



# Test Report : SPA01W8-03

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1W SIP Package 8:1 Ultra-Wide Input DC-DC Regulated Converter

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

## ■ SAFETY TEST

Safety test

## ■ RELIABILITY TEST

Environment Test

## ■ DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

| NO | TEST ITEM        | SPECICATION          | TEST CONDITION                                | RESULT          | VERDICT |
|----|------------------|----------------------|-----------------------------------------------|-----------------|---------|
| 1  | VOLTAGE ACCURACY | -2.0% ~ +2.0 % (Max) | I/P:24VDC<br>O/P:FULL LOAD<br>Ta:25°C         | +0.21%          | P       |
| 2  | RIPPLE & NOISE   | 100 mVp-p (Max)      | I/P:24VDC<br>O/P:FULL LOAD<br>Ta:25°C         | 14 mV           | P       |
| 3  | LINE REGULATION  | -0.5% ~ +0.5 %       | I/P:9VDC~75VDC<br>O/P:FULL LOAD<br>Ta:25°C    | +0.03% ~ +0.05% | P       |
| 4  | LOAD REGULATION  | -1.0% ~ +1.0%        | I/P:24VDC<br>O/P:0% LOAD~FULL LOAD<br>Ta:25°C | -0.12% ~ +0.16% | P       |

### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECICATION                            | TEST CONDITION                             | RESULT                                  | VERDICT |
|----|-----------------------|----------------------------------------|--------------------------------------------|-----------------------------------------|---------|
| 1  | EFFICIENCY            | 77%                                    | I/P:24VDC<br>O/P:FULL LOAD<br>Ta:25°C      | 78.72%                                  | P       |
| 2  | DC CURRENT            | 54 mA / FULL LOAD<br>3 mA / NO LOAD    | I/P:24VDC<br>O/P:NO / FULL LOAD<br>Ta:25°C | 52.3 mA / FULL LOAD<br>2.3 mA / NO LOAD | P       |
| 3  | UNDER VOLTAGE LOCKOUT | START-UP 8.8V<br>SHUTDOWN VOLTAGE 8.0V | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25°C    | 7.70 VDC<br>6.79 VDC                    | P       |

### PROTECTION FUNCTION TEST

| NO | TEST ITEM            | SPECICATION | TEST CONDITION                          | RESULT                                | VERDICT |
|----|----------------------|-------------|-----------------------------------------|---------------------------------------|---------|
| 1  | SHORT PROTECTION     | CONTINUOUS  | I/P:75VDC<br>O/P:FULL LOAD<br>Ta:25°C   | CONTINUOUS,<br>AUTOMATIC RECOVERY     | P       |
| 2  | OVER LOAD PROTECTION | 110~350%    | I/P:24VDC<br>O/P:TESTING<br>Ta:25°C     | 167.3%<br>HICCUP MODE<br>AUTO-RECOVER | P       |
| 3  | CASE TEMPERATURE     | +110°C max  | I/P:24VDC<br>O/P:TESTING<br>Ta: TESTING | OK<br>AUTOMATIC RECOVERY              | P       |

## SAFETY TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECICATION           | TEST CONDITION                  | RESULT                        | VERDICT |
|----|----------------------|-----------------------|---------------------------------|-------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P:1500 VDC/min  | I/P-O/P:1500 VDC/min<br>Ta:25°C | I/P-O/P: 0.002mA<br>NO DAMAGE | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P:500VDC>1000MΩ | I/P-O/P:500 VDC<br>Ta:25°C      | I/P-O/P>1000MΩ<br>NO DAMAGE   | P       |

## RELIABILITY TEST

### ENVIRONMENT TEST

| NO | TEST ITEM                    | SPECICATION                                                                                                                                                                                                | TEST CONDITION                                                                                                                                                                   | RESULT    |          |   |   |   |   |      |        |        |         |  |
|----|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|---|---|---|---|------|--------|--------|---------|--|
| 1  | TEMPERATURE RISE TEST        | 1. ROOM AMBIENT BURN-IN : 4HRS<br>I/P:24VDC O/P:FULL LOAD Ta=25°C<br>2. HIGH AMBIENT BURN-IN : 4HRS<br>I/P:24VDC O/P:FULL LOAD Ta=90°C<br>3. HIGH AMBIENT BURN-IN : 4HRS<br>I/P:24VDC O/P:50% LOAD Ta=95°C | <table border="1"> <tr> <th>NO</th><th>Position</th><th>1</th><th>2</th><th>3</th></tr> <tr> <td>1</td><td>CASE</td><td>40.3°C</td><td>96.1°C</td><td>101.9°C</td></tr> </table> | NO        | Position | 1 | 2 | 3 | 1 | CASE | 40.3°C | 96.1°C | 101.9°C |  |
| NO | Position                     | 1                                                                                                                                                                                                          | 2                                                                                                                                                                                | 3         |          |   |   |   |   |      |        |        |         |  |
| 1  | CASE                         | 40.3°C                                                                                                                                                                                                     | 96.1°C                                                                                                                                                                           | 101.9°C   |          |   |   |   |   |      |        |        |         |  |
| 2  | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 4 HOURS                                                                                                                                                                                      | I/P:24VDC<br>O/P: FULL LOAD<br>Ta= -40°C                                                                                                                                         | TEST : OK |          |   |   |   |   |      |        |        |         |  |

### OTHER

| NO | TEST ITEM | SPECICATION                                                             | TEST CONDITION | RESULT |
|----|-----------|-------------------------------------------------------------------------|----------------|--------|
| 1  | MTBF      | MIL-HDBK-217F,GB,25°C<br>TOTAL FAILURE RATE : 2.0<br>M.T.B.F : >500KHRS |                |        |

| TEST RESULT | TESTER       | APPROVAL    |
|-------------|--------------|-------------|
| PASS        | ARCHEN HSIAO | PETER CHENG |