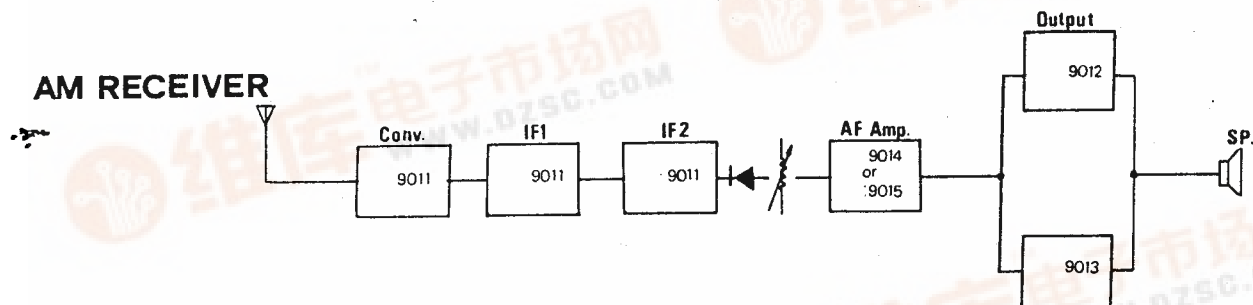
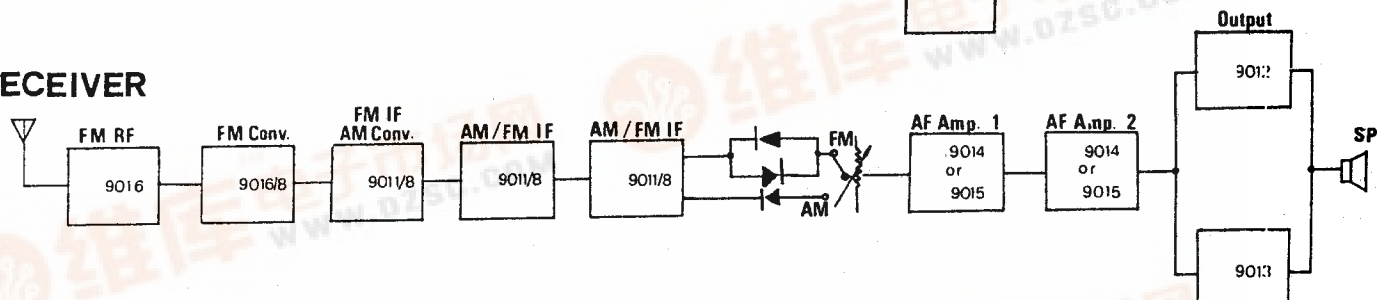


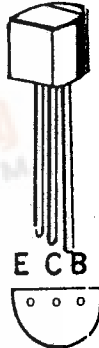
SELECTION GUIDE FOR AM / FM RADIO TRANSISTOR KIT

AM RECEIVER



FM RECEIVER



TYPE	POLARITY	APPLICATIONS	CASE
CL 9011	NPN	AM / FM IF , AM CONVERTER	TO-92B 
CL 9012	PNP	AUDIO POWER OUTPUT	
CL 9013	NPN	AUDIO POWER OUTPUT	
CL 9014	NPN	AUDIO DRIVER	
CL 9015	PNP	AUDIO DRIVER	
CL 9016	NPN	FM RF	
CL 9018	NPN	AM / FM IF , FM CONVERTER	



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DEVICE SPECIFICATIONS [$T_A = 25^\circ\text{C}$ unless otherwise specified]

TYPE	MAXIMUM RATINGS					ELECTRICAL CHARACTERISTICS														
	V_{CB0} (V)	V_{CE0} (V)	V_{EB0} (V)	P_D (mW)	H_{FE}	I_{CB0} (mA)	V_{CB} (V)	V_{BE} (V)	I_C (mA)	V_{CE} (V)	$V_{CE(sat)}$ (V)	I_C (mA)	I_B (mA)	f_T (MHz)	I_C (mA)	V_{CE} (V)	C_{ob} (pF)	V_{CB} (V)	$C_{cbb} \times 1/$ (pSec)	NF (dB)
					min. max.	max.		typ. max.	typ. max.	typ. max.	typ. max.	typ. max.	min. typ.	typ. max.	typ. max.				typ.	typ.
CL 9011	25	20	3	300	28 198	50	18	0.67 0.85	1 5	0.08 0.5	10 1	150 220	1 5	19 25	10	22	3 ^{2/}			
CL 9012	25	20	5	500	64 350	500	18	0.7 0.85	10 1	0.2 0.6	250 25									
CL 9013	25	20	5	500	64 350	500	18	0.7 0.85	10 1	0.2 0.6	250 25									
CL 9014	25	20	5	500	60 1000	50	18	0.63 0.85	1 5	0.07 0.5	10 1	50 140	1 5	2.7 6	10	2 ^{3/}				
CL 9015	25	20	5	500	60 1000	50	18	0.64 0.85	1 5	0.07 0.5	10 1	50 120	1 5	3.5 6	10	2 ^{3/}				
CL 9016	25	20	3	300	28 198	50	18	0.72 0.85	1 5	0.14 0.5	10 1	500 800	5 5	1.1 1.6	10	12	3 ^{4/}			
CL 9018	20	15	3	300	28 198	50	18	0.72 0.85	1 5	0.14 0.5	10 1	400 800	5 5	1.3 1.7	10	18				

- 1/ : C_{crbb} @ $I_C = 1\text{mA}$ $V_{CE} = 5\text{V}$ $f = 31.8\text{MHz}$
 2/ : NF @ $I_C = 1\text{mA}$ $V_{CE} = 5\text{V}$ $R_G = 500\Omega$ $f = 1\text{MHz}$
 3/ : NF @ $I_C = 0.1\text{mA}$ $V_{CE} = 5\text{V}$ $R_G = 10k\Omega$ $f = 30\text{Hz to } 15\text{kHz}$
 4/ : NF @ $I_C = 1\text{mA}$ $V_{CE} = 5\text{V}$ $R_G = 50\Omega$ $f = 100\text{MHz}$

CLASSIFICATION OF HFE GROUPS

TYPE NO.	GROUP	A	B	C	D	E	F	G	H	I	@ I_C / V_{CE}
CL 9011 CL 9016 CL 9018					28 - 45	39 - 60	54 - 80	72 - 108	97 - 146	132 - 198	1mA / 5V
CL 9014 CL 9015		60 - 156	100 - 300	200 - 600	400 - 1000						1mA / 5V
CL 9012 CL 9013					64 - 91	78 - 112	96 - 135	118 - 166	144 - 202	180 - 350	50mA / 1V