New SSD (Samsung) Test

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SSD 840 EVO 1TB

Newly available SSD since this summer

OCZ vs. Samsung

	OCZ Octane	Samsung
Capacity	1TB	1TB
interface	SATA III/6Gbps, SATA II /3Gbps	SATA III/6Gbps, SATA II/3Gpbs
Form Factor	2.5 inch	2.5 inch
Weight	83 g	53g
Operating Temp	0 - 70C	0 - 70C
Storage Temp	-45 – 85C	-55 – 95C
Power	1.16 W idle / 2.65W Active	0.045W idle / Average 0.1W
Max Read (sequential)	460 MB/s	540 MB/s
Max Write (sequential)	330 MB/s	520 MB/s
Current price	1,335 USD	599 USD

All values from datasheets

Power Consumption Test at NTU

- OCZ: 5V, 0.198A (idle)
- Samsung: 5V, 0.058A (idle)
  ~0.3A (heavy read/write)
  ~0.5A when booting

➢ Current measured by reading DC PW supplier
➢ Results look higher than Samsung data sheet

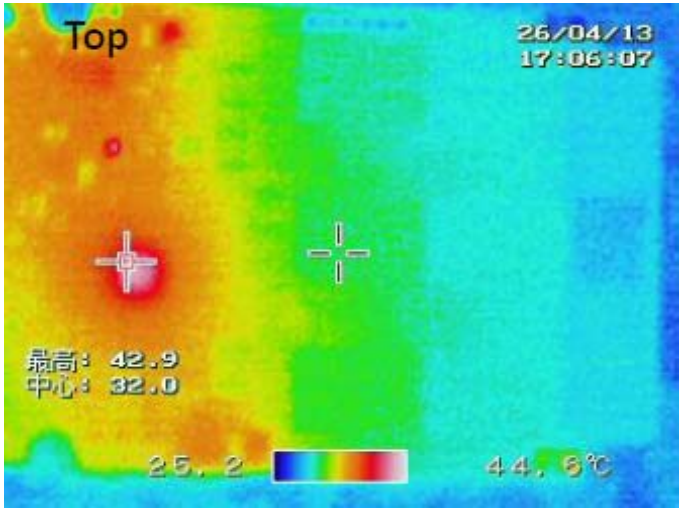
- ANITA SSD storage power estimation based on measurement (SSD only)

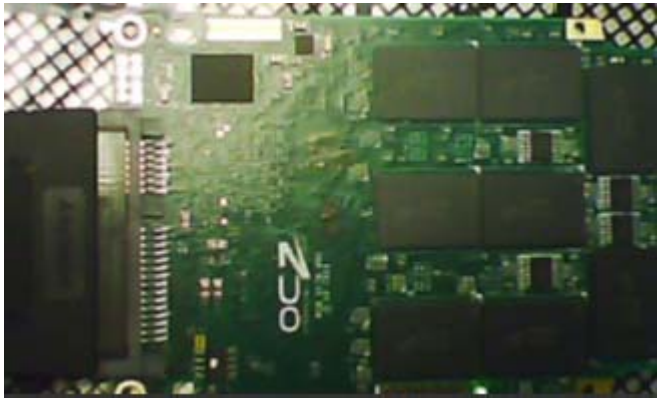
6TB SSD, 1 active + 5 idle

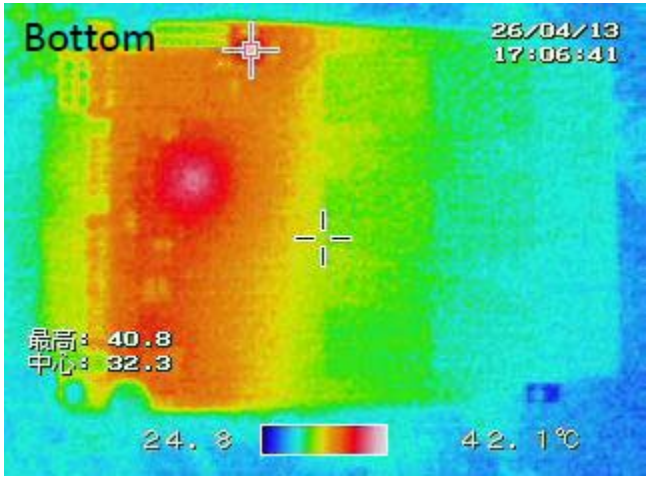
➢ OCZ: 1x2.65W + 5*0.99W= 7.6 W
➢ Samsung: 1x1.5W + 5x0.29 W x 5 = 2.9W

Thermal Images

OCZ, Idle state (Apr 2013)



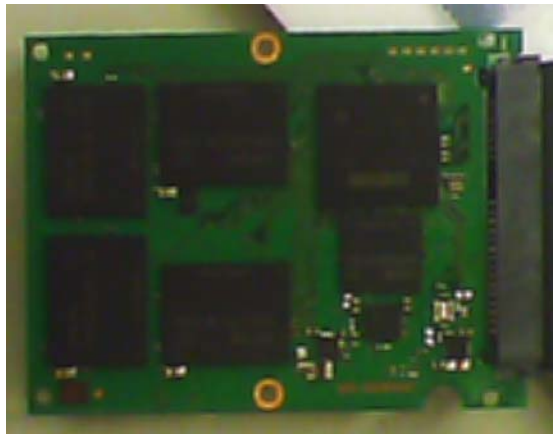


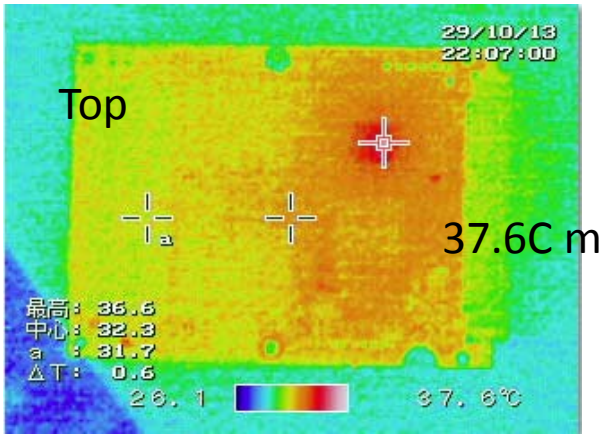


Four high temp spots (>40C) found → Silicone thermal pads were placed by NTU

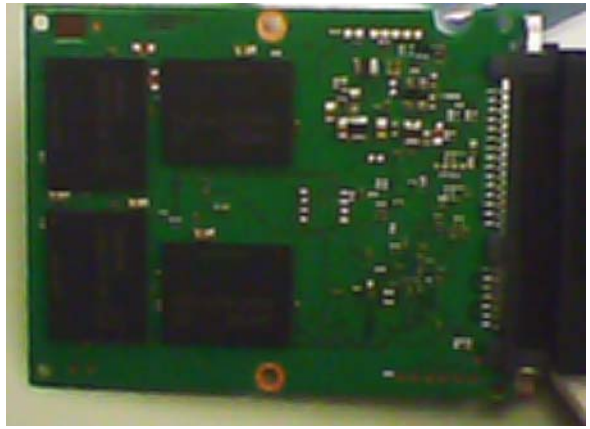
Thermal Images

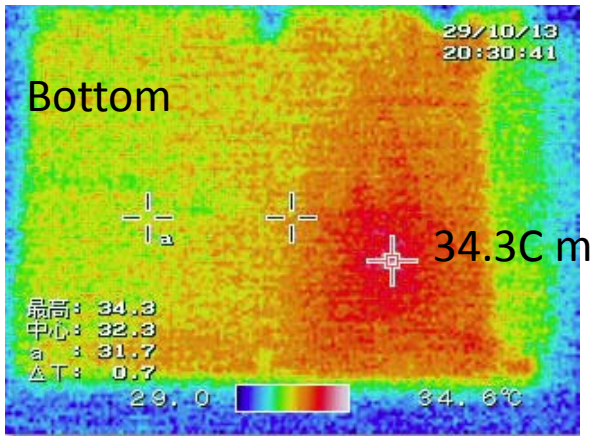
Samsung, Idle state (Oct 2013)





37.6C max





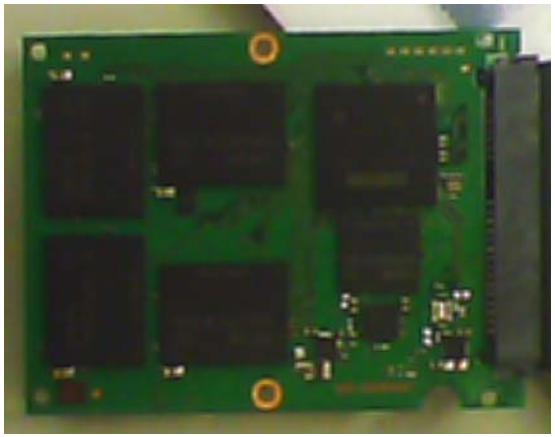
34.3C max

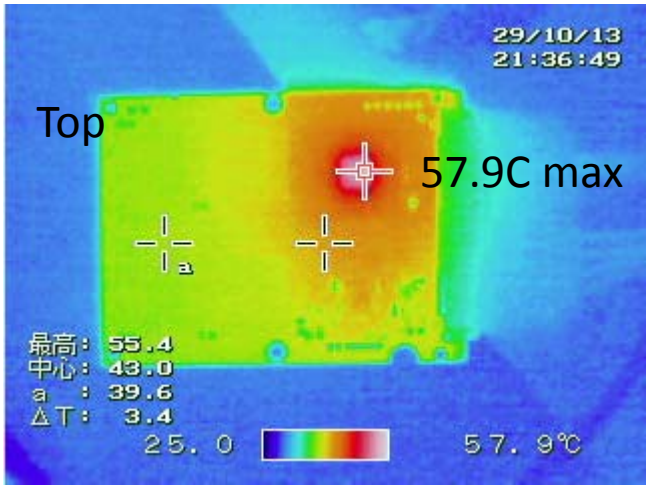
No part higher than 40 C when idle → cooler than than OCZ

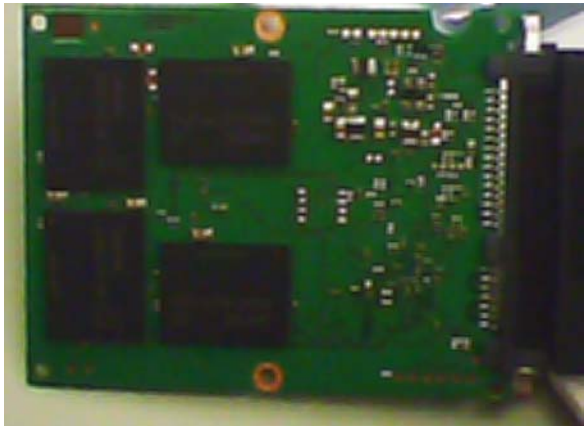
Only one cheap (controller) show highest temp (37.6C)

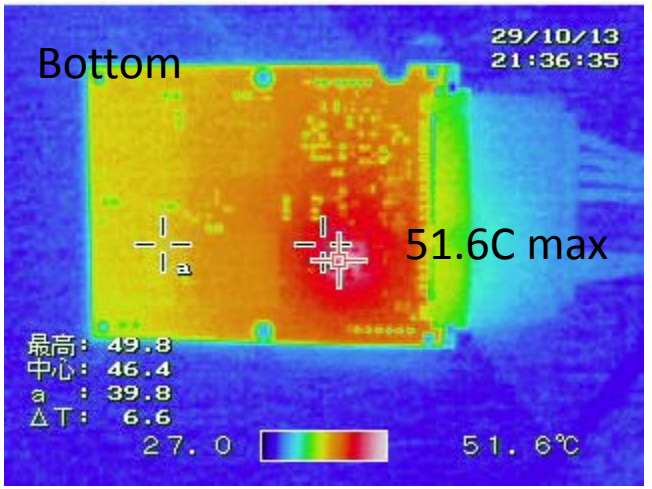
Thermal Images

Samsung, after 30 min heavy read/write



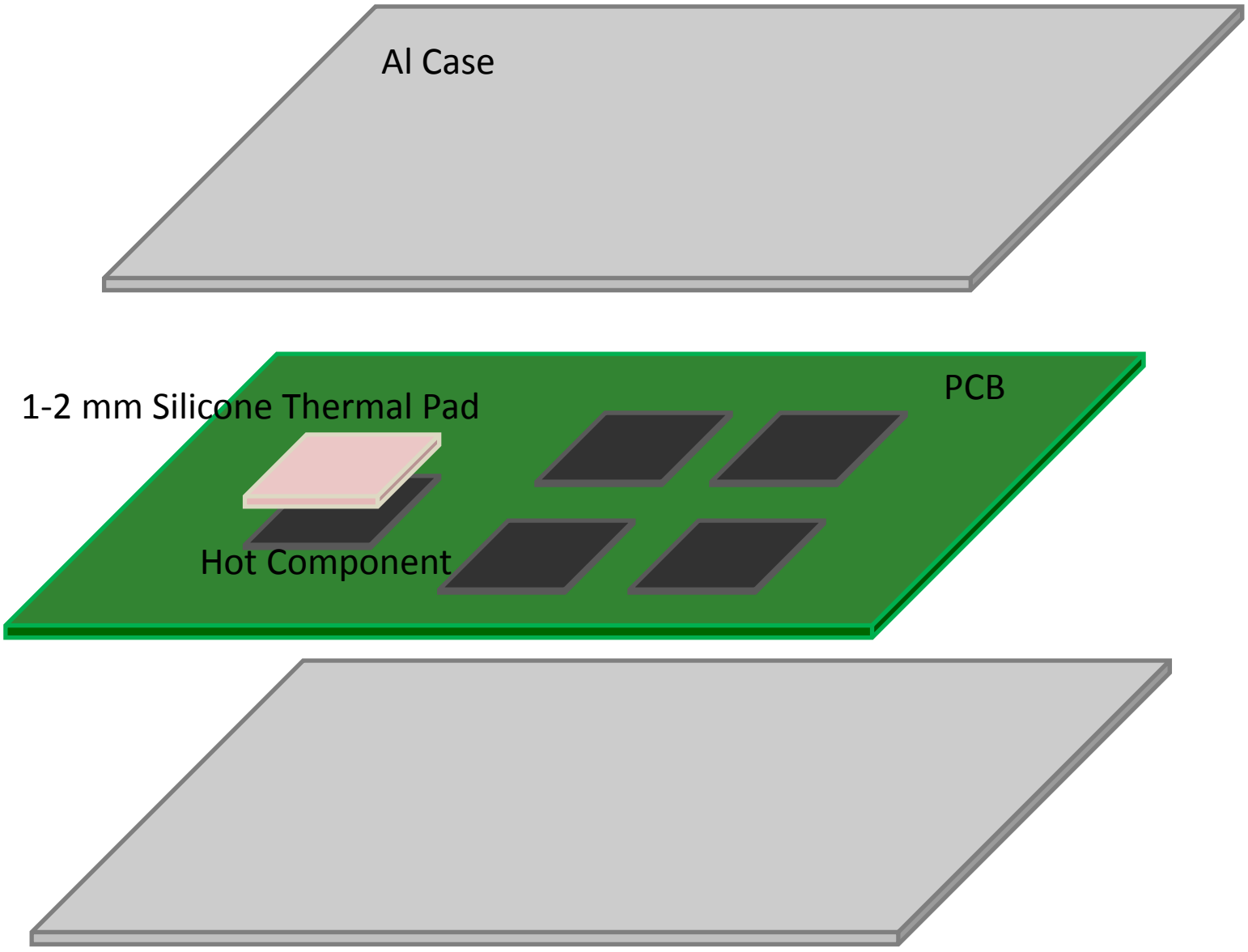






→ No image taken for OZC during read/write (no comparison available)

→ Samsung Controller cheap on top side may need a silicone thermal pad


Al Case
1-2 mm Silicone Thermal Pad
PCB
Hot Component

Summary

- Samsung SSD EVO 840 SSD is a good solution for Anita SSD

  - less power
  - better performance
  - lower heat → simpler thermal design required
  - cheaper

… than OCZ