



MQS CB (Clean Body) Terminal

1. SCOPE

1.1 Content

This specification describes the design, the characteristics, the tests and the quality requirements of the
MQS CB Terminal.

1.2 General Product Description

The contact system combines the features of robust construction and highest functional requirements.

The electrical contact is made by a rectangle pin with length 0.63mmx0.63mm.

1.3 Application Sector

The contact system is designed for electronic applications with shrouded connectors and pin headers in automobiles.

1.4 Qualification

When testing the MQS CB terminal products the following specified specifications and standards shall be used.

All tests have to be done using the applicable inspection plan and product.

2. REFERENCED DOCUMENTS

The following documents form a part of this specification to the extent specified herein.

In the case of a conflict between this specification and the specified documents, this specification has priority.

For the listed documents is valid the specification at the date of the first release of this specification.

2.1 TE Specifications

- | | |
|---------------------------------------|--|
| A. 109-1 | General Requirements for Test Specifications |
| B. 114-61024 | Application Specification for MQS Terminal |
| C. 2005119, 2005120, 2390121, 2390130 | Product drawing |

3. DESCRIPTION OF NOMENCLATURE

All design and construction data, such as dimensions, materials, wire sizes, etc., are shown in the product drawings.

4. PROPERTIES

4.1 General Requirements

The product must correspond with the drawing, concerning the design and the physical dimensions.

4.2 Technical Data - Ratings

A. Current carrying capacity	Max. 7.5A
B. Maximum mating cycles	10 (for tin-plated contacts)
C. Temperature range	-40 °C to +125 °C (for tin-plated contacts)
D. Voltage	14.0 ± 0.1 VDC

4.3 Performance

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Chapter 4.4

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

4.4 Test Requirements and Procedures Summary

Test Description	Requirement		Procedure
TERMINAL MECHANICAL			
1. Visual Inspection	Assure parts used for testing are free of damage and obvious defects.		Visually, dimensionally and functionally inspected per applicable qualify inspection plan.
2. Terminal/Terminal Cycling	Preconditioning		Completely mate and un-mate each connector or terminal pair 10 times for tin-plated contacts.
3. Terminal-to-Terminal Engaging Force	0.1 ~ 0.5kgf		Operation speed: 50mm/min. Measure the force required to mate contact Initial.
4.Terminal-to-Terminal Disengaging Force	0.1 ~ 0.5kgf		Operation speed: 50mm/min. Measure the force required to un-mate contact.
5. Terminal Bend Resistance	Terminal shall not be damaged by a 0.4kgf load		Operation speed: 50mm/min. Original position, the terminal rotated 90° and 180°from the position shown in Fig. 1
6. Terminal Retention Force *	Secondary lock : 6kgf min		Operation speed: 50mm/min. Fix the housing after inserting crimped terminals. Extend one line of cable in axial direction at a position 50~100 mm away from crimped part
7. Crimp Tensile Strength (for copper/copper alloy conductor)	Wire Size (mm ²)	Strength (N)	Operation speed: 50mm/min. Apply an axial pull-off load to crimped wire of contact secured on the tester.
	0.3	6kgf min	
	0.5	9kgf min	
	0.75	10kgf min	

(Continued)

**TERMINAL ELECTRICAL**

8. Termination Resistance * (Low Level)	Initial: 10 mΩ Max. Final: 20 mΩ Max.	Subject mated contacts assembled in housing to 20±5mV open circuit at 100 mA Max. Fig. 2
9. Maximum Current Rating	Satisfy requirements of test item on the "4.5 sequence."	Max terminal current measurements are done. Temp rising 40°C Max. Fig. 3 (Refer to SAE/USCAR-2 5.3.3.3)
10. Current Cycling	40°C maximum temperature rise Over ambient. No ignition is allowed during the test.	Only perform the mate/unmate conditioning on a mated pair only once if the pair is used in multiple tests. 45 minutes "ON", 15 minutes "OFF" 1008 Hours
11. Instant Cutoff *	No electrical discontinuity exceeds 4.3V for more than 10 μsec shall occur.	Connect in series. Apply power with a waveform recorder and check. 5V, 100mA Fig. 4

TERMINAL ENVIRONMENTAL

12. Vibration *	Satisfy requirements of test item on the "4.5 sequence."	Frequency: 20-200 Sweep time: 3min Max. Acceleration: 4.4G Direction: X, Y, Z Duration: 40hours per each direction
13. Thermal Shock *	Satisfy requirements of test item on the "4.5 sequence."	-40°C/60 min. 125°C/60min. Temp transfer time: 5min. Max. Making this a cycle, repeat 200 cycles Fig. 5
14. Temp/Humidity *	Satisfy requirements of test item on the "4.5 sequence."	5cycle Fig. 6
15. Temp' Rising *	Satisfy requirements of test item on the "4.5 sequence."	Measure temperature rising at wire crimped by applied current to all positions.

(End)

* The test is required with applicable housing and header product.

4.5 Product Qualification Test Sequence

Test Examination	Test Group (sample quantities: 10ea minimum)									
	TG1	TG2	TG3	TG4	TG5	TG6	TG7	TG8	TG9	
	Test Sequence *									
1. Visual Inspection	1,4	1,3	1,3	1,3	1,3	1,6	1,4	1,4	1,5	
2. Connector/Terminal Cycling	2									
3. Terminal-to-Terminal Engaging Force	2									
4. Terminal-to-Terminal Disengaging Force	3									
5. Terminal Bend Resistance		2								
6. Terminal Retention Force			2						4	
7. Crimp Tensile Strength				2						
8. Voltage Drop					2	5	3	3	3	
9. Maximum Current Rating						2				
10. Current Cycling						3				
11. Instant Cutoff							2			
12. Vibration							2			
13. Thermal Shock								2		
14. Temp/Humidity									2	
15. Temp Rising						2,4				

* Numbers indicated sequence in which tests are performed.

4.6 Test Reference / Appendix

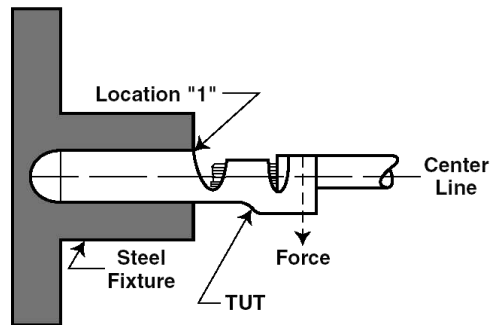


Fig. 1 Terminal Bend Resistance

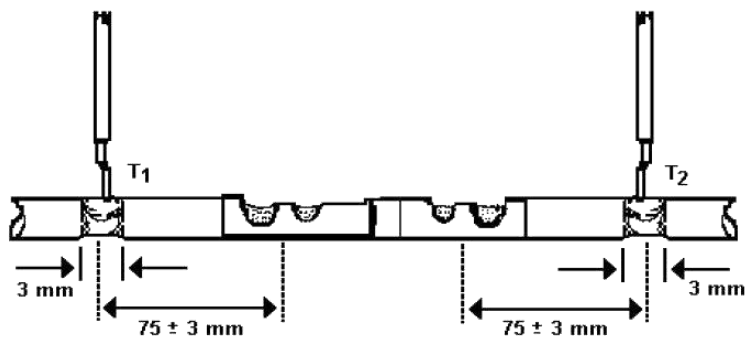


Fig. 2 Voltage Drop

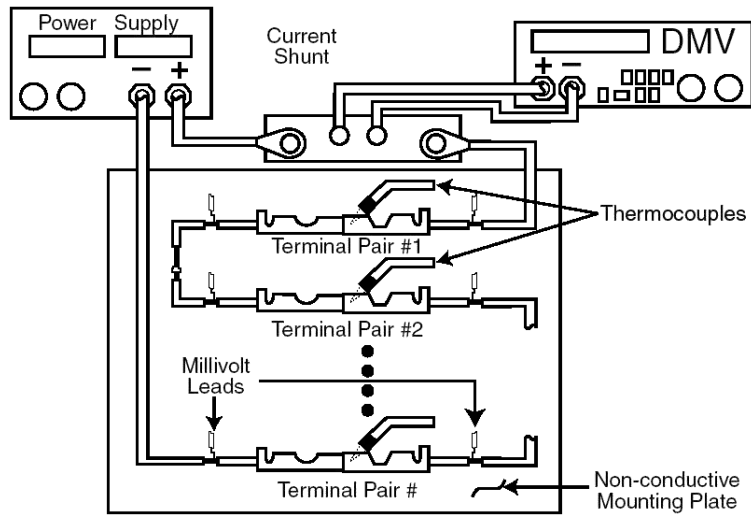


Fig. 3 Maximum Current Rating

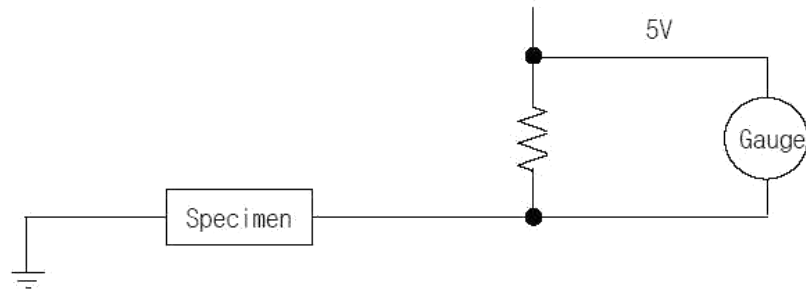


Fig. 4 Instant Cutoff

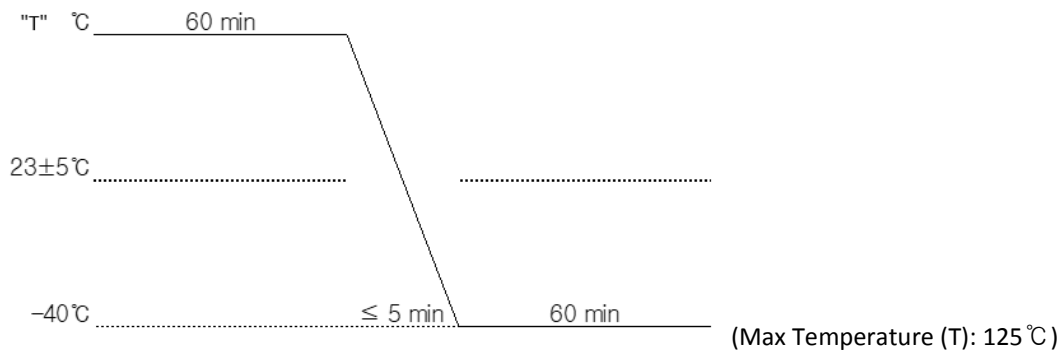


Fig. 5 Thermal Shock

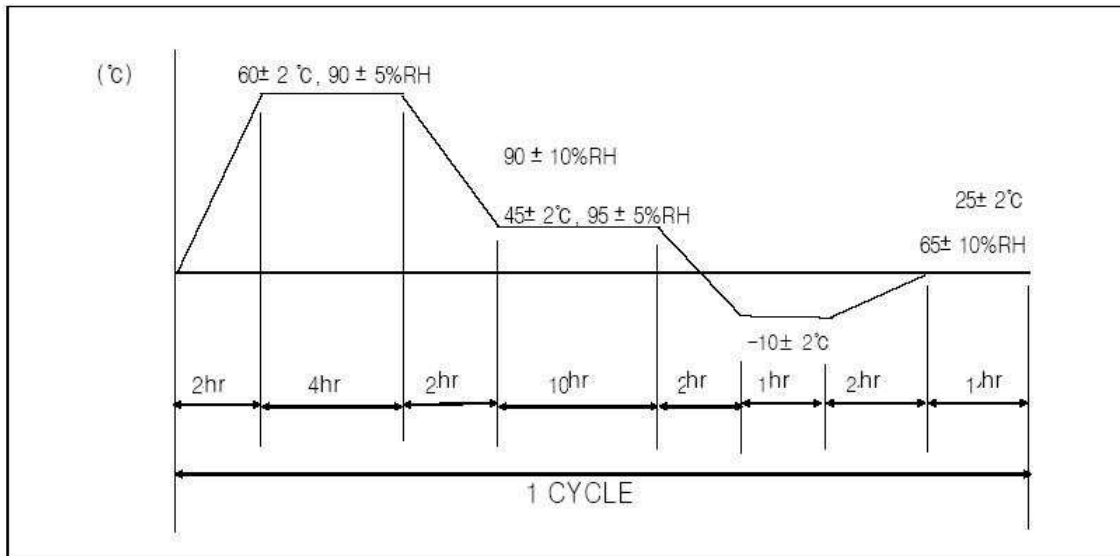


Fig. 6 Temp/Humidity