



# Test Report : DDRH-45-12

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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	-0.24%	P
2	RIPPLE & NOISE	100 mVp-p	I/P:800VDC O/P:FULL LOAD Ta:25°C	80mV	P
3	LINE REGULATION	-1.0% ~ +1.0%	I/P:150VDC~1500VDC O/P: FULL LOAD Ta:25°C	-0.03% ~ +0.00%	P
4	LOAD REGULATION	-1.0% ~ +1.0%	I/P:800VDC O/P:10% LOAD~FULL LOAD Ta:25°C	-0.18% ~ +0.17%	P
5	HOLD UP TIME	20ms min.	I/P:800VDC O/P:FULL LOAD Ta:25°C	32.8ms	P
6	SETUP TIME	2s max.	I/P:800VDC O/P: FULL LOAD Ta:25°C	137ms	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	130.5VDC ~1500 VDC	P
2	EFFICIENCY	85%	I/P:800VDC O/P:FULL LOAD Ta:25°C	86.98%	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 0.160 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	181.1% 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 119VDC	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°C</td><td>70.0°C</td></tr> <tr><td>2</td><td>C101</td><td>41.8°C</td><td>66.8°C</td><td>79.2°C</td></tr> <tr><td>3</td><td>C102</td><td>42.0°C</td><td>67.0°C</td><td>79.1°C</td></tr> <tr><td>4</td><td>C103</td><td>41.7°C</td><td>66.7°C</td><td>78.8°C</td></tr> <tr><td>5</td><td>C104</td><td>40.6°C</td><td>65.6°C</td><td>78.2°C</td></tr> <tr><td>6</td><td>C105</td><td>47.5°C</td><td>72.5°C</td><td>82.0°C</td></tr> <tr><td>7</td><td>C108</td><td>45.0°C</td><td>70.0°C</td><td>80.6°C</td></tr> <tr><td>8</td><td>C202</td><td>59.3°C</td><td>84.3°C</td><td>87.3°C</td></tr> <tr><td>9</td><td>C203</td><td>60.2°C</td><td>85.2°C</td><td>87.7°C</td></tr> <tr><td>10</td><td>C207</td><td>61.9°C</td><td>86.9°C</td><td>88.9°C</td></tr> <tr><td>11</td><td>Q101</td><td>41.6°C</td><td>66.6°C</td><td>78.9°C</td></tr> <tr><td>12</td><td>Q102</td><td>62.4°C</td><td>87.4°C</td><td>91.1°C</td></tr> <tr><td>13</td><td>Q103</td><td>64.2°C</td><td>89.2°C</td><td>92.3°C</td></tr> <tr><td>14</td><td>T2</td><td>56.2°C</td><td>81.2°C</td><td>87.7°C</td></tr> <tr><td>15</td><td>BD1</td><td>41.1°C</td><td>66.1°C</td><td>79.0°C</td></tr> <tr><td>16</td><td>CY2</td><td>60.1°C</td><td>85.1°C</td><td>88.5°C</td></tr> <tr><td>17</td><td>T1</td><td>64.8°C</td><td>89.8°C</td><td>91.4°C</td></tr> <tr><td>18</td><td>PH1</td><td>48.0°C</td><td>73.0°C</td><td>82.3°C</td></tr> <tr><td>19</td><td>D201</td><td>84.1°C</td><td>109.1°C</td><td>99.6°C</td></tr> </tbody> </table>				NO	Position	1	2	3	1	Ta	25.0°C	50°C	70.0°C	2	C101	41.8°C	66.8°C	79.2°C	3	C102	42.0°C	67.0°C	79.1°C	4	C103	41.7°C	66.7°C	78.8°C	5	C104	40.6°C	65.6°C	78.2°C	6	C105	47.5°C	72.5°C	82.0°C	7	C108	45.0°C	70.0°C	80.6°C	8	C202	59.3°C	84.3°C	87.3°C	9	C203	60.2°C	85.2°C	87.7°C	10	C207	61.9°C	86.9°C	88.9°C	11	Q101	41.6°C	66.6°C	78.9°C	12	Q102	62.4°C	87.4°C	91.1°C	13	Q103	64.2°C	89.2°C	92.3°C	14	T2	56.2°C	81.2°C	87.7°C	15	BD1	41.1°C	66.1°C	79.0°C	16	CY2	60.1°C	85.1°C	88.5°C	17	T1	64.8°C	89.8°C	91.4°C	18	PH1	48.0°C	73.0°C	82.3°C	19	D201	84.1°C	109.1°C	99.6°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 : 3.1594 M.T.B.F : 316,514 HRS			P

TEST RESULT	TESTER	APPROVAL
PASS	ARCHEN HSIAO	PETER CHENG