

# Data Sheet

## FUJITSU Mainboard D3543-S Mini-ITX

### Industrial Series

Intel® embedded Gemini Lake SoC (System on Chip, 10W TDP) for DDR4 2400 SDRAM Memory  
Enhanced operating temperature range from 0°C to 60°C



#### Processors (SoC):

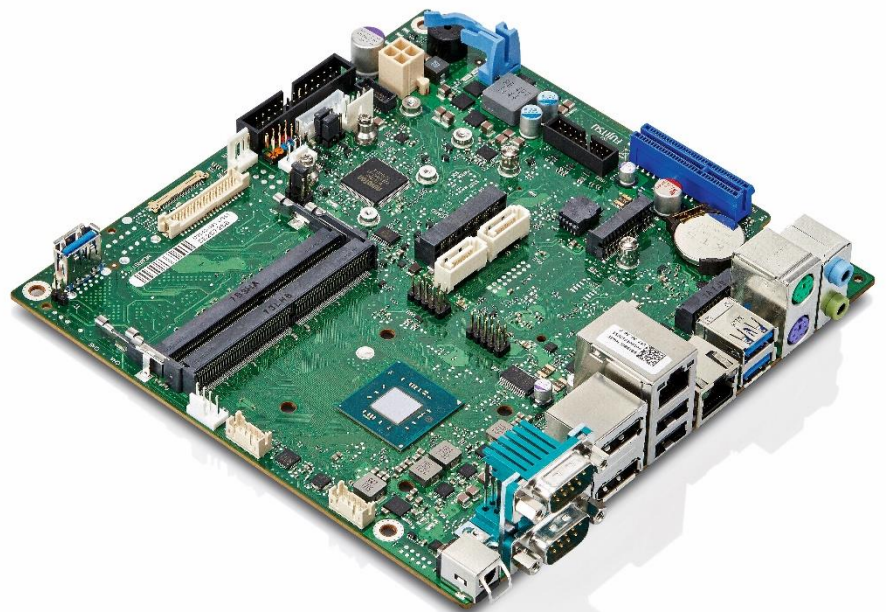
- Intel® Celeron® Processor J4005 (DC @2.0GHz / 2.7GHz), integrated Intel® UHD Graphics 600 (12EUs @700MHz)
  - Intel® Celeron® Processor J4105 (QC @1.5GHz / 2.5GHz), integrated Intel® UHD Graphics 600 (12EUs @750MHz)
  - Intel® Pentium® Silver Processor J5005 (QC @1.5GHz / 2.8GHz), integrated Intel® UHD Graphics 605 (18EUs @800MHz)
- 10W TDP

#### Memory:

2 x DDR4 2400 SDRAM (SO-DIMM)

#### Product Features:

- Intel® UHD Graphics 600/605 (within SoC)
- 2x DisplayPort V1.2a
- Dual Channel LVDS (24Bit) and eDP V1.4 onboard
- 8 Bit GPIO & HD Audio onboard
- USB 2.0 and USB 3.1 (gen1) onboard
- 2x SATA III
- Onboard support for M.2 SSD (SATA/PCIe)
- Onboard support for M.2 WLAN/Bluetooth module
- Dual GbE LAN onboard
- Intel® integrated TPM V2.0 onboard
- WideRange internal/external DC Input (8V - 36V)
- HW Watchdog onboard
- RS-232/485/422 support onboard (planned)



(upon request)



# Features and benefits

**Board Size** Mini-ITX: 6.7" x 6.7" (170 x 170 mm)

**Mainboard Versions**

	Processor (SoC)	Graphics	Memory	Graphics
D3543-S1	Intel® Celeron® J4005 (Dual Core) 2.0GHz / 2.7GHz <sup>1)</sup>	Intel® UHD 600 12EUs; max. 8GB 250MHz / 700MHz <sup>2)</sup>	DDR4 / 2400 two sockets max. 16GB	2 x DP V1.2 max. 4096 x 2160 @60Hz
D3543-S2	Intel® Celeron® J4105 (Quad Core) 1.5GHz / 2.5GHz <sup>1)</sup>	Intel® UHD 600 12EUs; max. 8GB 250MHz / 750MHz <sup>2)</sup>		1 x eDP V1.4 2 lanes max. 1920 x 1200
D3543-S3	Intel® Pentium® Silver J5005 (Quad Core) 1.5GHz / 2.8GHz <sup>1)</sup>	Intel® UHD 605 18EUs; max. 8GB 250MHz / 800MHz <sup>2)</sup>		1 x LVDS 24Bit Dual Channel max. 1920 x 1200  max. 3 x independent display

1) CPU Base Frequency / Burst Frequency 2) Graphics Base Frequency / max. Dynamic Frequency

**Memory** 2 x SO DIMM Socket (1.2V), max. 16GB,  
DDR4 - 2400 (CL17) / 2133 (CL15) SDRAM, unbuffered, non-ECC

**Power Specification** External DC Input 8V-36V (5A max. / 100W max.)  
Internal DC Input 8V-36V (8A max. / 100W max.)  
Onboard SoC and system voltage regulators (high efficiency)

**Power Supply Requirements**

Source	Voltage Range	Min. PSU Load	Max. Voltage Tolerance	typ. Mainboard Input Power <sup>1)</sup>	max. Mainboard Input Power <sup>2)</sup>
DC-IN (wide range)	8-36V	0A	± 5 %	5W - 15W	100W

- 1) Mainboard incl. Memory and M.2 SATA SSD (MS Windows 10 Idle Mode / Full Load)
- 2) Mainboard incl. Memory, M.2 SATA SSD, any USB Devices, any LVDS / eDP devices, any SATA devices  
See TechNotes document for detailed power requirements

**BIOS** AMI Aptio 5.x (UEFI) BIOS  
modified and adapted by Fujitsu Technology Solutions; Recovery BIOS, SM-BIOS (DMI), BIOS and CPU Microcode Update, Quick Boot, Logo Boot, Quiet Boot, Plug & Play, Automatic DRAM Configuration, BIOS Support for S.M.A.R.T., Advanced Power Management, ACPI S3/S4, Wake on time from S5. Boot support for M.2 SSD (AHCI / NVME)  
BIOS integrated HW Diagnostic Tool, Watchdog Support  
**No legacy OS support, no MBR installation** (UEFI only due to Intel restrictions)

**Security Features** Recovery BIOS, System and BIOS Password, Boot Sequence Control, Serial- / USB- Port Access Protection, Boot Sector Virus Warning, Write Protection for Flash BIOS, EraseDisk (BIOS Feature), Intel integrated TPM V2.0

<b>Special Features</b>	<p>Silent Fan</p> <p>System Guard</p> <p>Silent Drives</p> <p>Recovery BIOS</p> <p>Desk Update</p> <p>Multi Boot</p> <p>HDD Password</p> <p>Always On</p> <p>Never Off</p> <p>CSA / UL Compliance</p> <p>FCC Compliance</p>	<p>Independent temperature related processor fan and system fan supervision</p> <p>View Silent Fan features</p> <p>Noise reduction for optical and hard disk drives</p> <p>Restores a corrupted BIOS</p> <p>Simple driver update with Driver &amp; Utilities DVD</p> <p>Comfortable boot from any boot device</p> <p>Access protection for disk drives</p> <p>Reliable power-on whenever voltage is connected</p> <p>Option to prevent the system from being shut down</p> <p>Upon request: cTÜVus acc. IEC62368-1</p> <p>FCC-B verified</p>	
<b>Operating Systems</b>	<p><b>OS</b></p> <p>MS Windows 10-64 RS1<sup>1</sup></p> <p>MS Windows 10-64 RS2<sup>1</sup></p> <p>MS Windows 10-64 RS3</p> <p>Linux-64</p> <p><b>Important Note:</b>  <b>Legacy OS / MBR installation (DOS, MS Windows 7, ...) is not supported due to Intel restrictions</b></p>	<p><b>"Runnable"</b></p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p><b>"Tested/Released by Fujitsu"</b></p> <p>--</p> <p>--</p> <p>X (recommended!)</p> <p>functional test planned</p>
<b>Designed for 24 / 7 use</b>	<p>Longlife components for 24 / 7 use (0°C – 60°C) in industrial applications</p> <p>Revision control &amp; Extended Lifecycle (min. 5 years + 1 year eXtended LifeCycle option)</p>		
<b>Graphics</b>	<p>Integrated <b>Intel® UHD Graphics 600/605</b></p> <p>2 x DisplayPort V1.2a / 1 x embedded DisplayPort (eDP) 1.4 / 1 x Dual-Channel 24bit LVDS</p> <p>Supports up to 3 x independent display</p> <p>Following max. display combinations are supported:</p> <ul style="list-style-type: none"> <li>1 x DisplayPort (external) + 1 x LVDS (internal) + 1 x embedded DisplayPort (internal)</li> <li>2 x DisplayPort (DP, external) + 1 x embedded DisplayPort (eDP, internal)</li> </ul> <p>Note: Simultaneous use of LVDS and DP2 (upper port) is not possible</p>		
<b>Audio</b>	<p><b>Realtek ALC671</b> 5.1-channel, High Definition Audio Codec</p>		
<b>LAN</b>	<p>1 x <b>Intel i210</b> with 10/100/1000MBit/s, Wake-on-LAN (WoL) by interesting Packets, Link Status Change and Magic Packet™, PXE and iSCSI supported, BIOS MAC Address Display</p> <p>1 x <b>Realtek RTL8111G</b> with 10/100/1000 MBit/s, Wake-on-LAN (WoL) by interesting Packets, Link Status Change and Magic Packet™, PXE support, BIOS MAC Address Display</p>		
<b>Drives / Modules</b>	<p>2 x Serial ATA (SATA) III 600 Interface (up to 6GBit/s), NCQ, AHCI;</p> <p>1 x M.2 Key B socket (2242 / 2260 / 2280) for following applications:</p> <ul style="list-style-type: none"> <li>• SATA based M.2 SSD modules</li> <li>• PCIe based M.2 SSD modules (one PCI lane)</li> <li>• Specific M.2 PCIe-based extension modules like LAN, SATA, COM, etc.</li> </ul> <p>Boot support: AHCI / NVME</p> <p><u>Notes:</u> M.2 (SATA mode only) is shared with SATA port 1</p> <p><b>Simultaneous use of M.2 2280 modules and M.2 2230 (WLAN/Bluetooth) possible!</b></p>		

<sup>1</sup> Long-term driver update support for RS1 (LTSB) and RS2 is not guaranteed by Intel

<b>WLAN / Bluetooth</b>	1 x M.2 Key E socket (WLAN / Bluetooth), mechanical support for 2230 Supports M.2 modules with PCIe x1 (Gen2) and / or USB 2.0 interface <u>Note: Simultaneous use of M.2 2280 modules and M.2 2230 (WLAN/Bluetooth) possible!</u>	
<b>LVDS</b>	LVDS Controller <b>Realtek RTD2136R</b> (DisplayPort to LVDS converter)	
<b>Mini-PCIe</b>	1 x mini PCIe socket (PCIe / USB), mechanical support for full and half size mini PCIe cards Supports modules with mini PCIe x1 (Gen2) and USB 2.0 interface	
<b>Features</b>	Chipset	Intel Gemini Lake SoC
<b>D3543-S (Mini-ITX)</b>	DP V1.2a / 2 <sup>nd</sup> DP V1.2a / LVDS / eDP V1.4 / HDMI / DVI / VGA	✓ / ✓ / ✓ / ✓ / ✓ / - / - / - / -
	Buzzer / int. Speaker Support (mono) <sup>2</sup> / 5.1 Multichannel Audio	✓ / ✓ / ✓
	LAN Gbit / 100 Mbit / 10 Mbit / WoL / PXE / M.2 2230 WLAN-BT	✓ / ✓ / ✓ / ✓ / ✓ / ✓ / ✓ / ✓
	iAMT-vPro / Intel Standard Manageability / DASH V1.1	- / - / -
	SATA / M.2 (SATA) / M.2 PCIe (1 lane) / eSATA-Support / RAID / mSATA	✓ / ✓ / ✓ / ✓ / ✓ / - / - / -
	Mini-PCIe / USB 2.0 / USB 3.1 (gen1) / FireWire™	✓ / ✓ / ✓ / ✓ / -
	FAN monitored & controlled PSU / CPU / AUX1 / AUX2	- / ✓ / ✓ / ✓ / -
	TEMP monitored CPU / onboard sensors / external sensor	✓ / ✓ / ✓ / -
<b>Special Features</b>	COM interface support for RS-232 / RS-485 / RS-422	(planned)
<b>D3543-S</b>	Silent Fan / System Guard / Silent Drives	✓ / ✓ / ✓ / ✓
	Recovery BIOS / Desk Update / Multi Boot	✓ / ✓ / ✓ / ✓
	HDD Password / EraseDisk <sup>3</sup> / TPM V1.2 / TPM V2.0	✓ / ✓ / ✓ / - / ✓ / ✓
	Logo Boot Option / Intel On Screen Branding	✓ / ✓
	BIOS POST- / BIOS Boot- / OS- HW Watchdog	✓ / ✓ / ✓ / ✓
	Operating Mode 24-7 / 8-5 (hrs per day - days per week)	✓ / -
	Mainboard operating temperature range (chassis inside) <sup>4</sup>	0°C – 60°C
<b>Internal Connectors</b>	SO DIMM Sockets (DDR4 2400)	2
<b>D3543-S</b>	SATA-600 / M.2 SSD <sup>5</sup> / M.2 WLAN-BT / mSATA / Mini-PCIe	2 / 1 / 1 / 1 / - / 1
	Front Panel Audio (9-Pin, HD Audio) / SP-DIF Out (Digital Audio)	1 / 1
	USB 2.0 pin header (provides 2 USB channel) / USB Stick socket	2 / 1
	USB 3.1 Gen1 pin header (provides 2 USB channels) <sup>6</sup>	1
	Serial COM3 <sup>7</sup> / Serial COM4 <sup>8</sup> / Parallel Port header	tbd / tbd / 1
	LVDS / LVDS Backlight / Embedded DisplayPort	1 / 1 / 1
	FAN PSU / CPU (PWM) / AUX1 (PWM)	- / 1 / 1
	Intrusion (Case Open) / GPIO (8Bit) / SMBus (Case Temp.)	1 / 1 / -
	Mono Speaker header / Internal Stereo Speaker header / DMIC header	1 / - / -
	Front Panel (Power Switch, Reset Switch, LEDs, Intel 10 pin header)	1
	SATA Drive Power Connector (5V/12V) / DC-In Connector 8-36V (4 pin)	1 / 1
<b>External Connectors</b>	DisplayPort V1.2a / HDMI / DVI / VGA	2 / - / - / -
<b>D3543-S</b>	Audio Mic. In / Line in / Line out (or driver configuration)	- / 1 / 1
	LAN (RJ-45) / PS/2 Keyboard / Mouse	2 / 2
	USB 2.0 / USB 3.1 Gen1	2 / 2
	DC-In connector (external input) 8-36V @ 5A max.	1

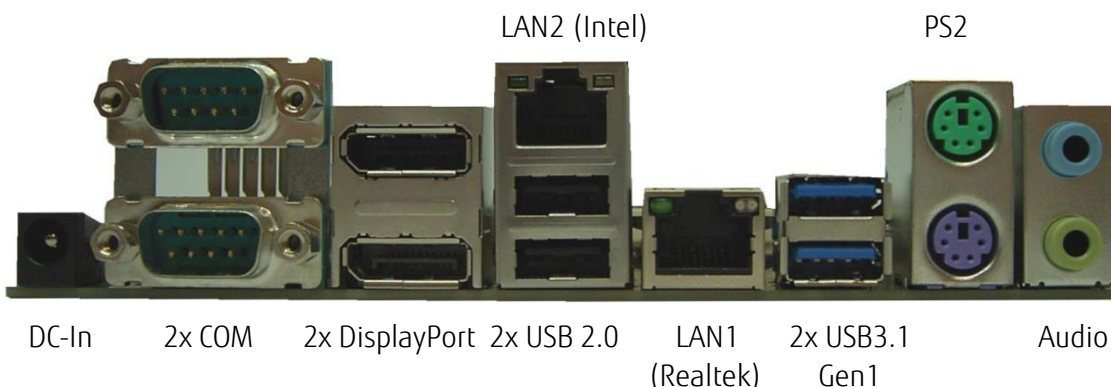
<sup>2</sup> Mono speaker support; max. 2.2W @4Ω / 1.3W @8Ω<sup>3</sup> BIOS feature; License included<sup>4</sup> Forced cooling required for high operating temperature range. See upcoming TechNotes document for details<sup>5</sup> SATA-based M.2 SSD is shared with SATA port 1; simultaneous use of M.2 2280 module and M.2 2230 module (WLAN/Bluetooth) possible<sup>6</sup> USB3 connector includes separate USB2.0 signal pins (2 channels)<sup>7</sup> COM3 / COM4: RS-232 @ reduced feature set; pin header 2mm pitch; specific software driver support (mandatory!) currently under investigation.

See TechNotes document for details

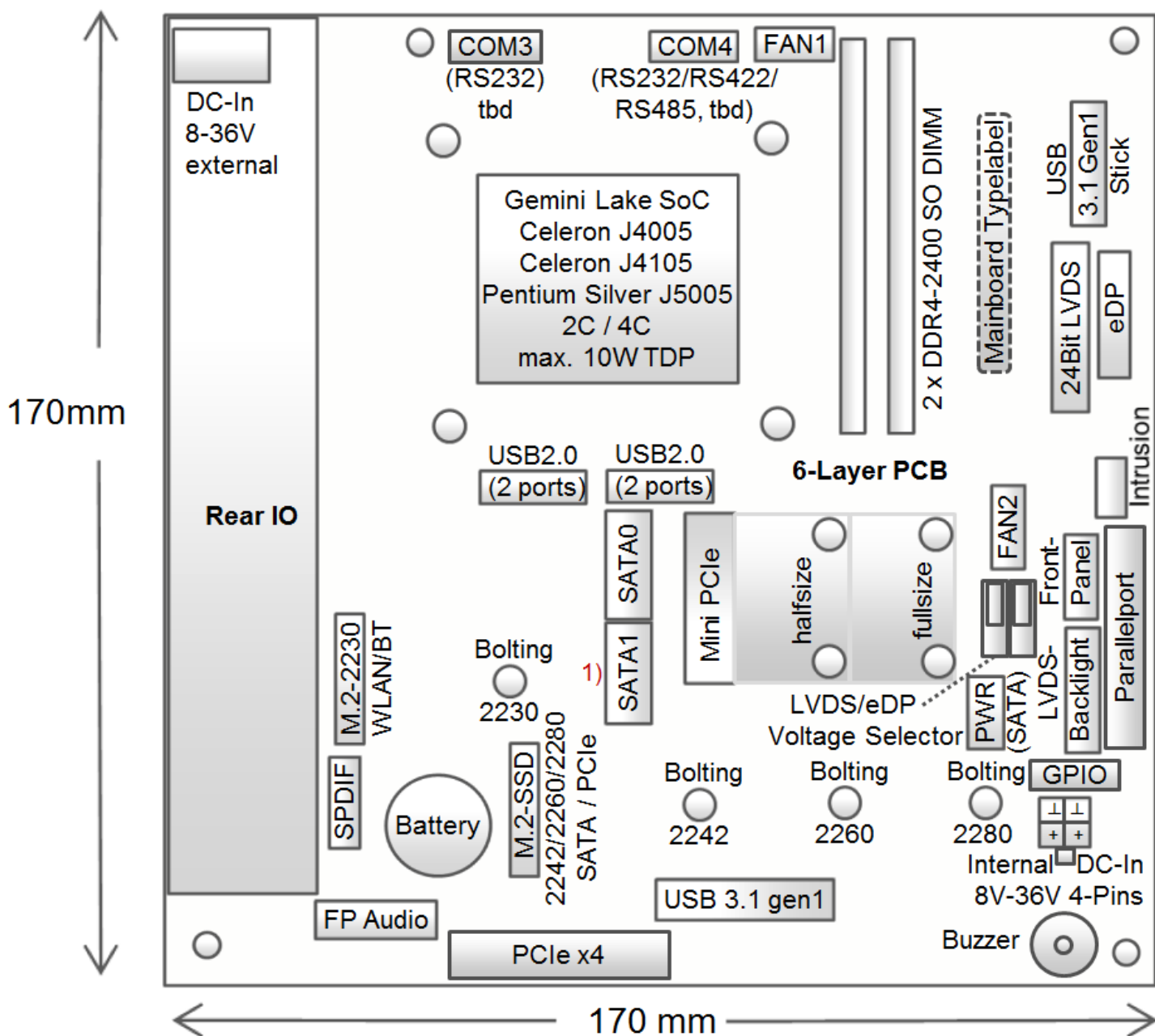
<sup>8</sup> COM4 provides additional support for RS-422 / RS-485; specific software driver support (mandatory!) currently under investigation.

External Connectors

Rear I/O:



Connector / Socket Diagram



1) SATA Port1 shared with M.2 SATA-SSD

Accessories

	(Ordercode)	
Mini-ITX Chassis Kit for D3543-S	F5000-J5	
Internal AC Adapter 12V/65W for chassis kit	F5000-P4	
AC Adapter 19V/40W	F5000-P5 (E622)	
AC Adapter 19V/65W	F5000-P3 (E623)	
Active Heatsink + Backplate	F5000-C9	
Fanless Heatsink + Backplate	F5000-C10	
USB-C Rear Extension Cable (USB 3.1/gen1)	F5000-K8	
Risercard 1x PCIe X4	F5000-R6 (D3318)	

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