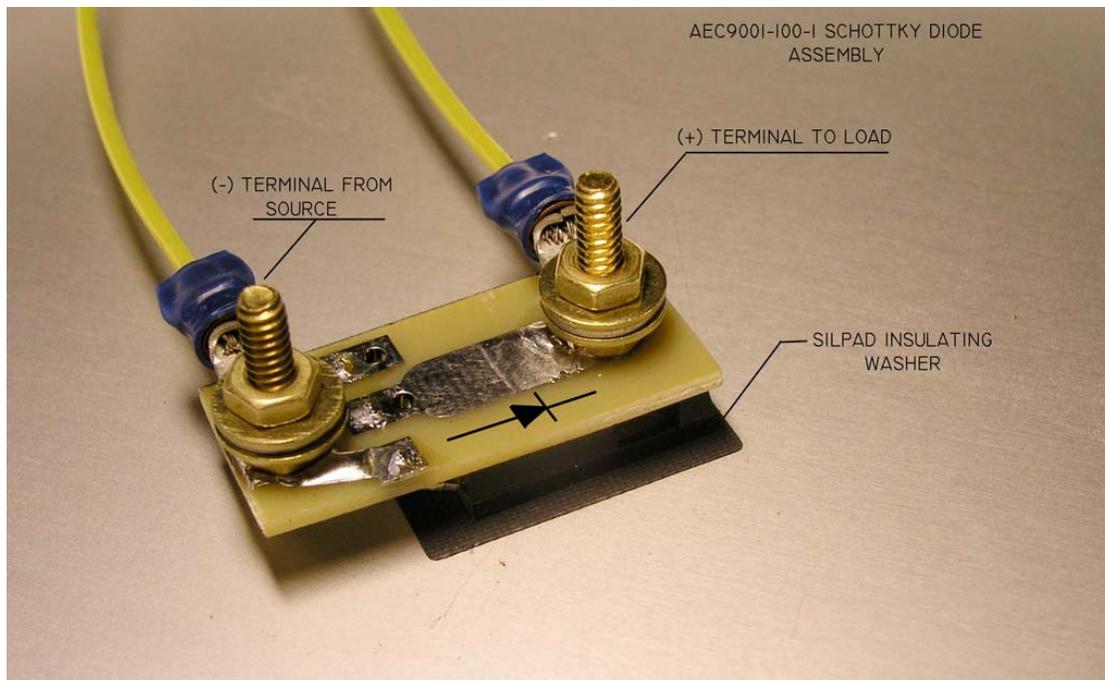




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Installation Instructions AEC9001 Schottky Power Diode



1. INTRODUCTION

The AEC9001 Schottky Diode Assembly was developed to provide a low-loss, compact device intended to fill the role of endurance bus isolation diode as described in architectures published at

<http://aeroelectric.com>

and in The AeroElectric Connection.

This diode has been designed and tested to 20 amps continuous current at ambient temperatures expected aboard light aircraft. The Schottky diode is electrically more efficient than the silicon bridge rectifier called out in published drawings cited above.

Notice

AEC9001 Series Schottky diodes are not FAA approved. They are not offered for use on any type certified aircraft.

Do not order this product with intent to install on a type certified aircraft before you contact the local offices of the FAA for guidance and a commitment to assist you with a field approval.

IM9001-700A
7 December 2008

2. FEATURES

2.1 A design goal for this product was to achieve rated performance without the addition of a heat-sink. The idea was to use existing surface of aircraft structure as a heat-sink. If the proposed location for installation of the diode did not provide a convenient mounting location, the installer could fabricate a 3 x 3 inch, flanged bracket from .040 or thicker aluminum as a heatsink. The heat-transfer surface on the bottom of the diode is electrically connected to the load side terminal. This means that a shoulder washer and silicone flat washer must be used to break electrical contact between the diode and its mounting surface.

3. PARTS SUPPLIED

3.1 AEC9001 Schottky Power Diode Kits Contents						
						Note 1: These are common commercial components with no special requirements other than being made from brass.
			1	IM9001-700A		Installation Instructions (this document)
			2	Note 1	6	Nut, 6-32, 1/4" Small Pattern Brass
			1	SP600-104	5	Washer, SilPad Insulating
			5	Note 1	4	Washer, #6 Clearance Hole, Brass
			2	Note 1	3	Screw, 6-32 x 5/8", Round Head Brass
			1	3233	2	Washer, #6 Clearance, Extruded Fiber
			1	9001-100-1	1	Schottky Diode Assembly
				AEC9001		Scottky Power Diode (Kit)
			/-1	Part No.	#	Description
Quantity/Assembly						

3.2 Materials Not Supplied The installer supplies lead-wires, ring terminals and E6000 or equal adhesive.

4. INSTALLATION TOOLS

4.1 In addition to ordinary hand tools you will need a crimping tool that applies terminals on lead wires to and from the diode assembly.

5. INSTALLATION INSTRUCTIONS

5.1 Location: The AEC9001 should be mounted in as close proximity as practical to the Main Bus and E-Bus feedpoints. The proposed mounting surface needs to be flat. It does not need to be free of paint. If you plan to load the E-bus to greater than 10A -AND- the proposed surface is less than .040" thick aluminum, then I suggest you cut a 6 square-inch piece of .040 to .062" aluminum and bond it to the surface immediately under the diode assembly. This piece of aluminum may be any practical form factor . . . 1.5" wide by 4" long to 2.5" square. Whatever fits best. Bond into place with E6000 and wait 24-48 hours before continuing with the installation.

5.2 Mounting: Drill a 1/4" hole through the mounting surface. Carefully de-burr the hole on both sides. The surface under the diode assembly and immediately around the hole on both sides must be totally free of projections.

- 5.3 Assembly:** Referring to the figure at the back of this document, familiarize yourself with the order of assembly for the supplied components Hold screw (3), washer (4) and extruded washer (2) in place while you finish the assembly from the other side. . If the opposite side of your proposed mounting surface cannot be reached then you'll need an assistant.
- 5.4** Drop the SilPad insulating washer (5) over the screw followed by the diode assembly (1). Rotate screw in the diode assembly's captive nut until the under-surface of the diode has captured the SilPad against the mounting surface. Take care to keep the SilPad aligned under the diode's footprint as you tighten the screw firmly. Take care not to torque too tightly . . . it's a BRASS screw!
- 5.5** Use an ohmmeter to verify integrity of the insulation. You should have no conductivity (infinite resistance) from the diode's wiring studs to the airframe.
- 5.6** Install proposed lead wires on the diode assembly's wiring studs. Use a brass flat washer (4) on both sides of the terminal. Tighten firmly. The lead wire attached to the mounting screw goes to the e-bus (load). The lead wire opposite the mounting screw goes to the main-bus (source).
- 5.7** Cover the head of screw (3) with a two thin coats of E6000 adhesive to a spot about 1/2" in diameter about 24 hours apart. This will protect the electrically active screw from inadvertent contact.
- 5.8 Optionally,** you may choose to "lock" the terminal nuts using a TINY spot of super-glue at the junction of screw threads and the nut. It will wick down into the joint and hold the nut in place. It is likely that you'll twist off the screws if this assembly needs to be removed for any reason in the future. The components are easily replaced with brass hardware from a local hardware source.

6. OPERATIONAL CHECKOUT

- 6.1** If not previously verified, use your ohmmeter to measure resistance between airframe ground and the power output terminal on the diode assembly. It should indicate substantially higher resistance than with the ohmmeter probes shorted together. This test insures that the insulation provided by the silicone insulator and extruded washer has not been compromised by installation error.
- 6.2** DC PWR MASTER switch ON. bus voltage powered with battery only will be somewhere below 13.0 (26.0) volts.
- 6.3** Observe that items powered from the essential bus are operable.
- 6.4** E-Bus ALTERNATE FEED switch ON. DC PWR MASTER switch OFF. Observe that items powered from the E-Bus are operable. Items powered from the Main Bus are inoperable.

7. OPERATING INSTRUCTIONS

- 6.5** There are no special operating procedures associated with the installation of this product

8. MAINTENANCE

- 8.1** All products installed with these instructions are free of adjustments requiring periodic re-calibration. The system is tested with every flight cycle such that abnormal behavior (shorted diode or open wiring) is readily detected. No preventative maintenance activities are recommended for the AEC9001 Schottky Diode. Replacement of the diode assembly is on condition of failure.

AEC900I-I KIT INSTALLATION DETAILS

