

R2026F SATA III to mSATA 2-port RAID Card

RAID 1 Mode Performance & Burn In Test Rev. 1.0

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1. Overview

R2026F RAID card offers SATA 3 interface, built-in 2-port Mini PCI-e 52-pin connector can be combined mSATA SSD into a RAID 0, RAID 1, JBOD mode of operation.

2. Tools and Results of Performance Measurement

- 2.1 Test Platform
 - M/B :ASRock **Z97 Extreme 6**CPU :Intel **i5-4426**, 3.2GHz/ 6M Cache/ LGA1150Memory :Kingston **KVR16N11S8/4**, DDR3-1600MHz, 8G(4GB DIMM*2)ATX Power :FSP RAIDER 550, **550W ATX**, 12V V2.2 Power SupplyGraphic :Z97 Chipsets built-in HD Graphics 4600OS :Microsoft Windows 8.1 64bit OS
- 2.2 Test target: R2026F RAID Card and mSATA SSD(Crucial CT-128M550SSD3/128GBx2)



R2026F Adapter

R2026F + M.2 SSD

CT-128M550SSD3

2.3 Install Hardware

2.3.1 Insert mSATA SSDx2 into R2026F converter's Mini PCI-e connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes).
 Connect R2026F converter to SATA III Port of ASRock Z97 Extreme6.

2.4 BIOS & Windows 8 OS environment setup

2.4.1 Install Windows 8.1 x64 OS.

- 2.5 CrystalDiskMark 3.0.1 x64 performance test
 ※Benchmark (Sequential Read & Write / default = 1MB)
 - 2.5.1



2.6 AS SSD Benchmark 1.7 performance test

Benchmark (Read & Write by MB/s, default block size = 16MB)

2.6.1 Used Crucial CT-128M550SSD3/128GBx2 in RAID 1 performance as below:

🛎 AS SSD Benchmark 1.7.4739.38088 – 🗉 🗙						
File Edit View Tools Language Help						
C: ASMT109x- Safe V						
ASMT109x- Safe 2143 5 storahci - OK 359424 K - OK 119.24 GB	Read:	Write:				
<mark>⊡ S</mark> eq	479.26 MB/s	343.92 MB/s				
☑ 4K	20.58 MB/s	43.69 MB/s				
☑ 4K-64Thrd	199.02 MB/s	27.41 MB/s				
☑ Acc.time	0.174 ms	0.240 ms				
Score:	268	105				
	510					
Start						

2.7 ATTO Disk Benchmark performance test

%Benchmark (Sequential Read / default block size = 8MB)

2.7.1 Used Crucial CT-128M550SSD3/128GBx2 in RAID 1 performance as below:

File View Help Drive: [-c-] Force Write Access Image: Diject 1/0 Transfer Sige: 0.5 10 8192.0 KB Total Length: 256 MB Image: Diject 1/0 Neither Queue Depth: 4 Image: Diject 1/0 Start
Drive: [-c-] Force Write Access ✓ Direct I/O Transfer Sige: 0.5 10 8192.0 KB Total Length: 256 MB ✓ Queue Depth: 4 Controlled by: ✓ Start
Drive: [-o-] ▼ Force Write Access ▼ Diject 1/0 Transfer Size: 0.5 10 8192.0 KB Controlled Log Controlled Log Total Length: 256 MB ▼ Controlled Log Queue Depth: 4 ▼ Controlled Log ▼ Start Start Start
Transfer Size: 0.5 to 8192.0 KB C I/O Comparison Total Length: 256 MB Image: Controlled by:
Queue Depth: 4 Controlled by:
Controlled by:
<< Description >>
×
Test Results
0.5 0.5 0.5 0.6 0

2.8 AnvilBenchmark_V110_B337

2.8.1 Used Crucial CT-128M550SSD3/128GBx2 in RAID 1 performance as below:

🙃 Anvil's Storage Utilities 1.1.0 (2014-January-1) – 🗆 🗙							
File	Benchmarks	IOmeter System	m Info Settings	Test size 1GB	🔽 Drive 🖃 c: []		V Screenshot Help
SSE	SSD Benchmark						ASMT109x- Safe 128GB/2143 5
				1000			
	Read	Resp. time	MB read	IOPS	MB/S		
	Seq 4MB	8.8809ms	2,048.0	112.60	450.41		
	4K	0.1822ms	268.0	5,488.49	21.44		
	4K QD4	0.1753ms	1,114.0	22,815.40	89.12		1,750,47
	4K QD16	0.2504ms	3,120.6	63,909.82	249.65	Run read	1,750.47
	32K	0.2589ms	1,812.5	3,862.48	120.70		
	128K	0.4677ms	4,013.1	2,138.20	267.27	_	2,170.86
	Write	Resp. time	MB written	IOPS	MB/s	Run	2,170.80
	Seq 4MB	50.4766ms	1,024.0	19.81	79.24		
	4K	0.1286ms	307.1	7,776.62	30.38	D	420.39
	4K QD4	0.3165ms	504.0	12,639.01	49.37	Hun write	420.39
	4K QD16	2.6217ms	256.2	6,102.92	23.84		
Micro Z97 Intel Mem Pro	Microsoft Windows 8.1 專業版 64 位元 Build (9600) Z97 Extreme6/P1.00, CPUSocket Intel(R) Core(TM) i5-4460 CPU @ 3.20GHz Memory : 7,882 MB Professional Edition			Drives : Notes :			ASMT109x- Safe 128GB/2143 5 Drive C: 118.9/93.0GB free (78.2%) NTFS - Cluster size 40968 Storage driver storahci Alignment 359424(8 OK Compression 100% (Incompressible)

3. Burn In Tests and Results

- 3.1 BurnInTest v7.1 Pro
 - 3.1.1 system information for CT-128M550SSD3/128GBx2 in RAID 1 as below:



3.1.2 show **RAID 1** SSD test mode(default cyclic -- 10 ways cycle test)

0	BurnInTest V7.1 Pro –	3 ×
File Edit Configuration Test Quick Tests He	lp	
🔛 🍠 📋 💥 💆 🖎 Current configurat	on 🗸 ▶ 📕 🕢	
System Information Burn In Results Event Log	emperature	
Memory	BurnInTest Preferences	×
Total Physical Memory: 7882MB Available Physical Memory: 6552MB Slot 1: 46B DDR3 Si Kingston 990 1.5V, Cik: 80 Slot 2: Not populat Slot 3: 46B DDR3 Si Kingston 990 1.5V, Cik: 80 Slot 4: Not populat Virtual Memory: C:\pagefile.s	Temp / Battery Sound CPU PU Pre-Test Post-Test Video Playba Tape Serial ports Parallel ports 2 D Gra Jo Graphics USB RAM Plug-in Manage Disk Coptical Disk Logging A Errors Manage Disk selection Automatically select all hard drives at the start of testing Drive Test Mode Threshold File size C: [Local drive] Default (Cyclic) NA 1.00 D: ASRock Support DD (D). Not Testing	nter ck phics ement :twork
Intel(R) HD Graphics 4600 Chip Type: Intel(R) HD (r D&C Type: Internal Memory: 2204MB BIOS: Intel Video E Driver provider: Intel Video The Corport Driver version: 10.18.10.34 Driver date: 3-11-2014 Monitor 1: 1920X1080x	r C ⊂ Edit details for drive: C: [Local drive] Test this drive ✓ Test mode Default (Cyclic) ✓	>
Disk volumes	File size 1.00 (% of disk) Seek count 100	
C: Local drive, NTFS, (118.90GB total, 93.49GB D: Optical drive, ASRock SupportCD, CDFS	re Block size 256 V KB Slow drive threshold 0.0 MB/Sec (VA = No threshold warning) Duty cycle override % (or leave blank to accept default)	
Disk drives 磁硼機: Model: ASMT109x- Safe Serial: 01234567	SMART options Run self test and log SMART errors Log bad sector increase Bad sector threshold 20	
Optical drives		
Ready	確定 取消 彭	龙明

3.1.3 show CT-128M550SSD3/128GBx2 in RAID 1 24-hour Burn-in test PASSED

õ	BurnInTe	est V7.1 Pro				×	
File Edit Configuration Test Quick Tests Help							
🛃 🗐 🗋 💢 🙆 Current configuration 🗸 🏓 📕 🥝							
System Information Burn In Results Ev	ent Log Temperature						
Results for MIC							
Test configuration file: LastUsed.bitcfg			Status:	IDLE	1 An		
Start time: Thu Sep 18 19:09:47	2014 Stop time: Fri Se	p 19 19:09:55 2014	Duration:	024h 00m 08s		3	
Test Name Cyde	Operations Errors	Last Error Description					
@Disk (C:) 441	1.222 Trillion 0	No errors					
						~	
		BurnInTest	test result				
						1	
			_			-	
		OK					
View errors by categories						-	
Ready							

4. Summary

- 4.1 R2026F is SATA III Interface, I/O speed, max. to 600MB/s.
- 4.2 R2026F adapter I/O performance is based on mSATA SSD.