

## SECTION H — ELECTRICITY

### H03 BASIC ELECTRONIC CIRCUITRY

**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 13/00; 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)

#### Subclass index

##### GENERATION WITHOUT FREQUENCY-CHANGING

- By means of amplification and feedback; negative resistance.....5/00, 7/00
- By means of transit-time tubes; electron-beam tubes.....9/00, 13/00
- By shock-exciting; Hall effect; radiation source and detectors.....11/00, 15/00, 17/00

##### GENERATION WITH FREQUENCY- CHANGING

- By multiplication or division of a signal.....19/00
- By combining unmodulated signals.....21/00

##### PARTICULARITIES OF GENERATED OSCILLATIONS

- Swept-over frequency range; multi-frequency; multiphase; noise.....23/00, 25/00, 27/00, 29/00

##### OTHER METHODS OF GENERATION.....28/00

##### DETAILS.....1/00

#### 1/00 Details

- 1/02 • Structural details of power oscillators, e.g. for heating
- 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)
- 5/14 • • frequency-determining element connected *via* bridge circuit to closed ring around which signal is transmitted
- 5/16 • • • active element in amplifier being vacuum tube
- 5/18 • with frequency-determining element comprising distributed inductance and capacitance
- 5/20 • with frequency-determining element comprising resistance and either capacitance or inductance, e.g. phase-shift oscillator
- 5/22 • • active element in amplifier being vacuum tube (H03B 5/26 takes precedence)
- 5/24 • • active element in amplifier being semiconductor device (H03B 5/26 takes precedence)

- 5/26 • • 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
- 5/28 • • • active element in amplifier being vacuum tube
- 5/30 • with frequency-determining element being electromechanical resonator
- 5/32 • • being a piezo-electric resonator (piezo-electric elements in general H01L 41/00)
- 5/34 • • • active element in amplifier being vacuum tube (H03B 5/38 takes precedence)
- 5/36 • • • active element in amplifier being semiconductor device (H03B 5/38 takes precedence)
- 5/38 • • • frequency-determining element being connected *via* bridge circuit to closed ring around which signal is transmitted
- 5/40 • • being a magnetostrictive resonator (H03B 5/42 takes precedence; magnetostrictive elements in general H01L 41/00)
- 5/42 • • frequency-determining element connected *via* bridge circuit to closed ring around which signal is transmitted

#### 7/00 Generation of oscillations using active element having a negative resistance between two of its electrodes (H03B 9/00 takes precedence)

- 7/02 • with frequency-determining element comprising lumped inductance and capacitance
- 7/04 • • active element being vacuum tube
- 7/06 • • active element being semiconductor device
- 7/08 • • • being a tunnel diode

## H03B

- 7/10
  - active element being gas-discharge or arc-discharge tube
- 7/12
  - with frequency-determining element comprising distributed inductance and capacitance
- 7/14
  - active element being semiconductor device
- 9/00 Generation of oscillations using transit-time effects [2]**
- 9/01
  - using discharge tubes [2]
- 9/02
  - using a retarding-field tube (using klystrons H03B 9/04) [2]
- 9/04
  - using a klystron [2]
- 9/06
  - using a reflex klystron [2]
- 9/08
  - using a travelling-wave tube [2]
- 9/10
  - using a magnetron [2]
- 9/12
  - using solid state devices, e.g. Gunn-effect devices [2]
- 9/14
  - and elements comprising distributed inductance and capacitance [3]
- 11/00 Generation of oscillations using a shock-excited tuned circuit (with feedback H03B 5/00)**
- 11/02
  - excited by spark (spark gaps therefor H01T 9/00)
- 11/04
  - excited by interrupter
- 11/06
  - by mechanical interrupter
- 11/08
  - interrupter being discharge tube
- 11/10
  - interrupter being semiconductor device
- 13/00 Generation of oscillations using deflection of electron beam in a cathode-ray tube**
- 15/00 Generation of oscillations using galvano-magnetic devices, e.g. Hall-effect devices, or using super-conductivity effects (galvano-magnetic devices per se H01L 43/00)**
- 17/00 Generation of oscillations using radiation source and detector, e.g. with interposed variable obturator**
- 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 [3]
- 19/05
  - using non-linear capacitance, e.g. varactor diodes [3]
- 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 [3]
- 19/18
  - and elements comprising distributed inductance and capacitance [3]
- 19/20
  - being diodes exhibiting charge storage or enhancement effects [3]
- 21/00 Generation of oscillations by combining unmodulated signals of different frequencies (H03B 19/00 takes precedence; frequency changing circuits in general H03D) [3]**
- 21/01
  - by beating unmodulated signals of different frequencies [3]
- 21/02
  - by plural beating, i.e. for frequency synthesis [3]
- 21/04
  - using several similar stages [3]
- 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) [4]**
- 29/00 Generation of noise currents and voltages**