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**0.64 mm Generation Y Male Inline Terminal**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the TE Connectivity 0.64 mm Generation Y Terminal.

## 1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

## 1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed in August of 2008. The Qualification Test Report number for this testing is 501-657-1. This documentation is on file and is available from TE.

**2. APPLICABLE DOCUMENTS**

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

## 2.1. TE Document

[501-657-1](#): Qualification Test Report (0.64 mm Generation Y Male Inline Terminal)

## 2.2. Industry Standards

- Ford SDS (Rev 15):
- SAE/USCAR-2 (Rev 4, 5/04): Performance Specification For Automotive Electrical Connector Systems
- SAE/USCAR-20 (Rev 1, 10/02): Field Correlated Life Test Supplement to SAE/USCAR-2

**3. REQUIREMENTS**

## 3.1. Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

## 3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

## 3.3. Ratings

- Voltage: 12 volts DC
- Temperature: -40 to 100°C

## 3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

## 3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
<b>TERMINAL MECHANICAL</b>		
Visual inspection.	No damage to form, fit or function as examined by unaided vision.	SAE/USCAR-2.
Connector cycling.	Preconditioning.	SAE/USCAR-2. 10 mating/unmating cycles.
Terminal-to-terminal engaging force.	3.7 N maximum. Reference 108-2296. This is a function of the female terminal.	SAE/USCAR-2. Measure the force necessary to fully insert a blade into a receptacle.
Terminal-to-terminal disengaging force.	0.6 N minimum. Reference 108-2296. This is a function of the female terminal.	SAE/USCAR-2. Measure the force necessary to remove a blade from a receptacle.
Terminal bend resistance.	Terminal shall not be damaged by a 4 N force applied for 15 seconds.	SAE/USCAR-2. Apply specified force in 3 specified directions at a maximum rate of 50 mm per minute.
Terminal crush resistance.	Withstand an applied force of 70 N for 2 minutes with no damage.	Ford SDS. Apply specified force at a maximum rate of 50 mm per minute to the top of the terminal.
Robustness to test probe.	Withstand an applied force of 30 N with no displacement.	Ford SDS. Apply specified force at a maximum rate of 50 mm per minute to the front face of the terminal.
Vibration.	No damage.	SAE/USCAR-20. Subject specimens to vibration profile per Figure 4.
<b>TERMINAL ELECTRICAL</b>		
Dry circuit resistance.	20 milliohms maximum.	SAE/USCAR-20. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Millivolt drop.	10 milliohms maximum.	SAE/USCAR-2.
Maximum current rating.	30°C maximum temperature rise over ambient. 20 milliohms maximum resistance.	SAE/USCAR-2. See Figure 5.
1008 hour current cycling.	55°C maximum temperature rise over ambient. 20 milliohms maximum resistance.	SAE/USCAR-2.

Figure 1 (cont'd)

Test Description	Requirement	Procedure
<b>TERMINAL ENVIRONMENTAL</b>		
Thermal shock.	No damage.	SAE/USCAR-20. Subject specimens to 72 cycles between -40 and 85°C with 30 minute dwells at temperature extremes and 30 second transition between temperatures.
Thermal age.	No damage.	SAE/USCAR-20. Subject specimens to 85°C for 72 hours.
Temperature/humidity cycling.	No damage.	SAE/USCAR-20. Subject specimens to 24 temperature/humidity cycles as follows: 1) 16 hours at 65 ± 3°C and 95 to 98% relative humidity; 2) 2 hours at -40 ± 3°C humidity uncontrolled; 3) 2 hours at 85 ± 3°C humidity uncontrolled; 4) 4 hours at 23 ± 3°C humidity uncontrolled. The above steps constitute 1 complete cycle, 4 cycles constitute 1 complete test. Maximum transfer time between temperature extremes shall be 5 minutes. Maximum time tolerance shall be ± 5 minutes.

**Figure 1 (end)**

## 3.6. Product Qualification Test Sequence

Test or Examination	Test Group (a)						
	1	2	3	4	5	6	7
	Test Sequence (b)						
Visual inspection	1,4	1,3	1,3	1,3	1,7	1,5	1,13
Connector cycling					2	2	
Terminal-to-terminal engaging force	2						
Terminal-to-terminal disengaging force	3						
Terminal bend resistance		2					
Terminal crush resistance				2			
Robustness to test probe			2				
Vibration							4,9
Dry circuit resistance							2,7,12
Millivolt drop					3,5	3	
Maximum current rating					4,6		
1008 hour current cycling						4	
Thermal shock							5,10
Thermal age							3,8
Temperature/humidity cycling							6,11


**NOTE**

(a) See Paragraph 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

Figure 2

3.7. Product Requalification Test Sequence

Test Sequence	USCAR/EWCAP SAE/USCAR-2	Terminal Testing		
		Tool Transfer	New/Capacity Tooling	Material Change (1)
A	Terminal-to-terminal engage/disengage force	X	X	X
B	Terminal bend resistance		X	X
C	Maximum/current cycling			X
D	Terminal-connector insertion/extraction		X	
M	Vibration			(2)
N	Thermal shock			(2)
O	Temperature/humidity cycling			(2)



**NOTE**

- (1) Material change includes: base material, hardness, plating, process and/or electrical lubricant.
- (2) USCAR-20 and test sequence N may be performed in place of these three tests.

**Figure 3**

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## 4. QUALITY ASSURANCE PROVISIONS

### 4.1. Qualification Testing

#### A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Each test group shall consist of a minimum of ten specimens.

#### B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

### 4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering (see Figure 3).

### 4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

### 4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

Hertz (Hz)	g <sup>2</sup> /Hz
10	0.070
20	0.070
40	0.020
350	0.020
550	0.005
700	0.001
750	0.0001
2000	0.0001
RMS g level 3.2 gs	

Figure 4 (Vibration Profile)

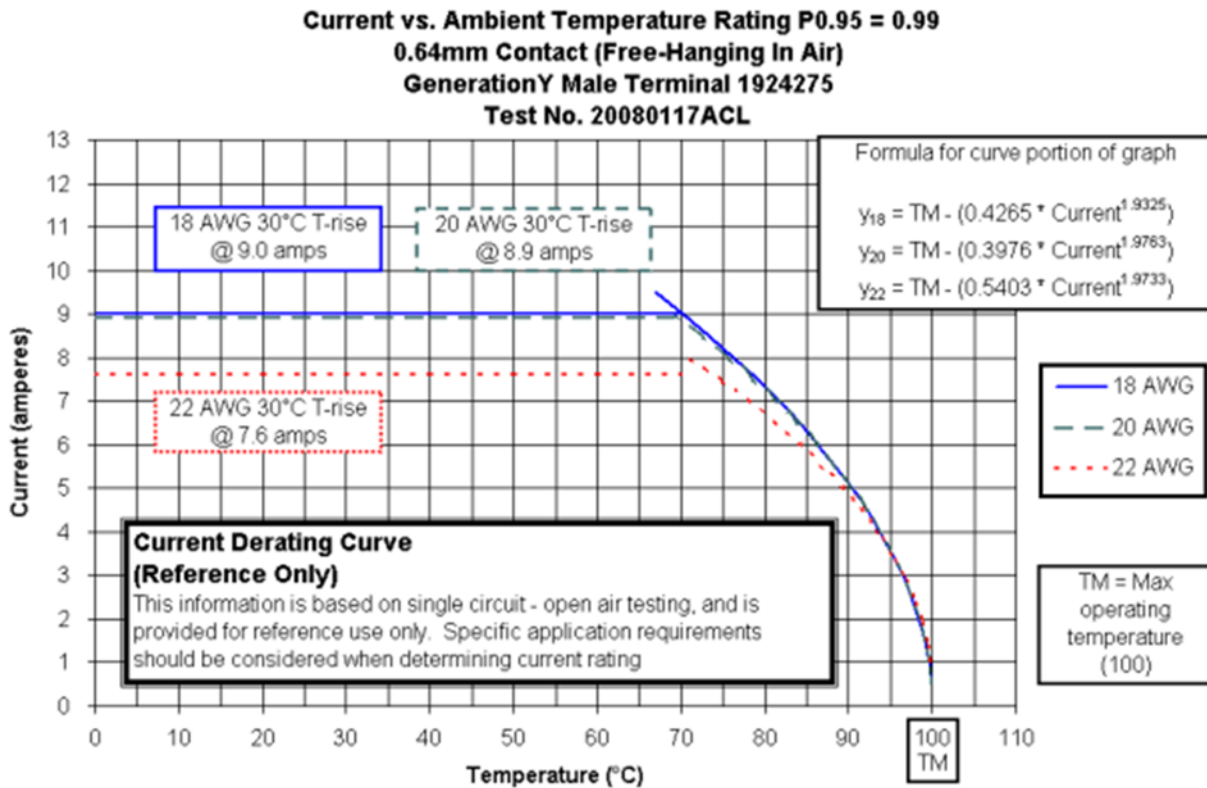


Figure 5 (Maximum Current Rating)