H03B  GENERATION OF OSCILLATIONS, DIRECTLY OR BY FREQUENCY-CHANGING, BY CIRCUITS EMPLOYING ACTIVE ELEMENTS WHICH OPERATE IN A NON-SWITCHING MANNER; GENERATION OF NOISE BY SUCH CIRCUITS (measuring, testing G01R; generators adapted for electrophonic musical instruments G10H; Speech synthesis G10L; masers, lasers H01S; dynamo-electric machines H02K; power inverter circuits H02M; by using pulse techniques H03K; automatic control of generators H03L; starting, synchronisation or stabilisation of generators where the type of generator is irrelevant or unspecified H03L; generation of oscillations in plasma H05H)

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00  Details
1/02  Structural details of power oscillators, e.g. for heating (construction of transmitters H04B; features of generators for heating by electromagnetic fields H05B 6/00)
1/04  Reducing undesired oscillations, e.g. harmonics
5/00  Generation of oscillations using amplifier with regenerative feedback from output to input (H03B 9/00; H03B 15/00 take precedence)
5/02  Details
5/04  Modifications of generator to compensate for variations in physical values, e.g. power supply, load, temperature
5/06  Modifications of generator to ensure starting of oscillations
5/08  with frequency-determining element comprising lumped inductance and capacitance
5/10  active element in amplifier being vacuum tube (H03B 5/14 takes precedence)
5/12  active element in amplifier being semiconductor device (H03B 5/14 takes precedence)
5/1203 [the amplifier being a single transistor]
5/1206 [using multiple transistors for amplification]
5/1209 [the amplifier having two current paths operating in a differential manner and a current source or degeneration circuit in common to both paths, e.g. a long-tailed pair. (H03B 5/1215 takes precedence)]
5/1212 [the amplifier comprising a pair of transistors, wherein an output terminal of each being connected to an input terminal of the other, e.g. a cross coupled pair]
5/1215 [the current source or degeneration circuit being in common to both transistors of the pair, e.g. a cross-coupled long-tailed pair]
5/1218 [the generator being of the balanced type]
5/1221 [the amplifier comprising multiple amplification stages connected in cascade]
phase-shift oscillator

with frequency-determining element comprising distributed inductance and capacitance

active element in amplifier being vacuum tube

frequency-determining element comprising 

active element in amplifier being semiconductor device

frequency-determining element being part of bridge circuit in closed ring around which signal is transmitted; frequency-determining element being connected via a bridge circuit to such a closed ring, e.g. Wien-Bridge oscillator, parallel-T oscillator

active element in amplifier being vacuum tube

with frequency-determining element being electromechanical resonator

being a piezo-electric resonator (selection of piezo-electric material H01L 41/00)

(resonator having more than two terminals (H03B 5/326 takes precedence))

(resonator being an acoustic wave device, e.g. SAW or BAW device)

active element in amplifier being vacuum tube

active element in amplifier being semiconductor device

(active element in the amplifier being a semiconductor device)

(active element being semiconductor device)

(active element being vacuum tube)

strip line resonator

cavity resonator

(active element being semiconductor device)

(active element being a semiconductor device)

(active element being a semiconductor device)

cavity resonator

(active element in the amplifier being a semiconductor device)

(active element in the amplifier being a semiconductor device)

(active element being a semiconductor device)

(active element being a semiconductor device)

(active element in the amplifier being a vacuum tube)
19/00 Generation of oscillations by non-regenerative frequency multiplication or division of a signal from a separate source (transference of modulation from one carrier to another H03D 7/00)

19/03 . . . using non-linear inductance
19/05 . . . using non-linear capacitance, e.g. varactor diodes
19/06 . . . by means of discharge device or semiconductor device with more than two electrodes
19/08 . . . by means of a discharge device
19/10 . . . using multiplication only
19/12 . . . using division only
19/14 . . . by means of a semiconductor device
19/16 . . . using uncontrolled rectifying devices, e.g. rectifying diodes or Schottky diodes
19/18 . . . and elements comprising distributed inductance and capacitance

19/20 . . . being diodes exhibiting charge storage or enhancement effects

21/00 Generation of oscillations by combining unmodulated signals of different frequencies (H03B 19/00 takes precedence; frequency changing circuits in general H03D)

21/01 . . . by beating unmodulated signals of different frequencies
21/02 . . . by plural beating, i.e. for frequency synthesis ;
            Beating in combination with multiplication or division of frequency (digital frequency synthesis using a ROM G06F 1/02; digital frequency synthesis in general H03K; indirect frequency synthesis using a PLL H03L 7/16)

21/025 . . . [by repeated mixing in combination with division of frequency only]

21/04 . . . using several similar stages

23/00 Generation of oscillations periodically swept over a predetermined frequency range (angle-modulating circuits in general H03C 3/00)

25/00 Simultaneous generation by a free-running oscillator of oscillations having different frequencies

27/00 Generation of oscillations providing a plurality of outputs of the same frequency but differing in phase, other than merely two anti-phase outputs

28/00 Generation of oscillations by methods not covered by groups H03B 5/00 - H03B 27/00, including modification of the waveform to produce sinusoidal oscillations (analogue function generators for performing computing operations G06G 7/26; use of transformers for conversion of waveform in ac-ac converters H02M 5/18)

29/00 Generation of noise currents and voltages (gas filled discharge tubes with solid cathode specially adapted as noise generators H01J 17/005)

220/000 Indexing scheme relating to details of oscillators covered by H03B

220/0002 . . . Types of oscillators
220/0004 . . . Butler oscillator
220/0006 . . . Clapp oscillator
220/0008 . . . Colpitts oscillator
220/001 . . . Hartley oscillator
220/0012 . . . Pierce oscillator
220/0014 . . . Structural aspects of oscillators
220/0016 . . . including a ring, disk or loop shaped resonator
220/0018 . . . relating to the cutting angle of a crystal, e.g. AT cut quartz
220/002 . . . making use of ceramic material
220/0022 . . . characterised by the substrate, e.g. material
220/0024 . . . including parallel striplines
220/0026 . . . relating to the pins of integrated circuits
220/0028 . . . based on a monolithic microwave integrated circuit [MMIC]

220/003 . . . Circuit elements of oscillators
220/0032 . . . including a device with a Schottky junction
220/0034 . . . including a buffer amplifier
220/0036 . . . including an emitter or source coupled transistor pair or a long tail pair
220/0038 . . . including a current mirror
frequency of the oscillations

Aspects of oscillators relating to varying the frequency of the oscillations

2201/001 Varying the frequency of the oscillations by manual means

2201/010 the means being an element with a variable capacitance

2201/011 the means being an element with a varicap or a variable capacitance of a diode or transistor

2201/012 the means being an element with a variable inductance

2201/013 the means being associated with an element comprising distributed inductances and capacitances

2201/014 the element being a cavity

2201/015 the element being a dielectric resonator

2201/016 the means being an element with a variable capacitance, e.g. a varicap, a varactor or a variable capacitance of a diode or transistor

2201/017 the element being a dielectric resonator

2201/018 the means being a manual switch

2201/019 Varying the frequency of the oscillations by electronic means

2201/020 the means being an element with a variable capacitance, e.g. capacitance diode

2201/021 the means being associated with an element comprising distributed inductances and capacitances

2201/022 the element being a cavity

2201/023 the element being a magnetically variable element, e.g. an Yttrium Iron Garnet

2201/024 the element being a magnetostrictive element

2201/025 the means being an electronic switch for switching in or out oscillator elements

2201/026 the means comprising a diode

2201/027 the means comprising a transistor

2201/028 the means delivering several selected voltages or currents

2201/029 the means functioning digitally

2201/030 and being controlled by a processing device, e.g. a microprocessor

2201/031 Varying beside the frequency also another parameter of the oscillator in dependence on the frequency

2201/032 the parameter being the amplitude of a signal, e.g. maintaining a constant output amplitude over the frequency range

2201/033 the parameter being the amount of feedback

2201/034 the parameter being another frequency, e.g. a harmonic of the oscillating frequency

2201/035 the parameter being the quality factor of a resonator

2201/036 the parameter being a bias voltage or a power supply

2201/037 Aspects of oscillators relating to reduction of undesired oscillations

2202/001 Reduction of undesired oscillations originated from distortion in one of the circuit elements of the oscillator

2202/010 the circuit element being the active device

2202/011 the circuit element being a limiter

2202/012 the circuit element being a frequency determining element

2202/020 Reduction of undesired oscillations originated from natural noise of the circuit elements of the oscillator

2202/021 the noise being essentially white noise, i.e. frequency independent noise

2202/022 the noise being coloured noise, i.e. frequency dependent noise

2202/023 the noise being essentially proportional to the inverse of the frequency, i.e. the so-called 1/f noise

2202/030 Reduction of undesired oscillations originated from internal parasitic couplings, i.e. parasitic couplings within the oscillator itself

2202/040 Reduction of undesired oscillations originated from outside noise or interferences, e.g. from parasitic couplings with circuit elements outside the oscillator

2202/050 Reduction of undesired oscillations through filtering or through special resonator characteristics
Reduction of undesired oscillations through modification of a bias voltage, e.g. selecting the operation point of an active device

Reduction of undesired oscillations through a cancelling of the undesired oscillation

by modifying the internal feedback of the oscillator

by using a feedback loop external to the oscillator, e.g. the so-called noise degeneration

Reduction of undesired oscillations originated from the oscillator in circuit elements external to the oscillator by means associated with the oscillator

by avoiding coupling between these circuit elements

through shielding

through a frequency dependent coupling, e.g. which attenuates a certain frequency range

by compensating through additional couplings with these circuit elements