Low-Line -3V = 97V</p> <p>O/P: (1)Full Load (1) 452V (2)Output Short (2) 476V (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (3) 454V (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (4) 448V (5) LEDmax (5) 446V (6)LEDmin (6) 462V</p> <p>Ta:25°C</p>	
4	Diode Peak Voltage	<p>Q101 Rated 100A/ 40V</p> <p>Q100 Rated 100A/ 40V</p>	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =308 V</p> <p>O/P: (1)Full Load (1) 29.V (2)Output Short (2) 9.1V (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (3) 29.3V (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (4) 29.7V (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (5) 29.5V (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (6) 29.1V (7)0%→400% Load. (7) 22.5V (8).NO LOAD (8) 27.9V (9) LEDmax (9) 29.3V (10)LEDmin (10) 23.1V</p> <p>Ta:25°C</p>	<p>Q101:</p> <p>VDS:</p> <p>(1) 29.V (2) 9.1V (3) 29.3V (4) 29.7V (5) 29.5V (6) 29.1V (7) 22.5V (8) 27.9V (9) 29.3V (10) 23.1V</p> <p>Q100</p> <p>VDS:</p> <p>(1) 28.9V (2) 6.7V (3) 29.1V (4) 29.3V (5) 28.9V (6) 29.1V (7) 19.9V (8) 26.9V (9) 28.7V (10) 23.5V</p>

5	Input Capacitor Voltage	C5 Rated: 100uF / 450 V	I/P:High-Line +3V =308V 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	(1) 446V (2) 434V (3) 442V (4) 442V
6	Control IC Voltage Test	U1 Rated - 0.3V~35V  U2 Rated - 0.3V to 20V U100 Rated - 0.3V~32V	AC ON/OFF I/P:High-Line +3V =308 V  FOR C.V MODE TYPE O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin.LOW LINE FOR C.C MODE TYPE O/P(6)LEDmax (7)LEDmin	U2: (1) 17.7V (2) 17.9V (3) 17.7V (4) 16.1V (5) 15.7V  U1: (1) 17.6V (2) 17.5V (3) 17.7V (4) 16.9V (5) 13.9V (6) 17.9V (7) 17.7V  U100: (1) 11.3V (2) 11.3V (3) 11.3V (4) 14.3V (5) 11.5V (6) 11.9V (7) 11.3V

## SAFETY & EMC TEST

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min	I/P-O/P: 4.125 KVAC/min Ta:25°C	I/P-O/P: 0.238mA  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 / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25°C	L-FG:0.048mA N-FG:0.043 mA

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	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 B	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: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV	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 : NPF-200V-12 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=30 °C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=47.8 °C																																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=30°C</th> <th>HIGH AMBIENT Ta=47.8°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>RTH1</td><td>66.4°C</td><td>79.7°C</td></tr> <tr><td>2</td><td>BD1</td><td>67.2°C</td><td>83.4°C</td></tr> <tr><td>3</td><td>Q1</td><td>68.8°C</td><td>85.2°C</td></tr> <tr><td>4</td><td>C5</td><td>64.3°C</td><td>80.3°C</td></tr> <tr><td>5</td><td>L2</td><td>66.1°C</td><td>82.2°C</td></tr> <tr><td>6</td><td>C86</td><td>67.9°C</td><td>84.1°C</td></tr> <tr><td>7</td><td>Q71</td><td>65.8°C</td><td>82.3°C</td></tr> <tr><td>8</td><td>Q73</td><td>66.5°C</td><td>83.2°C</td></tr> <tr><td>9</td><td>U1</td><td>64.5°C</td><td>80.4°C</td></tr> <tr><td>10</td><td>C36</td><td>65.8°C</td><td>82.4°C</td></tr> <tr><td>11</td><td>T1</td><td>75.6°C</td><td>93.0°C</td></tr> <tr><td>12</td><td>C106</td><td>68.6°C</td><td>86.6°C</td></tr> <tr><td>13</td><td>Q100</td><td>74.8°C</td><td>92.9°C</td></tr> <tr><td>14</td><td>Q101</td><td>74.5°C</td><td>92.5°C</td></tr> <tr><td>15</td><td>U101</td><td>75.6°C</td><td>92.6°C</td></tr> <tr><td>16</td><td>RTH5</td><td>65.0°C</td><td>81.4°C</td></tr> <tr><td>17</td><td>TC</td><td>58.0°C</td><td>74.0°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=30°C	HIGH AMBIENT Ta=47.8°C	1	RTH1	66.4°C	79.7°C	2	BD1	67.2°C	83.4°C	3	Q1	68.8°C	85.2°C	4	C5	64.3°C	80.3°C	5	L2	66.1°C	82.2°C	6	C86	67.9°C	84.1°C	7	Q71	65.8°C	82.3°C	8	Q73	66.5°C	83.2°C	9	U1	64.5°C	80.4°C	10	C36	65.8°C	82.4°C	11	T1	75.6°C	93.0°C	12	C106	68.6°C	86.6°C	13	Q100	74.8°C	92.9°C	14	Q101	74.5°C	92.5°C	15	U101	75.6°C	92.6°C	16	RTH5	65.0°C	81.4°C	17	TC	58.0°C	74.0°C
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230 VAC O/P : 103 * LOAD Ta : 25°C	TEST : OK																																																																								
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/110VAC O/P : FULL LOAD Ta= -45/-30 °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 : 305 VAC 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	± 0.01 %/°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 C106 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) 183069HRS (2) 45137HRS (3) 113601HRS (4) 208682 HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2625.4K hrs min. Telcordia SR-332 (Bellcore); 247.5K 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