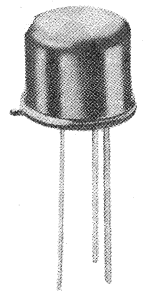
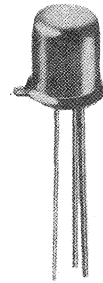
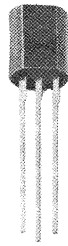
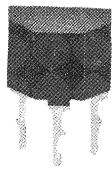


# Dati tecnici riassuntivi dei transistori e dei moduli per bassa frequenza

Polarity indication P = p-n-p  
N = n-p-n

type	polarity	status	case	RATINGS				CHARACTERISTICS							
				V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub> at T <sub>amb</sub>	hFE at I <sub>C</sub>	F	f <sub>T</sub>	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub>	I <sub>C</sub> /I <sub>B</sub>			
				V	V	A	W	(T <sub>case</sub> ) °C	min-max	mA	dB		typ	typ	typ
BC107				50	45					110-450	2				
BC108				30	20					110-800	2				
BC109	N	D	TO-18(1)	30	20	0,1	0,3	25		200-800	1,2	300	200	0,1/5	
BC107 A,B				50	45				A	110-220	2				
BC108 A,B,C				30	20				B	200-450	2				
BC109 B,C				30	20				C	420-800	1,2				
BC140-6,10,16	N	D	TO-39(1)	80	40	1	3,7	(45)	6	40-100		> 50	600	1/100	
BC141-6,10,16				100	60				10	63-160	100				
									16	100-250					
BC146/01										80-200	2				
BC146/02	N	D	SOT-42	20	20	0,05	0,05	45		140-350	0,2	1,5	150	—	—
BC146/03										280-550	2				
BC147				50	45					110-450	2				
BC148				30	20					110-800	2				
BC149	N	C	SOT-25(1)	30	20	0,1	0,3	25		200-800	1,2	300	200	0,1/5	
BC147 A,B				50	45				A	110-220	2				
BC148 A,B,C				30	20				B	200-450	2				
BC149 B,C				30	20				C	420-800	1,2				
BC157				50	45					75-260	2				
BC158				30	25					75-500	2				
BC159	P	C	SOT-25(1)	25	20	0,1	0,3	25		125-500	2	1	150	250	0,1/5
BC158 A,B				30	25				A	125-260	2				
BC159 A,B				25	20				B	240-500	1				
BC160-6,10,16	P	D	TO-39(1)	40	40	1	3,7	(45)	6	40-100		> 50	600	1/100	
BC161-6, 10,16				60	60				10	63-160	100				
									16	100-250					
BC177				50	45					75-260	2				
BC178				30	25					75-500	2				
BC179	P	D	TO-18(1)	25	20	0,1	0,3	25		125-500	2	1	150	250	0,1/5
BC178 A,B				30	25				A	125-260	2				
BC179 A,B				25	20				B	240-500	1				



SOT-25

SOT-42

TO-92

TO-18

TO-39

type	polarity	status	case	RATINGS					CHARACTERISTICS					
				V <sub>CB0</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub> at T <sub>amb</sub>	h <sub>FE</sub> at I <sub>C</sub>	F	f <sub>T</sub>	V <sub>CEsat</sub> at	I <sub>C</sub> /I <sub>B</sub>		
				(V <sub>CES</sub> )					typ	typ	max	A/mA		
				V	V	A	W	°C	min-max	mA	dB	MHz	mV	
BC200/01									50-105		2			
BC200/02	P	D	SOT-42	20	20	0,05	0,05	45	85-200	0,2	1,5	90	-	-
BC200/03									165-400		2			
BC327				(50)	45				100-600					
BC328	P	D	TO-92(2)	(30)	25	0,5	0,8	25	100-600	100	-	100	700	0,5/50
BC327-16,25,40				(50)	45				16 100-250					
BC328-16,25,40				(30)	25				25 160-400					
									40 250-600					
BC337				(50)	45				100-600					
BC338	N	D	TO-92(2)	(30)	25	0,5	0,8	25	100-600	100	-	200	700	0,5/50
BC337-16,25,40				(50)	45				16 100-250					
BC338-16,25,40				(30)	25				25 160-400					
									40 250-600					
BC368	N	D	TO-92(3)	(25)	20	1	1	25	85-375	500	-	60	500	1/100
BC369	P													
BC375	N	N	TO-92(2)	25	20	1	0,8	25	60-340	150	-	150	500	0,5/50
BC376	P													
BC546				80	65				110-450					
BC547				50	45				110-800					
BC548	N	D	TO-92(2)	30	30	0,1	0,5	25	110-800	2	2	300	600	0,1/5
BC546 A,B				80	65				A 110-220					
BC547 A,B,C				50	45				B 200-450					
BC548 A,B,C				30	30				C 420-800					
BC549				30	30				200-800					
BC550	N	D	TO-92(2)	50	45	0,1	0,5	25	200-800	2	1,4	300	600	0,1/5
BC549 B,C				30	30				B 200-450					
BC550 B,C				50	45				C 420-800					
BC556				80	65				75-250					
BC557				50	45				75-475					
BC558	P	D	TO-92(2)	30	30	0,1	0,5	25	75-475	2	2	150	650	0,1/5
BC556 A				80	65									
BC557 A,B				50	45				A 125-250					
BC558 A,B				30	30				B 220-475					

# I.f. general purpose transistors

## abridged data

Polarity indication P = p-n-p  
N = n-p-n

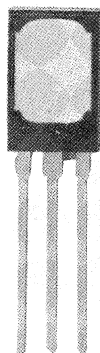
type	polarity	status	case	RATINGS				CHARACTERISTICS							
				V <sub>CBO</sub> (V <sub>CE</sub> S) V	V <sub>CEO</sub> V	I <sub>C</sub> A	P <sub>tot</sub> W	at T <sub>amb</sub> (T <sub>mb</sub> ) °C	hFE at I <sub>C</sub> min-max	F typ dB	f <sub>T</sub> typ MHz	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub> max V	I <sub>C</sub> /I <sub>B</sub> A/mA		
BC559				30	30					125-475					
BC560	P	D	TO-92(2)	50	45	0,1	0,5	25		125-475	2	1	150	650	0,1/5
BC559 A,B				30	30				A	125-250					
BC560 A,B				50	45				B	220-475					
BC635				45	45					40-250					
BC637	N	D	TO-92(3)	60	60	1	1	25		40-160	150	—	130	500	0,5/50
BC639				100	80					40-160					
BC636				45	45					40-250					
BC638	P	D	TO-92(3)	60	60	1	1	25		40-160	150	—	50	0,5	0,5/50
BC640				100	80					40-160					
BCY30A				64	64					10- 35					
BCY31A				64	64					15- 60					
BCY32A	P	D	TO-5(1)	64	64	0,05	0,6	25		20- 70	20	8	7	0,55	0,02/3
BCY33A				32	32					10- 35					
BCY34A				32	32					15- 60					
BCY56	N	D	TO-18(1)	45	45	0,1	0,3	25		100-450	2	1,5	85	typ 0,2	0,1/10
BCY57				25	20					200-800			100		
BCY58 VII				(32)	32					VII 120-220					
VIII,IX,X										VIII 180-310					
BCY59 VII	N	D	TO-18(1)	(45)	45	0,2	1	45		IX 250-460	2	2	280	0,7	0,1/2,5
VIII,IX,X								(T <sub>case</sub> )		X 380-630					
BCY70				50	40					100		2			
BCY71	P	D	TO-18(1)	45	45	0,2	0,35	25		100-400	10	0,8	450	0,5	0,05/5
BCY72				30	25					100		2,0			
BCY78 VII				(32)	32					VII 120-220					
VIII,IX,X										VIII 180-310					
BCY79 VII	P	D	TO-18(1)	(45)	45	0,2	1	45		IX 250-460	2	2	180	0,8	0,1/2,5
VIII,IX								(T <sub>case</sub> )		X 380-630					
2N929	N	C	TO-18(1)	(45)	45	0,03	0,3	25		100-350	0,01	—	80	1	0,01/0,5
2N930										150-600					
2N2483	N	C	TO-18(1)	(60)	60	(0,05)	0,36	(25)		40-120	0,01	—	80	0,35	0,001/0,1
2N2484										100-500					

# I.f. power transistors

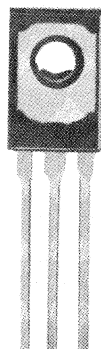
abridged data

Polarity indication P = p-n-p  
N = n-p-n

type	polarity	status	case	RATINGS					CHARACTERISTICS						
				V <sub>CB0</sub>	V <sub>CEO</sub>	I <sub>C</sub>		P <sub>tot</sub> at T <sub>mb</sub>	hFE at I <sub>C</sub>		f <sub>hfe</sub>	f <sub>T</sub>	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub>		
				(V <sub>CERM</sub> ) V	V	A	W	C	min-max	A	typ kHz	typ MHz	max V	A/mA	
BD131	N	C	TO-126	70	45	3	15	60	40	0,5	—	> 60	0,7	2/200	
BD132	P			45	45										
BD135	N	D	TO-126	45	45	1	8	70	40-250	0,15	—	250	0,5	0,5/50	
BD137				60	60										
BD139				100	80										
BD136	P	D	TO-126	45	45	1	8	70	40-250	0,15	—	75	0,5	0,5/50	
BD138				60	60										
BD140				100	80										
BD201	N	D	TO-220(1)	60	45	8	60	25	30	3	25	> 3	1	3/300	
BD203				60	60					2					
BD202	P	D	TO-220(1)	60	45	8	60	25	30	3	25	> 3	1	3/300	
BD204				60	60					2					
BD226	N	D	TO-126	45	45	1,5	12,5	62	40-250	0,15	—	125	0,8	1/100	
BD228				60	60				40-160						
BD230				100	80				40-160						
BD227	P	D	TO-126	45	45	1,5	12,5	62	40-250	0,15	—	50	0,8	1/100	
BD229				60	60				40-160						
BD231				100	80				40-160						
BD233	N	D	TO-126	45	45	2	25	25	40-250	0,15	—	> 3	0,6	1/100	
BD235				60	60										
BD237				100	80										
BD234	P	D	TO-126	45	45	2	25	25	40-250	0,15	—	> 3	0,6	1/100	
BD236				60	60										
BD238				100	80										
BD291	N	D	SOT-82	45	45	6	60	25	30	3	—	> 3	1	3/300	
BD293				60	60					2					
BD295				80	80					2					
BD292	P	D	SOT-82	45	45	6	60	25	30	3	—	> 3	1	3/300	
BD294				60	60					2					
BD296				80	80					2					
BD329	N	D	TO-126	32	20	3	15	45	85-375	0,5	—	130	0,5	2/200	
BD330	P											100			



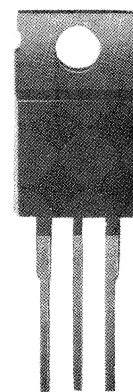
SOT-82



TO-126

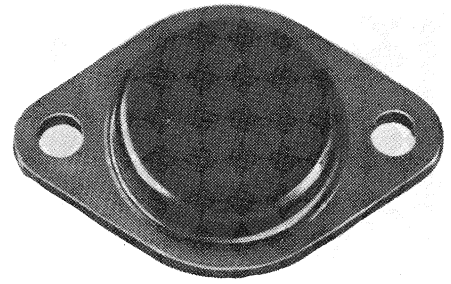


TO-202



TO-220

type	polarity	status	case	RATINGS					CHARACTERISTICS					
				V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub> at T <sub>mb</sub>		h <sub>FE</sub> at I <sub>C</sub>		f <sub>hfe</sub>	f <sub>T</sub>	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub>	
				V	V	A	W	°C	min-max	A	typ	kHz	MHz	max
BD331	N	D	SOT-82	60	60	6	60	25	750	3	60	7	2	3/12
BD333				80	80									
BD335				100	100									
BD337				120	120									
BD332	P	D	SOT-82	60	60	6	60	25	750	3	60	7	2	3/12
BD334				80	80									
BD336				100	100									
BD338				120	120									
BD433	N	D	TO-126	22	22	4	36	25	85-475	0,5	-	> 3	0,5	2/200
BD435				32	32				85-475				0,5	2/200
BD437				45	45				85-375				0,7	3/300
BD434	P	D	TO-126	22	22	4	36	25	85-475	0,5	-	> 3	0,5	2/200
BD436				32	32				85-475				0,5	2/200
BD438				45	45				85-375				0,7	3/300
BD645	N	D	TO-220(1)	80	60	8	62,5	25	750	3	50	-	2	3/12
BD647				100	80									
BD649				120	100									
BD651				140	120									
BD646	P	D	TO-220(1)	60	60	8	62,5	25	750	3	100	-	2	3/12
BD648				80	80									
BD650				100	100									
BD652				120	120									
BD675	N	D	TO-126	45	45	4	40	25	750	1,5	-	7	2,5	1,5/6
BD677				60	60									
BD679				80	80									
BD681				100	100									
BD683				120	120									
BD676	P	D	TO-126	45	45	4	40	25	750	1,5	-	7	2,5	1,5/6
BD678				60	60									
BD680				80	80									
BD682				100	100									
BD684				120	120									
BD839	N	N	TO-202	45	45	1,5	10	62	40-250	0,15	-	125	0,8	1/100
BD841				60	60									
BD843				100	80									
BD840				45	45									
BD842	P	N	TO-202	60	60	1,5	10	62	40-250	0,15	-	50	0,8	1/100
BD844				100	80									

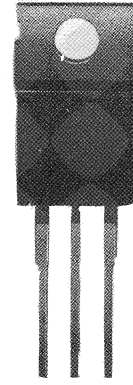


TO-3

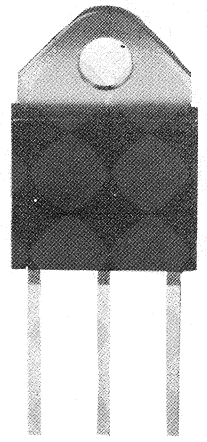
type	polarity	status	case	RATINGS					CHARACTERISTICS					
				V <sub>CB0</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub> at T <sub>mb</sub>		hFE at I <sub>C</sub>		f <sub>hfe</sub>	f <sub>T</sub>	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub>	
				V	V	A	W	°C	min-max	A	typ kHz	typ MHz	max V	A/mA
BD933	N	N	TO-220	45	45	3	30	25	40-250	0,15	—	3	0,6	1/100
BD935				60	60									
BD937				100	80									
BD939				120	100									
BD934	P	N	TO-220	45	45	3	30	25	40-250	0,15	—	3	0,6	1/100
BD936				60	60									
BD938				100	80									
BD940				120	100									
BD943	N	N	TO-220	22	22	5	40	25	85-475	0,5	—	3	0,5	2/200
BD945				32	32									
BD947				45	45									
BD944	P	N	TO-220	22	22	5	40	25	85-475	0,5	—	3	0,5	2/200
BD946				32	32									
BD948				45	45									
BD949	N	N	TO-220	60	60	5	40	25	40	0,5	—	3	1	2/200
BD951				80	80									
BD953				100	100									
BD950	P	N	TO-220	60	60	5	40	25	40	0,5	—	3	1	2/200
BD952				80	80									
BD954				100	100									
BDT62	P	N	TO-220	60	60	10	90	25	1000	3	—	—	2	3/12
BDT62A				80	80									
BDT62B				100	100									
BDT62C				120	120									
BDT63	N	N	TO-220	60	60	10	90	25	1000	3	—	—	2	3/12
BDT63A				80	80									
BDT63B				100	100									
BDT63C				120	120									
BDT91	N	N	TO-220	60	60	10	90	25	20-200	4	—	4	1	4/400
BDT93				80	80									
BDT95				100	100									
BDT92	P	N	TO-220	60	60	10	90	25	20-200	4	—	4	1	4/400
BDT94				80	80									
BDT96				100	100									



TO-126

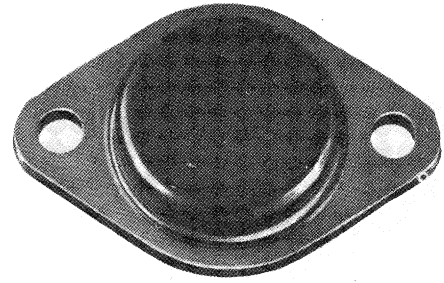


TO-220



SOT-93

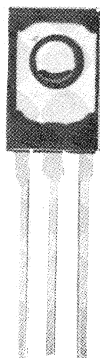
type	polarity	status	case	RATINGS				CHARACTERISTICS						
				V <sub>CB0</sub> (V <sub>CERM</sub> ) V	V <sub>CEO</sub> V	I <sub>C</sub> A	P <sub>tot</sub> at T <sub>mb</sub> W °C	hFE at I <sub>C</sub> min-max	t <sub>f</sub> typ μs	f <sub>T</sub> typ MHz	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub> max V	A/mA		
BDV64	P	D	SOT-93	60	60	12	125	25	1000	5	1	—	2	5/20
BDV64A				80	80									
BDV64B				100	100									
BDV64C				120	120									
BDV65	N	D	SOT-93	60	60	12	125	25	1000	5	1,5	—	2	5/20
BDV65A				80	80									
BDV65B				100	100									
BDV65C				120	120									
BDW55	N	N	TO-126	45	45	1	8	95	40-250	0,15	0,08	250	0,5	0,5/50
BDW57				60	60									
BDW59				100	80									
BDW56	P	N	TO-126	45	45	1	8	95	40-250	0,15	0,08	75	0,5	0,5/50
BDW58				60	30									
BDW60				100	80									
BDX35	N	C	TO-126	60	60	5	15	75	45-450	0,5	—	100	0,9	5/500
BDX36				60	60								0,7	
BDX37				80	80								0,9	
BDX42	N	C	TO-126	60	45	1	5	100	1500	0,5	—	—	1,6	1/4
BDX43				80	60								1,6	1/1
BDX44				100	80								1,3	0,5/0,5
BDX45	P	C	TO-126	60	45	1	5	100	1500	0,5	—	—	1,6	1/4
BDX46				80	60								1,6	1/1
BDX47				100	80								1,3	0,5/0,5
BDX62	P	C	TO-3(2)	60	60	8	90	25	1000	3	f <sub>hfe</sub> typ 100 kHz	—	2	3/12
BDX62A				80	80									
BDX62B				100	100									
BDX62C				120	120									
BDX63	N	C	TO-3(2)	80	60	8	90	25	1000	3	f <sub>hfe</sub> typ 100 kHz	—	2	3/12
BDX63A				100	80									
BDX63B				120	100									
BDX63C				140	120									



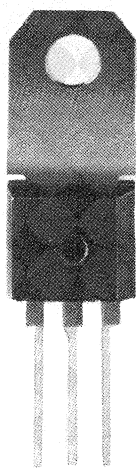
TO-3

type	polarity	status	case	RATINGS					CHARACTERISTICS						
				V <sub>CB0</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub> at T <sub>mb</sub>		hFE at I <sub>C</sub>		f <sub>hfe</sub>	f <sub>T</sub>	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub>		
				V	V	A	W	°C	min-max	A	typ kHz	typ MHz	max V	A/mA	
BDX64	P	C	TO-3(2)	60	60	12	117	25	1000	5	80	—	2	5/20	
BDX64A				80	80										
BDX64B				100	100										
BDX64C				120	120										
BDX65	N	C	TO-3(2)	80	60	12	117	25	1000	5	50	—	2	5/20	
BDX65A				100	80										
BDX65B				120	100										
BDX65C				140	120										
BDX66	P	C	TO-3(2)	60	60	16	150	25	1000	10	60	—	2	10/40	
BDX66A				80	80										
BDX66B				100	100										
BDX66C				120	120										
BDX67	N	C	TO-3(2)	80	60	16	150	25	1000	10	50	—	2	10/40	
BDX67A				100	80										
BDX67B				120	100										
BDX67C				140	120										
BDX77	N	D	TO-220(1)	100	80	8	60	25	30	2	> 25	> 3	1	3/300	
BDX78	P			80	80										
BDX91	N	C	TO-3(2)	60	60	8	90	25	20	3	—	> 4	0,8	3/300	
BDX93				80	80										
BDX95				100	100										
BDX92	P	C	TO-3(2)	60	60	8	90	25	20	3	—	> 4	0,8	3/300	
BDX94				80	80										
BDX96				100	100										
BDY90	N	D	TO-3(1)	120	100	10	40	75	30–120	5	—	70	1,5	10/1000	
BDY91				100	80								1,5		
BDY92				80	60								1		
BF419	N	N	TO-126	300	250	0,1	6	90	typ 45	0,02	—	90	11	0,2/20	
BF457	N	D	TO-126	160	160	0,1	6	90	26	0,03	—	90	1	0,03/6	
BF458				250	250										
BF459				300	300										

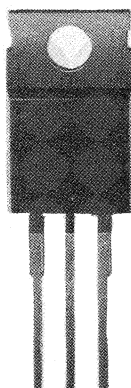




TO-126



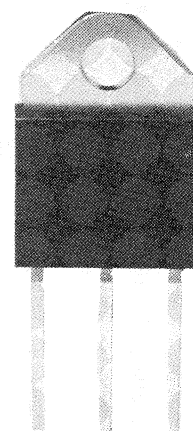
TO-202



TO-220



SOT-82



SOT-93

type	polarity	status	case	RATINGS					CHARACTERISTICS						
				V <sub>CB0</sub> (V <sub>CESM</sub> ) V	V <sub>CE0</sub> (V <sub>CER</sub> ) V	I <sub>C</sub> A	P <sub>tot</sub> at T <sub>mb</sub> W	T <sub>mb</sub> °C	hFE at I <sub>C</sub> min-max	t <sub>fmax</sub> T <sub>mb</sub> = 95 °C μs	f <sub>T</sub> typ MHz	V <sub>CEsat</sub> at I <sub>C</sub> /I <sub>B</sub> max V	A/mA		
BF469 BF471	N	D	TO-126	250 300	250 (300)	0,03	1,8	114	50	0,025	—	60	—	—	
BF470 BF472	P	D	TO-126	250 300	250 (300)	0,03	1,8	114	50	0,025	—	60	—	—	
BF819	N	N	TO-202	300	250	0,1	6	75	typ 45	0,02	—	90	11	0,2/20	
BF857 BF858 BF859	N	N	TO-202	160 250 300	160 250 300	0,1	6	75	26	0,03	—	90	1	0,03/6	
BF869 BF871	N	N	TO-202	250 300	250 (300)	0,05	5	25	50	0,025	—	60	—	—	
BF870 BF872	P	N	TO-202	250 300	250 (300)	0,05	5	25	50	0,025	—	60	—	—	
BU204 BU205 BU206	N	D	TO-3(1)	(1300) (1500) (1700)	600 700 800	2,5	10	90	2 2 1,8	2	—	7,5	5	2/1000 2/1000 2/1100	
BU207A BU208A BU209A	N	D	TO-3(1)	(1500) (1500) (1700)	600 700 800	5 5 4	12,5 80 12,5	95 25 95	2,25 2,5 2,25	4,5 4,5 3	— — —	7	5 1 5	4,5/2000 4,5/2000 3/1300	
BU326 BU326A	N	D	TO-3(1)	(800) (900)	375 400	6	60	50	typ 30	0,6	1	6	3	4/1250	
BU426 BU426A BU433	N	N	SOT-93	(800) (900) (800)	375 400 375	6	70	< 73	typ 30 typ 30 typ 40	0,6	1	6	1,5	2,5/500	
BUW84 BUW85	N	D	SOT-82	(800) (1000)	400 450	2	50	25	typ 50	0,1	1,4	20	1,5	0,3/30	
BUX80 BUX81 BUX82 BUX83	N	D	TO-3(1)	(800) (1000) (800) (1000)	400 450 400 450	10 10 6 6	100 100 60 60	40 40 50 50	typ 30	1,2 1,2 0,6 0,6	0,8 0,8 1 1	6	1,5	5/1000 5/1000 2,5/500 2,5/500	
BUX84 BUX85 BUX86 BUX87	N	D	TO-220(1) TO-220(1) TO-126 TO-126	(800) (1000) (800) (1000)	400 450 400 450	2 2 0,5 0,5	40 40 20 20	50 50 60 60	typ 50	0,1 0,1 0,05 0,05	1,4 1,4 1,3 1,3	20	1,5	0,3/30 0,3/30 0,1/10 0,1/10	

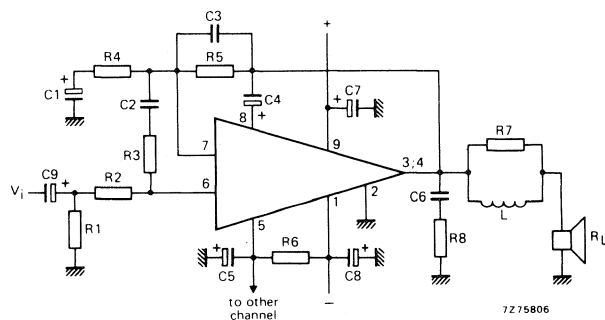
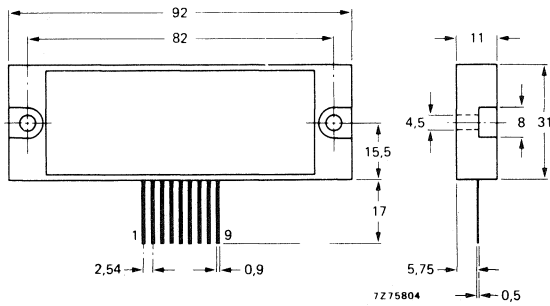
# I.f. power modules

## hybrid integrated circuits

### Audio power amplifiers

- thin-film substrate
- output power up to 60 W
- good ripple rejection
- high stability for complex loads
- built-in short-circuit protection (SOAR protected)
- low transient distortion
- low harmonic distortion

type	status	$P_O$ at $d_{tot} < 0,2\%$		$d_{tot}$ at $P_O = 1 \text{ W}; f = 1 \text{ kHz}$	power bandwidth ( $-3 \text{ dB}$ )	$P_O$ at $R_L = 4 \Omega$ $d_{tot} = 0,7\%$
		$R_L = 4 \Omega$	$R_L = 8 \Omega$			
OM931	N	> 30 W at $\pm 23 \text{ V}$	> 30 W at $\pm 26 \text{ V}$	typ 0,02%	20 Hz to 40 kHz	typ 40 W
OM961	N	> 60 W at $\pm 31 \text{ V}$	> 60 W at $\pm 35 \text{ V}$			typ 75 W



#### List of components:

$R1 = 10 \text{ k}\Omega$ (0,25 W)	$C1 = 47 \mu\text{F}$ (10 V)
$R2 = 4,7 \text{ k}\Omega$ (0,25 W)	$C2 = 270 \text{ pF}$ (10%)
$R3 = 300 \Omega$ (0,25 W)	$C3 = 120 \text{ pF}$ (10%)
$R4 = 680 \Omega$ (0,25 W)	$C4 = 100 \mu\text{F}$
$R5 = 10 \text{ k}\Omega$ (0,25 W)	$C5 = 470 \mu\text{F}$
$R6 = 22 \Omega$ (0,5 W)	$C6 = 100 \text{ nF}$
$R7 = 2,2 \Omega$ (0,25 W)	$C7 = 10 \mu\text{F}$ (63 V)
$R8 = 10 \Omega$ (0,5 W)	$C8 = 10 \mu\text{F}$ (63 V)
	$C9 = 1 \mu\text{F}$ (63 V)

$L = 4 \mu\text{H}$

$R_L = 4 \text{ or } 8 \Omega$ .