
0.64 mm Generation Y Terminal

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics 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 on 10May07. The Qualification Test Report number for this testing is 501-657. This documentation is on file at and available from Engineering Practices and Standards (EPS).

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. Tyco Electronics Documents

- 114-13183: Application Specification (Generation Y 0.64 mm Socket Contacts)
- 501-657: Qualification Test Report (0.64 mm Generation Y Terminal)

2.2. Industry Standards

- 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
- SAE/USCAR-21 (Rev 1, 4/04): Performance Specification For Cable-to-Terminal Electrical Crimps

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
- Free Air Current Rating at or below 70°C, see Figure 3 for free air derating curve.
 - 18 AWG: 10.5 amperes
 - 20 AWG: 9.5 amperes
 - 22 AWG: 8.3 amperes
- 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
TERMINAL MECHANICAL		
Visual inspection.	No defects.	SAE/USCAR-2, 5.1.8.3.
Connector/terminal cycling.	Preconditioning.	SAE/USCAR-2, 5.1.7.4.
Terminal-to-terminal engaging force.	3.7 N maximum.	SAE/USCAR-2, 5.2.1.3. First cycle.
Terminal-to-terminal disengaging force.	0.6 N minimum.	SAE/USCAR-2, 5.2.1.3. Tenth cycle.
Terminal bend resistance.	Terminal shall not be damaged by a 4 N load.	SAE/USCAR-2, 5.2.2.3, Figure 3. Apply specified load at a maximum rate of 50 mm per minute.
Terminal crush resistance.	Withstand a crush load of 70 N without visible fracture or degradation of electrical performance, terminal insertion, or terminal cavity lockup.	Apply specified load at a maximum rate of 50 mm per minute to top and side of the terminal box for 2 minutes.
Robustness to test probe.	Withstand an applied force of 30 N on the front face of the terminal beam.	Apply a 30 N load at a maximum rate of 50 mm per minute to the flap on the front of the terminal to simulate electrical test probes.
TERMINAL ELECTRICAL		
Dry circuit resistance.	20 milliohms maximum.	SAE/USCAR-2, 5.3.1.3.
Voltage drop.	20 milliohms maximum.	SAE/USCAR-2, 5.3.2.3.
Maximum current rating.	30°C maximum temperature rise over ambient. 20 milliohms maximum resistance. See Figure 4.	SAE/USCAR-2, 5.3.3.3.

Figure 1 (continued)

Test Description	Requirement	Procedure
1008 hour current cycling.	55°C maximum temperature rise over ambient. 20 milliohms maximum resistance.	SAE/USCAR-2, 5.3.4.3.
Thermal shock.	Temperature Class II (105°C). 20 milliohms maximum resistance.	SAE/USCAR-2, 5.6.1.3.
Stand alone pressure/vacuum (does not apply to 1456574).	7 psi initial pressure/vacuum. 4 psi after heat soak. Insulation resistance to exceed 20 milliohms at 500 volts DC.	SAE/USCAR-2, 5.6.6.3.
Field correlated life test.	The crimp-interface-crimp dry circuit resistance shall not exceed 20 milliohms as measured at the beginning and end of each test cycle. The crimp resistance of each crimp shall not exceed 3 milliohms at the beginning and end of test. The crimp-interface resistance shall not exceed 17 milliohms at the beginning and end of each test cycle.	SAE/USCAR-20, Sections 6 and 7.
CRIMP VALIDATION		
Appearance.	No defects.	SAE/USCAR-21, 4.2.4.
CCH, CCW, ICH and ICW.	Measure and record.	SAE/USCAR-21, Appendix E.
Cross-section.	No defects.	SAE/USCAR-21, 4.3.4.
Conductor crimp pull-out force.	50 N for 22 AWG wire. 75 N for 20 AWG wire. 90 N for 18 AWG wire.	SAE/USCAR-21, 4.4.4.
Accelerated environmental test sequence (ENV).	0.93 milliohm maximum or ΔR 0.84 milliohm for 22 AWG wire. 0.74 milliohm maximum or ΔR 0.66 milliohm for 20 AWG wire. 0.62 milliohm maximum or ΔR 0.56 milliohm for 18 AWG wire.	SAE/USCAR-21, 4.5.2.4.

Figure 1 (end)

3.6. Product Qualification Test Sequence

Test or Examination	Test Group (a)										
	1(b)	2(b)	3(b)	4(b)	5(c)	6(c)	7(c)	8(c)	9(b)	10(b)	11
	Test Sequence (d)										
Visual inspection	1,4	1,3	1,3	1,3	1,9	1,7	1,4				
Connector/terminal cycling					2	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							
Dry circuit resistance					3,7	3,5					
Voltage drop					4,8	6					
Maximum current rating					5						
1008 hour current cycling					6						
Thermal shock						4					
Stand alone pressure/vacuum							3				
Field correlated life test								1			
Appearance									1	1	1,3
CCH, CCW, ICH and ICW									2		
Cross-section									3		
Conductor crimp pull-out force										2	
Accelerated environmental test sequence (ENV)											2

- NOTE**
- (a) See paragraph 4.1.A.
 - (b) Tests on terminals only.
 - (c) Tests on terminals in connectors.
 - (d) 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/mechanical shock			(2)
N	Thermal shock			(2)
O	Temperature/humidity cycling			(2)
P	High temperature exposure			(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 four tests.*

Figure 3

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. Test groups 1, 3 and 4 shall each consist of 10 specimens. Test group 2 shall consist of 15 specimens of each wire size being tested. Test groups 5 and 11 shall each consist of 30 specimens of each wire size being tested. Test group 6 shall consist of 10 specimens of each wire size being tested. Test group 7 shall consist of 20 specimens. Test group 8 shall consist of 8 specimens. Test group 9 shall consist of 3 specimens of each wire size being tested. Test group 10 shall consist of 60 specimens of each wire size being tested.

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.

Current vs. Ambient Temperature Rating P0.95 = 0.99 0.64mm Contact (Free-Hanging In Air)
 Generation Y terminals 1456841 and 1456574
 Test No. 20060267ACL

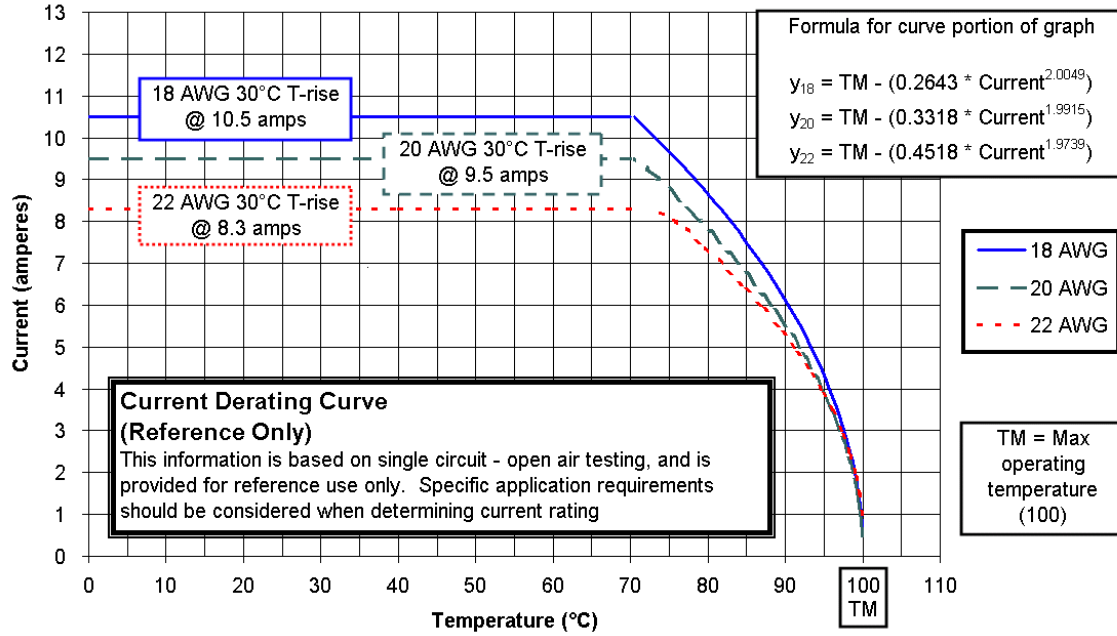


Figure 4
 Maximum Current Rating