Standard timer connector rast 5mm, 2~12 positions

1. Introduction

1.1 Purpose

This is a verification test. The purpose of this test is to evaluate the performance of Standard timer housing. Testing was performed on below products to determine its compliance with the requirements of 108-18049-1, Rev. A7

1.2 Scope

This report covers the electrical, mechanical, environmental, and material performance for Standard timer housing. Testing was performed in third lab per aligned with requestor. TG1, TG3, TG5, TG6 and TG 10 were performed at DEKRA iST Reliability Services Limited (No.351，Kunjia Road, Kunshan city, China) between 2022-07-05 and 2022-07-20, TG 8 was performed at Center Testing International Group Co., Ltd (Hongwei Industry Zone, Bao'an 70 District, Shenzhen, Guangdong, China) between 2022-07-19 and 2022-08-05, TG 7 was performed at TE Connectivity Shanghai Electrical Test Laboratory (Building ID 554) between 2022-06-23 and 2023-06-27.
All results from vendor are summarized in this report by the original data from 3rd party and checked by SECTL
The associated test number is TP-22-01041.

1.3 Conclusion

Based on the test results, all samples meet the requirement according to customer requirement The testing results are only responsible for the specimens tested.

1.4 Test Specimens

Product Description

Standard timer housing

Specimens received on 2022-06-23 with the following part numbers were used for test:

Test Group	Part No.	Part Rev.	Description	Qty. (pcs)	Part No.	Part Rev.	Description	Qty. (pcs)	Comments
1	2407487-2	1	2POS STD TIMER HOUSING W. INTERIOR LOCK.	5	964203-2	c	STD PW TIMER CONTACT	10	/
3	2407487-2	1	2POS STD TIMER HOUSING W. INTERIOR LOCK.	5	6-1971895-2	b	2P, RAST 5 HEADER, PL, SHROUDED	5	/
5	2407487-2	1	2POS STD TIMER HOUSING W. INTERIOR LOCK.	5	6-1971895-2	b	2P, RAST 5 HEADER, PL, SHROUDED	5	2407487-2 assembled with 964203-2
6	2407487-2	1	2POS STD TIMER HOUSING W. INTERIOR LOCK.	5	6-1971895-2	b	2P, RAST 5 HEADER, PL, SHROUDED	5	2407487-2 assembled with 964203-2
7	2407487-2	1	2POS STD TIMER HOUSING W. INTERIOR LOCK.	3	6-1971895-2	b	2P, RAST 5 HEADER, PL, SHROUDED	3	2407487-2 assembled with 964203-2
8	2407487-2	1	2POS STD TIMER HOUSING W. INTERIOR LOCK.	10	6-1971895-2	b	2P, RAST 5 HEADER, PL, SHROUDED	10	2407487-2 assembled with 964203-2
10	6-1971895-2	b	2P, RAST 5 HEADER, PL, SHROUDED	3	/	/	/	/	/

1.5 Test Sequence

Test Item	Test Group [a]						
	1	3	5	6	7	8	10
	Test Sequence [b]						
Cold Storage						3	
Contact Resistance (Voltage Drop Test)				2,4	3	2,6	
Dielectric Withstanding Voltage						7	
Dry Heat						4	
Saturated Atmosphere in the presence of sulfur dioxide						5	
Examination of Product	1	1	1	1	1,4	1	1
Glow Wire Test							2
Housing locking mechanism strength test		2					
Insulation Resistance			2				
Mating Force &Un-mating Force				3			
Retention Force Test	2						
Derating Curve					2		

Note: a). Test group defined per customer requirement.
b). Numbers indicate sequence in which tests are performed.

1.6 Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15 ℃ to 35 ℃
Relative Humidity: 25 %RH to 75 %RH

2. Summary of Test

Group	SN	Description	Test Item	Qty (pcs)	Test Result				Requirement	Conclusion
					Max	Min	Avg	Unit		
1	1	2407487-2	Examination of Product	5	No physical damage.			-	No physical damage.	Meet Spec.
	2	2407487-2	Retention Force Test	5	194.0	167.5	178.7	N	30 N Min.	Meet Spec.
3	1	2407487-2	Examination of Product	5	No physical damage.			-	No physical damage.	Meet Spec.
	2	2407487-2	Housing locking mechanism strength test	5	40.4	32.3	36.7	N	10 N Min.	Meet Spec.
5	1	2407487-2	Examination of Product	5	No physical damage.			-	No physical damage.	Meet Spec.
	2	2407487-2	Insulation Resistance	5	3.61	3.05	3.27	$10^{10}\Omega$	5 MΩ= ($5*10^6$) Min.	Meet Spec.
6	1	2407487-2	Examination of Product	5	No physical damage.			-	No physical damage.	Meet Spec.
	2	2407487-2	Contact Resistance (Voltage Drop Test)	5	1.16	0.97	1.10	mΩ	Initial: $R_i \leq 1.5$ mΩ	Meet Spec.
	3	2407487-2	Mating Force	5	21.16	19.04	20.18	N	/	Judged by client
	4	2407487-2	Un-mating Force	5	16.13	13.20	14.98	N	/	Judged by client
	5	2407487-2	Contact Resistance (Voltage Drop Test)	5	2.26	1.24	1.80	mΩ	After test: R_{at} ≤ 5 mΩ	Meet Spec.
7	1	2407487-2	Examination of Product	3	No physical damage.			/	No physical damage.	Meet Spec.
	2	2407487-2	Derating Curve	3	See Appendix			/	/	Judged by client
	3	2407487-2	Contact Resistance (Voltage Drop Test)	3	2.82	2.39	2.58	mΩ	After test: Rat ≤ 5 mΩ	Meet Spec.
8	1	2407487-2	Examination of	10	No physical damage.			/	No physical	Meet Spec.

Group	SN	Description	Test Item	Qty (pcs)	Test Result				Requirement	Conclusion
					Max	Min	Avg	Unit		
			Product						damage.	
	2	2407487-2	Contact Resistance (Voltage Drop Test)	10	1.44	0.46	1.06	mΩ	Initial: $R_i \leq$ 1.5 mΩ	Meet Spec.
	3	2407487-2	Cold Storage	10	No physical damage.			/	No physical damage.	Meet Spec.
	4	2407487-2	Dry Heat	10	No physical damage.			/	No physical damage.	Meet Spec.
	5	2407487-2	Saturated Atmosphere in the presence of sulfur dioxide	10	No physical damage.			/	No physical damage.	Meet Spec.
	6	2407487-2	Contact Resistance	10	1.51	0.46	1.02	mΩ	After test: R_{at} ≤ 5 mΩ	Meet Spec.
	7	2407487-2	Dielectric Withstanding Voltage	10	No breakdown nor flashover			/	No breakdown nor flashover	Meet Spec.
10	1	6-1971895-2	Examination of Product	3	No physical damage.			/	No physical damage.	Meet Spec.
	2	6-1971895-2	Glow Wire Test (750 ℃)	3	t_E-t_i＜2 s or No flame			/	t_E-t_i＜2 s or No flame	Meet Spec.

3. Test Procedures and Requirements

3.1 Contact Resistance
Apply 1A current to the samples and record the voltage between the female and male part.
Requirement: Initial $R_i \leqslant 1.5\ m\Omega$
After test $R_{at} \leqslant 5\ m\Omega$
Test Method: IEC 60512-2-2-2003.

3.2 Dielectric Withstanding Voltage
Apply 2500 VAC between adjacent terminals and hold for 60s.
Requirement: No breakdown and flashover.
Test Method: EIA-364-20F-2019.

3.3 Examination of Product
Visual inspection on the samples.
Requirement: No physical damage.
Test Method: EIA-364-18B-2007.

3.4 Mating Force & Un-mating Force
Keep the female terminal and male terminal mating and un-mating force at a rate of 25mm/min.
Requirement: because of the samples with housing, so only for reference
Test Method: Customized Requirement.

3.5 Dry Heat
Mated samples
Hold the samples for 168h under 105 ℃.
Requirement: No physical damage.
Test Method: Customized Requirement.

3.6 Cold Storage
Mated samples
Hold the samples for 2h under -40 ℃.
Requirement: No physical damage.
Test Method: Customized Requirement.

3.7 Glow Wire Test
Subject completely assembled specimen to the temperature of 750 ℃, duration of glow-wire applied is 30 seconds.
Requirement: tE-tI＜2 s (750 ℃)
Test Method: IEC 60335-1-2020

3.8 Housing locking mechanism strength test
Apply a force to the samples to keep the mated housing separate from each other at a rate of 100mm/min.
Requirement: Min. 10 N (Interior Locking)
Test Method: Customized Requirement

3.9 Insulation Resistance
Mated samples
After storing in a relative humidity of 91~95% and 20~30 ℃ without dew for 48 h
Voltage for testing: 250VDC
Requirement: 5MΩ Min.
Test Method: Customized Requirement

3.10 Saturated Atmosphere in the presence of sulfur dioxide
Mated samples
Sulfur dioxide concentration: 0.67%
Test duration: 8h
Temperature: 40℃
After 8 hours under sulfur dioxide samples need to be cooling for 16h
Test Method: ISO 22479 2019

3.11 Retention Force Test
Apply an axial pull-off load to wire which is crimped with terminal to keep the terminal from housing at a rate of 100mm/min record the peak force.
Requirement: 30 N Min.
Test Method: Customized Requirement

3.12 Derating Curve
Category temperature = +105° C
Nominal Current = 4A, 6A, 10A, 16A, 20A
Drawing the derating curve refer to the temperature rise for the defined current.
Test Method: Customized Requirement

4. Validation

Requested by:

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_____ 2022-06-02
TE Connectivity Product Engineering

Prepared by:

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TE Connectivity Shanghai Electrical Components Test Lab.

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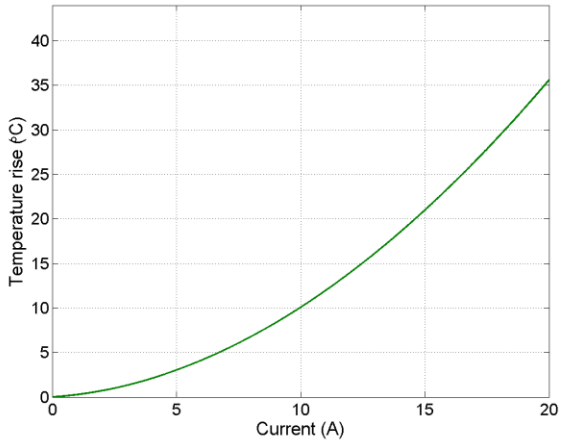
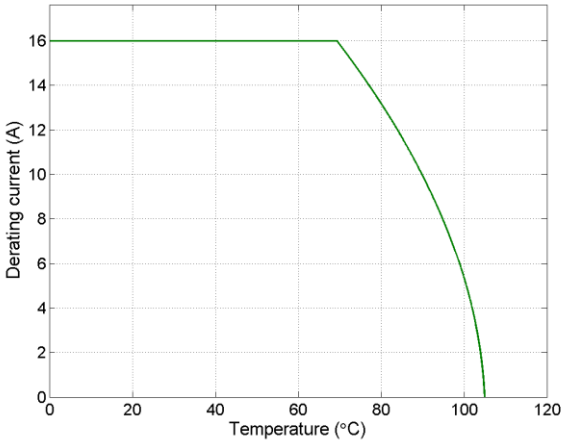
Appendix:





PS: The break-point of derating curve corresponds to the current 16.0A&69.6℃.

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