



Test Report: HEP-2300-55

2300W Switching Power Supply for Harsh Environment

■ 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

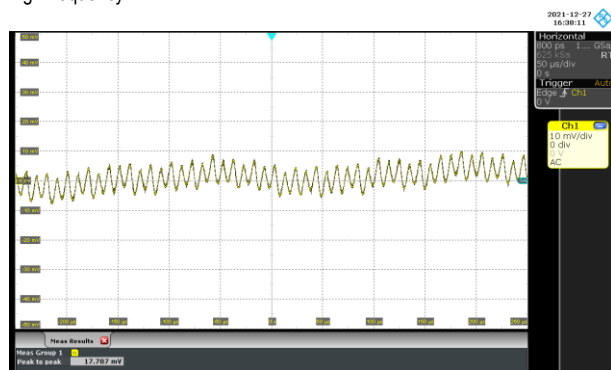
ENVIRONMENT TEST

DESIGN VERIFY TEST

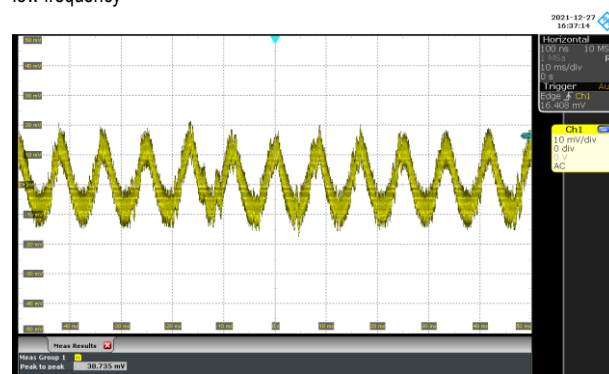
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 39V ~ 57.6V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	37.94V~59.16V/230VAC 37.93V~59.15V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1 : -1%~ +1%	I/P : 90VAC /305VAC O/P:FULL/ MIN. LOAD Ta : 25°C	V1 : -0.01%~ 0%
3	LINE REGULATION (Max)	V1 : -0.5%~ +0.5%	I/P : 220VAC~ 305VAC O/P : FULL LOAD Ta : 25°C	V1 : 0%~ 0%
4	LOAD REGULATION(Max)	V1 : -0.5%~ +0.5%	I/P : 230VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : -0.01%~ 0.09%
5	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	0 %
6	RIPPLE & NOISE(Max)	V1 : 480mVp-p	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 38.73mVp-p

high frequency :



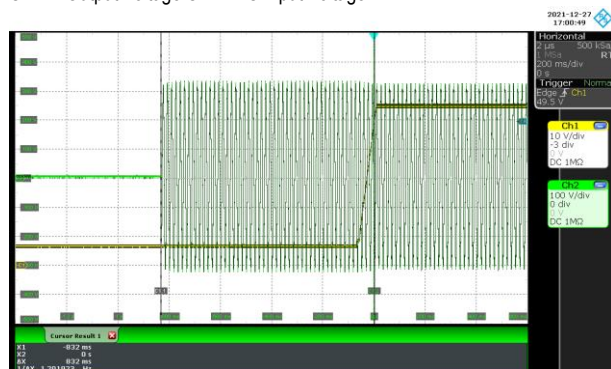
low frequency :

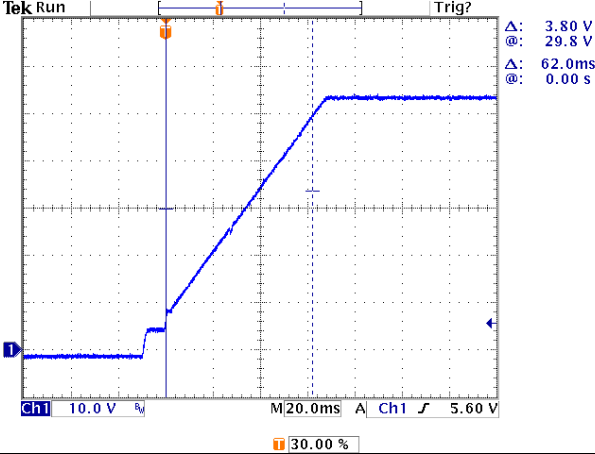
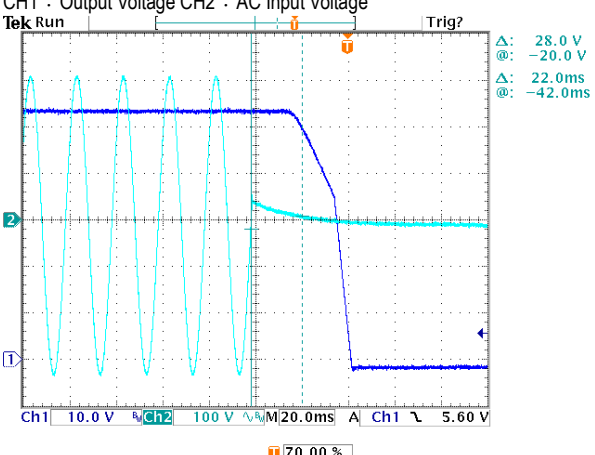
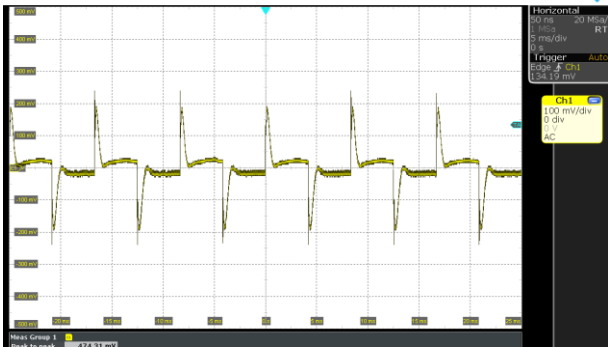
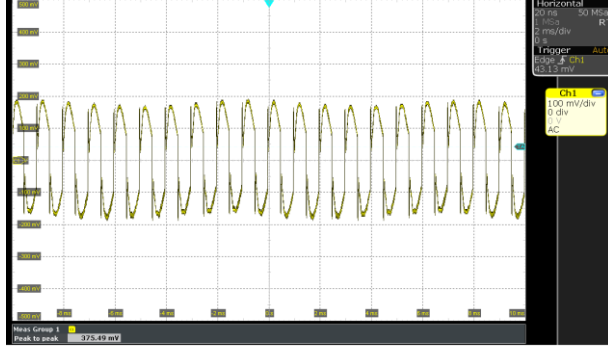


7	SET UP TIME(Max)	230VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 832ms
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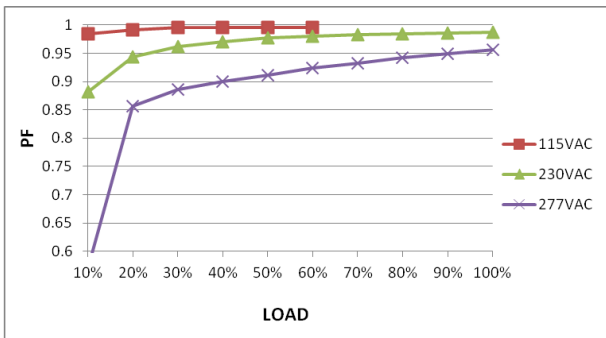
INPUT=230VAC/50HZ @ FULL LOAD

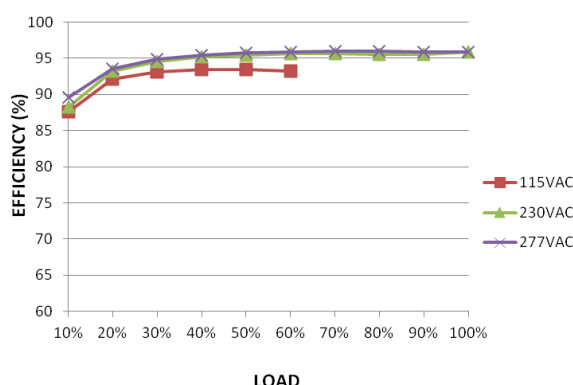
CH1 : Output Voltage CH2 : AC Input Voltage



8	RISE TIME (Max)	230VAC/100ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 62ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage 				
9	HOLD UP TIME (Typ.)	230VAC/12ms @FULL LOAD	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 22 ms@ FULL LOAD
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage 				
10	DYNAMIC LOAD	V1: 5.5Vp-p	I/P : 230VAC O/P : (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta : 25°C	474.31mVp-p 375.49mVp-p
FULL /50% LOAD 50%DUTY / 120HZ  FULL /50% LOAD 50%DUTY / 1KHZ 				

INPUT FUNCTION TEST

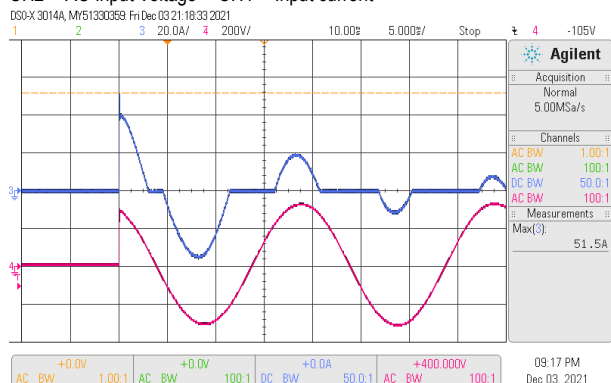
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~305VAC	I/P : TESTING O/P : Derating Load Ta : 25°C	87V~305V
			I/P : LOW-LINE-3V=87 V HIGH-LINE+15%=315 V O/P : FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON : 30 Sec OFF : 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST : OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P : 90 VAC ~305 VAC O/P : FULL~MIN LOAD Ta : 25°C	TEST : OK
3	INPUT CURRENT (Typ.)	277/ 9.3A 230V/ 11A 115V/ 13.3A	I/P : 277 VAC O/P : Full Load I/P : 230 VAC O/P : Full Load I/P : 115 VAC O/P : 60% Load Ta : 25°C	I=9.14A / 277VAC I=10.62A / 230VAC I=12.77 / 115VAC
4	LEAKAGE CURRENT	<1.8mA(peak)/240V <2 mA(peak)/277V	I/P : 264 VAC I/P : 305 VAC O/P : Min LOAD Ta : 25°C	L-FG : 1.28 mA / 264V N-FG : 1.28 mA /264V L-FG : 1.52 mA /305V N-FG : 1.52 mA /305V
5	POWER FACTOR (Typ.)	0.93/277VAC 0.95/230VAC 0.99/115VAC	I/P : 277AC O/P : FULL LOAD I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 60% LOAD Ta : 25°C	PF=0.9540/277VAC PF=0.9848/230VAC PF=0.9957/115VAC
	P.F vs LOAD 			
6	EFFICIENCY(Typ.)	95.5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	95.7%
	EFFICIENCY vs LOAD			



7	INRUSH CURRENT(Typ.)	230V/60A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I =51.5A / 230VAC T50= 1.44 ms /230V
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INPUT=230VAC/50HZ @ FULL LOAD

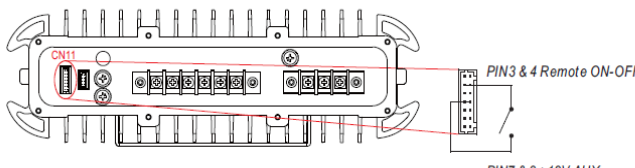
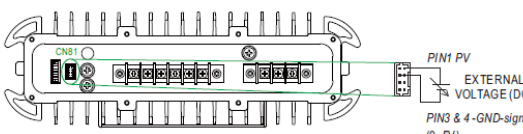
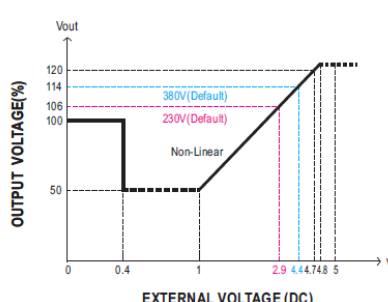
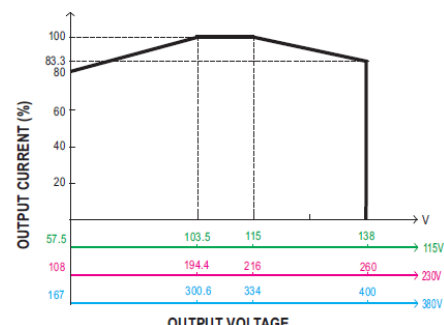
CH2 : AC Input Voltage CH4 : Input current



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~115% PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.	I/P : 305VAC I/P : 90V O/P : TESTING Ta : 25°C	110%/ 305VAC 51.4% /90VAC
2	OVER VOLTAGE PROTECTION	60.5V~69.1V Protection type : Shut down O/P voltage,re-power on to recover.	I/P : 305VAC I/P : 90VAC O/P : MIN LOAD Ta : 25°C	62.2V/ 305VAC 62.2V/ 90VAC
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down O/P voltage,, recovers automatically after temperature goes down	I/P : 305VAC O/P : FULL LOAD I/P : 90VAC O/P : 50% LOAD	O.T.P. Active PASS Shutdown 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 : 305VAC I/P : 90VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE

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><tr><th>AUX</th><th>TOLERANCE</th><th>RIPPLE</th><th>TEST RESULT</th></tr><tr><td>12V / 0.5A</td><td>10.8~13.2 V</td><td>150mVp-p</td><td>11.94V/55mv</td></tr></table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.5A	10.8~13.2 V	150mVp-p	11.94V/55mv									
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12V / 0.5A	10.8~13.2 V	150mVp-p	11.94V/55mv																
2	REMOTE ON/OFF CONTROL	3.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><tr><th>Remote ON-OFF</th><th>Power Supply Status</th></tr><tr><td>Short circuit</td><td>ON</td></tr><tr><td>Open circuit</td><td>OFF</td></tr></table> I/P : 230 VAC O/P : FULL LOAD Ta : 25°C Test Result : <table><tr><th>Between ON/OFF and +5V-AUX</th><th>Power Supply Status</th></tr><tr><td>SW SHORT</td><td>ON</td></tr><tr><td>SW OPEN</td><td>OFF</td></tr></table>	Remote ON-OFF	Power Supply Status	Short circuit	ON	Open circuit	OFF	Between ON/OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF					
Remote ON-OFF	Power Supply Status																		
Short circuit	ON																		
Open circuit	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 100% output voltage is 115/216/334V.  ◎ The rated current should change with the Output Voltage Programming accordingly. I/P : 230 VAC O/P : FULL LOAD Ta : 25°C TEST RESULT : <table><tr><th>MODEL</th><th>PV</th><th><0.4V</th><th>1V</th><th>5V</th></tr><tr><td>SPEC</td><td></td><td>55±5%</td><td>24±5%</td><td>57.6±5%</td></tr><tr><td>Vout</td><td></td><td>55.18V</td><td>23.35V</td><td>58.82V</td></tr></table>	MODEL	PV	<0.4V	1V	5V	SPEC		55±5%	24±5%	57.6±5%	Vout		55.18V	23.35V	58.82V		
MODEL	PV	<0.4V	1V	5V															
SPEC		55±5%	24±5%	57.6±5%															
Vout		55.18V	23.35V	58.82V															

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. OUTPUT CURRENT (%) EXTERNAL VOLTAGE (DC) ① The 100% output current is rated current. ② Maximum operation current <100% is recommended. I/P : 230 VAC O/P : TESTING Ta : 25°C <table><tr><td>ADJ V</td><td><0.4V</td><td>1V</td><td>5V</td></tr><tr><td>SPEC</td><td>46A±5%</td><td>8.35A±10%</td><td>48A±10%</td></tr><tr><td>TEST</td><td>46.05A</td><td>8A</td><td>46A</td></tr></table>			ADJ V	<0.4V	1V	5V	SPEC	46A±5%	8.35A±10%	48A±10%	TEST	46.05A	8A	46A							
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5	DC-OK SIGNAL	The TTL signal out, PSU turn on = 4.5 ~ 5.5V PSU turn off = -0.5V ~ 0.5V Please refer to the Function Manual	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	PSU turn on = 5.12 V PSU turn off = -0.005 V																			
6	LED Indicators	※ LED Status Indicators <table><tr><td>LED</td><td>Description</td></tr><tr><td>● Green</td><td>The power supply functions normally.</td></tr><tr><td>● Red</td><td>Abnormal status (Over temperature protection, Overload protection)</td></tr><tr><td>● Red (Flashing)</td><td>The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/MODBus interface.)</td></tr></table> ※ LED Status Indicators (for Charger) <table><tr><td>LED</td><td>Description</td></tr><tr><td>● Green</td><td>Float (stage 3)</td></tr><tr><td>● Orange</td><td>Charging (stage 1 or stage 2)</td></tr><tr><td>● Red</td><td>Abnormal status (OTP, OLP, Charging timeout.)</td></tr><tr><td>● Red (Flashing)</td><td>The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/MODBus interface.)</td></tr></table>			LED	Description	● Green	The power supply functions normally.	● Red	Abnormal status (Over temperature protection, Overload protection)	● Red (Flashing)	The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/MODBus interface.)	LED	Description	● Green	Float (stage 3)	● Orange	Charging (stage 1 or stage 2)	● Red	Abnormal status (OTP, OLP, Charging timeout.)	● Red (Flashing)	The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/MODBus interface.)	PASS
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CHARGER MODE

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	BOOST CHARGE VOLTAGE	57.6V±0.55V	I/P : 230 VAC O/P : BAT. LOAD Ta : 25°C	57.78V
2	FLOAT CHARGE VOLTAGE	55.2V±0.55V	I/P : 230 VAC O/P : BAT. LOAD Ta : 25°C	55.41V
3	OUTPUT CURRENT	40A	I/P : 230 VAC O/P : BAT. LOAD Ta : 25°C	40.05A

4

1.Charging Curve

- ※ By default, the HEP-2300 operates in power supply mode, and it can be configured to charger mode by PMBus, CANBus, or SBP-001.
- ※ By factory default, this charger performs the default curve which can be programmed via PMBus and CANBus.
- ※ To accommodate the parameters of the charging curve, SBP-001, the smart battery charging programmer designed by MEAN WELL, and a personal computer are needed. Please contact MEAN WELL for details.

※ 2 stage charging curve (default)

Start

Charge Voltage

Charge Current

100%

10%

stage 1

stage 2

Battery Full

Color of LED

Loading Indicator

Status Indicator

Charger fail if charging time exceed charging timeout

State	HEP-2300-55
Constant Current	40A
Vboost	57.6V

© Suitable for lead-acid batteries (flooded, Gel and AGM) and Li-ion batteries (lithium iron and lithium manganese).

※ 3 stage charging curve

Start

Charge Voltage

Charge Current

100%

10%

stage 1

stage 2

stage 3

Color of LED

Loading Indicator

Status Indicator

Charger fail if charging time exceed charging timeout

State	HEP-2300-55
Constant Current	40A
Vboost	57.6V
Vfloat	55.2V

© Suitable for lead-acid batteries (flooded, Gel and AGM) and Li-ion batteries (lithium iron and lithium manganese).

PASS

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/600V VGS : $\pm 30V$	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)CV-1V(CHARGE MODE) I/P : Low-Line -3V = 217V 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)CV-1V(CHARGE MODE) Ta : 25°C	VDS: (1) 533.20V/ (2) 537.15V/ (3) 525.30V/ (4) 529.25V/ (5) 533.20V/ (6) 521.34V/ (7) 529.25V/ (8) 521.34V/ VDS : (1) 537.15V/ (2) 537.15V/ (3) 529.25V/ (4) 529.25V/ (5) 533.20V/ (6) 525.30V/ (7) 521.34V/ (8) 537.15V/
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q66 Rated 40A/650V VGS : $\pm 30V$	I/P : High-Line +3V =308V AC ON/OFF O/P : (1)Full Load	VDS : (1) 572.73V

			(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 = 217V 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℃	(2) 588.54V (3) 564.82V (4) 568.77V (5) 572.73V (6) 568.77V (7) 580.63V VDS: (1) 572.73V (2) 580.63V (3) 572.73V (4) 568.77V (5) 568.77V (6) 552.96V (7) 576.68V
3	P.F.C DIODE	D14 Rated 10A/650V	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/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz I/P : Low-Line -3V = 217V 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℃	(1) 489.72V (2) 505.53V (3) 489.72V (4) 493.68V (1) 489.72V (2) 497.63V (3) 489.72V (4) 485.77V
4	Diode Peak Voltage	Q204 Rated 87A/150V VGS : ± 20V Q216 Rated 87A/150V VGS : ± 20V	AC ON/OFF I/P : High-Line +3V =308V 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)CV-1V(CHARGE MODE) Ta : 25℃	Q204 : VDS : (1) 135.34V (2) 135.34V (3) 139.29V (4) 141.66V (5) 141.66V (6) 143.24V (7) 147.19V (8) 128.22V (9) 139.29V Q216 : VDS : (1) 129.80V (2) 128.22V (3) 128.22V (4) 130.59V (5) 129.8V (6) 132.17V (7) 134.55V (8) 123.48V (9) 130.59V

5	Input Capacitor Voltage	C5 Rated : 220u/450V -40~105°C Surge Voltage 495V	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) 449V (2) 446.32V (3) 449V (4) 445.53V
6	Control IC Voltage Test	PWM IC U900 Rated 8.9 V ~ 15.5V PFC IC U301 Rated 10.8V ~ 27 V O/P IC U203 Rated -0.3V ~37 V MCU IC U701 Rated 2.0V ~3.6V AUX IC U601 Rated 10.5V~25V	AC ON/OFF I/P : High-Line +3V =308V 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	U900 : (1) 13.083V (2) 12.806V (3) 13.241V (4) 12.806V (5) 12.885V U301 : (1) 12.569V (2) 12.372V (3) 12.925V (4) 12.332V (5) 12.411V U203 : (1) 12.253V (2) 12.174V (3) 12.451V (4) 12.134V (5) 12.095V U701 : (1) 3.33V (2) 3.52V (3) 3.33V (4) 3.36V (5) 3.43V U601 : (1) 13.747V (2) 13.826V (3) 13.826V (4) 13.431V (5) 13.51V
8	TOP SWITCHING STAND BY POWER	U601 Rated 3.5 A/ 800 V	AC ON/OFF I/P:High-Line +3V =308V O/P : (1)Full Load (2)Remote On/Off I/P : Low-Line -3V =217V O/P : (1)Full Load (2)Remote On/Off Ta : 25°C	U601 : (1) 572.73V (2) 588.54V (1) 568.77V (2) 592.49V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P : 6KVDC/min I/P-FG : 4KVDC/min O/P-FG : 4KVDC/min	I/P-O/P : 6.6KVDC/min I/P-FG : 4.8KVDC /min O/P-FG : 4.8KVDC /min Ta : 25°C	PASS 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 : 4.3GΩ I/P-FG : >30GΩ O/P-FG : 3.31GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta : 25°C	26 mΩ

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 (CISPR32) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS
3	RADIATION	EN55032 (CISPR32) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS
4	E.S.D	EN61000-4-2 Level 3, 8KV air Level 2, 4KV contact	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 Level 3	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-6-2 INDUSTRY 2KV/Line-Line 4KV/Line-Earth	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 : HEP-2300-55 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	105.4°C
2	Q51	69.8°C	98.0°C
3	Q65	67.2°C	95.9°C
4	Q901	69.2°C	98.3°C
5	Q903	68.3°C	95.2°C
6	Q204	67.5°C	94.9°C
7	Q212	66.8°C	94.1°C
8	T1 (coil)	69.6°C	98.7°C
9	T2 (coil)	67.5°C	95.8°C
10	RT4	65.2°C	94.1°C
11	RT5	64.1°C	92.9°C
12	U201	63.9°C	92.8°C
13	U203	62.7°C	90.5°C
14	U301	63.9°C	92.1°C
15	U302	62.0°C	89.1°C
16	U900	61.2°C	88.1°C
17	C111	67.5°C	95.9°C
18	C115	66.3°C	93.5°C
19	C125	59.8°C	82.0°C
20	C13	67.6°C	94.1°C
21	C553	65.4°C	93.1°C
22	C560	57.5°C	83.9°C
23	C6	58.3°C	85.1°C
24	C9	57.6°C	84.5°C
25	D14	81.4°C	107.5°C
26	L3 C	70.6°C	99.3°C
27	L3 W	72.7°C	102.1°C
28	LF201	63.4°C	90.8°C
29	LF3	67.8°C	96.6°C
30	LF4	67.1°C	95.9°C
31	C130	62.5°C	90.5°C
32	L1 C	70.0°C	99.8°C

			33	L1 W	69.7℃	99.6℃
			34	RT3	58.9℃	85.3℃
			35	R212	69.3℃	97.7℃
			36	RY1	68.7℃	95.6℃
			37	T51	70.1℃	96.8℃
			38	T601 (coil)	68.6℃	95.6℃
			39	U601	74.9℃	100.6℃
			40	D651	68.9℃	95.1℃
			41	D655	73.3℃	100.0℃
			42	D602	75.3℃	103.1℃
			43	U51	68.9℃	97.5℃
			44	U702	55.3℃	81.2℃
			45	RG65	62.6℃	89.4℃
			46	U651	60.7℃	87.1℃
			47	U701	58.1℃	82.9℃
			48	TC	60.3℃	85.3℃
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 93.7%LOAD(55V) Ta : 25℃	TEST : OK		
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/220VAC O/P : 100 %LOAD Ta= -45 °C	TEST : OK		
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50℃/95 %R.H NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK		
5	TEMPERATURE COEFFICIENT	+ - 0.03 %/°C(0~50℃)	I/P : 230 VAC O/P : FULL LOAD	+ - 0.003 %/°C(0~50℃)		
6	STORAGE TEMPERATURE TEST	-40~85℃	1. Thermal shock Temperature : -45℃~ +90℃ 2. Temperature change rate : 25℃ / 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	-40~50℃	1. Thermal shock Temperature : -45℃~ +55℃ 2. Temperature change rate : 25℃ / 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	20~500Hz, 10G 12min./1cycle, 72min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 20~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 10G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25℃			

9	CAPACITOR LIFE CYCLE	SUPPOSE C111 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (1) 261868HRS (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (2) 56207HRS (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (3) 105243HRS (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME (4) 121448HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 478K hrs min. Telcordia SR-332 (Bellcore) ; 44.8K 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 : 55,000 hours

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	VINCENT TSENG

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