

SECTION H – ELECTRICITY

H01 BASIC ELECTRIC ELEMENTS

H01C RESISTORS

- (1) In this subclass, the following term is used with the meaning indicated:
 – “adjustable” means mechanically adjustable. [2]
- (2) Variable resistors, the value of which is changed non-mechanically, e.g. by voltage or temperature, are classified in group H01C 7/00. [2]

NON-ADJUSTABLE RESISTORS	3/00, 7/00, 8/00, 11/00	OTHER RESISTORS	13/00
ADJUSTABLE RESISTORS.....	10/00	DETAILS	1/00
		MANUFACTURE	17/00

1/00 Details

- 1/01 . Mounting; Supporting [2]
- 1/012 . . the base extending along, and imparting rigidity or reinforcement to, the resistive element (H01C 1/016 takes precedence; the resistive element being formed in two or more coils or loops as a spiral, helical, or toroidal winding H01C 3/18, H01C 3/20; the resistive element being formed as one or more layers or coatings on a base H01C 7/00) [2]
- 1/014 . . the resistor being suspended between, and being supported by, two supporting sections (H01C 1/016 takes precedence) [2]
- 1/016 . . with compensation for resistor expansion or contraction [2]
- 1/02 . Housing; Enclosing; Embedding; Filling the housing or enclosure [2]
- 1/022 . . the housing or enclosure being openable or separable from the resistive element [2]
- 1/024 . . the housing or enclosure being hermetically sealed (H01C 1/028, H01C 1/032, H01C 1/034 take precedence) [2]
- 1/026 . . . with gaseous or vacuum spacing between the resistive element and the housing or casing [2]
- 1/028 . . the resistive element being embedded in insulation with outer enclosing sheath [2]
- 1/03 . . . with powdered insulation [2]
- 1/032 . . plural layers surrounding the resistive element (H01C 1/028 takes precedence) [2]
- 1/034 . . the housing or enclosure being formed as coating or mould without outer sheath (H01C 1/032 takes precedence) [2]
- 1/036 . . . on wound resistive element [2]
- 1/04 . Arrangements of distinguishing marks, e.g. colour coding
- 1/06 . Electrostatic or electromagnetic shielding arrangements
- 1/08 . Cooling, heating, or ventilating arrangements
- 1/082 . . using forced fluid flow [2]
- 1/084 . . using self-cooling, e.g. fins, heat sinks [2]
- 1/12 . Arrangements of current collectors
- 1/125 . . of fluid contacts [2]

- 1/14 . Terminals or tapping points specially adapted for resistors (in general H01R); Arrangements of terminals or tapping points on resistors
- 1/142 . . the terminals or tapping points being coated on the resistive element [2]
- 1/144 . . the terminals or tapping points being welded or soldered [2]
- 1/146 . . the resistive element surrounding the terminal [2]
- 1/148 . . the terminals embracing or surrounding the resistive element (H01C 1/142 takes precedence) [2]
- 1/16 . Resistor networks not otherwise provided for
- 3/00 Non-adjustable metal resistors made of wire or ribbon, e.g. coiled, woven, or formed as grids**
- 3/02 . arranged or constructed for reducing self-induction, capacitance, or variation with frequency
- 3/04 . Iron-filament ballast resistors; Other resistors having variable temperature coefficient
- 3/06 . Flexible or folding resistors, whereby such a resistor can be looped or collapsed upon itself [2]
- 3/08 . Dimension or characteristic of resistive element changing gradually or in discrete steps from one terminal to another [2]
- 3/10 . the resistive element having zig-zag or sinusoidal configuration [2]
- 3/12 . . lying in one plane [2]
- 3/14 . the resistive element being formed in two or more coils or loops continuously wound as a spiral, helical, or toroidal winding (H01C 3/02 H01C 3/12 take precedence) [2]
- 3/16 . . including two or more distinct wound elements, or two or more winding patterns [2]
- 3/18 . . wound on a flat or ribbon base (H01C 3/16 takes precedence) [2]
- 3/20 . . wound on cylindrical or prismatic base (H01C 3/16 takes precedence) [2]

7/00 Non-adjustable resistors formed as one or more layers or coatings; Non-adjustable resistors made from powdered conducting material or powdered semi-conducting material with or without insulating material (consisting of loose powdered or granular material H01C 8/00; resistors with a potential-jump barrier or surface barrier, e.g. field effect resistors, H01L 29/00; semiconductor devices sensitive to electromagnetic or corpuscular radiation, e.g. photoresistors, H01L 31/00; devices using superconductivity or hyperconductivity H01L 39/00; devices using galvano-magnetic or similar magnetic effects, e.g. magnetic-field-controlled resistors, H01L 43/00; solid state devices for rectifying, amplifying, oscillating, or switching without a potential-jump barrier or surface barrier H01L 45/00; bulk negative resistance effect devices H01L 47/00) [2]

- 7/02 . having positive temperature coefficient
- 7/04 . having negative temperature coefficient
- 7/06 . including means to minimise changes in resistance with changes in temperature
- 7/10 . voltage responsive, i.e. varistors [6]
- 7/102 . . Varistor boundary, e.g. surface layers (H01C 7/12 takes precedence) [6]
- 7/105 . . Varistor cores (H01C 7/12 takes precedence) [6]
- 7/108 . . . Metal oxide [6]
- 7/112 ZnO type [6]
- 7/115 Titanium dioxide- or titanate type [6]
- 7/118 . . . Carbide, e.g. SiC type [6]
- 7/12 . . Overvoltage protection resistors; Arresters [3]
- 7/13 . current-responsive [2]

Groups H01C 7/02 H01C 7/13 take precedence over groups H01C 7/18 H01C 7/22. [2]

- 7/18 . comprising a plurality of layers stacked between terminals [2]
- 7/20 . the resistive layer or coating being tapered [2]
- 7/22 . Elongated resistive element being bent or curved, e.g. sinusoidal, helical [2]

8/00 Non-adjustable resistors consisting of loose powdered or granular conducting, or powdered or granular semi-conducting material [2]

- 8/02 . Coherers or like imperfect resistors for detecting electromagnetic waves [2]
- 8/04 . Overvoltage protection resistors; Arresters [2,3]

10/00 Adjustable resistors [2]

- 10/02 . Liquid resistors [2]
- 10/04 . with specified mathematical relationship between movement of resistor actuating means and value of resistance, other than direct proportional relationship [2]
- 10/06 . adjustable by short-circuiting different amounts of the resistive element [2]
- 10/08 . . with intervening conducting structure between the resistive element and the short-circuiting means, e.g. taps [2]
- 10/10 . adjustable by mechanical pressure or force [2]
- 10/12 . . by changing surface pressure between resistive masses or resistive and conductive masses, e.g. pile type [2]
- 10/14 . adjustable by auxiliary driving means [2]
- 10/16 . including plural resistive elements [2]
- 10/18 . . including coarse and fine resistive elements [2]

- 10/20 . . Contact structure or movable resistive elements being ganged [2]
- 10/22 . resistive-element dimensions changing gradually in one direction, e.g. tapered resistive element (H01C 10/04 takes precedence) [2]
- 10/23 . resistive-element dimensions changing in a series of discrete, progressive steps [2]
- 10/24 . the contact moving along turns of a helical resistive element, or *vice versa* [2]
- 10/26 . resistive element moving (H01C 10/16, H01C 10/24 take precedence) [2]

Groups H01C 10/02 H01C 10/26 take precedence over groups H01C 10/28 H01C 10/50. [2]

- 10/28 . the contact rocking or rolling along resistive element or taps [2]
- 10/30 . the contact sliding along resistive element [2]
- 10/32 . . the contact moving in an arcuate path [2]
- 10/34 . . . the contact or the associated conducting structure riding on collector formed as a ring or portion thereof [2]
- 10/36 . . . structurally combined with switching arrangements [2]
- 10/38 . . the contact moving along a straight path [2]
- 10/40 . . . screw-operated [2]
- 10/42 the contact bridging and sliding along resistive element and parallel conducting bar or collector [2]
- 10/44 . . . the contact bridging and sliding along resistive element and parallel conducting bar or collector (H01C 10/42 takes precedence) [2]
- 10/46 . Arrangements of fixed resistors with intervening connectors, e.g. taps (H01C 10/28, H01C 10/30 take precedence) [2]
- 10/48 . . including contact movable in an arcuate path [2]
- 10/50 . structurally combined with switching arrangement (H01C 10/36 takes precedence) [2]

11/00 Non-adjustable liquid resistors [2]

13/00 Resistors not provided for elsewhere

- 13/02 . Structural combinations of resistors (impedance networks H03H) [2]

17/00 Apparatus or processes specially adapted for manufacturing resistors (providing fillings for housings or enclosures H01C 1/02; reducing insulation surrounding a resistor to powder H01C 1/03; manufacture of thermally variable resistors H01C 7/02, H01C 7/04) [2]

- 17/02 . adapted for manufacturing resistors with envelope or housing (apparatus or processes for filling or compressing insulating material in heating element tubes H05B 3/52) [2]
- 17/04 . adapted for winding the resistive element [2]
- 17/06 . adapted for coating resistive material on a base [2]
- 17/065 . . by thick-film techniques, e.g. serigraphy [6]
- 17/07 . . by resistor foil bonding, e.g. cladding [6]
- 17/075 . . by thin-film techniques [6]
- 17/08 . . . by vapour deposition [2]
- 17/10 . . . by flame spraying [2]
- 17/12 . . . by sputtering [2]
- 17/14 . . . by chemical deposition [2]
- 17/16 using electric current [2]
- 17/18 without using electric current [2]

- 17/20 . . by pyrolytic processes **[2]**
- 17/22 . adapted for trimming **[2]**
- 17/23 . . by opening or closing resistor tracks of predetermined resistive values **[6]**
- 17/232 . . Adjusting the temperature coefficient; Adjusting value of resistance by adjusting temperature coefficient **[6]**
- 17/235 . . Initial adjustment of potentiometer parts for calibration **[6]**
- 17/24 . . by removing or adding resistive material (H01C 17/23, H01C 17/232, H01C 17/235 take precedence) **[2,6]**
- 17/242 . . . by laser **[6]**
- 17/245 . . . by mechanical means, e.g. sand-blasting, cutting, ultrasonic treatment **[6]**
- 17/26 . . by converting resistive material **[2]**
- 17/28 . adapted for applying terminals **[2]**
- 17/30 . adapted for baking **[2]**