

DIOTEC ELECTRONICS CORPORATION
 18020 HOBART BLVD. UBIT B, GARDENA, CA 90248 USA
 PH: 310-767-1052 FX: 310-767-7958
 E-MAIL: support@diotec-usa.com
 WEB SITE: www.diotec-usa.com

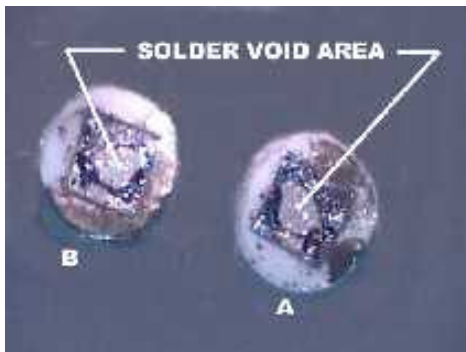
Shorted Diodes? Diode Overheating, Charring, or Non-Obvious Failure Causes?

Diode Failure Symptoms: Shorted, Thermal Runaway, Overheated, Charred, No Mechanical Integrity, No Obvious Symptoms.

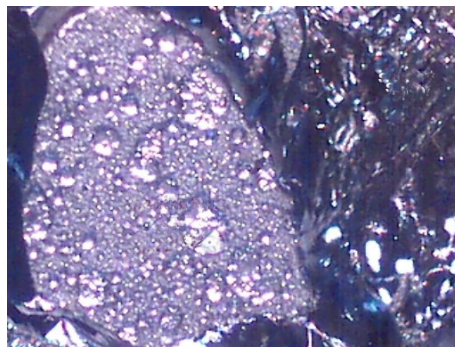
The most likely cause of most diode failures is Poor Die Attach Soldering! Thus, Solder Voids Are Created Which Prevent Heat Dissipation, Causes Hot Spots, Die Solder Reflow, and Ultimate Diode FAILURE.

This invisible problem of poor Die Attach Soldering is much, much, more serious, and a lot more common than you might think. In the photographs below, diodes produced by a prestigious multinational semiconductor manufacturer were examined for die solder quality. These diodes were provided by one of our potential customers who have experienced serious quality problems and premature failures.

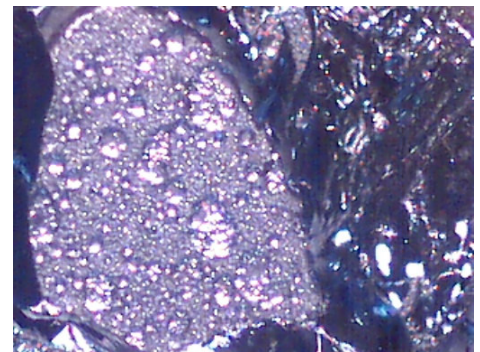
This set of photos illustrates a very common situation when a diode is pried open. The crater-like areas in the center and right-hand photos are solder voids. The black areas are the silicon die.



LARGE VOID AREA REVEALED IN THE SOLDER LAYER



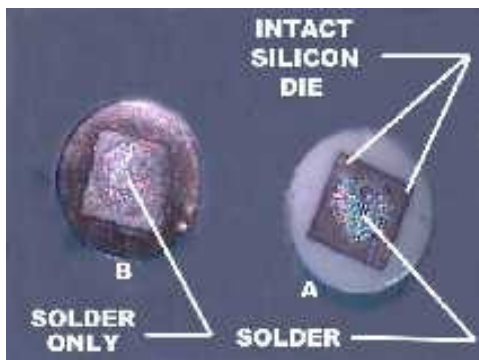
SECTION B



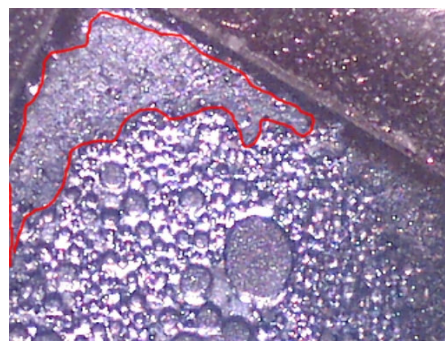
SECTION A

NUMEROUS SOLDER VOIDS CAN CLEARLY BE SEEN IN THESE CLOSE UPS. These Voids 1) Greatly Weaken The Diode's Mechanical Integrity, 2) Increase The Forward Voltage Drop, and 3) Severely Restrict The Dissipation of Heat From The Die. Restricted Heat Dissipation causes the Diode to Operate at Elevated Temperatures Which Could Lower Its Current Handling and/or Cause Premature Failure.

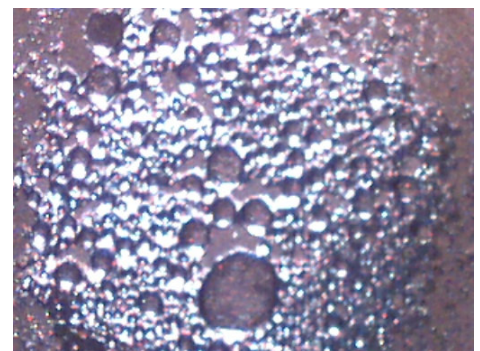
This set of photographs illustrates another common, but much more serious, situation. Here the diode is pried open and separates completely at the die solder layer



**ONLY SOLDER IN SECTION B
 CHIP IS INTACT IN SECTION A
 SOLDER COVERS ~ 50% OF DIE**



SECTION B - ONLY SOLDER



SECTION A- DIE SIDE

The Solder Either Failed to Wet And, Hence, Bond to The Die's Surface (Surface Outlined in Red on Section B) or is riddled with voids. As a Result, This Diode Has Absolutely No Mechanical Strength And May Fail On Impact if Dropped or Struck. Additionally, The Thermal Resistance of This Diode is so High that Thermal Runaway is a Certainty.

DIOTEC ELECTRONICS CORPORATION

This is the High Quality DIOTEC difference.

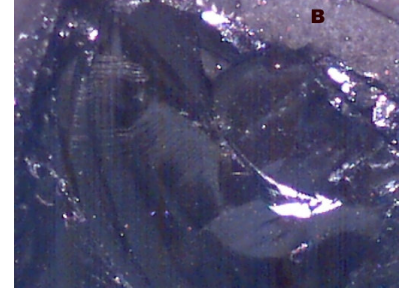


**BREAKS AT SILICON DIE
NO VISIBLE VOIDS.**



SECTION A

Superior Soldering Results in SUPERIOR MECHANICAL STRENGTH, SUPERB HEAT DISSIPATION, and LOWER FORWARD VOLTAGE DROP



SECTION B

DIOTEC utilizes an advanced, computer controlled, vacuum die soldering process, which enables silicon chips to be soldered to metal with **exceptional consistency** and **void free quality**. Thus, DIOTEC diodes and bridge rectifiers have unmatched heat dissipation, cooler junction temperatures, lower leakage currents, and reduced thermal stress. Additionally, the high quality die attachment allows the diodes survive mechanical shock without bond failure, another common problem with most offshore "cheap" diodes.

SHOULD YOU WANT:

- To discuss this topic further?
- A free analysis similar to that shown here to determine the quality of the diodes you are now using? **We'll tell it like we see it and return your items with the pictures so you can see for yourself.**
- To try our products in your application? **Request product samples**

Please don't hesitate to contact:

JOE LIN or DEAN LIGOCKI

PHONE

PH: 310-767-1052

FAX

FX: 310-767-7958

EMAIL

***joel@diotec-usa.com
deanl@diotec-usa.com***

**DIOTEC ELECTRONICS CORPORATION
THE ONLY HIGH QUALITY DIODES & RECTIFIERS AT COMPETITIVE PRICES**