

Concorde Battery Corporation 2009 San Bernardino Road West Covina, California, USA 91790

RG-300

24 VOLT 3.3 Ah, VALVE REGULATED, LEAD-ACID, AIRCRAFT BATTERY

DECLARATION OF DESIGN PERFORMANCE

TO THE REQUIREMENTS OF

RTCA DO-293 and IEC 60952-1

Applications: Emergency Aircraft Battery for Avionics

NOTE: Applications may not be a complete list of all applications for this battery type.

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Characteristic	RTCA DO-293	Requirement/Performance	Test Report /	
	IEC 60952-1		Reference	
Description	The RG-300 is a 24 volt b	RG-300 is a 24 volt battery designed for emergency power to avionics.		
	The battery consists of tw cells are housed in an epo The electrolyte is a sulfuri See Material Safety Data terminal connectors. The RG-300 is electrically	e battery consists of twelve 2 volt cells connected in series. Intercell connections are made on a circuit board at the top of the cells. The lls are housed in an epoxy fuse coated aluminum container and cover. The battery hold down is incorporated into the outer housing. The electrolyte is a sulfuric acid and water solution and is absorbed within the battery plates and separators. There is no free electrolyte. We Material Safety Data Sheet for hazardous material identification and precautions. Each battery is equipped with Power Pole style minal connectors.		
	The RG-300 conforms to	Concorde envelope drawing RG-300.	·	
Format	IEC 60952-2	Concorde Drawing No. RG-300		
Connector	IEC 60952-2	The battery is available with Power Pole type connectors		
Mass		RG-300. 4.4 kg (9.6 lbs)		
Charging method	IEC 60952-1, 4.3	Constant potential at 28.25 V		
Any auxiliary requirement:		None		
Ventilation	DO-293, 1.9 IEC 60952-2	Battery is not equipped with vent tubes		
Flammability	IEC 60952-2	RG-300 outer container is fire resistant		
Unspillability		Non spill		
Electrical Perforr	nance			
Rated Capacity (C ₁)	DO-293, 2.2.2 IEC 60952-1, 5.1.1	3.3 Ah		
Capacity at –18°C	DO-293, 2.2.3 IEC 60952-1, 5.1.2	2.1 Ah, when discharged at the C_1 rate.		
Capacity at –30°C	DO-293, 2.2.4 IEC 60952-1, 5.1.3	1.5 Ah, when discharged at the C_1 rate.		
Capacity at +50°C	DO-293, 2.2.5 IEC 60952-1, 5.1.4	3.3 Ah, when discharged at the C_1 rate.		
Power Rating +23°C	DO-293, 2.2.6.1 IEC 60952-1, 5.2.1.1	N/A, Not rated for engine starting		
Power Rating -18°C	DO-293, 2.2.6.2 IEC 60952-1, 5.2.1.2			
Power Rating -30°C	DO-293, 2.2.6.3 IEC 60952-1, 5.2.1.3			
Rapid Discharge Capacity at 23°C	DO-293, 2.3.1 IEC 60952-1, 5.3.1	1.9 Ah, when discharged at the $10C_1$ rate to $10V$.		
Rapid Discharge Capacity at -30°C	DO-293, 2.3.2 IEC 60952-1, 5.3.2	0.7 Ah, when discharged at the $10C_1$ rate to $10V$.		

Characteristic	RTCA DO-293	Requirement/Performance	Test Report /
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Charge Retention	DO-293, 2.4	Qualification based on similarity to the RG-122-3.	
<u> </u>	IEC 60952-1, 5.4	+23 C - Rating value for design = 95% of rated capacity.	
		Qualification based on similarity to the RG-122-3.	7
		+50 C - Rating value for design = 70% of rated capacity.	
Storage	DO-293, 2.5	Qualification based on similarity to the RG-122-3.	
-	IEC 60952-1, 5.5	DO-293 - 1 year storage life test successfully completed.	
Charge Stability	DO-293, 2.6	Qualification based on similarity to the RG-122-3.	
	IEC 60952-1, 5.6, Class I	OK. Max battery temperature on charge = 50°C. Charge current fell during the	
		entire charge period.	
		Capacity at end of test > C_1	
Short-circuit Current	DO-293, 2.7	Peak current = 433 A	
	IEC 60952-1, 5.7	Last recorded current = 234 A at 3.3s	
Charge Acceptance	DO-293, 2.8	Qualification based on similarity to the RG-122-3.	
	IEC 60952-1, 5.8	+23°C = 101%	
		+23°C = 101% after storage testing.	_
		-18°C (battery with heaters only): N/A	
		-40°C (battery with heaters only): N/A	
Insulation Resistance	DO-293, 2.9.1 JEC 60952-1, 5.9.1	All samples successfully met the test requirements	
Dielectric Strength	DO-293, 2.9.2	All samples successfully met the test requirements.	
	IEC 60952-1, 5.9.2		
Duty Cycle	DO-293, 2.10	N/A, Not rated for engine starting.	
Performance	IEC 60952-1, 5.10		
Water Consumption	DO-293, 2.11 IEC 60952-1, 5.11	N/A	
Overcharge	DO-293, no requirement	Not tested	
Endurance	IEC 60952-1, 5.12		
Cyclic Endurance	DO-293, 2.12	Qualification based on similarity to the RG-122-3.	
	IEC 60952-1, 5.13	100 cycle requirement successfully met.	
Deep Discharge	DO-293, 2.13	Qualification based on similarity to the RG-122-3.	
	IEC 60952-1, 5.14	Test requirements successfully completed.	
		After storage for 12 months:	
		Test requirements successfully completed.	
Induced Destructive	DO-293, 2,14	Qualification based on similarity to the RG-122-3.	
Overcharge	IEC 60952-1, 5.15	Test requirements successfully met.	
Electrical Emissions	DO-293, 2.15	N/A, Battery contains no active electronics.	
Environmontal B	rformanco	1	
		Test and qualified to DO 202	
VIDIATION			
	160 00902-1, 0.1		

Characteristic	RTCA DO-293	Requirement/Performance	Test Report /
	IEC 60952-1		Reference
Acceleration	DO-293, no requirement	Not tested.	
	IEC 60952-1, 6.2		
Operational Shock	DO-293, 3.3.1	Tested and qualified to DO-293.	
	IEC 60952-1, 6.3, Class I		
Crash Safety Shock	DO-293, 3.3.2	Tested and qualified to DO-293.	
	IEC 60952-1, 6.4		
Explosion	DO-293, 3.4	Tested and qualified to DO-293.	
Containment	IEC 60952-1, 6.5		
Altitude	DO-293, 3.5	Qualification based on similarity to the RG-122-3.	
	IEC 60952-1, 6.6	Tested and qualified to DO-293.	
Rapid Decompression	DO-293, 3.5.2	Qualification based on similarity to the RG-122-3.	
	IEC 60952 no requirement	Tested and qualified to DO-293.	
Temperature Shock	DO-293, 3.6	Tested and qualified to DO-293.	
	IEC 60952-1, 6.7		
Fungus Resistance	DO-293, 3.7	Tested and qualified to DO-293.	
	IEC 60952-1, 6.8		
Humidity	DO-293, 3.8	Qualification based on similarity to the RG-122-3.	
-	IEC 60952-1, 6.9	Tested and qualified to DO-293.	

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Characteristic	RTCA DO-293	Requirement/Performance	Test Report /
	IEC 60952-1		Reference
Fluid Contamination	IEC 60952-1 DO-293, 3.9 IEC 60952-1, 6.10	Test was performed on representative material samples. All samples successfully met the test requirement. Fluids tested: Fuels: Aviation Jet A fuel Aviation piston engine fuel (100LL AVGAS) Hydraulic fluids: Mineral based (MIL-H-5606) Non-mineral based synthetic (MIL-PRF-83282 and MIL-PRF-87257) Lubricating oils: Mineral based (MIL-L-6081) Ester based synthetic (MIL-L-23699) Internal combustion engine SAE 15W40 Solvents and cleaning fluids: Isopropyl alcohol (TT-I-735) Denatured alcohol De-icing fluid: Ethylene Glycol Propylene Glycol AMS 1424 (SAE AEA Type I) AMS 1428 (SAE AEA Type VI) Insecticides - none Sullage - none Disinfectants (heavy duty phenolics) - none	Reference
		Fire extinguishants - none	
Salt Spray	DO-293, 3.10 IEC 60952-1, 6.11	<i>Qualification based on similarity to the RG-122-3.</i> Tested and qualified to DO-293.	
Physical Integrity at High Temperature	DO-293, 3.11 IEC 60952-1, 6.12	Tested and qualified to DO-293.	
Flammability	DO-293, no requirement IEC 60952-1, 6.13	Not tested. See Section 1	
Electrolyte Resistance	DO-293, 3.12 IEC 60952-1, 6.14	All samples met the specification requirements.	
Thermal Sensors	DO-293, 3.13 IEC 60952-1, 6.15	N/A.	
Component Qualification tests	DO-293, 3.14 IEC 60952-1, 6.16	All sample components successfully met the test requirements.	
Battery Airtightness	DO-293, no requirement IEC 60952-1, 6.17	N/A.	
Cell Baffle	DO-293, no requirement IEC 60952-1, 6.18	N/A	

Characteristic	RTCA DO-293 IEC 60952-1	Requirement/Performance	Test Report / Reference
Strength of	DO-293, 3.15	N/A.	
Handle Strength	DO-293, 3.16	N/A.	
	IEC 60952-1, 6.20		

N/A = Not Applicable

Authentication:

Manufacturer:

Concorde Battery Corporation

Signed: Name of signatory:

Title or Function:

John B. Timmons, PE Vice President Engineering