

## SECTION H — ELECTRICITY

### H03 BASIC ELECTRONIC CIRCUITRY

**H03H IMPEDANCE NETWORKS, e.g. RESONANT CIRCUITS; RESONATORS** (measuring, testing G01R; arrangements for producing a reverberation or echo sound G10K 15/08; impedance networks or resonators consisting of distributed impedances, e.g. of the waveguide type, H01P; control of amplification, e.g. bandwidth control of amplifiers, H03G; tuning resonant circuits, e.g. tuning coupled resonant circuits, H03J; networks for modifying the frequency characteristics of communication systems H04B)

#### Note(s)

- This subclass covers:
  - networks comprising lumped impedance elements;
  - networks comprising distributed impedance elements together with lumped impedance elements;
  - networks comprising electromechanical or electro-acoustic elements;
  - networks simulating reactances and comprising discharge tubes or semiconductor devices;
  - constructions of electromechanical resonators.
- In this subclass, the following expression is used with the meaning indicated:
  - "passive elements" means resistors, capacitors, inductors, mutual inductors, or diodes.
- Attention is drawn to the Notes following the titles of class B81 and subclass B81B relating to "micro-structural devices" and "micro-structural systems".
- In this subclass, main groups with a higher number take precedence.

#### Subclass index

##### NETWORKS

Adaptive.....	21/00
Using digital techniques.....	17/00
Transversal filters.....	15/00
Using passive elements only:	
one port; multi-port.....	5/00, 7/00
Using electromechanical or electro-acoustical elements.....	9/00
Using active elements.....	11/00
Using time varying elements.....	19/00
Using other elements or techniques.....	2/00

DETAILS.....1/00

MANUFACTURE.....3/00

<b>1/00</b>	<b>Constructional details of impedance networks whose electrical mode of operation is not specified or applicable to more than one type of network</b> (constructional details of electromechanical transducers H03H 9/00)	3/04	• • • for obtaining desired frequency or temperature coefficient [3]
1/02	• RC networks, e.g. filters (structural combinations of capacitors with other electric elements H01G) [3]	3/06	• • for the manufacture of magnetostrictive resonators or networks [3]
<b>2/00</b>	<b>Networks using elements or techniques not provided for in groups H03H 3/00-H03H 21/00 [3]</b>	3/08	• • for the manufacture of resonators or networks using surface acoustic waves [3]
<b>3/00</b>	<b>Apparatus or processes specially adapted for the manufacture of impedance networks, resonating circuits, resonators</b>	3/10	• • • for obtaining desired frequency or temperature coefficient [3]
3/007	• for the manufacture of electromechanical resonators or networks [3]	<b>5/00</b>	<b>One-port networks comprising only passive electrical elements as network components [3]</b>
3/013	• • for obtaining desired frequency or temperature coefficient (H03H 3/04, H03H 3/10 take precedence) [3]	5/02	• without voltage- or current-dependent elements
3/02	• • for the manufacture of piezo-electric or electrostrictive resonators or networks (H03H 3/08 takes precedence) [3]	5/10	• • comprising at least one element with prescribed temperature coefficient
		5/12	• with at least one voltage- or current-dependent element
		<b>7/00</b>	<b>Multiple-port networks comprising only passive electrical elements as network components</b> (receiver input circuits H04B 1/18; networks simulating a length of communication cable H04B 3/40) [3]

## H03H

- 7/01 • Frequency selective two-port networks [3]
- 7/03 • • comprising means for compensation of loss [3]
- 7/06 • • including resistors (H03H 7/075, H03H 7/09, H03H 7/12, H03H 7/13 take precedence) [3]
- 7/065 • • • Parallel T-filters [3]
- 7/07 • • • Bridged T-filters [3]
- 7/075 • • Ladder networks, e.g. electric wave filters [3]
- 7/09 • • Filters comprising mutual inductance [3]
- 7/12 • • Bandpass or bandstop filters with adjustable bandwidth and fixed centre frequency (H03H 7/09 takes precedence; automatic control of bandwidth in amplifiers H03G 5/16)
- 7/13 • • using electro-optical elements [3]
- 7/18 • Networks for phase shifting
- 7/19 • • Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters [3]
- 7/20 • • Two-port phase shifters providing an adjustable phase shift [3]
- 7/21 • • providing two or more phase shifted output signals, e.g. n-phase output [3]
- 7/24 • Frequency-independent attenuators
- 7/25 • • comprising an element controlled by an electric or magnetic variable (H03H 7/27 takes precedence) [3]
- 7/27 • • comprising a photo-electric element [3]
- 7/30 • Time-delay networks
- 7/32 • • with lumped inductance and capacitance
- 7/34 • • with lumped and distributed reactance
- 7/38 • Impedance-matching networks
- 7/40 • • Automatic matching of load impedance to source impedance
- 7/42 • Balance/unbalance networks
- 7/46 • Networks for connecting several sources or loads, working on different frequencies or frequency bands, to a common load or source (for use in multiplex transmission systems H04J 1/00)
- 7/48 • Networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source (phase shifters providing two or more output signals H03H 7/21) [3]
- 7/52 • One-way transmission networks, i.e. unilines
- 7/54 • Modifications of networks to reduce influence of variations of temperature [3]
- 9/00 Networks comprising electromechanical or electro-acoustic elements; Electromechanical resonators** (manufacture of piezo-electric or magnetostrictive elements H01L 41/00; loudspeakers, microphones, gramophone pick-ups or the like H04R)
- 9/02 • Details [3]
- 9/05 • • Holders; Supports [3]
- 9/08 • • • Holders with means for regulating temperature
- 9/09 • • • Elastic or damping supports [3]
- 9/10 • • • Mounting in enclosures
- 9/12 • • • • for networks with interaction of optical and acoustic waves
- 9/125 • • Driving means, e.g. electrodes, coils [3]
- 9/13 • • • for networks consisting of piezo-electric or electrostrictive materials (H03H 9/145 takes precedence) [3]
- 9/135 • • • for networks consisting of magnetostrictive materials (H03H 9/145 takes precedence) [3]
- 9/145 • • • for networks using surface acoustic waves [3]
- 9/15 • Constructional features of resonators consisting of piezo-electric or electrostrictive material (H03H 9/25 takes precedence) [3]

- 9/17 • • having a single resonator (crystal tuning forks H03H 9/21) [3]
- 9/19 • • • consisting of quartz [3]
- 9/205 • • having multiple resonators (crystal tuning forks H03H 9/21) [3]
- 9/21 • • Crystal tuning forks [3]
- 9/215 • • • consisting of quartz [3]
- 9/22 • Constructional features of resonators consisting of magnetostrictive material
- 9/24 • Constructional features of resonators of material which is not piezo-electric, electrostrictive, or magnetostrictive
- 9/25 • Constructional features of resonators using surface acoustic waves [3]
- Note(s)**  
Groups H03H 9/15-H03H 9/25 take precedence over groups H03H 9/30-H03H 9/74.
- 9/30 • Time-delay networks
- 9/36 • • with non-adjustable delay time (H03H 9/40, H03H 9/42 take precedence) [3]
- 9/38 • • with adjustable delay time (H03H 9/40, H03H 9/42 take precedence) [3]
- 9/40 • • Frequency-dependent delay lines, e.g. dispersive delay lines (H03H 9/42 takes precedence) [3]
- 9/42 • • using surface acoustic waves [3]
- 9/44 • • • Frequency-dependent delay lines, e.g. dispersive delay lines [3]
- 9/46 • Filters (multiple-port electromechanical filters H03H 9/70) [3]
- 9/48 • • Coupling means therefor [3]
- 9/50 • • • Mechanical coupling means [3]
- 9/52 • • • Electric coupling means [3]
- 9/54 • • comprising resonators of piezo-electric or electrostrictive material (H03H 9/64 takes precedence) [3]
- 9/56 • • • Monolithic crystal filters [3]
- 9/58 • • • Multiple crystal filters [3]
- 9/60 • • • • Electric coupling means therefor [3]
- 9/62 • • comprising resonators of magnetostrictive material (H03H 9/64 takes precedence) [3]
- 9/64 • • using surface acoustic waves [3]
- 9/66 • Phase shifters [3]
- 9/68 • • using surface acoustic waves [3]
- 9/70 • Multiple-port networks for connecting several sources or loads, working on different frequencies or frequency bands, to a common or source [3]
- 9/72 • • Networks using surface acoustic waves [3]
- 9/74 • Multiple-port networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source (networks for phase shifting H03H 9/66) [3]
- 9/76 • • Networks using surface acoustic waves [3]
- 11/00 Networks using active elements**
- 11/02 • Multiple-port networks [3]
- 11/04 • • Frequency selective two-port networks [3]
- 11/06 • • • comprising means for compensation of loss [3]
- 11/08 • • • using gyrators [3]
- 11/10 • • • using negative impedance converters (H03H 11/08 takes precedence) [3]
- 11/12 • • • using amplifiers with feedback (H03H 11/08, H03H 11/10 take precedence) [3]
- 11/14 • • • using electro-optical devices [3]
- 11/16 • • Networks for phase shifting [3]

- 11/18 • • • Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters [3]
- 11/20 • • • Two-port phase shifters providing an adjustable phase shift [3]
- 11/22 • • • providing two or more phase shifted output signals, e.g. n-phase output [3]
- 11/24 • • Frequency-independent attenuators [3]
- 11/26 • • Time-delay networks (analogue shift registers G11C 27/04) [3]
- 11/28 • • Impedance matching networks [3]
- 11/30 • • Automatic matching of source impedance to load impedance [3]
- 11/32 • • Balance-unbalance networks [3]
- 11/34 • • Networks for connecting several sources or loads working on different frequencies or frequency bands, to a common load or source (for use in multiplex transmission systems H04J 1/00) [3]
- 11/36 • • Networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source (phase shifters providing two or more output signals H03H 11/22) [3]
- 11/38 • • One-way transmission networks, i.e. unilines [3]
- 11/40 • • Impedance converters [3]
- 11/42 • • • Gyrators (used in frequency selective networks H03H 11/08) [3]
- 11/44 • • • Negative impedance converters (H03H 11/42 takes precedence; used in frequency-selective networks H03H 11/10) [3]
- 11/46 • One-port networks [3]
- 11/48 • • simulating reactances [3]
- 11/50 • • • using gyrators [3]
- 11/52 • • simulating negative resistances [3]
- 11/54 • Modifications of networks to reduce influence of variations of temperature [3]
- 15/00 Transversal filters** (electromechanical filters H03H 9/46, H03H 9/70) [3]
- 15/02 • using analogue shift registers [3]
- 17/00 Networks using digital techniques** [3]
- 17/02 • Frequency-selective networks [3]
- 17/04 • • Recursive filters [3]
- 17/06 • • Non-recursive filters [3]
- 17/08 • Networks for phase-shifting [3]
- 19/00 Networks using time-varying elements, e.g. N-path filters** [3]
- 21/00 Adaptive networks** [3]