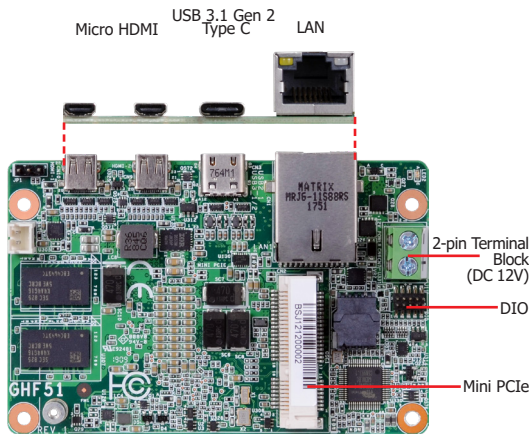
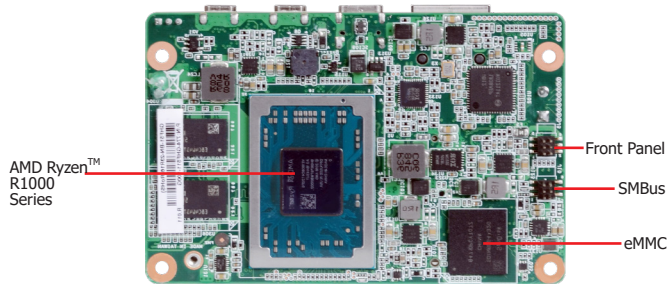


## GHF51



Top View



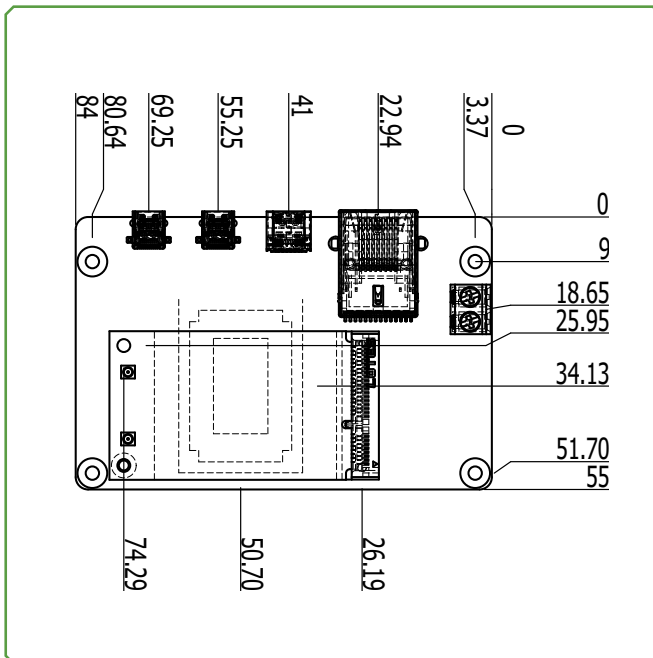
Bottom View

### Features

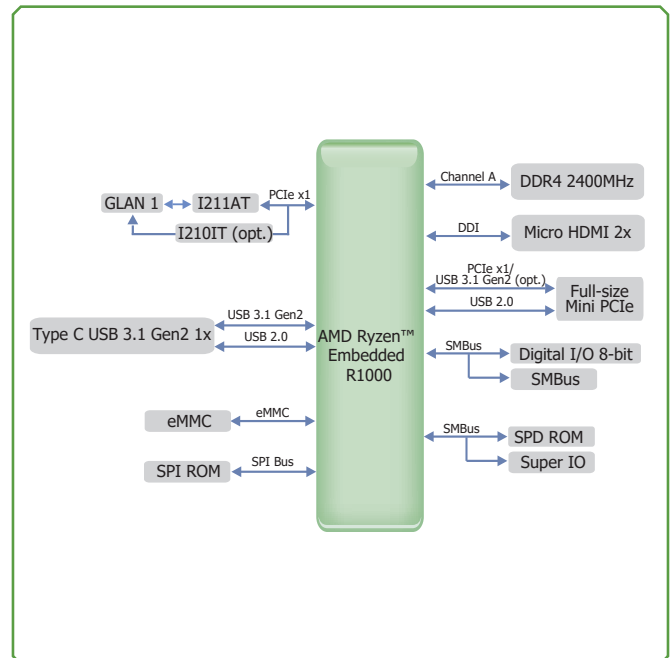
- Small form factor 1.8" SBC for space-limited applications
- Single Channel DDR4 Memory Down up to 4GB/8GB
- HDMI 1.4 resolution supports up to 4096x2160 @ 24Hz
- Expansion and Storage: 1 Mini PCIe, 1 SMBus
- Rich I/O: 1 Intel GbE, 1 USB 3.1 Gen 2, 2 Micro HDMI



### Mechanical Drawing



### Block Diagram



## Specifications

<b>SYSTEM</b>	<b>Processor</b>	AMD® Ryzen™ Embedded R1606G, Dual Core, 1MB Cache, 3 CU, 2.6GHz (3.5GHz), 12W AMD® Ryzen™ Embedded R1505G, Dual Core, 1MB Cache, 3 CU, 2.4GHz (3.3GHz), 12W AMD® Ryzen™ Embedded R1305G, Dual Core, 3 CU, 1.5GHz (2.8GHz), 8-10W AMD® Ryzen™ Embedded R1102G, Dual Core, 3 CU, 1.2GHz (2.6GHz), 6W AMD® Ryzen™ Embedded V1605B, 4C/8T, 2MB Cache, 8 CU, 2.0GHz (3.6GHz), 12W (Planning)
	<b>Memory</b>	DDR4 Memory Down up to 4GB/8GB Single Channel DDR4 2400MHz
	<b>BIOS</b>	AMI SPI 64Mbit
	<b>GRAPHICS</b>	<b>Controller</b> AMD Vega GPU with up to 3 computing units. <b>Feature</b> H.265 decode/encode support, VP9 decode <b>Display</b> 2 x Micro HDMI HDMI 1.4: resolution up to 4096x2160 @ 24Hz
<b>EXPANSION</b>	<b>Interface</b> 1 x Full-size Mini PCIe (PCIe Gen2/USB 2.0, opt: USB 3.1 Gen2/USB 2.0)	
<b>ETHERNET</b>	<b>Controller</b> 1 x Intel® I211AT PCIe (10/100/1000Mbps) or 1 x Intel® I210IT PCIe (10/100/1000Mbps) (available upon request)	
<b>REAR I/O</b>	<b>Ethernet</b> 1 x GbE (RJ-45)	
	<b>USB</b> 1 x Type C USB 3.1 Gen 2	
	<b>Display</b> 2 x Micro HDMI (HDMI 1.4)	
<b>INTERNAL I/O</b>	<b>DIO</b> 1 x 8-bit DIO	
	<b>SMBus</b> 1 x SMBus	
<b>STORAGE</b>	<b>eMMC</b> 1 x 16GB/32GB/64GB eMMC	
<b>WATCHDOG TIMER</b>	<b>Output &amp; Interval</b> Software Reset, Programmable via Software from 1 to 655,535 Seconds	
<b>SECURITY</b>	<b>TPM</b> fTPM 2.0	
<b>POWER</b>	<b>Type</b> Single 12V +/-5% DC	
	<b>Connector</b> 2-pin Terminal Block	
	<b>Consumption</b> Typical: R1505G: 12V @ 0.37A (4.44W) Max: R1505G: 12V @ 1.74A (20.88W)	
	<b>RTC Battery</b> CR2032 Coin Cell	
<b>OS SUPPORT (UEFI Only)</b>	<b>Microsoft/Linux</b> Windows 10 IoT Enterprise 64-bit Linux (Kernel 5.3)	
<b>ENVIRONMENT</b>	<b>Temperature</b> Operating: 0 to 60°C/ -20 to 70°C(opt.) Storage: -40 to 85°C	
	<b>Humidity</b> Operating: 5 to 90% RH Storage: 5 to 90% RH	
	<b>MTBF</b> 872,484 hrs @ 25°C; 635,789 hrs @ 45°C; 460,442 hrs @ 60°C	
<b>MECHANICAL</b>	<b>Dimensions</b> 1.8" SBC Form Factor 84mm (3.31") x 55mm (2.17")	
	<b>Height</b> PCB: 1.60mm Top Side: 13.8mm, Bottom Side: 2.00mm	

## Ordering Information

Model Name	P/N	Processor	Memory	eMMC	Display	GbE	USB 3.1 Gen 2	Power	Thermal	Temp.
<b>GHF51-BN-46R15</b>	770-GHF511-000G	R1505G	4 GB	64 GB	2 Micro HDMI	1	1	12VDC	Fanless	0 to 60°C
<b>GHF51-BN-46R16</b>	770-GHF511-100G	R1606G	4 GB	64 GB	2 Micro HDMI	1	1	12VDC	Fanless	0 to 60°C
<b>GHF51-EN-46R16</b>	770-GHF511-300G	R1606G	4 GB	64 GB	2 Micro HDMI	1	1	12VDC	Fanless	-20 to 70°C
<b>GHF51-BN-46R11</b>	770-GHF511-400G	R1102G	4 GB	64 GB	2 Micro HDMI	1	1	12VDC	Fanless	0 to 60°C
<b>GHF51-BN-46R13</b>	770-GHF511-500G	R1305G	4 GB	64 GB	2 Micro HDMI	1	1	12VDC	Fanless	0 to 60°C
<b>GHF51-BN-86R16</b>	770-GHF511-600G	R1606G	8 GB	64 GB	2 Micro HDMI	1	1	12VDC	Fanless	0 to 60°C

## Packing List

• 1 GHF51 board	
• 1 Heat spreader (Height: 11mm)	A71-808322-000G
• 1 Screw of Mini PCIe card	A32-E12016-050G

## Optional Items

• Power adapter (60W, 12V, DC jack)	671-106012-000G
• SMBus cable	A81-009353-016G
• 2-pole terminal to DC Jack cable	A81-004013-000G
• DIO cable	A81-009203-018G
• Front panel cable	A81-020047-016G
• Heat sink for 0~60°C (Height: 29.66mm)	A71-008127-010G
• Heat sink for -20~70°C (Height: 30.7mm)	A71-008127-020G