TDK·Lambda

RTHB-5080

RELIABILITY DATA

DWG. No.SC575-RTHB-80-001			
QA	R&D		
APPROVED BY	APPROVED BY	CHECKED BY	DRAWN BY
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TDK

I N D E X

The following data are typical values. As all units have nearly
the same characteristics, the data to be considered as ability values.

RTHB-5080

1. Calculated values of MTBF

MODEL ： RTHB-5080

 (1) Calculating Method
　　　 Calculated based on parts stress reliability projection of
　　　 MIL-HDBK-217F NOTICE2.
　　　 Individual failure rates λ_G is given to each part and MTBF is
　　　 calculated by the count of each part.

$$MTBF = \frac{1}{\lambda_{equip}} = \frac{1}{\sum\limits_{i=1}^{n} N_i (\lambda_G \pi_Q)_i} \times 10^6 \ (hours)$$

　　　 λ_{equip}　　: Total equipment failure rate (Failure / 10^6 Hours)
　　　 λ_G　　　 : Generic failure rate for the ith generic part
　　　　　　　　　 (Failure/ 10^6 Hours)
　　　 Ni　　　　 : Quantity of ith generic part
　　　 N　　　　 : Number of different generic part categories
　　　 π_Q　　　 : Generic quality factor for the ith generic part ($\pi_Q = 1$)

 (2) MTBF Values
　　　 GF　　　 : Ground, Fixed

　　　　　　 MTBF ＝ 1,906,069 (Hours)

2. Vibration Test

MODEL　：　RTHB-5080 (Representation Product : RTHN-5150)

  (1) Vibration Test Class
       Frequency Variable Endurance Test

  (2) Equipment Used
       Controller VS-1000-6, Vibrator 905-FN (IMV CORP.)

  (3) The Number of D.U.T. (Device Under Test)
       2 units

  (4) Test Condition
       · Frequency : 10~55Hz
       · Amplitude : 0.7mm, Sweep for 1 min.
       · Dimension and times : X, Y and Z directions for 0.5 hours each.

  (5) Test Method
       Fix the D.U.T. on the fitting-stage

  (6) Test Results
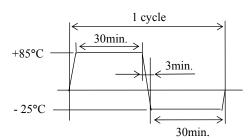   PASS

Typical Sample Data

Check item	Spec.		Before Test	After Test
Attenuation (dB)	Differential Mode : 25dBmin.	0.2 MHz	75.15	75.10
		30 MHz	56.05	56.05
	Common Mode : 25dBmin.	0.1 MHz	32.80	32.80
		10 MHz	38.70	38.20
Leakage Current (mA)	5mA max.(500V, 60Hz)	Line1	2.68	2.67
		Line2	2.68	2.67
		Line3	2.69	2.68
DC Resistance (mΩ)	6m Ω max.		2.54	2.54
Test Voltage	L-L : 2192Vdc 60s. L-E : 2500Vac 60s.		OK	OK
Isolation Resistance (MΩ)	100M Ω min. (500Vdc 60s)		1.0×10^7	1.0×10^7

3. Heat Cycle Test

MODEL : RTHB-5080 (Representation Product : RTHN-5150)

(1) Equipment Used
   TEMPERATURE CHAMBER TSA-71H-W (ESPEC CORP.)

(2) The Number of D.U.T. (Device Under Test)
   2 units

(3) Test Conditions
   · Ambient Temperature : -25~+85°C
   · Test Cycles : 100cycles

(4) Test Method
   Before the test check if there is no abnormal characteristics and put
   the D.U.T. in the testing chamber. Then test it in the above cycles,
   After the test is completed leave it for 1 hour at room temperature
   and check it if there is no abnormal each characteristics.

(5) Test Results
   PASS

   Typical Sample Data

Check item	Spec.		Before Test	After Test
Attenuation (dB)	Differential Mode : 25dBmin.	0.2 MHz	68.95	73.65
		30 MHz	57.70	54.75
	Common Mode : 25dBmin.	0.1 MHz	33.50	31.50
		10 MHz	40.25	40.40
Leakage Current (mA)	5mA max.(500V, 60Hz)	Line1	2.69	2.63
		Line2	2.67	2.65
		Line3	2.67	2.65
DC Resistance (mΩ)	6m Ω max.		2.47	2.44
Test Voltage	L-L : 2192Vdc 60s. L-E : 2500Vac 60s.		OK	OK
Isolation Resistance (MΩ)	100M Ω min. (500Vdc 60s)		1.0×10^7	1.0×10^7

4. Humidity Test

MODEL   :   RTHB-5080 (Representation Product : RTHN-5150)

 (1) Equipment Used
       TEMP. & HUMID. CHAMBER PR-4KT (ESPEC CORP.)

 (2) The Number of D.U.T. (Device Under Test)
       2 units

 (3) Test Conditions
       · Ambient Temperature : +40°C
       · Test Time : 500 hours
       · Ambient Humidity : 90~95% RH   No Dewdrop

 (4) Test Method
       Before the test check if there is no abnormal characteristics and put
       the D.U.T. in the testing chamber. Then test it in the above conditions.
       After the test is completed leave it for 1 hour at room temperature
       and check it if there is no abnormal each characteristics.

 (5) Test Results
       PASS

Typical Sample Data

Check item	Spec.		Before Test	After Test
Attenuation (dB)	Differential Mode : 25dBmin.	0.2 MHz	71.45	74.75
		30 MHz	54.85	49.00
	Common Mode : 25dBmin.	0.1 MHz	33.40	33.50
		10 MHz	39.15	39.90
Leakage Current (mA)	5mA max.(500V, 60Hz)	Line1	2.71	2.66
		Line2	2.70	2.66
		Line3	2.69	2.66
DC Resistance (mΩ)	6m Ω max.		2.51	2.44
Test Voltage	L-L : 2192Vdc 60s. L-E : 2500Vac 60s.		OK	OK
Isolation Resistance (MΩ)	100M Ω min. (500Vdc 60s)		1.0×10^7	1.0×10^7

5. High Temperature Resistance Test

MODEL   :   RTHB-5080 (Representation Product : RTHN-5300)

(1) Equipment Used
    TEMPERATURE CHAMBER PHH-300 (ESPEC CORP.)

(2) The Number of D.U.T. (Device Under Test)
    2 units

(3) Test Conditions
    · Ambient Temperature : +50°C
    · Test Time : 500 hours
    · Operating : DC 300A

(4) Test Method
    Before the test check if there is no abnormal characteristics and put
    the D.U.T. in the testing chamber. Then test it in the above conditions.
    After the test is completed leave it for 1 hour at room temperature
    and check it if there is no abnormal each characteristics.

(5) Test Results
    PASS

Typical Sample Data

Check item	Spec.		Before Test	After Test
Attenuation (dB)	Differential Mode : 25dBmin.	0.2 MHz	75.80	78.15
		30 MHz	34.25	38.60
	Common Mode : 25dBmin.	0.5 MHz	34.15	34.40
		6 MHz	38.60	29.55
Leakage Current (mA)	5mA max.(500V, 60Hz)	Line1	2.72	2.65
		Line2	2.72	2.66
		Line3	2.72	2.66
DC Resistance (mΩ)	2m Ω max.		1.02	0.99
Test Voltage	L-L : 2192Vdc 60s. L-E : 2500Vac 60s.		OK	OK
Isolation Resistance (MΩ)	100M Ω min. (500Vdc 60s)		1.0×10^7	1.0×10^7

6. Low Temperature Storage Test

MODEL   :   RTHB-5080 (Representation Product : RTHN-5150)

(1) Equipment Used
    TEMPERATURE CHAMBER PG-2FT (ESPEC CORP.)

(2) The Number of D.U.T. (Device Under Test)
    2 units

(3) Test Conditions
    · Ambient Temperature : -25°C
    · Test Time : 500 hours

(4) Test Method
    Before the test check if there is no abnormal characteristics and put
    the D.U.T. in the testing chamber. Then test it in the above conditions.
    After the test is completed leave it for 1 hour at room temperature
    and check it if there is no abnormal each characteristics.

(5) Test Results
    PASS

    Typical Sample Data

Check item	Spec.		Before Test	After Test
Attenuation (dB)	Differential Mode : 25dBmin.	0.2 MHz	69.10	71.70
		30 MHz	54.25	63.80
	Common Mode : 25dBmin.	0.1 MHz	32.85	32.90
		10 MHz	40.20	40.40
Leakage Current (mA)	5mA max.(500V, 60Hz)	Line1	2.73	2.65
		Line2	2.69	2.65
		Line3	2.69	2.65
DC Resistance (mΩ)	6m Ω max.		2.48	2.45
Test Voltage	L-L : 2192Vdc 60s. L-E : 2500Vac 60s.		OK	OK
Isolation Resistance (MΩ)	100M Ω min. (500Vdc 60s)		1.0×10^7	1.0×10^7