



What kind of SSD is Used in Missile Vehicle?

The launch of missile brings extremely heavy instantaneous shock to the launcher vehicle, as a vehicle-mounted hard disk, it is quite important to make sure no any failure happens against severe shock and vibration.



The Fatal Weakness of SATA Goldfinger in Tactical Missile Application

1. The goldfinger adopts flat structure, male connector and female connector contact through the plane, inevitably there will be momentary poor contact during sharp shock and vibration, and the poor contact may cause system crash or even damage the SSD due to frequent abnormal power loss.
2. The intense shock may result in drag and mismatch between male and female connectors. The goldfinger uses fixed structure with no any buffer design, thus it is likely to be damaged by violent drag causing by intense shock.

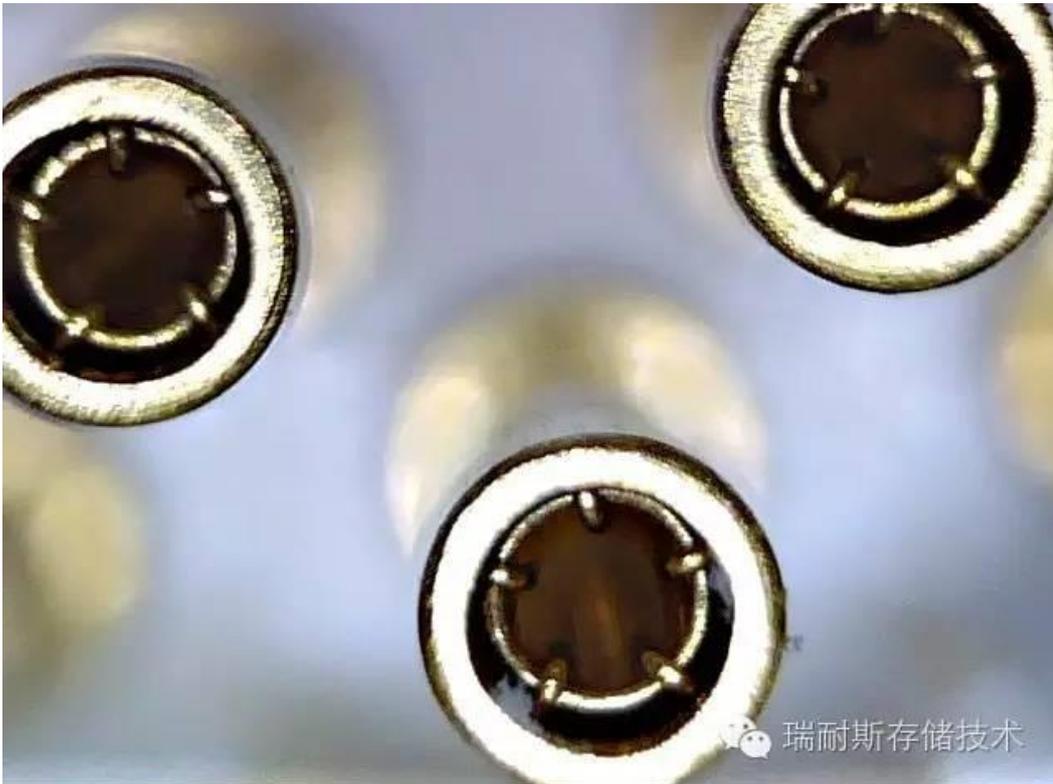
A ruggedized connector is indispensable to solve the above problems, the meaning of “ruggedized” is not simply fixation, but adopts buffer design and flexible structure to ensure the hard disk work reliably under strong shock and vibration environment.

Technology of R-SATA (Ruggedized SATA) Connector:

1. A R-SATA connector is designed with buffer structure between the connector and PCB. The bottom of each pin is designed with spherical rotation body, and all the pins are ensured rotatable in the same angle. The rotatable pins can take buffer function to the greatest extent when facing strong vibration, which avoids connector damaged by violent drag. The following photo is magnified by dozens of times with electron microscope, which is invisible to the eye.



2. To be rugged, the female connector have to not just ensure easy insertion and extraction but also ensure no bad contact or damage to the tiny pins when facing intense shock & vibration, therefore the female connector is designed with pipe in pipe casing structure and hyperboloid contact technology, providing buffer allowance and meanwhile avoiding bad contact against the vibration of the male connector in any direction through the elastic pins on 5 angles.



3. Elastic cushion is also guaranteed in the weld legs.



4. Male connector has to involve buffer design as well, both internal and external structure are clearly from below 2 angles:





5. For the SSD drive, the chipset and PCB must be stuck firmly using adhesive underfill to avoid soldering loose causing by vibration.

Therefore, the only way to achieve real reliability is to control all the minor technical details!

