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## PRODUCT SPECIFICATION EXTREME POWERMASS<sup>®</sup> BUSS BAR CONNECTOR





REVISION:	ECR/ECN INFORMATION:	TITLE: PRODI	JCT SPECIFICATIO	ON	SHEET No.
Α	EC No:UCP2016-3524		EME POWERMAS		<b>1</b> of <b>17</b>
A	DATE:2014/02/28	BUSS	BAR CONNECTO	R	
DOCUMENT NUMBER:		CREATED / REVISED BY:	CHECKED BY:	<u>APPROV</u>	/ED BY:
PS-172201-001		M.BANDURA	A. PATEL	B. PISZ	CZOR



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### 1.0 SCOPE

The Extreme Powermass Buss Bar Connector is a right angle receptacle which can attach to a printed circuit board with either press-fit or through-hole solder terminals, and is intended for use with a buss bar type interface.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAMES & SERIES NUMBERS:

This specification covers the performance requirements and test methods for the following products listed by series numbers:

- \* 172201-0001 Extreme Powermass Receptacle Assembly, Screw Mount with Press-Fit
- \* 172201-0002 Extreme Powermass Receptacle Assembly, Screw Mount with Solder Terminal
- \* 172201-0003 Extreme Powermass Receptacle Assembly, Solder Terminal

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Dimensions: See individual sales drawings. Material: RoHs compliant materials (LCP for housings, copper alloy for terminals).

Plating: Silver on mating surfaces and Tin on the PC tail with nickel underplating overall.

### 2.3 SAFETY AGENCY APPROVALS

UL File Number: TBD

CSA File Number: TBD

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Refer to the appropriate sales drawings and other sections of this specification for the necessary referenced documents and specifications.

### 3.1 MOLEX DRAWINGS

3.1.1 SD-172201-0001 Receptacle Assembly Drawing

3.1.2 SD-172201-0002 Receptacle Assembly Drawing

3.1.3 AS 172201-001 Application Specification

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### 4.0 RATINGS

#### 4.1 VOLTAGE

UL/CSA: 600 VAC

#### Connector Rating per UL-1977

Connector voltage rating meets the connector approval level defined by UL 1977, Sect. 11 for spacing per table 11.1. Example: 1.2 mm spacing for a voltage rating of 250 volt or less, and 3.2 mm spacing for a voltage rating of more than 250 volts.

Exception taken for spacing less than those specified are permitted, if the device complies with the requirements in the dielectric voltage withstanding test per Sect. 17. of UL 1977.

#### **Application Voltage Guideline**

For application voltage requirements, please refer to UL-60950 or other standards. Creepage & Clearance also needs to be determined based upon pad/trace locations on the pcb.

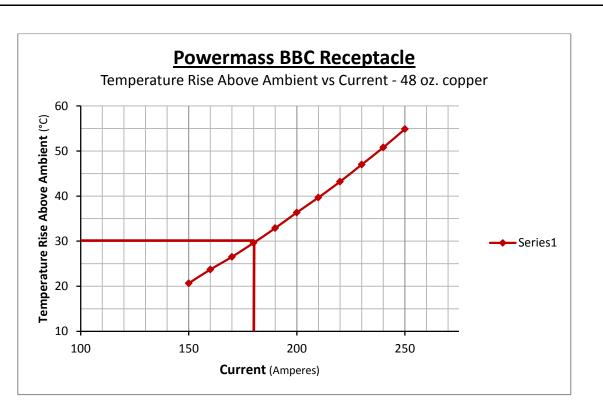
#### 4.2 CURRENT \*\*

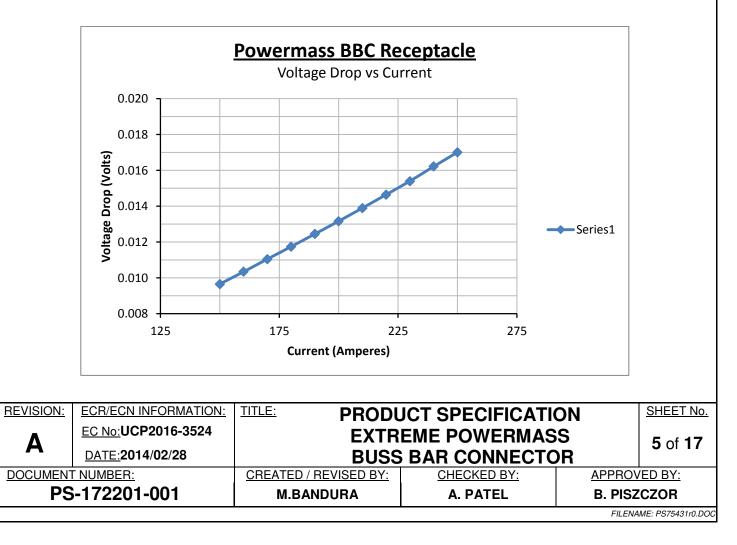
180 Amps

\*\* Current rating is application dependent. Above rating is provided as a guideline only. Appropriate de-rating is required per ambient conditions, copper weight of PCB, gross heating from adjacent modules/components, and other factors that influence connector performance.

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#### 4.3 TEMPERATURE

Temperature life tested per EIA 364-17 Method A for 180 hrs@105<sup>o</sup> per table-8 to meet field temperature of 65<sup>o</sup> C for 7 years life. See Sect. 8.1for detailed test sequence of EIA-364-1000.01, Group I.

Operating: -40°C to +105°C Non-operating: -40°C to +105°C (including T-Rise from applied current)

#### 4.4 DURABILITY

25 cycles

### 5.0 QUALIFICATION

Laboratory condition and sample selection are in accordance with EIA-364-1000.01.

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#### 6.0 PERFORMANCE

\* The values listed below are derived from testing performed under laboratory conditions, using a silver plated buss bar with an environmental barrier. End results may vary depending upon specific application requirements, and the condition of the mating buss bar interface.

#### 6.1 ELECTRICAL PERFORMANCE

	DESCRIPTION	TEST CONDITION	REQUIREMENT	
	INITIAL CONTACT RESISTANCE (LOW LEVEL) (EIA-364-23)	Per EIA-364-23	0.30 milliohm	
	VOLTAGE DROP (@ RATED CURRENT)	Per EIA-364-70	See Chart on Page 5	
	INSULATION RESISTANCE	Apply 500 VDC between adjacent terminals or ground. Per EIA-364-21	5,000 megaohms minimum	
	DIELECTRIC WITHSTANDING VOLTAGE	Apply 1500 VDC for 1 minute between adjacent terminals or ground. Per EIA-364-20	No breakdown	
	TEMPERATURE RISE	Mate connectors Measure T-Rise @ Rated Current After 96 Hours per EIA-364-70	30 C T-Rise above ambient	
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	<u>DATE:</u> 2014/02/20 T NUMBER:	CREATED / REVISED BY:	BAR CONNECTOR CHECKED BY: APPROVED	<b>D</b> )/

**M.BANDURA** 

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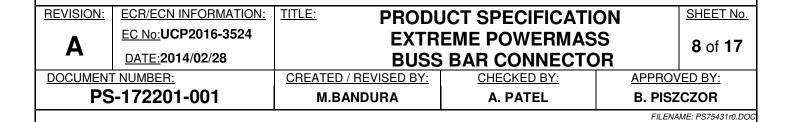
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**B. PISZCZOR** 



#### 6.2 MECHANICAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
MATING FORCE, SINGLE CIRCUIT (EIA-364-37)	Mate connectors at a rate of 25 +/- 6 mm per minute.	3000 g (Max Value)
UNMATING FORCE, SINGLE CIRCUIT (EIA-364-37)	Unmate connectors at a rate of 25 +/- 6 mm per minute.	200 g (Min Value)
DURABILITY W/O ENVIRONMENT (EIA-364-09)	Mate connectors 5 cycles at a maximum rate of 10 cycles per minute.	Maximum Change: 0.25 milliohm
CONTACT RETENTION (EIA-364-29)	Axial pullout force on the terminal in the housing at a rate of 25 +/- 6 mm per minute.	225 g (Min Value)
Resistance to heat from soldering rework (for PCB with OSP vias)	Per EIA-364-61, Test Procedure 4 for compliant pin retention force	Meet PCB retention requirement per Sect 6.4 of this spec.





#### 6.3 ENVIRONMENTAL PERFORMANCE

	ITEM	TEST CONDITION	REQUIRE	MENT
	VIBRATION (EIA-364-28)	Mate connectors and vibrate per EIA-364-28 test condition D 15 minutes each axis	Maximum ( 0.25 mil	
	MECHANICAL SHOCK (EIA-364-27)	Mate connectors and shock at 50 g with ½ sine wave (11 milliseconds) shocks in the X, Y, Z axes (18 shocks total)	Maximum ( 0.25 mill	Change: iohm
	THERMAL SHOCK (EIA-364 TS-1000.01)	Mate connectors, expose to 10 cycles from -55 deg. C to 85 deg. C per EIA-364 TS- 1000.01	Maximum ( 0.25 mill	
	TEMPERATURE LIFE (EIA-364 TS-1000.01)	Mate Connectors, expose to 180 hours at 105 °C Per EIA-364-17 and EIA-364 TS-1000.01	t Maximum Change: 0.25 milliohm	
	CYCLIC TEMPERATURE AND HUMIDITY (EIA-364 TS-1000.01)	Mate connectors: expose to 24 cycles from 25 °C / 80% RH to 65 °C / 50% RH	Maximum ( 0.25 mill	
	DUST (EIA-364-91)	Unmated 1 hour duration 25 °C / 50% RH dust mass of 9 g/ft <sup>3</sup> at rate of 300 m/min	Maximum ( 0.25 mill	
	MIXED FLOWING GAS (EIA-364-65)	168 hours unmated, 72 hours mated, per EIA-364-65 Class IIA	Maximum Change: 0.25 milliohm	
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#### 6.4 COMPLIANT PIN PERFORMANCE

\* When tested with 3.18 mm thick, double sided PCB, with 2.0 Oz. copper. Values may vary with changes in pcb construction.

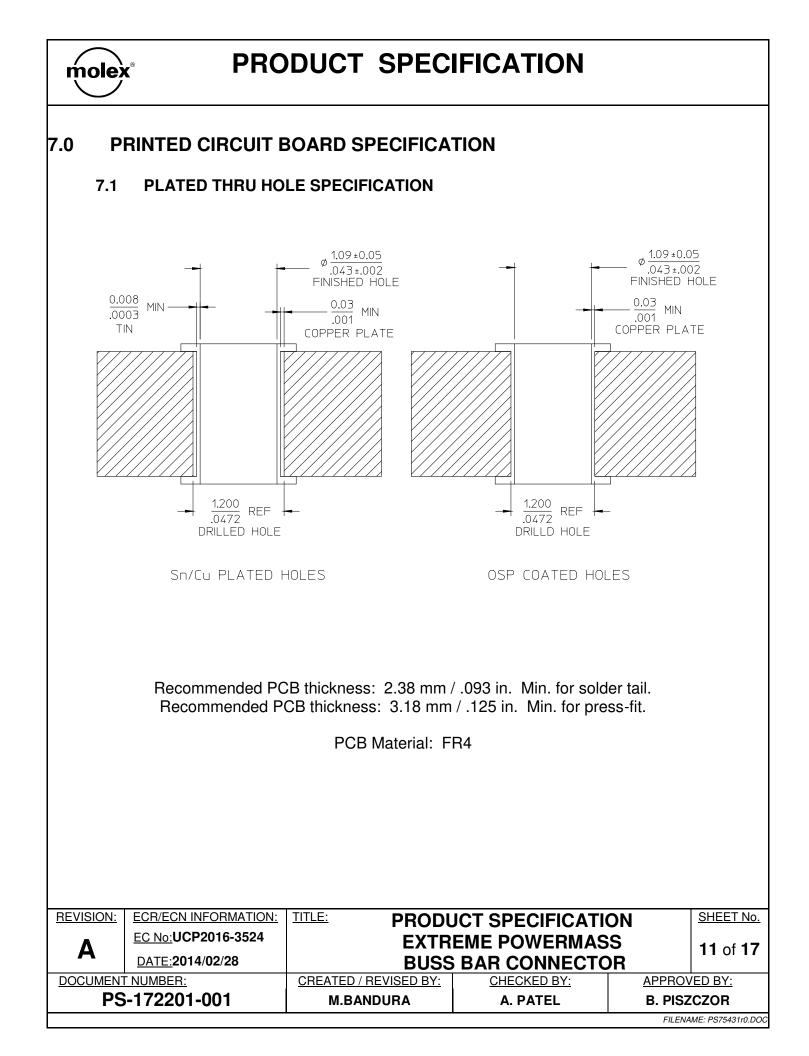
6.4.1 **Tin Plated** Thru Hole - Insertion and Withdrawal Force per EIA-364-05 and EIA-364-29.

COMPONENT	TEST CONDITION	REQUI	REMENT
COMPONENT	TEST CONDITION	INSERT.	WITHDR.
Power Receptacle (Single section)	Insert the single compliant section into the PTH, extract the section from the hole after 12 hrs, repeat 2 times (new part in the same hole)	111 N 25 lb MAX.	28 N 6.5 lb MIN.

## 6.4.2 **OSP Plated** Thru Hole - Insertion and Withdrawal Force per EIA-364-05 and EIA-364-29.

COMPONENT	TEST CONDITION	REQUIREMENT	
COMPONENT	TEST CONDITION	INSERT.	WITHDR.
Power Receptacle (Single section)	Insert the single compliant section into the PTH, extract the section from the hole after 12 hrs, repeat 2 times (new part in the same hole)	46.3 N 10.4 lb MAX	20.5 N 4.6 lb MIN.

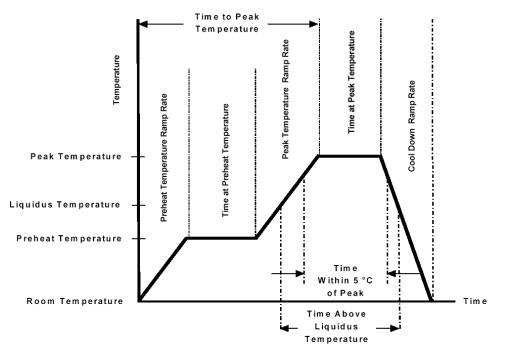
REVISION:	ECR/ECN INFORMATION: EC No: <b>UCP2016-3524</b> DATE: <b>2014/02/28</b>	EXTR	JCT SPECIFICATION EME POWERMAS	S	<u>SHEET No.</u> <b>10</b> of <b>17</b>
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#### 7.2 SOLDER PROFILE

(This profile is per JEDEC J-STD-020D.1 and it is for guide line only; please see notes for additional information)



Description	Requirement
Average Ramp Rate	3°C/sec Max
Preheat Temperature	150°C Min to 200°C Max
Preheat Time	60 to 180 sec
Ramp to Peak	3°C/sec Max
Time over Liquids (217°C)	60 to 150 sec
Peak Temperature	260 +0/-5°C
Time within 5°C of Peak	20 to 40 sec
Ramp - Cool Down	6°C/sec Max
Time 25°C to Peak	8 min Max

Notes:

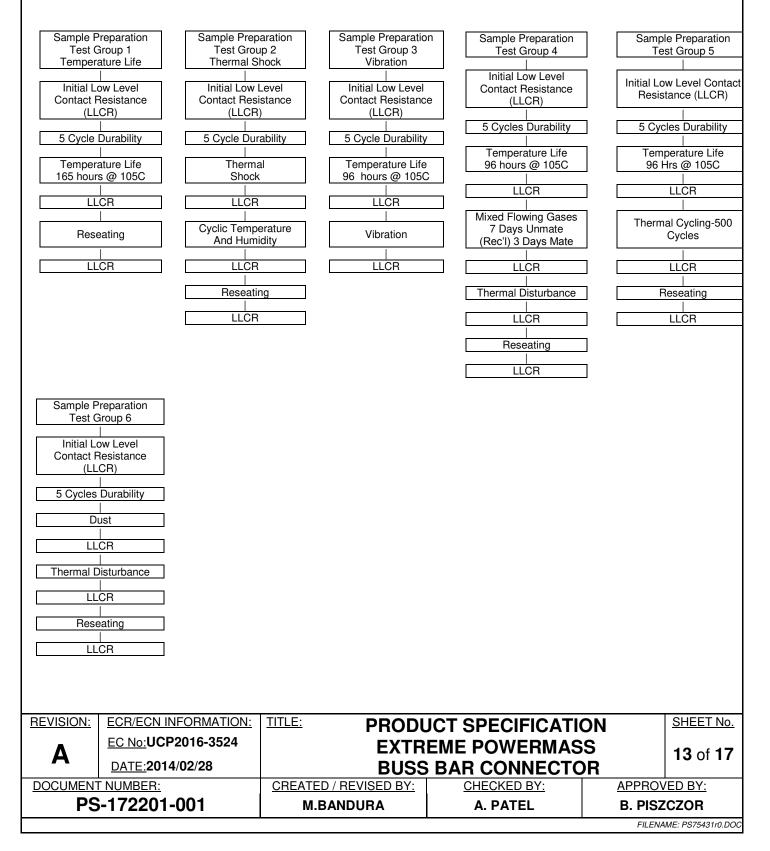
- 1. Temperature indicated refers to the PCB surface temperature at solder tail area.
- 2. Connector can withstand up to 3 reflow cycles with a cool-down to room temperature in-between.
- 3. Actual reflow profile also depends on equipment, solder paste, PCB thickness, and other components on the board. Please consult your solder paste & reflow equipment manufacturer for their recommendations to adopt a suitable process.

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### 8.0 TEST SEQUENCE

#### 8.1 Reliability Test Sequences (per EIA-364-1000):





### 8.2 Miscellaneous Test Sequences:

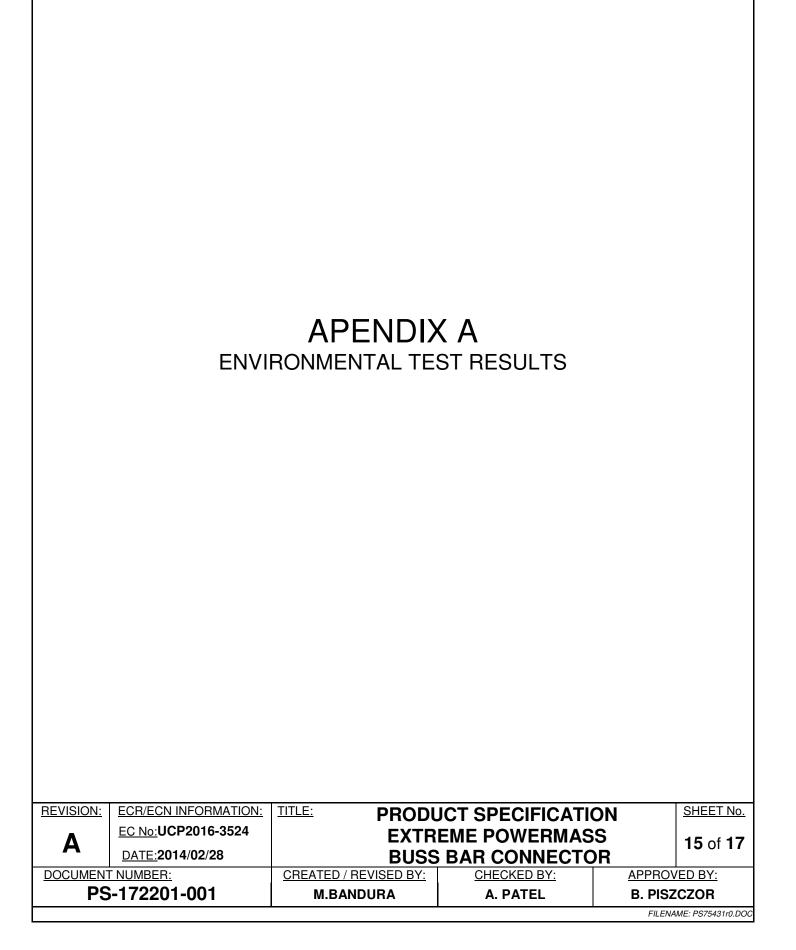
Sample Preparation Current Rating

Initial Low Level Contact Resistance (LLCR)

30 Deg C Temperature Rise (Profile)

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	EIA-364-1000, Test Group 1							
	Initial	Reseating 3X						
	(mΩ)	(Δ mΩ)	$(\Delta m\Omega)$	$(\Delta m\Omega)$				
Max	0.128	0.017	0.045	0.005				
Min	0.101	-0.019	-0.022	-0.032				
Avg	0.114	-0.003	0.017	-0.015				
Ν	10	10	10	10				
Criteria	-	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max				
Result	-	All Pass	All Pass	All Pass				

EIA-364-1000, Test Group 2							
	Initial Durability Thermal 5X Shock			Cyclic Humidity	Reseating 3X		
	(mΩ)	(Δ mΩ)	$(\Delta m\Omega)$	$(\Delta m\Omega)$	$(\Delta m\Omega)$		
Max	0.133	0.005	0.014	0.047	0.002		
Min	0.100	-0.018	-0.028	-0.029	-0.031		
Avg	0.116	-0.005	-0.002	0.002	-0.014		
N	10	10	10	10	10		
Criteria	-	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max		
Result	-	All Pass	All Pass	All Pass	All Pass		

	EIA-364-1000, Test Group 3							
			Temp Life 105C, 96 Hrs	Vibration				
	(mΩ)	(Δ mΩ)	(Δ mΩ)	(Δ mΩ)				
Max	0.141	0.033	0.049	0.029				
Min	0.092	-0.031	0.003	-0.029				
Avg	0.116	0.001	0.033	-0.003				
N	10	10	10	10				
Criteria	-	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max				
Result	-	All Pass	All Pass	All Pass				

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	EIA-364-1000, Test Group 4								
	Initial	Durability 5X	Temp Life 105C, 96 Hrs	MFG-7 Day Unmated	MFG-3 Day Mated	Thermal Disturbance	Reseating 3X		
	(mΩ)	$(\Delta m\Omega)$	(Δ mΩ)	(Δ mΩ)	(Δ mΩ)	(Δ mΩ)	$(\Delta m\Omega)$		
Max		0.029	0.036	0.023	0.005	0.004	0.000		
Min		-0.016	-0.027	-0.023	-0.029	-0.041	-0.036		
Avg		0.002	0.009	-0.004	-0.013	-0.022	-0.019		
N		30 0.25 mΩ	30	30	30	30.000	30		
Criteria	-	Max	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max		
Result	-	All Pass	All Pass	All Pass	All Pass	All Pass	All Pass		

EIA-364-1000, Test Group 5							
	Initial	Durability 5X	Temp Life 105C, 96 Hrs	Thermal Cycling	Reseating 3X		
	(mΩ)	(Δ mΩ)	$(\Delta m\Omega)$	$(\Delta m\Omega)$	$(\Delta m\Omega)$		
Max	0.134	0.025	0.055	0.061	0.029		
Min	0.096	-0.016	-0.029	-0.026	0.000		
Avg	0.112	0.003	0.006	0.012	0.010		
N	10	10	10	10	10		
Criteria	-	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max		
Result	-	All Pass	All Pass	All Pass	All Pass		

EIA-364-1000, Test Group 6							
	InitialDurabilityDustThermal5XDisturbance				Reseating 3X		
	(mΩ)	(Δ mΩ)	(Δ mΩ)	(Δ mΩ)	$(\Delta m\Omega)$		
Max	0.126	0.013	0.009	0.039	-0.009		
Min	0.090	-0.027	-0.019	-0.024	-0.023		
Avg	0.110	0.000	-0.007	-0.005	-0.015		
Ν	10	10	10	10	10		
Criteria	-	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max	0.25 mΩ Max		
Result	-	All Pass	All Pass	All Pass	All Pass		

