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W83627DHG-P

W83627DHG-PT

NUVOTON LPC I/O

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TABLE OF CONTENTS –

1. GENERAL DESCRIPTION 1
2. FEATURES 2
3. BLOCK DIAGRAM 5
4. PIN LAYOUT 6
5. PIN DESCRIPTION 7
   - 5.1 LPC Interface 8
   - 5.2 FDC Interface 8
   - 5.3 Multi-Mode Parallel Port 9
   - 5.4 Serial Port & Infrared Port Interface 12
   - 5.5 KBC Interface 14
   - 5.6 Serial Peripheral Interface 15
   - 5.7 Hardware Monitor Interface 16
   - 5.8 PECI Interface 17
   - 5.9 SST Interface 17
   - 5.10 Advanced Configuration and Power Interface 18
   - 5.11 SMBus Interface 19
   - 5.12 General Purpose I/O Port 19
     - 5.12.1 GPIO Power Source 19
     - 5.12.2 GPIO-2 Interface 19
     - 5.12.3 GPIO-3 Interface 20
     - 5.12.4 GPIO-4 Interface 21
     - 5.12.5 GPIO-5 Interface 21
     - 5.12.6 GPIO-6 Interface 22
     - 5.12.7 GPIO-4 with WDTO# / SUSLED Multi-function 22
   - 5.13 Particular ACPI Function pins 22
   - 5.14 POWER PINS 22
6. ACPI GLUE LOGIC 24
7. CONFIGURATION REGISTER ACCESS PROTOCOL 27
   - 7.1 Configuration Sequence 28
     - 7.1.1 Enter the Extended Function Mode 29
     - 7.1.2 Configure the Configuration Registers 29
     - 7.1.3 Exit the Extended Function Mode 29
     - 7.1.4 Software Programming Example 29
8. HARDWARE MONITOR 31
   - 8.1 General Description 31
   - 8.2 Access Interfaces 32
     - 8.2.1 LPC Interface 32
     - 8.2.2 I^2C interface 34
   - 8.3 Analog Inputs 35
     - 8.3.1 Voltages Over 2.048 V or Less Than 0 V 35
     - 8.3.2 Voltage Detection 36
     - 8.3.3 Temperature Sensing 36
   - 8.4 SST Command Summary 38
     - 8.4.1 Command Summary 38
     - 8.4.2 Combination Sensor Data Format 39

8.5 PECI 40
8.6 Fan Speed Measurement and Control 44
8.6.1 Fan Speed Measurement 44
8.6.2 Fan Speed Control 45
8.6.3 SMART FAN™ Control 46
8.7 Interrupt Detection 58
8.7.1 SMI# Interrupt Mode 58
8.7.2 OVT# Interrupt Mode 62
8.7.3 Caseopen Detection 64
8.7.4 BEEP Alarm Function 64
9. HARDWARE MONITOR REGISTER SET 66
9.1 Address Port (Port x5h) 66
9.2 Data Port (Port x6h) 66
9.3 SYSFANOUT PWM Output Frequency Configuration Register - Index 00h (Bank 0) 66
9.4 SYSFANOUT Output Value Select Register - Index 01h (Bank 0) 67
9.5 CPUFANOUT0 PWM Output Frequency Configuration Register - Index 02h (Bank 0) 68
9.6 CPUFANOUT0 Output Value Select Register - Index 03h (Bank 0) 68
9.7 FAN Configuration Register I - Index 04h (Bank 0) 69
9.8 SYSTIN Target Temperature Register/ SYSFANIN Target Speed Register - Index 05h (Bank 0) 69
9.9 CPUTIN Target Temperature Register/ CPUFANIN0 Target Speed Register - Index 06h (Bank 0) 70
9.10 Tolerance of Target Temperature or Target Speed Register - Index 07h (Bank 0) 70
9.11 SYSFANOUT Stop Value Register - Index 08h (Bank 0) 70
9.12 CPUFANOUT0 Stop Value Register - Index 09h (Bank 0) 71
9.13 SYSFANOUT Start-up Value Register - Index 0Ah (Bank 0) 71
9.14 CPUFANOUT0 Start-up Value Register - Index 0Bh (Bank 0) 71
9.15 SYSFANOUT Stop Time Register - Index 0Ch (Bank 0) 72
9.16 CPUFANOUT0 Stop Time Register - Index 0Dh (Bank 0) 72
9.17 Fan Output Step Down Time Register - Index 0Eh (Bank 0) 72
9.18 Fan Output Step Up Time Register - Index 0Fh (Bank 0) 73
9.19 AUXFANOUT PWM Output Frequency Configuration Register - Index 10h (Bank 0) 73
9.20 AUXFANOUT Output Value Select Register - Index 11h (Bank 0) 74
9.21 FAN Configuration Register II - Index 12h (Bank 0) 74
9.22 AUXTIN Target Temperature Register/ AUXFANIN0 Target Speed Register - Index 13h (Bank 0) 75
9.23 Tolerance of Target Temperature or Target Speed Register - Index 14h (Bank 0) 76
9.24 AUXFANOUT Stop Value Register - Index 15h (Bank 0) 76
9.25 AUXFANOUT Start-up Value Register - Index 16h (Bank 0) 76
9.26 AUXFANOUT Stop Time Register - Index 17h (Bank 0) 77
9.27 OVT# Configuration Register - Index 18h (Bank 0) 77
9.28 Reserved Registers - Index 19h ~ 1Fh (Bank 0) 77
9.29 Value RAM — Index 20h ~ 3Fh (Bank 0) 78
9.30 Configuration Register - Index 40h (Bank 0) 79
9.31 Interrupt Status Register 1 - Index 41h (Bank 0) 80
9.32 Interrupt Status Register 2 - Index 42h (Bank 0) 80
9.33 SMI# Mask Register 1 - Index 43h (Bank 0) 81

9.34 SMI# Mask Register 2 - Index 44h (Bank 0) 81
9.35 Interrupt Status Register 4 - Index 45h (Bank 0) 82
9.36 SMI# Mask Register 3 - Index 46h (Bank 0) 82
9.37 Fan Divisor Register I - Index 47h (Bank 0) 83
9.38 Serial Bus Address Register - Index 48h (Bank 0) 83
9.39 CPUFANOUT0/AUXFANOUT Monitor Temperature Source Select Register - Index 49h (Bank 0) 84
9.40 CPUFANOUT1 Monitor Temperature Source Select Register - Index 4Ah (Bank 0) 85
9.41 Fan Divisor Register II - Index 4Bh (Bank 0) 86
9.42 SMI#/OVT# Control Register - Index 4Ch (Bank 0) 86
9.43 FAN IN/OUT Control Register - Index 4Dh (Bank 0) 87
9.44 Register 50h ~ 5Fh Bank Select Register - Index 4Eh (Bank 0) 88
9.45 Nuvoton Vendor ID Register - Index 4Fh (Bank 0) 89
9.46 Reserved Register - Index 50h ~ 55h (Bank 0) 89
9.47 BEEP Control Register 1 - Index 56h (Bank 0) 90
9.48 BEEP Control Register 2 - Index 57h (Bank 0) 91
9.49 Chip ID - Index 58h (Bank 0) 92
9.50 Diode Selection Register - Index 59h (Bank 0) 92
9.51 Reserved Register - Index 5Ah ~ 5Ch (Bank 0) 92
9.52 VBAT Monitor Control Register - Index 5Dh (Bank 0) 92
9.53 Critical Temperature and Current Mode Enable Register - Index 5Eh (Bank 0) 94
9.54 Reserved Register - Index 5Fh (Bank 0) 94
9.55 CPUFANOUT1 PWM Output Frequency Configuration Register - Index 60h (Bank 0) 95
9.56 CPUFANOUT1 Output Value Select Register - Index 61h (Bank 0) 95
9.57 FAN Configuration Register III - Index 62h (Bank 0) 96
9.58 Target Temperature Register/CPUFANIN1 Target Speed Register - Index 63h (Bank 0) 96
9.59 CPUFANOUT1 Stop Value Register - Index 64h (Bank 0) 97
9.60 CPUFANOUT1 Start-up Value Register - Index 65h (Bank 0) 97
9.61 CPUFANOUT1 Stop Time Register - Index 66h (Bank 0) 97
9.62 CPUFANOUT0 Maximum Output Value Register - Index 67h (Bank 0) 98
9.63 CPUFANOUT0 Output Step Value Register - Index 68h (Bank 0) 98
9.64 CPUFANOUT1 Maximum Output Value Register - Index 69h (Bank 0) 98
9.65 CPUFANOUT1 Output Step Value Register - Index 6Ah (Bank 0) 98
9.66 SYSFANOUT Critical Temperature register - Index 6Bh (Bank 0) 99
9.67 CPUFANOUT0 Critical Temperature Register - Index 6Ch (Bank 0) 99
9.68 AUXFANOUT Critical Temperature Register - Index 6Dh (Bank 0) 99
9.69 CPUFANOUT1 Critical Temperature Register - Index 6Eh (Bank 0) 100
9.70 FANCTRL5 SMART FAN™ III+ Temperature 1 Register (T1) – Index 6Fh (Bank 0) 100
9.71 FANCTRL5 SMART FAN™ III+ Temperature 2 Register (T2) – Index 70h (Bank 0) 100
9.72 FANCTRL5 SMART FAN™ III+ Temperature 3 Register (T3) – Index 71h (Bank 0) 101
9.73 FANCTRL5 SMART FAN™ III+ DC/PWM 1 Register - Index 72h (Bank 0) 101
9.74 FANCTRL5 SMART FAN™ III+ DC/PWM 2 Register - Index 73h (Bank 0) 101
9.75 FANCTRL5 SMART FAN™ III+ DC/PWM 3 Register - Index 74h (Bank 0) 102
9.76 SMART FAN™ III+-1 input source & output FAN select Register - Index 75h (Bank 0) 102
9.77 SYSTIN SMI# Shut-down mode High Limit Temperature Register - Index 76h (Bank 0) 103
9.78 SYSTIN SMI# Shut-down mode Low Limit Temperature Register - Index 77h (Bank 0) 103

9.79 CPUTIN SMI# Shut-down mode High Limit Temperature Register - Index 78h (Bank 0) 103
9.80 CPUTIN SMI# Shut-down mode Low Limit Temperature Register - Index 79h (Bank 0). 104
9.81 AUXTIN SMI# Shut-down mode High Limit Temperature Register - Index 7Ah (Bank 0) 104
9.82 AUXTIN SMI# Shut-down mode Low Limit Temperature Register - Index 7Bh (Bank 0) 104
9.83 Temperature selection Register - Index 7Ch (Bank 0) 105
9.84 Temperature Register - Index 7Dh (Bank 0)..... 105
9.85 CPUTIN Temperature Sensor Temperature (High Byte) Register - Index 50h (Bank 1) . 106
9.86 CPUTIN Temperature Sensor Temperature (Low Byte) Register - Index 51h (Bank 1) .. 106
9.87 CPUTIN Temperature Sensor Configuration Register - Index 52h (Bank 1)..... 106
9.88 CPUTIN Temperature Sensor Hysteresis (High Byte) Register - Index 53h (Bank 1) 107
9.89 CPUTIN Temperature Sensor Hysteresis (Low Byte) Register - Index 54h (Bank 1) 107
9.90 CPUTIN Temperature Sensor Over-temperature (High Byte) Register - Index 55h (Bank1) 108
9.91 CPUTIN Temperature Sensor Over-temperature (Low Byte) Register - Index 56h (Bank 1) 108
9.92 FANCTRL6 SMART FAN™ III+ Temperature 1 Register (T1) – Index 58h (Bank 1) 108
9.93 FANCTRL6 SMART FAN™ III+ Temperature 2 Register (T2) – Index 59h (Bank 1) 109
9.94 FANCTRL6 SMART FAN™ III+ Temperature 3 Register (T3) – Index 5Ah (Bank 1) 109
9.95 FANCTRL6 SMART FAN™ III+ DC/PWM 1 Register - Index 5Bh (Bank 1) 109
9.96 FANCTRL6 SMART FAN™ III+ DC/PWM 2 Register - Index 5Ch (Bank 1)..... 110
9.97 FANCTRL6 SMART FAN™ III+ DC/PWM 3 Register - Index 5Dh (Bank 1)..... 110
9.98 FANCTRL6 SMART FAN™ III+ input source & output FAN select Register - Index 5Eh (Bank 1)..... 110
9.99 AUXTIN Temperature Sensor Temperature (High Byte) Register - Index 50h (Bank 2).. 111
9.100 AUXTIN Temperature Sensor Temperature (Low Byte) Register - Index 51h (Bank 2) 111
9.101 AUXTIN Temperature Sensor Configuration Register - Index 52h (Bank 2)..... 112
9.102 AUXTIN Temperature Sensor Hysteresis (High Byte) Register - Index 53h (Bank 2) 112
9.103 AUXTIN Temperature Sensor Hysteresis (Low Byte) Register - Index 54h (Bank 2) 113
9.104 AUXTIN Temperature Sensor Over-temperature (High Byte) Register - Index 55h (Bank 2) 113
9.105 AUXTIN Temperature Sensor Over-temperature (Low Byte) Register - Index 56h (Bank 2) 113
9.106 Interrupt Status Register 3 - Index 50h (Bank 4)..... 114
9.107 SMI# Mask Register 4 - Index 51h (Bank 4)..... 114
9.108 Reserved Register - Index 52h (Bank 4) 114
9.109 BEEP Control Register 3 - Index 53h (Bank 4) 115
9.110 SYSTIN Temperature Sensor Offset Register - Index 54h (Bank 4)..... 115
9.111 CPUTIN Temperature Sensor Offset Register - Index 55h (Bank 4) 116
9.112 AUXTIN Temperature Sensor Offset Register - Index 56h (Bank 4)..... 116
9.113 Reserved Register - Index 57h-58h (Bank 4)..... 116
9.114 Real Time Hardware Status Register I - Index 59h (Bank 4) 116
9.115 Real Time Hardware Status Register II - Index 5Ah (Bank 4)..... 117
9.116 Real Time Hardware Status Register III - Index 5Bh (Bank 4)..... 118
9.117 Reserved Register - Index 5Ch ~ 5Fh (Bank 4) 119
9.118 Value RAM 2 — Index 50h-59h (Bank 5) 119
9.119 SYSFANIN SPEED HIGH-BYTE VALUE (RPM) - Index 50h (Bank 6)..... 119

9.120 SYSFANIN SPEED LOW-BYTE VALUE (RPM) - Index 51h (Bank 6) 120
9.121 CPUFANIN0 SPEED HIGH-BYTE VALUE (RPM) - Index 52h (Bank 6) 120
9.122 CPUFANIN0 SPEED LOW-BYTE VALUE (RPM) - Index 53h (Bank 6) 120
9.123 AUXFANIN0 SPEED HIGH-BYTE VALUE (RPM) - Index 54h (Bank 6) 121
9.124 AUXFANIN0 SPEED LOW-BYTE VALUE (RPM) - Index 55h (Bank 6) 121
9.125 CPUFANIN1 SPEED HIGH-BYTE VALUE (RPM) - Index 56h (Bank 6) 121
9.126 CPUFANIN1 SPEED LOW-BYTE VALUE (RPM) - Index 57h (Bank 6) 122
9.127 AUXFANIN1 SPEED HIGH-BYTE VALUE (RPM) - Index 58h (Bank 6) 122
9.128 AUXFANIN1 SPEED LOW-BYTE VALUE (RPM) - Index 59h (Bank 6) 122
9.129 FANOUT Configure register of PECI Error - Index 5Ah (Bank 6) 123
9.130 FANCTRL2 pre-configured register for PECI error - Index 5Bh (Bank 6) 123
9.131 FANCTRL3 pre-configured register for PECI error - Index 5Ch (Bank 6) 123
9.132 FANCTRL4 pre-configured register for PECI error - Index 5Dh (Bank 6) 124
9.133 FANCTRL5 pre-configured register for PECI error - Index 5Eh (Bank 6) 124
9.134 FANCTRL6 pre-configured register for PECI error - Index 5Fh (Bank 6) 125
10. SERIAL PERIPHERAL INTERFACE 126
10.1 Using the SPI Interface via the LPC 126
11. FLOPPY DISK CONTROLLER 129
11.1 FDC Functional Description 129
11.1.1 FIFO (Data) 129
11.1.2 Data Separator 130
11.1.3 Write Precompensation 130
11.1.4 Perpendicular Recording Mode 130
11.1.5 FDC Core 131
11.1.6 FDC Commands 131
11.2 Register Descriptions 140
11.2.1 Status Register A (SA Register) (Read base address + 0) 140
11.2.2 Status Register B (SB Register) (Read base address + 1) 141
11.2.3 Digital Output Register (DO Register) (Write base address + 2) 142
11.2.4 Tape Drive Register (TD Register) (Read base address + 3) 143
11.2.5 Main Status Register (MS Register) (Read base address + 4) 144
11.2.6 Data Rate Register (DR Register) (Write base address + 4) 144
11.2.7 FIFO Register (R/W base address + 5) 146
11.2.8 Digital Input Register (DI Register) (Read base address + 7) 148
11.2.9 Configuration Control Register (CC Register) (Write base address + 7) 150
12. UART PORT 151
12.1 Universal Asynchronous Receiver/Transmitter (UART A, UART B) 151
12.2 Register Description 151
12.2.1 UART Control Register (UCR) (Read/Write) 151
12.2.2 UART Status Register (USR) (Read/Write) 154
12.2.3 Handshake Control Register (HCR) (Read/Write) 154
12.2.4 Handshake Status Register (HSR) (Read/Write) 155
12.2.5 UART FIFO Control Register (UFR) (Write only) 156
12.2.6 Interrupt Status Register (ISR) (Read only) 156
12.2.7 Interrupt Control Register (ICR) (Read/Write) 157
12.2.8 Programmable Baud Generator (BLL/BHL) (Read/Write) 158
12.2.9 User-defined Register (UDR) (Read/Write) 158

13. PARALLEL PORT 159
13.1 Printer Interface Logic 159
13.2 Enhanced Parallel Port (EPP) 160
13.2.1 Data Port (Data Swapper) 160
13.2.2 Printer Status Buffer 161
13.2.3 Printer Control Latch and Printer Control Swapper 161
13.2.4 EPP Address Port 162
13.2.5 EPP Data Port 0-3 162
13.2.6 EPP Pin Descriptions 162
13.2.7 EPP Operation 162
13.3 Extended Capabilities Parallel (ECP) Port 163
13.3.1 ECP Register and Bit Map 164
13.3.2 Data and ecpAFifo Port 165
13.3.3 Device Status Register (DSR) 165
13.3.4 Device Control Register (DCR) 165
13.3.5 CFIFO (Parallel Port Data FIFO) Mode = 010 166
13.3.6 ECPDFIFO (ECP Data FIFO) Mode = 011 166
13.3.7 TFIFO (Test FIFO Mode) Mode = 110 166
13.3.8 CNFGA (Configuration Register A) Mode = 111 166
13.3.9 CNFGB (Configuration Register B) Mode = 111 166
13.3.10 ECR (Extended Control Register) Mode = all 167
13.3.11 ECP Pin Descriptions 168
13.3.12 ECP Operation 169
13.3.13 FIFO Operation 170
13.3.14 DMA Transfers 170
13.3.15 Programmed I/O (NON-DMA) Mode 170
14. KEYBOARD CONTROLLER 171
14.1 Output Buffer 171
14.2 Input Buffer 171
14.3 Status Register 172
14.4 Commands 172
14.5 Hardware GATEA20/Keyboard Reset Control Logic 174
14.5.1 KB Control Register 174
14.5.2 Port 92 Control Register 175
15. POWER MANAGEMENT EVENT 176
15.1 Power Control Logic 177
15.1.1 PSON# Logic 177
15.1.2 AC Power Failure Resume 178
15.2 Wake Up the System by Keyboard and Mouse 179
15.2.1 Waken up by Keyboard events 179
15.2.2 Waken up by Mouse events 180
15.3 Resume Reset Logic 181
15.4 PWROK Generation 181
15.4.1 The Relation among PWROK/PWROK2, ATXPGD and FTPRST# 182
16. SERIALIZED IRQ 185
16.1 Start Frame 185
16.2 IRQ/Data Frame 186

16.3 Stop Frame 187
17. WATCHDOG TIMER 188
18. GENERAL PURPOSE I/O 189
19. VID INPUTS AND OUTPUTS 190
19.1 VID Input Detection 190
19.2 VID Output Control 190
20. PCI RESET BUFFERS 191
21. CONFIGURATION REGISTER 192
21.1 Chip (Global) Control Register 192
21.2 Logical Device 0 (FDC) 199
21.3 Logical Device 1 (Parallel Port) 202
21.4 Logical Device 2 (UART A) 203
21.5 Logical Device 3 (UART B) 204
21.6 Logical Device 5 (Keyboard Controller) 206
21.7 Logical Device 6 (Serial Peripheral Interface) 208
21.8 Logical Device 7 (GPIO6) 209
21.9 Logical Device 8 (WDTO# & PLED) 211
21.10 Logical Device 9 (GPIO2, GPIO3, GPIO4, GPIO5) 213
21.11 Logical Device A (ACPI) 219
21.12 Logical Device B (Hardware Monitor) 227
21.13 Logical Device C (PECI, SST) 229
22. SPECIFICATIONS 235
22.1 Absolute Maximum Ratings 235
22.2 Hardware Monitor Ratings 235
22.3 DC CHARACTERISTICS 235
22.4 AC CHARACTERISTICS 247
22.4.1 Power On / Off Timing 247
22.4.2 AC Power Failure Resume Timing 248
22.4.3 VSBGATE# Timing 251
22.4.4 Clock Input Timing 251
22.4.5 PECI and SST Timing 253
22.4.6 SPI Timing 254
22.4.7 SMBus Timing 255
22.4.8 Floppy Disk Drive Timing 255
22.4.9 UART/Parallel Port 257
22.4.10 Parallel Port Mode Parameters 259
22.4.11 Parallel Port 260
22.4.12 KBC Timing Parameters 267
22.4.13 GPIO Timing Parameters 270
22.5 LPC Timing 272
23. TOP MARKING SPECIFICATIONS 273
24. ORDERING INFORMATION 274
25. PACKAGE SPECIFICATION 275
26. REVISION HISTORY 276

List of Figures

Figure 3-1 W83627DHG-P Block Diagram 5
Figure 4-1 Pin Layout for W83627DHG-P 6
Figure 7-1 Structure of the Configuration Register 27
Figure 7-2 Devices of I/O Base Address 28
Figure 7-3 Configuration Register 28
Figure 7-4 Chip (Global) Control Registers 30
Figure 8-1 LPC Bus' Reads from / Writes to Internal Registers 33
Figure 8-2 Serial Bus Write to Internal Address Register Followed by the Data Byte 34
Figure 8-3 Serial Bus Read from Internal Address Register 34
Figure 8-4 Analog Inputs and Application Circuit of the W83627DHG-P 35
Figure 8-5 Monitoring Temperature from Thermistor 37
Figure 8-6 Monitoring Temperature from Thermal Diode (Voltage Mode) 37
Figure 8-7 Monitoring Temperature from Thermal Diode (Current Mode) 38
Figure 8-8 PECI Temperature 41
Figure 8-9 Temperature and Fan Speed Relation after Tbase Offsets 42
Figure 8-10 Block Diagram for PECI 1.0 43
Figure 8-11 FANOUT and Corresponding Temperature Sensors in SMART FAN™ I, III, and III+ 47
Figure 8-12 Mechanism of Thermal Curise™ Mode (PWM Duty Cycle) 49
Figure 8-13 Mechanism of Thermal Curise™ Mode (DC Output Value) 49
Figure 8-14 Mechanism of Fan Speed Cruise™ Mode 50
Figure 8-15 Setting of SMART FAN™ III 53
Figure 8-16 SMART FAN™ III Mechanism (Current Temp. > Target Temp. + Tol.) 53
Figure 8-17 SMART FAN™ III Mechanism (Current Temp. < Target Temp. - Tol.) 54
Figure 8-18 SMART FAN™ III+ Mechanism 56
Figure 8-19 SMI Mode of Voltage and Fan Inputs 58
Figure 8-20 SMI Mode of SYSTIN I 60
Figure 8-21 SMI Mode of SYSTIN II 61
Figure 8-22 SMI Mode of CPUTIN 62
Figure 8-23 OVT# Modes of Temperature Inputs 63
Figure 8-24 Caseopen Mechanism 64
Figure 14-1 Keyboard and Mouse Interface 171
Figure 15-1 Power Control Mechanism 177
Figure 15-2 Power Sequence from S5 to S0, then Back to S5 178
Figure 15-3 The previous state is “on” - 3VCC falls to 2.6V and SUSB# keeps at 2.0V 179
Figure 15-4 The previous state is “off” - 3VCC falls to 2.6V and SUSB# keeps at 0.8V 179
Figure 15-5 Mechanism of Resume Reset Logic 181
Figure 15-6 181
Figure 15-7 183
Figure 15-8 183
Figure 15-9 184

List of Tables

Table 8-1 Temperature Data Format 36
Table 8-2 SST Command Summary 38
Table 8-3 Typical Temperature Values 39
Table 8-4 Fan Divisor Definition 44
Table 8-5 Divisor, RPM, and Count Relation 44
Table 8-6 Display Registers - at SMART FAN™ I Mode 50
Table 8-7 Relative Registers - at Thermal Cruise™ Mode 51
Table 8-8 Relative Registers-at Fan Speed Cruise™ Mode 51
Table 8-9 Display Register - in SMART FAN™ III Mode 55
Table 8-10 Relative Register - in SMART FAN™ III Control Mode 55
Table 8-11 Display Registers - in SMART FAN™ III+ Mode 57
Table 10-1 Base Address Setting 126
Table 10-2 SPI Address Map 126
Table 10-3 MODE 127
Table 11-1 The Delays of the FIFO 129
Table 11-2 FDC Registers 140
Table 12-1 Register Summary for UART 153
Table 13-1 Pin Descriptions for SPP, EPP, and ECP Modes 159
Table 13-2 EPP Register Addresses 160
Table 13-3 Address and Bit Map for SPP and EPP Modes 160
Table 13-4 ECP Mode Description 163
Table 13-5 ECP Register Addresses 164
Table 13-6 Bit Map of the ECP Registers 164
Table 14-1 Bit Map of Status Register 172
Table 14-2 KBC Command Sets 172
Table 15-1 Bit Map of Logical Device A, CR[E4h], Bits[6:5] 178
Table 15-2 Definitions of Mouse Wake-Up Events 180
Table 15-3 Timing and Voltage Parameters of RSMRST# 181
Table 15-4 182
Table 15-5 Bit Map of Logical Device A, CR[E6h], Bits[3:1] 182
Table 15-6 183
Table 16-1 SERIRQ Sampling Periods 186

1. GENERAL DESCRIPTION

The W83627DHG-P is a member of Nuvoton's Super I/O product line. This family features the LPC (Low Pin Count) interface. This interface is more economical than its ISA counterpart, in that it has approximately forty pins fewer, yet still provides as great performance. In addition, the improvement allows even more efficient operation of software, BIOS and device drivers.

In addition to providing an LPC interface for I/O, the W83627DHG-P monitors several critical parameters in PC hardware, including power supply voltages, fan speeds, and temperatures. In terms of temperature monitoring, the W83627DHG-P adopts the Current Mode (dual current source) approach. The W83627DHG-P also supports the Smart Fan control system, including SMART FAN™ I, SMART FAN™ III and SMART FAN™ III+, which makes the system more stable and user-friendly.

The W83627DHG-P supports four -- 360K, 720K, 1.2M, 1.44M, or 2.88M -- disk drive types and data transfer rates of 250 Kb/s, 300 Kb/s, 500 Kb/s, 1 Mb/s, and 2 Mb/s. The disk drive adapter supports the functions of floppy disk drive controller (compatible with the industry standard 82077/ 765), data separator, write pre-compensation circuit, decode logic, data rate selection, clock generator, drive interface control logic, and interrupt and DMA logic. Such a wide range of functions integrated into one W83627DHG-P greatly reduces the number of required components to interface with floppy disk drives.

The W83627DHG-P provides two high-speed serial communication ports (UARTs), one of which provides IR functions IrDA 1.0 (SIR for 1.152K bps). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem-control capability, and a processor interrupt system. Both UARTs support legacy speeds up to 115.2K bps as well as even higher baud rates of 230K, 460K, or 921K bps to support higher speed modems.

The W83627DHG-P supports the PC-compatible printer port (SPP), the bi-directional printer port (BPP), the enhanced parallel port (EPP) and the extended capabilities port (ECP).

The W83627DHG-P provides a bridge of the Low Pin Count interface to Serial Peripheral Interface (SPI) that supports up to 8M bits serial flash ROM. The W83627DHG-P provides flexible I/O control functions through a set of 40 general purpose I/O (GPIO) ports. These GPIO ports may serve as simple I/O ports or may be individually configured to provide alternative functions.

The W83627DHG-P supports the SST (Simple Serial Transport) interface and Intel® PECI (Platform Environment Control Interface).

The W83627DHG-P fully complies with the Microsoft© PC98, PC99 and PC2001 System Design Guides and meets the requirements of ACPI.

The configuration registers inside the W83627DHG-P support mode selection, function enable and disable, and power-down selection. Furthermore, the configurable PnP features are compatible with the plug-and-play feature in Windows 95/98/2000/XP™, making the allocation of the system resources more efficient than ever.

One special characteristic of the Super I/O product line is the separation of the power supply in normal operation from that in standby operation. Please pay attention to the layout of these two power supplies to avoid short circuits. Otherwise, the feature will not function.

In addition to W83627DHG-P, there is W83627DHG-PT. W83627DHG-PT is exactly the same as W83627DHG-P, except the IC operation temperature. W83627DHG-PT supports industrial standard, which means the IC operating temperature ranges from -40℃ to 85℃. W83627DHG-P supports commercial standard, which means the IC operating temperature ranges from 0℃ to 70℃.

2. FEATURES

General

- Comply with LPC specification 1.1 version
- Support LDRQ# (LPC DMA), SERIRQ (Serialized IRQ)
- Integrated hardware monitor functions
- Compliant with Microsoft PC98/PC99/PC2001 System Design Guide
- Support DPM (Device Power Management), ACPI (Advanced Configuration and Power Interface)
- Programmable configuration settings
- Single 24- or 48-MHz clock input
- Support selective pins of 5 V tolerance

FDC

- Variable write pre-compensation with track-selection capability
- Support vertical recording format
- DMA-enable logic
- 16-byte data FIFOs
- Support floppy disk drives and tape drives
- Detect all overrun and underrun conditions
- Built-in address mark detection circuit to simplify the read electronics
- FDD anti-virus functions with software write protect and FDD-write enable signal (write data signal forced to be inactive)
- Support 3.5-inch or 5.25-inch floppy disk drives
- Compatible with industry standard 82077
- 360K / 720K / 1.2M / 1.44M / 2.88M formats
- 250K, 300K, 500K, 1M, 2M bps data transfer rate
- Support 3-mode FDD and its Windows driver

UART

- Two high-speed, 16550-compatible UARTs with 16-byte send / receive FIFOs
- Fully programmable serial-interface characteristics:
  --- 5, 6, 7 or 8-bit characters
  --- Even, odd or no parity bit generation/detection
  --- 1, 1.5 or 2 stop-bit generation
- Internal diagnostic capabilities:
  --- Loop-back controls for communications link fault isolation
  --- Break, parity, overrun, framing error simulation
- Programmable baud rate generator allows division of clock source by any value from 1 to (2^{16} - 1)
- Maximum baud rate for clock source 24 MHz is 1.5 M bps.

Parallel Port

- Compatible with IBM parallel port
- Support PS/2-compatible bi-directional parallel port
- Support Enhanced Parallel Port (EPP) - Compatible with IEEE 1284 specification
- Support Extended Capabilities Port (ECP) - Compatible with IEEE 1284 specification
- Enhanced printer port back-drive current protection
- Extension FDD mode support disk drive B; and Extension 2FDD mode support disk drives A and B through parallel port

Keyboard Controller

- 8042-based keyboard controller
- Asynchronous Access to two data registers and one status register
- Software-compatible with 8042
- Support PS/2 mouse
- Support Port 92
- Support both interrupt and polling modes
- Fast Gate A20 and Hardware Keyboard Reset
- 12MHz operating frequency

Hardware Monitor Functions

- Smart Fan control system, supporting the functions of SMART FAN™ I -- "Thermal Cruise™" and "Speed Cruise™" modes, SMART FAN™ III and SMART FAN™ III+
- Programmable threshold temperature to speed fan fully while current temperature exceeds this threshold in the Thermal Cruise™ mode
- Three thermal inputs from the different combinations of remote thermistors, and the thermal diode output
- Support Current Mode (dual current source) temperature sensing method
- Nine voltage inputs (CPUVCORE, VIN[0..3] and 3VCC, AVCC , 3VSB, VBAT)
- Five fan-speed monitoring inputs
- Four fan-speed controls
- Dual mode for fan control (PWM and DC)
- Built-in case open detection circuit
- Programmable hysteresis and setting points for all monitored items
- Over-temperature indicator output
- Issue SMI#, OVT# to activate system protection
- Nuvoton Hardware Doctor™ support
- Eight VID inputs / outputs
- Provide I^2C interface to read / write registers

Serial Peripheral Interface

- Support up to 8M bits SPI Flash Memory with clock up to 33 MHz
- Support Mode 0 and Mode 3

Infrared

- Support IrDA version 1.0 SIR protocol with maximum baud rate up to 115.2K bps
- Support SHARP ASK-IR protocol with maximum baud rate up to 57,600 bps

General Purpose I/O Ports

- 40 programmable general purpose I/O ports
- GPIO port 4 supports the optional functions of Watchdog Timer Out and Suspend LED Output
- GP30, GP31 and GP35 can distinguish whether the input pins undergo any transitions by reading the registers. All of the 3 GPIOs can assert PSOUT# or PME# to wake up the system if each of them undergoes any transition.

OnNow Functions

- Keyboard Wake-Up by programmable keys
- Mouse Wake-Up by programmable buttons
- OnNow Wake-Up from all of the ACPI sleeping states (S1-S5)

Simple Serial Transport™ Interface

- SST temperature and voltage Combination Sensor command support
- Support SST 0.9 Specification

PECI Interface

- Support PECI 1.0 and 1.1a Specifications
- Support 4 CPU addresses and 2 domains per CPU address

Package

- 128-pin QFP
- Pb-free/RoHS

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3. BLOCK DIAGRAM

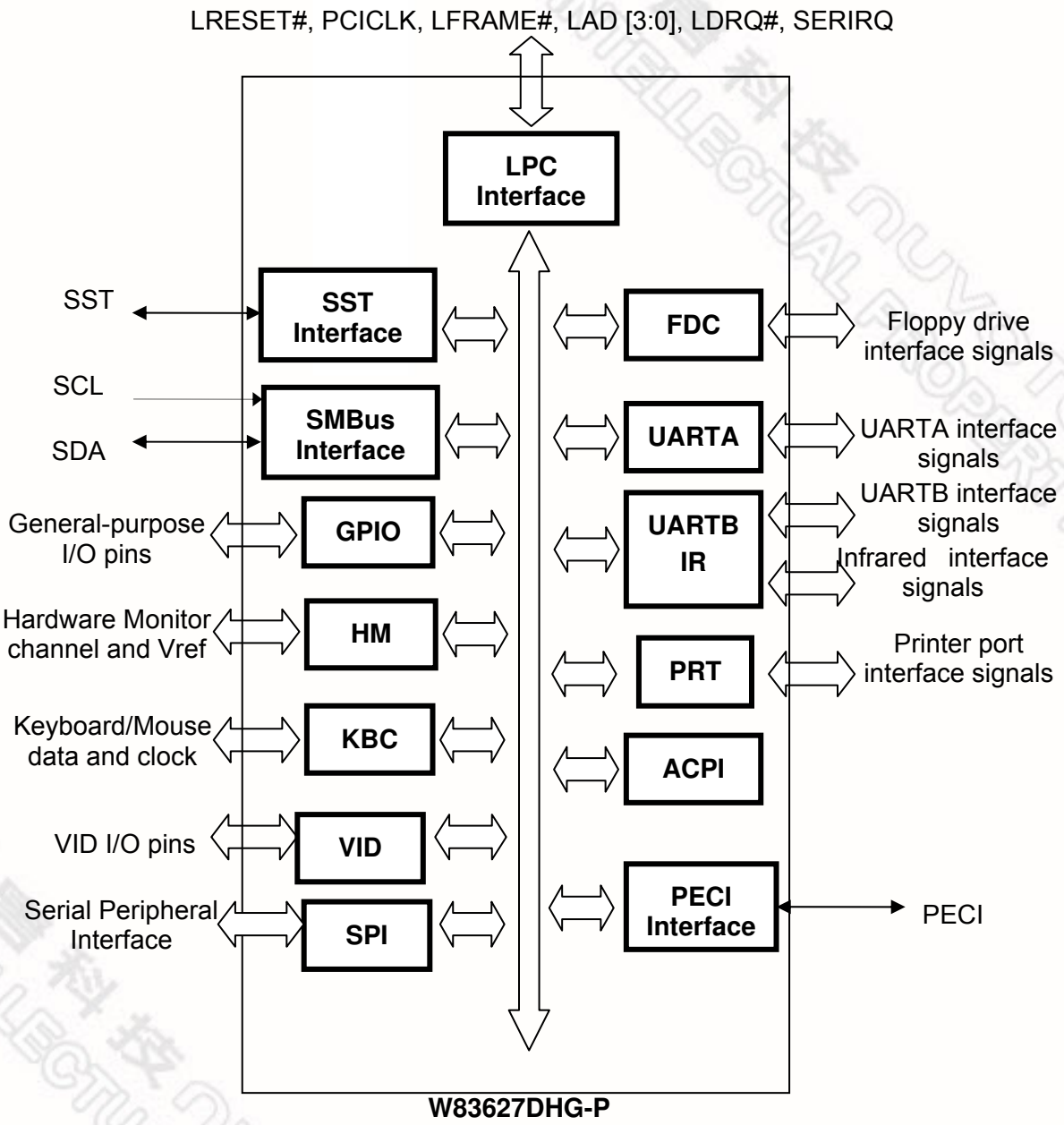

Figure 3-1 W83627DHG-P Block Diagram

4. PIN LAYOUT

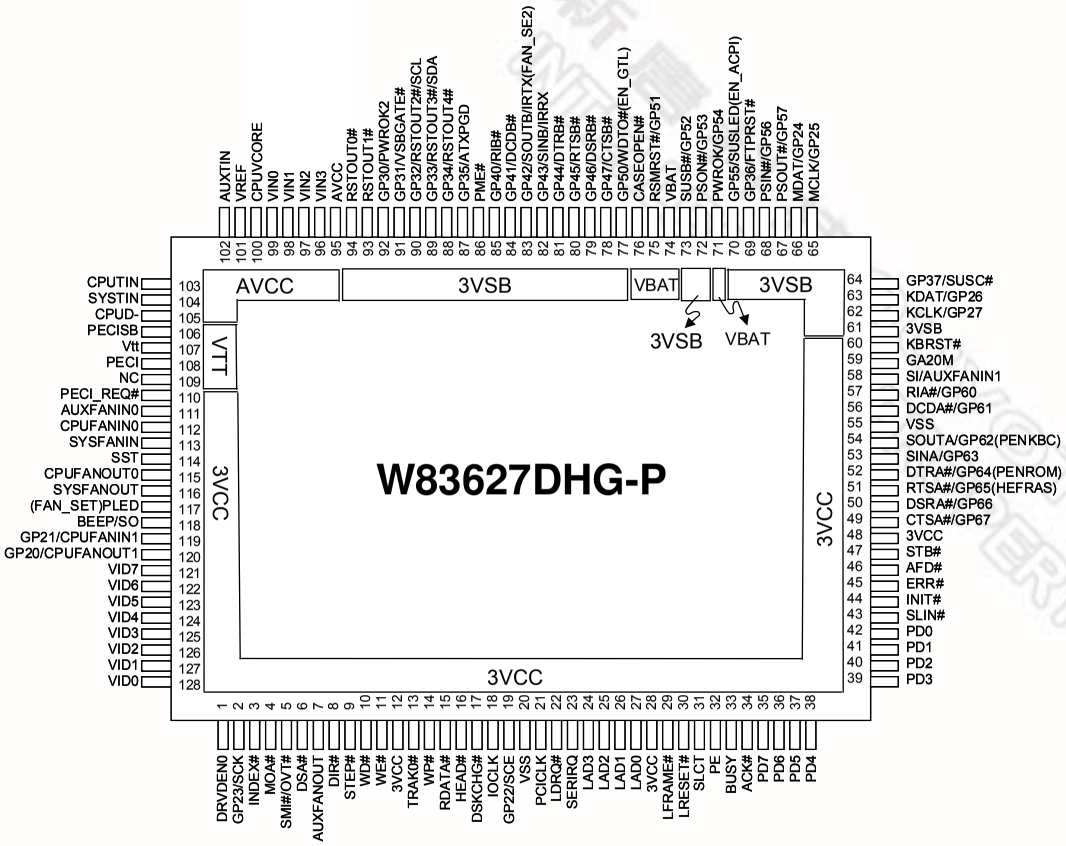

Figure 4-1 Pin Layout for W83627DHG-P

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5. PIN DESCRIPTION

Note: Please refer to Section 22.3 DC CHARACTERISTICS for details.

AOUT - Analog output pin
AIN - Analog input pin
IN_{cd} - CMOS-level input pin with internal pull-down resistor
IN_{cs} - CMOS-level, Schmitt-trigger input pin
IN_{csu} - CMOS-level, Schmitt-trigger input pin with internal pull-up resistor
IN_{t} - TTL-level input pin
IN_{td} - TTL-level input pin with internal pull-down resistor
IN_{ts} - TTL-level, Schmitt-trigger input pin
IN_{tp3} - 3.3V, TTL-level input pin
IN_{tsp3} - 3.3V TTL level Schmitt-trigger input pin
IN_{tu} - TTL-level input pin with internal pull-up resistor
I/O_{8} - bi-directional pin with 8-mA source-sink capability
I/O_{8t} - TTL-level, bi-directional pin with 8-mA source-sink capability
I/O_{12} - bi-directional pin with 12-mA source-sink capability
I/O_{12t} - TTL-level, bi-directional pin with 12-mA source-sink capability
I/O_{12ts} - Schmitt-trigger, bi-directional pin with 12-mA source-sink capability
I/O_{12tp3} - 3.3V, TTL-level, bi-directional pin with 12-mA source-sink capability
I/OD_{8t} - TTL-level, bi-directional pin. Open-drain output with 8-mA sink capability
I/OD_{12} - Bi-directional pin. Open-drain output with 12-mA sink capability
I/OD_{12t} - TTL-level bi-directional pin. Open-drain output with 12-mA sink capability
I/OD_{12cs} - CMOS-level, bi-directional, Schmitt-trigger pin. Open-drain output with 12-mA sink capability
I/OD_{12ts} - TTL-level, bi-directional, Schmitt-trigger pin. Open-drain output with 12-mA sink capability
I/OD_{12tp3} - 3.3V, TTL-level, bi-directional pin. Open-drain output with 12-mA sink capability
I/OD_{16t} - TTL-level, bi-directional pin. Open-drain output with 16-mA sink capability
I/OD_{16ts} - Schmitt-trigger, bi-directional pin. Open-drain output with 16-mA sink capability
I/OD_{16cs} - CMOS-level, Schmitt-trigger, bi-directional pin. Open-drain output with 16-mA sink capability
I/OD_{24t} - TTL-level, bi-directional pin. Open-drain output with 24-mA sink capability
O_{12p3} - 3.3V output pin with 12-mA source-sink capability
O_{12tp3} - 3.3V, TTL-level output pin with 12-mA source-sink capability
O_{8} - TTL-level output pin with 8-mA source-sink capability
O_{12} - TTL-level output pin with 12-mA source-sink capability
O_{24} - TTL-level output pin with 24-mA source-sink capability
OD_{8} - Open-drain output pin with 8-mA sink capability
OD_{12} - Open-drain output pin with 12-mA sink capability
OD_{24} - Open-drain output pin with 24-mA sink capability
I_{V3} - Bi-direction pin with source capability of 6 mA and sink capability of 1 mA
I/O_{V3} - Bi-direction pin with source capability of 6 mA and sink capability of 1 mA

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5.1 LPC Interface

SYMBOL	PIN	I/O	DESCRIPTION
IOCLK	18	IN_{tp3}	System clock input, either 24MHz or 48MHz. The actual frequency must be specified in the register. The default value is 48MHz.
PME#	86	OD_{12p3}	Generated PME event.
PCICLK	21	IN_{tsp3}	PCI-clock 33-MHz input.
LDRQ#	22	O_{12p3}	Encoded DMA Request signal.
SERIRQ	23	I/OD_{12tp3}	Serialized IRQ input / output.
LAD[3:0]	24-27	I/O_{12tp3}	These signal lines communicate address, control, and data information over the LPC bus between a host and a peripheral.
LFRAME#	29	IN_{tsp3}	Indicates the start of a new cycle or the termination of a broken cycle.
LRESET#	30	IN_{tsp3}	Reset signal. It can be connected to the PCIRST# signal on the host.

5.2 FDC Interface

SYMBOL	PIN	I/O	DESCRIPTION
DRVDEN0	1	OD_{24}	Drive Density Select bit 0.
INDEX#	3	IN_{cs}	This Schmitt-trigger input from the disk drive is active-low when the head is positioned over the beginning of a track marked by an index hole. This input pin needs to connect a pulled-up 1-KΩ resistor to 5V for Floppy Drive compatibility.
MOA#	4	OD_{24}	Motor A On. When set to 0, this pin activates disk drive A. This is an open-drain output.
DSA#	6	OD_{24}	Drive Select A. When set to 0, this pin activates disk drive A. This is an open-drain output.
DIR#	8	OD_{24}	Direction of the head step motor. An open-drain output. Logic 1 = outward motion Logic 0 = inward motion
STEP#	9	OD_{24}	Step output pulses. This active-low open-drain output produces a pulse to move the head to another track.
WD#	10	OD_{24}	Write data. This logic-low open-drain writes pre-compensation serial data to the selected FDD. An open-drain output.
WE#	11	OD_{24}	Write enable. An open-drain output.
TRAK0#	13	IN_{cs}	Track 0. This Schmitt-trigger input from the disk drive is active-low when the head is positioned over the outermost track. This input pin needs to connect a pulled-up 1-KΩ resistor to 5V for Floppy Drive compatibility.
WP#	14	IN_{cs}	Write protected. This active-low Schmitt input from the disk drive indicates that the diskette is write-protected. This input pin needs to connect a pulled-up 1-KΩ resistor to 5V for Floppy Drive compatibility.

SYMBOL	PIN	I/O	DESCRIPTION
RDATA#	15	IN_{cs}	The read-data input signal from the FDD. This input pin needs to connect a pulled-up 1-KΩ resistor to 5V for Floppy Drive compatibility.
HEAD#	16	OD_{24}	Head selection. This open-rain output determines which disk drive head is active. Logic 1 = side 0 Logic 0 = side 1
DSKCHG#	17	IN_{cs}	Diskette change. This signal is active-low at power-on and whenever the diskette is removed. This input pin needs to connect a pulled-up 1-KΩ resistor to 5V for Floppy Drive compatibility.

5.3 Multi-Mode Parallel Port

SYMBOL	PIN	I/O	DESCRIPTION
SLCT	31	IN_{ts}	PRINTER MODE: An active-high input on this pin indicates that the printer is selected. See the description of the parallel port for the definition of this pin in ECP and EPP modes.
WE2#		OD_{12}	EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the WE# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the WE# pin of FDC.
PE	32	IN_{ts}	PRINTER MODE: An active-high input on this pin indicates that the printer has detected the end of the paper. See the description of the parallel port for the definitions of this pin in ECP and EPP modes.
WD2#		OD_{12}	EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the WD# pin of FDC. EXTENSION 2FDD MODE This pin is for Extension FDD A and B; its function is the same as the WD# pin of FDC
BUSY	33	IN_{ts}	PRINTER MODE: An active-high input indicates that the printer is not ready to receive data. See the description of the parallel port for the definitions of this pin in ECP and EPP modes.
MOB2#		OD_{12}	EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the MOB# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the MOB# pin of FDC.

SYMBOL	PIN	I/O	DESCRIPTION
ACK#	34	IN_{ts}	PRINTER MODE: ACK# An active-low input on this pin indicates that the printer has received data and is ready to accept more data. See the descriptions of the parallel port for the definition of this pin in ECP and EPP modes.
DSB2#		OD_{12}	EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the DSB# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the DSB# pin of FDC.
ERR#	45	IN_{ts}	PRINTER MODE: ERR# An active-low input on this pin indicates that the printer has encountered an error condition. See the description of the parallel port for the definitions of this pin in ECP and EPP modes.
HEAD2#		OD_{12}	EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the HEAD# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the HEAD# pin of FDC.
SLIN#	43	OD_{12}	PRINTER MODE: SLIN# Output line for detection of printer selection. See the description of the parallel port for the definitions of this pin in ECP and EPP modes.
STEP2#		OD_{12}	EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the STEP# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the STEP# pin of FDC.
INIT#	44	OD_{12}	PRINTER MODE: INIT# Output line for the printer initialization. See the description of the parallel port for the definitions of this pin in ECP and EPP modes.
DIR2#		OD_{12}	EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the DIR# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the DIR# pin of FDC.

SYMBOL	PIN	I/O	DESCRIPTION
AFD# DRVDEN02	46	OD_{12} OD_{12}	PRINTER MODE: AFD# An active-low output from this pin causes the printer to auto feed a line after a line is printed. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the DRVDEN0# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the DRVDEN0# pin of FDC.
STB#	47	OD_{12}	PRINTER MODE: STB# An active-low output is used to latch the parallel data into the printer. See the description of the parallel port for the definitions of this pin in ECP and EPP modes.
PD0 INDEX2#	42	I/O_{12ts} IN_{ts}	PRINTER MODE: PD0 Parallel port data bus bit 0. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the INDEX# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the INDEX# pin of FDC.
PD1 TRAK02#	41	I/O_{12ts} IN_{ts}	PRINTER MODE: PD1 Parallel port data bus bit 1. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the TRAK0# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the TRAK0# pin of FDC.
PD2 WP2#	40	I/O_{12ts} IN_{ts}	PRINTER MODE: PD2 Parallel port data bus bit 2. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the WP# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the WP# pin of FDC.

SYMBOL	PIN	I/O	DESCRIPTION
PD3 RDATA2#	39	I/O_{12ts} IN_{ts}	PRINTER MODE: PD3 Parallel port data bus bit 3. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the RDATA# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the RDATA# pin of FDC.
PD4 DSKCHG2#	38	I/O_{12ts} IN_{ts}	PRINTER MODE: PD4 Parallel port data bus bit 4. See the description of the parallel port for the definition of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is for Extension FDD B; its function is the same as the DSKCHG# pin of FDC. EXTENSION 2FDD MODE: This pin is for Extension FDD A and B; its function is the same as the DSKCHG# pin of FDC.
PD5	37	I/O_{12ts}	PRINTER MODE: PD5 Parallel port data bus bit 5. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is a tri-state output. EXTENSION 2FDD MODE:MOA2# This pin is a tri-state output.
PD6 MOA2#	36	I/O_{12ts} OD_{12}	PRINTER MODE: PD6 Parallel port data bus bit 6. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is a tri-state output. EXTENSION 2FDD MODE: This pin is for Extension FDD A; its function is the same as the MOA# pin of FDC
PD7 DSA2#	35	I/O_{12ts} OD_{12}	PRINTER MODE: PD7 Parallel port data bus bit 7. See the description of the parallel port for the definitions of this pin in ECP and EPP modes. EXTENSION FDD MODE: This pin is a tri-state output. EXTENSION 2FDD MODE: This pin is for Extension FDD A; its function is the same as the DSA# pin of FDC.

5.4 Serial Port & Infrared Port Interface

SYMBOL	PIN	I/O	DESCRIPTION

SYMBOL	PIN	I/O	DESCRIPTION
RIA#	57	IN_t	Ring Indicator. An active-low signal indicates that a ring signal is being received from the modem or the data set.
GP60		I/OD_{12t}	General-purpose I/O port 6 bit 0.
DCDA#	56	INt	Data Carrier Detection. An active-low signal indicates the modem or data set has detected a data carrier.
GP61		I/OD_{12t}	General-purpose I/O port 6 bit 1.
SOUTA	54	O_8	UART A Serial Output. This pin is used to transmit serial data out to the communication link.
PENKBC		IN_t	During power on reset, this pin is pulled down internally and is defined as PENKBC, and the power-on values are shown at CR24 bit 2. The PCB layout should reserve space for a 1-kΩ resistor to pull down this pin to ensure the disabling of KBC, and a 1-kΩ resistor is recommended to pull the pin up If wish to enable KBC.
GP62		I/O_8	General-purpose I/O port 6 bit 2.
SINA	53	IN_t	Serial Input. This pin is used to receive serial data through the communication link.
GP63		I/OD_{12t}	General-purpose I/O port 6 bit 3.
DTRA#	52	O_8	UART A Data Terminal Ready. An active-low signal informs the modem or data set that the controller is ready to communicate.
PENROM		IN_t	During power-on reset, this pin is pulled down internally and is defined as PENROM disabled, and the power-on values are shown at CR24 bit 1 (ENROM). The PCB layout should reserve space for a 1-kΩ resistor to pull down this pin to ensure the disabling of SPI interface, and a 1-kΩ resistor is recommended to pull the pin up if wish to enable ROM.
GP64		I/O_8	General-purpose I/O port 6 bit 4.
RTSA#	51	O_8	UART A Request To Send. An active-low signal informs the modem or data set that the controller is ready to send data.
HEFRAS		IN_t	During power-on reset, this pin is pulled down internally and is defined as HEFRAS, which provides the power-on value for CR26 bit 6 (HEFRAS). The PCB layout should reserve space for a 1-kΩ resistor to pull down this pin so as to ensure the selection of I/O port's configuration address to 2EH, and a 1-kΩ resistor is recommended to pull it up if 4EH is selected as I/O port's configuration address.
GP65		I/O_8	General-purpose I/O port 6 bit 5.
DSRA#	50	IN_t	Data Set Ready. An active-low signal indicates the modem or data set is ready to establish a communication link and transfer data to the UART.
GP66		I/OD_{12t}	General-purpose I/O port 6 bit 6.
CTSA#	49	IN_t	Clear To Send. This is the modem-control input. The function of these pins can be tested by reading bit 4 of the handshake status register.

SYMBOL	PIN	I/O	DESCRIPTION
GP67		I/OD_{12t}	General-purpose I/O port 6 bit 7.
RIB#	85	IN_t	Ring Indicator. An active-low signal indicates that a ring signal is being received from the modem or the data set.
GP40*		I/OD_{12t}	General-purpose I/O port 4 bit 0.
DCDB#	84	IN_t	Data Carrier Detection. An active-low signal indicates the modem or data set has detected a data carrier.
GP41***		I/OD_{12t}	General-purpose I/O port 4 bit 1.
FAN_SET2	83	IN_t	Determines the initial FAN speed. Power-on configuration for 2 fan speeds, 50% or 100%. When VCC is on, this pin needs a pulled-up or a pulled-down resistor to decide whether the fan speed is 50% or 100%. Only CPUFANOUT1 is supported.
SOUTB		O_{12}	UART B Serial Output. This pin is used to transmit serial data out to the communication link.
IRTX			IR Transmitter output.
GP42*		I/O_{12t}	General-purpose I/O port 4 bit 2. Note: This pin changes to input state during internal PWROK from low to high, then goes back to the previous setting state. (Please see the AP Note 1 of W83627DHG-P)
SINB	82	IN_t	Serial Input. This pin is used to receive serial data through the communication link.
IRRX			IR Receiver input.
GP43***		I/OD_{12t}	General-purpose I/O port 4 bit 3.
DTRB#	81	O_{12}	UART B Data Terminal Ready. An active-low signal informs the modem or data set that the controller is ready to communicate.
GP44*		I/OD_{12t}	General-purpose I/O port 4 bit 4.
RTSB#	80	O_{12}	UART B Request To Send. An active-low signal informs the modem or data set that the controller is ready to send data.
GP45***		I/OD_{12t}	General-purpose I/O port 4 bit 5.
DSRB#	79	IN_t	Data Set Ready. An active-low signal indicates the modem or data set is ready to establish a communication link and transfer data to the UART.
GP46*		I/OD_{12t}	General-purpose I/O port 4 bit 6.
CTSB#	78	IN_t	Clear To Send. This is the modem-control input. The function of these pins can be tested by reading bit 4 of the handshake status register.
GP47***		I/OD_{12t}	General-purpose I/O port 4 bit 7.

Note: Regarding the * sign, please see 5.12.7 GPIO-4 with WDTO# / SUSLED Multi-function for detailed information.

5.5 KBC Interface

SYMBOL	PIN	I/O	DESCRIPTION
GA20M	59	O_{12}	Gate A20 output. This pin is high after system reset. (KBC P21)

SYMBOL	PIN	I/O	DESCRIPTION
KBRST#	60	O_{12}	Keyboard reset. This pin is high after system reset. (KBC P20)
KCLK	62	I/OD_{16ts}	Keyboard Clock.
GP27		I/OD_{16t}	General-purpose I/O port 2 bit 7.
KDAT	63	I/OD_{16ts}	Keyboard Data.
GP26		I/OD_{16t}	General-purpose I/O port 2 bit 6.
MCLK	65	I/OD_{16ts}	PS2 Mouse Clock.
GP25		I/OD_{16t}	General-purpose I/O port 2 bit 5.
MDAT	66	I/OD_{16ts}	PS2 Mouse Data.
GP24		I/OD_{16t}	General-purpose I/O port 2 bit 4.

5.6 Serial Peripheral Interface

The SPI employs a master-slave model and typically has three signal lines: serial data input line (SI), serial data output line (SO), and serial clock line (SCK). Different slaves are addressed on the bus by chip select signals from the master. The data bits are first shifted in/out the most significant bit (MSB). The data are often shifted simultaneously out from the output pin and into the input pin. Among the parameters, only the communication lines and the clock edge are defined by the SPI. The others differ from device to device.

SPI Operation

To initiate the data transfer between the W83627DHG-P and a slave device, SCE# must go low. This synchronizes the slave device with the W83627DHG-P. Data can now be transferred between the W83627DHG-P and the slave device in one of two modes: the data is sampled either on the rising or the falling edge of the clock.

In a slave device, a logic low is received on the SCE# line and the clock input is at the SCK pin, which synchronizes the slave with the W83627DHG-P. Data is then received serially at the SI pin. During a write cycle, data is shifted out to the SO pin on clocks from the W83627DHG-P.

SYMBOL	PIN	I/O	DESCRIPTION
SCE#	19	O_{12}	Serial flash ROM interface chip selection.
GP22		I/OD_{12t}	General-purpose I/O port 2 bit 2.
SCK	2	O_{12}	Clock output for serial flash.
GP23		I/OD_{12t}	General-purpose I/O port 2 bit 3.
SO	118	O_8	Transfer commands, addresses or data to serial flash. This pin is connected to SI of serial flash.
BEEP		OD_8	Beep function for hardware monitor. This pin is low after system reset.
SI	58	IN_{ts}	Receive data from serial flash. This pin is connected to SO of serial flash.
AUXFANIN1		I/O_{12ts}	0 to +3 V amplitude fan tachometer input.