

Index

Symbols

1/1 dividers, 35
 1/2 dividers, 35
 2 cycles, 32
 2/3 dividers, 35
 2/5 dividers, 35
 3 cycles, 32
 8-bit I/O Recovery Time, 30, 150
 8-bit ISA cards, 150
 16-bit I/O Recovery Time, 30, 150
 16-bit ISA cards, 150
 32-bit Disk Access, 30, 151
 32-bit Transfer Mode, 31, 151

A

A20 mode switching, 69, 213
 ABIT KT7A-RAID motherboard,
 BIOS updates for, 11
 ABIT NV7-series motherboards, 52
 ABIT S17 BIOS setup utility, 14
 accessing BIOS setup utility, 14
 Acronym List, 329
 Act Bank A to B CMD Delay, 32, 153
 adapters, Primary Graphics Adapter,
 107, 267
 addresses, Shadowing Address Ranges,
 130, 303
 Advanced Programmable Interrupt
 Controller (APIC), 41, 77
 Interrupt Mode, 223
 AGP 2X Mode, 32, 153
 AGP 2X transfers, 32
 AGP 4X cards, 32
 AGP 4X Drive Strength, 32, 154-155
 AGP 4X Mode, 33, 155
 AGP 4X protocol, 33
 AGP 8X Mode, 33, 156
 AGP 8X-capable motherboards, AGP
 Capability, 34
 AGP Always Compensate, 33, 157
 AGP aperture, 69, 213
 AGP Aperture Size, 34, 157-159
 AGP buses, 2X mode, 32
 AGP Capability, 34, 159
 AGP Clock/CPU FSB Clock, 35, 159
 AGP Drive Strength, 32, 35, 160-161
 AGP Drive Strength N Ctrl, 36, 161
 AGP Drive Strength P Ctrl, 36, 162
 AGP Driving Control, 36, 161-162
 AGP Driving Value, 37, 163
 AGP Fast Write, 37, 164
 AGP ISA Aliasing, 37, 164-165
 AGP Master 1WS Read, 38, 165
 AGP Master 1WS Write, 38, 166
 AGP Prefetch, 38, 166
 AGP Secondary Lat Timer, 39, 167-168
 AGP Spread Spectrum, 39, 168
 AGP to DRAM Prefetch, 40, 169
 AGPCLK/CPUCLK, 40, 169
 aliasing, AGP ISA Aliasing, 164-165
 All Banks, 123
 All Banks Precharge Command, 123
 Anti-Virus Protection, 40, 170
 API (Application Program Interface), 5
 APIC (Advanced Programmable
 Interrupt Controller), 41, 77
 Interrupt Mode, 223
 APIC Function, 41, 74, 170

336 Application Program Interface (API)

Application Program Interface (API), 5

ASK IR (Amplitude Shift Keyed IR) mode, 245

Assign IRQ For USB, 41, 171

Assign IRQ For VGA, 41, 171

AT Bus Clock, 41, 172-173

ATA100RAID IDE Controller, 42, 173

Athlon 4 SSED Instruction, 42, 174

Auto Detect DIMM/PCI Clk, 43, 175

Auto Turn Off PCI Clock Pin, 43, 175

Award, 282

AwardFlash software, 12

AwardFlash utility commands, 13

B

bandwidth, quadrupling through AGP 8X transfer protocol, 156

Basic Input/Output System. *See* BIOS

batteries, CMOS, 19

BIOS (Basic Input/Output System), 5

accessing BIOS setup utility, 14

corrupted BIOS, 20-21

Flash BIOS Protection, 65, 208

how it works, 5-6

motherboard BIOS, 6-7

optimizing, 7-8, 14

Primary VGA BIOS, 268

Video BIOS Cacheable, 320

Video BIOS Shadowing, 143-144, 321-322

BIOS chips, 6, 23

hot flashing, 22

inserting, 24

removing, 24

swapping, 24-25

BIOS drivers, 7

BIOS flash disk, preparing, 12

BIOS flash utility, 24

BIOS ID, determining, 10

BIOS setup utility, 14

BIOS updates, 8-9

for ABIT KT7A-RAID motherboard, 11

determining BIOS ID, 10

determining BIOS version, 9

flashing motherboard BIOS, 12-13

obtaining, 11-12

preparing BIOS flash disk, 12

boot disks

booting up with, 24

creating in Windows XP, 12

Boot Other Device, 44, 176

Boot Sequence, 44, 176

Boot Sequence EXT Means, 45, 177

Boot to OS/2, 45, 177

Boot Up Floppy Seek, 45, 178

Boot Up NumLock Status, 45, 178

booting

with boot disks, 24

Boot Other Device, 44, 176

Boot Sequence, 44, 176

Boot Sequence EXT Means, 45, 177

Boot To OS/2, 45, 177

Boot Up Floppy Seek, 45, 178

Boot Up NumLock Status, 45, 178

First Boot Device, 65, 208

Quick Boot, 110, 270

Second Boot Device, 130, 302

Third Boot Device, 137, 312

burst transactions

SDRAM Burst Len, 119

SDRAM Burst Length, 119

bursts

DRAM Burst Length 8QW, 196

PCI Dynamic Bursting, 255-256

SDRAM Burst Len, 283

SDRAM Burst Length, 284

Byte Merge, 46, 178-179

C

caching

CPU Level 1 Cache, 184-185

CPU Level 2 Cache, 185-186

CPU Level 3 Cache, 186

- L3 Cache, 231
- Level 2 Cache Latency, 232
- PCI Master Read Caching, 102, 259
- System BIOS Cacheable, 136, 311
- Video BIOS Cacheable, 143, 320
- Video Memory Cache Mode, 144, 322-323
- Video RAM Cacheable, 145, 323-324

capability, AGP Capability, 159

capacity of BIOS chips, 6

CAS (Column Address Strobe), 195

chaining, PCI Chaining, 97, 252

ChipAway, 40

chips, BIOS chips, 6

CLK_CTL (Clock Control), 79

clock speed

- ISA buses, 41
- setting ratios between, 40

Clock Throttle, 47, 180

clocks

- AGP Clock/CPU FSB Clock, 35, 159
- AGPCLK/CPUCLK, 169
- AT Bus Clock, 172-173
- Auto Detect DIMM/PCI Clk, 175
- Clock Throttle, 180
- Disable Unused PCI Clock, 56, 195
- ISA 14.318MHz Clock, 78, 225
- K7 CLK_CTL Select, 228-229
- KBC Input Clock Select, 80, 229
- PCI Clock/CPU FSB Clock, 98, 253-254

CMOS battery removal, 19

CMOS discharge jumper, 18

Column Address Strobe (CAS), 195

command leadoff time, 122

command queues, Host Bus In-Order Queue Depth, 73

Compatible FPU OPCODE, 47, 67, 181, 211

compliance, PCI 2.1, 97, 251-252

concurrency, P2C/C2P Concurrency, 249

controllers

- ATA100RAID, 42, 173
- Onboard FDD Controller, 90, 243
- Onboard IDE-1 Controller, 91, 244
- Onboard IDE-2 Controller, 91, 244
- Onboard USB Controller, 93, 246
- Ultra DMA-66 IDE Controller, 140, 316
- Ultra DMA-100 IDE Controller, 139, 315
- Ultra DMA-133 IDE Controller, 140, 315
- USB Controller, 141, 317

controls, SDRAM Precharge Control, 124

corrupted BIOS, 20-21

- hot flashing, 24

CPU bus, 35, 241

CPU Drive Strength, 48, 181

CPU Fast String, 48, 182

CPU Hyper-Threading, 49, 182-183

CPU L2 Cache ECC Checking, 49, 184

CPU Latency Timer, 50

CPU Level 1 Cache, 50, 184-185

CPU Level 2 Cache, 50, 185-186

CPU Level 3 Cache, 51, 186

CPU Thermal-Throttling, 51, 187

CPU to PCI Post Write, 51, 188

CPU to PCI Write Buffer, 52, 189

CPU VCore Voltage, 52, 189

CPU/DRAM CLK Synch CTL, 48

CR2032 batteries, 19

Create an MS-DOS startup disk, 12

create non-local surface call, 158

currents, Differential Current, 56

D

- data integrity, DRAM Data Integrity Mode, 58**
- DBI (Dynamic Bus Inversion), 53, 191**
- DBI Output for AGP Transmitter, 53, 191**
- Delay DRAM Read Latch, 53, 191**

338 **Delay IDE Initial****Delay IDE Initial, 54, 192****Delay Prior To Thermal, 54, 193****Delayed Transaction, 55, 194-195****delays**

2 cycles or 3 cycles, 32

Act Ban A to B CMD Delay, 153

Delay DRAM Read Latch, 53, 191

Delay IDE Initial, 54, 192

Delay Prior To Thermal, 194

Delayed Transaction, 55, 194-195

DRAM Read Latch Delay, 61, 202-203

Keyboard Auto-Repeat Delay, 80, 230

PCI Delay Transaction, 98, 254-255

PCI Delayed Transaction, 55, 194

SDRAM Active to Precharge Delay,
117, 280SDRAM Bank-to-Bank Delay, 118,
128, 282

SDRAM RAS Precharge Delay, 124, 294

SDRAM RAS-to-CAS Delay, 126, 296

SDRAM Write to Read Command Delay,
129, 301

Typematic Rate Delay, 138, 313

Write Data In to Read Delay, 147, 326

Differential Current, 56**DIP (Dual In-line Package), 6, 23****Direct Memory Access (DMA), 75**

ECP Mode Use DMA, 63, 205

IDE Bus Master Support, 220

Master Drive UltraDMA, 83, 234-235

Slave Drive UltraDMA, 132, 305-306

Ultra DMA Mode, 139, 314-315

Disable Unused PCI Clock, 56, 195**disks, creating DOS boot disks, 22-23****displays, Init Display First, 76, 221****dividers, 35****DMA (Direct Memory Access), 75**

ECP Mode Use DMA, 63, 205

IDE Bus Master Support, 220

Master Drive UltraDMA, 83, 234-235

Slave Drive UltraDMA, 132, 305-306

Ultra DMA Mode, 139, 314-315

DOS boot disks, creating, 22-23**DOS Flat Mode, 57****DRAM**

Delay DRAM Read Latch, 53, 191

OS Select For DRAM > 64MB, 248

DRAM Act to PreChrg CMD, 57, 195**DRAM Burst Length 8QW, 57, 196****DRAM Data Integrity Mode, 58,
197-198****DRAM Idle Timer, 58, 198-199****DRAM Interleave Time, 59, 200****DRAM Page-Mode, 59****DRAM PreChrg to Act CMD, 60, 200****DRAM Ratio (CPU:DRAM), 60,
201-202****DRAM Ratio H/W Strap, 61, 202****DRAM Read Latch Delay, 61, 202-203****DRAM Refresh Rate, 203****drive strength**

AGP 4X Drive Strength, 154-155

AGP Drive Strength, 160-161

AGP Drive Strength N Ctrl, 161

AGP Drive Strength P Ctrl, 162

CPU Drive Strength, 48, 181

MD Driving Strength, 236

N transistor drive strength, 115

P transistor drive strength, 116

S2K Bus Driving Strength, 277

drivers, BIOS, 7**driving controls, AGP Driving
Control, 162****driving strength**

MD Driving Strength, 84

S2K Bus Driving Strength, 115

driving values, AGP Driving Value, 163**Dual In-line Package (DIP), 6, 23****Duplex Select, 62, 204****Dynamic Bus Inversion (DBI), 53, 191**

E**ECC (Error Checking and Correction),
49, 58**

CPU L2 Cache ECC Checking, 184

DRAM Data Integrity Mode, 197-198

SDRAM ECC Setting, 121, 288

ECP (Extended Capabilities Port), 95, 205

ECP Mode Use DMA, 63, 205

edge-triggered, 100

EMI (Electromagnetic Interference), 43

- AGP Spread Spectrum, 168
- FSB Spread Spectrum, 212

Enhanced 3DNow!, 174

Enhanced IDE Operation Under Windows NT, 151

EPP (Enhanced Parallel Port), 95, 205, 249

EPP Mode Select, 63, 205

Error Checking and Correction (ECC), 49, 58

- CPU L2 Cache ECC Checking, 184
- DRAM Data Integrity Mode, 197-198
- SDRAM ECC Setting, 121, 288

errors, Speed Error Hold, 306

ESCD (Extended System Configuration Data), 66

- Force Update ESCD, 66, 210
- Reset Configuration Data, 113, 275

Extended Capabilities Port (ECP), 95, 205

Extended System Configuration Data (ESCD), 66

- Force Update ESCD, 66, 210
- Reset Configuration Data, 113, 275

F

Fast R-W Turn Around, 64, 207

fast string processing, 182

Fast Write to Read Turnaround, 64, 207

FDD (floppy drive controller), 90

- Onboard FDD Controller, 243
- Report No FDD For Win95, 274

FIFO (First In, First Out), 323

final opcode (FOP), 67

First Boot Device, 65, 208

First In, First Out (FIFO), 323

Flash BIOS Protection, 65, 208

flashing motherboard BIOS, 12-13

Floppy 3 Mode Support, 65, 209

Floppy Disk Access Control, 66, 209

floppy drive controller (FDD), 90

- Onboard FDD Controller, 243
- Report No FDD For Win95, 274

floppy drives

- Floppy 3 Mode Support, 65, 209
- Swap Floppy Drive, 135, 310

FOP (final opcode), 67

FOP code, 211

fopcode, 211

Force 4-Way Interleave, 66, 210

Force Update ESCD, 66, 210

FPU OPCODE Compatible Mode, 47, 67, 181, 211

Frame Buffer Size, 67

framebuffer writes, 103

FSB (front side bus), 35

FSB Spread Spectrum, 68, 212

Full Screen Logo, 68, 212

Full-Duplex, 62

functions

- APIC, 170
- Onboard IR Function, 245

G

GART (Graphics Address Relocation Table), 34, 69, 213

- AGP Aperture Size, 157
- Graphics Aperture Size, 70, 214

Gate A20 Option, 69, 213

Gigabyte Dual BIOS, 20

Graphic Win Size, 69, 213

Graphic Window WR Combin, 70, 214

Graphics Address Relocation Table (GART), 34, 69, 213

- AGP Aperture Size, 157
- Graphics Aperture Size, 70, 214

Graphics Aperture Size, 70, 214

H

- Half-Duplex, 62**
- Hardware Reset Protect, 72, 216**
- HDD S.M.A.R.T. Capability, 72, 216-217**
- Host Bus In-Order Queue Depth, 73, 217-218**
- hot flash-capable computers, preparing, 23**
- hot flashing, 21-22**
 - BIOS chips, 22
 - booting up with boot disks, 24
 - corrupted BIOS chips, 24
 - creating DOS boot disks, 22-23
 - motherboards, 26-27
 - preparing hot flash-capable computers, 23
 - swapping BIOS chips, 24
- Hyper-Threading Technology, 73, 218-219**

I

- ID, determining BIOS ID, 10**
- IDE**
 - Delay IDE Initial, 192
 - PCI IDE Busmaster, 256
- IDE Bus Master Support, 75, 220**
- IDE controllers, 44**
 - ATA100RAID IDE Controller, 173
 - Onboard IDE-1 Controller, 91, 244
 - Onboard IDE-2 Controller, 91, 244
 - Ultra DMA-66 IDE Controller, 140, 316
 - Ultra DMA-100 IDE Controller, 139, 315
 - Ultra DMA-133 IDE Controller, 140, 315
- IDE HDD Block Mode, 75, 220**
- idle limits, SDRAM Idle Limit, 122, 289-291**
- IEEE 1284, 249**
- In-Order Queue Depth, 76, 222-223**
- Infra-Red (IR), 62, 92**
 - Onboard IR Function, 92
- infra-red reception (RxD), 114**

- Init Display First, 76, 221**
- Insert key, 18**
- inserting BIOS chips, 24**
- Intel Hyper-Threading Technology, 49, 73, 183**
- interleaves**
 - Force 4-Way Interleave, 210
 - Rank Interleave, 271
 - SDRAM Bank Interleave, 117, 281-282
- Interrupt Mode, 77, 223**
- intervals, refreshing, 112**
- IOQD, 77, 224-225**
- IR (Infra-Red), 62, 92**
 - Onboard IR Function, 92
- IrDA (HPSIR) mode, 245**
- IRQ**
 - Assign IRQ For USB, 41, 171
 - Assign IRQ For VGA, 41, 171
 - PCI IRQ Activated By, 100, 257
- ISA, AGP ISA Aliasing, 164-165**
- ISA 14.318MHz Clock, 78, 225**
- ISA buses, clock speed, 41**
- ISA cards**
 - 8-bit ISA cards, 150
 - 16-bit ISA cards, 150
- ISA Enable Bit, 78, 225, 227**

J-K

- K7 CLK_CTL Select, 79, 228-229**
- KBC Input Clock Select, 80, 229**
- Keyboard Auto-Repeat Delay, 80, 230**
- Keyboard Auto-Repeat Rate, 80, 230**
- keyboards**
 - resetting BIOS, 18
 - USB Keyboard Support, 141, 317

L

- latency**
 - AGP Master 1WS Read, 166
 - Level 2 Cache Latency, 81, 232
 - PCI Latency Timer, 257

PCI Target Latency, 103, 260
 SDRAM CAS Latency Time, 119, 285
LD-Off Dram RD/WR Cycles, 81
Level 1 cache, 184
Level 2 cache, 49, 185
Level 2 Cache Latency, 81, 232
Level 3 cache, 81, 187, 231
level-triggered, 100
limits
 SDRAM Idle Limit, 122, 289-291
 SDRAM Page Hit Limit, 123, 292
 SDRAM PH Limit, 124, 293
locating CMOS discharge jumper, 18
logos, Full Screen Logo, 212
LS/ZIP, 137

M

mappings, swapping (Onboard FDC Swap A & B), 90
Master Drive PIO Mode, 83, 233
Master Drive UltraDMA, 83, 234-235
Master Priority Rotation, 84, 235
MD Driving Strength, 84, 236
memory
 Memory Hole At 15M-16M, 85, 236
 OS/2 Onboard Memory > 64M, 94, 247
 saving (AGP Aperture Size), 158
 Share Memory Size, 131, 303
 Video Memory Cache Mode, 322-323
Memory Hole At 15M-16M, 85, 236
memory request organizer (MRO), 134, 308
mice, USB Mouse Support, 141, 318
Microsoft Windows 95, Report No FDD For Win95, 112
Model Specific Register (MSR), 79
motherboard BIOS, 6
 flashing, 12-13
 what it does, 7

motherboards

ABIT NV7-series, CPUVCORE Voltage, 52
 AGP 8x-capable motherboards, AGP
 Capability, 34
 hot flashing, 26-27
mouse controls, PS/2 Mouse Function Control, 108, 269
MP Capable Bit Identify, 85, 237, 239
MPS (Multi-Processor Specification), 86, 239
MPS Control Version For OS, 86, 239
MPS Revision, 86, 239
MRO (memory request organizer), 134, 308
MSR (Model Specific Register), 79
Multi-Processor Specification (MPS), 86, 239
Multi-Sector Transfers, 87, 240

N

N transistor drive strength, 115
N/B Strap CPU As, 88, 241
No Mask of SBA FE, 88, 241
Non-ACP BIOSes, 105
NVIDIA nForce, SuperStability Mode, 134

O

obtaining BIOS updates, 11-12
OEM (Original Equipment Manufacturer), 8
Onboard FDC Swap A & B, 90, 243
Onboard FDD Controller, 90, 243
Onboard IDE-1 Controller, 91, 244
Onboard IDE-2 Controller, 91, 244
Onboard IR Function, 92, 245
Onboard Parallel Port, 92, 245
Onboard Serial Port 1, 92, 246

342 Onboard Serial Port 2

Onboard Serial Port 2, 93, 246
 Onboard USB Controller, 93, 246
 OnChip VGA Mode Select, 93
 One Bank, 123
 operating systems, 6
 BIOS, 7
 optimizing BIOS, 7-8, 14
 Original Equipment Manufacturer (OEM), 8
 OS
 MPS Control Version For OS, 239
 PNP OS Installed, 264-265
 OS Select For DRAM > 64MB, 94, 248
 OS/2, booting to, 177
 OS/2 Onboard Memory > 64M, 94, 247
 overclocking, AGP 4X Drive Strength, 154

P

P transistor drive strength, 116
P2C/C2P Concurrency, 95, 249
page hits, SDRAM Page Hit Limit, 123, 292
page modes, DRAM-Page Mode, 59
pages, SDRAM Page Closing Policy, 123
Parallel Port Mode, 95, 249-250
parallel ports
 Onboard Parallel Ports, 92, 245
 Parallel Port Mode, 95, 249-250
Passive Release, 96, 250
PCI
 CPU to PCI Post Write, 51
 CPU to PCI Write Buffer, 52
 Disable Unused PCI Clock, 56, 195
PCI 2.1 Compliance, 97, 251-252
PCI Chaining, 97, 252
PCI Clock/ CPU FSB Clock, 98, 253-254
PCI Delay Transaction, 98, 254-255
PCI Delayed Transaction, 55, 97, 194

PCI devices, AGP latency, 39
PCI Dynamic Bursting, 99, 255-256
PCI IDE Busmaster, 100, 256
PCI IRQ Activated By, 100, 257
PCI Latency Time, 39
PCI Latency Timer, 100, 257
PCI Master 0 WS Read, 101, 258
PCI Master 0 WS Write, 101, 258
PCI Master Read Caching, 102, 259
PCI Pipelining, 102, 259
PCI Prefetch, 102, 260
PCI Target Latency, 103, 260
PCI to DRAM Prefetch, 103, 261
PCI#2 Access #1 Retry, 96, 251
PCI/VGA Palette Snoop, 103, 261
Phoenix Technologies Award, 282
PIO (Programmed Input/Output), 75, 220
 Master Drive PIO Mode, 83, 233
 Share Drive PIO Mode, 304
 Slave Drive PIO Mode, 131
PIO Mode, 104, 262
pipelining, PCI Pipelining, 259
PIRQx Use IRQ No., 104-105, 262, 264
PLCC (Plastic Leaded Chip Carrier), 6, 23
PLL Overshoot on Wake-Up from Disconnect Causes Auto-Compensation Circuit to Fail, 79, 228
PNP OS Installed, 105-106, 264-265
polarity (TX, RX Inverting Enable), 137
ports
 parallel ports
 Onboard Parallel Ports, 92, 245
 Parallel Port Mode, 95, 249-250
 serial ports
 Onboard Serial Port 1, 92, 246
 Onboard Serial Port 2, 93, 246
POST (Power-On Diagnostic Test), 7
Post Write Combine, 106, 266
power consumption, reducing, 43

Power On Function, 107, 267

Power-On Diagnostic Test (POST), 7

prefetching

- AGP Prefetch, 166
- AGP to DRAM Prefetch, 169
- data, system controllers, 40
- PCI Prefetch, 102, 260
- PCI to DRAM Prefetch, 103, 261

preparing

- BIOS flash disk, 12
- hot flash-capable computers, 23

Primary Graphics Adapter, 107, 267

Primary VGA BIOS, 108, 268

Processor Number Feature, 108, 269

Programmed Input/Output (PIO), 75, 220

- Master Drive PIO Mode, 83, 233
- Share Drive PIO Mode, 304
- Slave Drive PIO Mode, 131

protection, Anti-Virus Protection, 170

PS/2 Mouse Function Control, 108, 269

Q

QDR (Quad Data Rate), 60

**quadrupling bandwidth through
AGP 8X transfer protocol, 156**

queues

- Host Bus In-Order Queue Depth, 217-218
- In-Order Queue Depth, 76, 222-223

Quick Boot, 110, 270

Quick Power On Self Test, 110, 270

R

Rank Interleave, 111, 271

ranks, 111

RAS (Row Address Strobe), 195

ratios

- CPU:DRAM, 88
- DRAM Ratio (CPU:DRAM), 60, 201-202

- DRAM Ratio H/W Strap, 61, 202
- setting between clock speeds, 40

Read Wait State, 111, 272

Read-Around-Write, 111, 271

recovery mechanisms

- 8-bit I/O Recovery Time, 150
- 16-bit I/O Recovery Time, 150

reducing power consumption, 43

Refresh Interval, 112, 272

Refresh Mode Select, 112, 273

refresh rates, DRAM Refresh Rate, 203

refreshing

- Refresh Interval, 112, 272
- Refresh Mode Select, 112, 273

removing BIOS chips, 24

repeating

- Keyboard Auto-Repeat Delay, 80
- Keyboard Auto-Repeat Rate, 80

Report No FDD For Win95, 112, 274

Reset Configuration Data, 113, 275

resetting BIOS with keyboard, 18

Resource Controlled By, 113, 275

**rotation, Master Priority Rotation,
84, 235**

Row Active Time, 121

Row Address Strobe (RAS), 195

Row Cycle Time, 121

RxD (infra-red reception), 114

RxD, TxD Active, 114, 276

S

S2K Bus Driving Strength, 115, 277

S2K Strobe N Control, 115, 277

S2K Strobe P Control, 116, 278

saving memory, AGP Aperture Size, 158

SBA (Sideband Address), 88, 241

SDRAM 1 T Command, 116, 278-279

**SDRAM 1 T Command Control, 117,
279-280**

344 SDRAM Active Precharge Delay

- SDRAM Active Precharge Delay, 117, 280
- SDRAM Bank Interleave, 117, 281-282
- SDRAM Bank-to-Bank Delay, 118, 128, 282
- SDRAM Burst Len, 119, 283
- SDRAM Burst Length, 119, 284
- SDRAM CAS Latency Time, 119, 285
- SDRAM Command Leadoff Time, 120, 285
- SDRAM Command Rate, 120, 286
- SDRAM Cycle Length, 120, 287
- SDRAM Cycle Time Tras/Trc, 121, 288
- SDRAM ECC Setting, 121, 288
- SDRAM Idle Limit, 122, 289-291
- SDRAM Leadoff Command, 122, 291
- SDRAM Page Closing Policy, 123, 291
- SDRAM Page Hit Limit, 123, 292
- SDRAM PH Limit, 124, 293
- SDRAM Precharge Control, 124, 293
- SDRAM RAS Precharge Delay, 124, 294
- SDRAM RAS Precharge Time, 125, 295
- SDRAM RAS Pulse Width, 125, 295
- SDRAM RAS-to-CAS Delay, 126, 296
- SDRAM Row Active Time, 126, 297
- SDRAM Row Cycle Time, 126, 297
- SDRAM Tras Timing Value, 127, 298
- SDRAM Trc Timing Value, 127, 298
- SDRAM Trcd Timing Value, 128, 299
- SDRAM Trp Timing Value, 128, 300
- SDRAM Trrd Timing Value, 129, 300
- SDRAM Write Recovery Time, 129, 301
- SDRAM Write to Read Command Delay, 129, 301
- Second Boot Device, 130, 302
- Security Setup, 130, 302
- Self Monitoring Analysis And Reporting Technology (S.M.A.R.T.), 72
 - HDD S.M.A.R.T. Capability, 216-217
- serial ports
 - Onboard Serial Port 1, 92, 246
 - Onboard Serial Port 2, 93, 246
- Serial Presence Detect (SPD), 153, 202
- shadowing, Video BIOS Shadowing, 143-144, 321-322
- Shadowing Address Ranges, 130, 303
- Share Memory Size, 131, 303
- Sideband Address (SBA), 88, 241
- sidebanding support, 154
- simultaneous switching outputs, 53, 191
- Slave Drive PIO Mode, 131, 304
- Slave Drive UltraDMA, 132, 305-306
- S.M.A.R.T. (Self Monitoring Analysis And Reporting Technology), 72
 - HDD S.M.A.R.T. Capability, 216-217
- snooping, PCI/VGA Palette Snoop, 103, 261
- software, AwardFlash, 12
- SPD (Serial Presence Detect), 153, 202
- Speed Error Hold, 132, 306
- Split Lock Operations, 133, 306
- Spread Spectrum, 133, 307-308
- SRAM (Static RAM), 184
- SSE (Streaming SIMD Extensions), 174
- SSE-optimized software, 43
- Static RAM (SRAM), 184
- Streaming SIMD Extensions (SSE), 174
- string, CPU Fast String, 182
- Super Bypass Mode, 134, 308
- Super Bypass Wait State, 134, 308
- SuperStability Mode, 134, 309-310
- Swap Floppy Drive, 135, 310
- swapping
 - BIOS chips, 24-25
 - floppy drives, 135, 310
 - mappings of drives, 90, 243
- Synchronous Mode Select, 136, 310

System BIOS Cacheable, 136, 311
 system controllers, prefetching data, 40

T

TCC (Thermal Control Circuit), 54
testing, Quick Power On Self Test, 270
Third Boot Device, 137, 312
Thoroughbred-A cores, 79
Thoroughbred-B cores, 80

threading

CPU Hyper-Threading, 49, 182-183
 Hyper-Threading Technology, 73, 218-219

throttling, CPU Thermal-Throttling, 187

time

DRAM Interleave Time, 59, 200
 SDRAM CAS Latency Time, 285
 SDRAM Command Leadoff Time, 285
 SDRAM RAS Precharge Time, 125, 295
 SDRAM Row Active Time, 126, 297
 SDRAM Row Cycle Time, 126, 297
 SDRAM Tras Timing Value, 127
 SDRAM Trc Timing Value, 127, 298
 SDRAM Trcd Timing Value, 128, 299
 SDRAM Trp Timing Value, 128, 300
 SDRAM Trrd Timing Value, 129, 300
 SDRAM Write Recovery Time, 129, 301
 Write Recovery Time, 148, 327

timers

AGP Secondary Lat Timer, 167-168
 CPU Latency Timer, 50
 DRAM Idle Timer, 58, 198-199
 PCI Latency Timer, 100, 257
 Watchdog Timer, 147, 326

traffic, P2C/C2P Concurrency, 95

transactions, PCI Delay Transaction, 254-255

transfers, Multi-Sector Transfers, 87, 240

transmission (TxD), 114

tRAS, 121, 298

SDRAM RAS Pulse Width, 125

tRC, 121

troubleshooting

corrupted BIOS, 20-21
 hot flashing, 21-22
 BIOS chips, 22
 booting up with boot disks, 24
 corrupted BIOS chips, 24
 creating DOS boot disks, 22-23
 motherboards, 26-27
 preparing hot flash-capable computers, 23
 swapping BIOS chips, 24
 unbootable systems, 17
 built-in mechanisms that protect computers
 from being unbootable due to incorrect
 BIOS settings, 17
 CMOS battery removal, 19
 CMOS discharge jumper, 18
 keyboard resets, 18

tRRD, 300

turnarounds

Fast R-W Turn Around, 207
 Fast Write to Read Turnaround, 207

tWR (Write Recovery Time), 129, 148, 327

tWTR, 207, 326

Write Data In to Read Delay, 147

TX, RX Inverting Enable, 137, 312

TxD (transmission), 114

Typematic Rate, 137, 312

Typematic Rate Delay, 138, 313

Typematic Rate Setting, 138, 313

U

UC (UnCached), 323

Ultra DMA Mode, 139, 314-315

Ultra DMA-66 IDE Controller, 140, 316

Ultra DMA-100 IDE Controller, 139, 315

Ultra DMA-133 IDE Controller, 140, 315

unbootable systems, 17

built-in mechanisms that protect
computers from being unbootable due to
incorrect BIOS settings, 17

346 unbootable systems

CMOS battery removal, 19
 CMOS discharge jumper, 18
 keyboard resets, 18

UnCached (UC), 323**Uncached Speculative Write Combining (USWC), 70, 106, 142, 214**

Video Memory Cache Mode, 144

universal BIOS flash utility, 27**updating BIOS, 8-9**

determining BIOS ID, 10
 determining BIOS version, 9
 flashing motherboard BIOS, 12-13
 obtaining BIOS updates, 11-12
 preparing BIOS flash disk, 12

USB

Assign IRQ For USB, 171
 Assign IRQ For VGA, 171
 Onboard USB Controller, 246

USB Controller, 141, 317

assigning IRQ to, 41

USB Keyboard Support, 141, 317**USB Mouse Support, 141, 318****USWC (Uncached Speculative Write Combining), 70, 106, 142, 214**

Video Memory Cache Mode, 144

USWC Write Posting, 142, 318-319**utilities**

BIOS flash utility, 24
 BIOS setup utility, 14
 universal BIOS flash utility, 27

V

version of BIOS, determining, 9**VGA, assigning IRQ to, 41****Video BIOS Cacheable, 143, 320****Video BIOS Shadowing, 143-144, 321-322****Video Memory Cache Mode, 144, 322-323****Video RAM Cacheable, 145, 323-324****virtual addressing, 157****Virus Warning, 145, 324****viruses, Anti-Virus Protection, 170**

ChipAway, 40

VLink 8X Support, 146, 325**voltage, CPU VCore Voltage, 189**

W-Z

warnings, Virus Warning, 145, 324**Watchdog Timer (WDT), 147, 326****Windows 95, Report No FDD for Win95, 112, 274****Windows XP, creating boot disks, 12****write buffer**

CPU to PCI Post Write, 188
 CPU to PCI Write Buffer, 189

Write Data in to Read Command Delay (tWTR), 64, 129**Write Data In to Read Delay, 147, 326****Write Recovery Time (tWR), 129, 148, 327****Zary, Ondrej, 27**