



# Test Report : MDD02M-05

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2W SIP Package DC-DC Medical Grade Unregulated Converter

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

## ■ SAFETY TEST

Safety Test

## ■ RELIABILITY TEST

Environment Test

Other Test

**DESIGN VERIFY TEST**
**OUTPUT FUNCTION TEST**

| NO | TEST ITEM        | SPECICATION       | TEST CONDITION                                  | RESULT                                       | VERDICT |
|----|------------------|-------------------|---|--|---------|
| 1  | VOLTAGE ACCURACY | -5%~+5% (Max)     | I/P:12VDC<br>O/P:FULL LOAD<br>Ta:25°C           | V1 +0.18%<br>V2 +0.94%                       | P       |
| 2  | RIPPLE & NOISE   | 75 mVp-p (Max)    | I/P:12VDC<br>O/P:FULL LOAD<br>Ta:25°C           | V1 19mV<br>V2 16mV                           | P       |
| 3  | LINE REGULATION  | -12% ~ +12% (Max) | I/P:10.8VDC~13.2VDC<br>O/P:FULL LOAD<br>Ta:25°C | V1 -11.44% ~ +11.36%<br>V2 -11.41% ~ +11.24% | P       |
| 4  | LOAD REGULATION  | -10% ~ +10% (Max) | I/P:12VDC<br>O/P:MINI LOAD-FULL LOAD<br>Ta:25°C | V1 -4.66% ~ +5.14%<br>V2 -4.85% ~ +4.70%     | P       |

**INPUT FUNCTION TEST**

| NO | TEST ITEM  | SPECICATION                                       | TEST CONDITION                             | RESULT                                  | VERDICT |
|----|------------|---|--|---|---------|
| 1  | EFFICIENCY | 78 % (Typ)  | I/P:12VDC<br>O/P:FULL LOAD<br>Ta:25°C      | 78.3%                                   | P       |
| 2  | DC CURRENT | 210 mA / FULL LOAD (Max)<br>17 mA / NO LOAD (Max) | I/P:12VDC<br>O/P:NO / FULL LOAD<br>Ta:25°C | 205.4mA / FULL LOAD<br>16.9mA / NO LOAD | P       |

**PROTECTION FUNCTION TEST**

| NO | TEST ITEM        | SPECICATION         | TEST CONDITION                        | RESULT          | VERDICT |
|----|------------------|---------------------|---------------------------------------|-----------------|---------|
| 1  | SHORT PROTECTION | MOMENTARY 3sec. max | I/P:12VDC<br>O/P:FULL LOAD<br>Ta:25°C | NO DAMAGE<br>OK | P       |

**SAFETY TEST**
**SAFETY TEST**

| NO | TEST ITEM         | SPECICATION          | TEST CONDITION                  | RESULT                        | VERDICT |
|----|-------------------|----------------------|---------------------------------|-------------------------------|---------|
| 1  | WITHSTAND VOLTAGE | I/P-O/P:6000 VDC/min | I/P-O/P:6000 VDC/min<br>Ta:25°C | I/P-O/P: 0.002mA<br>NO DAMAGE | P       |

|   |                      |                      |                            |                            |   |
|---|----------------------|----------------------|----------------------------|----------------------------|---|
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ | I/P-O/P:500 VDC<br>Ta:25°C | I/P-O/P>100MΩ<br>NO DAMAGE | P |
|---|----------------------|----------------------|----------------------------|----------------------------|---|

## ■ RELIABILITY TEST

### ENVIRONMENT TEST

| NO | TEST ITEM                    | SPECICATION   | TEST CONDITION                           | RESULT    | VERDICT |    |          |   |   |   |      |        |         |
|----|------------------------------|---|--|-----------|---------|----|----------|---|---|---|------|--------|---------|
| 1  | TEMPERATURE RISE TEST        | 1. ROOM AMBIENT BURN-IN : 8 HRS<br>I/P:12VDC O/P:FULL LOAD Ta=25°C<br>2. HIGH AMBIENT BURN-IN : 8 HRS<br>I/P:12VDC O/P:FULL LOAD Ta=85°C  |  |           | P       |    |          |   |   |   |      |        |         |
|    |                              | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CASE</td> <td>47.0°C</td> <td>107.0°C</td> </tr> </tbody> </table> |  |           |         | NO | Position | 1 | 2 | 1 | CASE | 47.0°C | 107.0°C |
| NO | Position                     | 1   | 2  |           |         |    |          |   |   |   |      |        |         |
| 1  | CASE                         | 47.0°C  | 107.0°C                                  |           |         |    |          |   |   |   |      |        |         |
| 2  | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOURS   | I/P:12VDC<br>O/P: FULL LOAD<br>Ta= -40°C | TEST : OK | P       |    |          |   |   |   |      |        |         |

### OTHER

| NO | TEST ITEM | SPECICATION   | TEST CONDITION | RESULT | VERDICT |
|----|-----------|---|----------------|--------|---------|
| 1  | MTBF      | MIL-HDBK-217F,GB,25°C,Full Load<br>TOTAL FAILURE RATE : 0.2340<br>M.T.B.F : 4274000 HRS |                |        | P       |

| TEST RESULT | TESTER | APPROVAL     |
|-------------|--------|--------------|
| PASS        | ARCHEN | VINCENT ZENG |