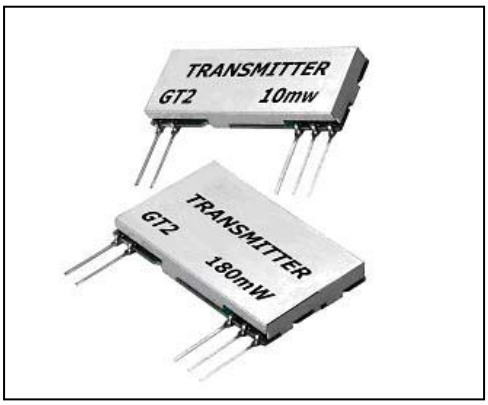
General Description

'Wireless Connector'

A new pan-european frequency allocation has been designated by ERC/DEC(94)02 for the harmonised frequency band that was originally allocated the ERMES band.
This has resulted in a harmonised frequency allocation between 169.4 to 169.8 MHz for applications ranging from social alarms to asset tracking and paging for use in the UK and Europe.



This band has been sub-divided into low power (10mW) channels and high power (500mW) channels.

MK have released their new range of narrow-band VHF 'Genesis 2' radio modules specifically for these new frequency bands.

The GT2 offers 10mW transmit power whilst the GT2HP offers adjustable RF power output between 4mW and up to 200mW.

Compatible Receiver Modules

- GENESIS GR2

Applications

- SOCIAL ALARMS
- METER READING
- HEARING AIDS
- PAGING
- TRACING AND ASSET TRACKING

Features

- MINIATURE SIL PACKAGES
- 10mW & 200mW RF OUTPUT POWER
- DATA RATES UP TO 9600 BITS/S
- NARROW BAND CRYSTAL TECHNOLOGY
- COMMON GENESIS FOOTPRINT – CHOOSE BETWEEN 100 TO 1000 MHz OPERATION
- AVAILABLE ON MANY CHANNELS – SEE ORDERING INFORMATION
- OTHER CHANNELS AVAILABLE ON REQUEST
- SINGLE 3 & 5 VOLT SUPPLY
- EN 300-220 compliant module

GT2 – 10mW Transmitter

Absolute Maximum Ratings: Transmitter

Operating temperature:	-10°C to +55°C
Storage temperature:	-40°C to +100°C
Supply Voltage (pin 3)	5.5V
Data input (pin 5)	5.5V

Electrical Characteristics (173 version): Parameters measured at 25^0C

	pin	min.	Typ.	max.	units	notes
DC LEVELS						
Supply voltage	3	4.5	5.0	5.5	Volts	5v ver
		2.0	3.0	3.6	Volts	3v ver
Current & RF POWER						
173.225 MHz (Applies to all channels)						
Supply current @ V_{CC} = 5V (5v module)	3	11	12	13	mA	1
Supply current @ Vcc = 3V (3v module)	3	7	8	9	mA	1
RF power 5v module	2	8.5	10	13	mW	1
RF power 3v module	2	3	7	9	mW	1
RF & Data						
2^{nd} harmonic			-40		dBm	2
Harmonics @ > 1GHz			-50		dBm	2
Initial frequency accuracy			±25		Hz	
Frequency accuracy over full temp range				±1.8	KHz	
FM deviation of RF carrier			4		KHz	
Power up time to full RF			1		ms	
Data rate				9.6	kbits/s	
Data pulse width		100			µs	

Note 1: measured into a 50Ω impedance
2: the limit for the European spec EN 300 220 is –36dBm

GT2HP-200mW Transmitter

Absolute Maximum Ratings: Transmitter

Operating temperature:	-10°C to +55°C
Storage temperature:	-40°C to +100°C
Supply Voltage (pin 3)	5.5V
Data input (pin 5)	5.5V

Electrical Characteristics (173.225 MHz version): Parameters measured at 25^0C

	pin	min.	Typ.	max.	units	notes
DC LEVELS						
Supply voltage	3	4.5	5.0	5.5	Volts	
Current & RF POWER						
Supply current @ V_{CC} = 5V	3	28		155	mA	
RF power 5v module @min & max power adjust settings	2	4		200	mW	1
	2					
RF & Data						
2^{nd} harmonic			-40		dBm	2
Harmonics @ > 1GHz			-50		dBm	2
Initial frequency accuracy			±25		Hz	
Frequency accuracy over full temp range				±1.8	KHz	
FM deviation of RF carrier			4		KHz	
Power up time to full RF			1		ms	
Data rate				9.6	kbits/s	3
Data pulse width		100			µs	

Note 1: Measured into a 50Ω impedance and min and max readings taken with RF output power set to min and max by turning power setting trimmer accordingly.

2: The limit for the European spec EN 300 220 is –36dBm.

3: All modules are 25KHz channel spacing in which case the data rate can be up to 9.6 kbps. However, for the new 169.4 to 169.8 MHz allocation, some channel bandwidths are 12.5KHz. Hence the max data rate in these channels is 4.8kbps.

Connection Details

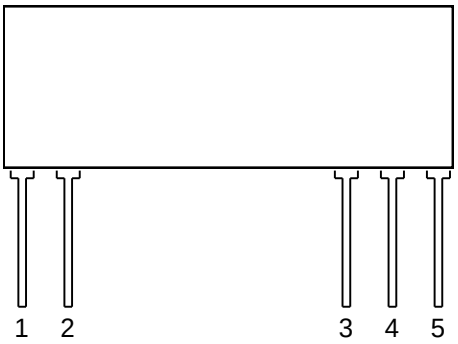


Figure 1: Genesis Transmitter
(Pins outs for both GT2 & GT2HP are the same)

Pin Description:

RF GND *(pin 1)*
RF ground pin, internally connected to pin 4 (0V). This pin should ideally be connected to the nearest ground plane (e.g. coax braid, main PCB ground plane etc.)

RF OUT *(pin2)*
50Ω RF antenna output. To achieve best results the antenna impedance must match that of the module.

V_{CC} *(pin 3)*
+Ve supply pin. The module will generate RF when V_{CC} is present and a 100nF decoupling capacitor as close as possible to this pin is recommended.

GND *(pin 4)*
Supply and data ground connection, connected to pin 1.

Data IN *(pin 5)*
This input has an impedance of 47KΩ and should ideally be driven by a CMOS logic drive or compatible.

Application Information

Antenna Design

The design and positioning of the antenna is as crucial as the module performance itself in achieving a good wireless system range. The following will assist the designer in maximising system performance.

The antenna should be kept as far away from sources of electrical interference as physically possible. If necessary, additional power line decoupling capacitors should be placed close to the module.

The antenna 'hot end' should be kept clear of any objects, especially any metal as this can severely restrict the efficiency of the antenna to receive power. Any earth planes restricting the radiation path to the antenna will also have the same effect.

Best range is achieved with either a straight piece of wire, rod or PCB track @ ¼ wavelength (43cm @ 173 MHz). Further range may be achieved if the ¼ wave antenna is placed perpendicular in the middle of a solid earth plane measuring at least 50cm radius. In this case, the antenna should be connected to the module via some 50 ohm characteristic impedance coax

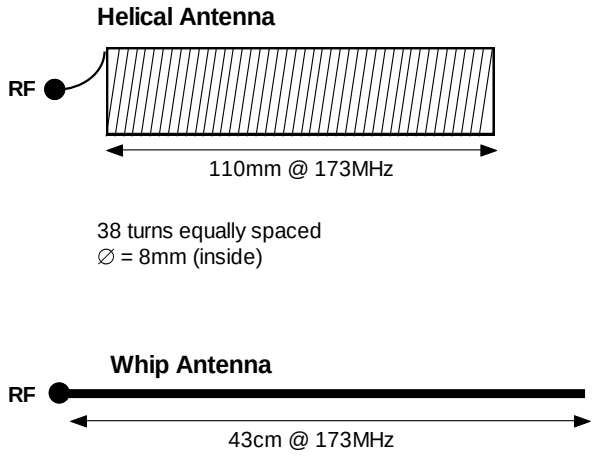


Figure 2: Antenna Configurations To Be Used With The Genesis Transmitter Modules

Application Circuit

The application circuit shows how the Genesis transmitter can easily be integrated into a system to form a wireless link

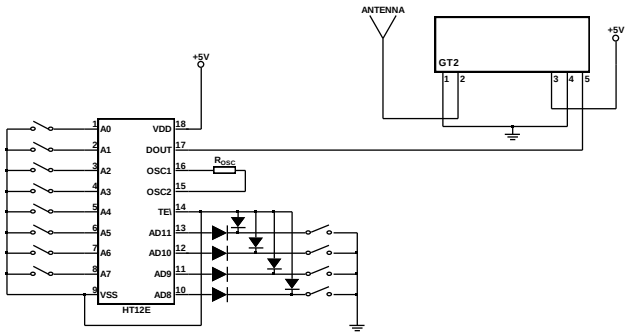


Figure 3: MK Transmitter Application Circuit

Evaluation Kit

An evaluation kit is available to rapidly asses the full capabilities of these modules – see data sheet EVK1.

Mechanical Dimensions

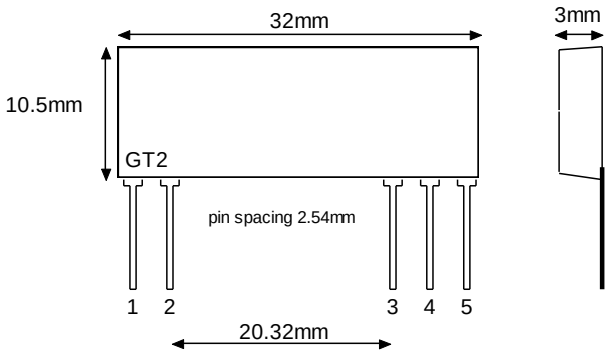


Figure 4: GT2 Transmitter

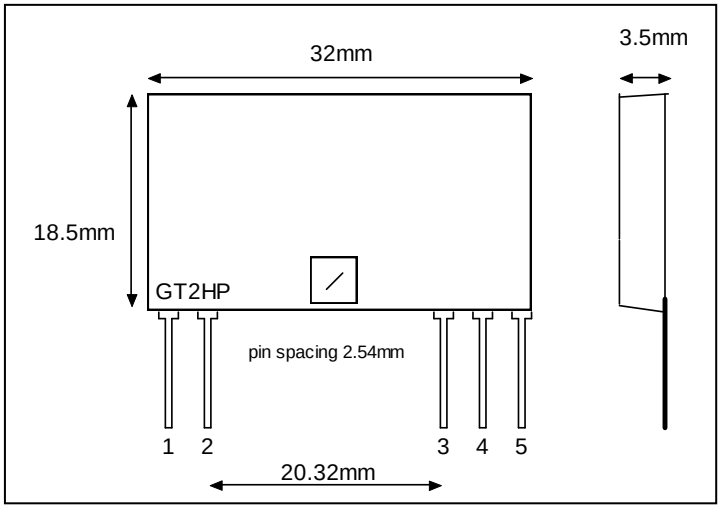


Figure 5: GT2HP Transmitter

Ordering Information

Standard Product;

Part No
GT2HP-173.225-5v
GT2HP-151.3-5v (AUSTRALIA)
GT2HP-169.61875-5v (TRACKING)
GT2HP-169.66875-5v (PAGING)

Please consult our sales department for further information or other frequencies.

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