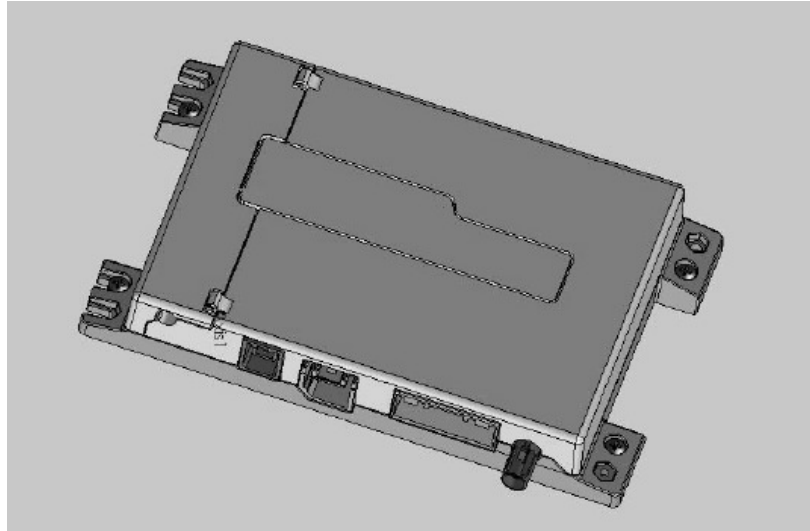


## GVN54 PRODUCT SPECIFICATIONS – August 11, 2010



The GVN54 series products are the next generation “black box” models in GARMIN’s Vehicle Navigation series. The GVN54 is designed to interface with an existing display in a vehicle. It is customizable to allow different audio/video and input/output configurations for specific OEMs.

Below are the proposed features.

	<b>GVN54</b>
<b>Processor</b>	450MHz+ processor
<b>Graphics</b>	NTCS composite, RGB video, DSP, 2D/3D Graphics Engine
<b>DRAM</b>	128 Mbytes DDR
<b>NAND</b>	4GB eMMC NAND Flash
<b>Communications</b>	UART serial
<b>TMC</b>	Onboard TMC
<b>Video</b>	Analog RGB+Sync 800x480 NTSC Composite
<b>Dead Reckoning</b>	Yes
<b>UART</b>	9600 bps
<b>Wireless Connectivity</b>	No
<b>XM</b>	No
<b>RF Remote</b>	No
<b>Locking USB connector</b>	No
<b>Auto temp range</b>	-40C to +85C operation
<b>Maps</b>	SD card (or microSD with SD adapter)
<b>Map Updates</b>	SD card (or microSD with SD adapter)
<b>Splashscreen</b>	Custom
<b>Printed Manuals</b>	Not supplied
<b>Cable Harness</b>	Not supplied
<b>GPS Antenna</b>	Not supplied. Antenna used must operate from a 5 volt supply.

## GARMIN GVN54 Series Product Specifications

### General specifications:

Operating temperature: -40C to +85C  
 Storage temperature: -40C to +85C  
 Operating voltage: 9.5V to 28V  
 Operating current consumption: 1.7A max @ 13.8V  
 Typical operating current: 150mA @ 13.8V  
 ACC off current consumption: < 100uA @ 13.8V  
 Height: 24 mm  
 Width: 97 mm  
 Length: 165 mm  
 Weight: approximately 190 g

### Notes:

GVN54 is not waterproof.  
 SD cards are consumer grade.

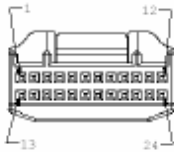
### Signal Pinout

Pin No.	Signal Name	Function	Note
1	COMPOSITE_VIDEO_GND		Video Ground
2	VIDEO_BLUE	Output: 0 ~0.7V, 75 ohm	Analog
3	VIDEO_RED	Output: 0 ~0.7V, 75 ohm	Analog
4	VIDEO_SYNC	Output: 0 ~3.3 V	Video RGB composite sync
5	SERIAL_TX	Output: 0 ~3.3 V	UART output, 9600 baud
6	AUDIO_R	Output: 1.0Vrms, 10K ohm	Analog
7	AUDIO_L	Output: 1.0Vrms, 10K ohm	Analog
8	AUDIO_MUTE	Output: 0 ~ external voltage Float = Nav Audio output OFF Grounded = Nav Audio Output ON	Open-collector output
9	Speaker -	Output: 2.5W max, minimum 4Ω speaker	Amplified audio speaker -
10	Park Brake Sensor	Input: Disengaged - floating Engaged - grounded	Safe mode option
11	POWER_GND		Power Ground
12	VBATT	Input: 9.5 to 28VDC	<2A @ 13V
13	VIDEO_NTSC_COMPOSITE	Output: 1.0Vp-p, 75 ohm	Analog
14	RGB_VIDEO_GND		Video Ground
15	VIDEO_GREEN	Output: 0 ~0.7V, 75 ohm	Analog
16	SERIAL_RX	Input: 0~5V TTL	UART input, 9600 baud
17	DGND		Digital Ground
18	no connect		
19	AUDIO_GND		Audio Ground
20	DISABLE_NAV_AUDIO	Input: Audio ON state = grounded Audio OFF state = high-Z(open)	Open collector driver from vehicle
21	Speaker +	Output: 2.5W max, minimum 4Ω speaker	Amplified audio speaker +
22	DR Reverse signal	Input 0~Vbatt 0V or float = forward Vbatt = reverse	DR Forward/reverse
23	DR Speed Pulse	Input: open collector from vehicle TBD pulses per mile Count every TBD ms Speed pulse granularity could potentially be down to 0.25km/hr	DR distance/speed
24	VIGN	Input: 9.5 to 28VDC	< 5 mA @ 13V

## GARMIN GVN54 Series Product Specifications

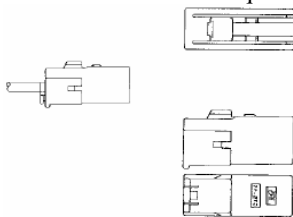
### System Mating Connector

24 Pin Plug: AMP 1318917 (or equivalent). Contact Pins: AMP 1123343 (or equivalent)



### GPS Mating Connector

Hirose GT5-1S-HU or equivalent JST connector



### GPS Antenna

For OEM applications where Garmin does not supply the GPS antenna, the specifications for the GPS antenna are listed below:

The GPS antenna must operate from a supply voltage of 5.0V

The GPS antenna shall operate from -40C to 85C and 5% to 95% relative humidity.

The GPS antenna gain shall be from 24dB to 0dB including cable losses. The GPS antenna noise figure shall be a maximum of 2.0dB from -40C to 85C.

The VSWR max shall be less than 2:1 at 1575.42 MHz

The antenna must be mounted in a manner that has a clear view of the sky

The antenna shall be right hand circular polarized (RHCP)

The out of band rejection shall be >20dB at 100MHz beyond 1575.42MHz

The GPS antenna shall not produce a third-order frequency product that interferes with the normal GPS signal.

Example: A 3<sup>rd</sup> order product at 1.57542GHz must not be created in the LNAs and sent to the GPS receiver when driving by transmitter towers, when transmitting GSM, etc.

To help ensure a third order product does not occur, the antenna shall meet the following frequency response specs, for a minimum input power compression point at 1dB:

@ 1575.42 MHz = -20 dBm minimum

@ 824 to 894 MHz = -10 dBm minimum

@ 1850 to 1990 MHz = -10 dBm minimum

@ 450 MHz = 0 dBm minimum

### Map and SW Update options

Map and software updates will typically be available once per year on a pre-programmed SD or Micro-SD card with adaptor.

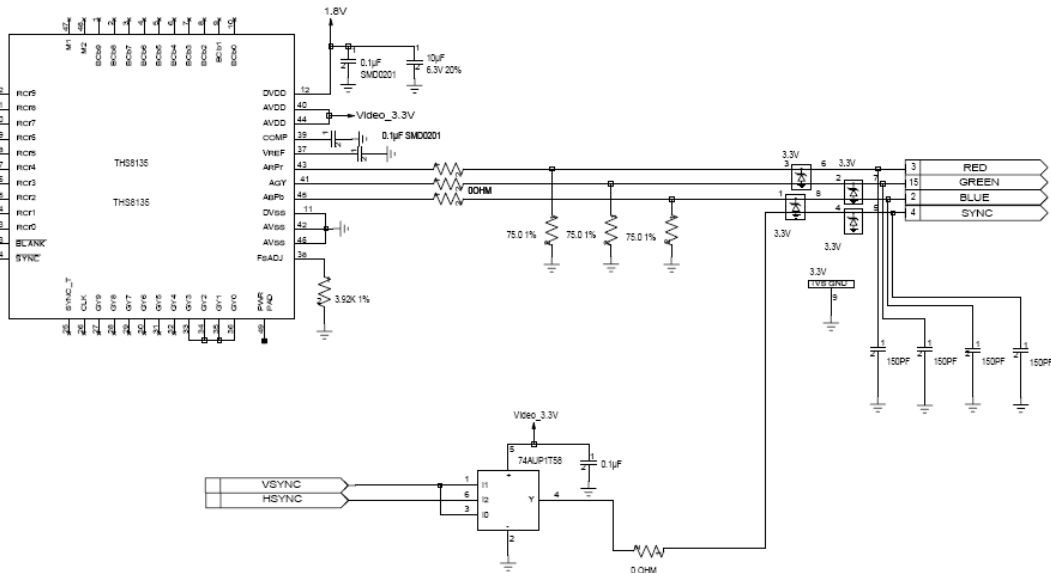
# GARMIN GVN54 Series Product Specifications

## GVN54 I/O circuitry for interface

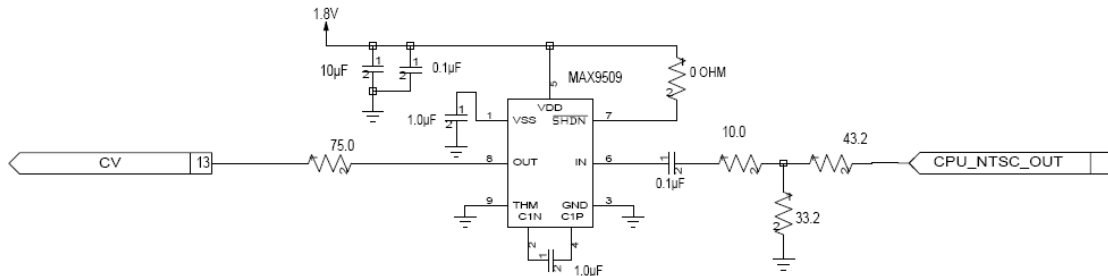
Connector arrows with numerals indicate pins on the 24 pin vehicle harness connector. All other arrows denote internal GVN54 connections. Circuits and component values shown may change.

### R, G, B, SYNC Video

Note - It is required that the R, G, B, and SYNC signal lines are to be shielded within the cable harness.

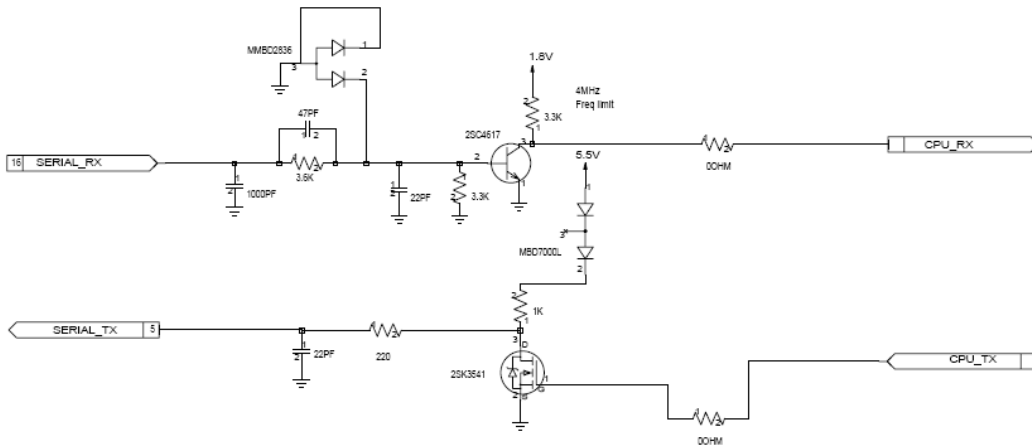


### NTSC Composite Video



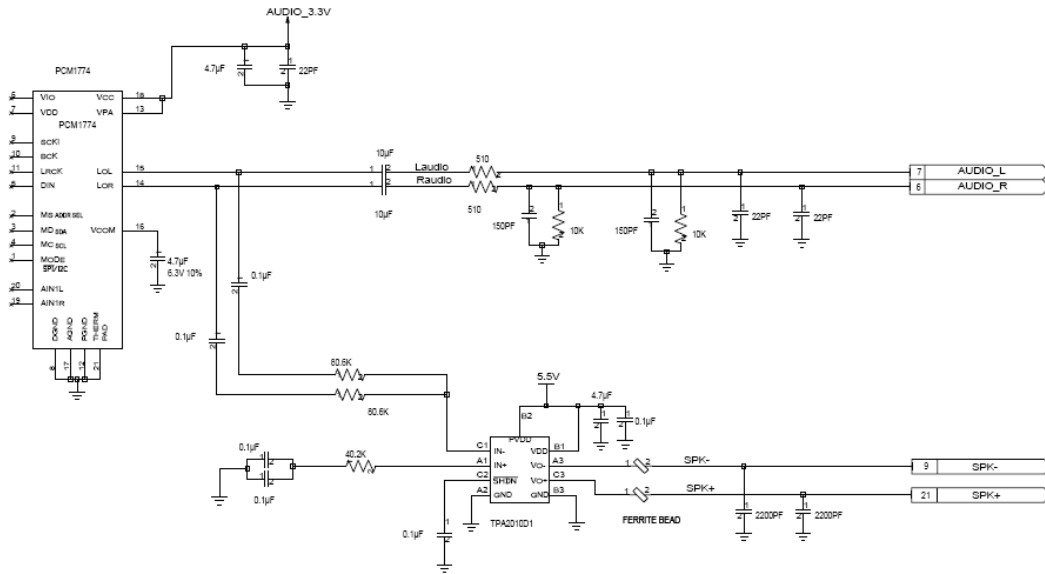
# GARMIN GVN54 Series Product Specifications

## Serial Communications



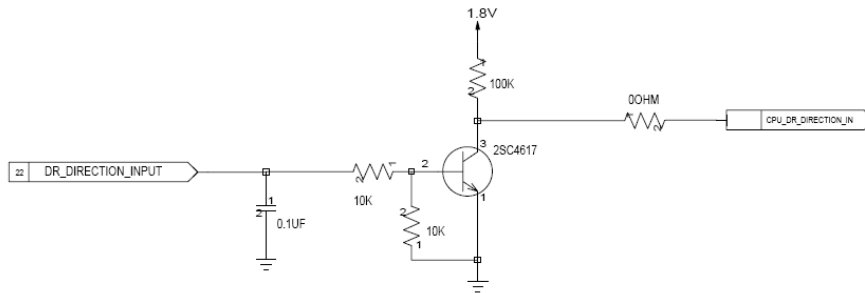
## Line Level Audio and Speaker Amplifier

Note – It is required that the Audio\_L and Audio\_R signal lines are to be shielded within the cable harness.

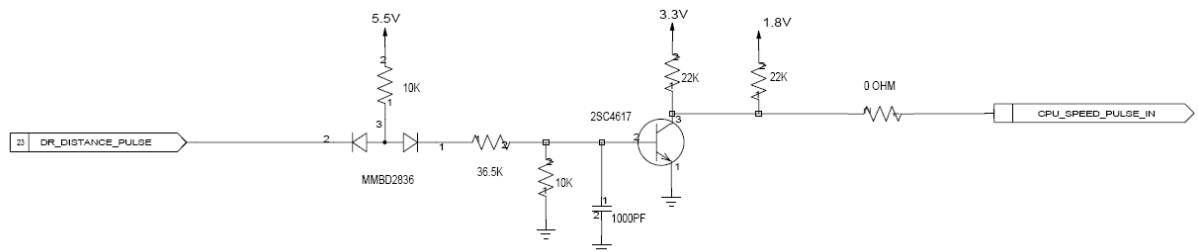


# GARMIN GVN54 Series Product Specifications

## DR Direction Input

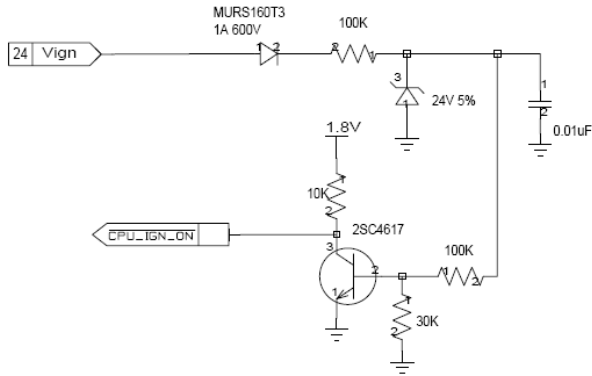


## DR Distance Pulse

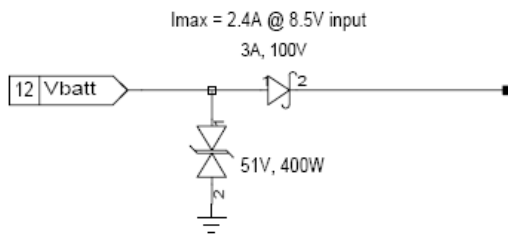


# GARMIN GVN54 Series Product Specifications

## Vignition/Accessories

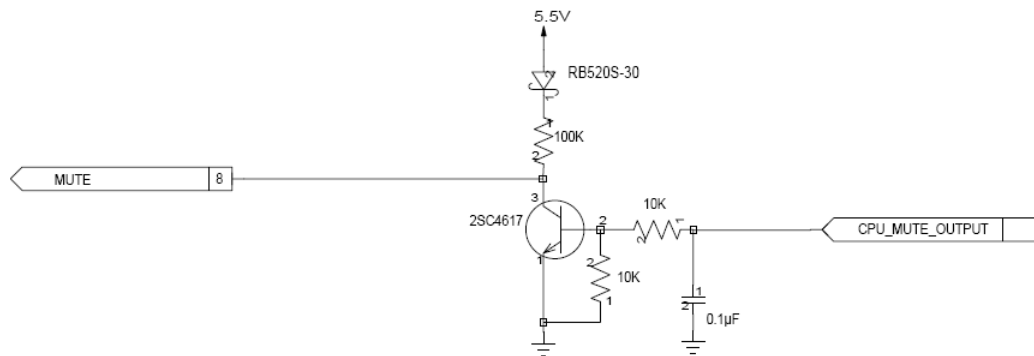


## VBATT Input



## MUTE Output

Can be used as Open Collector output, or a weak pull-up is available.



## GARMIN GVN54 Series Product Specifications

### **Disable NAV Audio Input**

Customer driver circuit would be open-collector. Input voltage at the pin would thus be driven low for ON state and would be at HI-Z for the OFF state.