



# Test Report : DDRH-45-48

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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	-0.11%	P
2	RIPPLE & NOISE	150 mVp-p	I/P:800VDC O/P:FULL LOAD Ta:25°C	100mV	P
3	LINE REGULATION	-1.0% ~ +1.0%	I/P:150VDC~1500VDC O/P: FULL LOAD Ta:25°C	-0.01% ~+0.01%	P
4	LOAD REGULATION	-1.0% ~ +1.0%	I/P:800VDC O/P:10% LOAD~FULL LOAD Ta:25°C	-0.01% ~ +0.02%	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	88.80%	P
3	DC CURRENT	75mA / FULL LOAD 0.2mA / NO LOAD	I/P:800VDC O/P:NO / FULL LOAD Ta:25°C	63.3mA / FULL LOAD 0.198 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	197.2% 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>41.2°C</td><td>66.2°C</td><td>81.1°C</td></tr> <tr><td>3</td><td>C102</td><td>41.7°C</td><td>66.7°C</td><td>81.4°C</td></tr> <tr><td>4</td><td>C103</td><td>40.0°C</td><td>65.0°C</td><td>80.2°C</td></tr> <tr><td>5</td><td>C104</td><td>38.6°C</td><td>63.6°C</td><td>79.2°C</td></tr> <tr><td>6</td><td>C105</td><td>45.7°C</td><td>70.7°C</td><td>83.7°C</td></tr> <tr><td>7</td><td>C108</td><td>42.6°C</td><td>67.6°C</td><td>81.8°C</td></tr> <tr><td>8</td><td>C202</td><td>49.9°C</td><td>74.9°C</td><td>85.7°C</td></tr> <tr><td>9</td><td>C203</td><td>49.4°C</td><td>74.4°C</td><td>85.0°C</td></tr> <tr><td>10</td><td>Q101</td><td>39.8°C</td><td>64.8°C</td><td>80.1°C</td></tr> <tr><td>11</td><td>Q102</td><td>59.4°C</td><td>84.4°C</td><td>92.5°C</td></tr> <tr><td>12</td><td>Q103</td><td>59.7°C</td><td>84.7°C</td><td>92.7°C</td></tr> <tr><td>13</td><td>T2</td><td>48.2°C</td><td>73.2°C</td><td>85.3°C</td></tr> <tr><td>14</td><td>BD1</td><td>38.1°C</td><td>63.1°C</td><td>78.8°C</td></tr> <tr><td>15</td><td>CY2</td><td>49.9°C</td><td>74.9°C</td><td>85.8°C</td></tr> <tr><td>16</td><td>T1</td><td>58.7°C</td><td>83.7°C</td><td>90.9°C</td></tr> <tr><td>17</td><td>PH1</td><td>43.9°C</td><td>68.9°C</td><td>82.4°C</td></tr> <tr><td>18</td><td>D201</td><td>68.8°C</td><td>93.8°C</td><td>95.8°C</td></tr> <tr><td>19</td><td>CASE</td><td>54.0°C</td><td>79.0°C</td><td>88.3°C</td></tr> </tbody> </table>				NO	Position	1	2	3	1	Ta	25.0°C	50.0°C	70.0°C	2	C101	41.2°C	66.2°C	81.1°C	3	C102	41.7°C	66.7°C	81.4°C	4	C103	40.0°C	65.0°C	80.2°C	5	C104	38.6°C	63.6°C	79.2°C	6	C105	45.7°C	70.7°C	83.7°C	7	C108	42.6°C	67.6°C	81.8°C	8	C202	49.9°C	74.9°C	85.7°C	9	C203	49.4°C	74.4°C	85.0°C	10	Q101	39.8°C	64.8°C	80.1°C	11	Q102	59.4°C	84.4°C	92.5°C	12	Q103	59.7°C	84.7°C	92.7°C	13	T2	48.2°C	73.2°C	85.3°C	14	BD1	38.1°C	63.1°C	78.8°C	15	CY2	49.9°C	74.9°C	85.8°C	16	T1	58.7°C	83.7°C	90.9°C	17	PH1	43.9°C	68.9°C	82.4°C	18	D201	68.8°C	93.8°C	95.8°C	19	CASE	54.0°C	79.0°C	88.3°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