



Test Report: NSP-150-12

150W AC/DC High Reliable Multi-Industries Enclosed Type Power 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

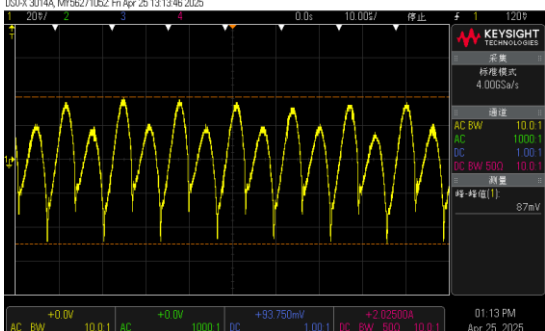
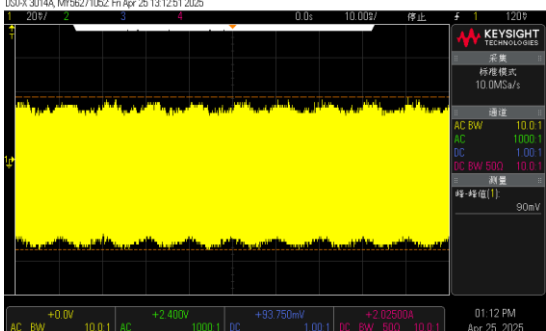
E.M.C. Test

■ RELIABILITY TEST

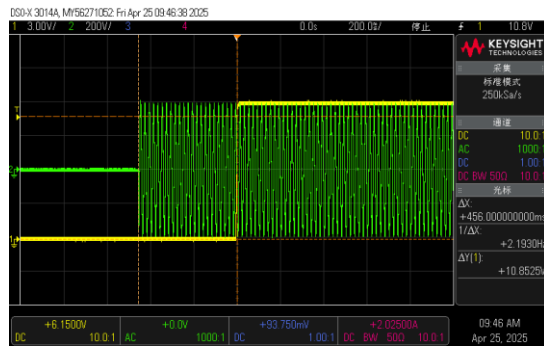
ENVIRONMENT TEST

DESIGN VERIFY TEST

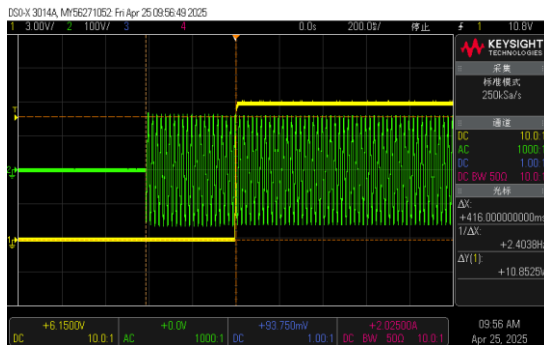
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 10.8V~ 14V	I/P : 230 VAC O/P : MIN LOAD Ta : 25°C	10.3V~14.8V/230VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -2%~ +2 %	I/P: 85VAC /305VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: -0.25% +0.42%
3	LINE REGULATION	V1: -0.5%~ +0.5%	I/P: 85VAC ~ 305VAC O/P:FULL LOAD Ta:25°C	V1: -0.08%~ + 0.00%
4	LOAD REGULATION	V1: -0.5%~ +0.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.08%~ +0.00%
5	OVER/UNDERSHOOT TEST	< ± 5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	2.92%
6	RIPPLE & NOISE (Max)	V1: 150 mVp-p	I/P: 230 VAC O/P: MIN LOAD—FULL LOAD Ta:25°C	V1: 90 mVp-p / 100% load
high frequency :		low frequency :		
				
7	SET UP TIME(Max)	277VAC/1000ms 230VAC/1000ms 115VAC/1500ms	I/P : 230 VAC I/P : 277VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	277VAC/456 ms 230VAC/ 452ms 115VAC/ 416ms

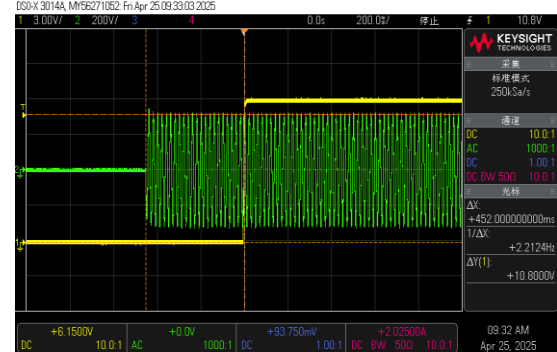
INPUT=277VAC/60HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Vltage



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



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



8	RISE TIME (Max)	277VAC/80ms 230VAC/80ms 115VAC/80ms	I/P : 277VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	277VAC/3.7ms 230VAC/ 3.6ms 115VAC/3.6ms
---	-----------------	---	--	---

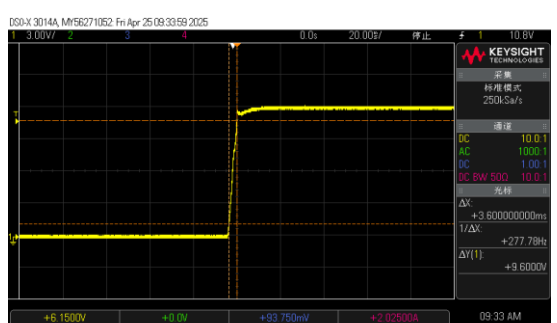
INPUT=277VAC/60HZ @ FULL LOAD
CH1 : Output Voltage



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



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

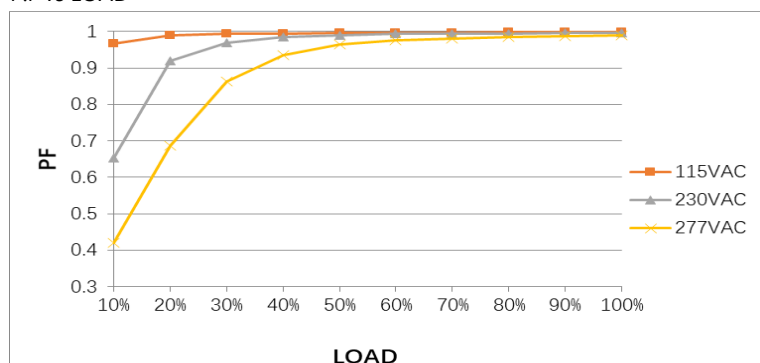


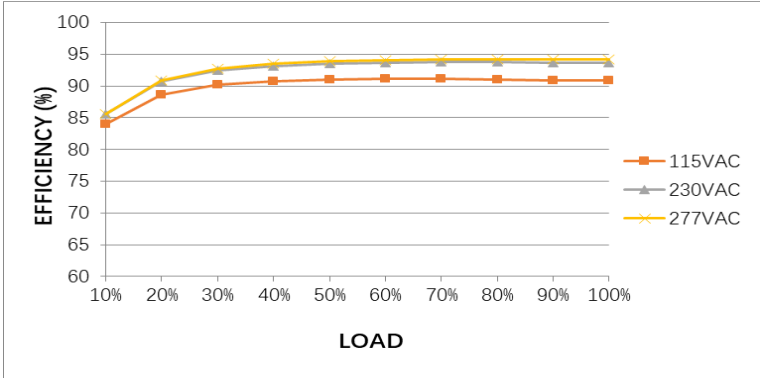
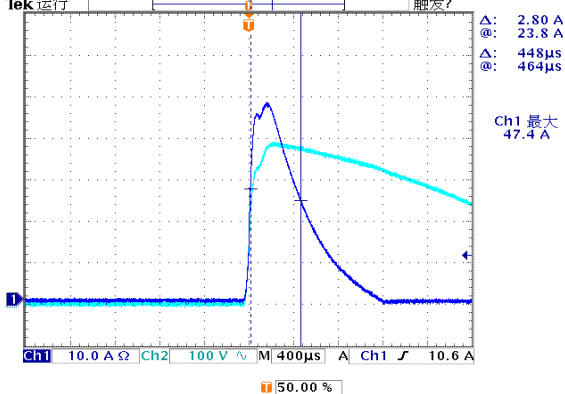
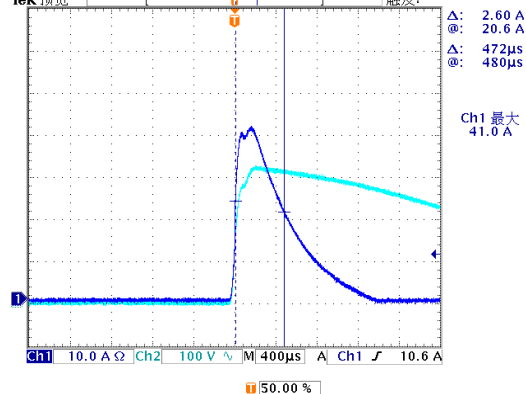
9	HOLD UP TIME (Typ.)	277VAC/16ms 230VAC/16ms 115VAC/16ms	I/P : 277VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	277VAC/29ms 230VAC/29ms 115VAC/29ms
INPUT=277VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage				
10	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	221mVp-p 175mVp-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	85VAC~305VAC 120VDC~ 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 Ta:25°C	(1) 85 V~305V (2) 120Vdc~ 431 Vdc/FULL LOAD 120 Vdc~ 431Vdc/50% LOAD (3) 120Vdc~ 431Vdc/FULL LOAD 120Vdc~431 Vdc/50% LOAD
			I/P: LOW-LINE-3V=82 V HIGH-LINE+10V=315 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:85VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK
3	INPUT CURRENT (Typ.)	277V/ 0.63A 230V/ 0.75 A 115V/ 1.55 A	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =0.58A/ 277VAC I =0.69A/ 230VAC I =1.43A/ 115VAC
4	LEAKAGE CURRENT	Earth leakage current <350μA(rms)@277Vac	I/P : 277 VAC O/P : Min LOAD Ta : 25°C	L-FG : 192μA N-FG : 192μA
		Touch current <100μA(rms)@277Vac	I/P : 277 VAC O/P : Min LOAD Ta : 25°C	L-V+ : 45μA L-V- : 45μA N-V+ : 45μA N-V- : 45μA
5	POWER FACTOR (Typ.)	0.90/277VAC 0.93/ 230VAC 0.98/ 115VAC	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF=0.989/277VAC PF=0.996/230VAC PF=0.998/115VAC

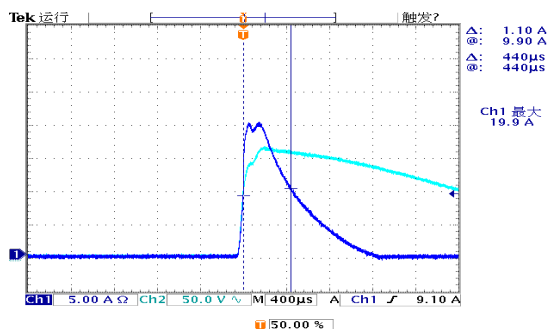
P.F vs LOAD



6	EFFICIENCY(Typ.)	93%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	93.63%
EFFICIENCY vs LOAD 				
7	NO LOAD POWER CONSUMPTION(Typ.)	Remote Power ON : 3W/277VAC 3W/230VAC 3W/115VAC Remote Power OFF : 0.5W/277VAC 0.5W/230VAC 0.3W/115VAC	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : RC ON/RC OFF Ta : 25°C	Remote Power ON : 0.83W/277VAC 0.83W/230VAC 0.86W/115VAC Remote Power OFF : 0.39W/277VAC 0.31W/230VAC 0.13W/115VAC
8	INRUSH CURRENT(Typ.)	277VAC/55A 230VAC/45A 115VAC/23A COLD START	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =47.4A/ 277VAC T50=448us/277VAC I =41.0A/ 230VAC T50= 472us/230VAC I =19.9A/ 115VAC T50= 440us/115VAC
INPUT=277VAC/50HZ @ FULL LOAD CH2: AC Input Voltage CH1: Input current  INPUT=230VAC/50HZ @ FULL LOAD CH2: AC Input Voltage CH1: Input current 				

INPUT=115VAC/50HZ @ FULL LOAD

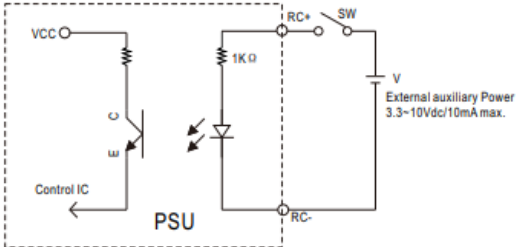
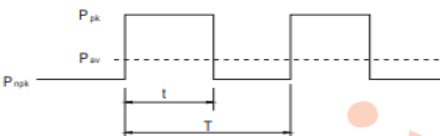
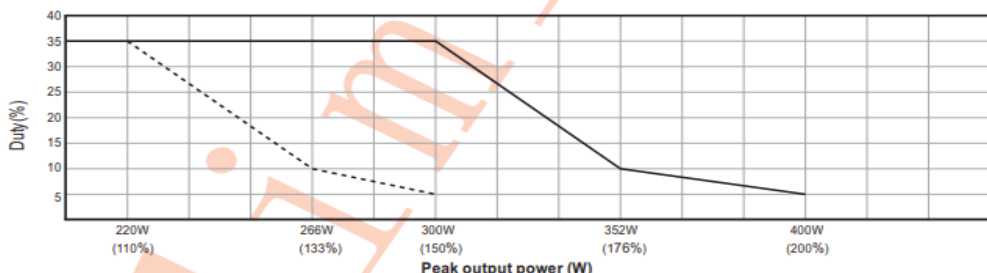
CH2 : AC Input Voltage CH1 : Input current

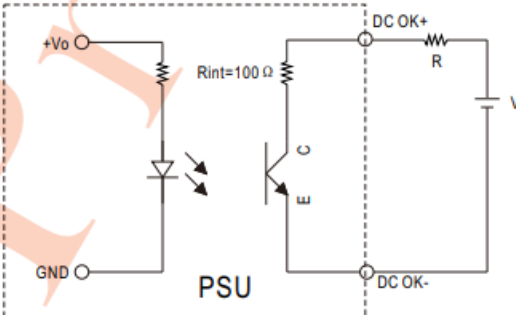


PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 200%	I/P: 305VAC I/P: 230VAC I/P: 85VAC O/P: TESTING Ta:25°C	128.0%/ 305VAC 128.0%/ 230VAC 128.0%/ 85VAC Protection type : 1、Normally works within 105 ~ 200% rated output power for more than 5 seconds and then constant current limiting without shutdown(Vout>30%), recovers automatically after fault condition is removed, or shut down o/p voltage when Vout<30%,AC re-power on to recover 2、>200% rated power, constant current limiting (Vout>30%)with auto-recovery after fault condition is removed, or shut down o/p voltage when Vout t<30%,AC re-power on to recover
2	OVER VOLTAGE PROTECTION	15V~19V	I/P: 305VAC I/P: 230VAC I/P: 85VAC O/P: MIN LOAD Ta:25°C	17.7V/ 305VAC 17.7V/ 230VAC 17.6V/ 85VAC Protection type : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 305VAC I/P: 85VAC 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: 85VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE Protection type : Constant current limiting for more than 5 seconds (Vout<30%) and then shut down o/p voltage, AC re-power on to recover

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	REMOTE ON/OFF CONTROL	2.Remote Control The PSU can be turned ON/OFF by using the "Remote Control" function with external switch and auxiliary power <table><tr><td>PSU Vo Status</td><td>Between RC-(pin1) and RC+(pin2) on CN1</td></tr><tr><td>POWER ON</td><td>Keep 0~0.8Vdc or open</td></tr><tr><td>POWER OFF</td><td>Keep 3.3~10Vdc by external voltage</td></tr></table>  I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : PASS <table><tr><td>Between ON/OFF</td><td>Power Output Status</td></tr><tr><td>POWER OFF (0~0.8V)</td><td>ON</td></tr><tr><td>POWER ON (3.3~10V)</td><td>OFF</td></tr></table>	PSU Vo Status	Between RC-(pin1) and RC+(pin2) on CN1	POWER ON	Keep 0~0.8Vdc or open	POWER OFF	Keep 3.3~10Vdc by external voltage	Between ON/OFF	Power Output Status	POWER OFF (0~0.8V)	ON	POWER ON (3.3~10V)	OFF		
PSU Vo Status	Between RC-(pin1) and RC+(pin2) on CN1															
POWER ON	Keep 0~0.8Vdc or open															
POWER OFF	Keep 3.3~10Vdc by external voltage															
Between ON/OFF	Power Output Status															
POWER OFF (0~0.8V)	ON															
POWER ON (3.3~10V)	OFF															
2	PEAK POWER	1. Peak Power $P_{av} = \frac{P_{pk} \times t + P_{npgk} \times (T-t)}{T} \leq P_{rated}$$Duty = \frac{t}{T} \times 100\% \leq 35\%$$t \leq 5 \text{ sec}$  P_{av}: Average output power (W) P_{pk}: Peak output power (W) P_{npgk}: Non-peak output power (W) P_{rated}: Rated output power (W) t: Peak power width (sec) T: Period (sec)  For example (24V model): $V_{in} = 200V_{ac}$ $Duty_max = 5\%$ $P_{av} = P_{rated} = 200W$ $P_{pk} = 400W$ $t \leq 5 \text{ sec}$ $T = \frac{5 \text{ sec}}{5\%} = 100 \text{ sec}$ $P_{npgk} \leq \frac{TP_{av} - tP_{pk}}{T-t}$ $P_{npgk} \leq 189W$ Note:When the output voltage is adjusted to the upper limit, the peak power is 150% rated power I/P: 100/305VAC O/P:PEAK LOAD (1Hour NO DAMAGE) Ta:25°C Test Result: PASS														

3	REMOTE SENSE	The remote sensing compensates voltage drop on the load wiring up to 0.3V.	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	> 0.3 V						
4	DC_OK Signal	4.DC_OK signal ※ DC_OK is a collector shorted signal. It is used by an optocoupler in the power supply which indicates the output status of the power supply as exhibited below.  External voltage source(V) and resistor(R) <table><tr><th>PSU Vo Status</th><th>Photo transistor</th></tr><tr><td>POWER ON</td><td>Conduct(Low impedance)</td></tr><tr><td>POWER OFF</td><td>Open(High impedance)</td></tr></table> Optocoupler Rating(max.) 15Vdc/10mA resistive load I/P:230VAC O/P:FULL LOAD Ta:25°C TEST :OK			PSU Vo Status	Photo transistor	POWER ON	Conduct(Low impedance)	POWER OFF	Open(High impedance)
PSU Vo Status	Photo transistor									
POWER ON	Conduct(Low impedance)									
POWER OFF	Open(High impedance)									

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q6 Rated : 650V/11A	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.	VDS: (1) 451V (2) 488V (3) 451V (4) 455V (5) 451V (6) 451V (7) 492V

			I/P:Low-Line -3V = 82V 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	VDS: (1) 435V (2) 492V (3) 435V (4) 435V (5) 435V (6) 435V (7) 488V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated : 650V/15A	I/P:High-Line +3V =308V 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. I/P:Low-Line -3V =82V 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	VDS: (1) 454V (2) 474V (3) 446V (4) 437V (5) 467V (6) 458V (7) 494V VDS: (1) 543V (2) 551V (3) 543V (4) 528V (5) 537V (6) 539V (7) 514V
3	P.F.C DIODE	D8 Rated : 4 A/650V	I/P:High-Line +3V =308 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	(1) 459V (2) 459V (3) 455V (4) 459V

			I/P:Low-Line -3V = 82V 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	(1) 463V (2) 463V (3) 459V (4) 459V
4	Diode Peak Voltage	Q101 Rated : 160 A/ 60V	AC ON/OFF 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).NO LOAD Ta:25°C	Q101: VDS: (1) 30.7V (2) 32.3V (3) 30.7V (4) 30.7V (5) 30.7V (6) 30.7V (7) 32.7V (8) 30.3V
5	Input Capacitor Voltage	C5 Rated: 82μ/ 450V Surge voltage: 500V	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)443V/21 (2)443V/18 (3)447V/19 (4)431V/20
6	Control IC Voltage Test	PWM IC U2 Rated 9.6V~ 36V O/P IC U100 Rated 3V~30V	AC ON/OFF I/P:High-Line +3V =308 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	U2 (1) 19.0V (2) 19.2V (3) 19.0V (4) 19.2V (5) 19.0V U100 (1) 11.6V (2) 11.6V (3) 11.6V (4) 11.6V (5) 9.60V

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4.2 K VAC/min I/P-FG : 2.1 K VAC/min O/P-FG: 1.5 KVAC/min	I/P-O/P: 4.62 KVAC/min I/P-FG: 2.52 KVAC/min O/P-FG: 1.8 KVAC/min Ta:25°C	I/P-O/P: 1.712 mA I/P-FG: 1.604 mA O/P-FG: 1.728 mA
2	ISOLATION RESISTANCE	I/P-O/P: 500 VDC>100MΩ I/P-FG: 500 VDC>100MΩ O/P-FG: 500 VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: >9999 MΩ I/P-FG: >9999 MΩ O/P-FG: >9999 MΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	10mΩ

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	BS EN/EN55032(CISPR32),CNS 15936 EN/EN55014-1(CISPR14-1) EN/EN55011(CISPR11)	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	BS EN/EN55032(CISPR32),CNS 15936 EN/EN55014-1(CISPR14-1) EN/EN55011(CISPR11)	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 AIR : 15KV / Contact : 8KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-4-5 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 : NSP-150-12 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=28 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=61.4 °C <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=28 °C</th><th>HIGH AMBIENT Ta=61.4 °C</th></tr><tr><td>1</td><td>LF1</td><td>50.4°C</td><td>83.3°C</td></tr><tr><td>2</td><td>C2</td><td>51.1°C</td><td>98.0°C</td></tr><tr><td>3</td><td>RTH1</td><td>74.5°C</td><td>89.8°C</td></tr><tr><td>4</td><td>BD2</td><td>58.6°C</td><td>101.4°C</td></tr><tr><td>5</td><td>L1</td><td>71.3°C</td><td>85.7°C</td></tr><tr><td>6</td><td>D8</td><td>53.1°C</td><td>91.2°C</td></tr><tr><td>7</td><td>Q1</td><td>59.0°C</td><td>94.4°C</td></tr><tr><td>8</td><td>R5</td><td>62.8°C</td><td>89.0°C</td></tr><tr><td>9</td><td>C5</td><td>56.5°C</td><td>91.3°C</td></tr><tr><td>10</td><td>C36</td><td>58.9°C</td><td>90.9°C</td></tr><tr><td>11</td><td>C14</td><td>58.5°C</td><td>96.8°C</td></tr><tr><td>12</td><td>U2</td><td>64.9°C</td><td>88.1°C</td></tr><tr><td>13</td><td>Q5</td><td>54.9°C</td><td>90.1°C</td></tr><tr><td>14</td><td>Q6</td><td>57.0°C</td><td>87.1°C</td></tr><tr><td>15</td><td>U4</td><td>55.0°C</td><td>96.1°C</td></tr><tr><td>16</td><td>T1</td><td>62.7°C</td><td>86.5°C</td></tr><tr><td>17</td><td>C200</td><td>53.6°C</td><td>89.1°C</td></tr><tr><td>18</td><td>C106</td><td>56.9°C</td><td>87.7°C</td></tr><tr><td>19</td><td>U121</td><td>55.4°C</td><td>89.9°C</td></tr><tr><td>20</td><td>Q100</td><td>57.5°C</td><td>92.8°C</td></tr><tr><td>21</td><td>Q101</td><td>59.9°C</td><td>91.3°C</td></tr><tr><td>22</td><td>RTH3</td><td>57.8°C</td><td>81.2°C</td></tr><tr><td>23</td><td>TC</td><td>49.0°C</td><td>83.3°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=28 °C	HIGH AMBIENT Ta=61.4 °C	1	LF1	50.4°C	83.3°C	2	C2	51.1°C	98.0°C	3	RTH1	74.5°C	89.8°C	4	BD2	58.6°C	101.4°C	5	L1	71.3°C	85.7°C	6	D8	53.1°C	91.2°C	7	Q1	59.0°C	94.4°C	8	R5	62.8°C	89.0°C	9	C5	56.5°C	91.3°C	10	C36	58.9°C	90.9°C	11	C14	58.5°C	96.8°C	12	U2	64.9°C	88.1°C	13	Q5	54.9°C	90.1°C	14	Q6	57.0°C	87.1°C	15	U4	55.0°C	96.1°C	16	T1	62.7°C	86.5°C	17	C200	53.6°C	89.1°C	18	C106	56.9°C	87.7°C	19	U121	55.4°C	89.9°C	20	Q100	57.5°C	92.8°C	21	Q101	59.9°C	91.3°C	22	RTH3	57.8°C	81.2°C	23	TC	49.0°C	83.3°C
NO	Position	ROOM AMBIENT Ta=28 °C	HIGH AMBIENT Ta=61.4 °C																																																																																																	
1	LF1	50.4°C	83.3°C																																																																																																	
2	C2	51.1°C	98.0°C																																																																																																	
3	RTH1	74.5°C	89.8°C																																																																																																	
4	BD2	58.6°C	101.4°C																																																																																																	
5	L1	71.3°C	85.7°C																																																																																																	
6	D8	53.1°C	91.2°C																																																																																																	
7	Q1	59.0°C	94.4°C																																																																																																	
8	R5	62.8°C	89.0°C																																																																																																	
9	C5	56.5°C	91.3°C																																																																																																	
10	C36	58.9°C	90.9°C																																																																																																	
11	C14	58.5°C	96.8°C																																																																																																	
12	U2	64.9°C	88.1°C																																																																																																	
13	Q5	54.9°C	90.1°C																																																																																																	
14	Q6	57.0°C	87.1°C																																																																																																	
15	U4	55.0°C	96.1°C																																																																																																	
16	T1	62.7°C	86.5°C																																																																																																	
17	C200	53.6°C	89.1°C																																																																																																	
18	C106	56.9°C	87.7°C																																																																																																	
19	U121	55.4°C	89.9°C																																																																																																	
20	Q100	57.5°C	92.8°C																																																																																																	
21	Q101	59.9°C	91.3°C																																																																																																	
22	RTH3	57.8°C	81.2°C																																																																																																	
23	TC	49.0°C	83.3°C																																																																																																	
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 124 % LOAD Ta : 25°C	TEST : OK																																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 85VAC/305VAC O/P : 75/100 % LOAD Ta=-35/-45 °C	TEST : OK																																																																																																
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C/95 %R.H NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta=60 °C HUMIDITY= 95 %R.H	TEST : OK																																																																																																

5	TEMPERATURE COEFFICIENT	± 0.05 %/°C(0~60°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.0074 %/°C(0~60°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	-30~60°C	1. Thermal shock Temperature : -35°C~ +65°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 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=60 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=60 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=60 °C LIFE TIME		(1) 332050HRS (2) 31895HRS (3) 63230HRS (4) 115562HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2159.4K hrs min. Telcordia SR-332 (Bellcore) ; 258.3K 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	WUWQIN/ZHOUBIAO	WENF	WUWQ

2020.10.1 TAG-QA-009