

D8000 Connector Series

1. SCOPE

1.1. Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of Dynamic connector D-8000 series.

1.2. Qualification

When tests are performed, the following specified specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence.

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2.1. TE Connectivity Documents

- 114-78058: Application Specification.
- 501-78768: Test Report

2.2. Commercial standard and Specifications:

- EN 61984: Connectors - Safety requirements and tests
- IEC 60529: Degrees of Protection Provided by Enclosures (IP Code)
- IEC 60664-1: Insulation coordination for equipment within low-voltage systems (Part 1)
- UL1977: Standard for safety.
- MIL-STD-202: Test methods for Electronic and Electrical Component Parts
- EIA364: Electrical Connector/Socket test Procedures including Environmental Classifications

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

- Rated Current/ Voltage / Impulse Voltage / Pollution Degree
- WTW:100A,WTB:90A/1000V AD/DC /8KV/III
- Operation Temperature -55°C ~+105°C
- Degree of Protection IP20 for WTP with mated condition
- Overvoltage Category III

3.4. Derating curves

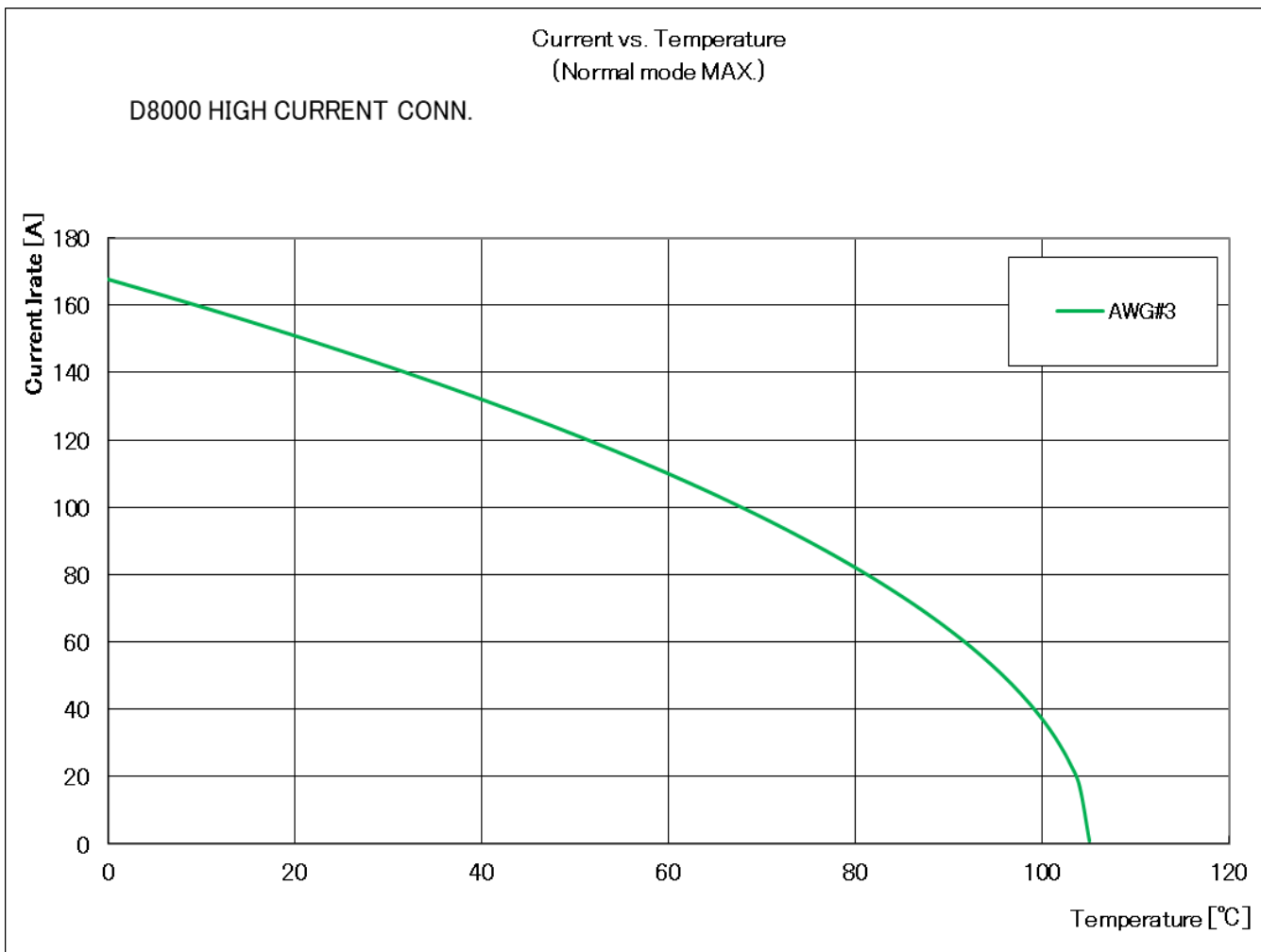


Fig.1

3.5. Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.2. All tests shall be performed in the room temperature, unless otherwise specified.



General			
No.	Test Items	Requirements	Condition according to
3.5.1	Examination of Product	Meets requirements of product drawing and Specification	Visual inspection No physical damage.

Electrical			
3.5.2	Contact Resistance (Low Level)	0.8mΩMax	Subject mated contacts assembled in housing to 50mV Max open circuit at 50mA. Refer to Fig. 5 EIA364-23
3.5.3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA Max.	3kV AC for 1 minute. Test between adjacent circuits of mated/ unmated connectors. MIL-STD-202 Method 301
3.5.4	Insulation Resistance	1000MΩ Min	Impressed voltage 500 V DC. Test between adjacent circuits of mated/ unmated connectors. MIL-STD-202 Method 302 condition B
	Temperature Rising	30°C Max. under loaded specified current or rating current.	Measure temperature rising by energized current: WTB type:90A. WTW type:100A Refer to Fig.4 EIA364-70

Mechanical												
3.5.6	Contact Retention Force	98N Min.	Apply an axial pull-off load to crimped wire. Operation Speed: 100mm/min. EIA364-29									
3.5.7	Crimp Tensile Strength	<table border="1"> <thead> <tr> <th colspan="2">Wire Size</th> <th>Crimp Tensile(min)</th> </tr> <tr> <th>mm²</th> <th>(AWG)</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>#3</td> <td>380</td> </tr> </tbody> </table>	Wire Size		Crimp Tensile(min)	mm ²	(AWG)	N	25	#3	380	Apply an axial pull-off load to crimped wire of contact secured on the tester. Operation Speed : 25 mm/min. EIA364-8
		Wire Size		Crimp Tensile(min)								
		mm ²	(AWG)	N								
25	#3	380										
3.5.8	Physical Shock	No electrical discontinuity greater than 1μsec. Shall occur. Meet requirement of Contact resistance (0.8 mΩ Max.)	Accelerated Velocity :490m/s ² Waveform : sine wave Duration : 11ms Velocity Change : 3.4m/s Number of Drops:3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops MIL-STD-202 Method 213, condition A									



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3.5.9	Connector Mating Force	58.8N Max per 1 contact	Operation Speed : 100mm/min. Measure the force required to mate connector. EIA364-13
3.5.10	Connector Unmating Force	58.8 N Max per 1 contact	Operation Speed : 100mm/min. Measure the force required to unmate connector. EIA364-13
3.5.11	Contact Insertion Force	39.2N Max per 1 contact	Measure the force required to insert contact into housing.
3.5.12	Vibration(High Frequency)	No electrical discontinuity greater than 1 μ sec. Shall occur.	Vibration Frequency: 10-500 / 15min. Accelerated Velocity : 98 m/s ² Vibration Direction: X,Y,Z Duration : 2 hours each MIL-STD-202 Method 204 condition A
3.5.13	Durability (Repeated Mate/Unmating)	Meet requirement of Contact resistance (0.8 m Ω Max.).	Operation Speed :100mm / min 10 cycles
3.5.14	Housing Locking Strength	98N Min.	Measure housing locking strength. Operation Speed : 50 mm/min. EIA364-98
3.5.15	Solderability	Wet Solder Coverage : 95% Min.	Solder Temperature : 235 \pm 5 $^{\circ}$ C Immersion Duration : 5 \pm 0.5seconds Flux : Alpha 100 MIL-STD-202 Method 208

Environmental			
3.5.16	Resistance to Soldering Heat for Reflow Process(HDR type)	No physical damage. Retention force of leg: 15N min/pin. Operation speed: 25.4mm/min.	Reflow condition: Fig. 6 preheat temperature: 150-200 $^{\circ}$ C preheat time: 60 to 120 seconds Peak temperature: 260 $^{\circ}$ C Peak temperature time :20 to 40 seconds Time 25 $^{\circ}$ C to peak: 8 minutes maximum Per J-STD-020, Table 5-2, Pb-Free.
3.5.17	Thermal Shock	Meet requirement of Contact resistance(0.8m Ω Max).	Mated connector -55 $^{\circ}$ C / 30min., 85 $^{\circ}$ C / 30min. Making this a cycle, repeat 25 cycles. MIL-STD-202 Method 107, condition A-1



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3.5.18	Humidity-Temperature Cycling	Meet requirement of Contact resistance(0.8mΩ Max).	Mated/Unmated connector, 25~65°C, 90~95% R.H. 10 cycles Cold shock -10°C not performed MIL-STD-202 Method 106
3.5.19	Industrial Gas (SO ₂)	Meet requirement of Contact resistance(0.8mΩ Max).	Mated connector SO ₂ Gas: 10ppm, 95% R.H. 25 °C, 96 hours
3.5.20	Temperature Life (Heat Aging)	Meet requirement of Contact resistance(0.8mΩ Max).	Mated connector 105 °C, Duration: 250hours MIL-STD-202 Method 108
3.5.21	Industrial gas (H ₂ S)	Meet requirement of Contact resistance(0.8mΩ Max).	Mated connector H ₂ S Gas: 10ppm, 95% R.H. 25 °C, 504 hours

Fig.2(End)

4. Product Qualification Test Sequence

Test Examination	Test Group											
	1	2	3	4	5	6	7	8	9	10	11	12
	Test Sequence(a)											
Examination of Product	1	1	1	1	1	1	1	1	1	1	1	1
Contact Resistance (Low Level)		2,5	2,4,6 8,10	2,5								2,5
Dielectric withstanding Voltage						3,6						
Insulation Resistance						2,5						
Temperature Rising					2							
Vibration		3										
Physical Shock		4										
Conn. Mating Force	2,5,											
Conn. Unmating Force	3,6											
Conn. Locking Strength							2					
Cont. Insertion Force								2				
Cont. Retention Force								3				
Crimp Tensile Strength									2			
Durability (Repeated Mate/Unmating)	4		3	3								3
Solderability										2		
Resistance to Soldering heat											2	
Thermal Shock			7									
Humidity-Temperature Cycling			9			4						
Industrial SO ₂ gas				4								
Temperature Life			5									
Industrial H ₂ S gas												4

Fig.3

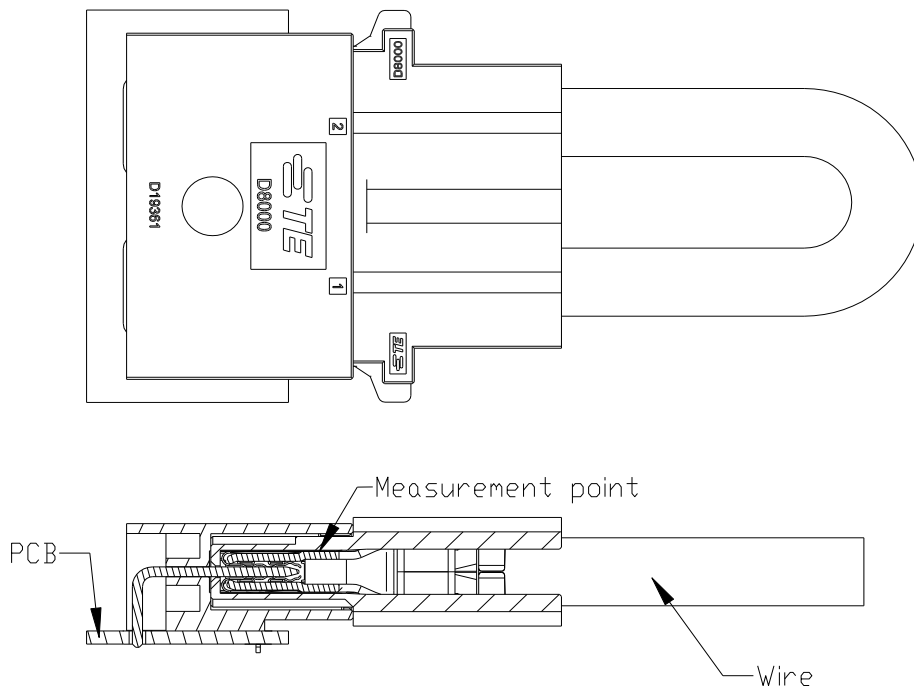
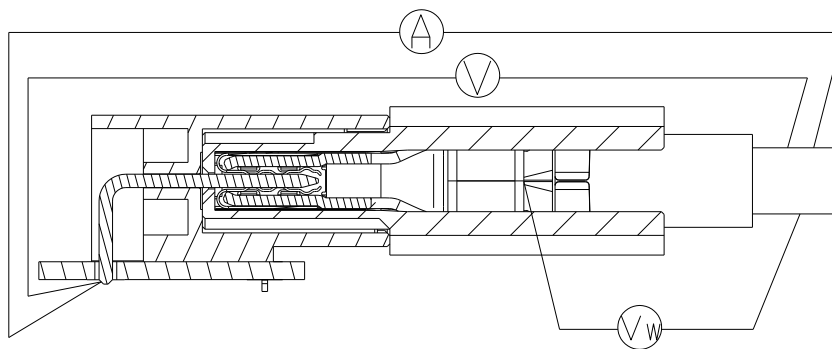


Fig.4/Test point of temperature rise



$$m\Omega = (V - V_w) / A$$

Fig.5/Masurement of contact LLCR

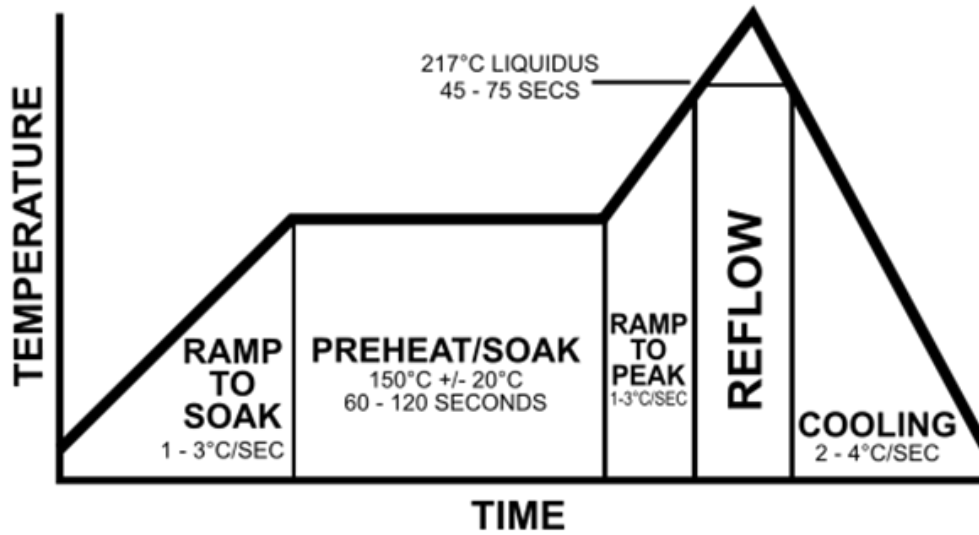


Fig 6/Reflow Profile

5. Requirements:

5.1. Qualification Testing

- Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production.

- Test Sequence

Qualification inspection shall be verified by Testing samples as specified in Figure 3.

- Test Conditions:

Unless otherwise specified, all the tests shall be performed in any combination of the test condition.

Temperature	15-35°C
Relative humidity	45-75%
Atmospheric Pressure	866.6-1066.6hPa

5.2. Requalification Testing

If changes significantly affecting form, fit or functions 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.

5.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 2. 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 re-submittal.

5.4. 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.



6. PART DESCRIPTION

Part No.	Description
1-2351965-2	D8000 HDR Conn.
2373747-5	D8000 REC Contact
1-2351981-2	D8000 REC HSG
2351982-5	D8000 TAB Contact
1-2352216-2	D8000 TAB HSG