

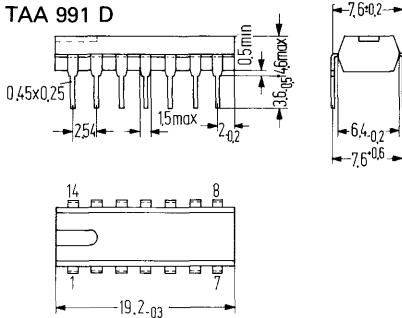
Combined AM/FM IF amplifier for radio receivers. The circuit is suited for AC- and batteryoperated sets. An additionally available control voltage (pin 12) permits control of a RF-pre-amplifier stage.

- Good control for AM operation
- Good limiting qualities for FM operation
- Low current requirement
- Low supply voltage dependence

Type	Ordering codes
TAA 991 D	Q67000-A289
TAA 991 Q	Q67000-A726

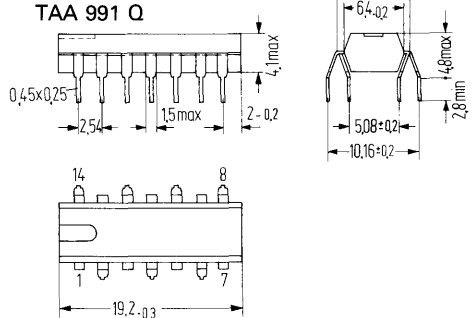
Package outlines

TAA 991 D



Plastic plug-in package
14 pins, dual-in-line
20 A 14 DIN 41 866
Weight approx. 1.1 g

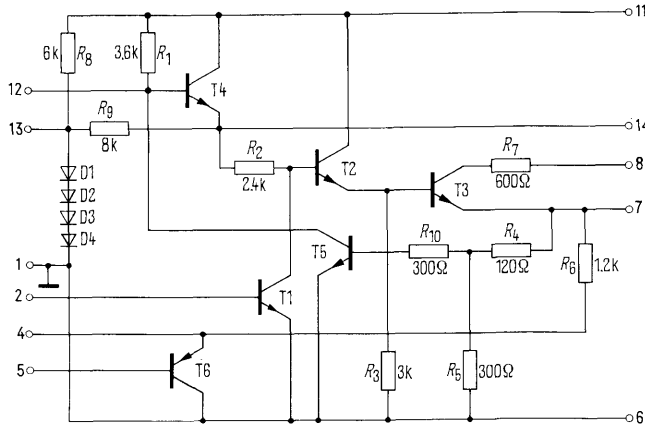
TAA 991 Q



Plastic plug-in package
14 pins, quad-in-line
similar 20 A 14 DIN 41 866
Weight approx. 1.1 g

Dimensions in mm

Circuit diagramm



Absolute maximum ratings

Supply voltage	V_{cc}	11	V
Storage temperature	T_s	-30 to +125	°C
Junction temperature	T_j	150	°C
Thermal resistance (system-air)	R_{thsa}	120	K/W

Range of operating

Supply voltage	V_{CC}	4.5 to 11	V
Ambient temperature in operation	T_{amb}	-15 to +18	°C

Electrical characteristics ($T_{amb} = 25^{\circ}\text{C}$)

AM operation ($f_{IF} = 460 \text{ kHz}$, $V_{CC} = 5 \text{ V}$)

Total current consumption (without signal)	I_{CC}	3.6	mA
Collector current of Tr 3 (without signal)	I_8	2	mA
Stabilized voltage	V_{13}	2.8 (2.6–3.2)	V
Voltage gain	G_v	80	dB
Control range	ΔG_v	50	dB
Voltage starting control ¹⁾	V_{ieff}	50	μV
Feedback voltage ($V_{ieff} = 50 \mu\text{V}$; $f_{mod} = 1 \text{ kHz}$; $m = 80\%$)	$-V_{fb}$	200 (> 100)	mV
AF output voltage	V_{qAF}	120	mV
($V_{ieff} = 50 \mu\text{V}$; $f_{mod} = 1 \text{ kHz}$; $m = 80\%$)			
Input voltage causing overdrive	V_{ieff}	15	mV

AM operation ($f_{IF} = 460 \text{ kHz}$, $V_{CC} = 9 \text{ V}$)

Total current consumption (without signal)	I_{CC}	6	mA
Collector current Tr 3 (without signal)	I_6	2	mA
Stabilized voltage	V_{13}	2.9 (2.6–3.2)	V
Voltage gain	G_v	90	dB
Control range	ΔG_v	60	dB
Voltage starting control ¹⁾	V_{ieff}	15	μV
Feedback voltage ($V_{ieff} = 15 \mu\text{V}$, $f_{mod} = 1 \text{ kHz}$, $m = 80\%$)	$-V_{fb}$	200 (> 100)	mV
AF output voltage ($V_{ieff} = 15 \mu\text{V}$, $f_{mod} = 1 \text{ kHz}$, $m = 80\%$)	V_{qAF}	120	mV
Input voltage causing overdrive	V_{ieff}	25	mV
Harmonic distortion ($V_{ieff} = 15 \text{ mV}$, $f_{mod} = 1 \text{ kHz}$, $m = 80\%$)	k	< 10	%
AF output voltage ($V_{ieff} = 15 \text{ mV}$, $f_{mod} = 1 \text{ kHz}$, $m = 80\%$)	V_{qAF}	300	mV
Base current of Tr 6 ($V_{ieff} = 15 \text{ mV}$, $f_{mod} = 1 \text{ kHz}$, $m = 80\%$)	I_5	< 30	μA
Input voltage starting prestage control	V_{ieff}	1	mV
Prestage control voltage	$V_{ieff} \leq 200 \mu\text{V}$ $V_{ieff} \geq 3 \text{ mV}$	V_{12} V_{12}	> 2.8 < .5 V V
Input impedance ($V_{ieff} = 50 \mu\text{V}$)	Z_1	1250/100	Ω/pF

FM operation ($f_{IF} = 10.7 \text{ MHz}$; $V_{CC} = 5 \text{ V}$; $\Delta f = 75 \text{ kHz}$; $f_{mod} = 1 \text{ kHz}$)

Voltage gain	G_v	76	dB
Input voltage for limiting ²⁾	V_{ieff}	300	μV
AF output voltage	V_{qAF}	200	mV

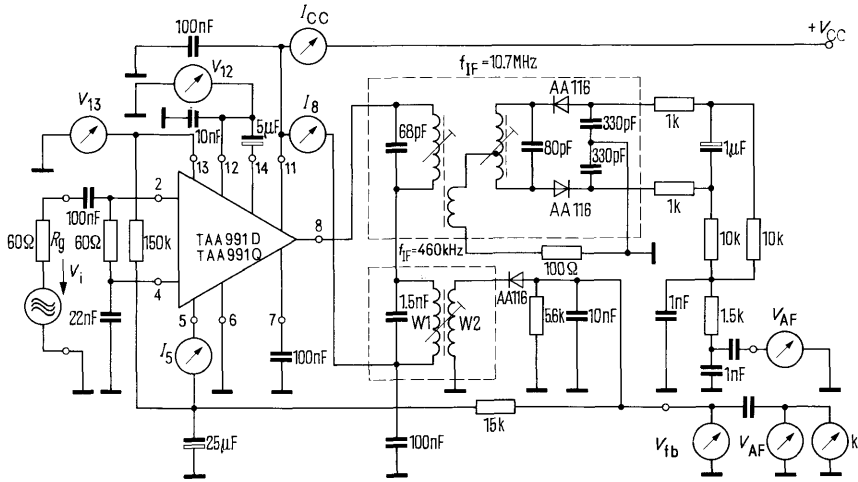
FM operation ($f_{IF} = 10.7 \text{ MHz}$; $V_{CC} = 9 \text{ V}$; $\Delta f = \pm 75 \text{ kHz}$; $f_{mod} = 1 \text{ kHz}$)

Voltage gain	G_v	86	dB
Input voltage for limiting ²⁾	V_{ieff}	225	μV
AF output voltage ($V_{ieff} = 100 \text{ mV}$)	V_{qAF}	300	mV
AM suppression ($m = 30\%$)	V_{FM}/V_{AM}	50	dB
Input impedance ($V_{ieff} = 2 \text{ mV}$)	Z_1	150/70	Ω/pF

¹⁾ Start of regulation is defined as the input voltage for which $\frac{V_{ieff}}{V_{AF}} = \frac{10}{3} \text{ dB}$.

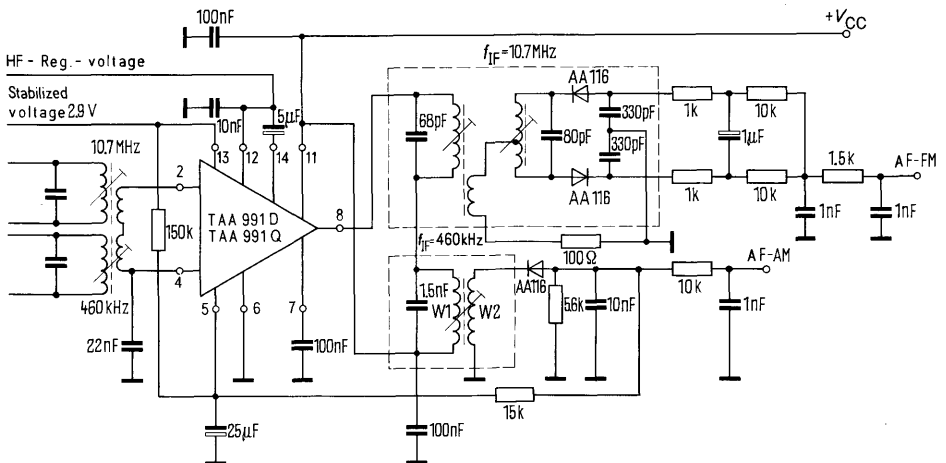
²⁾ Start of limiting is defined as the input voltage at which the AF output voltage has dropped by 3 dB; reference potential is $V_{ieff} = 100 \text{ mV}$.

Test circuit



$W_1 = 77$ HF-litz 12×0.04 Cul
 $W_2 = 55$ HF-litz 12×0.04 Cul

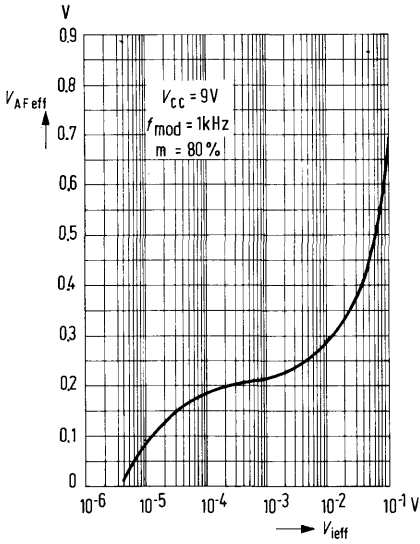
Application circuit



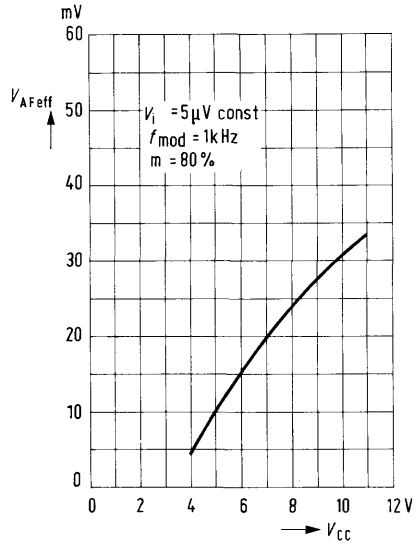
$W_1 = 77$ HF-litz 12×0.04 Cul
 $W_2 = 55$ HF-litz 12×0.04 Cul

AM operation ($f_{IF} = 460$ kHz)

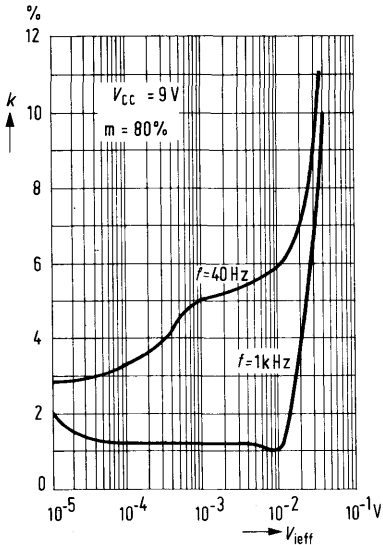
AF output voltage versus input voltage



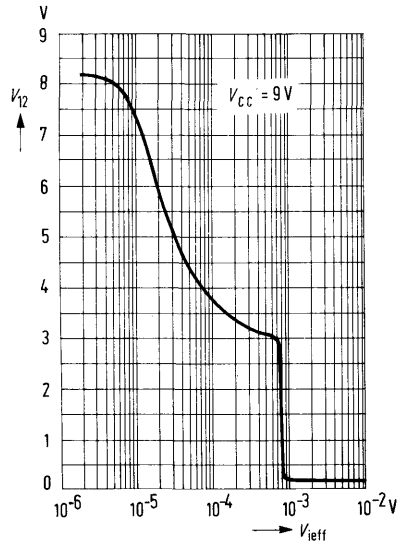
AF output voltage versus supply voltage



Harmonic distortion versus input voltage

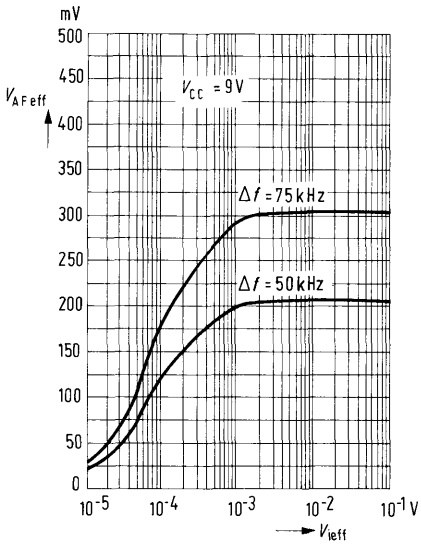


Prestage control voltage v. input voltage

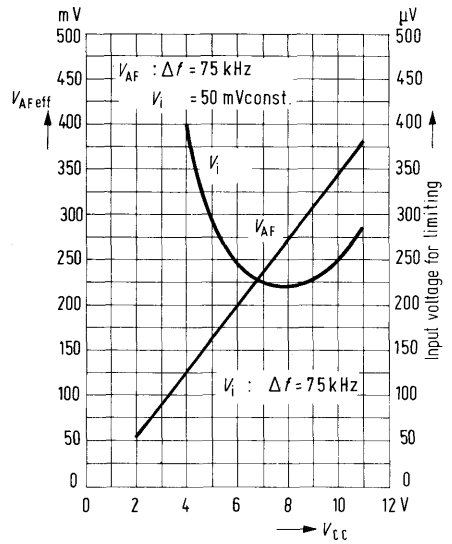


FM operation ($f_{IF} = 10.7$ MHz)

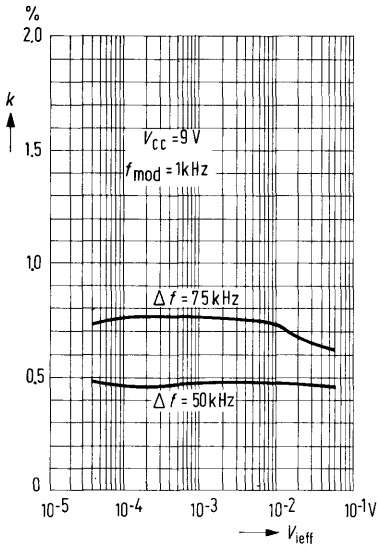
AF output voltage versus input voltage



AF output voltage and input voltage starting limiting versus supply voltage



Harmonic distortion versus input voltage



AM suppression versus input voltage

