



# Test Report: NGE100

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100W 4-Port USB GaN Fast Charger

## ■ 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

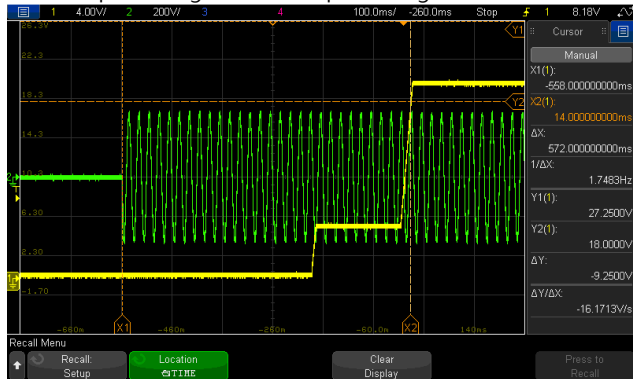
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

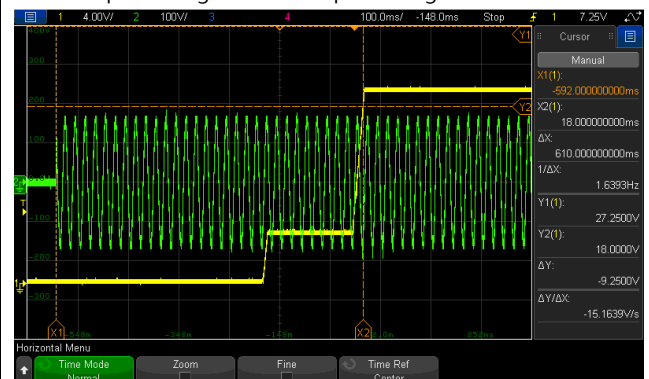
OUTPUT FUNCTION TEST

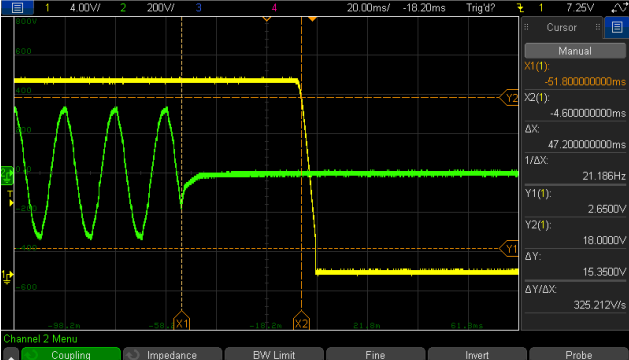
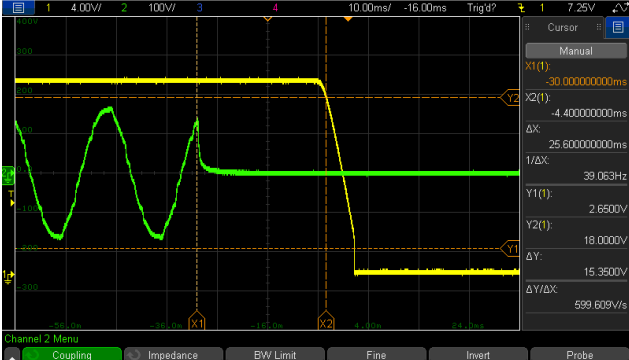
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	5V: -5.0%~ +5.0 % 9V: -5.0%~ +5.0 % 12V: -4.0%~ +4.0 % 15V: -4.0%~ +4.0% 20V: -4.0%~ +4.0%	I/P: 90VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	TEST: 5V: -2.404%~ +2.400 % 9V: -1.330%~ +1.450% 12V: -1.000%~ +1.090 % 15V: -0.870%~ +0.870% 20V: -0.010%~ +1.050%
2	LINE REGULATION	5V: -1.0%~ +1.0 % 9V: -1.0%~ +1.0 % 12V: -1.0%~ +1.0 % 15V: -1.0%~ +1.0 % 20V: -1.0%~ +1.0 %	I/P: 90VAC~ 264VAC O/P:FULL LOAD Ta:25°C	TEST: 5V: -0.020%~ +0.020 % 9V: -0.023%~ +0.000 % 12V: -0.008%~ +0.025 % 15V: -0.034%~ +0.025 % 20V: -0.050%~ +0.050 %
3	LOAD REGULATION	5V: -5.0%~ +5.0 % 9V: -5.0%~ +5.0 % 12V: -4.0%~ +4.0 % 15V: -4.0%~ +4.0 % 20V: -4.0%~ +4.0 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	TEST: 5V: -2.404%~ +2.400 % 9V: -1.330%~ +1.450% 12V: -1.000%~ +1.090 % 15V: -0.870%~ +0.870% 20V: -0.010%~ +1.050%
4	OVER/UNDERSHOOT TEST	5V: <± 10% 9V: <± 10% ; 12V: <± 5% 15V: <± 5% 20V: <± 5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	TEST: 5V: - 7.96% 9V: -8.10% ; 12V: -3.67% 15V: -5.41% 20V: -2.51%
5	SET UP TIME(Max)	230VAC/1000ms 115VAC/2000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD @ 20V 5A Ta : 25°C	230VAC/572 ms 115VAC/610ms

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



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

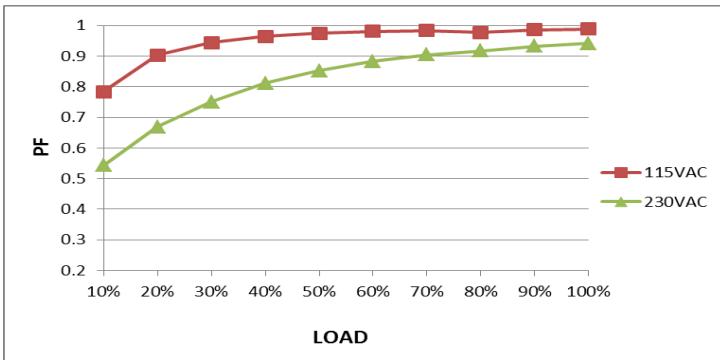


6	HOLD UP TIME (Typ.)	230VAC/30ms 115VAC/10ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD@ 20V 5A Ta : 25°C	230VAC/ 47.2 ms 115VAC/ 25.6 ms																								
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p> 		<p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p> 																										
7	RIPPLE & NOISE (Max )	5V: 200mVp-p 9V: 200mVp-p; 12V: 200mVp-p 15V: 200mVp-p 20V: 200mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	TEST: 5V: 31mVp-p 9V: 47mVp-p; 12V: 51mVp-p 15V: 39mVp-p 20V: 37mVp-p																								
8	DYNAMIC LOAD	5V: 1000 mVp-p 9V: 1800 mVp-p 12V: 1200 mVp-p 15V: 1500 mVp-p 20V: 2000 mVp-p	I/P: 230VAC O/P: (1)FULL /MIN LOAD 50%DUTY / 120HZ (2)FULL /MIN LOAD 50%DUTY / 1KHZ Ta:25°C	TEST: 5V: (1) 462 mVp-p (2) 380 mVp-p 9V: (1) 459 mVp-p (2) 411 mVp-p 12V: (1) 419 mVp-p (2) 352 mVp-p 15V: (1) 796 mVp-p (2) 1220 mVp-p 20V: (1) 1340 mVp-p (2) 1260 mVp-p																								
9	TRANSIENT RECOVERY TIME	5V: 1000 mVp-p 9V: 1800 mVp-p 12V: 1200 mVp-p 15V: 1500 mVp-p 20V: 2000 mVp-p <500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	TEST: 5V: 603mVp-p 0us 9V: 820mVp-p 0us 12V: 960mVp-p 0us 15V: 1010mVp-p 0us 20V: 1200mVp-p 0us																								
10	Output Plug TEST	Plug and unplug test 10 times	I/P:230VAC O/P:FULL LOAD Ta:25°C	TEST: OK <table border="1" data-bbox="1149 1747 1516 1881"> <thead> <tr> <th>C1</th> <th>5V</th> <th>9V</th> <th>12V</th> <th>15V</th> <th>20V</th> </tr> </thead> <tbody> <tr> <td>FULL LOAD</td> <td>OK</td> <td>OK</td> <td>OK</td> <td>OK</td> <td>OK</td> </tr> <tr> <th>A1</th> <th>5V</th> <th>9V</th> <th>12V</th> <th>15V</th> <th>20V</th> </tr> <tr> <td>FULL LOAD</td> <td>OK</td> <td>OK</td> <td>OK</td> <td>—</td> <td>OK</td> </tr> </tbody> </table>	C1	5V	9V	12V	15V	20V	FULL LOAD	OK	OK	OK	OK	OK	A1	5V	9V	12V	15V	20V	FULL LOAD	OK	OK	OK	—	OK
C1	5V	9V	12V	15V	20V																							
FULL LOAD	OK	OK	OK	OK	OK																							
A1	5V	9V	12V	15V	20V																							
FULL LOAD	OK	OK	OK	—	OK																							
11	FOR 5V ONLY(45W)	USB C1: 5V3A, USB C2: 5V3A, USB A1: 5V1.5A, USB A2: 5V1.5A ,	I/P:230VAC O/P:TESTING Ta:25°C	TEST: OK																								

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																		
1	INPUT VOLTAGE RANGE	90VAC~264VAC	(1) I/P:TESTING O/P:FULL LOAD Ta:25°C	(1) 78.5V~264V/ FULL LOAD 78.5V~264V/ 80% LOAD																		
			I/P: 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.)	0.8/ 230VAC 1.6/115VAC	I/P : 115 VAC/230VAC O/P : FULL LOAD Ta : 25°C	0.512A/ 230VAC at 20V 5A 0.998A/115VAC at 20V 5A																		
4	LEAKAGE CURRENT	< 0.5mA / 240 VAC	I/P : 264 VAC/60HZ O/P : Min LOAD Ta : 25°C	TEST: PD3.0 <table border="1"> <tr><td>@Vo=5V</td><td>0.337mA</td></tr> <tr><td>@Vo=9V</td><td>0.328mA</td></tr> <tr><td>@Vo=12V</td><td>0.349mA</td></tr> <tr><td>@Vo=15V</td><td>0.336mA</td></tr> <tr><td>@Vo=20V</td><td>0.325mA</td></tr> </table> QC3.0 <table border="1"> <tr><td>@Vo=5V</td><td>0.329mA</td></tr> <tr><td>@Vo=9V</td><td>0.335mA</td></tr> <tr><td>@Vo=12V</td><td>0.338mA</td></tr> <tr><td>@Vo=20V</td><td>0.326mA</td></tr> </table>	@Vo=5V	0.337mA	@Vo=9V	0.328mA	@Vo=12V	0.349mA	@Vo=15V	0.336mA	@Vo=20V	0.325mA	@Vo=5V	0.329mA	@Vo=9V	0.335mA	@Vo=12V	0.338mA	@Vo=20V	0.326mA
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5	NO LOAD CONSUMPTION	< 0.3W	I/P : 240VAC O/P : NO LOAD Ta : 25°C	0.258 W																		
6	POWER FACTOR (Typ.)	0.92/ 230VAC @ 20V 5A 0.98/115VAC@ 20V 5A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF=0.9409/230VAC @ 20V 5A PF=0.9909/115VAC @ 20V 5A																		

P.F vs LOAD



7	EFFICIENCY(Typ.)	88.5% $\text{@Vo}=20\text{V}/5\text{A}$	I/P:230 VAC O/P:FULL LOAD Ta:25°C	88.7% $\text{@Vo}=20\text{V}/5\text{A}$																																	
<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>84</td><td>82</td></tr> <tr><td>20%</td><td>90</td><td>88</td></tr> <tr><td>30%</td><td>89</td><td>89</td></tr> <tr><td>40%</td><td>90</td><td>89</td></tr> <tr><td>50%</td><td>90</td><td>89</td></tr> <tr><td>60%</td><td>90</td><td>89</td></tr> <tr><td>70%</td><td>90</td><td>89</td></tr> <tr><td>80%</td><td>89</td><td>89</td></tr> <tr><td>90%</td><td>89</td><td>89</td></tr> <tr><td>100%</td><td>89</td><td>89</td></tr> </tbody> </table>					LOAD (%)	115VAC Efficiency (%)	230VAC Efficiency (%)	10%	84	82	20%	90	88	30%	89	89	40%	90	89	50%	90	89	60%	90	89	70%	90	89	80%	89	89	90%	89	89	100%	89	89
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80%	89	89																																			
90%	89	89																																			
100%	89	89																																			
8	INRUSH CURRENT(Typ.)	230V/95A 115V/65A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =85.0A/ 230VAC I =53.3A/ 115VAC T50= 330us/230V																																	
<p>INPUT=230VAC/50HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current</p> <p>INPUT=115VAC/ 60HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current</p>																																					

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																																								
1	OVER LOAD PROTECTION	101 %~ 150 % Protection type : Hiccup mode, recovers automatically after fault condition is removed	I/P: 264VAC I/P: 230VAC I/P: 100VAC O/P:TESTING Ta:25°C	TEST : <table border="1"> <thead> <tr> <th></th> <th>10</th> <th>15</th> <th>20</th> <th>25</th> <th>30</th> <th>35</th> <th>40</th> <th>45</th> <th>50</th> <th>55</th> <th>60</th> <th>65</th> <th>70</th> <th>75</th> <th>80</th> <th>85</th> <th>90</th> <th>95</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Efficiency (%)</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> </tr> <tr> <td>Input Power (W)</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td> </tr> <tr> <td>Output Power (W)</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> <td>88.5</td> </tr> <tr> <td>Input Current (A)</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> <td>0.38</td> </tr> <tr> <td>Output Current (A)</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> </tr> </tbody> </table> PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Efficiency (%)	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	Input Power (W)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	Output Power (W)	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	Input Current (A)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	Output Current (A)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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2	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
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### CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	USB OUTPUT POWER	<p>Single port output</p> <p>Dual port output</p> <p>Triple simultaneous output</p> <p>Quad port output</p> <p>TEST : <u>OK</u></p>		

### COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor ( D to S) or (C to E) Peak Voltage	Q3 Rated: 17A/700 V	AC ON/OFF I/P:High-Line +3V =267V@ 20V 5A 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. Ta:25°C	VDS: (1) 583V (2) 555V (3) 587V (4) 587V (5) 587V (6) 591V (7) 583V

2	P.F.C Transistor ( D to S) or (C to E) Peak Voltage	Q1 Rated: 17A/650 V	AC ON/OFF I/P:High-Line +3V =267 V @ 20V 5A 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) 475V (2) 475V (3) 475V (4) 475V (5) 475V (6) 467V (7) 471V
3	P.F.C DIODE	D2 Rated: 6 A/ 600 V	AC ON/OFF I/P:High-Line +3V =267 V @ 20V 5A 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) 402V (2) 398V (3) 398V (4) 398V
4	Diode Peak Voltage	Q101 /Q102 Rated: 60 A/ 120 V	AC ON/OFF I/P:High-Line +3V =267 V@ 20V 5A 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) 92.5V (2) 92.5V (3) 92.5V (4) 92.5V (5) 92.5V (6) 92.5V (7) 93.3V (8) 90.1V
5	USB_2C Transistor ( D to S) or (C to E) Peak Voltage	Q203 Rated : 119 A/ 40 V  Q204 Rated : 119 A/ 40 V	AC ON/OFF I/P:High-Line +3V =267 V@ 20V 5A 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/	Q203: VDS: (1) 23.2V (2) 24.2V (3) 23.4V (4) 23.4V (5) 23.4V (6) 23.2V (7) 24.6V (8) 22.8V  Q204: VDS: (1) 22.6V (2) 22.6V (3) 22.6V (4) 22.5V (5) 22.3V (6) 22.6V (7) 22.6V (8) 22.6V

			<p>Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Ta:25°C</p>	
6	<p>USB_2A Transistor ( D to S) or (C to E) Peak Voltage</p>	<p>U202 : 36 V</p> <p>U203 Rated : 36 V</p>	<p>AC ON/OFF I/P:High-Line +3V =267 V @ 20V 0.9A (A1) O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Ta:25°C</p>	<p>U202                      U203 VDS:                      VDS:</p> <p>(1) 24.0V                      (1) 22.4V (2) 24.0V                      (2) 21.8V (3) 23.8V                      (3) 22.6V (4) 23.6V                      (4) 22.4V (5) 23.0V                      (5) 22.4V (6) 23.4V                      (6) 22.8V (7) 23.8V                      (7) 22.6V (8) 22.8V                      (8) 22.6V</p>
7	<p>Input Capacitor Voltage</p>	<p>C5 Rated: 82μ / 420 V</p>	<p>I/P:High-Line +3V =267V @ 20V 5A 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)403V (2)399V (3)403V (4)391V</p>
8	<p>Control IC Voltage Test</p>	<p>PWM IC U2 Rated 8 V~ 83 V</p> <p>PFC IC U1 Rated -0.3V~ 30 V</p> <p>O/P IC U100 Rated 4V~ 8.5 V</p>	<p>AC ON/OFF I/P:High-Line +3V =267 V@ 20V 5A O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)NO LOAD VRmin(Low LINE) Ta:25°C</p>	<p>U2 (1) 28.5V (2) 25.7V (3) 25.7V (4) 18.9V</p> <p>U1 (1) 17.7V (2) 17.6V (3) 17.8V (4) 17.5V</p> <p>U100 (1) 8.27V (2) 8.27V (3) 8.27V (4) 8.27V</p>



9	Clamp Diode Peak Voltage	D11 Rated : 1A / 620V	AC ON/OFF I/P : High-Line +3V = 267 V@ 20V 5A O/P : (1) Dynamic Load 90%Duty/1KHz (2)Full load continue Ta : 25°C	(1) 527V (2) 515V
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## ■ SAFETY& E.M.C. TEST

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min	I/P-O/P: 3.6 KVAC/min Ta:25°C	I/P-O/P:1.28mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 600 VDC Ta:25°C	I/P-O/P: 50GΩ NO DAMAGE

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	BS EN/EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD @20V/5A Ta:25°C	■ PASS
2	CONDUCTION	BSEN/EN55032(CISPR32) FCC PART 15 /CISPR22, CAN ICES-3(B)/NMB-3(B) GB/T 9254.1-2021 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	BS EN/EN55032(CISPR32) FCC PART 15 /CISPR22, CAN ICES-3(B)/NMB-3(B) GB/T 9254.1-2021 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	BS EN/EN61000-4-2 AIR : 8KV / Contact : 4KV	I/P : 230 VAC/50HZ O/P :	CRITERIA A
5	E.F.T	BS EN/EN61000-4-4 INPUT : 1KV	C1:20V/2.25A C2:15V/2A A1:20V/0.6A	CRITERIA A
6	SURGE	IEC61000-4-5 L-N : 1KV	A2:12V/1A 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			





		33	Q206	75.6°C	86.6°C
		34	C225	89.9°C	98.9°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )		I/P : 230 VAC O/P : 105%LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR		I/P : 264VAC/100VAC O/P : 100%LOAD Ta= -25°C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 35°C/95 %R.H NO DAMAGE		I/P : 272 VAC O/P : FULL LOAD Ta=35°C/HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03%/°C(0~40°C)		I/P : 230 VAC O/P : FULL LOAD	± 0.01%/°C(0~40°C)
6	STORAGE TEMPERATURE TEST	-20~85°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	-20~35°C		1. Thermal shock Temperature : -25°C~ +40°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 C102 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=35°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 35°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 35°C LIFE TIME			(1) 34358HRS (2) 18881HRS (3) 31698HRS (4) 60399HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 3008.3K hrs min. Telcordia TR/SR-332 (Bellcore) ; 336.4K hrs min. MIL-HDBK-217F (25°C)			
11	Ongoing Reliability Test	I/P : 230VAC O/P : 80% LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours			

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Yuwei	Liutt	Wangdz

2020.10.1 TAG-QA-009