



# Test Report : DDRH-45-24

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45W High Reliable 150~1500Vdc Ultra Wide Input DC-DC Converter

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

## ■ SAFETY TEST

Safety Test

## ■ RELIABILITY TEST

Environment Test

Other

## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDITC
1	VOLTAGE ACCURACY	-2.0% ~ +2.0 %	I/P:800VDC O/P:FULL LOAD Ta:25°C	+0.10%	P
2	RIPPLE & NOISE	100 mVp-p	I/P:800VDC O/P:FULL LOAD Ta:25°C	75mV	P
3	LINE REGULATION	-1.0% ~ +1.0%	I/P:150VDC~1500VDC O/P: FULL LOAD Ta:25°C	+0.02% ~ -0.01%	P
4	LOAD REGULATION	-1.0% ~ +1.0%	I/P:800VDC O/P:10% LOAD~FULL LOAD Ta:25°C	+0.02% ~ -0.03%	P
5	HOLD UP TIME	20ms min.	I/P:800VDC O/P:FULL LOAD Ta:25°C	30.8ms	P
6	SETUP TIME	2s max.	I/P:800VDC O/P: FULL LOAD Ta:25°C	132ms	P

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDITC
1	INPUT VOLTAGE RANGE	150 VDC ~1500 VDC	I/P:TESTING O/P:FULL LOAD Ta:25°C	119.0VDC ~1500 VDC	P
2	EFFICIENCY	86%	I/P:800VDC O/P:FULL LOAD Ta:25°C	87.03%	P
3	DC CURRENT	75mA / FULL LOAD 0.2mA / NO LOAD	I/P:800VDC O/P:NO / FULL LOAD Ta:25°C	64.5mA / FULL LOAD 0.183 mA / NO LOAD	P

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDITC
1	SHORT PROTECTION	CONTINUOUS	I/P:1500VDC O/P:FULL LOAD Ta:25°C	HICCUP MODE AUTO-RECOVER	P
2	OVER LOAD PROTECTION	110% ~ 300%	I/P:800VDC O/P:TESTING Ta:25°C	182.4% HICCUP MODE AUTO-RECOVER	P
3	OVER VOLTAGE PROTECTION	YES	I/P:800VDC O/P: MIN LOAD Ta:25°C	HICCUP MODE AUTO-RECOVER	P
4	DC INPUT REVERSE POLARITY	NO DAMAGE	I/P:800VDC O/P: FULL LOAD Ta:25°C	NO DAMAGE	P
5	UNDER VOLTAGE LOCKOUT	START-UP VOLTAGE 132Vdc(max) SHUTDOWN VOLTAGE 121Vdc(min)	I/P: TESTING O/P: FULL LOAD Ta:25°C	130.5VDC 119.0VDC	P

## SAFETY TEST

### SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDITC
1	WITHSTAND VOLTAGE	I/P-O/P:4.0KVAC/min	I/P-O/P:4.0KVAC/min Ta:25°C	I/P-O/P: 0.002mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>1000MΩ	I/P-O/P:500 VDC Ta:25°C	I/P-O/P>1000MΩ NO DAMAGE	P

## RELIABILITY TEST

### ENVIRONMENT TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDITC																																																																																																									
1	TEMPERATURE RISE TEST	1. ROOM AMBIENT BURN-IN : 4HRS I/P:800VDC O/P:FULL LOAD Ta=25°C 2. HIGH AMBIENT BURN-IN : 4HRS I/P:800VDC O/P:FULL LOAD Ta=50°C 3. HIGH AMBIENT BURN-IN : 4HRS I/P:800VDC O/P:50% LOAD Ta=70°C			P																																																																																																									
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr><td>1</td><td>Ta</td><td>25.0°C</td><td>50.0°C</td><td>70.0°C</td></tr> <tr><td>2</td><td>C101</td><td>36.5°C</td><td>61.5°C</td><td>77.4°C</td></tr> <tr><td>3</td><td>C102</td><td>36.9°C</td><td>61.9°C</td><td>77.7°C</td></tr> <tr><td>4</td><td>C103</td><td>36.0°C</td><td>61.0°C</td><td>77.0°C</td></tr> <tr><td>5</td><td>C104</td><td>35.4°C</td><td>60.4°C</td><td>76.6°C</td></tr> <tr><td>6</td><td>C105</td><td>40.6°C</td><td>65.6°C</td><td>79.9°C</td></tr> <tr><td>7</td><td>C108</td><td>38.4°C</td><td>63.4°C</td><td>78.5°C</td></tr> <tr><td>8</td><td>C202</td><td>46.2°C</td><td>71.2°C</td><td>81.9°C</td></tr> <tr><td>9</td><td>C203</td><td>45.3°C</td><td>70.3°C</td><td>81.1°C</td></tr> <tr><td>10</td><td>C207</td><td>46.2°C</td><td>71.2°C</td><td>81.8°C</td></tr> <tr><td>11</td><td>Q101</td><td>35.9°C</td><td>60.9°C</td><td>77.0°C</td></tr> <tr><td>12</td><td>Q102</td><td>48.3°C</td><td>73.3°C</td><td>85.3°C</td></tr> <tr><td>13</td><td>Q103</td><td>48.8°C</td><td>73.8°C</td><td>85.7°C</td></tr> <tr><td>14</td><td>T2</td><td>45.0°C</td><td>70.0°C</td><td>83.0°C</td></tr> <tr><td>15</td><td>BD1</td><td>34.7°C</td><td>59.7°C</td><td>76.1°C</td></tr> <tr><td>16</td><td>CY2</td><td>44.9°C</td><td>69.9°C</td><td>81.7°C</td></tr> <tr><td>17</td><td>T1</td><td>49.2°C</td><td>74.2°C</td><td>84.9°C</td></tr> <tr><td>18</td><td>PH1</td><td>39.9°C</td><td>64.9°C</td><td>79.0°C</td></tr> <tr><td>19</td><td>D201</td><td>60.1°C</td><td>85.1°C</td><td>88.9°C</td></tr> <tr><td>20</td><td>CASE</td><td>41.7°C</td><td>66.7°C</td><td>80.4°C</td></tr> </tbody> </table>				NO	Position	1	2	3	1	Ta	25.0°C	50.0°C	70.0°C	2	C101	36.5°C	61.5°C	77.4°C	3	C102	36.9°C	61.9°C	77.7°C	4	C103	36.0°C	61.0°C	77.0°C	5	C104	35.4°C	60.4°C	76.6°C	6	C105	40.6°C	65.6°C	79.9°C	7	C108	38.4°C	63.4°C	78.5°C	8	C202	46.2°C	71.2°C	81.9°C	9	C203	45.3°C	70.3°C	81.1°C	10	C207	46.2°C	71.2°C	81.8°C	11	Q101	35.9°C	60.9°C	77.0°C	12	Q102	48.3°C	73.3°C	85.3°C	13	Q103	48.8°C	73.8°C	85.7°C	14	T2	45.0°C	70.0°C	83.0°C	15	BD1	34.7°C	59.7°C	76.1°C	16	CY2	44.9°C	69.9°C	81.7°C	17	T1	49.2°C	74.2°C	84.9°C	18	PH1	39.9°C	64.9°C	79.0°C	19	D201	60.1°C	85.1°C	88.9°C	20	CASE	41.7°C	66.7°C	80.4°C
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 4 HOURS	I/P:800VDC O/P: FULL LOAD Ta= -40°C	TEST : OK	P																																																																																																									

### OTHER

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDITC
1	MTBF	MIL-HDBK-217F,GB,25°C TOTAL FAILURE RATE : 2.6941 M.T.B.F : 371,185 HRS			P

TEST RESULT	TESTER	APPROVAL
PASS	ARCHEN HSIAO	PETER CHENG