

## 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** (generators specially adapted for electrophonic musical instruments G10H; masers or lasers H01S; 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 (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 (starting of generators H03L 3/00)

- 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, H03B 7/06 take precedence)

- 5/14 • • the frequency-determining element being connected *via* a bridge circuit to a closed loop in which the 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 • • the frequency-determining element being part of a bridge circuit in a closed loop in which the signal is transmitted; the frequency-determining element being connected *via* a bridge circuit to such a closed loop, 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

- 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 • • • the frequency-determining element being connected *via* a bridge circuit to a closed loop in which the signal is transmitted

- 5/40 • • being a magnetostrictive resonator (H03B 5/42 takes precedence)

- 5/42 • • the frequency-determining element being connected *via* a bridge circuit to a closed loop in which the 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

- 7/10 • • active element being gas-discharge or arc-discharge tube

- 7/12 • with frequency-determining element comprising distributed inductance and capacitance

## H03B

- 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
  - 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, devices using spin transfer effects, devices using giant magnetoresistance, or using super-conductivity effects**
- 17/00 Generation of oscillations using a radiation source and a detector**
- 19/00 Generation of oscillations by non-regenerative frequency multiplication or division of a signal from a separate source**
  - 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) [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**
- 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) [4]**
- 29/00 Generation of noise currents and voltages (gas-filled discharge tubes with solid cathode specially adapted as noise generators H01J 17/00)**