



# Test Report: DRP-3200-24

---

3200W Rack Mountable Front End Rectifier

## ■ 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

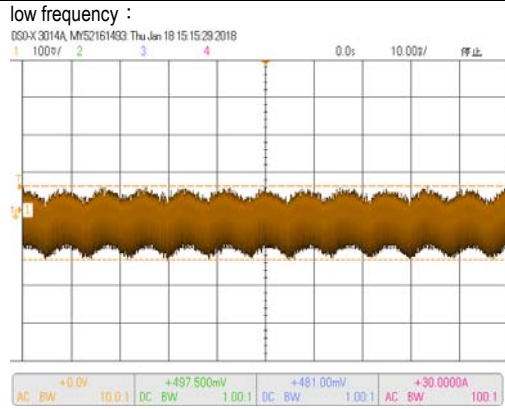
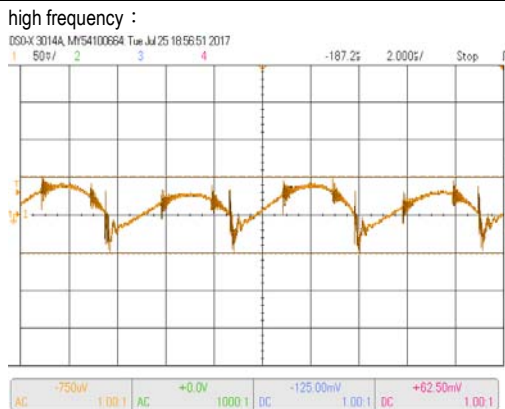
## ■ RELIABILITY TEST

ENVIRONMENT TEST

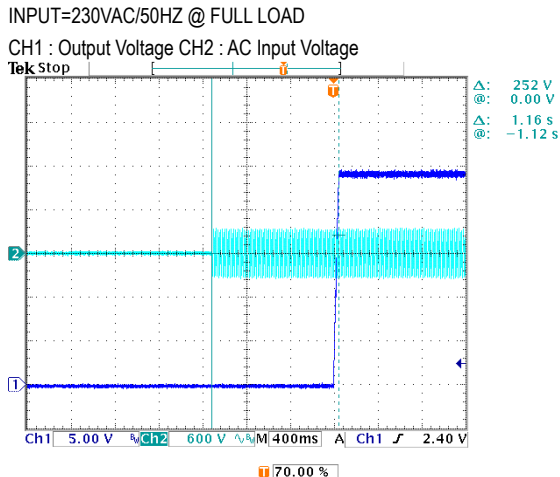
DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 23.5 V~ 30V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	22.86V~30.99V/230VAC 22.86V~30.99V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 1%~-1%	I/P: 180VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.6%~-0.08%
3	LINE REGULATION (Max)	V1: 0.5%~-0.5%	I/P: 180VAC~264VAC O/P:FULL LOAD Ta:25°C	V1:0.04%~-0.04%
4	LOAD REGULATION(Max)	V1: 0.5%~-0.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.2%~-0.24%
5	OVER/UNDERSHOOT TEST	±10%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	<10%
6	RIPPLE & NOISE(Max)	V1: 300mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1 197 mVp-p

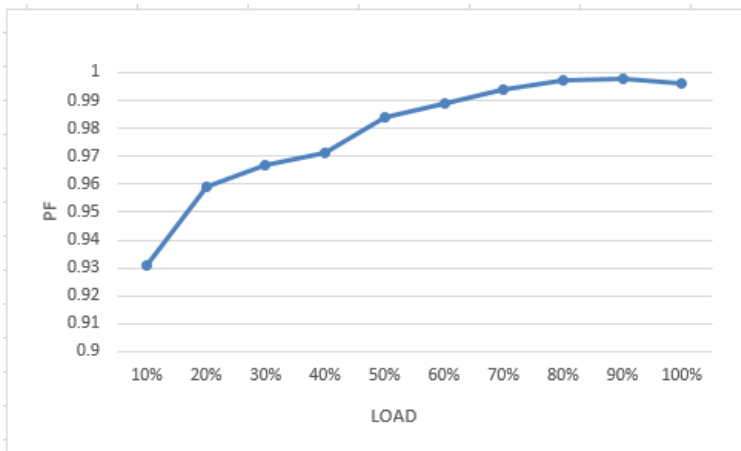


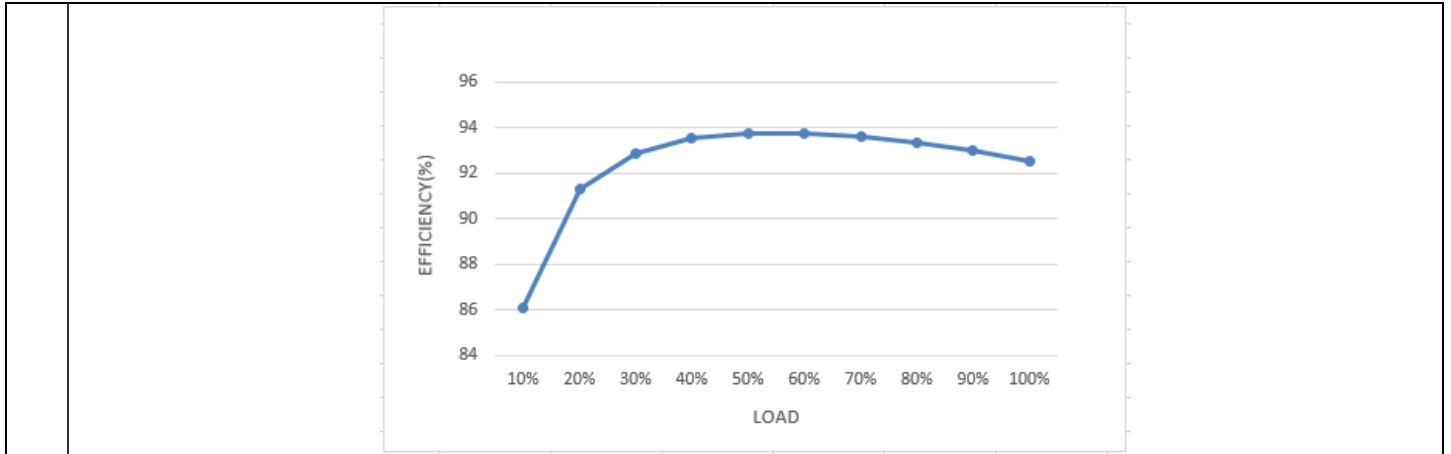
7	SET UP TIME(Max)	230VAC/1500ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 1160 ms
---	------------------	---------------	---	-----------------



<b>8</b> RISE TIME (Max)	230VAC/60ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 41.4ms
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p>			
<b>9</b> HOLD UP TIME (Typ.)	230VAC 75%/ 16ms 230VAC 100%/9ms	I/P : 230 VAC O/P : 75% LOAD O/P : 100% LOAD Ta : 25°C	17.2ms (75% load) 10.4ms (100% load)
<p>INPUT=230VAC/50HZ @75% LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p> <p>INPUT=230VAC/50HZ @100% LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>			
<b>10</b> DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	1010mVp-p(120HZ) 1130mVp-p(1KHZ)
<p>FULL /50% LOAD 50%DUTY / 120HZ</p> <p>FULL /50% LOAD 50%DUTY / 1KHZ</p>			

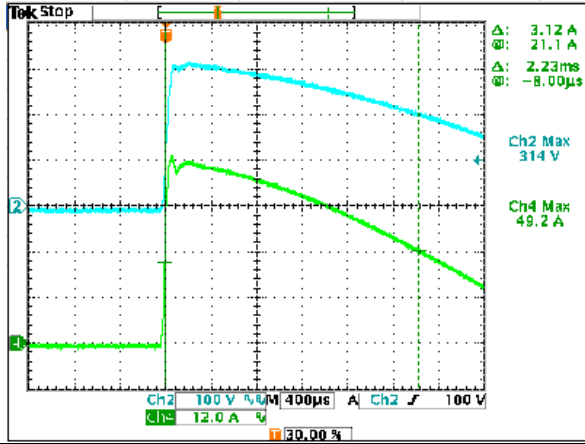
**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																						
1	INPUT VOLTAGE RANGE	90VAC~264VAC	(1)I/P:AC TESTING O/P: FULL / 50% LOAD Ta:25°C	(1)164Vac~264Vac/FULL LOAD 85Vac~264Vac/50%LOAD																						
			I/P: (1)LOW-LINE-3V=87V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (2)230Vac ON: 0.5 Sec OFF: 0.5 Sec 20MIN (3)230Vac ON:3Sec OFF:3Sec 12HOURS ( POWER ON/OFF NO DAMAGE ) Ta:25°C	TEST:OK																						
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:180 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK																						
3	INPUT CURRENT (Typ.)	230V/ 17 A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I =15.32 A/ 230VAC																						
4	LEAKAGE CURRENT	<1.5 mA / 230 VAC	I/P : 230 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.62 mA N-FG : 0.62 mA																						
5	POWER FACTOR (Typ.)	0.97 / 230VAC	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.996/230VAC																						
<p>P.F vs LOAD</p>  <table border="1"> <caption>P.F vs LOAD Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>P.F.</th> </tr> </thead> <tbody> <tr><td>10%</td><td>0.93</td></tr> <tr><td>20%</td><td>0.96</td></tr> <tr><td>30%</td><td>0.97</td></tr> <tr><td>40%</td><td>0.975</td></tr> <tr><td>50%</td><td>0.985</td></tr> <tr><td>60%</td><td>0.99</td></tr> <tr><td>70%</td><td>0.995</td></tr> <tr><td>80%</td><td>0.998</td></tr> <tr><td>90%</td><td>0.998</td></tr> <tr><td>100%</td><td>0.995</td></tr> </tbody> </table>					LOAD (%)	P.F.	10%	0.93	20%	0.96	30%	0.97	40%	0.975	50%	0.985	60%	0.99	70%	0.995	80%	0.998	90%	0.998	100%	0.995
LOAD (%)	P.F.																									
10%	0.93																									
20%	0.96																									
30%	0.97																									
40%	0.975																									
50%	0.985																									
60%	0.99																									
70%	0.995																									
80%	0.998																									
90%	0.998																									
100%	0.995																									
6	EFFICIENCY(Typ.)	93.5% / (75%LOAD)	I/P:230 VAC O/P:75%LOAD Ta:25°C	93.63%																						
	EFFICIENCY vs LOAD																									



7	INRUSH CURRENT(Typ.)	230V/55 A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=49.2A/ 230VAC T50=2230 us/230V
---	----------------------	-------------------------	---	-------------------------------------

INPUT=230VAC/50HZ @ FULL LOAD  
CH4 : Input current CH2: input voltage

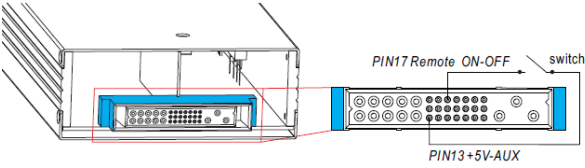


## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105 %~ 115 %  PROTECTION TYPE : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 180VAC O/P: TESTING Ta:25°C	110.45%/ 264VAC 110.45%/ 230VAC 110.22%/180VAC  PROTECTION TYPE : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover
2	OVER VOLTAGE PROTECTION	31.5 V~ 37.5 V  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	33.35V/ 264VAC 33.33V/ 230VAC 33.35V/ 90VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE  PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 180VAC O/P: FULL LOAD	O.T.P. Active ROTECTION 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, shut down O/P voltage 5 sec. after O/P voltage is down low, 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, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover
---	------------------	--	--	--

## CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	AUXILIARY POWER (AUX)	1.Auxiliary voltage output, 10.6~13.2V, referenced to GND-AUX (pin2). The maximum load current is 0.8A. This output has the built-in "Oring diodes" and is not controlled by "Remote ON-OFF." 2.Auxiliary voltage output, 4.5~5.5V, referenced to GND-AUX (pin2). The maximum load current is 0.3A. This output has the built-in "Oring diodes" and is not controlled by "Remote ON-OFF"  I/P: 230 VAC O/P:FULL LOAD Ta:25°C  Test Result : <table border="1" data-bbox="507 929 1342 1068"> <thead> <tr> <th>AUX</th> <th>TOLERANCE</th> <th>RIPPLE</th> <th>TEST RESULT</th> </tr> </thead> <tbody> <tr> <td>12V / 0.8A</td> <td>10.8~13.2 V</td> <td>450mVp-p</td> <td>12.128V /0.8A 121 mVp-p</td> </tr> <tr> <td>5V / 0.3A</td> <td>4.5 ~ 5.5V</td> <td>150mVp-p</td> <td>4.71V/0.3A 117 mVp-p</td> </tr> </tbody> </table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.8A	10.8~13.2 V	450mVp-p	12.128V /0.8A 121 mVp-p	5V / 0.3A	4.5 ~ 5.5V	150mVp-p	4.71V/0.3A 117 mVp-p		
AUX	TOLERANCE	RIPPLE	TEST RESULT													
12V / 0.8A	10.8~13.2 V	450mVp-p	12.128V /0.8A 121 mVp-p													
5V / 0.3A	4.5 ~ 5.5V	150mVp-p	4.71V/0.3A 117 mVp-p													
2	REMOTE CONTROL ON/OFF	The power supply can be turned ON/OFF individually or along with other units by using the "Remote ON-OFF" function.    I/P: 230 VAC O/P:FULL LOAD Ta:25°C  Test Result : <table border="1" data-bbox="427 1451 976 1585"> <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" data-bbox="1054 1189 1490 1283"> <thead> <tr> <th>Between Remote ON-OFF and +5V-AUX</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>Switch Short</td> <td>ON</td> </tr> <tr> <td>Switch Open</td> <td>OFF</td> </tr> </tbody> </table>	Between Remote ON-OFF and +5V-AUX	Power Supply Status	Switch Short	ON	Switch Open	OFF
Between ON/OFF and +5V-AUX	Power Supply Status															
SW SHORT	ON															
SW OPEN	OFF															
Between Remote ON-OFF and +5V-AUX	Power Supply Status															
Switch Short	ON															
Switch Open	OFF															
3	REMOTE SENSE	S+ / S- >0.5V Compensate voltage drop on the load wiring up to 0.5V.	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	> 0.5 V												

<p>4</p>	<p>ALARM SIGNAL</p>	<p>1. DC OK SIGNAL          High (4.5 ~ 5.5V) : When the <math>V_{out} \leq 80\% \pm 5\%</math>.          Low (-0.5 ~ 0.5V) : When <math>V_{out} \geq 80\% \pm 5\%</math>.          The maximum sourcing current is 10mA and only for output.           I/P: 230 VAC          O/P: FULL LOAD          Ta: 25°C           Test Result :</p> <table border="1"> <thead> <tr> <th>Vout</th> <th>DC OK SIGNAL</th> </tr> </thead> <tbody> <tr> <td><math>V_{out} \leq 75\%</math></td> <td>4.98V</td> </tr> <tr> <td><math>V_{out} \geq 85\%</math></td> <td>0.0081v</td> </tr> </tbody> </table>	Vout	DC OK SIGNAL	$V_{out} \leq 75\%$	4.98V	$V_{out} \geq 85\%$	0.0081v	<p>2. AC OK SIGNAL          High (4.5 ~ 5.5V) : When the input voltage is <math>\geq 87V_{rms}</math>.          Low (-0.5 ~ 0.5V) : When the input voltage is <math>\leq 75V_{rms}</math>.          The maximum sourcing current is 10mA and only for output.           I/P: 230 VAC          O/P: FULL LOAD          Ta: 25°C           Test Result :</p> <table border="1"> <thead> <tr> <th>Vin</th> <th>DC OK SIGNAL</th> </tr> </thead> <tbody> <tr> <td><math>VAC \geq 87V_{rms}</math></td> <td>4.98V</td> </tr> <tr> <td><math>VAC \leq 75V_{rms}</math></td> <td>-0.035V</td> </tr> </tbody> </table>	Vin	DC OK SIGNAL	$VAC \geq 87V_{rms}$	4.98V	$VAC \leq 75V_{rms}$	-0.035V						
Vout	DC OK SIGNAL																				
$V_{out} \leq 75\%$	4.98V																				
$V_{out} \geq 85\%$	0.0081v																				
Vin	DC OK SIGNAL																				
$VAC \geq 87V_{rms}$	4.98V																				
$VAC \leq 75V_{rms}$	-0.035V																				
		<p>3. T-ALARM          High (4.5 ~ 5.5V) : When the internal temperature exceeds the limit of temperature alarm, or when Fan fails.          Low (-0.1 ~ 0.5V) : When the internal temperature is normal, and when Fan works normally.          The maximum sourcing current is 10mA and only for output           I/P: 230 VAC          O/P: FULL LOAD          Ta: 25°C           Test Result :</p> <table border="1"> <thead> <tr> <th>P.SU STATUS</th> <th>Vo</th> <th>T-ALARM SPEC</th> <th>T-ALARM TEST</th> </tr> </thead> <tbody> <tr> <td>NORMAL</td> <td>100%±2%</td> <td>-0.1 ~ 0.5V</td> <td>0.0081v</td> </tr> <tr> <td>OTP</td> <td>0V</td> <td>4.5~5.5V</td> <td>4.961V</td> </tr> <tr> <td>FAN LOCK</td> <td>0V</td> <td>4.5~5.5V</td> <td>4.961V</td> </tr> </tbody> </table>	P.SU STATUS	Vo	T-ALARM SPEC	T-ALARM TEST	NORMAL	100%±2%	-0.1 ~ 0.5V	0.0081v	OTP	0V	4.5~5.5V	4.961V	FAN LOCK	0V	4.5~5.5V	4.961V			
P.SU STATUS	Vo	T-ALARM SPEC	T-ALARM TEST																		
NORMAL	100%±2%	-0.1 ~ 0.5V	0.0081v																		
OTP	0V	4.5~5.5V	4.961V																		
FAN LOCK	0V	4.5~5.5V	4.961V																		
<p>5</p>	<p>OUTPUT VOLTAGE PROGRAMMABLE (PV)</p>	<p>※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed to 50~125% of the nominal voltage by applying EXTERNAL VOLTAGE.</p> <p>EXTERNAL VOLTAGE (DC) <math>\rightarrow</math> PIN27 PV    PIN29 -V(signal)</p> <p>⊙ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="422 1400 790 1691"> <p>Graph 1: Output Voltage (%) vs External Voltage (DC). The output voltage is constant at 100% for external voltages up to 0.4V, then drops to 50% at 1V, and rises linearly to 125% at 4.7V.</p> </div> <div data-bbox="821 1422 1276 1657"> <p>Graph 2: Output Current (%) vs Output Voltage (%). The output current is constant at 80% for output voltages from 50% to 90%, then rises to 100% at 95%, stays at 100% until 100%, and then drops to 80% at 125%.</p> </div> </div> <p>⊙ The rated current should change with the Output Voltage Programming accordingly.          ⊙ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section.</p> <p>I/P: 230 VAC          O/P: FULL LOAD          Ta: 25°C          TEST RESULT :</p> <table border="1"> <thead> <tr> <th>MODEL \ PV</th> <th>&lt;0.3V</th> <th>1V</th> <th>3.435V</th> <th>4.7V</th> <th>5V</th> </tr> </thead> <tbody> <tr> <td>SPEC</td> <td>24V±5%</td> <td>12V±5%</td> <td>24V±5%</td> <td>30V±5%</td> <td>30V±5%</td> </tr> <tr> <td>Vout</td> <td>24.03V</td> <td>12.063V</td> <td>24.068V</td> <td>30.47V</td> <td>30.99V</td> </tr> </tbody> </table>		MODEL \ PV	<0.3V	1V	3.435V	4.7V	5V	SPEC	24V±5%	12V±5%	24V±5%	30V±5%	30V±5%	Vout	24.03V	12.063V	24.068V	30.47V	30.99V
MODEL \ PV	<0.3V	1V	3.435V	4.7V	5V																
SPEC	24V±5%	12V±5%	24V±5%	30V±5%	30V±5%																
Vout	24.03V	12.063V	24.068V	30.47V	30.99V																

**6** OUTPUT CURRENT PROGRAMMABLE (PC)

※ The constant current level can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.

EXTERNAL VOLTAGE (DC)  $\text{PIN26 PC}$   $\text{PIN29 -V(signal)}$

⊙ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section.

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	110.37%	21.2%	100%	102.25%

## COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 52A/600V  Q3 Rated 52A/600V	I/P: High-Line +3V = 267V AC ON/OFF 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. PV=1V (8) 100% LOAD (9) 50% LOAD (10) 10% LOAD	Q1: Q3 VDS: VDS: (1) 477 V (1) 493 V (2) 481 V (2) 501 V (3) 489 V (3) 493 V (4) 493 V (4) 497 V (5) 497 V (5) 501 V (6) 493 V (6) 493 V (7) 501 V (7) 493 V (8) 477 V (8) 497 V (9) 469 V (9) 493 V (10) 433 V (10) 413 V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 900 Rated 52 A/600V	I/P: High-Line +3V = 267 V AC ON/OFF	Q900: Q902: VDS: VDS:



		Q 902 Rated 52 A/600V	<p>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.</p>	<p>(1)505V (2)505V (3)505V (4)501V (5)503V (6)473V (7)477V</p>	<p>(1)493V (2)493V (3)491V (4)493V (5)497V (6)477V (7)457V</p>
3	P.F.C DIODE	D8 Rated 16 A/600V	<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 Ta:25°C</p>	<p>(1) 441V (2) 449V (3) 421V (4) 421V</p>	
4	Diode Peak Voltage	<p>Q101 Rated 100 A/100 V</p> <p>Q104 Rated 100 A/100 V</p> <p>Q107 Rated 100 A/100 V</p> <p>Q110 Rated 100 A/100 V</p>	<p>I/P:High-Line +3V =267 V AC ON/OFF 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).NO LOAD (9) burst mode</p>	<p>Q101: VDS: (1)85.7V (2)95V (3)68.8V (4)68.8V (5)68.8V (6)68V (7)67.2V (8)68V (9)58.3</p> <p>Q107: VDS: (1)77.7V (2)96.2V (3)66.5V (4)68.1V (5)68.6V (6)69.4V (7)68.6V (8)69.4V (9)71V</p>	<p>Q104: VDS: (1)72.1V (2)83.4V (3)64.9V (4)64.1V (5)64.9V (6)62.5V (7)64.1V (8)71.3V (9)60.3V</p> <p>Q110: VDS: (1)80.2V (2)93.1V (3)74.6V (4)73.4V (5)68.2V (6)69.8V (7)70.5V (8)61.8V (9)65.8V</p>
5	Input Capacitor Voltage	C5 Rated: 330μ/ 450V 105 °C	<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)432V (2)424V (3)448V (4) 432V</p>	
6	Control IC Voltage Test	<p>PWM IC U201 Rated 6.5 V~30V</p> <p>PFC IC U900 Rated 4.5V~20 V</p>	<p>I/P:High-Line +3V =267 V AC ON/OFF O/P:(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P.</p>	<p>U201 (1) 14.9V (2) 15.1V (3) 15.1 (4) 12.7V</p>	<p>U900 (1) 13.9V (2)14.5V (3)14.9V (4)13.5V</p>

			(5)NO LOAD VRMIN.(LOW LINE) Ta:25°C	(5) 13.3V (5)12.7V
7	TOP SWITCHING STAND BY POWER	U71 Rate 20 A/ 800V	I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Remote On/Off Ta:25°C	(1) 645V (2) 645V

## SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8 KVAC/min Ta:25°C	I/P-O/P: 12.04 mA I/P-FG: 10.73mA O/P-FG: 23 mA 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: 13 GΩ I/P-FG: 2.86GΩ O/P-FG: 5 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	25mΩ

## E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:100% LOAD Ta:25°C	Test by certified Lab
2	CONDUCTION	EN55022 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	Test by certified Lab
3	RADIATION	EN55022 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	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 : DRP-3200-24																																																																																																																																																																										
		1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD																																																																																																																																																																										
		2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD																																																																																																																																																																										
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25°C</th> <th>HIGH AMBIENT Ta= 50°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>63.0°C</td><td>86.4°C</td></tr> <tr><td>2</td><td>RY1</td><td>44.2°C</td><td>67.6°C</td></tr> <tr><td>3</td><td>D7</td><td>68.4°C</td><td>92.1°C</td></tr> <tr><td>4</td><td>D8</td><td>62.7°C</td><td>86.8°C</td></tr> <tr><td>5</td><td>T3</td><td>36.0°C</td><td>59.6°C</td></tr> <tr><td>6</td><td>U900</td><td>41.9°C</td><td>64.6°C</td></tr> <tr><td>7</td><td>Q900</td><td>64.2°C</td><td>87.7°C</td></tr> <tr><td>8</td><td>Q902</td><td>53.9°C</td><td>77.9°C</td></tr> <tr><td>9</td><td>C5</td><td>31.9°C</td><td>53.9°C</td></tr> <tr><td>10</td><td>U902</td><td>51.3°C</td><td>74.5°C</td></tr> <tr><td>11</td><td>Q1</td><td>63.0°C</td><td>87.0°C</td></tr> <tr><td>12</td><td>Q3</td><td>54.3°C</td><td>77.4°C</td></tr> <tr><td>13</td><td>T1-2</td><td>68.2°C</td><td>90.7°C</td></tr> <tr><td>14</td><td>T1-1</td><td>58.4°C</td><td>80.8°C</td></tr> <tr><td>15</td><td>T2-2</td><td>65.0°C</td><td>87.3°C</td></tr> <tr><td>16</td><td>T2-1</td><td>58.7°C</td><td>80.8°C</td></tr> <tr><td>17</td><td>T301</td><td>30.6°C</td><td>53.3°C</td></tr> <tr><td>18</td><td>U71</td><td>38.6°C</td><td>61.4°C</td></tr> <tr><td>19</td><td>U201</td><td>45.1°C</td><td>67.9°C</td></tr> <tr><td>20</td><td>C111</td><td>59.2°C</td><td>81.0°C</td></tr> <tr><td>21</td><td>C121</td><td>52.4°C</td><td>74.9°C</td></tr> <tr><td>22</td><td>C115</td><td>55.4°C</td><td>78.2°C</td></tr> <tr><td>23</td><td>C116</td><td>53.6°C</td><td>76.2°C</td></tr> <tr><td>24</td><td>Q401</td><td>73.9°C</td><td>99.6°C</td></tr> <tr><td>25</td><td>Q411</td><td>85.1°C</td><td>107.7°C</td></tr> <tr><td>26</td><td>Q101</td><td>66.3°C</td><td>89.9°C</td></tr> <tr><td>27</td><td>Q108</td><td>66.7°C</td><td>89.9°C</td></tr> <tr><td>28</td><td>U425</td><td>60.0°C</td><td>83.0°C</td></tr> <tr><td>29</td><td>RT90</td><td>40.0°C</td><td>63.4°C</td></tr> <tr><td>30</td><td>U903</td><td>31.3°C</td><td>54.8°C</td></tr> <tr><td>31</td><td>U501</td><td>50.8°C</td><td>74.0°C</td></tr> <tr><td>32</td><td>RG76</td><td>91.6°C</td><td>114.4°C</td></tr> <tr><td>33</td><td>L1</td><td>38.4°C</td><td>61.1°C</td></tr> <tr><td>34</td><td>L3</td><td>56.8°C</td><td>78.9°C</td></tr> <tr><td>35</td><td>R900</td><td>42.5°C</td><td>66.1°C</td></tr> <tr><td>36</td><td>ZR2</td><td>39.7°C</td><td>63.4°C</td></tr> <tr><td>37</td><td>LF1</td><td>51.4°C</td><td>75.4°C</td></tr> <tr><td>38</td><td>C2</td><td>41.5°C</td><td>65.2°C</td></tr> <tr><td>39</td><td>C10</td><td>47.0°C</td><td>70.6°C</td></tr> <tr><td>40</td><td>ZR1</td><td>46.4°C</td><td>69.9°C</td></tr> <tr><td>41</td><td>RT1</td><td>37.0°C</td><td>60.6°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 25°C	HIGH AMBIENT Ta= 50°C	1	BD1	63.0°C	86.4°C	2	RY1	44.2°C	67.6°C	3	D7	68.4°C	92.1°C	4	D8	62.7°C	86.8°C	5	T3	36.0°C	59.6°C	6	U900	41.9°C	64.6°C	7	Q900	64.2°C	87.7°C	8	Q902	53.9°C	77.9°C	9	C5	31.9°C	53.9°C	10	U902	51.3°C	74.5°C	11	Q1	63.0°C	87.0°C	12	Q3	54.3°C	77.4°C	13	T1-2	68.2°C	90.7°C	14	T1-1	58.4°C	80.8°C	15	T2-2	65.0°C	87.3°C	16	T2-1	58.7°C	80.8°C	17	T301	30.6°C	53.3°C	18	U71	38.6°C	61.4°C	19	U201	45.1°C	67.9°C	20	C111	59.2°C	81.0°C	21	C121	52.4°C	74.9°C	22	C115	55.4°C	78.2°C	23	C116	53.6°C	76.2°C	24	Q401	73.9°C	99.6°C	25	Q411	85.1°C	107.7°C	26	Q101	66.3°C	89.9°C	27	Q108	66.7°C	89.9°C	28	U425	60.0°C	83.0°C	29	RT90	40.0°C	63.4°C	30	U903	31.3°C	54.8°C	31	U501	50.8°C	74.0°C	32	RG76	91.6°C	114.4°C	33	L1	38.4°C	61.1°C	34	L3	56.8°C	78.9°C	35	R900	42.5°C	66.1°C	36	ZR2	39.7°C	63.4°C	37	LF1	51.4°C	75.4°C	38	C2	41.5°C	65.2°C	39	C10	47.0°C	70.6°C	40	ZR1	46.4°C	69.9°C	41	RT1	37.0°C	60.6°C		
		NO	Position	ROOM AMBIENT Ta= 25°C	HIGH AMBIENT Ta= 50°C																																																																																																																																																																							
		1	BD1	63.0°C	86.4°C																																																																																																																																																																							
		2	RY1	44.2°C	67.6°C																																																																																																																																																																							
		3	D7	68.4°C	92.1°C																																																																																																																																																																							
		4	D8	62.7°C	86.8°C																																																																																																																																																																							
		5	T3	36.0°C	59.6°C																																																																																																																																																																							
		6	U900	41.9°C	64.6°C																																																																																																																																																																							
		7	Q900	64.2°C	87.7°C																																																																																																																																																																							
		8	Q902	53.9°C	77.9°C																																																																																																																																																																							
		9	C5	31.9°C	53.9°C																																																																																																																																																																							
		10	U902	51.3°C	74.5°C																																																																																																																																																																							
		11	Q1	63.0°C	87.0°C																																																																																																																																																																							
		12	Q3	54.3°C	77.4°C																																																																																																																																																																							
		13	T1-2	68.2°C	90.7°C																																																																																																																																																																							
		14	T1-1	58.4°C	80.8°C																																																																																																																																																																							
		15	T2-2	65.0°C	87.3°C																																																																																																																																																																							
		16	T2-1	58.7°C	80.8°C																																																																																																																																																																							
		17	T301	30.6°C	53.3°C																																																																																																																																																																							
		18	U71	38.6°C	61.4°C																																																																																																																																																																							
		19	U201	45.1°C	67.9°C																																																																																																																																																																							
		20	C111	59.2°C	81.0°C																																																																																																																																																																							
		21	C121	52.4°C	74.9°C																																																																																																																																																																							
		22	C115	55.4°C	78.2°C																																																																																																																																																																							
		23	C116	53.6°C	76.2°C																																																																																																																																																																							
		24	Q401	73.9°C	99.6°C																																																																																																																																																																							
		25	Q411	85.1°C	107.7°C																																																																																																																																																																							
		26	Q101	66.3°C	89.9°C																																																																																																																																																																							
		27	Q108	66.7°C	89.9°C																																																																																																																																																																							
		28	U425	60.0°C	83.0°C																																																																																																																																																																							
		29	RT90	40.0°C	63.4°C																																																																																																																																																																							
		30	U903	31.3°C	54.8°C																																																																																																																																																																							
		31	U501	50.8°C	74.0°C																																																																																																																																																																							
		32	RG76	91.6°C	114.4°C																																																																																																																																																																							
		33	L1	38.4°C	61.1°C																																																																																																																																																																							
		34	L3	56.8°C	78.9°C																																																																																																																																																																							
		35	R900	42.5°C	66.1°C																																																																																																																																																																							
		36	ZR2	39.7°C	63.4°C																																																																																																																																																																							
		37	LF1	51.4°C	75.4°C																																																																																																																																																																							
38	C2	41.5°C	65.2°C																																																																																																																																																																									
39	C10	47.0°C	70.6°C																																																																																																																																																																									
40	ZR1	46.4°C	69.9°C																																																																																																																																																																									
41	RT1	37.0°C	60.6°C																																																																																																																																																																									
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230 VAC O/P : 109 % LOAD Ta : 25°C	TEST : OK																																																																																																																																																																								



3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230VAC /180VAC O/P : 100 % LOAD Ta= -30°C/-25°C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C 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(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.0016 %/°C(0~50°C)
6	STORAGE TEMPERATURE TEST	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		OK
7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C~ +55°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		OK
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK
9	CAPACITOR LIFE CYCLE	SUPPOSE C111 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= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME		(1) 84676.8HRS (2) 18691HRS (3) 88819HRS (4) 237199HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 176.1K hrs min. Telcordia SR-332 (Bellcore) ; 44.5K hrs min. MIL-HDBK-217F (25°C)		
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50°C		

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