

GenesisRadio.com.au

Software Defined Radio Kit

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Genesis Q5

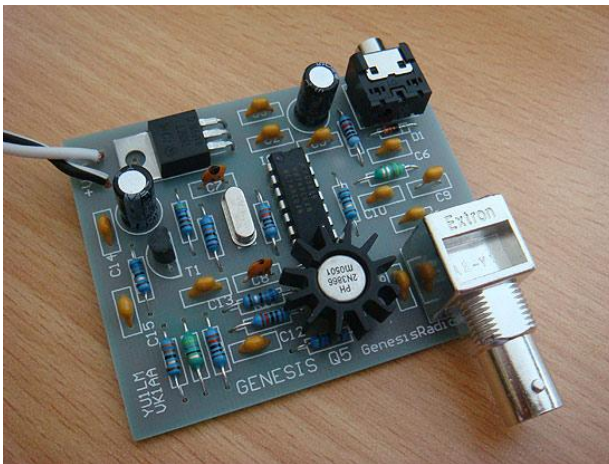
Dear ham friend,

Thank you for purchasing Q5 SDR kit.

Genesis Q5 is a simple quartz crystal controlled QRP transmitter designed by YU1LM and produced by VK1AA. The maximum power output is 1 W, CW only. Q5 comes in 4 different versions:

Q5-80 (3.560 MHz), **Q5-40** (7.030 MHz), **Q5-30** (10.116 MHz), **Q5-20** (14.060 MHz)

EXTRAS: Set of all 4 crystals: US\$ 4, additional PCB US\$ 5, the crystal frequencies are standard international QRP frequencies.



Builder's Notes – READ THIS FIRST

- Integral circuit (74HC04) is supplied either on small pad inside a brown paper bag or wrapped in aluminum foil.

This IC is static sensitive so before handling make sure to discharge yourself by touching *electrical ground*.

- to identify resistors, use Ohm meter. Do not rely on color code unless you know how to read the respective value

- capacitor markings: **33**=33pf **681**=680pF **102**= 1nF **103**=10nF **104**=100nF. Observe proper polarity of electrolytic capacitors

- note that for 80m kit value of R3=1K5 and C9=1nF

-if you have received more resistors or capacitors, that's fine, just install those required as per <http://www.genesisradio.com.au/Q5/>

- voltage regulator holes are very tight but can be fitted without much trouble - just push all 3 leads straight down then bend the regulator 90 degrees.

- same for audio jack; tight holes- apply bit of force but make sure to align pins first

- 2N3866 does get hot but that is normal. Don't worry about it- just avoid touching it.

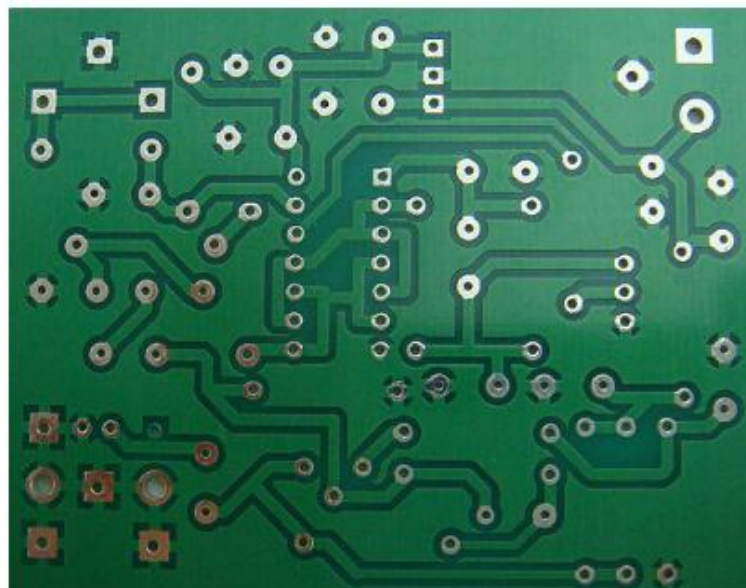
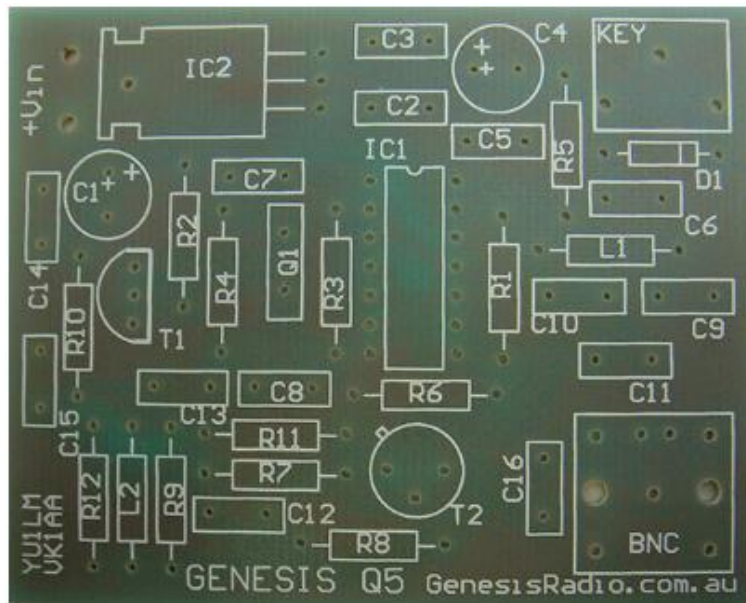
- Input voltage: 12V DC / 500 mA. Use quality power supply.

DO NOT OVERHEAT WHILE SOLDERING. Recommended soldering iron: 15-40W max.

Kit Content

Kit comes with the following components:

Q5: BOM (BILL OF MATERIAL)



Quartz crystals

- | | | |
|---|--------|------------|
| 1 | Quartz | 10,116 MHz |
| Optional crystals available 3,560 MHz, 7,030 MHz, 14,060 MHz. | | |

Capacitors

- | | | |
|---|---|--------|
| 1 | C1, C4 | 100 uF |
| 2 | C2, C3, C6, C10, C11, C12, C13, C14, C15, C16 | 100 nF |
| 3 | C5 | 10 nF |
| 4 | C7, C8 | 33 pF |
| 5 | C9 | 330 pF |
| C9 value: 330pF (Q5-20, Q5-30), 680pF (Q5-40) and 1nF (Q5-80) | | |

Resistors

- | | | |
|-----------------------|----------|-------|
| 1 | R1 | 10 R |
| 2 | R2 | 4K7 |
| 3 | R3 | 330R |
| R3 value: 1K5 (Q5-80) | | |
| 4 | R4 | 100K |
| 5 | R5 | 10K |
| 6 | R6 | 390 R |
| 7 | R7, R9 | 330 R |
| 8 | R8 | 560 R |
| 9 | R10, R11 | 6R8 |
| 10 | R12 | 33 R |

RF Choke

- | | | |
|---|----|--------|
| 1 | L1 | 470 nH |
| 2 | L2 | 47 uH |

Integral Circuit

- | | | |
|---|-------------------|------|
| 1 | 74HC04N | |
| 2 | Voltage Regulator | 7805 |

Transistors

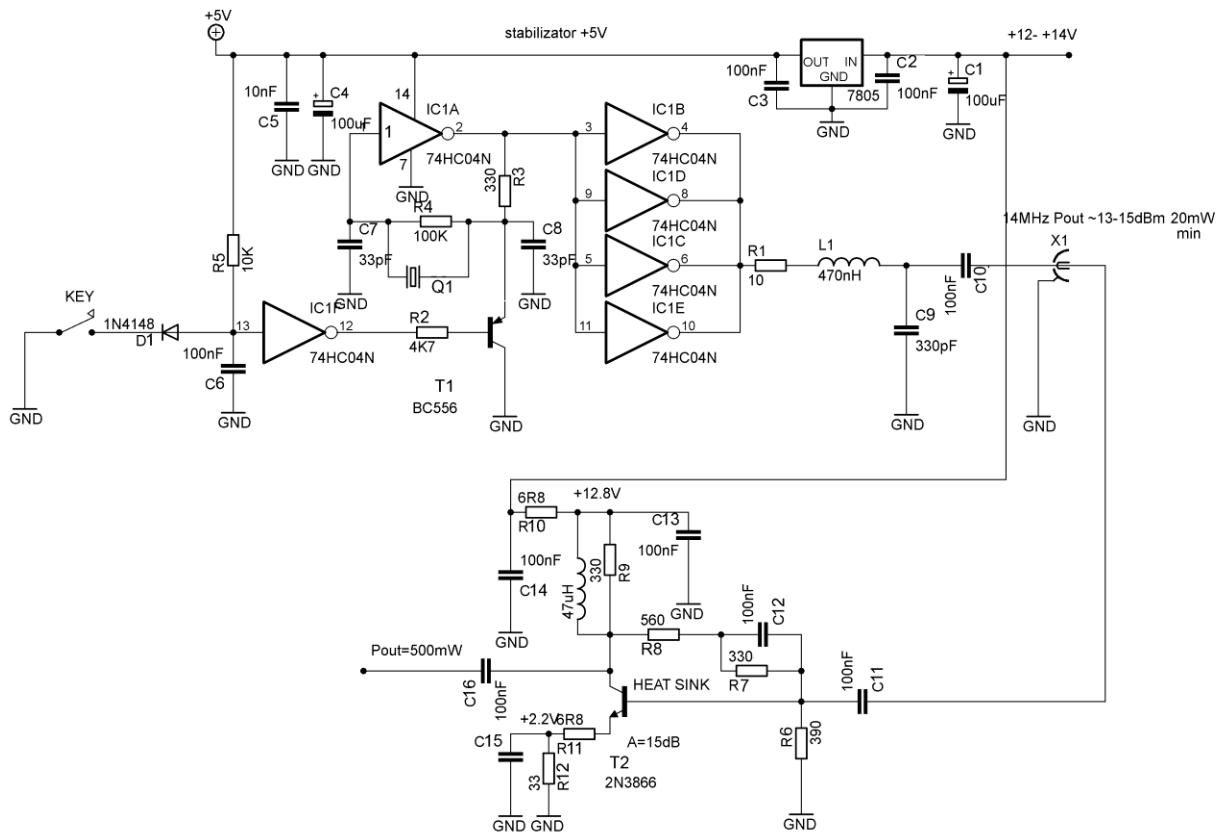
- | | | |
|---|----|--------|
| 1 | T1 | BC556 |
| 2 | T2 | 2N3866 |

Diodes

- | | | |
|---|----|--------|
| 1 | D1 | 1N4148 |
|---|----|--------|

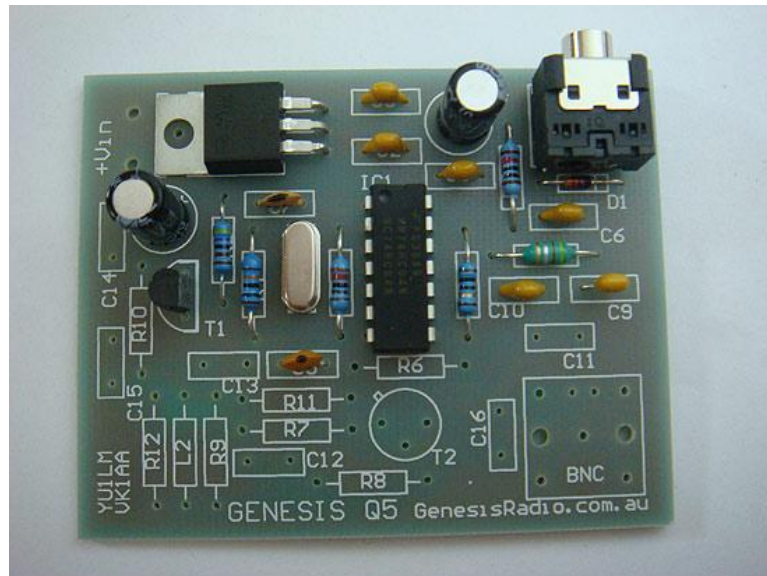
Hardware

- | | | |
|---|----------------------|-----------|
| 1 | Heat sink for 2N3866 | Aluminium |
| 2 | Key jack | 3.5mm |
| 3 | Antenna connector | BNC |
| 4 | PCB | |



Phase 1

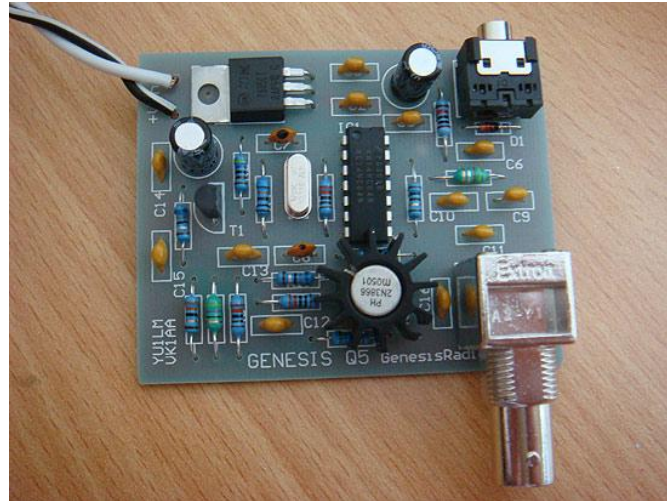
Assembly of Oscillator



After the assembly of the oscillator, connect the input voltage and keyer. Current consumption is approx. 40mA @12.8V. You should be able to hear Q5 oscillator on your receiver.

Phase 2

Assembly of PA section



Current consumption is approx. 110mA @12.8V. (approx. 130 mA key down).
Should you wish to increase output power replace R7 with 220R.
Under normal operation condition 2N3866 will get fairly hot - even while not transmitting.
However this is quite acceptable - 2N3866 is robust transistor capable of 3W dissipation at 200C.



Happy building and happy DXing!

Nick Hacko VK1AA

The schematic diagram and more information are also available at

<http://www.GenesisRadio.com.au/Q5>

Email questions and comments to **info@GenesisRadio.com.au**