

**CPC****COOPERATIVE PATENT CLASSIFICATION****H03F**

**AMPLIFIERS** (measuring, testing [G01R](#) ; optical parametric amplifiers [G02F](#) ; circuit arrangement with secondary emission tubes [H01J 43/30](#); masers, lasers [H01S](#) ; control of amplification [H03G](#) ; coupling arrangements independent of the nature of the amplifiers, voltage dividers [H03H](#) ; amplifiers capable only of dealing with pulses [H03K](#) ; repeater circuits in transmission lines [H04B 3/36](#), [H04B 3/58](#); application of speech amplifiers in telephonic communication [H04M 1/60](#), [H04M 3/40](#))

**NOTE**

This subclass covers:

- linear amplification, there being linear relationship between the amplitudes of input and output, and the output having substantially the same waveform as the input;
- dielectric amplifiers, magnetic amplifiers, and parametric amplifiers when used as oscillators or frequency-changers;
- constructions of active elements of dielectric amplifiers and parametric amplifiers if no provision exists elsewhere.

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[H03F 1/44](#) covered by [H03F 1/42](#)  
[H03F 1/46](#) covered by [H03F 1/42](#)  
[H03F 3/18](#) covered by [H03F 3/00](#)  
[H03F 3/32](#) covered by [H03F 3/30](#)  
[H03F 7/06](#) covered by [H03F 7/00](#)

**Guidance heading:****H03F 1/00**

**Details of amplifiers with only discharge tubes, only semiconductor devices or only unspecified devices as amplifying elements**

**H03F 1/02**

- . Modifications of amplifiers to raise the efficiency, e.g. gliding Class A stages, use of an auxiliary oscillation

**H03F 1/0205**

- .. {in transistor amplifiers }

**H03F 1/0211**

- ... {with control of the supply voltage or current }

**H03F 1/0216**

- .... {Continuous control }

**H03F 1/0222**

- ..... {by using a signal derived from the input signal }

**H03F 1/0227**

- ..... {using supply converters }

**H03F 1/0233**

- ..... {by using a signal derived from the output signal, e.g. bootstrapping the voltage supply }

**H03F 1/0238**

- ..... {using supply converters }

**H03F 1/0244**

- .... {Stepped control }

H03F 1/025	.....	{by using a signal derived from the input signal }
H03F 1/0255	.....	{by using a signal derived from the output signal }
H03F 1/0261	...	{with control of the polarisation voltage or current, e.g. gliding Class A }
H03F 1/0266	....	{by using a signal derived from the input signal }
H03F 1/0272	....	{by using a signal derived from the output signal }
H03F 1/0277	...	{Selecting one or more amplifiers from a plurality of amplifiers }
H03F 1/0283	...	{Reducing the number of Dc-current paths }
H03F 1/0288	...	{using a main and one or several auxiliary peaking amplifiers whereby the load is connected to the main amplifier using an impedance inverter, e.g. Doherty amplifiers }
H03F 1/0294	...	{using vector summing of two or more constant amplitude phase-modulated signals }
H03F 1/04	..	in discharge-tube amplifiers
H03F 1/06	...	to raise the efficiency of amplifying modulated radio frequency waves; to raise the efficiency of amplifiers acting also as modulators { (modulation <a href="#">H03C</a> ) }
H03F 1/07	....	Doherty-type amplifiers
H03F 1/08	.	Modification of amplifiers to reduce detrimental influences of internal impedances of amplifying elements ( <a href="#">wide-band amplifiers with inter-stage coupling networks incorporating these impedances H03F 1/42</a> ; eliminating transit-time effects in vacuum tubes <a href="#">H01J 21/34</a> )
H03F 1/083	..	{in transistor amplifiers ( <a href="#">H03F 1/10</a> to <a href="#">H03F 1/22</a> take precedence) }
H03F 1/086	...	{with FET`s }
H03F 1/10	..	by use of amplifying elements with multiple electrode connections
H03F 1/12	..	by use of attenuating means { ( <a href="#">attenuators H03G</a> ) }
H03F 1/13	...	in discharge tube amplifiers
H03F 1/14	..	by use of neutralising means
H03F 1/16	...	in discharge tube amplifiers
H03F 1/18	..	by use of distributed coupling {i.e. <a href="#">distributed amplifiers</a> ( <a href="#">distributed amplifiers using coupling networks with distributed constants H03F 3/605</a> ) }
H03F 1/20	...	in discharge-tube amplifiers
H03F 1/22	..	by use of cascode coupling, i.e. earthed cathode or emitter stage followed by earthed grid or base stage respectively
H03F 1/223	...	{with MOSFET`s }
H03F 1/226	...	{with junction-FET`s }
H03F 1/24	...	in discharge-tube amplifiers
H03F 1/26	.	Modifications of amplifiers to reduce influence of noise generated by amplifying elements
H03F 1/28	..	in discharge-tube amplifiers { ( <a href="#">constructional modifications H01J 23/11</a> ) }
H03F 1/30	.	Modifications of amplifiers to reduce influence of variations of temperature or supply voltage { or other physical parameters ( <a href="#">in differential amplifiers H03F 3/45479</a> ) }
H03F 1/301	..	{in MOSFET amplifiers ( <a href="#">H03F 1/303</a> , <a href="#">H03F 1/305</a> , <a href="#">H03F 1/308</a> take precedence) }
H03F 1/302	..	{in bipolar transistor amplifiers ( <a href="#">H03F 1/303</a> , <a href="#">H03F 1/305</a> , <a href="#">H03F 1/307</a> take precedence) }
H03F 1/303	..	{using a switching device ( <a href="#">H03F 1/305</a> , <a href="#">H03F 3/005</a> , <a href="#">H03F 3/38</a> take precedence) }

- H03F 1/304 . . . {and using digital means }
- H03F 1/305 . . {in case of switching on or off of a power supply }
- H03F 1/306 . . {in junction-FET amplifiers ([H03F 1/303](#), [H03F 1/305](#), [H03F 1/309](#) take precedence) }
- H03F 1/307 . . {in push-pull amplifiers }
- H03F 1/308 . . . {using MOSFET }

**WARNING**

Not complete, see also [H03F 1/301](#)

- H03F 1/309 . . . {using junction-FET }

**WARNING**

Not complete, see also [H03F 1/306](#)

- H03F 1/32 . . Modifications of amplifiers to reduce non-linear distortion (by negative feedback [H03F 1/34](#))
- H03F 1/3205 . . {in field-effect transistor amplifiers }
- H03F 1/3211 . . {in differential amplifiers }
- H03F 1/3217 . . {in single ended push-pull amplifiers }
- H03F 1/3223 . . {using feed-forward ([H03F 1/3211](#) takes precedence) }
- H03F 1/3229 . . . {using a loop for error extraction and another loop for error subtraction }
- H03F 1/3235 . . . . {using a pilot signal }

**WARNING**

Not complete, see also [H03F 1/3229](#)

- H03F 1/3241 . . {using predistortion circuits ([H03F 1/3211](#), [H03F 1/3217](#) take precedence) }
- H03F 1/3247 . . . {using feedback acting on predistortion circuits ([H03F 1/3264](#) takes precedence) }

**WARNING**

Not complete, see also [H03F 1/3241](#) for non patent literature

- H03F 1/3252 . . . {using multiple parallel paths between input and output ([H03F 1/3258](#), [H03F 1/3282](#), [H03F 1/3294](#) take precedence) }

**WARNING**

Not complete, see also [H03F 1/3241](#) for non patent literature

- H03F 1/3258 . . . {based on polynomial terms }
- H03F 1/3264 . . . {in audio amplifiers }
- H03F 1/327 . . . . {to emulate discharge tube amplifier characteristics }
- H03F 1/3276 . . . {using the nonlinearity inherent to components, e.g. a diode }
- H03F 1/3282 . . . {Acting on the phase and the amplitude of the input signal }

- H03F 1/3288 . . . . {to compensate phase shift as a function of the amplitude }
- H03F 1/3294 . . . {Acting on the real and imaginary components of the input signal }
- H03F 1/33 . . in discharge-tube amplifiers
- H03F 1/34 . Negative-feedback-circuit arrangements with or without positive feedback ([H03F 1/02](#) to [H03F 1/30](#), [H03F 1/38](#) to [H03F 1/50](#), [H03F 3/50](#) take precedence; { for rejection of common mode signals [H03F 3/45479](#) })
- H03F 1/342 . . {in field-effect transistor amplifiers }
- H03F 1/345 . . {using hybrid or directional couplers }

**WARNING**

Not complete, see also [H03F 1/34](#)

- H03F 1/347 . . {using transformers }
- H03F 1/36 . . in discharge-tube amplifiers
- H03F 1/38 . Positive-feedback circuit arrangements without negative feedback
- H03F 1/40 . . in discharge-tube amplifiers
- H03F 1/42 . Modifications of amplifiers to extend the bandwidth
- H03F 1/48 . . of aperiodic amplifiers
- H03F 1/483 . . . {with field-effect transistors }
- H03F 1/486 . . . {with IC amplifier blocks }
- H03F 1/50 . . . with tubes only
- H03F 1/52 . Circuit arrangements for protecting such amplifiers { (monitoring arrangements [G01R 31/28](#); increasing reliability in communication systems, e.g. using redundancy [H04B 1/74](#)) }
- H03F 1/523 . . {for amplifiers using field-effect devices ([H03F 1/526](#) takes precedence) }
- H03F 1/526 . . {protecting by using redundant amplifiers }

**WARNING**

Not complete, see also [H03F 1/523](#)

- H03F 1/54 . . with tubes only { (testing of vacuum tubes [G01R 31/25](#)) }
- H03F 1/542 . . . {Replacing by standby devices }
- H03F 1/544 . . . {Protection of filaments }
- H03F 1/546 . . . {Delaying application of anode power supply with respect to application of filament heating power supply }
- H03F 1/548 . . . {Protection of anode or grid circuit against overload }
- H03F 1/56 . Modifications of input or output impedances, not otherwise provided for
- H03F 1/565 . . {using inductive elements }

**H03F 3/00 Amplifiers with only discharge tubes or only semiconductor devices as amplifying elements**

- H03F 3/005 . { using switched capacitors, e.g. dynamic amplifiers; using switched capacitors as resistors in differential amplifiers ([H03F 3/45](#) takes precedence) }

**NOTE**

Groups [H03F 3/20](#) to [H03F 3/72](#) take precedence over groups [H03F 3/02](#) to [H03F 3/195](#)

**WARNING**

Not complete, see also [H03F 1/02](#), [H03F 3/70](#), [H03F 3/72](#)

- H03F 3/02 . with tubes only (subsequent sub-groups take precedence)
- H03F 3/04 . with semiconductor devices only (subsequent sub-groups take precedence)
- H03F 3/06 . . . using hole storage effect
- H03F 3/08 . . . controlled by light
- H03F 3/082 . . . {with FET`s ([H03F 3/085](#) takes precedence) }
- H03F 3/085 . . . {using opto-couplers between stages }
- H03F 3/087 . . . {with IC amplifier blocks ([H03F 3/085](#) takes precedence) }
- H03F 3/10 . . with diodes { (parametric amplifiers [H03F 7/00](#)) }
- H03F 3/12 . . . with Esaki diodes
- H03F 3/14 . . with amplifying devices having more than three electrodes or more than two PN junctions
- H03F 3/16 . . with field-effect devices
- H03F 3/165 . . . {with junction-FET`s }
- H03F 3/181 . Low frequency amplifiers, e.g. audio preamplifiers
- H03F 3/183 . . with semiconductor devices only
- H03F 3/185 . . . with field-effect devices ([H03F 3/187](#) takes precedence)
- H03F 3/1855 . . . . {with junction-FET devices }
- H03F 3/187 . . . in integrated circuits
- H03F 3/189 . High frequency amplifiers, e.g. radio frequency amplifiers
- H03F 3/19 . . with semiconductor devices only
- H03F 3/191 . . . Tuned amplifiers ([H03F 3/193](#), [H03F 3/195](#) take precedence)
- H03F 3/193 . . . with field-effect devices ([H03F 3/195](#) takes precedence)
- H03F 3/1935 . . . . {with junction-FET devices }
- H03F 3/195 . . . in integrated circuits
- H03F 3/20 . Power amplifiers, e.g. Class B amplifiers, Class C amplifiers ([H03F 3/26](#) to [H03F 3/30](#) take precedence)
- H03F 3/21 . . with semiconductor devices only { ([H03F 3/245](#) takes precedence) }
- H03F 3/211 . . . {using a combination of several amplifiers ([H03F 3/60](#) takes precedence) }

**WARNING**

Not complete, see also [H03F 3/21](#), [H03F 3/68](#)

- H03F 3/213      ...      in integrated circuits
- H03F 3/217      ...      Class D power amplifiers; Switching amplifiers
- H03F 3/2171      ....      {with field-effect devices ([H03F 3/2173](#) to [H03F 3/2178](#) take precedence) }
- H03F 3/2173      ....      {of the bridge type }
- H03F 3/2175      ....      {using analogue-digital or digital-analogue conversion ([H03F 3/2173](#) takes precedence) }
- H03F 3/2176      ....      {Class E amplifiers }
- H03F 3/2178      ....      {using more than one switch or switching amplifier in parallel or in series ([H03F 3/2173](#), [H03F 3/2175](#) take precedence) }
- H03F 3/22      ..      with tubes only ([H03F 3/24](#) takes precedence)
- H03F 3/24      ..      of transmitter output stages
- H03F 3/245      ...      {with semiconductor devices only }
- H03F 3/26      .      Push-pull amplifiers; Phase-splitters therefor (duplicated single-ended push-pull arrangements or phase-splitters therefor [H03F 3/30](#))
- H03F 3/265      ..      {with field-effect transistors only }
- H03F 3/28      ..      with tubes only
- H03F 3/30      .      Single-ended push-pull {(SEPP) } amplifiers { (single-ended sense amplifiers [G11C 7/067](#)) }; Phase-splitters therefor
- H03F 3/3001      ..      {with field-effect transistors }
- H03F 3/3008      ...      {Bifet SEPP output stages }
- H03F 3/301      ...      {CMOS common drain output SEPP amplifiers ([H03F 3/3008](#) takes precedence) }
- H03F 3/3011      ....      {with asymmetrical driving of the end stage }
- H03F 3/3013      .....      {using a common drain driving stage, i.e. follower stage }
- H03F 3/3015      .....      {using a common source driving stage, i.e. inverting stage }
- H03F 3/3016      ....      {with symmetrical driving of the end stage }
- H03F 3/3018      .....      {using opamps as driving stages }
- H03F 3/302      .....      {using two SEPP driving stages }
- H03F 3/3022      ...      {CMOS common source output SEPP amplifiers ([H03F 3/3008](#) takes precedence) }
- H03F 3/3023      ....      {with asymmetrical driving of the end stage }
- H03F 3/3025      .....      {using a common drain driving stage, i.e. follower stage }
- H03F 3/3027      .....      {using a common source driving stage, i.e. inverting stage }
- H03F 3/3028      ....      {with symmetrical driving of the end stage }
- H03F 3/303      .....      {using opamps as driving stages }
- H03F 3/3032      .....      {using two SEPP driving stages }
- H03F 3/3033      ...      {NMOS SEPP output stages ([H03F 3/3008](#) takes precedence) }
- H03F 3/3035      ....      {using differential amplifiers as phase-splitting elements }
- H03F 3/3037      ....      {with asymmetric control, i.e. one control branch containing a supplementary phase inverting stage }

- H03F 3/3038 . . . {PMOS SEPP output stages ([H03F 3/3008 takes precedence](#)) }
- H03F 3/304 . . . . {using differential amplifiers as phase-splitting element }
- H03F 3/3042 . . . . {with asymmetric control, i.e. one control branch containing a supplementary phase inverting stage }
- H03F 3/3044 . . . {Junction FET SEPP output stages ([H03F 3/3008 takes precedence](#)) }
- H03F 3/3045 . . . . {with asymmetrical driving of the end stage }
- H03F 3/3047 . . . . . {using a common drain driving stage, i.e. follower stage }
- H03F 3/3049 . . . . . {using a common source driving stage, i.e. inverting stage }
- H03F 3/305 . . . . {with symmetrical driving of the end stage }
- H03F 3/3052 . . . . . {using opamps as driving stages }
- H03F 3/3054 . . . . . {using two SEPP driving stages }
- H03F 3/3055 . . . {Paralleled mixed SEPP stages, e.g. a CMOS common drain and a CMOS common source in parallel or bipolar SEPP and FET SEPP in parallel }
- H03F 3/3057 . . . . {with asymmetrical driving of the end stage }
- H03F 3/3059 . . . . {with symmetrical driving of the end stage }
- H03F 3/3061 . . . {Bridge type, i.e. two complementary controlled SEPP output stages }
- H03F 3/3062 . . . . {with asymmetrical driving of the end stage }
- H03F 3/3064 . . . . {with symmetrical driving of the end stage }
- H03F 3/3066 . . {the collectors of complementary power transistors being connected to the output }
- H03F 3/3067 . . . {with asymmetrical driving of the end stage }
- H03F 3/3069 . . {the emitters of complementary power transistors being connected to the output }
- H03F 3/3071 . . . {with asymmetrical driving of the end stage }
- H03F 3/3072 . . . . {using Darlington transistors ([H03F 3/3074 takes precedence](#)) }
- H03F 3/3074 . . . . {using parallel power transistors }
- H03F 3/3076 . . . {with symmetrical driving of the end stage }
- H03F 3/3077 . . . . {using Darlington transistors ([H03F 3/3079 takes precedence](#)) }
- H03F 3/3079 . . . . {using parallel power transistors }
- H03F 3/3081 . . {Duplicated single-ended push-pull arrangements, i.e. bridge circuits ([using FET's H03F 3/3061](#)) }
- H03F 3/3083 . . {the power transistors being of the same type ([H03F 3/3001 takes precedence](#)) }
- H03F 3/3084 . . . {one of the power transistors being controlled by the output signal }
- H03F 3/3086 . . . {two power transistors being controlled by the input signal }
- H03F 3/3088 . . . . {with asymmetric control, i.e. one control branch containing a supplementary phase inverting transistor }
- H03F 3/3089 . . . . {comprising field-effect transistors in the control circuit }
- H03F 3/3091 . . . . {comprising two complementary transistors for phase-splitting }
- H03F 3/3093 . . . . {comprising a differential amplifier as phase-splitting element }
- H03F 3/3094 . . . . {Phase splitters therefor ([H03F 3/3088](#), [H03F 3/3091](#), [H03F 3/3093](#), [H03F 3/3096](#), [H03F 3/3098 take precedence](#)) }
- H03F 3/3096 . . . . {using a single transistor with output on emitter and collector as phase splitter }
- H03F 3/3098 . . . . {using a transformer as phase splitter }
- H03F 3/34 . . . . Dc amplifiers in which all stages are dc-coupled ([H03F 3/45 takes precedence](#))

- H03F 3/343 . . with semiconductor devices only
- H03F 3/3432 . . . {with bipolar transistors }
- H03F 3/3435 . . . . {using Darlington amplifiers }
- H03F 3/3437 . . . . . {with complementary transistors }
- H03F 3/345 . . . with field-effect devices ([H03F 3/347](#) takes precedence)
- H03F 3/3455 . . . . {with junction-FET`s }
- H03F 3/347 . . . in integrated circuits
- H03F 3/36 . . with tubes only
  
- H03F 3/38 . Dc amplifiers with modulator at input and demodulator at output; Modulators or demodulators specially adapted for use in such amplifiers ( {switched capacitor amplifiers [H03F 3/005](#) }; modulators in general [H03C](#) ; demodulators in general [H03D](#) ; amplitude modulation of pulses in general [H03K 7/02](#); amplitude demodulation of pulses in general [H03K 9/02](#))
  
- H03F 3/387 . . with semiconductor devices only
- H03F 3/393 . . . with field-effect devices
- H03F 3/40 . . with tubes only
  
- H03F 3/42 . Amplifiers with two or more amplifying elements having their dc paths in series with the load, the control electrode of each element being excited by at least part of the input signal, e.g. so-called totem-pole amplifiers
  
- H03F 3/423 . . {with MOSFET`s }
- H03F 3/426 . . {with junction-FET`s }
- H03F 3/44 . . with tubes only
  
- H03F 3/45 . Differential amplifiers ([differential sense amplifiers G11C 7/062](#))
- H03F 3/45071 . . {with semiconductor devices only }
- H03F 3/45076 . . . {characterised by the way of implementation of the active amplifying circuit in the differential amplifier }
- H03F 3/4508 . . . . {using bipolar transistors as the active amplifying circuit ([H03F 3/45278](#) takes precedence) }
- H03F 3/45085 . . . . . {Long tailed pairs ([H03F 3/45112](#), [H03F 3/45139](#) take precedence) }
- H03F 3/45089 . . . . . {Non-folded cascode stages }
- H03F 3/45094 . . . . . {Folded cascode stages }
- H03F 3/45098 . . . . {PI types ([H03F 3/45125](#), [H03F 3/45152](#) take precedence) }
- H03F 3/45103 . . . . . {Non-folded cascode stages }
- H03F 3/45107 . . . . . {Folded cascode stages }
- H03F 3/45112 . . . . {Complementary long tailed pairs having parallel inputs and being supplied in parallel }
- H03F 3/45116 . . . . . {Non-folded cascode stages }
- H03F 3/45121 . . . . . {Folded cascode stages }
- H03F 3/45125 . . . . {Complementary PI types having parallel inputs and being supplied in parallel }
- H03F 3/4513 . . . . . {Non-folded cascode stages }
- H03F 3/45134 . . . . . {Folded cascode stages }
- H03F 3/45139 . . . . {Complementary long tailed pairs having parallel inputs and being supplied in series }



H03F 3/45143	.....	{Non-folded cascode stages }
H03F 3/45147	.....	{Folded cascode stages }
H03F 3/45152	.....	{Complementary PI types having parallel inputs and being supplied in series }
H03F 3/45156	.....	{Non-folded cascode stages }
H03F 3/45161	.....	{Folded cascode stages }
H03F 3/45165	.....	{Complementary cross coupled types }
H03F 3/4517	.....	{Complementary non-cross coupled types }
H03F 3/45174	.....	{Mirror types }
H03F 3/45179	....	{using MOSFET transistors as the active amplifying circuit ( <a href="#">H03F 3/45278</a> takes precedence) }
H03F 3/45183	.....	{Long tailed pairs ( <a href="#">H03F 3/4521</a> , <a href="#">H03F 3/45237</a> take precedence) }
H03F 3/45188	.....	{Non-folded cascode stages }
H03F 3/45192	.....	{Folded cascode stages }
H03F 3/45197	.....	{PI types ( <a href="#">H03F 3/45224</a> , <a href="#">H03F 3/45251</a> take precedence) }
H03F 3/45201	.....	{Non-folded cascode stages }
H03F 3/45206	.....	{Folded cascode stages }
H03F 3/4521	.....	{Complementary long tailed pairs having parallel inputs and being supplied in parallel }
H03F 3/45215	.....	{Non-folded cascode stages }
H03F 3/45219	.....	{Folded cascode stages }
H03F 3/45224	.....	{Complementary PI types having parallel inputs and being supplied in parallel }
H03F 3/45228	.....	{Non-folded cascode stages }
H03F 3/45233	.....	{Folded cascode stages }
H03F 3/45237	.....	{Complementary long tailed pairs having parallel inputs and being supplied in series }
H03F 3/45242	.....	{Non-folded cascode stages }
H03F 3/45246	.....	{Folded cascode stages }
H03F 3/45251	.....	{Complementary PI types having parallel inputs and being supplied in series }
H03F 3/45255	.....	{Non-folded cascode stages }
H03F 3/4526	.....	{Folded cascode stages }
H03F 3/45264	.....	{Complementary cross coupled types }
H03F 3/45269	.....	{Complementary non-cross coupled types }
H03F 3/45273	.....	{Mirror types }
H03F 3/45278	....	{using BiFET transistors as the active amplifying circuit }
H03F 3/45282	.....	{Long tailed pairs ( <a href="#">H03F 3/45309</a> , <a href="#">H03F 3/45336</a> take precedence) }
H03F 3/45286	.....	{Non-folded cascode stages }
H03F 3/45291	.....	{Folded cascode stages }
H03F 3/45295	.....	{PI types ( <a href="#">H03F 3/45322</a> , <a href="#">H03F 3/45349</a> take precedence) }
H03F 3/453	.....	{Non-folded cascode stages }
H03F 3/45304	.....	{Folded cascode stages }
H03F 3/45309	.....	{Complementary long tailed pairs having parallel inputs and being

		supplied in parallel }
H03F 3/45313	.....	{Non-folded cascode stages }
H03F 3/45318	.....	{Folded cascode stages }
H03F 3/45322	.....	{Complementary PI types having parallel inputs and being supplied in parallel }
H03F 3/45327	.....	{Non-folded cascode stages }
H03F 3/45331	.....	{Folded cascode stages }
H03F 3/45336	.....	{Complementary long tailed pairs having parallel inputs and being supplied in series }
H03F 3/4534	.....	{Non-folded cascode stages }
H03F 3/45345	.....	{Folded cascode stages }
H03F 3/45349	.....	{Complementary PI types having parallel inputs and being supplied in series }
H03F 3/45354	.....	{Non-folded cascode stages }
H03F 3/45358	.....	{Folded cascode stages }
H03F 3/45363	.....	{Complementary cross coupled types }
H03F 3/45367	.....	{Complementary non-cross coupled types }
H03F 3/45372	.....	{Mirror types }
H03F 3/45376	....	{using junction FET transistors as the active amplifying circuit ( <a href="#">H03F 3/45278</a> takes precedence) }
H03F 3/45381	.....	{Long tailed pairs ( <a href="#">H03F 3/45408</a> , <a href="#">H03F 3/45434</a> take precedence) }
H03F 3/45385	.....	{Non-folded cascode stages }
H03F 3/4539	.....	{Folded cascode stages }
H03F 3/45394	.....	{PI types ( <a href="#">H03F 3/45421</a> , <a href="#">H03F 3/45448</a> take precedence) }
H03F 3/45399	.....	{Non-folded cascode stages }
H03F 3/45403	.....	{Folded cascode stages }
H03F 3/45408	.....	{Complementary long tailed pairs having parallel inputs and being supplied in parallel }
H03F 3/45412	.....	{Non-folded cascode stages }
H03F 3/45417	.....	{Folded cascode stages }
H03F 3/45421	.....	{Complementary PI types having parallel inputs and being supplied in parallel }
H03F 3/45426	.....	{Non-folded cascode stages }
H03F 3/4543	.....	{Folded cascode stages }
H03F 3/45434	.....	{Complementary long tailed pairs having parallel inputs and being supplied in series }
H03F 3/45439	.....	{Non-folded cascode stages }
H03F 3/45443	.....	{Folded cascode stages }
H03F 3/45448	.....	{Complementary PI types having parallel inputs and being supplied in series }
H03F 3/45452	.....	{Non-folded cascode stages }
H03F 3/45457	.....	{Folded cascode stages }
H03F 3/45461	.....	{Complementary cross coupled types }
H03F 3/45466	.....	{Complementary non-cross coupled types }

H03F 3/4547	.....	{Mirror types }
H03F 3/45475	....	{using IC blocks as the active amplifying circuit }
H03F 3/45479	...	{characterised by the way of common mode signal rejection }
H03F 3/45484	....	{in differential amplifiers with bipolar transistors as the active amplifying circuit ( <a href="#">H03F 3/4578</a> takes precedence) }
H03F 3/45488	.....	{by using feedback means ( <a href="#">H03F 3/4578</a> takes precedence) }
H03F 3/45493	.....	{Measuring at the loading circuit of the differential amplifier }
H03F 3/45497	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45502	.....	{Controlling the common emitter circuit of the differential amplifier }
H03F 3/45506	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45511	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45515	.....	{Measuring at the active amplifying circuit of the differential amplifier }
H03F 3/4552	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45524	.....	{Controlling the common emitter circuit of the differential amplifier }
H03F 3/45529	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45533	.....	{Measuring at the common emitter circuit of the differential amplifier }
H03F 3/45538	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45542	.....	{Controlling the common emitter circuit of the differential amplifier }
H03F 3/45547	....	{by using feedforward means ( <a href="#">H03F 3/45596</a> takes precedence) }
H03F 3/45551	.....	{Measuring at the input circuit of the differential amplifier }
H03F 3/45556	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/4556	.....	{Controlling the common emitter circuit of the differential amplifier }
H03F 3/45565	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45569	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45573	.....	{Measuring at the active amplifying circuit of the differential amplifier }
H03F 3/45578	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45582	.....	{Measuring at the common emitter circuit of the differential amplifier }
H03F 3/45587	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45591	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45596	....	{by offset reduction }
H03F 3/456	.....	{by using a feedback circuit }
H03F 3/45605	.....	{using switching means, e.g. sample and hold }
H03F 3/45609	.....	{by using a feedforward circuit }
H03F 3/45614	.....	{using switching means, e.g. sample and hold }
H03F 3/45618	.....	{by using balancing means }
H03F 3/45623	.....	{using switching means }
H03F 3/45627	.....	{by using cross switches }
H03F 3/45632	....	{in differential amplifiers with FET transistors as the active amplifying circuit ( <a href="#">H03F 3/4578</a> takes precedence) }
H03F 3/45636	.....	{by using feedback means ( <a href="#">H03F 3/45744</a> takes precedence) }
H03F 3/45641	.....	{Measuring at the loading circuit of the differential amplifier }
H03F 3/45645	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/4565	.....	{Controlling the common source circuit of the differential amplifier }

H03F 3/45654	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45659	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45663	.....	{Measuring at the active amplifying circuit of the differential amplifier }
H03F 3/45668	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45672	.....	{Controlling the common source circuit of the differential amplifier }
H03F 3/45677	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45681	.....	{Measuring at the common source circuit of the differential amplifier }
H03F 3/45686	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/4569	.....	{Controlling the common source circuit of the differential amplifier }
H03F 3/45695	.....	{by using feedforward means ( <a href="#">H03F 3/45744</a> takes precedence) }
H03F 3/45699	.....	{Measuring at the input circuit of the differential amplifier }
H03F 3/45704	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45708	.....	{Controlling the common source circuit of the differential amplifier }
H03F 3/45713	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45717	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45721	.....	{Measuring at the active amplifying circuit of the differential amplifier }
H03F 3/45726	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/4573	.....	{Measuring at the common source circuit of the differential amplifier }
H03F 3/45735	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45739	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45744	.....	{by offset reduction }
H03F 3/45748	.....	{by using a feedback circuit }
H03F 3/45753	.....	{using switching means, e.g. sample and hold }
H03F 3/45757	.....	{by using a feedforward circuit }
H03F 3/45762	.....	{using switching means, e.g. sample and hold }
H03F 3/45766	.....	{by using balancing means }
H03F 3/45771	.....	{using switching means }
H03F 3/45775	.....	{by using cross switches }
H03F 3/4578	....	{in differential amplifiers with BiFET transistors as the active amplifying circuit }
H03F 3/45784	.....	{by using feedback means ( <a href="#">H03F 3/45892</a> takes precedence) }
H03F 3/45789	.....	{Measuring at the loading circuit of the differential amplifier }
H03F 3/45793	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45798	.....	{Controlling the common source circuit of the differential amplifier }
H03F 3/45802	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45807	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45811	.....	{Measuring at the active amplifying circuit of the differential amplifier }
H03F 3/45816	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/4582	.....	{Controlling the common source circuit of the differential amplifier }
H03F 3/45825	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45829	.....	{Measuring at the common source circuit of the differential amplifier }
H03F 3/45834	.....	{Controlling the input circuit of the differential amplifier }

H03F 3/45838	.....	{Controlling the common source circuit of the differential amplifier }
H03F 3/45843	.....	{by using feedforward means ( <a href="#">H03F 3/45892</a> takes precedence) }
H03F 3/45847	.....	{Measuring at the input circuit of the differential amplifier }
H03F 3/45852	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45856	.....	{Controlling the common source circuit of the differential amplifier }
H03F 3/4586	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45865	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45869	.....	{Measuring at the active amplifying circuit of the differential amplifier }
H03F 3/45874	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45878	.....	{Measuring at the common source circuit of the differential amplifier }
H03F 3/45883	.....	{Controlling the active amplifying circuit of the differential amplifier }
H03F 3/45887	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45892	.....	{by offset reduction }
H03F 3/45896	.....	{by using a feedback circuit }
H03F 3/45901	.....	{using switching means, e.g. sample and hold }
H03F 3/45905	.....	{by using a feedforward circuit }
H03F 3/4591	.....	{using switching means, e.g. sample and hold }
H03F 3/45914	.....	{by using balancing means }
H03F 3/45919	.....	{using switching means }
H03F 3/45923	.....	{by using cross switches }
H03F 3/45928	....	{using IC blocks as the active amplifying circuit }
H03F 3/45932	.....	{by using feedback means ( <a href="#">H03F 3/45968</a> takes precedence) }
H03F 3/45937	.....	{Measuring at the loading circuit of the differential amplifier }
H03F 3/45941	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45946	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/4595	.....	{by using feedforward means ( <a href="#">H03F 3/45968</a> takes precedence) }
H03F 3/45955	.....	{Measuring at the input circuit of the differential amplifier }
H03F 3/45959	.....	{Controlling the input circuit of the differential amplifier }
H03F 3/45964	.....	{Controlling the loading circuit of the differential amplifier }
H03F 3/45968	.....	{by offset reduction }
H03F 3/45973	.....	{by using a feedback circuit }
H03F 3/45977	.....	{using switching means, e.g. sample and hold }
H03F 3/45982	.....	{by using a feedforward circuit }
H03F 3/45986	.....	{using switching means, e.g. sample and hold }
H03F 3/45991	.....	{by using balancing means }
H03F 3/45995	.....	{using switching means }
H03F 3/46	. Reflex amplifiers { ( <a href="#">reflection amplifiers H03F 3/608</a> ) }	
H03F 3/48	.. with tubes only	
H03F 3/50	. Amplifiers in which input is applied to, or output is derived from, an impedance common to input and output circuits of the amplifying element, e.g. cathode follower	
H03F 3/505	.. {with field-effect devices }	

- H03F 3/52 . . with tubes only
- H03F 3/54 . Amplifiers using transit-time effect in tubes or semiconductor devices ([parametric amplifiers H03F 7/00](#); [solid state travelling-wave devices H01L 45/02](#))
- H03F 3/55 . . with semiconductor devices only
- H03F 3/56 . . using klystrons
- H03F 3/58 . . using travelling-wave tubes
- H03F 3/60 . Amplifiers in which coupling networks have distributed constants, e.g. with waveguide resonators ([H03F 3/54 takes precedence](#))
- H03F 3/601 . . {using FET`s, e.g. GaAs FET`s ([H03F 3/607](#), [H03F 3/608 take precedence](#)) }

**WARNING**

Not complete, see also [H03F 3/16](#)

- H03F 3/602 . . {Combinations of several amplifiers }

**WARNING**

Not complete, see also [H03F 3/68](#)

- H03F 3/604 . . . {using FET`s }

**WARNING**

Not complete, see also [H03F 3/16](#), [H03F 3/68](#)

- H03F 3/605 . . {Distributed amplifiers }

**WARNING**

Not complete, see also [H03F 1/18](#)

- H03F 3/607 . . . {using FET`s }

**WARNING**

Not complete, see also [H03F 1/18](#)

- H03F 3/608 . . {Reflection amplifiers, i.e. amplifiers using a one-port amplifying element and a multiport coupler ([H03F 7/00 takes precedence](#)) }

**WARNING**

Not complete, see also [H03F 3/46](#)

- H03F 3/62 . Two-way amplifiers

- H03F 3/64 . . with tubes only

- H03F 3/66 . Amplifiers simultaneously generating oscillations of one frequency and amplifying signals of another frequency

- H03F 3/68 . Combinations of amplifiers, e.g. multi-channel amplifiers for stereophonics { ([power](#)

amplifiers using a combination of several semiconductor amplifiers [H03F 3/211](#); combinations of amplifiers using coupling networks with distributed constants [H03F 3/602](#) }

- [H03F 3/70](#) . Charge amplifiers
- [H03F 3/72](#) . Gated amplifiers, i.e. amplifiers which are rendered operative or inoperative by means of a control signal
- [H03F 5/00](#) Amplifiers with both discharge tubes and semiconductor devices as amplifying elements**
- [H03F 7/00](#) Parametric amplifiers ( {[H03F 19/00](#) takes precedence }; devices or arrangements for the parametric generation or amplification of light, infra-red or ultra-violet waves [G02F 1/39](#))**
- [H03F 7/02](#) . using variable-inductance element; using variable-permeability element
- [H03F 7/04](#) . using variable-capacitance element; using variable-permittivity element
- [H03F 9/00](#) Magnetic amplifiers**
- [H03F 9/02](#) . current-controlled, i.e. the load current flowing in both directions through a main coil
- [H03F 9/04](#) . voltage-controlled, i.e. the load current flowing in only one direction through a main coil, e.g. Logan circuits ([H03F 9/06](#) takes precedence)
- [H03F 9/06](#) . Control by voltage time integral, i.e. the load current flowing in only one direction through a main coil, whereby the main coil winding also can be used as a control winding, e.g. Ramey circuits
- [H03F 11/00](#) Dielectric amplifiers**
- [H03F 13/00](#) Amplifiers using amplifying element consisting of two mechanically- or acoustically-coupled transducers, e.g. telephone-microphone amplifier**
- [H03F 15/00](#) Amplifiers using galvano-magnetic effects not involving mechanical movement, e.g. using Hall effect**
- [H03F 17/00](#) Amplifiers using electroluminescent element or photocell**
- [H03F 19/00](#) Amplifiers using superconductivity effects**
- [H03F 21/00](#) { Amplifiers not covered by groups [H03F 3/00](#) to [H03F 19/00](#) (dynamo-electric amplifiers [H02K](#) ) }

**Guidance heading:**



## **H03F 2003/00      Amplifiers with only discharge tubes or only semiconductor devices as amplifying elements**

- H03F 2003/30      .    Single-ended push-pull {(SEPP) } amplifiers { (single-ended sense amplifiers [G11C 7/067](#)) }; Phase-splitters therefor
- H03F 2003/3001    . .    {with field-effect transistors }
- H03F 2003/3003    . . .    with MOSFET`s
- H03F 2003/3005    . . .    with junction-FET`s
- H03F 2003/3006    . . .    in a bridge configuration
  
- H03F 2003/45      .    Differential amplifiers ([differential sense amplifiers G11C 7/062](#))
- H03F 2003/45004    . .    with semiconductor devices only
- H03F 2003/45008    . . .    with field-effect devices
- H03F 2003/45013    . . .    Integrated circuits
- H03F 2003/45017    . . . .    with field-effect devices
- H03F 2003/45022    . . .    Rejection of common mode signals; Modifications of differential amplifiers to reduce the influence of variations of physical parameters, e.g. temperature, age
- H03F 2003/45026    . . . .    MOSFET amplifiers
- H03F 2003/45031    . . . . .    using switching means
- H03F 2003/45035    . . . . .    with a combination of P-MOS and N-MOS differential amplifiers as input stage
- H03F 2003/4504    . . . .    using feedback means
- H03F 2003/45044    . . . . .    feedback on the differential amplifier in series with the Dc current supply
- H03F 2003/45049    . . . . .    feedback on the input leads of the differential amplifier
- H03F 2003/45053    . . . . .    using a capacitor in the feedback loop
- H03F 2003/45058    . . . .    in junction-FET amplifiers
- H03F 2003/45062    . . . . .    using switching means
- H03F 2003/45067    . . . .    using switching means

### **Guidance heading:**

## **H03F 2200/00      Indexing scheme relating to amplifiers**

- H03F 2200/03      .    the amplifier being designed for audio applications
- H03F 2200/06      .    A balun, i.e. balanced to or from unbalanced converter, being present at the input of an amplifier
- H03F 2200/09      .    A balun, i.e. balanced to or from unbalanced converter, being present at the output of an amplifier
- H03F 2200/102     .    A non-specified detector of a signal envelope being used in an amplifying circuit
- H03F 2200/105     .    A non-specified detector of the power of a signal being used in an amplifying circuit
- H03F 2200/108     .    A coil being added in the drain circuit of a FET amplifier stage, e.g. for noise reducing



purposes

- H03F 2200/111 . the amplifier being a dual or triple band amplifier, e.g. 900 and 1800 MHz, e.g. switched or not switched, simultaneously or not
- H03F 2200/114 . the amplifier comprising means for electro-magnetic interference [EMI] protection
- H03F 2200/117 . A coil being coupled in a feedback path of an amplifier stage
- H03F 2200/12 . A bias circuit for some stages being shown using transmission lines
- H03F 2200/121 . A transistor in common gate configuration being used in a feedback circuit of an amplifier stage
- H03F 2200/123 . A difference signal between an output and an input signal of an amplifier being coupled back at the input of the amplifier
- H03F 2200/126 . A diode being coupled in a feedback path of an amplifier stage, e.g. active or passive diode
- H03F 2200/129 . there being a feedback over the complete amplifier
- H03F 2200/132 . Hybrid coupler placed in a feedback circuit of an amplifier
- H03F 2200/135 . there being a feedback over one or more internal stages in the global amplifier
- H03F 2200/138 . the feedback circuit comprising a parallel resonance circuit
- H03F 2200/141 . the feedback circuit of the amplifier stage comprising a resistor and a capacitor in series, at least one of them being an active one
- H03F 2200/144 . the feedback circuit of the amplifier stage comprising a passive resistor and passive capacitor
- H03F 2200/147 . the feedback circuit comprising a series resonance circuit
- H03F 2200/15 . the supply or bias voltage or current at the drain side of a FET being continuously controlled by a controlling signal
- H03F 2200/151 . A source follower being used in a feedback circuit of an amplifier stage
- H03F 2200/153 . Feedback used to stabilise the amplifier
- H03F 2200/156 . One or more switches are realised in the feedback circuit of the amplifier stage
- H03F 2200/159 . the feedback circuit being closed during a switching time
- H03F 2200/162 . FETs are biased in the weak inversion region
- H03F 2200/165 . A filter circuit coupled to the input of an amplifier
- H03F 2200/168 . Two amplifying stages are coupled by means of a filter circuit

- H03F 2200/171 . A filter circuit coupled to the output of an amplifier
- H03F 2200/174 . Floating gate implemented in MOS technology
- H03F 2200/177 . Folded cascode realised by a folding coil
- H03F 2200/18 . the bias of the gate of a FET being controlled by a control signal
- H03F 2200/181 . A coil being added in the gate circuit of a FET amplifier stage, e.g. for noise reducing purposes
- H03F 2200/183 . the amplifier comprising a gated diode
- H03F 2200/186 . the ground, reference potential being controlled
- H03F 2200/189 . the ground, reference or shield potential difference between different chips being controlled
- H03F 2200/192 . A hybrid coupler being used at the input of an amplifier circuit
- H03F 2200/195 . A hybrid coupler being used as power measuring circuit at the input of an amplifier circuit
- H03F 2200/198 . A hybrid coupler being used as coupling circuit between stages of an amplifier circuit
- H03F 2200/201 . A hybrid coupler being used as power measuring inter-stage circuit between two stages of an amplifier circuit
- H03F 2200/204 . A hybrid coupler being used at the output of an amplifier circuit
- H03F 2200/207 . A hybrid coupler being used as power measuring circuit at the output of an amplifier circuit
- H03F 2200/21 . Bias resistors are added at the input of an amplifier
- H03F 2200/211 . the input of an amplifier can be attenuated by a continuously controlled transistor attenuator
- H03F 2200/213 . A variable capacitor being added in the input circuit, e.g. base, gate, of an amplifier stage
- H03F 2200/216 . A coil being added in the input circuit, e.g. base, gate, of an amplifier stage
- H03F 2200/219 . Follower transistors are added at the input of the amplifier, e.g. source or emitter followers
- H03F 2200/222 . A circuit being added at the input of an amplifier to adapt the input impedance of the amplifier
- H03F 2200/225 . the input circuit of an amplifying stage comprising an LC-network
- H03F 2200/228 . A measuring circuit being coupled to the input of an amplifier

- H03F 2200/231 . the input of an amplifier can be switched on or off by a switch to amplify or not an input signal
- H03F 2200/234 . the input amplifying stage being one or more operational amplifiers
- H03F 2200/237 . A parallel resonance being added in series in the input circuit, e.g. base, gate, of an amplifier stage
- H03F 2200/24 . the supply or bias voltage or current at the source side of a FET being continuously controlled by a controlling signal
- H03F 2200/241 . A parallel resonance being added in shunt in the input circuit, e.g. base, gate, of an amplifier stage
- H03F 2200/243 . A series resonance being added in series in the input circuit, e.g. base, gate, of an amplifier stage
- H03F 2200/246 . A series resonance being added in shunt in the input circuit, e.g. base, gate, of an amplifier stage, e.g. as a trap
- H03F 2200/249 . A switch coupled in the input circuit of an amplifier being controlled by a circuit, e.g. feedback circuitry being controlling the switch
- H03F 2200/252 . Multiple switches coupled in the input circuit of an amplifier are controlled by a circuit, e.g. feedback circuitry being controlling the switch
- H03F 2200/255 . Amplifier input adaptation especially for transmission line coupling purposes, e.g. impedance adaptation
- H03F 2200/258 . the input of the amplifier has voltage limiting means
- H03F 2200/261 . Amplifier which being suitable for instrumentation applications
- H03F 2200/264 . An operational amplifier based integrator or transistor based integrator being used in an amplifying circuit
- H03F 2200/267 . A capacitor based passive circuit, e.g. filter, being used in an amplifying circuit
- H03F 2200/27 . A biasing circuit node being switched in an amplifier circuit
- H03F 2200/271 . the DC-isolation amplifier, e.g. chopper amplifier, modulation/demodulation amplifier, uses capacitive isolation means, e.g. capacitors
- H03F 2200/273 . the DC-isolation amplifier, e.g. chopper amplifier, modulation/demodulation amplifier, uses inductive isolation means, e.g. transformers
- H03F 2200/276 . the DC-isolation amplifier, e.g. chopper amplifier, modulation/demodulation amplifier, uses optical isolation means, e.g. optical couplers
- H03F 2200/279 . the level shifting stage between two amplifying stages being realised by an explicit differential amplifier
- H03F 2200/282 . the level shifting stage between two amplifying stages being realised by a diode

- H03F 2200/285 . the level shifting stage between two amplifying stages being realised by an emitter follower
- H03F 2200/288 . the level shifting stage between two amplifying stages being realised by a resistor or potentiometer
- H03F 2200/291 . the level shifting stage between two amplifying stages being realised by a source follower
- H03F 2200/294 . the amplifier being a low noise amplifier [LNA]
- H03F 2200/297 . the loading circuit of an amplifying stage comprising a capacitor
- H03F 2200/301 . the loading circuit of an amplifying stage comprising a coil
- H03F 2200/303 . the loading circuit of an amplifying stage comprising a diode or diode coupled transistor
- H03F 2200/306 . the loading circuit of an amplifying stage being a parallel resonance circuit
- H03F 2200/309 . the loading circuit of an amplifying stage being a series resonance circuit
- H03F 2200/31 . the switching power stage comprising circuitry for emulating the behaviour of a bootstrap diode
- H03F 2200/312 . the loading circuit of an amplifying stage comprising one or more switches
- H03F 2200/315 . the loading circuit of an amplifying stage comprising a transmission line
- H03F 2200/318 . A matching circuit being used as coupling element between two amplifying stages
- H03F 2200/321 . Use of a microprocessor in an amplifier circuit or its control circuit
- H03F 2200/324 . An amplitude modulator or demodulator being used in the amplifier circuit
- H03F 2200/327 . Amplitude shift keying modulation being used in an amplifying circuit
- H03F 2200/33 . Bridge form coupled amplifiers; H-form coupled amplifiers
- H03F 2200/331 . Sigma delta modulation being used in an amplifying circuit
- H03F 2200/333 . A frequency modulator or demodulator being used in the amplifier circuit
- H03F 2200/336 . A I/Q, i.e. phase quadrature, modulator or demodulator being used in an amplifying circuit
- H03F 2200/339 . Pulse amplitude modulation being used in an amplifying circuit
- H03F 2200/342 . Pulse code modulation being used in an amplifying circuit
- H03F 2200/345 . Pulse density modulation being used in an amplifying circuit
- H03F 2200/348 . Pulse frequency modulation being used in an amplifying circuit

- H03F 2200/351 . Pulse width modulation being used in an amplifying circuit
- H03F 2200/354 . the amplifier comprising MOS which are biased in the moderate inversion region
- H03F 2200/357 . the amplifier comprising MOS which are biased in the weak inversion region
- H03F 2200/36 . the amplifier comprising means for increasing the bandwidth
- H03F 2200/361 . Transistor with multiple collectors
- H03F 2200/363 . Transistor with multiple emitters
- H03F 2200/366 . Multiple MOSFETs are coupled in parallel
- H03F 2200/369 . A negative impedance circuit being added to an amplifier circuit
- H03F 2200/372 . Noise reduction and elimination in amplifier
- H03F 2200/375 . Circuitry to compensate the offset being present in an amplifier
- H03F 2200/378 . A variable capacitor being added in the output circuit, e.g. collector, drain, of an amplifier stage
- H03F 2200/381 . An active variable resistor, e.g. controlled transistor, being coupled in the output circuit of an amplifier to control the output
- H03F 2200/384 . Amplifier without output filter, i.e. directly connected to the load
- H03F 2200/387 . A circuit being added at the output of an amplifier to adapt the output impedance of the amplifier
- H03F 2200/39 . Different band amplifiers are coupled in parallel to broadband the whole amplifying circuit
- H03F 2200/391 . the output circuit of an amplifying stage comprising an LC-network
- H03F 2200/393 . A measuring circuit being coupled to the output of an amplifier
- H03F 2200/396 . the output of an amplifier can be switched on or off by a switch to couple the output signal to a load
- H03F 2200/399 . A parallel resonance being added in shunt in the output circuit, e.g. base, gate, of an amplifier stage
- H03F 2200/402 . A series resonance being added in shunt in the output circuit, e.g. base, gate, of an amplifier stage
- H03F 2200/405 . the output amplifying stage of an amplifier comprising more than three power stages
- H03F 2200/408 . the output amplifying stage of an amplifier comprising three power stages
- H03F 2200/411 . the output amplifying stage of an amplifier comprising two power stages

- H03F 2200/414 . A switch being coupled in the output circuit of an amplifier to switch the output on/off
- H03F 2200/417 . A switch coupled in the output circuit of an amplifier being controlled by a circuit
- H03F 2200/42 . the input to the amplifier being made by capacitive coupling means
- H03F 2200/421 . Multiple switches coupled in the output circuit of an amplifier are controlled by a circuit
- H03F 2200/423 . Amplifier output adaptation especially for transmission line coupling purposes, e.g. impedance adaptation
- H03F 2200/426 . the amplifier comprising circuitry for protection against overload
- H03F 2200/429 . Two or more amplifiers or one amplifier with filters for different frequency bands are coupled in parallel at the input or output
- H03F 2200/432 . Two or more amplifiers of different type are coupled in parallel at the input or output, e.g. a class D and a linear amplifier, a class B and a class A amplifier
- H03F 2200/435 . A peak detection being used in a signal measuring circuit in a controlling circuit of an amplifier
- H03F 2200/438 . Separate feedback of amplitude and phase signals being present
- H03F 2200/441 . Protection of an amplifier being implemented by clamping means
- H03F 2200/444 . Diode used as protection means in an amplifier, e.g. as a limiter or as a switch
- H03F 2200/447 . the amplifier being protected to temperature influence
- H03F 2200/45 . the load of the amplifier being a capacitive element, e.g. CRT
- H03F 2200/451 . the amplifier being a radio frequency amplifier
- H03F 2200/453 . Controlling being realised by adding a replica circuit or by using one among multiple identical circuits as a replica circuit
- H03F 2200/456 . A scaled replica of a transistor being present in an amplifier
- H03F 2200/459 . Ripple reduction circuitry being used in an amplifying circuit
- H03F 2200/462 . the current being sensed
- H03F 2200/465 . Power sensing
- H03F 2200/468 . the temperature being sensed
- H03F 2200/471 . the voltage being sensed
- H03F 2200/474 . A current mirror being used as sensor
- H03F 2200/477 . Paralleled transistors are used as sensors

- H03F 2200/48 . the output of the amplifier being coupled out by a capacitor
- H03F 2200/481 . A resistor being used as sensor
- H03F 2200/483 . A shunting switch being paralleled to the sensor
- H03F 2200/486 . the current in the load of an amplifying stage being sensed by a torus
- H03F 2200/489 . A coil being added in the source circuit of a common source stage, e.g. as degeneration means
- H03F 2200/492 . A coil being added in the source circuit of a transistor amplifier stage as degenerating element
- H03F 2200/495 . A parallel resonance circuit being added in the source circuit of a FET amplifier
- H03F 2200/498 . A resistor being added in the source circuit of a transistor amplifier stage as degenerating element
- H03F 2200/501 . A series resonance circuit being added in the source circuit of a FET amplifier
- H03F 2200/504 . the supply voltage or current being continuously controlled by a controlling signal, e.g. the controlling signal of a transistor implemented as variable resistor in a supply path for, an IC-block showed amplifier
- H03F 2200/507 . A switch being used for switching on or off a supply or supplying circuit in an IC-block amplifier circuit
- H03F 2200/51 . Capacitor in positive feedback circuit of an amplifier circuit to bootstrap a resistor
- H03F 2200/511 . Many discrete supply voltages or currents or voltage levels can be chosen by a control signal in an IC-block amplifier circuit
- H03F 2200/513 . the amplifier being made for low supply voltages
- H03F 2200/516 . Some amplifier stages of an amplifier use supply voltages of different value
- H03F 2200/519 . the bias or supply voltage or current of the drain side of a FET amplifier being controlled to be on or off by a switch
- H03F 2200/522 . the bias or supply voltage or current of the gate side of a FET amplifier being controlled to be on or off by a switch
- H03F 2200/525 . the bias or supply voltage or current of the source side of a FET amplifier being controlled to be on or off by a switch
- H03F 2200/528 . the temperature dependence being controlled by referencing to the band gap
- H03F 2200/531 . the temperature difference between different chips being controlled
- H03F 2200/534 . Transformer coupled at the input of an amplifier
- H03F 2200/537 . A transformer being used as coupling element between two amplifying stages

- H03F 2200/54 . Two or more capacitor coupled amplifier stages in cascade
- H03F 2200/541 . Transformer coupled at the output of an amplifier
- H03F 2200/543 . A transmission line being used as coupling element between two amplifying stages
- H03F 2200/546 . A tunable capacitance being present in an amplifier circuit
- H03F 2200/549 . the amplifier comprising means to emulate the vacuum tube behaviour
- H03F 2200/552 . the amplifier being made for video applications
- H03F 2200/555 . A voltage generating circuit being realised for biasing different circuit elements
- H03F 2200/57 . Separate feedback of real and complex signals being present
- H03F 2200/61 . the cascode amplifier has more than one common gate stage
- H03F 2200/63 . the amplifier being suitable for CATV applications
- H03F 2200/66 . Clipping circuitry being present in an amplifier, i.e. the shape of the signal being modified
- H03F 2200/69 . the amplifier stage being a common drain coupled MOSFET, i.e. source follower
- H03F 2200/72 . the amplifier stage being a common gate configuration MOSFET
- H03F 2200/75 . the amplifier stage being a common source configuration MOSFET
- H03F 2200/78 . A comparator being used in a controlling circuit of an amplifier
- H03F 2200/81 . Inputs or outputs are crossed during a first switching time, not crossed during a second switching time
- H03F 2200/84 . A cross coupling circuit being realized by current mirrors
- H03F 2200/87 . the cross coupling circuit being realised only by MOSFETs
- H03F 2200/91 . the amplifier has a current mode topology
- H03F 2200/93 . Two or more transistors are coupled in a Darlington composite transistor configuration, all transistors being of the same type
- H03F 2200/96 . Two or more complementary transistors are coupled in a Darlington composite transistor configuration
- H03F 2200/99 . A diode as rectifier being used as a detecting circuit in an amplifying circuit

**Guidance heading:**

**H03F 2201/00 Indexing scheme relating to details of amplifiers with only discharge tubes, only semiconductor devices or only unspecified devices as amplifying elements**



**covered by [H03F 1/00](#)**

- H03F 2201/32 . Indexing scheme relating to modifications of amplifiers to reduce non-linear distortion
- H03F 2201/3203 . . the amplifier comprising means for back off control in order to reduce distortion
- H03F 2201/3206 . . Multiple channels are combined and amplified by only one amplifier
- H03F 2201/3209 . . the amplifier comprising means for compensating memory effects
- H03F 2201/3212 . . Using a control circuit to adjust amplitude and phase of a signal in a signal path
- H03F 2201/3215 . . To increase the output power or efficiency
- H03F 2201/3218 . . the main amplifier or error amplifier being a feedforward amplifier
- H03F 2201/3221 . . Predistortion by overamplifying in a feedforward stage the distortion signal to have a combined main signal and "negative" distortion to form the predistorted signal for a further stage. so that after amplification in the further stage only the amplified main signal remains
- H03F 2201/3224 . . Predistortion being done for compensating memory effects
- H03F 2201/3227 . . Adaptive predistortion based on amplitude, envelope or power level feedback from the output of the main amplifier
- H03F 2201/3231 . . Adaptive predistortion using phase feedback from the output of the main amplifier
- H03F 2201/3233 . . Adaptive predistortion using lookup table, e.g. memory, RAM, ROM, LUT, to generate the predistortion
- H03F 2201/3236 . . A generated signal, e.g. a pulse or an inverted synchronous signal, being added to avoid certain conditions, e.g. clipping

**H03F 2203/00 Indexing scheme relating to amplifiers with only discharge tubes or only semiconductor devices as amplifying elements covered by [H03F 3/00](#)**

- H03F 2203/20 . Indexing scheme relating to power amplifiers, e.g. Class B amplifiers, Class C amplifiers
- H03F 2203/21 . . with semiconductor devices only
- H03F 2203/211 . . . using a combination of several amplifiers
- H03F 2203/21103 . . . . An impedance adaptation circuit being added at the input of a power amplifier stage
- H03F 2203/21106 . . . . An input signal being distributed in parallel over the inputs of a plurality of power amplifiers
- H03F 2203/21109 . . . . An input signal being distributed by switching to a plurality of paralleled power amplifiers
- H03F 2203/21112 . . . . An filter circuit being added at the input of a power amplifier stage
- H03F 2203/21115 . . . . An input signal dependant signal being measured by current measuring at the input of a power amplifier
- H03F 2203/21118 . . . . An input signal dependant signal being measured by power measuring at the input of a power amplifier
- H03F 2203/21121 . . . . An input signal dependant signal being measured by voltage measuring at the input of a power amplifier
- H03F 2203/21124 . . . . A parallel resonance circuit being coupled at the input of a power amplifier
- H03F 2203/21127 . . . . the input bias current of a power amplifier being controlled, e.g. by an active current source or a current mirror
- H03F 2203/21131 . . . . the input bias voltage of a power amplifier being controlled, e.g. by a

		potentiometer or an emitter follower
H03F 2203/21133	....	A series resonance circuit being coupled at the input of a power amplifier
H03F 2203/21136	....	An input signal of a power amplifier being on/off switched
H03F 2203/21139	....	An impedance adaptation circuit being added at the output of a power amplifier stage
H03F 2203/21142	....	Output signals of a plurality of power amplifiers are parallel combined to a common output
H03F 2203/21145	....	Output signals are combined by switching a plurality of paralleled power amplifiers to a common output
H03F 2203/21148	....	An output signal of a power amplifier being controlled by controlling current signal, e.g. by controlled current mirror
H03F 2203/21151	....	An output signal of a power amplifier being controlled by controlling power signal, e.g. by an inductive coupler
H03F 2203/21154	....	An output signal of a power amplifier being controlled by controlling voltage signal
H03F 2203/21157	....	A filter circuit being added at the output of a power amplifier stage
H03F 2203/21161	....	An output signal dependant signal being measured by current measuring at the output of a power amplifier
H03F 2203/21163	....	An output signal dependant signal being measured by power measuring, e.g. by an inductive coupler, at the output of a power amplifier
H03F 2203/21166	....	An output signal dependant signal being measured by voltage measuring at the output of a power amplifier
H03F 2203/21169	....	A parallel resonance circuit being coupled at the output of a power amplifier
H03F 2203/21172	....	A series resonance circuit being coupled at the output of a power amplifier
H03F 2203/21175	....	An output signal of a power amplifier being on/off switched
H03F 2203/21178	....	Power transistors are made by coupling a plurality of single transistors in parallel
H03F 2203/21181	....	the supply current of a power amplifier being continuously controlled, e.g. by controlling current sources or resistors
H03F 2203/21184	....	the supply current of a power amplifier being continuously measured, e.g. by a resistor, a current mirror, to produce a controlling signal
H03F 2203/21187	....	the supply current of a power amplifier being measured discontinuously in time, e.g. by sampling, to produce a controlling signal
H03F 2203/21191	....	the supply current of a power amplifier being switchable controlled, e.g. by choosing different current sources or resistors
H03F 2203/21193	....	the supply voltage of a power amplifier being continuously controlled, e.g. by an active potentiometer
H03F 2203/21196	....	the supply voltage of a power amplifier being switchable controlled
H03F 2203/30	.	Indexing scheme relating to single-ended push-pull [SEPP]; Phase-splitters therefor
H03F 2203/30003	..	the SEPP amplifier stage comprising calibration possibility
H03F 2203/30006	..	the push and the pull stages of the SEPP amplifier are both current mirrors
H03F 2203/30009	..	the push and pull stages of the SEPP amplifier are both cascode current mirrors
H03F 2203/30012	..	the two SEPP amplifying transistors are Darlington composite transistors
H03F 2203/30015	..	An input signal dependent control signal controls the bias of an output stage in the SEPP
H03F 2203/30018	..	A series coupled active resistor and capacitor are coupled in a feedback circuit of a SEPP amplifier

- H03F 2203/30021 .. A capacitor being coupled in a feedback circuit of a SEPP amplifier
- H03F 2203/30024 .. the SEPP bias current being controlled by a control signal from a feedback circuit
- H03F 2203/30027 .. the SEPP bias voltage being controlled by a control signal from a feedback circuit
- H03F 2203/30031 .. A resistor being coupled as feedback circuit in the SEPP amplifier
- H03F 2203/30033 .. A series coupled resistor and capacitor are coupled in a feedback circuit of a SEPP amplifier
- H03F 2203/30036 .. A feedback circuit to stabilise the SEPP being used
- H03F 2203/30039 .. the SEPP bias current being controlled by a control signal from a feedforward circuit
- H03F 2203/30042 .. the SEPP bias voltage being controlled by a control signal from a feedforward circuit
- H03F 2203/30045 .. the SEPP power transistors comprising measuring push or pull transistors to produce a controlling signal
- H03F 2203/30048 .. the SEPP amplifier has multiple SEPP outputs from paralleled output stages coupled in one or more outputs
- H03F 2203/30051 .. the SEPP amplifying transistors are composed of multiple coupled transistors
- H03F 2203/30054 .. the SEPP power transistors are realised as paralleled cascode coupled transistors, i.e. the push or the pull transistors
- H03F 2203/30057 .. the SEPP power transistors are realised as paralleled FETs, i.e. the push or the pull transistor
- H03F 2203/30061 .. One or more current mirrors are used as bias circuit or stages for the push or pull stages
- H03F 2203/30063 .. A differential amplifier being used in the bias circuit or in the control circuit of the SEPP-amplifier
- H03F 2203/30066 .. A optical element being used in the bias circuit of the SEPP-amplifier
- H03F 2203/30069 .. A SEPP amplifier with a reactive element in the bias circuit
- H03F 2203/30072 .. the SEPP has a power supply switchable by a controlling signal derived from the input signal
- H03F 2203/30075 .. the SEPP has a power supply switchable by a controlling signal derived from the output signal
- H03F 2203/30078 .. A resistor being added in the pull stage of the SEPP amplifier
- H03F 2203/30081 .. the pull transistor circuit comprising one or more capacitors
- H03F 2203/30084 .. the pull circuit of the SEPP amplifier being a cascode circuit
- H03F 2203/30087 .. Only the bias of the pull transistor of the SEPP being dynamically controlled by the input signal
- H03F 2203/30091 .. the pull side of the SEPP amplifier has an extra drive follower stage to control this pull side
- H03F 2203/30093 .. the pull side of the SEPP amplifier has an extra drive inverter stage to control this pull side
- H03F 2203/30096 .. An op amp being used as extra drive amp for the pull side of the SEPP
- H03F 2203/30099 .. the pull transistor being gated by a switching element
- H03F 2203/30102 .. the pull transistor has a measuring transistor for controlling purposes
- H03F 2203/30105 .. the pull transistor of the asymmetrically driven SEPP amplifier being a driven current mirror
- H03F 2203/30108 .. the pull transistor of the SEPP amplifier being a cascode current mirror
- H03F 2203/30111 .. A resistor being added in the push stage of the SEPP amplifier
- H03F 2203/30114 .. the push transistor circuit comprising one or more capacitors

- H03F 2203/30117 . . the push circuit of the SEPP amplifier being a cascode circuit
- H03F 2203/30121 . . Only the bias of the push transistor of the SEPP being dynamically controlled by the input signal
- H03F 2203/30123 . . the push side of the SEPP amplifier has an extra drive follower stage to control this push side
- H03F 2203/30126 . . the push side of the SEPP amplifier has an extra drive inverter stage to control this push side
- H03F 2203/30129 . . An op amp being used as extra drive amp for the push side of the SEPP
- H03F 2203/30132 . . the push transistor being gated by a switching element
- H03F 2203/30135 . . the push transistor has a measuring transistor for controlling purposes
- H03F 2203/30138 . . the push transistor of the asymmetrically driven SEPP amplifier being a driven current mirror
- H03F 2203/30141 . . the push transistor of the SEPP amplifier being a cascode current mirror
- H03F 2203/30144 . . the SEPP comprising a reactive element in the amplifying circuits
- H03F 2203/30147 . . the current sink of the push driven, i.e. source driven SEPP amplifier being a current mirror
- H03F 2203/30151 . . the current sink of the push driven, i.e. source driven SEPP amplifier being a cascode current mirror
- H03F 2203/30153 . . the current source of the pull driven, i.e. sink driven SEPP amplifier being a current mirror
- H03F 2203/30156 . . the current source of the pull driven, i.e. sink driven SEPP amplifier being a cascode current mirror
  
- H03F 2203/45 . . Indexing scheme relating to differential amplifiers
- H03F 2203/45002 . . the addition of two signals being made by addition of two currents by coupling the outputs of two current mirrors in parallel
- H03F 2203/45004 . . the addition of two signals being made by addition of two currents by coupling two current sources in parallel
- H03F 2203/45006 . . the addition of two signals being made by two emitter or source coupled followers
- H03F 2203/45008 . . the addition of two signals being made by a resistor addition circuit for producing the common mode signal
- H03F 2203/45011 . . the addition of two signals being made in a source degeneration circuit of a current mirror for producing the common mode signal
- H03F 2203/45012 . . the addition of two signals being made in a switched capacitor circuit for producing the common mode signal
- H03F 2203/45014 . . the addition of two signals being made in the tail circuit of a differential amplifier for producing the common mode signal
- H03F 2203/45016 . . the addition of two signals being made by paralleling two triode biased transistors for producing the common mode signal
- H03F 2203/45018 . . the differential amplifier amplifying transistors have added cross couplings
- H03F 2203/45021 . . One or more added diodes to the amplifying transistors in the differential amplifier
- H03F 2203/45022 . . One or more added resistors to the amplifying transistors in the differential amplifier
- H03F 2203/45024 . . the differential amplifier amplifying transistors are cascode coupled transistors
- H03F 2203/45026 . . One or more current sources are added to the amplifying transistors in the differential amplifier
- H03F 2203/45028 . . the differential amplifier amplifying transistors are folded cascode coupled transistors
- H03F 2203/45031 . . the differential amplifier amplifying transistors are compositions of multiple

- transistors
- H03F 2203/45032 . . the differential amplifier amplifying transistors are multiple paralleled transistors
- H03F 2203/45034 . . One or more added reactive elements, capacitive or inductive elements, to the amplifying transistors in the differential amplifier
- H03F 2203/45036 . . the differential amplifier amplifying transistors are single transistors
- H03F 2203/45038 . . One or more current sources are added or changed as balancing means to reduce the offset of the dif amp
- H03F 2203/45041 . . Fuses are blown to balance the dif amp to reduce the offset of the dif amp
- H03F 2203/45042 . . One or more resistors are added or changed as balancing to reduce the offset of the dif amp
- H03F 2203/45044 . . One or more switches are opened or closed to balance the dif amp to reduce the offset of the dif amp
- H03F 2203/45046 . . the base current of the amplifying transistors of a dif amp being compensated for providing a greater input impedance of the amplifier
- H03F 2203/45048 . . Calibrating and standardising a dif amp
- H03F 2203/45051 . . Two or more differential amplifiers cascade coupled
- H03F 2203/45052 . . the cascode stage of the cascode differential amplifier being controlled by a controlling signal, which controlling signal can also be the input signal
- H03F 2203/45054 . . the cascode stage of the cascode dif amp being a current mirror
- H03F 2203/45056 . . One or both transistors of the cascode stage of a differential amplifier being composed of more than one transistor
- H03F 2203/45058 . . the cascode stage of the differential amplifier comprising a reactive element
- H03F 2203/45061 . . the common mode reference signal being taken or deducted from the one or more inputs of the differential amplifier
- H03F 2203/45062 . . the common mode signal, e.g. voltage or current being added to the cascode stage of the cascode or folded cascode differential amplifier
- H03F 2203/45064 . . the resulting deducted common mode signal being added to the folding circuit of the folded differential amplifier
- H03F 2203/45066 . . the resulting deducted common mode signal being added at the one or more inputs of the differential amplifier
- H03F 2203/45068 . . the resulting deducted common mode signal being added at the one or more outputs of the differential amplifier
- H03F 2203/45071 . . the resulting deducted common mode signal being added at the substrate or body regions of the components of the differential amplifier
- H03F 2203/45072 . . the common mode voltage or current signal being added to the tail circuit of the differential amplifier
- H03F 2203/45074 . . A comparator circuit compares the common mode signal to a reference before controlling the differential amplifier or related stages
- H03F 2203/45076 . . the resulting deducted common mode signal being added to or controls the differential amplifier, and being a current signal
- H03F 2203/45078 . . the common mode signal being taken or deducted from the one or more inputs of the differential amplifier
- H03F 2203/45081 . . the common mode signal being level shifted before using it for controlling or adding
- H03F 2203/45082 . . the common mode signal being taken or deducted from the one or more outputs of the differential amplifier
- H03F 2203/45084 . . the common mode signal circuit comprising one or more inductive or capacitive elements, e.g. filter circuitry
- H03F 2203/45086 . . the common mode signal being taken or deducted from the tail circuit of the

- differential amplifier
- H03F 2203/45088 . . the resulting deducted common mode signal being added to or controls the differential amplifier, and being a voltage signal
  - H03F 2203/45091 . . Two complementary type differential amplifiers are paralleled, e.g. one of the p-type and one of the n-type
  - H03F 2203/45092 . . Two current sources bias one set of two common base transistors cascaded with two other common base transistors, the common base transistors being driven complementary
  - H03F 2203/45094 . . the dif amp being realized by coupling the emitters respectively sources of two common collector respectively drain transistors of a first type to the emitters respectively sources of two common base respectively gate transistors of a second complementary type
  - H03F 2203/45096 . . the difference of two signals being made by e.g. combining two or more current mirrors, e.g. differential current mirror
  - H03F 2203/45098 . . Two current mirrors coupled in a subtracting configuration
  - H03F 2203/45101 . . Control of the DC level being present
  - H03F 2203/45102 . . A diode being used as clamping element at the input of the dif amp
  - H03F 2203/45104 . . A diode being used as clamping element at the loading circuit of the dif amp
  - H03F 2203/45106 . . A diode being used as clamping element at the output of the dif amp
  - H03F 2203/45108 . . A diode being used as level shifter between stages or in a follower in relation with a dif amp
  - H03F 2203/45111 . . Two dif amps of the same type are used one dif amp for each input signal
  - H03F 2203/45112 . . the biasing of the differential amplifier being controlled from the input or the output signal
  - H03F 2203/45114 . . the differential amplifier contains another differential amplifier in its feedback circuit
  - H03F 2203/45116 . . Feedback coupled to the input of the differential amplifier
  - H03F 2203/45118 . . At least one reactive element being added to at least one feedback circuit of a dif amp
  - H03F 2203/45121 . . A floating gate element being part of a dif amp
  - H03F 2203/45122 . . the folded cascode stage of the folded cascode differential amplifier being controlled by a controlling signal
  - H03F 2203/45124 . . the folded cascode stage of the folded cascode dif amp being a current mirror
  - H03F 2203/45126 . . One or both transistors of the folded cascode stage of a folded cascode dif amp are composed of more than one transistor
  - H03F 2203/45128 . . the folded cascode stage of the folded cascode dif amp contains a reactive element
  - H03F 2203/45131 . . A follower being added between the dif amp and other explicit stages in the amplifying circuit
  - H03F 2203/45132 . . A source follower using multiple single follower stages cascaded in a composed follower being added to the dif amp
  - H03F 2203/45134 . . the whole differential amplifier together with other coupled stages being fully differential realised
  - H03F 2203/45136 . . One differential amplifier in IC-block form being shown
  - H03F 2203/45138 . . Two or more differential amplifiers in IC-block form are combined, e.g. measuring amplifiers
  - H03F 2203/45141 . . A cross coupled pair of transistors being added in the input circuit of a differential amplifier
  - H03F 2203/45142 . . At least one diode being added at the input of a dif amp



- H03F 2203/45144 . . At least one follower being added at the input of a dif amp
- H03F 2203/45146 . . At least one op amp being added at the input of a dif amp
- H03F 2203/45148 . . At least one reactive element being added at the input of a dif amp
- H03F 2203/45151 . . At least one resistor being added at the input of a dif amp
- H03F 2203/45152 . . Balancing means being added at the input of a dif amp to reduce the offset of the dif amp
- H03F 2203/45154 . . the bias at the input of the amplifying transistors being controlled
- H03F 2203/45156 . . At least one capacitor being added at the input of a dif amp
- H03F 2203/45158 . . One or more diodes coupled at the inputs of a dif amp as clamping elements
- H03F 2203/45161 . . One or more diodes coupled at the inputs of a dif amp as level shifting circuit elements
- H03F 2203/45162 . . A parallel resonance circuit being added in the one or more input circuits of the dif amp
- H03F 2203/45164 . . A series resonance circuit being added in the one or more input circuits of the dif amp
- H03F 2203/45166 . . Only one input of the dif amp being used for an input signal
- H03F 2203/45168 . . A dif amp being used as input stage to one or more other non-differential stages
- H03F 2203/45171 . . the input signal being switched to the one or more input terminals of the differential amplifier
- H03F 2203/45172 . . A transformer being added at the input of the dif amp
- H03F 2203/45174 . . the application of the differential amplifier being in an integrator circuit
- H03F 2203/45176 . . A cross coupling circuit, e.g. consisting of two cross coupled transistors, being added in the load circuit of the amplifying transistors of a differential amplifier
- H03F 2203/45178 . . the differential amplifier contains one or more extra resistors in the active load circuit
- H03F 2203/45181 . . Compensation of unbalanced loading in dif amps, e.g. unbalancing by connecting unequal circuits on both load circuits of the dif amp
- H03F 2203/45182 . . the differential amplifier contains one or more cascode current mirrors in the load
- H03F 2203/45184 . . the differential amplifier has one or more cascode current sources in the load
- H03F 2203/45186 . . the differential amplifier contains clamping components in the load circuit
- H03F 2203/45188 . . the differential amplifier contains one or more current sources in the load
- H03F 2203/45191 . . One or more diodes not belonging to a current mirror as loads of a dif amp
- H03F 2203/45192 . . the differential amplifier contains current mirrors comprising diodes which act as a load for the differential amplifier
- H03F 2203/45194 . . At least one active load circuit of the two load circuits in a differential amplifier being realised with a combination of more than one transistor
- H03F 2203/45196 . . A differential amplifier with one or more parallel coupled LC-circuits as load
- H03F 2203/45198 . . A parallel resonance circuit being added in the one or more load circuits of the dif amp
- H03F 2203/45201 . . the differential amplifier contains one or more reactive elements, i.e. capacitive or inductive elements, in the load
- H03F 2203/45202 . . the differential amplifier contains only resistors in the load
- H03F 2203/45204 . . A series resonance circuit being added in the one or more load circuits of the dif amp
- H03F 2203/45206 . . One or two switches are coupled in the loading circuit of the dif amp
- H03F 2203/45208 . . the dif amp being of the long tail pair type, one current source being coupled to the

- common emitter of the amplifying transistors
- H03F 2203/45211 .. the amplifying transistors have multiple collectors with a cross coupling
- H03F 2203/45212 .. the differential amplifier being designed to have a reduced offset
- H03F 2203/45214 .. Offset in a differential amplifier being reduced by control of the substrate voltage, the voltage being either fixed or variable
- H03F 2203/45216 .. A cross coupling circuit being added at the output terminals of the amplifying transistors of a differential amplifier
- H03F 2203/45218 .. Diode clamping means are present at the output of a differential amplifier
- H03F 2203/45221 .. the output signal being taken from the two complementary outputs of the differential amplifier
- H03F 2203/45222 .. the differential amplifier output being directly controlled by a feedback or feedforward circuit coupled at the output of the dif amp
- H03F 2203/45224 .. One output of the differential amplifier being taken into consideration
- H03F 2203/45226 .. the output signal being switched taken from the one or more output terminals of the differential amplifier
- H03F 2203/45228 .. A transformer being added at the output or the load circuit of the dif amp
- H03F 2203/45231 .. Two dif amps of the cascode type are paralleled at their input gates or bases
- H03F 2203/45232 .. Two dif amps of the folded cascode type are paralleled at their input gates or bases
- H03F 2203/45234 .. Two dif amps, one of them being of the cascode type and the other one of the folded cascode type, are paralleled at their input gates or bases
- H03F 2203/45236 .. Two dif amps realised in MOS or JFET technology, one of them being of the p-channel type and the other one of the n-channel type, are coupled in parallel with their gates
- H03F 2203/45238 .. Two dif amps realised in FET technology, the dif amps being either both of the NMOS type or both of the PMOS type, are coupled in parallel with their gates and their drains
- H03F 2203/45241 .. Two dif amps realised in MOS or JFET technology, the dif amps being either both of the p-channel type or both of the n-channel type, are coupled in parallel with their gates
- H03F 2203/45242 .. Two dif amps are paralleled at their inputs, the dif amps being of different types, e.g. one long tail type and one complementary or pi type
- H03F 2203/45244 .. the differential amplifier contains one or more explicit bias circuits, e.g. to bias the tail current sources, to bias the load transistors
- H03F 2203/45246 .. the dif amp being biased in the subthreshold region
- H03F 2203/45248 .. the dif amp being designed for improving the slew rate
- H03F 2203/45251 .. the dif amp has a cross coupling circuit in the source circuit of the amplifying transistors
- H03F 2203/45252 .. Diodes are added in the source circuit of the amplifying FETs of the dif amp
- H03F 2203/45254 .. A parallel resonance circuit being added in the one or more source circuits of the amplifying FETs of the dif amp
- H03F 2203/45256 .. One or more reactive elements are added in the source circuit of the amplifying FETs of the dif amp
- H03F 2203/45258 .. Resistors are added in the source circuit of the amplifying FETs of the dif amp
- H03F 2203/45261 .. A series resonance circuit being added in the one or more source circuits of the amplifying FETs of the dif amp
- H03F 2203/45262 .. the two amplifying FETs, amplifying two complementary input signals, are not source coupled, i.e. no tail being present



- H03F 2203/45264 . . the dif amp comprising frequency or phase stabilisation means
- H03F 2203/45266 . . the stage cascaded to the dif amp being an asymmetrical follower stage
- H03F 2203/45268 . . A common gate stage being coupled at the one or more outputs of the dif amp
- H03F 2203/45271 . . the output current being reduced by a transistor which being controlled by the input signal to sink current
- H03F 2203/45272 . . the output current being increased by a transistor which being controlled by the input signal to source current
- H03F 2203/45274 . . Level shifting stages are added to the differential amplifier at a position other than the one or more inputs of the dif amp
- H03F 2203/45276 . . An op amp as stage being coupled to the output of a dif amp
- H03F 2203/45278 . . Two SEPP stages are added to the differential amplifier, the outputs of the two SEPP stages being the two outputs of the whole amplifier
- H03F 2203/45281 . . One SEPP output stage being added to the differential amplifier
- H03F 2203/45282 . . the differential amplifier being coupled to a symmetrical follower output stage
- H03F 2203/45284 . . Sensing the temperature dependence by a temperature dependant sensor, e.g. a resistor, a diode
- H03F 2203/45286 . . the temperature dependence of a differential amplifier being controlled
- H03F 2203/45288 . . Differential amplifier with circuit arrangements to enhance the transconductance
- H03F 2203/45291 . . the active amplifying circuit [AAC] comprising balancing means
- H03F 2203/45292 . . the AAC comprising biasing means controlled by the signal
- H03F 2203/45294 . . the AAC comprising biasing means to stabilise itself
- H03F 2203/45296 . . the AAC comprising one or more discrete capacitive elements, e.g. a transistor coupled as capacitor
- H03F 2203/45298 . . the AAC comprising one or more combinations of discrete capacitor and resistor elements, e.g. active elements using a transistor as a capacitor or as a resistor
- H03F 2203/45301 . . there are multiple cascaded folded or not folded common gate stages of a cascode dif amp
- H03F 2203/45302 . . the common gate stage of a cascode dif amp being controlled
- H03F 2203/45304 . . the common gate stage of a BIFET cascode dif amp being implemented fully by FETs
- H03F 2203/45306 . . the common gate stage implemented as dif amp eventually for cascode dif amp
- H03F 2203/45308 . . the common gate stage of a cascode dif amp being implemented as one mirror circuit
- H03F 2203/45311 . . the common gate stage of a cascode dif amp being implemented by multiple transistors
- H03F 2203/45312 . . there being only one common gate stage of a cascode dif amp
- H03F 2203/45314 . . the AAC comprising clamping means, e.g. diodes
- H03F 2203/45316 . . the AAC comprising one or more discrete inductive elements or coils
- H03F 2203/45318 . . the AAC comprising a cross coupling circuit, e.g. two extra transistors cross coupled
- H03F 2203/45321 . . the common source stage of a BIFET cascode dif amp being implemented fully by FETs
- H03F 2203/45322 . . One or more current sources are added to the AAC
- H03F 2203/45324 . . the AAC comprising a Darlington transistor circuit
- H03F 2203/45326 . . the AAC comprising one or more extra diodes, e.g. as level shifter, as diode coupled transistors

- H03F 2203/45328 . . the AAC comprising one diode coupled AAC-transistor in a follower combination with the other AAC circuit part
- H03F 2203/45331 . . the AAC comprising one or more diodes coupled as a shunt between the AAC-transistors in the AAC
- H03F 2203/45332 . . the AAC comprising one or more capacitors as feedback circuit elements
- H03F 2203/45334 . . the AAC comprising one or more dif amps as feedback circuit elements
- H03F 2203/45336 . . the AAC comprising one or more resistors as feedback circuit elements
- H03F 2203/45338 . . the AAC comprising one or more series circuits of a resistor and a capacitor as feedback circuit elements
- H03F 2203/45341 . . the AAC comprising controlled floating gates
- H03F 2203/45342 . . the AAC comprising control means on a back gate of the AAC
- H03F 2203/45344 . . At least one of the AAC sub-circuits being a current mirror
- H03F 2203/45346 . . the AAC comprising one or more FETs with multiple drains
- H03F 2203/45348 . . the AAC comprising one or more FETs with multiple gates
- H03F 2203/45351 . . the AAC comprising one or more FETs with multiple sources
- H03F 2203/45352 . . the AAC comprising a combination of a plurality of transistors, e.g. Darlington coupled transistors
- H03F 2203/45354 . . the AAC comprising offset means
- H03F 2203/45356 . . the AAC comprising one or more op-amps, e.g. IC-blocks
- H03F 2203/45358 . . the AAC comprising multiple transistors parallel coupled at their sources and drains only, e.g. in a cascode dif amp, only those forming the composite common source transistor
- H03F 2203/45361 . . the AAC comprising multiple transistors parallel coupled at their drains only, e.g. in a cascode dif amp, only those forming the composite common source transistor
- H03F 2203/45362 . . the AAC comprising multiple transistors parallel coupled at their gates and drains only, e.g. in a cascode dif amp, only those forming the composite common source transistor
- H03F 2203/45364 . . the AAC comprising multiple transistors parallel coupled at their gates and sources only, e.g. in a cascode dif amp, only those forming the composite common source transistor
- H03F 2203/45366 . . the AAC comprising multiple transistors parallel coupled at their gates only, e.g. in a cascode dif amp, only those forming the composite common source transistor
- H03F 2203/45368 . . the AAC comprising multiple transistors parallel coupled at their sources only, e.g. in a cascode dif amp, only those forming the composite common source transistor
- H03F 2203/45371 . . the AAC comprising parallel coupled multiple transistors at their source and gate and drain or at their base and emitter and collector, e.g. in a cascode dif amp, only those forming the composite common source transistor or the composite common emitter transistor respectively
- H03F 2203/45372 . . the AAC comprising one or more potentiometers
- H03F 2203/45374 . . the AAC comprising one or more discrete resistors
- H03F 2203/45376 . . the AAC comprising one or more discrete resistors as shunts between collectors or drains
- H03F 2203/45378 . . the AAC comprising saturation or cutoff avoiding means, e.g. as a feedback circuit
- H03F 2203/45381 . . the AAC comprising multiple transistors coupled in shunt
- H03F 2203/45382 . . the AAC comprising common gate stages in the source circuit of the AAC before the common source coupling
- H03F 2203/45384 . . the AAC comprising common gate stages in the source circuit of the AAC before the common source coupling in which the common gate stage being controlled

- H03F 2203/45386 . . the AAC comprising one or more coils in the source circuit
- H03F 2203/45388 . . the AAC comprising diodes in the source circuit of the AAC before the common source coupling
- H03F 2203/45391 . . the AAC comprising potentiometers in the source circuit of the AAC before the common source coupling
- H03F 2203/45392 . . the AAC comprising resistors in the source circuit of the AAC before the common source coupling
- H03F 2203/45394 . . the AAC of the dif amp comprising FETs whose sources are not coupled, i.e. the AAC being a pseudo-differential amplifier
- H03F 2203/45396 . . the AAC comprising one or more switches
- H03F 2203/45398 . . the AAC comprising a voltage generating circuit as bias circuit for the AAC
- H03F 2203/45401 . . the common mode controlling loop [CMCL] comprising a transistor resistor addition circuit
- H03F 2203/45402 . . the CMCL comprising a buffered addition circuit, i.e. the signals are buffered before addition, e.g. by a follower
- H03F 2203/45404 . . the CMCL comprising capacitors containing, not in parallel with the resistors, an addition circuit
- H03F 2203/45406 . . the CMCL comprising a common source node of a long tail FET pair as an addition circuit
- H03F 2203/45408 . . the CMCL comprising a short circuited differential output of a dif amp as an addition circuit
- H03F 2203/45411 . . the CMCL comprising a diode addition circuit, e.g. using diode connected transistors
- H03F 2203/45412 . . the CMCL comprising a folding circuit as addition circuit
- H03F 2203/45414 . . the CMCL comprising a current mirror addition circuit
- H03F 2203/45416 . . the CMCL comprising no addition of the dif signals to produce a common mode signal
- H03F 2203/45418 . . the CMCL comprising a resistor addition circuit
- H03F 2203/45421 . . the CMCL comprising a switched capacitor addition circuit
- H03F 2203/45422 . . the CMCL comprising one or more capacitors not as integrating capacitor, e.g. for stability purposes
- H03F 2203/45424 . . the CMCL comprising a comparator circuit
- H03F 2203/45426 . . the CMCL comprising a comparator circuit with extra buffering means before comparison of the common mode signal, e.g. by a follower
- H03F 2203/45428 . . the CMCL comprising a comparator circuit using a four inputs dif amp
- H03F 2203/45431 . . the CMCL output control signal being a current signal
- H03F 2203/45432 . . the CMCL output control signal being a current signal and being buffered before used to control
- H03F 2203/45434 . . the CMCL output control signal being a voltage signal
- H03F 2203/45436 . . the CMCL output control signal being a voltage signal and being buffered before used to control
- H03F 2203/45438 . . the CMCL uses digital signals
- H03F 2203/45441 . . the CMCL comprising an integrating circuit
- H03F 2203/45442 . . the CMCL comprising multiple loops for the same stage or for different stages in the amplifier
- H03F 2203/45444 . . the CMCL comprising a sample and hold circuit
- H03F 2203/45446 . . there are two or more CMCLs

- H03F 2203/45448 .. the common source circuit [CSC] comprising an addition circuit made by mirrors
- H03F 2203/45451 .. the CSC comprising an addition circuit made by added current sources
- H03F 2203/45452 .. the CSC comprising balancing means
- H03F 2203/45454 .. the CSC comprising biasing means controlled by the input signal
- H03F 2203/45456 .. the CSC comprising bias stabilisation means, e.g. DC-level stability, positive or negative temperature coefficient dependent control
- H03F 2203/45458 .. the CSC comprising one or more capacitors
- H03F 2203/45461 .. the CSC comprising one or more switched capacitors
- H03F 2203/45462 .. the CSC comprising a cascode circuit
- H03F 2203/45464 .. the CSC comprising one or more coils
- H03F 2203/45466 .. the CSC being controlled, e.g. by a signal derived from a non specified place in the dif amp circuit
- H03F 2203/45468 .. the CSC comprising a cross coupling circuit, e.g. comprising two cross-coupled transistors
- H03F 2203/45471 .. the CSC comprising one or more extra current sources
- H03F 2203/45472 .. the CSC comprising one or more diodes
- H03F 2203/45474 .. the CSC comprising controlled one or more floating gates
- H03F 2203/45476 .. the CSC comprising a mirror circuit
- H03F 2203/45478 .. the CSC comprising a cascode mirror circuit
- H03F 2203/45481 .. the CSC comprising only a direct connection to the supply voltage, no other components being present
- H03F 2203/45482 .. the CSC comprising offset means
- H03F 2203/45484 .. the CSC comprising one or more op-amps
- H03F 2203/45486 .. the CSC comprising two or more paralleled transistors as current source
- H03F 2203/45488 .. the CSC being a pi circuit and a capacitor being used at the place of the resistor
- H03F 2203/45491 .. the CSC being a pi circuit and the resistor being implemented by one or more transistors
- H03F 2203/45492 .. the CSC being a pi circuit and the resistor being implemented by one or more controlled transistors
- H03F 2203/45494 .. the CSC comprising one or more potentiometers
- H03F 2203/45496 .. the CSC comprising one or more extra resistors
- H03F 2203/45498 .. the CSC comprising only resistors
- H03F 2203/45501 .. the CSC comprising a L-C parallel resonance circuit
- H03F 2203/45502 .. the CSC comprising a L-C series resonance circuit
- H03F 2203/45504 .. the CSC comprising more than one switch
- H03F 2203/45506 .. the CSC comprising only one switch
- H03F 2203/45508 .. the CSC comprising a voltage generating circuit as bias circuit for the CSC
- H03F 2203/45511 .. the feedback circuit [FBC] comprising one or more transistor stages, e.g. cascaded stages of the dif amp, and being coupled between the loading circuit [LC] and the input circuit [IC]
- H03F 2203/45512 .. the FBC comprising one or more capacitors, not being switched capacitors, and being coupled between the LC and the IC
- H03F 2203/45514 .. the FBC comprising one or more switched capacitors, and being coupled between the LC and the IC
- H03F 2203/45516 .. the FBC comprising a coil and being coupled between the LC and the IC

- H03F 2203/45518 .. the FBC comprising one or more diodes and being coupled between the LC and the IC
- H03F 2203/45521 .. the FBC comprising op amp stages, e.g. cascaded stages of the dif amp and being coupled between the LC and the IC
- H03F 2203/45522 .. the FBC comprising one or more potentiometers
- H03F 2203/45524 .. the FBC comprising one or more active resistors and being coupled between the LC and the IC
- H03F 2203/45526 .. the FBC comprising a resistor-capacitor combination and being coupled between the LC and the IC
- H03F 2203/45528 .. the FBC comprising one or more passive resistors and being coupled between the LC and the IC
- H03F 2203/45531 .. the FBC comprising a parallel resonance circuit and being coupled between the LC and the IC
- H03F 2203/45532 .. the FBC comprising a series resonance circuit and being coupled between the LC and the IC
- H03F 2203/45534 .. the FBC comprising multiple switches and being coupled between the LC and the IC.
- H03F 2203/45536 .. the FBC comprising a switch and being coupled between the LC and the IC.
- H03F 2203/45538 .. the IC comprising balancing means, e.g. trimming means
- H03F 2203/45541 .. the IC comprising dynamic biasing means, i.e. controlled by the input signal
- H03F 2203/45542 .. the IC comprising bias stabilisation means, e.g. DC level stabilisation, and temperature coefficient dependent control, e.g. by DC level shifting
- H03F 2203/45544 .. the IC comprising one or more capacitors, e.g. coupling capacitors
- H03F 2203/45546 .. the IC comprising one or more capacitors feedback coupled to the IC
- H03F 2203/45548 .. the IC comprising one or more capacitors as shunts to earth or as short circuit between inputs
- H03F 2203/45551 .. the IC comprising one or more switched capacitors
- H03F 2203/45552 .. the IC comprising clamping means, e.g. diodes
- H03F 2203/45554 .. the IC comprising one or more coils
- H03F 2203/45556 .. the IC comprising a common gate stage as input stage to the dif amp
- H03F 2203/45558 .. the IC being coupled at the sources of the source coupled pair
- H03F 2203/45561 .. the IC being controlled, e.g. by a signal derived from a non specified place in the dif amp circuit
- H03F 2203/45562 .. the IC comprising a cross coupling circuit, e.g. comprising two cross-coupled transistors
- H03F 2203/45564 .. the IC comprising one or more extra current sources
- H03F 2203/45566 .. the IC comprising one or more dif stages in cascade with the dif amp
- H03F 2203/45568 .. the IC comprising one or more diodes as shunt to the input leads
- H03F 2203/45571 .. the IC comprising two diodes e.g. Gilbert circuit
- H03F 2203/45572 .. the IC comprising one or more Zener diodes to the input leads
- H03F 2203/45574 .. the IC comprising four or more input leads connected to four or more AAC-transistors
- H03F 2203/45576 .. the IC comprising input impedance adapting or controlling means
- H03F 2203/45578 .. the IC comprising one or more diodes as level shifters
- H03F 2203/45581 .. the IC comprising one or more resistors as level shifters
- H03F 2203/45582 .. the IC comprising one or more voltage sources as level shifters

- H03F 2203/45584 .. the IC comprising extra differentially coupled transistors for controlling purposes only
- H03F 2203/45586 .. the IC comprising offset generating means
- H03F 2203/45588 .. the IC comprising offset compensating means
- H03F 2203/45591 .. the IC comprising one or more potentiometers
- H03F 2203/45592 .. the IC comprising one or more buffer stages other than emitter or source followers between the input signal leads and input leads of the dif amp, e.g. inverter stages
- H03F 2203/45594 .. the IC comprising one or more resistors, which are not biasing resistor
- H03F 2203/45596 .. the IC comprising one or more biasing resistors
- H03F 2203/45598 .. the IC comprising an input shunting circuit comprising a resistor and a capacitor in series
- H03F 2203/45601 .. the IC comprising one or more passive resistors by feedback
- H03F 2203/45602 .. the IC comprising one or more active resistors by feedback
- H03F 2203/45604 .. the IC comprising a input shunting resistor
- H03F 2203/45606 .. the IC comprising one or more parallel resonance circuits
- H03F 2203/45608 .. the IC comprising one or more series resonance circuits
- H03F 2203/45611 .. the IC comprising only one input signal connection lead for one phase of the signal
- H03F 2203/45612 .. the IC comprising one or more input source followers as input stages in the IC
- H03F 2203/45614 .. the IC comprising two cross coupled switches
- H03F 2203/45616 .. the IC comprising more than one switch, which are not cross coupled
- H03F 2203/45618 .. the IC comprising only one switch
- H03F 2203/45621 .. the IC comprising a transformer for phase splitting the input signal
- H03F 2203/45622 .. the IC comprising an voltage generating circuit
- H03F 2203/45624 .. the LC comprising balancing means, e.g. trimming means
- H03F 2203/45626 .. the LC comprising biasing means controlled by the input signal
- H03F 2203/45628 .. the LC comprising bias stabilisation means, e.g. DC level stabilisation means, and temperature coefficient dependent control, e.g. DC level shifting means
- H03F 2203/45631 .. the LC comprising one or more capacitors, e.g. coupling capacitors
- H03F 2203/45632 .. the LC comprising one or more capacitors coupled to the LC by feedback
- H03F 2203/45634 .. the LC comprising one or more switched capacitors
- H03F 2203/45636 .. the LC comprising clamping means, e.g. diodes
- H03F 2203/45638 .. the LC comprising one or more coils
- H03F 2203/45641 .. the LC being controlled, e.g. by a signal derived from a non specified place in the dif amp circuit
- H03F 2203/45642 .. the LC, and possibly also cascaded stages following it, being (are) controlled by the common mode signal derived to control a dif amp
- H03F 2203/45644 .. the LC comprising a cross coupling circuit, e.g. comprising two cross-coupled transistors
- H03F 2203/45646 .. the LC comprising an extra current source
- H03F 2203/45648 .. the LC comprising two current sources, which are not cascode current sources
- H03F 2203/45651 .. the LC comprising two cascode current sources
- H03F 2203/45652 .. the LC comprising one or more further dif amp stages, either identical to the dif amp or not, in cascade
- H03F 2203/45654 .. the LC comprising one or more extra diodes not belonging to mirrors



H03F 2203/45656	..	the LC comprising one diode of a current mirror, i.e. forming an asymmetrical load
H03F 2203/45658	..	the LC comprising two diodes of current mirrors
H03F 2203/45661	..	the LC comprising one or more controlled floating gates
H03F 2203/45662	..	the LC comprising inductive coupled loading elements
H03F 2203/45664	..	the LC comprising one or more cascaded inverter stages as output stage at one output of the dif amp circuit
H03F 2203/45666	..	the LC comprising two anti-phase controlled inverter circuits as output stages, e.g. fully differential
H03F 2203/45668	..	the LC comprising a level shifter circuit, which does not comprise diodes
H03F 2203/45671	..	the LC comprising one or more diodes as level shifter
H03F 2203/45672	..	the LC comprising one or more resistors as level shifter
H03F 2203/45674	..	the LC comprising one current mirror
H03F 2203/45676	..	the LC comprising one cascode current mirror
H03F 2203/45678	..	the LC comprising offset generating means
H03F 2203/45681	..	the LC comprising offset compensating means
H03F 2203/45682	..	the LC comprising one or more op-amps
H03F 2203/45684	..	the LC comprising one or more buffers or driving stages not being of the emitter respectively source follower type, between the output of the dif amp and the output stage
H03F 2203/45686	..	the LC comprising one or more potentiometers, which are not shunting potentiometers
H03F 2203/45688	..	the LC comprising one or more shunting potentiometers
H03F 2203/45691	..	the LC comprising one or more transistors as active loading resistors
H03F 2203/45692	..	the LC comprising one or more resistors in series with a capacitor coupled to the LC by feedback
H03F 2203/45694	..	the LC comprising more than one shunting resistor
H03F 2203/45696	..	the LC comprising more than two resistors
H03F 2203/45698	..	the LC comprising one or more resistors coupled to the LC by feedback (active or passive)
H03F 2203/45701	..	the LC comprising one resistor
H03F 2203/45702	..	the LC comprising two resistors
H03F 2203/45704	..	the LC comprising one or more parallel resonance circuits
H03F 2203/45706	..	the LC comprising one or more series resonance circuits
H03F 2203/45708	..	the LC comprising one SEPP circuit as output stage
H03F 2203/45711	..	the LC comprising two anti-phase controlled SEPP circuits as output stages, e.g. fully differential
H03F 2203/45712	..	the LC comprising a capacitor as shunt
H03F 2203/45714	..	the LC comprising a coil as shunt
H03F 2203/45716	..	the LC comprising a RC-series circuit as shunt, e.g. for stabilisation
H03F 2203/45718	..	the LC comprising a resistor as shunt
H03F 2203/45721	..	the LC comprising only an output circuit for one phase of the signal
H03F 2203/45722	..	the LC comprising one or more source followers, as post buffer or driver stages, in cascade in the LC
H03F 2203/45724	..	the LC comprising two cross coupled switches
H03F 2203/45726	..	the LC comprising more than one switch, which are not cross coupled

- H03F 2203/45728 . . the LC comprising one switch
- H03F 2203/45731 . . the LC comprising a transformer
- H03F 2203/45732 . . the LC comprising a voltage generating circuit
  
- H03F 2203/50 . Indexing scheme relating to amplifiers in which input being applied to, or output being derived from, an impedance common to input and output circuits of the amplifying element, e.g. cathode follower
- H03F 2203/5003 . . the sources of two source followers are differentially coupled
- H03F 2203/5006 . . the input signal being capacitively coupled to the gate of the source follower
- H03F 2203/5009 . . the output signal being capacitively coupled to the source of the source follower
- H03F 2203/5012 . . the source follower has a controlled source circuit, the controlling signal being derived from the drain circuit of the follower
- H03F 2203/5015 . . the source follower has a controlled source circuit, the controlling signal being derived from the gate circuit of the follower
- H03F 2203/5018 . . the source follower has a controlled source circuit, the controlling signal being derived from the source circuit of the follower
- H03F 2203/5021 . . the source follower has a controlled source circuit
- H03F 2203/5024 . . the source follower has a controlled source circuit, the source circuit being controlled via a capacitor, i.e. AC-controlled
- H03F 2203/5027 . . the source follower has a current mirror output circuit in its source circuit
- H03F 2203/5031 . . the source circuit of the follower being a current source
- H03F 2203/5033 . . Two source followers are controlled at their inputs by a differential signal
- H03F 2203/5036 . . the source follower has a resistor in its source circuit
- H03F 2203/5039 . . the source circuit of the follower has one or more capacitors between source and supply
- H03F 2203/5042 . . the source circuit of the follower has one or more coils between source and supply
- H03F 2203/5045 . . the source follower has a level shifter between source and output, e.g. a diode-connected transistor
  
- H03F 2203/72 . Indexing scheme relating to gated amplifiers, i.e. amplifiers which are rendered operative or inoperative by means of a control signal
- H03F 2203/7203 . . the gated amplifier being switched on or off by a switch in the bias circuit of the amplifier controlling a bias current in the amplifier
- H03F 2203/7206 . . the gated amplifier being switched on or off by a switch in the bias circuit of the amplifier controlling a bias voltage in the amplifier
- H03F 2203/7209 . . the gated amplifier being switched from a first band to a second band
- H03F 2203/7212 . . the gated amplifier being switched on or off by switching off or on a feedback control loop of the amplifier
- H03F 2203/7215 . . the gated amplifier being switched on or off by a switch at the input of the amplifier
- H03F 2203/7218 . . the gated amplifier being switched on or off by clamping by a switch at the input of the amplifier
- H03F 2203/7221 . . the gated amplifier being switched on or off by a switch at the output of the amplifier
- H03F 2203/7224 . . the gated amplifier being switched on or off by clamping by a switch at the output of the amplifier
- H03F 2203/7227 . . the gated amplifier being switched on or off by a switch in the supply circuit of the amplifier
- H03F 2203/7231 . . the gated amplifier being switched on or off by putting into cascade or not, by



- choosing between amplifiers by one or more switch(es)
- [H03F 2203/7233](#) . . the gated amplifier, switched on or off by putting into parallel or not, by choosing between amplifiers by one or more switch(es), being impedance adapted by switching an adapted passive network
- [H03F 2203/7236](#) . . the gated amplifier being switched on or off by putting into parallel or not, by choosing between amplifiers by (a ) switch(es)
- [H03F 2203/7239](#) . . the gated amplifier being switched on or off by putting into parallel or not, by choosing between amplifiers and shunting lines by one or more switch(es)