



# Test Report : RDDW10H-12

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10W DIP Package Reliable Railway DC-DC Converter

## ■ DESIGN VERIFY TEST

Output Function Test  
Input Function Test  
Protection Function Test  
Control Function Test

## ■ SAFETY TEST

Safety Test

## ■ RELIABILITY TEST

Environment Test  
Other

## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

| NO | TEST ITEM        | SPECICATION         | TEST CONDITION                                 | RESULT                                       | VERDICT |
|----|------------------|---------------------|--|--|---------|
| 1  | VOLTAGE ACCURACY | -1% ~ +1% (Max)     | I/P:110VDC<br>O/P:FULL LOAD<br>Ta:25°C         | V1 : +0.01%<br>V2 : +0.13%                   | P       |
| 2  | RIPPLE & NOISE   | 50 mVp-p (Max)      | I/P:110VDC<br>O/P:FULL LOAD<br>Ta:25°C         | V1 : 11 mV<br>V2 : 12 mV                     | P       |
| 3  | LINE REGULATION  | -0.2% ~ +0.2% (Max) | I/P:43VDC~160VDC<br>O/P:FULL LOAD<br>Ta:25°C   | V1 : -0.01% ~ +0.10%<br>V2 : -0.01% ~ +0.11% | P       |
| 4  | LOAD REGULATION  | -1% ~ +1% (Max)     | I/P:110VDC<br>O/P:0% LOAD-FULL LOAD<br>Ta:25°C | V1 : -0.09% ~ +0.18%<br>V2 : -0.10% ~ +0.17% | P       |

### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECICATION                                      | TEST CONDITION                              | RESULT                                     | VERDICT |
|----|-----------------------|--|---|--|---------|
| 1  | INPUT VOLTAGE RANGE   | 43 VDC ~160 VDC                                  | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25°C     | 38.09 ~160.0 VDC                           | P       |
| 2  | EFFICIENCY            | 87% (Typ)  | I/P:110VDC<br>O/P:FULL LOAD<br>Ta:25°C      | 87.7%                                      | P       |
| 3  | DC CURRENT            | 105 mA / FULL LOAD (Max)<br>6 mA / NO LOAD (Max) | I/P:110VDC<br>O/P:NO / FULL LOAD<br>Ta:25°C | 103.91 mA / FULL LOAD<br>1.67 mA / NO LOAD | P       |
| 4  | UNDER VOLTAGE LOCKOUT | POWER UP 40VDC (Typ)<br>POWER DOWN 38VDC (Typ)   | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25°C     | POWER UP 39.9VDC<br>POWER DOWN 38.1VDC     | P       |

### PROTECTION FUNCTION TEST

| NO | TEST ITEM            | SPECICATION | TEST CONDITION                         | RESULT                                | VERDICT |
|----|----------------------|-------------|--|---------------------------------------|---------|
| 1  | SHORT PROTECTION     | CONTINUOUS  | I/P:160VDC<br>O/P:FULL LOAD<br>Ta:25°C | HICCUP MODE<br>AUTO-RECOVER           | P       |
| 2  | OVER LOAD PROTECTION | 120% ~ 180% | I/P:110VDC<br>O/P:TESTING<br>Ta:25°C   | 135.0%<br>HICCUP MODE<br>AUTO-RECOVER | P       |

## CONTROL FUNCTION TEST

| NO | TEST ITEM      | SPECICATION   | TEST CONDITION                         | RESULT   | VERDICT |
|----|----------------|---|--|--|---------|
| 1  | REMOTE CONTROL | Power on :<br>R.C - Vin >3.5Vdc~ 160Vdc<br>or Open<br>Power off :<br>R.C - Vin <1.2Vdc or Short | I/P:110VDC<br>O/P:FULL LOAD<br>Ta:25°C | Power on :<br>R.C>2.55Vdc or Open<br>Power off :<br>R.C<2.21Vdc or Short | P       |

## SAFETY TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECICATION          | TEST CONDITION                  | RESULT                        | VERDICT |
|----|----------------------|----------------------|---------------------------------|-------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P:3.0K VDC/min | I/P-O/P:3.0K 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 : 8HRS<br>I/P:110VDC O/P:FULL LOAD Ta=25°C<br>2. HIGH AMBIENT BURN-IN : 8HRS<br>I/P:110VDC O/P:FULL LOAD Ta=60°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>59.6°C</td> <td>91.6°C</td> </tr> </tbody> </table> |   |           |         | NO | Position | 1 | 2 | 1 | CASE | 59.6°C | 91.6°C |
| NO | Position                     | 1  | 2   |           |         |    |          |   |   |   |      |        |        |
| 1  | CASE                         | 59.6°C   | 91.6°C                                    |           |         |    |          |   |   |   |      |        |        |
| 2  | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOURS  | I/P:110VDC<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<br>TOTAL FAILURE RATE : 0.829<br>M.T.B.F : 1205892HRS |                |        | P       |

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