

# Low Level and General Purpose Amplifiers

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub>	C <sub>ob</sub>	N.F.
			P <sub>d</sub>	I <sub>C</sub>	V <sub>CEO</sub>	min	max	I <sub>C</sub>	V <sub>CE</sub>	max	I <sub>C</sub>			
										(mW)	(mA)	(V)	(V)	(mA)
BC107	N	TO-18	300	100	45	110	450 #	2	5	0.6	100	150	6	10
BC108	N	TO-18	300	100	20	110	800 #	2	5	0.6	100	150	6	10
BC109	N	TO-18	300	100	20	110	800 #	2	5	0.6	100	150	6	4
BC147	N	TO-92F	350	100	45	110	450 #	2	5	0.6	100	200+	4.5	10
BC148	N	TO-92F	350	100	20	110	800 #	2	5	0.6	100	200+	4.5	10
BC149	N	TO-92F	350	100	20	200	800 #	2	5	0.6	100	200+	4.5	10
BC157	P	TO-92F	350	100	45	110	450 #	2	5	0.3	10	150+	3.5+	10
BC158	P	TO-92F	350	100	25	110	800 #	2	5	0.3	10	150+	3.5+	10
BC159	P	TO-92F	350	100	20	200	800 #	2	5	0.3	10	150+	3.5+	4
BC167	N	TO-92B	300	100	45	110	450 #	2	5	0.6	100	150	4.5	10
BC168	N	TO-92B	300	100	20	110	800 #	2	5	0.6	100	150	4.5	10
BC169	N	TO-92B	300	100	20	200	800 #	2	5	0.6	100	150+	4.5	4
BC171	N	TO-92F	300	100	45	125	500 # *	2	5	0.6	100	150	6	10
BC172	N	TO-92F	300	100	25	125	900 # *	2	5	0.6	100	150	6	10
BC173	N	TO-92F	300	100	25	125	900 # *	2	5	0.6	100	150	6	10
BC174	N	TO-92F	300	100	64	110	800 #	2	5	0.6	100	150	10	10
BC177	P	TO-18	300	100	45	70	450 #	2	5	0.3	10	150	7	10
BC178	P	TO-18	300	100	25	70	800 #	2	5	0.3	10	100	7	10
BC179	P	TO-18	300	100	25	200	800 #	2	5	0.3	10	100	7	4
BC181	P	TO-92F	300	200	25	60	-	2.5	5	0.25	50	150+	4.7+	-
BC182	N	TO-92F	300	200	50	110	450 #	2	5	0.6	100	150	5	10
BC182L	N	TO-92B	300	200	50	110	450 #	2	5	0.6	100	150	5	10
BC183	N	TO-92F	300	200	50	110	800 #	2	5	0.6	100	150	5	10
BC183L	N	TO-92B	300	200	30	110	800 #	2	5	0.6	100	150	5	10
BC184	N	TO-92F	300	200	30	200	800 #	2	5	0.6	100	150	5	4
BC184L	N	TO-92B	300	200	30	200	800 #	2	5	0.6	100	150	5	4
BC212	P	TO-92F	300	200	50	100	400 # *	2	5	0.6	100	100	10	10
BC212L	P	TO-92B	300	200	50	100	400 # *	2	5	0.6	100	100	10	10
BC213	P	TO-92F	300	200	30	100	600 # *	2	5	0.6	100	100	10	10
BC213L	P	TO-92B	300	200	30	100	600 # *	2	5	0.6	100	100	10	10
BC214	P	TO-92F	300	200	30	200	600 # *	2	5	0.6	150	150	10	2
BC214L	P	TO-92B	300	200	30	200	600 # *	2	5	0.6	100	150	10	2
BC224	P	TO-92B	250	30	30	150	450	1	5	0.7	10	150+	3.5+	-
BC237	N	TO-92F	300	100	45	110	450 #	2	5	0.6	100	150	4.5	10
BC238	N	TO-92F	300	100	20	110	800 #	2	5	0.6	100	150	4.5	10
BC239	N	TO-92F	300	100	20	200	800 #	2	5	0.6	100	150	4.5	4
BC250	P	TO-92F	300	100	20	35	800 #	1	1	0.4+	30	100	6	-
BC251	P	TO-92F	300	100	45	125	900 # *	2	5	0.3	10	80	6	10
BC252	P	TO-92F	300	100	25	125	900 # *	2	5	0.3	10	80	6	10
BC253	P	TO-92F	300	100	25	125	900 # *	2	5	0.3	10	80	6	4
BC256	P	TO-92F	300	100	64	125	500 #	2	5	0.5	100	130+	6	10
BC257	P	TO-92B	300	100	45	70	450 #	2	5	0.3	10	130	6	10
BC258	P	TO-92B	300	100	25	70	800 #	2	5	0.3	10	130	6	10
BC259	P	TO-92B	300	100	20	200	800 #	2	5	0.3	10	130	6	4
BC260	P	TO-18	300	100	20	35	600 #	1	1	0.4+	30	100	6	-
BC261	P	TO-18	300	100	45	125	900 # *	2	5	0.3	10	100	6	10
BC262	P	TO-18	300	100	25	125	900 # *	2	5	0.3	10	100	6	10
BC263	P	TO-18	300	100	25	125	900 # *	2	5	0.3	10	100	6	4

# HFE grouping available \* hfe @ 1KHz. + typical value

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TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub> min	C <sub>oh</sub> max	N.F. max
			P <sub>d</sub> (mW)	I <sub>C</sub> (mA)	V <sub>CEO</sub> (V)	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (mA)			
BC266	P	TO-18	300	100	64	110	450 #	2	5	0.3	10	150+	6	10
BC267	N	TO-18	400	1000	45	110	450 #	2	5	0.3	100	150	8.6+	3+
BC268	N	TO-18	400	1000	20	110	800 #	2	5	0.3	100	150	8.6+	3+
BC269	N	TO-18	400	1000	30	220	800 #	2	5	0.3	100	150	8.6+	4
BC280	N	TO-18	360	100	40	180	600	1	5	0.7	10	-	2.8+	3
BC282	N	TO-18	400	600	30	50	300	50	5	1	300	100	10	-
BC283	P	TO-18	400	600	30	40	270	50	5	1	300	80+	7	-
BC307	P	TO-92F	300	100	45	70	450 #	2	5	0.3	10	100	6	10
BC308	P	TO-92F	300	100	25	70	800 #	2	5	0.3	10	100	6	10
BC309	P	TO-92F	300	100	20	200	800 #	2	5	0.3	10	100	6	4
BC315	P	TO-92F	300	100	35	100	350 #	2	5	0.6	100	200	5+	2
BC315L	P	TO-92B	300	100	35	100	350 #	2	5	0.6	100	200	5+	2
BC317	N	TO-92A	310	150	45	110	450 #	2	5	0.5	100	100	4	6
BC318	N	TO-92A	310	150	30	110	800 #	2	5	0.5	100	100	7	6
BC319	N	TO-92A	310	150	20	200	800 #	2	5	0.5	100	100	4	6
BC320	P	TO-92A	310	150	45	70	450 #	2	5	0.3	10	100	4	6
BC321	P	TO-92A	310	150	30	70	800 #	2	5	0.3	10	100	4	6
BC322	P	TO-92A	310	150	20	200	800 #	2	5	0.3	10	100	4	4
BC330	N	TO-92F	250	30	45	220	- #	2	5	1	10	100	3	2
BC332	N	TO-92F	250	30	45	100	- #	2	5	1	10	100	3	6
BC333	N	TO-92F	310	50	25	100	1000 #	0.1	5	0.6	10	50	4	-
BC334	P	TO-92F	310	50	25	100	1000 #	0.1	5	0.6	10	50	4	-
BC335	N	TO-92F	310	50	25	100	1000 #	0.1	5	0.6	10	50	4	-
BC336	P	TO-92F	310	50	25	100	1000 #	0.1	5	0.6	10	50	4	-
BC347	N	TO-92A	300	100	45	40	450 #	2	5	0.25	10	125	4	10
BC348	N	TO-92A	300	100	30	40	450 #	2	5	0.25	10	125	4	10
BC349	N	TO-92A	300	100	20	40	450 #	2	5	0.25	10	125	4	10
BC350	P	TO-92A	300	100	45	40	450 #	2	5	0.25	10	125	4	10
BC351	P	TO-92A	300	100	30	40	450 #	2	5	0.25	10	125	4	10
BC352	P	TO-92A	300	100	20	40	450 #	2	5	0.25	10	125	4	10
BC357	P	TO-92F	310	100	25	100	500	10	10	0.25	10	200	10	-
BC358	N	TO-92F	310	100	25	100	500	10	10	0.25	10	125	10	-
BC382	N	TO-92F	300	100	45	100	900 #	2	5	0.6	100	150	5	6
BC382L	N	TO-92B	300	100	45	100	900 #	2	5	0.6	100	150	5	6
BC383	N	TO-92F	300	100	30	100	900 #	2	5	0.6	100	150	5	6
BC383L	N	TO-92B	300	100	30	100	900 #	2	5	0.6	100	150	5	6
BC384	N	TO-92F	300	100	30	250	900 #	2	5	0.6	100	150	5	4
BC384L	N	TO-92B	300	100	30	250	900 #	2	5	0.6	100	150	5	4
BC385	N	TO-92F	300	100	45	100	480	2	5	0.6	100	150	5	-
BC386	N	TO-92F	300	100	20	100	850	2	5	0.6	100	150	5	-
BC413	N	TO-92F	300	100	30	180	800 #	2	5	0.6	100	200+	2.7+	2.5
BC414	N	TO-92F	300	100	45	180	800 #	2	5	0.6	100	200+	2.7+	2.5
BC415	P	TO-92F	300	100	35	120	800 #	2	5	0.6	100	200+	2.7+	2
BC416	P	TO-92F	300	100	45	120	800 #	2	5	0.6	100	200+	2.7+	2
BC447	N	TO-92F	625	300	80	50	460 #	2	5	0.25	100	100	-	-
BC448	P	TO-92F	625	300	80	50	460 #	2	5	0.25	100	100	-	-
BC449	N	TO-92F	625	300	100	50	460 #	2	5	0.25	100	100	-	-

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TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(max)</sub>		f <sub>T</sub>	C <sub>ob</sub>	N.F.
			P <sub>a</sub> (mW)	I <sub>C</sub> (mA)	V <sub>CEO</sub> (V)	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (mA)	min (MHz)	max (MHz)	max (dB)
BC451	N	TO-92F	300	100	45	110	800 #	2	6	-	-	150	4.5	10
BC452	N	TO-92F	300	100	30	110	800 #	2	6	-	-	150	4.5	10
BC453	N	TO-92F	300	100	30	110	800 #	2	6	-	-	150	4.5	4
BC454	P	TO-92F	300	100	45	125	800 #	2	6	-	-	150	6	10
BC455	P	TO-92F	300	100	30	125	800 #	2	6	-	-	150	6	10
BC456	P	TO-92F	300	100	30	125	800 #	2	6	-	-	150	6	4
BC478	P	TO-18	360	150	50	110	450 #	2	5	0.25	10	-	6	6
BC479	P	TO-18	360	150	40	220	450 #	2	5	0.25	10	-	6	4
BC546	N	TO-92F	500	100	65	110	450 #	2	5	0.6	100	300+	4.5	10
BC547	N	TO-92F	500	100	45	110	450 #	2	5	0.6	100	250+	4.5	10
BC548	N	TO-92F	500	100	30	110	800 #	2	5	0.6	100	250+	4.5	10
BC549	N	TO-92F	500	100	30	200	800 #	2	5	0.6	100	250+	4.5	4
BC550	N	TO-92F	500	100	45	200	800 #	2	5	0.6	100	250+	4.5	4
BC556	P	TO-92F	500	100	65	110	450 #	2	5	0.6	100	300+	4.5	10
BC557	P	TO-92F	500	100	45	70	450 #	2	5	0.65	100	180+	3.2+	10
BC558	P	TO-92F	500	100	30	70	800 #	2	5	0.65	100	180+	3.2+	4
BC559	P	TO-92F	500	100	30	110	800 #	2	5	0.65	100	180+	3.2+	4
BC560	P	TO-92F	500	100	45	110	800 #	2	5	0.65	100	180+	3.2+	10
BCX58	N	TO-92F	450	100	32	120	630 #	2	5	0.5	100	125	4.5	6
BCX59	N	TO-92F	450	100	45	120	630 #	2	5	0.5	100	125	4.5	6
BCX78	P	TO-92F	450	100	32	120	630 #	2	5	0.6	100	100	4.5	6
BCX79	P	TO-92F	450	100	45	120	630 #	2	5	0.6	100	100	4.5	6
BCY58	N	TO-18	360	200	32	120	630 #	2	5	0.35	10	125	6	6
BCY59	N	TO-18	360	200	45	120	630 #	2	5	0.35	10	125	6	6
BCY70	P	TO-18	300	200	40	50	-	10	1	0.25	10	250	6	6
BCY71	P	TO-18	350	200	45	100	600	10	1	0.25	10	200	6	2
BCY72	P	TO-18	350	200	25	50	-	10	1	0.25	10	200	6	6
BCY78	P	TO-18	350	200	32	120	630 #	2	5	0.25	10	100	7	6
BCY79	P	TO-18	350	200	45	120	460 #	2	5	0.25	10	100	7	6
KM9011	N	TO-92A	300	100	20	28	198	1	5	0.5	10	150	2.5	-
KM9014	N	TO-92A	300	100	20	72	1000 #	1	5	0.5	10	50	6	2+
KM9015	P	TO-92A	300	100	20	72	1000 #	1	5	0.5	10	50	6	2+
MPS2714	N	TO-92A	350	100	18	75	225	2	4.5	0.3	50	250+	2.5+	-
MPS2716	N	TO-92A	360	100	18	75	225	2	4.5	-	-	-	5	-
MPS2923	N	TO-92A	360	100	25	90	180 *	2	10	-	-	-	12	-
MPS2924	N	TO-92A	360	100	25	150	300 *	2	10	-	-	-	12	-
MPS2925	N	TO-92A	360	200	25	235	470 *	2	10	-	-	-	12	-
MPS2926	N	TO-92A	360	200	18	35	470 # *	2	10	-	-	-	3.5	-
MPS3390	N	TO-92A	360	100	25	400	800	2	4.5	-	-	-	10	-
MPS3391	N	TO-92A	360	100	25	250	500	2	4.5	-	-	-	10	-
MPS3392	N	TO-92A	360	100	25	150	300	2	4.5	-	-	-	10	-
MPS3393	N	TO-92A	360	100	25	90	180	2	4.5	-	-	-	10	-
MPS3395	N	TO-92A	360	100	25	150	500	2	4.5	-	-	-	10	-
MPS3396	N	TO-92A	360	100	25	90	500	2	4.5	-	-	-	10	-
MPS3397	N	TO-92A	360	100	25	55	500	2	4.5	-	-	-	10	-
MPS3398	N	TO-92A	360	100	25	55	800	2	4.5	-	-	-	10	-

# HFE grouping available \* hfe @ 1KHz + typical value

# Low Level and General Purpose Amplifiers

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>		I <sub>C</sub>		V <sub>CE</sub>		f <sub>T</sub> min (MHz)	C <sub>ob</sub> max (MHz)	N.F. max (dB)
			P <sub>d</sub> (mW)	I <sub>C</sub> (mA)	V <sub>CEO</sub> (V)	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	V <sub>CE(max)</sub> max (V)	I <sub>C</sub> (mA)			
MPS3608	P	TO-92A	350	500	25	30	-	50	1	1	100	100	20	-
MPS3707	N	TO-92A	360	30	30	100	400	0.1	5	1	10	-	-	-
MPS3708	N	TO-92A	360	30	30	45	660	1	5	1	10	-	-	-
MPS3709	N	TO-92A	360	30	30	45	165	1	5	1	10	-	-	-
MPS3710	N	TO-92A	360	30	30	90	330	1	5	1	10	-	-	-
MPS3711	N	TO-92A	360	30	30	180	660	1	5	1	10	-	12	-
MPS3721	N	TO-92A	360	100	18	60	660	2	10	-	-	-	3.5	-
MPS5172	N	TO-92A	360	100	25	100	500	10	10	0.25	10	-	10	-
MPS6513	N	TO-92A	350	100	30	90	180	2	10	0.5	50	100	3.5	2+
MPS6514	N	TO-92A	350	100	25	150	300	2	10	0.5	50	100	3.5	2+
MPS6515	N	TO-92A	350	100	25	250	500	2	10	0.5	50	100	3.5	2+
MPS6517	P	TO-92A	350	100	40	90	180	2	10	0.5	50	100	4	2+
MPS6518	P	TO-92A	350	100	40	150	300	2	10	0.5	50	100	4	2+
MPS6519	P	TO-92A	350	100	25	250	500	2	10	0.5	50	100	4	2+
MPS6520	N	TO-92A	360	100	25	200	400	2	10	0.5	50	-	3.5	3
MPS6521	N	TO-92A	360	100	25	300	600	2	10	0.5	50	-	3.5	3
MPS6522	P	TO-92A	360	100	25	200	400	2	10	0.5	50	-	3.5	3
MPS6523	P	TO-92A	360	100	25	300	600	2	10	0.5	50	-	3.5	3
MPS6565	N	TO-92A	360	200	45	40	160	10	10	0.4	10	200	3.5	-
MPS6566	N	TO-92A	360	200	45	100	400	10	10	0.4	10	200	3.5	-
MPS6571	N	TO-92A	360	50	20	250	1000	0.1	5	0.5	10	50	4.5	-
MPS6573	N	TO-92A	360	100	35	200	500	10	5	0.5	10	100	12	-
MPS6574	N	TO-92A	360	100	35	100	300 #	1	5	0.5	10	100	12	-
MPS6575	N	TO-92A	360	100	45	200	500	10	5	0.5	10	100	12	-
MPS6576	N	TO-92A	360	100	45	100	300 #	1	5	0.5	10	100	12	-
MPS8097	N	TO-92A	350	200	40	250	700	0.1	5	-	-	250	4	2
MPS8098	N	TO-92A	350	200	60	100	300	1	5	0.3	100	100	6	-
MPS8598	P	TO-92A	350	200	60	100	300	1	5	0.3	100	100	8	-
MPS8599	P	TO-92A	350	200	80	100	300	1	5	0.3	100	150	8	-
MPS9410	N	TO-92A	350	500	12	60	400 #	50	1	0.5	250	200+	4+	-
MPS9411	N	TO-92A	350	500	18	60	400 #	50	1	0.5	250	200+	4+	-
MPS9412	N	TO-92A	350	500	25	60	400 #	50	1	0.5	250	200+	4+	-
MPS9460	P	TO-92A	350	500	12	60	400 #	50	1	0.5	250	150+	4.7+	-
MPS9461	P	TO-92A	350	500	18	60	400 #	50	1	0.5	250	150+	4.7+	-
MPS9462	P	TO-92A	350	500	25	60	400 #	50	1	0.5	250	150+	4.7+	-
MPS9600	N	TO-92A	300	100	12	25	300 #	1	5	0.5	10	30	4	-
MPS9601	N	TO-92A	300	100	18	25	300 #	1	5	0.5	10	50	4	-
MPS9602	N	TO-92A	300	100	30	25	300 #	1	5	0.5	10	50	4	-
MPS9630	N	TO-92A	350	100	12	45	600 #	1	5	0.5	30	-	-	-
MPS9631	N	TO-92A	350	100	18	45	600 #	1	5	0.5	30	-	-	-
MPS9632	N	TO-92A	350	100	30	45	600 #	1	5	0.5	30	-	-	-
MPS9633	N	TO-92A	310	50	30	250	1800 #	2	5	0.5	10	150	3.5	2.5
MPS9634	N	TO-92A	310	50	30	250	1800 #	2	5	0.5	10	150	3.5	2+
MPSA09	N	TO-92A	350	50	50	100	600 #	0.1	5	0.9	10	30	5	-
MPSA10	N	TO-92A	210	100	40	40	400	5	10	-	-	20	4	-
MPSA18	N	TO-92A	350	200	45	500	1500	10	5	0.3	50	100	3	1.5
MPSA20	N	TO-92A	350	100	40	40	400 #	5	10	0.25	10	125	4	-
MPSA70	P	TO-92A	350	100	40	40	400 #	5	10	0.25	10	125	4	-

# HFE grouping available \* hfe @ 1KHz + typical value

# Low Level and General Purpose Amplifiers

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub> min	C <sub>ob</sub> max	N.F. max
			P <sub>d</sub> (mW)	I <sub>C</sub> (mA)	V <sub>CEO</sub> (V)	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (mA)			
MPSD06	N	TO-92A	350	50	25	50	-	50	5	0.3	50	100	-	-
MPSD56	P	TO-92A	350	50	25	50	-	50	5	0.3	50	100	-	-
PN930	P	TO-92A	300	100	45	100	300	0.01	5	1	10	30	8	3
PN1711	N	TO-92A	300	100	32	100	300	150	10	1.5	150	70	25	-
PN3548	P	TO-92A	300	100	45	100	300	0.01	5	1	10	60	8	4
PN3565	N	TO-92A	300	50	25	150	600	1	10	0.35	1	40	4	-
PN3566	N	TO-92A	600	200	30	150	600	10	10	1	100	40	25	-
PN3694	N	TO-92A	600	30	45	100	450	10	1	0.2+	100	200	6	-
PN4249	P	TO-92A	200	100	60	100	300	0.1	5	0.25	10	50	6	3
PN4250	P	TO-92A	200	100	40	250	700	0.1	5	0.25	10	50	6	2
PN5138	P	TO-92A	300	50	30	50	800	0.1	10	0.3	10	30	7	-
TIS92	N	TO-92F	625	400	40	100	300	50	2	0.25	50	200+	4.2+	-
TIS93	P	TO-92F	625	400	40	100	300	50	2	0.25	50	150+	5+	-
TIS97	N	TO-92F	360	200	40	250	700	0.1	5	0.5	100	200	4	3
TIS98	N	TO-92F	360	200	60	100	300	1	5	0.5	100	200	4	-
2N841	N	TO-18	500	100	45	76	333	5	1	10	50	8	-	-
2N929	N	TO-18	300	1000	45	60	400	10	5	2	10	40	15	-
2N930	N	TO-18	500	30	45	100	300	0.01	5	1	10	30	8	3
2N930A	N	TO-18	500	30	45	100	300	0.01	5	0.5	10	45	6	3
2N2511	N	TO-18	360	200	50	240	750	10	5	1	5	45	6	4
2N2586	N	TO-18	300	100	45	120	360	0.01	5	0.5	10	45	7	3
2N2605	P	TO-18	400	30	45	100	300	0.01	5	0.5	10	30	6	3
2N2714	N	TO-92B	200	100	18	75	225	2	4.5	0.3	50	-	-	-
2N2716	N	TO-92B	200	100	18	75	225	2	4.5	-	-	-	5	-
2N2923	N	TO-92B	200	100	25	90	180	2	10	-	-	-	12	-
2N2924	N	TO-92B	200	100	25	150	300	2	10	-	-	-	12	-
2N2925	N	TO-92B	200	100	25	235	470	2	10	-	-	-	12	-
2N2926	N	TO-92B	200	100	18	35	470	2	10	-	-	-	12	-
2N3390	N	TO-92B	200	100	25	400	800	2	4.5	-	-	-	10	-
2N3391	N	TO-92B	200	100	25	250	500	2	4.5	-	-	120+	10	-
2N3391A	N	TO-92B	200	100	25	250	500	2	4.5	-	-	120+	10	5
2N3392	N	TO-92B	200	100	25	150	300	2	4.5	-	-	120+	10	-
2N3393	N	TO-92B	200	100	25	90	180	2	4.5	-	-	120+	10	-
2N3395	N	TO-92B	200	100	25	150	500	2	4.5	-	-	-	10	-
2N3396	N	TO-92B	200	100	25	90	500	2	4.5	-	-	-	10	-
2N3397	N	TO-92B	200	100	25	55	500	2	4.5	-	-	-	10	-
2N3398	N	TO-92B	200	100	25	55	800	2	4.5	-	-	-	10	-
2N3547	P	TO-18	400	100	60	100	500	1	5	1	10	45	8	5
2N3548	P	TO-18	400	100	45	100	300	0.01	5	1	10	60	8	4
2N3549	P	TO-18	400	100	60	100	500	0.01	5	1	10	60	8	4
2N3550	P	TO-18	400	100	45	200	600	0.01	5	0.5	5	60	8	4
2N3707	N	TO-92B	360	200	30	100	400	0.1	5	1	10	-	-	5
2N3708	N	TO-92B	360	200	30	45	660	1	5	1	10	-	-	-
2N3709	N	TO-92B	360	200	30	45	160	1	5	1	10	-	-	-
2N3710	N	TO-92B	360	200	30	90	330	1	5	1	10	-	-	-
2N3711	N	TO-92B	360	200	30	180	660	1	5	1	10	-	-	-
2N3721	N	TO-92B	200	100	18	60	660	2	10	1	100	100	12	-
2N3798	P	TO-18	360	50	60	150	450	1	5	0.25	1	100	4	3
2N3799	P	TO-18	360	50	60	300	900	1	5	0.25	1	100	4	1.5

# HFE grouping available. \* hfe @ 1KHz + typical value

# Low Level and General Purpose Amplifiers

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub>	C <sub>ob</sub>	N.F.
			P <sub>d</sub>	I <sub>C</sub>	V <sub>CE0</sub>			I <sub>C</sub>	V <sub>CE</sub>	max	I <sub>C</sub>			
						(mW)	(mA)					(V)	min	max
2N3859	N	TO-92B	200	100	30	100	200	2	4.5	0.125	10	90	4	-
2N3860	N	TO-92B	200	100	30	150	300	2	4.5	0.125	10	90	4	-
2N3900	N	TO-92B	360	100	18	250	500	2	4.5	-	-	160+	12	-
2N3901	N	TO-92B	360	100	18	350	700	2	4.5	-	-	200+	10	-
2N3903	N	TO-92A	350	200	40	50	150	10	1	0.3	50	250	4	6
2N3904	N	TO-92A	350	200	40	100	300	10	1	0.3	50	250	4	5
2N3905	P	TO-92A	350	200	40	50	150	10	1	0.4	50	250	4.5	5
2N3906	P	TO-92A	350	200	40	100	300	10	1	0.4	50	250	4.5	4
2N3946	N	TO-18	360	200	40	50	150	10	1	0.3	50	250	4	5
2N3947	N	TO-18	360	200	40	100	300	10	1	0.3	50	300	4	5
2N3962	P	TO-18	360	200	60	100	300	0.01	5	0.25	10	40	6	3
2N3964	P	TO-18	360	200	45	250	500	0.01	5	0.25	10	50	6	2
2N4058	P	TO-92B	360	100	30	100	400	0.1	5	0.7	10	-	-	5
2N4059	P	TO-92B	360	100	30	45	660	1	5	0.7	10	-	-	-
2N4060	P	TO-92B	360	100	30	45	165	1	5	0.7	10	-	-	-
2N4061	P	TO-92B	360	100	30	90	330	1	5	0.7	10	-	-	-
2N4062	P	TO-92B	360	100	30	180	660	1	5	0.7	10	-	-	-
2N4286	N	TO-92B	250	100	25	150	600	1	5	0.35	1	40	6	-
2N4287	N	TO-92B	250	100	45	150	600	1	5	0.35	1	40	6	8
2N4288	P	TO-92B	250	100	25	150	600	1	5	0.35	1	40	8	-
2N4289	P	TO-92B	250	100	45	150	600	1	5	0.35	1	40	8	4
2N4290	P	TO-92B	250	600	20	50	300	100	10	0.4	100	100	10	-
2N4291	P	TO-92B	250	600	30	100	300	100	10	0.4	100	100	10	-
2N4359	P	TO-18	360	50	45	50	600	1	5	-	-	20	6	4
2N4384	N	TO-18	300	50	30	100	500	0.01	5	0.2	10	30	8	2
2N4386	N	TO-18	300	50	30	40	500	0.01	5	0.2	10	30	8	3
2N4410	N	TO-92A	625	250	80	60	400	10	1	0.2	1	60	12	-
2N5086	P	TO-92A	350	50	50	150	500	0.1	5	0.3	10	40	4	3
2N5087	P	TO-92A	350	50	50	250	800	0.1	5	0.3	10	40	4	2
2N5088	N	TO-92A	350	50	30	300	900	0.1	5	0.5	10	50	4	3
2N5089	N	TO-92A	350	50	25	400	1200	0.1	5	0.5	10	50	4	2
2N5172	N	TO-92B	200	100	25	100	500	10	10	0.25	10	-	-	-
2N5209	N	TO-92A	350	50	50	100	300	0.1	5	0.7	10	30	4	4
2N5210	N	TO-92A	350	50	50	200	600	0.1	5	0.7	10	30	4	3
2N5219	N	TO-92A	350	100	15	35	500	2	10	0.4	10	150	4	-
2N5223	N	TO-92A	350	100	20	50	800	2	10	0.7	10	150	4	-
2N5227	P	TO-92A	350	50	30	50	700	2	10	0.4	10	100	5	-
2N5249	N	TO-92B	330	100	50	400	800	2	5	0.125	10	200+	4	3
2N5310	N	TO-92B	360	100	50	100	300	0.01	5	0.125	10	-	4	-
2N5825	N	TO-92F	360	100	40	100	200	2	5	0.125	10	90	4	-
2N5826	N	TO-92F	360	100	40	150	300	2	5	0.125	10	90	4	-
2N5827	N	TO-92F	360	100	40	250	500	2	5	0.125	10	90	4	-
2N5828	N	TO-92F	360	100	40	400	800	2	5	0.125	10	90	4	-
2SA495	P	TO-92B	200	100	30	70	240 #	10	1	1	10	100	7	-
2SA545	P	TO-92B	400	200	60	50	232 #	50	1	0.9	10	150+	-	-

# Low Level and General Purpose Amplifiers

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>r</sub> min (MHz)	C <sub>ob</sub> max (MHz)	N.F. max (dB)
			P <sub>d</sub> (mW)	I <sub>C</sub> (mA)	V <sub>CEO</sub> (V)	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (mA)			
2SA561	P	TO-92B	300	150	50	70	400 #	20	1	0.3	10	70+	13+	-
2SA564	P	TO-92B	250	50	25	65	700 #	2	5	0.4	50	150+	3.2+	2+
2SA564A	P	TO-92B	250	50	45	65	700 #	2	5	0.4	50	150+	3.2+	2+
2SA640	P	TO-92B	250	50	45	100	700	0.5	3	0.3	20	60	10	3
2SA641	P	TO-92B	250	50	45	100	700	0.5	3	0.3	20	60	10	-
2SA666	P	TO-92B	250	50	25	130	700 #	2	5	0.4	50	80+	-	16
2SA666A	P	TO-92B	250	50	45	130	700 #	2	5	0.4	50	80+	-	16
2SA673A	P	TO-92B	400	500	50	60	320 #	10	3	0.4	100	-	-	-
2SA721	P	TO-92B	150	50	35	180	1040 #	2	5	0.6	100	250+	-	-
2SA722	P	TO-92B	150	50	55	180	1040 #	2	5	0.6	100	250+	-	-
2SA888	P	TO-92A	350	50	25	65	700 #	2	5	0.5	50	100+	2.7+	-
2SA889	P	TO-92A	350	50	45	65	700 #	2	5	0.5	50	100+	2.7+	-
2SA1015	P	TO-92B	400	150	50	70	400	2	6	0.3	100	80	7	10
2SA1715	P	TO-92B	300	200	50	90	800	1	6	0.3	100	200+	6.5+	20
2SB637K	P	TO-92B	300	100	50	160	800	2	12	0.5	100	200+	1.8	-
2SC372	N	TO-92B	200	100	30	70	240 #	2	12	0.4	10	80	3.5	-
2SC373	N	TO-92B	200	100	30	200	400 #	2	12	0.4	10	80	3.5	-
2SC380	N	TO-92B	200	30	30	40	240 #	2	12	1.3	10	100	3.2	-
2SC454	N	TO-92B	200	100	30	60	320	2	12	1.1	10	230+	3.5	-
2SC536	N	TO-92B	200	100	20	40	850 #	1	6	-	-	-	6	-
2SC537	N	TO-92B	200	100	-	40	850 #	1	6	-	-	-	6	-
2SC644	N	TO-92B	150	50	25	130	700 #	2	5	0.4	50	75	10	3
2SC693	N	TO-92B	100	50	-	100	850 #	1	6	-	-	90	6	-
2SC734	N	TO-92B	300	150	50	70	400 #	20	1	0.25	100	80	10	-
2SC735	N	TO-92B	300	400	30	70	240 #	100	1	0.25	100	100	10	-
2SC828	N	TO-92B	250	50	25	65	700 #	2	5	0.4	50	150+	2.5+	2+
2SC828A	N	TO-92B	250	50	45	65	700 #	2	5	0.4	50	150+	2.5+	2+
2SC858	N	TO-92B	100	50	12	100	850 #	1	6	-	-	90	6	-
2SC900	N	TO-92B	250	100	35	225	1000 #	0.5	3	0.3	100	50	5	4
2SC923	N	TO-92B	250	100	35	225	1000 #	0.5	3	0.3	100	50	5	20
2SC945	N	TO-92B	250	100	50	90	600 #	1	6	0.3	100	150	5	15
2SC1000	N	TO-92B	200	100	50	200	700 #	2	6	0.3	10	80+	2.5	10
2SC1213A	N	TO-92B	400	500	50	60	320 #	10	3	0.4	100	-	-	-
2SC1222	N	TO-92B	250	100	45	150	1000 #	0.5	3	0.3	10	60	3.2+	3
2SC1327	N	TO-92B	150	50	35	180	1040 #	2	5	0.6	100	250+	-	-
2SC1328	N	TO-92B	150	100	35	180	1040 #	2	5	0.6	100	150+	3.2+	4
2SC1330	N	TO-92B	400	100	40	60	400 #	1	6	0.5	30	50	6	-
2SC1675	N	TO-92B	250	30	30	40	180 #	1	6	0.3	10	150	2.2	-
2SC1684	N	TO-92B	250	100	25	90	650 #	2	10	0.5	100	150+	3.5+	-
2SC1685	N	TO-92B	250	100	50	90	650 #	2	10	0.5	100	150+	3.5+	-
2SC1815	N	TO-92B	400	150	50	70	700 #	6	2	0.25	100	80	3.5	-
2SC1849	N	TO-92A	350	100	25	90	650 #	2	10	0.5	100	-	-	-
2SC1850	N	TO-92A	350	100	50	90	650 #	2	10	0.5	100	-	-	-
2SC2458	N	TO-92B	200	150	50	70	700 #	6	2	0.25	100	80	3.5	-
2SC2603	N	TO-92B	300	200	50	90	800	1	6	0.3	100	200+	2.5+	15

# HFE grouping available \* hfe @ 1KHz + typical value

# RF-IF High Frequency Transistors

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			$H_{FE}$				$V_{CE(00)}$		$f_T$	$C_{ob}$	N.F.
			$P_d$	$I_C$	$V_{CEO}$ $V_{CBO}^*$			$I_C$	$V_{CE}$	max	$I_C$	min	max	max
						(mW)	(mA)							
BF115	N	TO-72J	165	30	30	48	167	1	10	-	-	230+	0.8*	3.5+
BF155	N	TO-72G	200	20	40	20	-	2.5	10	0.3	10	400	0.4+*	9
BF167	N	TO-72J	150	25	30	27	-	4	10	0.95	10	300+	-	-
BF173	N	TO-72J	260	25	25	38	-	7	10	-	-	350	0.3*	-
BF180	N	TO-72G	150	20	20	45	-	2	10	-	-	675+	0.35	-
BF181	N	TO-72G	150	20	20	20	-	2	10	-	-	600+	0.9+	-
BF182	N	TO-72G	150	20	20	10	-	2	10	-	-	600+	1	7.4+
BF183	N	TO-72G	150	20	20	10	-	3	10	-	-	800+	1+	-
BF184	N	TO-72J	165	30	20	67	220	1	10	-	-	260+	0.9*	4
BF185	N	TO-72J	165	30	20	36	125	1	10	-	-	200+	0.9*	4
BF199	N	TO-92E	360	25	25	38	-	7	10	-	-	550+	0.32+*	-
BF200	N	TO-72G	150	20	20	15	-	2	10	-	-	500+	0.5*	5
BF224	N	TO-92E	360	50	30	30	-	7	10	0.15	10	300+	0.3+*	4
BF240	N	TO-92E	300	25	40	67	200	1	10	-	-	430+	0.34*	3.5
BF241	N	TO-92E	300	25	40	36	125	1	10	-	-	400+	0.34*	3.5
BF253	N	TO-92E	300	30	30	40	350 #	1	10	-	-	150	0.7+*	1.5
BF254	N	TO-92E	300	30	20	67	220	1	10	0.1+	10	260+	0.85+*	4
BF255	N	TO-92E	300	30	20	36	125	1	10	0.1+	10	200+	0.85+*	4
BF310	N	TO-92F	300	25	30	29	-	4	10	-	-	300+	1.6	-
BF311	N	TO-92E	300	25	25	40	-	15	10	-	-	750+	0.35*	-
BF314	N	TO-92F	300	25	30	29	-	4	10	-	-	450+	0.13*	-
BF368	N	TO-92A	310	50	15	35	125	1	10	0.4	10	250	1.7	-
BF369	N	TO-92A	310	50	20	70	220	1	10	0.4	10	400	1.7	-
BF494	N	TO-92E	300	30	20	67	220	1	10	0.1+	10	260+	0.85+*	4+
BF495	N	TO-92E	300	30	20	36	125	1	10	0.1+	10	200+	0.85+*	4+
BF562	N	TO-92F	250	20	20	20	-	3	10	-	-	600	-	3
BF594	N	TO-92E	250	30	25	65	220	1	10	-	-	260+	0.6+*	1.4+
BF595	N	TO-92E	250	30	25	35	125	1	10	-	-	260+	0.6+*	1.4+
BF597	N	TO-92E	360	25	25	38	-	7	10	-	-	550+	0.3+*	-
BFW68	N	TO-18	360	-	40	40	-	10	1	0.15	10	250	4	6
BFX89	N	TO-72G	25	15	20	20	150	2	1	-	-	1000+	1.7	4
BFY74	N	TO-18	360	100	45	40	180	10	5	1	10	250	4	-
BFY75	N	TO-18	360	100	45	65	300	10	5	1	10	250	4	-
BFY78	N	TO-18	300	50	12	20	-	3	1	0.4	10	500	2.8	6
BFY79	N	TO-72G	300	-	30	30	-	4	10	-	-	400	1.6	5.5
BFY88	N	TO-72J	175	25	25	40	-	5	1	-	-	750	0.28*	4
KM9016	N	TO-92A	300	50	20	28	198 #	1	5	0.5	10	500	1.6	3
KM9018	N	TO-92A	300	50	15	28	198 #	1	5	0.5	10	400	1.7	-
MPS918	N	TO-92A	350	50	15	20	-	3	1	0.4	10	600	1.7	-
MPS3563	N	TO-92A	350	50	12	20	200	8	10	-	-	600	1.7	6
MPS3693	N	TO-92A	350	50	45	40	160	10	10	-	-	200	3.5	4+
MPS3694	N	TO-92A	350	50	45	100	400	10	10	-	-	200	3.5	4+
MPS6507	N	TO-92A	350	100	20	25	-	2	10	-	-	700	2.5	-
MPS6511	N	TO-92A	350	50	20	25	-	10	10	-	-	-	2.5	-
MPS6539	N	TO-92C	350	50	20	20	-	4	10	-	-	500	0.7	4.5

# HFE groupings available + typical value



# RF-IF High Frequency Transistors

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			$H_{FE}$				$V_{CE(sat)}$		$f_T$	$C_{ob}$	N.F.
			$P_a$	$I_C$	$V_{CE0}$ $V_{CBO}^*$	min	max	$I_C$	$V_{CE}$	max	$I_C$			
												(mW)	(mA)	(V)
MPSH11	N	TO-92C	310	50	25	60	-	5	10	0.5	10	800	0.9	6
MPSH17	N	TO-92C	625	50	15	25	250	2	12	1.3	10	100	3.2	-
PN3563	N	TO-92A	250	50	12	20	200	8	10	-	-	600	1.7	4+
PN3564	N	TO-92A	250	50	15	20	200	15	10	0.3	20	400	3.5	-
PN5130	N	TO-92A	250	50	12	15	250	8	10	0.6	10	450	1.7	4+
PN5132	N	TO-92A	250	50	20	30	400	10	10	0.2	10	200	3.5	-
2N917	N	TO-72G	200	50	15	20	200	3	1	0.5	3	500	1.7	6
2N918	N	TO-72G	200	50	15	20	-	3	1	0.4	10	600	1.7	6
2N3662	N	TO-92B	200	25	12	20	-	8	10	0.6	10	700	1.5	4
2N3663	N	TO-92B	200	25	12	20	-	8	10	0.6	10	700	1.5	4
2N3825	N	TO-92B	250	100	15	20	-	2	10	0.25	2	200	3.5	4
2N3826	N	TO-92B	360	30	45	40	160	10	10	-	-	200	3.5	4
2N3827	N	TO-92B	360	30	45	100	400	10	10	-	-	200	3.5	4
2N3854	N	TO-92B	200	100	18	35	70	2	4.5	0.2	10	100	3.5	-
2N3854A	N	TO-92B	200	100	30	35	70	2	4.5	0.2	10	100	3.5	-
2N3855	N	TO-92B	200	100	18	60	120	2	4.5	0.2	10	130	3.5	-
2N3855A	N	TO-92B	200	100	30	60	120	2	4.5	0.2	10	130	3.5	-
2N3856	N	TO-92B	200	100	18	100	200	2	4.5	0.2	10	140	3.5	-
2N3856A	N	TO-92B	200	100	30	100	200	2	4.5	0.2	10	140	3.5	-
2N4292	N	TO-92B	200	50	15	20	-	3	1	0.6	10	600	3.5	6
2N4293	N	TO-92B	200	50	15	20	-	3	1	0.6	10	600	3.5	6
2N4994	N	TO-92F	360	30	45	40	160	10	10	-	-	200	3.5	-
2N5179	N	TO-72G	200	50	12	25	250	3	1	0.4	10	600+	1	4.5
2N5180	N	TO-72G	180	-	15	20	200	2	8	0.3	10	650	1	-
2N5181	N	TO-72G	180	50	45*	27	-	1	6	-	-	400	-	-
2N5182	N	TO-72G	180	-	35*	27	-	1	6	-	-	400	-	-
2N5770	N	TO-92A	625	50	15	20	-	3	1	0.4	10	600+	1.7	6
2SC717	N	TO-92B	200	50	19	40	-	1	6	1	20	600	2	-
2SC817	N	TO-72G	120	20	15	35	300 #	1	1	-	-	550	0.7*	-
2SC829	N	TO-92B	250	30	20	40	250 #	1	10	0.1	10	150	1.6*	-
2SC838	N	TO-92B	250	50	25	30	180 #	0.5	3	0.3	10	150	2.5	-
2SC839	N	TO-92B	250	50	25	30	180 #	0.5	3	0.3	10	150	2.5	4
2SC929	N	TO-92B	120	30	10	40	320 #	1	6	-	-	170	1.6*	-
2SC930	N	TO-92B	120	30	10	25	320 #	1	6	-	-	170	1.6*	-
2SC1047	N	TO-92B	150	15	20	40	160	1	6	-	-	450	1*	5
2SC1215	N	TO-92B	200	50	20	25	-	2	10	0.1+	10	600	1.5*	20+
2SC1293	N	TO-92B	300	50	25	15	120	1	6	-	-	200	1.8*	-
2SC1359	N	TO-92B	250	30	20	50	200	1	10	0.1+	10	150	1.5*	4
2SC1674	N	TO-92B	250	30	20	40	180 #	1	6	-	-	350	1.3	-
2SC1730	N	TO-92B	300	50	15	60	180 #	5	10	0.5	10	800	1.5	-
2SC1789	N	TO-92B	200	50	18	20	-	2	10	-	-	600	1.5*	-
2SC1923	N	TO-92B	100	20	30	25	140 #	1	6	-	-	500	0.7+*	4

# HFE groupings available + typical value.

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			$H_{FE}$				$V_{CE(sat)}$		$f_T$ min	$C_{ob}$ max	COMPLEMENTARY TYPE
			$P_d$ (mW)	$I_C$ (A)	$V_{CEO}$ $V_{CER}^*$ (V)	$H_{FE}$		$I_C$ (mA)	$V_{CE}$ (V)	max (V)	$I_C$ (A)			
						min	max					(MHz)	(MHz)	
BC119	N	TO-39	800	1	30	40	120	150	1	0.35	0.15	40	25	BC139
BC138	N	TO-39	800	1	30	35	-	100	10	1.5	1	40	25	-
BC139	P	TO-39	700	0.5	40	40	-	100	10	0.8	0.3	-	6+	BC119
BC140	N	TO-39	800	1	40	40	250 #	100	1	1	1	50	25	BC160
BC141	N	TO-39	800	1	60	40	250 #	100	1	1	1	50	25	BC161
BC142	N	TO-39	800	1	60	20	-	200	2	0.4	0.2	40	25	BC143
BC143	P	TO-39	800	1	60	20	-	300	1	0.6	0.2	60	20	BC142
BC144	N	TO-39	800	1	40	20	-	300	1	0.6	0.5	100+	20	-
BC160	P	TO-39	800	1	40	40	250 #	100	1	1	1	50	30	BC140
BC161	P	TO-39	800	1	60	40	250 #	100	1	1	1	50	30	BC141
BC185	N	TO-39	700	0.5	40	40	-	100	10	0.45	0.3	200	8	-
BC211	N	TO-39	800	1	40	40	250 #	150	2	1	1	50	25	BC313
BC211A	N	TO-39	800	1	60	40	250 #	150	2	1	1	50	25	BC313A
BC215	P	TO-18	400	0.5	30	40	300 #	150	10	0.9+	0.5	150	8	-
BC223	N	TO-92F	360	0.4	30	100	450 #	50	2	0.3	0.1	100	10	-
BC231	P	TO-92B	625	0.4	30	100	450	50	5	0.25	0.05	100	10	BC232
BC232	N	TO-92B	625	0.4	30	100	450	50	5	0.3	0.1	100	10	BC231
BC286	N	TO-39	800	1	60	20	180	500	2	1	1	150+	11+	BC287
BC287	P	TO-39	800	1	60	20	200	500	2	1	1	140+	18+	BC286
BC294	P	TO-39	600	0.6	60	100	300	150	10	0.4	0.15	100	-	-
BC297	P	TO-18	375	1	45	75	260 #	100	1	0.7	0.5	250+	8+	BC377
BC298	P	TO-18	375	1	25	75	260 #	100	1	0.7	0.5	250+	8+	BC378
BC300	N	TO-39	850	1	80	40	240 #	150	10	0.5	0.15	120+	10+	-
BC301	N	TO-39	850	1	60	40	240 #	150	10	0.5	0.15	120+	10+	BC303
BC302	N	TO-39	850	1	45	40	240 #	150	10	0.5	0.15	120+	10+	BC304
BC303	P	TO-39	850	1	60	40	240 #	150	10	0.65	0.15	100+	17+	BC301
BC304	P	TO-39	850	1	45	40	240 #	150	10	0.65	0.15	100+	17+	BC302
BC310	N	TO-39	800	1	70	40	-	200	1	0.4	0.2	90+	12+	BC311
BC311	P	TO-39	800	1	70	40	-	200	1	0.5	0.2	200+	12+	BC310
BC313	P	TO-39	800	1	40	40	250 #	150	2	1	1	50	30	BC211
BC313A	P	TO-39	800	1	60	40	250 #	150	2	1	1	50	30	BC211A
BC327	P	TO-92F	625	0.8	45	100	630 #	100	1	0.7	0.5	100+	14+	BC337
BC328	P	TO-92F	625	0.8	25	100	630 #	100	1	0.7	0.5	100+	14+	BC338
BC337	N	TO-92F	625	0.8	45	100	630 #	100	1	0.7	0.5	100+	10+	BC327
BC338	N	TO-92F	625	0.8	25	100	630 #	100	1	0.7	0.5	100+	10+	BC328
BC340	N	TO-39	800	0.5	40	40	250 #	50	5	0.4	0.15	100+	6.5+	BC360
BC341	N	TO-39	800	0.5	60	40	160 #	50	5	0.4	0.15	100+	6.5+	BC361
BC342	N	TO-39	800	1	60	20	-	500	10	0.8	0.3	100+	20	BC343
BC343	P	TO-39	800	1	60	20	-	500	10	0.8	0.3	100	20	BC342
BC344	N	TO-39	800	1	80	20	-	150	10	0.8	0.15	100	20	BC345
BC345	P	TO-39	800	1	80	20	-	150	10	0.8	0.15	100	20	BC344
BC360	P	TO-39	800	0.5	40	40	250 #	50	5	0.4	0.15	250+	6.5+	BC340
BC361	P	TO-39	800	0.5	60	40	160 #	50	5	0.4	0.15	250+	6.5+	BC341
BC368	N	TO-92B	800	1	20	85	375	500	1	0.5	1	65+	-	BC369
BC369	P	TO-92B	800	1	20	85	375	500	1	0.5	1	65+	-	BC368
BC376	P	TO-92F	625	1	20	60	340 #	200	1	0.5	0.5	-	-	-
BC377	N	TO-18	375	1	45	75	500	100	1	0.7	0.5	100	12	BC297
BC378	N	TO-18	375	1	25	75	500 #	100	1	0.7	0.5	100	12	BC298

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub> (MHz)	C <sub>ob</sub> (MHz)	COMPLEMENTARY TYPE
			P <sub>d</sub> (mW)	I <sub>C</sub> (A)	V <sub>CEO</sub> V <sub>CER</sub> *	min max		I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (A)			
BC381	P	TO-92F	625	0.2	25	60	-	2.5	5	0.25	0.05	100	10	-
BC387	N	TO-92F	310	0.6	30	40	300	100	1	0.5	0.1	200	10	BC388
BC388	P	TO-92F	310	0.6	30	40	300	100	1	0.5	0.1	200	10	BC387
BC425	N	TO-92F	500	0.5	60	20	250	100	10	0.25	0.1	50	4+	BC427
BC427	P	TO-92F	500	0.5	60	20	250	100	10	0.25	0.1	50	4.7+	BC425
BC431	N	TO-92F	625	0.8	60	63	240 #	100	1	0.7	0.5	100+	12+	BC432
BC432	P	TO-92F	625	0.8	60	63	240 #	100	1	0.7	0.5	100+	17+	BC431
BC440	N	TO-39	1000	1	40	40	250 #	500	4	1	1	50	25	BC460
BC441	N	TO-39	1000	1	60	40	250 #	500	4	1	1	50	25	BC461
BC460	P	TO-39	1000	1	40	40	250 #	500	4	1	1	50	25	BC440
BC461	P	TO-39	1000	1	60	40	250 #	500	4	1	1	50	25	BC441
BC485	N	TO-92F	625	1	45	60	400 #	100	2	0.5	0.5	200+	7+	BC486
BC486	P	TO-92F	625	1	45	60	400 #	100	2	0.5	0.5	150+	9+	BC485
BC487	N	TO-92F	625	1	60	60	400 #	100	2	0.5	0.5	200+	7+	BC488
BC488	P	TO-92F	625	1	60	60	400 #	100	2	0.5	0.5	150+	9+	BC487
BC489	N	TO-92F	625	1	80	60	400 #	100	2	0.5	0.5	200+	7+	BC490
BC490	P	TO-92F	625	1	80	60	400 #	100	2	0.5	0.5	150+	9+	BC489
BC527	P	TO-92A	625	1	60	40	400 #	100	1	0.7	0.5	100	15	BC537
BC528	P	TO-92A	625	1	80	40	400 #	100	1	0.7	0.5	100	15	BC538
BC534	P	TO-92A	625	0.5	80	50	-	10	1	0.25	0.1	50	6.5	BC535
BC535	N	TO-92A	625	0.5	80	50	-	10	1	0.25	0.1	50	6	BC534
BC537	N	TO-92A	625	1	60	40	400 #	100	1	0.7	0.5	100	15	BC527
BC538	N	TO-92A	625	1	80	40	400 #	100	1	0.7	0.5	100	15	BC528
BC635	N	TO-92B	700	1	45	40	250	150	2	0.5	0.5	50	11+	BC636
BC636	P	TO-92B	700	1	45	40	250	150	2	0.5	0.5	50	18+	BC635
BC637	N	TO-92B	700	1	60	40	160	150	2	0.5	0.5	50	11+	BC638
BC638	P	TO-92B	700	1	60	40	160	150	2	0.5	0.5	50	18+	BC637
BC639	N	TO-92B	700	1	80	40	160	150	2	0.5	0.5	50	11+	BC640
BC640	P	TO-92B	700	1	80	40	160	150	2	0.5	0.5	50	18+	BC639
BC727	P	TO-92A	625	1.5	40	63	630 #	100	1	0.7	0.5	40	20	BC737
BC728	P	TO-92A	625	1.5	25	63	630 #	100	1	0.7	0.5	40	20	BC738
BC737	N	TO-92A	625	1.5	40	63	630 #	100	1	0.7	0.5	40	20	BC727
BC738	N	TO-92A	625	1.5	25	63	630 #	100	1	0.7	0.5	40	20	BC728
BCW36	N	TO-92F	360	0.6	45	100	350	10	5	0.1	0.01	150	6	BCW37
BCW37	P	TO-92F	360	0.6	45	100	350	10	5	0.1	0.01	150	6	BCW36
BCX73	N	TO-92F	625	0.8	32	100	630 #	100	1	1.4	0.5	100	12	-
BCX74	N	TO-92F	625	0.8	45	100	630 #	100	1	1.4	0.5	100	12	-
BCX75	P	TO-92F	625	0.8	32	100	630 #	100	1	1.4	0.5	100	18	-
BCX76	P	TO-92F	625	0.8	45	100	630 #	100	1	1.4	0.5	100	18	-
BFR41	N	TO-92B	800	1	50	100	-	100	10	0.5	1	100+	10+	-
BFR79	P	TO-92B	800	1	80	50	-	100	10	1.6	1	100+	12+	-
BFX29	P	TO-39	600	0.6	60	50	125	10	10	0.4	0.15	100	12	-
BFX30	P	TO-39	600	0.6	65	50	200	10	0.4	-	-	100	12	-
BFX38	P	TO-39	800	1	55	85	-	100	5	0.5	0.5	100	20	-
BFX39	P	TO-39	800	1	55	40	-	100	5	0.5	0.5	100	20	-
BFX40	P	TO-39	800	1	75	40	-	100	5	0.5	0.5	100	20	-

# HFE grouping available + typical value // T<sub>c</sub>=25°C

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub>	C <sub>ob</sub>	COMPLEMENTARY TYPE
			P <sub>d</sub> (mW)	I <sub>C</sub> (A)	V <sub>CEO</sub> V <sub>CER</sub> *	min max		I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (A)	min (MHz)	max (MHz)	
BFX41	P	TO-39	800	1	75	85	-	100	5	0.5	0.5	100	20	-
BFX84	N	TO-39	800	1	60	30	-	150	10	0.35	0.15	50	12	-
BFX85	N	TO-39	800	1	60	70	-	150	10	0.35	0.15	100	12	-
BFX86	N	TO-39	800	1	35	70	-	150	10	0.35	0.15	100	12	-
BFX87	P	TO-39	600	0.6	50	40	-	150	10	0.4	0.15	250	12	-
BFX88	P	TO-39	600	0.6	40	40	-	150	10	0.4	0.15	250	8	-
BFY40	N	TO-39	800	0.8	30	40	-	10	10	1.85	0.15	-	-	-
BFY41	N	TO-39	800	0.6	60	35	-	50	10	5	0.05	-	-	-
BFY46	N	TO-39	2600 //	0.5	30	100	300	150	10	1.5	0.15	-	-	-
BFY50	N	TO-39	800	1	35	30	112 +	150	10	0.2	0.15	60	12	-
BFY51	N	TO-39	800	1	30	40	-	150	10	0.35	0.15	50	12	-
BFY52	N	TO-39	800	1	20	60	-	150	10	0.35	0.15	50	12	-
BFY53	N	TO-39	800	1	20	30	-	150	10	0.35	0.15	50	-	-
BFY55	N	TO-39	800	1	35	40	-	150	6	0.2	0.15	60	-	-
BFY56	N	TO-39	800	1	45	30	150	150	1	1.2	1	40	25	-
BFY56A	N	TO-39	800	1	55	40	120	150	1	1.2	1	60	25	-
BFY64	P	TO-39	700	-	40	80	-	10	10	1.8	0.5	200	10	-
BFY67	N	TO-39	800	0.5	30	40	120	150	10	1.5	0.15	60	25	-
BFY68	N	TO-39	800	0.5	30	100	300	150	10	1.5	0.15	70	25	-
BFY72	N	TO-39	800	-	28	40	150	150	10	0.7	0.5	250	8	-
BFY94	P	TO-39	3000 //	-	40	40	-	0.1	10	0.4	0.05	100	20	-
BSX45	N	TO-39	5000 //	1	40	40	250 #	100	1	1	1	50	25	-
BSX46	N	TO-39	5000 //	1	60	40	250 #	100	1	1	1	50	20	-
BSX47	N	TO-39	5000 //	1	80	40	160 #	100	1	0.9	0.5	50	15	-
BSY51	N	TO-39	800	0.5	25	40	120	150	10	0.8	0.15	100	10	-
BSY52	N	TO-39	800	0.5	25	100	300	150	10	0.8	0.15	100	10	-
BSY53	N	TO-39	900	0.75	30	40	120	150	10	1.2	0.5	100	10	-
BSY54	N	TO-39	800	0.75	30	100	300	150	10	1.2	0.5	145	10	-
BSY55	N	TO-39	800	0.5	80	40	120	150	10	0.6	0.15	100	10	-
BSY56	N	TO-39	800	0.5	80	100	300	150	10	0.6	0.15	145	10	-
BSY87	N	TO-39	800	0.5	60	40	120	150	10	0.6	0.15	100	10	-
BSY88	N	TO-39	800	0.5	25	100	300	150	10	0.6	0.15	100	10	-
CL055	P	TO-92A	625	1.5	20	50	360 #	100	1	0.4	0.5	120+	-	CL066
CL066	N	TO-92A	625	1.5	20	50	360 #	100	1	0.4	0.5	120+	-	CL055
CL155	P	TO-92A	625	2	25	50	360 #	100	1	0.45	1	120+	-	CL166
CL166	N	TO-92A	625	2	25	50	360 #	100	1	0.45	1	120+	-	CL155
CL168	N	TO-92B	625	3	15	180	-	100	1	0.6	1	120+	40+	-
CL169	N	TO-92B	625	3	15	180	360	100	1	0.4	1	100+	40+	-
CL266	N	TO-92A	625	2	60	45	-	100	10	0.5	0.5	-	-	-
KM9012	P	TO-92A	500	0.6	20	64	350 #	50	1	0.6	0.25	150+	4.7+	KM9013
KM9013	N	TO-92A	500	0.6	20	64	350 #	50	1	0.6	0.25	200+	4+	KM9012
MPS3702	P	TO-92A	360	0.2	25	60	300	50	5	0.25	0.05	100	12	MPS3704
MPS3703	P	TO-92A	360	0.2	30	50	150	50	5	0.25	0.05	100	12	MPS3706
MPS3704	N	TO-92A	360	0.8	30	100	300	50	2	0.6	0.1	100	12	MPS3702
MPS3705	N	TO-92A	360	0.8	30	50	150	50	2	0.8	0.1	100	12	MPS3702
MPS3706	N	TO-92A	360	0.8	20	30	600	50	2	1	0.1	100	12	MPS3703

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			$H_{FE}$				$V_{CE(sat)}$		$f_T$	$C_{ob}$	COMPLEMENTARY TYPE
			$P_d$	$I_C$	$V_{CE0}$ $V_{CER}^*$	$H_{FE}$		$I_C$	$V_{CE}$	max	$I_C$	min	max	
						min	max							
MPS4354	P	TO-92A	625	1	60	50	500	10	10	0.5	0.5	100	30	PN3567
MPS4355	P	TO-92A	625	1	60	100	400	10	10	0.5	0.5	100	30	PN3569
MPS4356	P	TO-92A	625	1	80	50	250	10	10	0.5	0.5	100	30	PN3568
MPS6530	N	TO-92A	500	0.6	40	40	120	100	1	0.5	0.1	250+	5	MPS6533
MPS6531	N	TO-92A	500	0.6	40	90	270	100	1	0.5	0.1	250+	5	MPS6534
MPS6532	N	TO-92A	500	0.6	30	30	-	100	1	0.5	0.1	250+	5	MPS6535
MPS6533	P	TO-92A	500	0.6	40	40	120	100	1	0.5	0.1	250+	6	MPS6530
MPS6534	P	TO-92A	500	0.6	40	90	270	100	1	0.3	0.1	250+	6	MPS6531
MPS6535	P	TO-92A	500	0.6	30	30	-	100	1	0.5	0.1	250+	6	MPS6532
MPS6560	N	TO-92A	625	0.6	25	50	200	500	1	0.5	0.5	60	30	MPS6562
MPS6561	N	TO-92A	625	0.6	20	50	200	350	1	0.5	0.35	60	30	MPS6563
MPS6562	P	TO-92A	625	0.6	25	50	200	350	1	0.5	0.5	60	30	MPS6560
MPS6563	P	TO-92A	625	0.6	20	50	200	350	1	0.5	0.35	60	30	MPS6561
MPS6591	N	TO-92A	625	0.25	50	40	-	10	10	0.6	0.01	60	12	-
MPS8000	N	TO-92A	625	0.5	60	30	-	100	2	0.3	0.1	-	-	-
MPS9416	N	TO-92A	625	0.6	18	50	300 #	350	1	0.55	0.5	-	-	MPS9466
MPS9416A	N	TO-92A	625	1	18	50	300 #	350	1	0.55	0.5	300+	5.5+	MPS9466A
MPS9417	N	TO-92A	625	0.6	25	50	300 #	350	1	0.55	0.5	-	-	MPS9647
MPS9417A	N	TO-92A	625	1	25	50	300 #	350	1	0.55	0.5	300+	5.5+	MPS9647A
MPS9418	N	TO-92A	625	1.5	25	80	300 #	350	4	0.6	1	300+	6+	MPS9468
MPS9434	N	TO-92A	625	0.6	50	45	600	50	1	1.1	0.1	200+	4+	MPS9484
MPS9466	P	TO-92A	625	0.6	18	50	300 #	350	1	0.55	0.5	-	-	MPS9416
MPS9466A	P	TO-92A	625	1	18	50	300 #	350	1	0.55	0.5	300+	12+	MPS9416A
MPS9467	P	TO-92A	625	0.6	25	50	300 #	350	1	0.55	0.5	300+	-	MPS9417
MPS9467A	P	TO-92A	625	1	25	50	300 #	350	1	0.55	0.5	300+	12+	MPS9417A
MPS9468	P	TO-92A	625	1.5	25	80	300 #	350	1	0.6	1	200+	18+	MPS9418
MPS9484	P	TO-92A	625	0.6	50	45	600	50	4	1.1	0.1	100+	4.7+	MPS9434
MPSA05	N	TO-92A	625	0.5	60	50	-	100	1	0.25	0.1	50	20	MPSA55
MPSA06	N	TO-92A	625	0.5	80	50	-	100	1	0.25	0.1	50	20	MPSA56
MPSA55	P	TO-92A	625	0.5	60	50	-	100	1	0.25	0.1	100	20	MPSA05
MPSA56	P	TO-92A	625	0.5	80	50	-	100	1	0.25	0.1	100	20	MPSA06
MPSD05	N	TO-92A	350	0.5	25	50	-	50	5	0.5	0.1	100	-	MPSD55
MPSD55	P	TO-92A	350	0.5	25	50	-	50	5	0.5	0.1	100	-	MPSD05
MSB492	P	TO-92A	625	2	25	80	360 #	200	1	0.5	1	100+	28+	-
PN2221	N	TO-92A	500	0.8	30	40	120	150	10	1.6	0.5	250	8	PN2906
PN2221A	N	TO-92A	500	0.8	40	40	120	150	10	1	0.5	250	8	PN2906A
PN2222	N	TO-92A	500	0.8	30	100	300	150	10	1.6	0.5	250	8	PN2907
PN2222A	N	TO-92A	500	0.8	40	100	300	150	10	1	0.5	300	8	PN2907A
PN2906	P	TO-92A	400	0.6	40	40	120	150	10	1.6	0.5	200	8	PN2221
PN2906A	P	TO-92A	400	0.6	60	40	120	150	10	1.6	0.5	200	8	PN2221A
PN2907	P	TO-92A	400	0.6	40	100	300	150	10	1.6	0.5	200	8	PN2222
PN2907A	P	TO-92A	400	0.6	60	100	300	150	10	1.6	0.5	200	8	PN2222A
PN3567	N	TO-92A	625	1	40	40	120	150	1	0.25	0.15	60	20	MPS4345
PN3568	N	TO-92A	625	1	60	40	120	150	1	0.25	0.15	60	20	MPS4356
PN3569	N	TO-92A	625	1	40	100	300	150	1	0.25	0.15	60	20	MPS4355
PN3638	P	TO-92A	625	0.5	25	30	-	50	1	1	0.3	100	20	-
PN3638A	P	TO-92A	625	0.5	25	100	-	50	1	1	0.3	100	10	-
PN3641	N	TO-92A	600	0.5	30	40	120	150	10	0.22	0.15	250	8	-

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			$H_{FE}$				$V_{CE(sat)}$		$f_T$ min	$C_{ob}$ max	COMPLEMENTARY TYPE
			$P_d$ (mW)	$I_C$ (A)	$V_{CEO}$ $V_{CER}^*$ (V)	$H_{FE}$		$I_C$ (mA)	$V_{CE}$ (V)	max (V)	$I_C$ (A)			
						min	max					(MHz)	(MHz)	
PN3642	N	TO-92A	600	0.5	45	40	120	150	10	0.22	0.15	250	8	-
PN3643	N	TO-92A	600	0.5	30	100	300	150	10	0.22	0.15	250	8	-
PN3644	P	TO-92A	600	0.5	45	100	300	150	10	0.4	0.15	200	8	-
PN3645	P	TO-92A	600	0.5	60	100	300	150	10	0.4	0.15	200	8	-
PN4355	P	TO-92A	600	0.5	60	100	400	10	10	1	1	100	30	-
PN4356	P	TO-92A	600	0.5	80	50	250	10	10	0.5	0.5	100	30	-
2N697	N	TO-39	600	0.5	40*	40	120	150	10	1.5	0.15	50	35	-
2N699	N	TO-39	600	1	80*	40	120	150	10	5	0.15	50	20	-
2N699A	N	TO-39	800	1	80*	40	120	150	10	5	0.15	50	20	-
2N699B	N	TO-39	800	1	80*	40	120	150	10	5	0.15	60	15	-
2N718	N	TO-18	400	0.5	40*	40	120	150	10	1.5	0.15	50	25	-
2N718A	N	TO-18	500	0.5	50*	40	120	150	10	1.5	0.15	60	25	-
2N720A	N	TO-18	500	1	80	40	120	150	10	5	0.15	50	15	-
2N911	N	TO-18	500	0.5	60	35	-	10	10	1.2	0.05	50	15	-
2N956	N	TO-18	500	0.5	50*	100	300	150	10	1.5	0.15	70	25	-
2N1420	N	TO-39	600	1	30*	100	300	150	10	1.5	0.15	50	35	-
2N1507	N	TO-39	600	1	30*	100	300	150	10	1.5	0.15	50	35	-
2N1566	N	TO-39	600	0.1	60	80	200	5	5	1	0.01	60	10	-
2N1613	N	TO-39	800	0.5	50*	40	120	150	10	1.5	0.15	60	25	-
2N1613A	N	TO-39	1000	0.5	50*	40	120	150	10	1	0.15	60	25	-
2N1613B	N	TO-39	1000	0.5	55*	40	120	150	10	0.2	0.15	60	10	-
2N1711	N	TO-39	800	1	50*	100	300	150	10	1.5	0.15	70	25	-
2N1711A	N	TO-39	1000	1	50*	100	300	150	10	1	0.15	70	25	-
2N1711B	N	TO-39	1000	1	55*	100	300	150	10	0.2	0.15	70	10	-
2N1889	N	TO-39	800	1	60	40	120	150	10	5	0.15	60	15	-
2N1890	N	TO-39	800	1	60	100	300	150	10	5	0.15	60	15	-
2N1893	N	TO-39	800	0.5	80	40	120	150	10	5	0.15	50	15	-
2N1973	N	TO-39	800	1	80*	75	-	10	10	1.2	0.05	60	15	-
2N1974	N	TO-39	800	1	80*	35	-	10	10	1.2	0.05	50	15	-
2N1975	N	TO-39	800	1	80	15	-	10	10	1.2	0.05	40	15	-
2N1983	N	TO-39	600	1	25	80	240	5	5	0.25	0.055	40	45	-
2N1984	N	TO-39	600	1	25	40	120	5	5	0.25	0.005	40	45	-
2N1986	N	TO-39	600	0.3	25	60	240	150	10	1.5	0.15	40	35	-
2N1988	N	TO-39	600	1	45	35	120	30	10	2	0.03	40	20	-
2N2017	N	TO-39	1000	1	60	50	200	200	10	2	0.2	-	-	-
2N2049	N	TO-39	800	0.5	50	100	300	150	10	0.4	0.01	50	25	-
2N2102	N	TO-39	1000	1	65	40	120	150	10	0.5	0.15	60	10	2N4036
2N2102A	N	TO-39	1000	1	65	40	120	150	10	0.5	0.15	60	10	-
2N2192	N	TO-39	800	1	40	100	300	150	10	0.35	0.15	50	20	-
2N2192A	N	TO-39	800	1	40	100	300	150	10	0.25	0.15	50	20	-
2N2192B	N	TO-39	800	1	40	100	300	150	10	0.18	0.15	50	20	-
2N2193	N	TO-39	800	1	50	40	120	150	10	0.35	0.15	50	20	-
2N2193A	N	TO-39	800	1	50	40	120	150	10	0.25	0.15	50	20	-
2N2193B	N	TO-39	800	1	50	40	120	150	10	0.18	0.15	50	20	-
2N2195	N	TO-39	800	1	25	20	-	150	10	0.35	0.15	50	20	-
2N2195A	N	TO-39	800	1	25	20	-	150	10	0.25	0.15	50	20	-
2N2195B	N	TO-39	800	1	25	20	-	150	10	0.28	0.15	50	20	-
2N2218	N	TO-39	800	0.8	30	40	120	150	10	0.4	0.15	250	8	-
2N2218A	N	TO-39	800	0.8	40	40	120	150	10	1.0	0.5	250	8	-

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			$H_{FE}$				$V_{CE(sat)}$		$f_T$ min (MHz)	$C_{ob}$ max (MHz)	COMPLEMENTARY TYPE
			$P_d$ (mW)	$I_C$ (A)	$V_{CEO}$ $V_{CER}^a$ (V)	$H_{FE}$		$I_C$ (mA)	$V_{CE}$ (V)	max (V)	$I_C$ (A)			
						min	max							
2N2219	N	TO-39	800	0.8	30	100	300	150	10	0.4	0.15	250	8	-
2N2219A	N	TO-39	800	0.8	40	100	300	150	10	1.0	0.5	250	8	-
2N2221	N	TO-18	500	0.8	30	40	120	150	10	0.4	0.15	250	8	-
2N2221A	N	TO-18	500	0.8	40	40	120	150	10	1.0	0.5	250	8	-
2N2222	N	TO-18	500	0.8	30	100	300	150	10	0.4	0.15	250	8	-
2N2222A	N	TO-18	500	0.8	40	100	300	150	10	1.0	0.5	250	8	-
2N2237	N	TO-39	600	0.5	20	40	125	100	1	0.25	0.1	100	35	-
2N2243	N	TO-39	800	1	80	40	120	150	10	0.25	0.15	50	15	-
2N2243A	N	TO-39	800	1	80	40	120	150	10	0.25	0.15	50	15	-
2N2270	N	TO-39	1000	1	45	50	200	150	10	0.9	0.15	100	15	-
2N2297	N	TO-39	800	1	35	40	120	150	10	0.2	0.15	60	12	-
2N2303	P	TO-39	600	0.5	35	75	200	150	10	1.5	0.15	60	45	-
2N2309	N	TO-39	600	0.5	30	25	125	0.2	4	-	-	40	25	-
2N2380	N	TO-39	600	0.5	40	20	120	150	5	1.3	0.15	100	14	-
2N2380A	N	TO-39	600	0.5	40	20	120	150	5	1.3	0.15	100	14	-
2N2405	N	TO-39	1000	1	90	60	200	150	10	0.5	0.15	50	15	-
2N2479	N	TO-39	600	0.5	40	30	120	150	1.5	0.85	0.15	150	14	-
2N2801	P	TO-39	800	0.8	35	75	225	150	10	0.4	0.15	120	25	-
2N2838	P	TO-18	500	0.8	35	75	225	150	10	0.4	0.15	120	25	-
2N2868	N	TO-39	800	1	40	40	120	150	10	0.25	0.15	50	20	-
2N2897	N	TO-18	500	1	45	50	200	150	10	1	0.15	100	15	-
2N2904	P	TO-39	600	0.6	40	40	120	150	10	0.4	0.15	200	8	-
2N2905	P	TO-39	600	0.6	40	100	300	150	10	1.6	0.5	200	8	-
2N2905A	P	TO-39	600	0.6	60	100	300	150	10	1.6	0.5	200	8	-
2N2906	P	TO-18	400	0.6	40	40	120	150	10	0.4	0.15	200	8	-
2N2906A	P	TO-18	400	0.6	60	40	120	150	10	1.6	0.5	200	8	-
2N2907	P	TO-18	400	0.6	40	100	300	150	10	1.6	0.5	200	8	-
2N2907A	P	TO-18	400	0.6	60	100	300	150	10	1.6	0.5	200	8	-
2N2927	P	TO-39	800	0.5	25	30	130	50	1	0.25	0.05	100	20	-
2N2958	N	TO-39	600	0.6	20	40	120	150	10	0.5	0.15	250	8	-
2N2959	N	TO-39	600	0.6	20	100	300	150	10	0.5	0.15	250	8	-
2N3029	N	TO-39	800	1	80	100	300	150	10	0.5	0.5	100	12	2N4033
2N3020	N	TO-39	800	1	80	40	120	150	10	0.5	0.5	80	12	2N4031
2N3036	N	TO-39	800	1	80	50	150	150	10	0.25	0.15	15	15	-
2N3053	N	TO-39	1000	0.7	40	50	250	150	10	1.4	0.15	100	15	2N4037
2N3053A	N	TO-39	1000	0.7	60	50	250	150	10	0.3	0.15	100	15	-
2N3072	P	TO-39	800	0.5	60	30	130	50	1	1	0.3	130	10	-
2N3073	P	TO-18	360	0.5	60	30	130	50	1	1	0.3	130	10	-
2N3107	N	TO-39	800	1	60	100	300	150	10	1	1	70	20	2N4032
2N3108	N	TO-39	800	1	60	40	120	150	10	0.25	0.15	60	20	2N4030
2N3109	N	TO-39	800	1	40	100	300	150	10	1	1	70	25	2N4033
2N3110	N	TO-39	800	1	40	40	120	150	10	0.25	0.15	60	25	-
2N3115	N	TO-18	400	0.6	20	40	120	150	10	0.5	0.15	250	8	-
2N3116	N	TO-18	400	0.6	20	100	300	150	10	0.5	0.15	250	8	-
2N3120	P	TO-39	800	0.5	45	30	130	50	1	1	0.5	130	10	-
2N3121	P	TO-18	360	0.5	45	30	130	50	1	1	0.5	130	10	-
2N3133	P	TO-39	600	0.6	35	40	120	150	10	0.6	0.15	200	10	-
2N3134	P	TO-39	600	0.6	35	100	300	150	10	0.6	0.15	200	10	-
2N3135	P	TO-18	400	0.6	35	40	120	150	10	0.6	0.15	200	10	-
2N3136	P	TO-18	400	0.6	35	100	300	150	10	0.6	0.15	200	10	-

# HFE grouping available + typical value //  $T_c=25^\circ C$

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub>	C <sub>ob</sub>	COMPLEMENTARY TYPE
			P <sub>d</sub> (mW)	I <sub>C</sub> (A)	V <sub>CEO</sub> V <sub>CER</sub> *	min max		I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (A)	min (MHz)	max (MHz)	
2N3299	N	TO-39	800	0.5	30	40	120	150	10	0.6	0.5	250	8	-
2N3300	N	TO-39	800	0.5	30	100	300	150	10	0.6	0.5	250	8	-
2N3301	N	TO-18	360	0.5	30	40	120	150	10	0.6	0.5	250	8	-
2N3302	N	TO-18	360	0.5	30	100	300	150	10	0.6	0.5	250	8	-
2N3326	N	TO-39	800	0.8	45	40	120	150	10	0.6	0.5	250	8	-
2N3414	N	TO-92B	360	0.5	25	75	225	2	4.5	0.3	0.05	-	-	-
2N3415	N	TO-92B	360	0.5	25	180	540	2	4.5	0.3	0.05	-	-	-
2N3416	N	TO-92B	360	0.5	50	75	225	2	4.5	0.3	0.05	-	-	-
2N3417	N	TO-92B	360	0.5	50	180	540	2	4.5	0.3	0.05	-	-	-
2N3502	P	TO-39	800	0.6	45	100	300	150	10	1	0.3	200	8	-
2N3503	P	TO-39	800	0.6	60	100	300	150	10	1	0.3	200	8	-
2N3504	P	TO-18	400	0.6	45	100	300	150	10	1	0.3	200	8	-
2N3505	P	TO-18	400	0.6	60	100	300	150	10	1	0.3	200	8	-
2N3678	N	TO-39	800	0.8	55	40	120	150	10	1	0.5	250	8	-
2N3700	N	TO-18	500	1	80	100	300	150	10	0.5	0.5	100	12	-
2N3701	N	TO-18	500	1	80	40	120	150	10	0.5	0.5	80	12	-
2N3702	P	TO-92B	360	0.2	25	60	300	50	5	0.25	0.05	100	12	2N3704
2N3703	P	TO-92B	360	0.2	30	30	150	50	5	0.25	0.05	100	12	2N3706
2N3704	N	TO-92B	360	0.2	30	100	300	50	2	0.6	0.1	100	12	2N3702
2N3705	N	TO-92B	360	0.2	30	50	150	50	2	0.8	0.1	100	12	2N3702
2N3706	N	TO-92B	360	0.2	20	30	600	50	2	1	0.1	100	12	2N3703
2N3793	N	TO-92B	250	0.5	20	20	120	10	10	0.4	0.1	100	10	-
2N3794	N	TO-92B	250	0.5	20	100	600	10	10	0.4	0.1	100	10	-
2N3945	N	TO-39	5000 //	1	50	40	250	150	10	0.5	0.15	60	12	-
2N4029	P	TO-18	500	1	80	100	300	100	5	0.5	0.5	150+	20	-
2N4030	P	TO-39	800	1	60	40	120	100	5	0.5	0.5	100	20	2N3108
2N4031	P	TO-39	800	1	80	40	120	100	5	0.5	0.5	100	20	2N3020
2N4032	P	TO-39	800	1	60	100	300	100	5	0.5	0.5	150	20	2N3107
2N4033	P	TO-39	800	1	80	100	300	100	5	0.5	0.5	150	20	2N3109
2N4036	P	TO-39	1000	1	65	40	140	150	10	0.65	0.15	60	30	2N2102
2N4037	P	TO-39	1000	1	40	50	250	150	10	1.4	0.15	60	30	2N3053
2N4234	P	TO-39	1000	3	40	30	150	250	1	0.6	1	3	100	2N4237
2N4235	P	TO-39	1000	3	60	30	150	250	1	0.6	1	3	100	2N4238
2N4236	P	TO-39	1000	1	80	30	150	250	1	0.6	1	3	100	2N4239
2N4237	N	TO-39	1000	1	40	30	150	250	1	0.6	1	2	100	2N4234
2N4238	N	TO-39	1000	1	60	30	150	250	1	0.6	1	2	100	2N4235
2N4239	N	TO-39	1000	1	80	30	150	250	1	0.3	0.5	2	100	2N4236
2N4314	P	TO-39	1000	1	65	50	250	150	10	1.4	0.15	60	30	-
2N4400	N	TO-92A	500	0.6	40	50	150	150	1	0.75	0.5	200	6.5	2N4402
2N4401	N	TO-92A	500	0.6	40	100	300	150	1	0.75	0.5	250	6.5	2N4403
2N4402	P	TO-92A	500	0.6	40	50	150	150	1	0.75	0.5	150	8.5	2N4400
2N4403	P	TO-92A	500	0.6	40	100	300	150	1	0.75	0.5	200	8.5	2N4401
2N4409	N	TO-92A	625	0.25	50	60	400	10	1	0.2	0.001	60	12	-
2N4424	N	TO-92B	625	0.5	40	180	540	2	4.5	0.3	0.05	-	-	-
2N4951	N	TO-92B	360	0.5	30	60	200	150	10	0.3	0.15	250	8	-
2N4952	N	TO-92B	360	0.5	30	100	300	150	10	0.3	0.15	250	8	-
2N4953	N	TO-92B	360	0.5	30	200	600	150	10	0.3	0.15	250	8	-
2N4954	N	TO-92B	360	0.5	30	60	600	150	10	0.3	0.15	250	8	-



# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub> (MHz)	C <sub>ob</sub> (MHz)	COMPLEMENTARY TYPE
			P <sub>d</sub> (mW)	I <sub>C</sub> (A)	V <sub>CEO</sub> V <sub>CER</sub> * (V)	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (A)			
2N5042	P	TO-39	800	1	40	40	150	150	1	1.3	1	100	35	2N3110
2N5220	N	TO-92A	350	0.5	15	30	600	50	10	0.5	0.15	100	10	2N5221
2N5221	P	TO-92A	350	0.5	15	30	600	50	10	0.5	0.15	100	15	2N5220
2N5225	N	TO-92A	350	0.2	25	30	600	50	10	0.8	0.1	50	20	2N5226
2N5226	P	TO-92A	350	0.2	25	30	600	50	10	0.8	0.1	50	20	2N5225
2N5354	P	TO-92B	360	0.5	25	40	120	50	1	1	0.3	100	8	-
2N5355	P	TO-92B	360	0.5	25	100	300	50	1	1	0.3	100	8	-
2N5356	P	TO-92B	360	0.5	25	250	500	50	1	1	0.3	100	8	-
2N5365	P	TO-92B	360	0.5	40	40	120	50	1	1	0.3	100	8	-
2N5366	P	TO-92B	360	0.5	40	100	300	50	1	1	0.3	100	8	-
2N5367	P	TO-92B	360	0.5	40	250	500	50	1	1	0.3	100	8	-
2N5368	N	TO-92F	500	0.5	30	60	200	150	10	0.3	0.15	250	8	2N5372
2N5369	N	TO-92F	500	0.5	30	100	300	150	10	0.3	0.15	250	8	2N5373
2N5370	N	TO-92F	500	0.5	30	200	600	150	10	0.3	0.15	250	8	2N5374
2N5371	N	TO-92F	500	0.5	30	60	600	150	10	0.3	0.15	250	8	2N5375
2N5372	P	TO-92F	500	0.5	30	40	120	150	10	0.3	0.15	150	10	2N5368
2N5373	P	TO-92F	500	0.5	30	100	300	150	10	0.3	0.15	150	10	2N5369
2N5374	P	TO-92F	500	0.5	30	200	400	150	10	0.3	0.15	150	10	2N5370
2N5375	P	TO-92F	500	0.5	30	40	400	150	10	0.3	0.15	150	12	2N5371
2N5418	N	TO-92B	400	0.5	25	40	120	50	1	1	0.3	-	6	-
2N5419	N	TO-92B	400	0.5	25	100	300	50	1	1	0.3	-	6	-
2N5420	N	TO-92B	400	0.5	25	250	500	50	1	1	0.3	-	6	-
2N5447	P	TO-92F	500	0.2	25	60	300	50	5	0.25	0.05	100	12	2N5449
2N5448	P	TO-92F	500	0.2	30	30	150	50	5	0.25	0.05	100	12	2N5450
2N5449	N	TO-92F	500	0.8	30	100	300	50	2	0.6	0.1	100	12	2N5447
2N5450	N	TO-92F	500	0.8	30	50	150	50	2	0.8	0.1	100	12	2N5448
2N5451	N	TO-92F	500	0.8	20	30	600	50	2	1	0.1	100	12	-
2N5810	N	TO-92F	625	0.75	25	60	200	2	2	0.75	0.5	100	15	2N5811
2N5811	P	TO-92F	625	0.75	25	60	200	2	2	0.75	0.5	100	15	2N5810
2N5812	N	TO-92F	625	0.75	25	150	500	2	2	0.75	0.5	135	15	2N5813
2N5813	P	TO-92F	625	0.75	25	150	500	2	2	0.75	0.5	135	15	2N5812
2N5814	N	TO-92F	625	0.75	40	60	120	2	2	0.75	0.5	100	15	2N5815
2N5815	P	TO-92F	625	0.75	40	60	120	2	2	0.75	0.5	100	15	2N5814
2N5816	N	TO-92F	625	0.75	40	100	200	2	2	0.75	0.5	120	15	2N5817
2N5817	P	TO-92F	625	0.75	40	100	200	2	2	0.75	0.5	120	15	2N5816
2N5818	N	TO-92F	625	0.75	40	150	300	2	2	0.75	0.5	135	15	2N5819
2N5819	P	TO-92F	625	0.75	40	150	300	2	2	0.75	0.5	135	15	2N5818
2N5820	N	TO-92F	625	1	60	60	120	2	2	0.75	0.5	140+	15	2N5821
2N5821	P	TO-92F	625	1	60	60	120	2	2	0.75	0.5	140+	15	2N5820
2N5822	N	TO-92F	625	1	60	100	200	2	2	0.75	0.5	140+	15	2N5823
2N5823	P	TO-92F	625	1	60	100	200	2	2	0.75	0.5	140+	15	2N5822
2N6428	N	TO-92A	625	0.2	50	200	-	2	5	0.6	0.1	100	3	-
2SA539	P	TO-92B	250	0.2	45	50	232 #	50	1	0.5	0.5	100	5.5+	2SC815
2SA562	P	TO-92B	500	0.5	30	70	400 #	100	1	0.25	0.1	150+	15	-
2SA642	P	TO-92B	250	0.3	15	65	400	50	1	0.6	0.3	180+	30	2SD227
2SA643	P	TO-92B	500	0.5	20	60	285 #	100	1	0.6	0.5	110+	30	2SD261

# HFE grouping available + typical value // T<sub>c</sub>=25°C

# Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub> min	C <sub>ob</sub> max	COMPLEMENTARY TYPE
			P <sub>d</sub> (mW)	I <sub>C</sub> (A)	V <sub>CEO</sub> V <sub>CER</sub> <sup>a</sup> (V)	min max		I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (A)			
2SA659	P	TO-92B	300	0.2	50	40	320 #	50	6	1.5	0.1	90+	-	2SC1175
2SA683	P	TO-92B	750	1	25	60	340 #	500	10	0.4	0.5	200+	30	2SC1383
2SA708	P	TO-39	800	0.7	60	80	240 #	50	2	0.7	0.5	100+	25+	-
2SA719	P	TO-92B	400	0.5	25	60	340 #	150	10	0.6	0.5	160+	15	2SC1317
2SA720	P	TO-92B	400	0.5	50	60	340 #	150	10	0.6	0.5	160+	15	2SC1318
2SA723	P	TO-92B	250	0.5	20	60	285 #	100	1	0.6	0.5	110+	-	2SD327
2SA733	P	TO-92B	250	0.1	40	60	600 #	1	6	0.5	0.03	50	12	2SC945
2SA817	P	TO-92B	600	0.3	80	70	240 #	50	2	0.4	0.2	100+	17+	2SC1627
2SA817A	P	TO-92B	800	0.4	80	130	-	50	5	0.2+	0.15	100	14	-
2SA890	P	TO-92A	625	0.5	25	60	340 #	150	10	0.6	0.5	200+	15	2SC1851
2SA891	P	TO-92A	625	0.5	50	60	340 #	150	10	0.6	0.5	200+	15	2SC1852
2SA950	P	TO-92B	600	0.8	25	100	320 #	100	1	0.7	0.5	120+	19+	2SC2120
2SA952	P	TO-92B	600	0.7	25	90	400 #	100	1	0.6	0.7	50	25	-
2SB594A	P	TO-92B	1500 //	2	80	40	300	500	2	1	1	-	-	-
2SB560	P	TO-92B	750	0.7	80	60	320 #	50	5	0.8	0.5	100+	15+	2SD438
2SB598	P	TO-92B	500	1	20	60	560 #	50	2	0.5	0.5	180+	15+	2SD545
2SB621	P	TO-92B	750	1	25	85	340 #	500	10	0.4	0.5	200+	30	2SD592
2SB621A	P	TO-92B	750	1	50	85	340 #	500	10	0.4	0.5	200+	30	2SD592A
2SC815	N	TO-92B	250	0.2	45	50	232 #	50	1	0.5	0.15	100	8	2SA539
2SC933	N	TO-92B	300	0.3	30	40	560 #	20	6	-	-	-	-	-
2SC934	N	TO-92B	300	0.3	15	40	560 #	20	5	-	-	-	-	-
2SC938	N	TO-92B	250	0.2	60	50	232 #	50	1	0.5	0.15	150+	-	-
2SC1008	N	TO-39	800	0.7	60	80	240 #	50	2	0.7	0.5	75+	17+	-
2SC1175	N	TO-92B	300	0.2	50	40	320 #	50	6	1.5	0.1	170+	-	2SA659
2SC1209	N	TO-92B	500	0.7	20	55	300 #	500	1	0.5	0.5	150+	4.2+	-
2SC1317	N	TO-92B	400	0.5	25	60	340 #	150	10	0.6	0.5	200+	15	2SA719
2SC1318	N	TO-92B	400	0.5	50	60	340 #	150	10	0.6	0.5	200+	15	2SA720
2SC1346	N	TO-92B	600	0.5	25	60	340 #	150	10	0.6	0.5	200+	15	2SA730
2SC1347	N	TO-92B	600	0.5	50	60	340 #	150	10	0.6	0.5	200+	15	2SA731
2SC1672	N	TO-92B	600	0.3	80	70	240 #	50	2	0.4	0.2	100+	10+	2SA817
2SC1788	N	TO-92B	600	0.5	20	65	220 #	500	2	0.4	0.5	150+	15	-
2SC1851	N	TO-92A	625	0.5	25	60	340 #	150	10	0.6	0.5	200+	15	2SA890
2SC1852	N	TO-92A	625	0.5	50	90	340 #	150	10	0.6	0.5	200+	15	2SA891
2SC2001	N	TO-92B	600	0.7	25	90	400 #	100	1	0.6	0.7	50	25	-
2SC2120	N	TO-92B	600	0.8	25	100	320 #	100	1	0.5	0.5	120	13+	2SA950
2SD227	N	TO-92B	250	0.3	15	65	400 #	50	1	0.5	0.3	120+	-	2SA642
2SD327	N	TO-92B	250	0.5	20	60	285 #	100	1	0.6	0.5	120+	-	2SA723
2SD471	N	TO-92B	1000	1	25	90	400 #	100	1	0.35	1	-	-	2SB564
2SD545	N	TO-92B	500	1	20	60	560 #	50	2	0.3	0.5	180+	15+	2SA598
2SD592	N	TO-92B	750	1	25	85	340 #	500	10	0.4	0.5	200+	20	2SB621
2SD592A	N	TO-92B	750	1	50	85	340 #	500	10	0.4	0.5	200+	20	2SB621A
8050	N	TO-92A	1000	1.5	25	85	300 #	100	1	0.5	0.8	100	40	8550
8550	P	TO-92A	1000	1.5	25	85	300 #	100	1	0.5	0.8	100	40	8050

# Power Transistors

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			$H_{FE}$				$V_{CE(sat)}$		$f_T$ min (MHz)	COMPLEMENTARY TYPE
			$P_d$ (W)	$I_C$ (A)	$V_{CEO}$ (V)	min	max	$I_C$ (A)	$V_{CE}$ (V)	max (V)	$I_C$ (A)		
BD239	N	TO-220	30	2	45	15	-	1	4	0.7	1	3	BD240
BD239A	N	TO-220	30	2	60	15	-	1	4	0.7	1	3	BD240A
BD239B	N	TO-220	30	2	80	15	-	1	4	0.7	1	3	BD240B
BD240	P	TO-220	30	2	45	15	-	1	4	0.7	1	3	BD239
BD240A	P	TO-220	30	2	60	15	-	1	4	0.7	1	3	BD239A
BD240B	P	TO-220	30	2	80	15	-	1	4	0.7	1	3	BD239B
BD241	N	TO-220	40	3	45	25	-	1	4	1.2	3	3	BD242
BD241A	N	TO-220	40	3	60	25	-	1	4	1.2	3	3	BD242A
BD241B	N	TO-220	40	3	80	25	-	1	4	1.2	3	3	BD242B
BD242	P	TO-220	40	3	45	25	-	1	4	1.2	3	3	BD241
BD242A	P	TO-220	40	3	60	25	-	1	4	1.2	3	3	BD241A
BD242B	P	TO-220	40	3	80	25	-	1	4	1.2	3	3	BD241B
MH810	P	TO-220	12	3	30	40	240 #	0.5	2	0.8	2	30	MH8100
MH8100	N	TO-220	12	3	30	40	240 #	0.5	2	0.8	2	30	MH810
TIP29	N	TO-220	30	1	40	15	75	1	4	0.7	1	3	TIP30
TIP29A	N	TO-220	30	1	60	15	75	1	4	0.7	1	3	TIP30A
TIP29B	N	TO-220	30	1	80	15	75	1	4	0.7	1	3	TIP30B
TIP30	P	TO-220	30	1	40	15	75	1	4	0.7	1	3	TIP29
TIP30A	P	TO-220	30	1	60	15	75	1	4	0.7	1	3	TIP29A
TIP30B	P	TO-220	30	1	80	15	75	1	4	0.7	1	3	TIP29B
TIP31	N	TO-220	40	3	40	10	50	3	4	1.2	3	3	TIP32
TIP31A	N	TO-220	40	3	60	10	50	3	4	1.2	3	3	TIP32A
TIP31B	N	TO-220	40	3	80	10	50	3	4	1.2	3	3	TIP32B
TIP31C	N	TO-220	40	3	100	10	50	3	4	1.2	3	3	TIP32C
TIP32	P	TO-220	40	3	40	10	50	3	4	1.2	3	3	TIP31
TIP32A	P	TO-220	40	3	60	10	50	3	4	1.2	3	3	TIP31A
TIP32B	P	TO-220	40	3	80	10	50	3	4	1.2	3	3	TIP31B
TIP32C	P	TO-220	40	3	100	10	50	3	4	1.2	3	3	TIP31C
2SA816	P	TO-220	10	0.75	80	70	240 #	0.15	2	0.5	0.5	50	2SC1626

# HFE groupings available

# High Voltage Transistors

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub>	C <sub>ob</sub>
			P <sub>d</sub>	I <sub>C</sub>	V <sub>CEO</sub>	I <sub>C</sub>		V <sub>CE</sub>	max	I <sub>C</sub>			
						I <sub>CM</sub> *	V <sub>CER</sub> *				min	max	(mA)
BC285	N	TO-18	360	100	120	30	-	5	30	0.5	10	50	4
BC312	N	TO-39	800	150	100	50	200	30	10	2	50	-	6+
BC393	P	TO-18	400	100	180	50	-	10	10	0.3	10	50	7
BC394	N	TO-18	400	100	180	30	-	10	10	0.3	10	50	5
BC450	P	TO-92F	350	200	100	50	460	2	5	0.25	100	100	-
BC530	P	TO-92A	625	100	120	40	180	10	5	0.25	50	100	6
BC531	P	TO-92A	625	100	150	60	240	10	5	0.25	50	100	6
BC532	N	TO-92A	625	100	140	60	250	10	5	0.15	10	100	6
BC533	N	TO-92A	625	100	160	80	250	10	5	0.15	10	100	6
BCW50	N	TO-18	500	100	120	18	-	3	10	-	-	50	5
BCX27	N	TO-92F	350	200	80	70	400	10	5	0.25	100	100	6
BCX28	P	TO-92F	350	200	80	70	400	10	5	0.25	100	100	6
BCX29	N	TO-92F	350	200	100	70	140	10	5	0.25	100	100	6
BCX30	P	TO-92F	350	200	100	70	140	10	5	0.25	100	100	6
BD115	N	TO-39	800	150	180	22	-	50	100	9	100	-	-
BF117	N	TO-39	680	100	140	25	-	30	10	1	30	40	4
BF120	N	TO-18	300	50	220	20	-	10	10	2	10	55	7
BF137	N	TO-39	380	100	160	25	-	30	10	1	30	50	4
BF156	N	TO-39	800	100	120	30	-	30	10	2	50	50	6
BF157	N	TO-39	800	100	150	30	-	30	10	2	50	50	6
BF174	N	TO-39	800	100	150	30	-	10	50	1	25	40	3.5*
BF177	N	TO-39	800	50	60	20	-	15	10	-	-	120+	3.5*
BF178	N	TO-39	800	50	115	20	-	30	20	-	-	120+	3.5*
BF179	N	TO-39	800	50	115	20	-	20	15	-	-	120+	3.5*
BF257	N	TO-39	800	100	160	25	-	30	10	1	30	50	5
BF258	N	TO-39	800	100	250	25	-	30	10	1	30	50	5
BF259	N	TO-39	800	100	300	25	-	30	10	1	30	50	5
BF294	N	TO-39	800	-	160	30	-	10	50	-	-	40	3.5
BF297	N	TO-92F	625	100	160	30	150	30	10	1	30	50	5
BF298	N	TO-92F	625	100	250	30	150	30	10	1	30	50	5
BF299	N	TO-92F	625	100	300	30	150	30	10	1	30	50	5
BF305	N	TO-39	600	50	150	20	-	30	20	-	-	50	3.5
BF336	N	TO-39	800	100	180	20	-	30	10	-	-	50	3.5*
BF337	N	TO-39	800	100	200	20	-	30	10	-	-	50	3.5*
BF338	N	TO-39	800	100	225	20	-	30	10	-	-	50	3.5*
BF391	N	TO-92A	625	500*	200	40	-	10	10	2	20	50	2*
BF392	N	TO-92A	625	500*	250	40	-	10	10	2	20	50	2*
BF393	N	TO-92A	625	500*	300	40	-	10	10	2	20	50	2*
BF397	P	TO-92F	625	100	90	40	250	10	10	0.5	10	-	-
BF398	P	TO-92F	625	100	150	30	200	10	10	0.5	10	-	-
BF421	P	TO-92B	625	200	300	40	-	25	20	-	-	60	-
BF422	N	TO-92B	625	200	250	50	-	25	20	-	-	60	1.6
BF423	P	TO-92B	625	200	250	50	-	25	20	-	-	60	-
BF491	P	TO-92A	625	500	200	40	-	10	10	2	20	50	1.6*
BF492	P	TO-92A	625	500	250	40	-	10	10	2	20	50	1.6*
BF493	P	TO-92A	625	500	300	40	-	10	10	2	20	50	1.6*

# HFE grouping available \* typical value

# High Voltage Transistors

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>		I <sub>C</sub>		V <sub>CE(sat)</sub>		f <sub>T</sub>	C <sub>ob</sub>	C <sub>re*</sub>
			P <sub>d</sub>	I <sub>C</sub>	V <sub>CEO</sub>									
			(mW)	I <sub>CM*</sub> (mA)	V <sub>CER*</sub> (V)	min	max	(mA)	(V)	max (V)	I <sub>C</sub> (mA)	min (MHz)	max (MHz)	
BFW43	P	TO-18	400	100	150	40	-	10	10	0.5	10	60	7	
BFW44	P	TO-39	700	100	150	40	-	10	10	0.5	10	60	7	
BFW45	N	TO-39	800	50	130	20	120	50	20	10	50	80	6	
BFX98	N	TO-39	800	100	150	30	-	25	10	1	25	40	8	
BFY57	N	TO-39	800	100	125	30	150	30	10	1.5	50	40	12	
BFY80	N	TO-18	500	100	90	30	-	2	10	0.9	2	50	8	
BSS38	N	TO-92F	300	100	80	20	-	4	1	0.7	4	60	-	
BSV68	P	TO-18	250	100	100	30	-	25	5	0.25	25	50	5	
BSY79	N	TO-18	300	30	120*	30	-	1	1	0.5	2	100+	4+	
MH7301	N	TO-220	1250	100	160	40	-	30	10	1.5	30	50	5	
MH7302	N	TO-220	1250	100	200	40	-	30	10	1.5	30	50	5	
MH7303	N	TO-220	1250	100	250	40	-	30	10	1.5	30	50	5	
MPSA42	N	TO-92A	625	100	300	40	-	30	10	0.5	20	50	3	
MPSA43	N	TO-92A	625	100	200	50	200	30	10	0.4	20	50	4	
MPSA92	P	TO-92A	625	500	300	25	-	30	10	0.5	20	50	6*	
MPSA93	P	TO-92A	625	500	200	25	-	30	10	0.4	20	50	8*	
MPSD01	N	TO-92A	625	100	200	20	-	30	10	-	-	40	3+	
MPSD02	N	TO-92A	350	50	140	25	-	10	10	-	-	40	-	
MPSD03	N	TO-92A	350	50	140	25	-	10	10	-	-	40	-	
MPSD52	P	TO-92A	350	50	140	25	-	10	10	-	-	40	-	
MPSD53	P	TO-92A	350	50	100	25	-	10	10	-	-	40	-	
MPSL01	N	TO-92A	500	100	120	50	300	10	5	0.3	50	60	8	
MPSL51	P	TO-92A	625	600	100	40	250	50	5	0.3	50	60	8	
2N3114	N	TO-39	800	200	150	30	120	30	10	1	50	40	9	
2N3634	P	TO-39	600	100	140	50	150	50	10	0.5	50	150	10	
2N3742	N	TO-39	1000	100	300	20	200	30	10	1	10	30	6	
2N3743	N	TO-39	1000	50	300	25	250	30	10	8	30	30	15	
2N3923	N	TO-39	800	1000	150	30	120	25	10	1	25	40	3.5	
2N4926	N	TO-39	1000	50	200	20	200	30	10	1	10	30	6	
2N4927	N	TO-39	1000	50	250	20	200	30	10	1	10	30	6	
2N4928	P	TO-39	600	100	100	25	200	10	10	0.5	10	100	6	
2N5058	N	TO-39	1000	150	300	35	150	30	25	1	30	30	10	
2N5059	N	TO-39	1000	150	250	30	150	30	25	1	30	30	10	
2N5400	P	TO-92A	350	600	120	40	180	10	5	0.5	50	100	6	
2N5401	P	TO-92A	350	600	150	60	240	10	5	0.5	50	100	6	
2N5550	N	TO-92A	350	600	140	60	250	10	5	0.25	50	100	6	
2N5551	N	TO-92A	350	600	160	80	250	10	5	0.2	50	100	6	
2SA639	P	TO-92B	200	50	180	30	330	15	6	0.9	10	130+	4.5+	
2SA675	P	TO-92B	250	100	80*	50	300 #	20	3	1.5	20	100	10	
2SA685	P	TO-92B	300	50	150*	30	-	15	3	1	15	40	10	
2SA749	P	TO-92B	250	50	100	50	-	20	1	0.3	50	40	3.5+	
2SC1279	N	TO-92B	250	50	160	50	330	10	3	0.5	10	150+	4.5+	

# HFE grouping available + typical value

# Miniature Transistors

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub>	N.F.	
			P <sub>d</sub> (mW)	I <sub>C</sub> (mA)	V <sub>CEO</sub> (V)	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (mA)	min (MHz)	max (dB)	f (Hz)
BC146	N	MT-42	50	50	20	80	550	0.2	0.5	-	-	150+	1.5+	30-15K
BC146R	N	MT-42	50	50	20	80	200	0.2	0.5	-	-	80+	1.5+	30-15K
BC146Y	N	MT-42	50	50	20	140	350	0.2	0.5	-	-	110+	4	30-15K
BC146G	N	MT-42	50	50	20	280	550	0.2	0.5	-	-	150+	1.5+	30-15K
BC200	P	MT-42	50	50	20	50	400	0.2	0.5	-	-	150+	1.5+	30-15K
BC200R	P	MT-42	50	50	20	50	105	0.2	0.5	-	-	80+	1.5+	30-15K
BC200Y	P	MT-42	50	50	20	85	200	0.2	0.5	-	-	110+	1.5+	30-15K
BC200G	P	MT-42	50	50	20	165	400	0.2	0.5	-	-	150+	1.5+	30-15K
BCW83	N	MT-42	225	200	30	100	850 #	2	5	0.25	10	150+	10	1K
MT4102	N	MT-42	50	50	20	200	600	1	5	0.25	10	60	3	1K
MT4103	N	MT-42	50	50	40	100	600	1	5	0.25	10	60	4	1K
MT4104	N	MT-42	50	50	25	50	500	1	5	0.3	1	40	4	1K

# HFE groupings available + typical value

# Darlington Transistors

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H <sub>FE</sub>				V <sub>CE(sat)</sub>		f <sub>T</sub>	Cob	N.F.
			P <sub>d</sub> (mW)	I <sub>C</sub> (mA)	V <sub>CEO</sub> V <sub>CES</sub> *	min	max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	max (V)	I <sub>C</sub> (mA)	min (MHz)	max (pF)	@f=1KHz max (dB)
BC516	P	TO-92F	625	400	30	30K	-	20	2	1	100	250+	4.5+	15#
BC517	N	TO-92F	625	400	30	30K	-	20	2	1	100	250+	3.5	15#
MPSA12	N	TO-92A	625	500	20	20K	-	10	5	1	10	-	-	-
MPSA13	N	TO-92A	500	300	30*	5K	-	10	5	1.5	100	125	3+	2+
MPSA14	N	TO-92A	500	300	30*	10K	-	10	5	1.5	100	125	3+	2+
MPSA63	P	TO-92A	625	300	30	10K	-	100	5	1.5	100	125	-	-
MPSA65	P	TO-92A	500	300	30*	50K	-	10	5	1.5	100	125	4+	2+
MPSA66	P	TO-92A	500	300	30*	75K	-	10	5	1.5	100	125	4+	2+
MPSD04	N	TO-92A	625	300	25*	1K	-	10	5	1	100	100	-	-
MPSD54	P	TO-92A	625	300	25*	1K	-	10	5	1	100	100	-	-
2N5305	N	TO-92B	600	300	25	2K	20K	2	5	1.4	200	60	10	-
2N5306	N	TO-92B	600	300	40	7K	70K	2	5	1.4	200	60	10	-
2N5307	N	TO-92B	600	300	40	2K	20K	2	5	1.4	200	60	10	-
2N5308	N	TO-92B	600	300	40	7K	70K	2	5	1.4	200	60	10	-

+ typical value # f=WB

# N - Channel Junction Field Effect Transistors

TYPE NO.	CASE	MAXIMUM RATINGS		$I_{DSS}$		$Y_{fs}$		$V_{GS(off)}$		$C_{iss}$	$C_{rss}$	NF
		$P_d$ (mW)	$BV_{GSS}$ (V)	(mA)		(mmhos)		(V)		(pF)	(pF)	(dB)
				min	max	min	max	min	max	max	max	max
BF244A	TO-92DA	300	30	2	6.5	3	6.5	0.5	8	4	1.6	1.5+
BF244B	TO-92DA	300	30	6	15	3	6.3	0.5	8	4	1.6	1.5+
BF244C	TO-92DA	300	30	12	25	3	6.5	0.5	8	4	1.6	1.5+
BF245A	TO-92DE	300	30	2	6.5	3	6.5	0.5	8	4	1.6	1.5+
BF245B	TO-92DE	300	30	6	15	3	6.5	0.5	8	4	1.6	1.5+
BF245C	TO-92DE	300	30	12	25	3	6.5	0.5	8	4	1.6	1.5+
BF256A	TO-92DE	360	30	3	7	4.5	-	0.5	7.5	4.5	1.2	7.5+
BF256B	TO-92DE	360	30	6	13	4.5	-	0.5	7.5	4.5	1.2	7.5+
BF256C	TO-92DE	360	30	11	18	4.5	-	0.5	7.5	4.5	1.2	7.5+
2N3819	TO-92DA	300	25	2	20	2	6.5	-	8	8	4	-
2N3823	TO-72DH	300	30	4	20	3.5	6.5	-	8	6	2	2.5
2N4416	TO-72DH	300	30	5	15	4.5	7.5	-	6	4	0.8	4
2N4416A	TO-72DH	300	35	5	15	4.5	7.5	2.5	6	4	0.8	4
2N5248	TO-92DA	360	30	4	20	3.5	6.5	1	8	6	2	-
2N5484	TO-92DD	310	25	1	5	3	6	0.3	3	5	1	3
2N5485	TO-92DD	310	25	4	10	3.5	7	0.5	4	5	1	2
2N5486	TO-92DD	310	25	8	20	4	8	2	6	5	1	2

- typical value

## Silicon Control Rectifiers

TYPE NO.	CASE	$I_T$ (RMS) (A) $T_c=50^\circ\text{C}$	$I_{TSM}$ (A) 60Hz	$V_{DRM} / V_{RRM}$ (V)	$I_{GT}$ ( $\mu\text{A}$ ) max	$I_H$ (mA) max	$V_{TM}$ (V) max
MCR100-4	TO-92AD	0.8	8	200	200	5	1.7
MCR100-6	TO-92AD	0.8	8	400	200	5	1.7
MCR100-8	TO-92AD	0.8	8	600	200	5	1.7
MCR100-4A	TO-92AC	0.8	8	200	200	5	1.7
MCR100-6A	TO-92AC	0.8	8	400	200	5	1.7
MCR100-8A	TO-92AC	0.8	8	600	200	5	1.7

# Three Terminals Voltage Regulators

TYPE NO.	CASE	MAXIMUM RATINGS			OUTPUT VOLTAGE				LINE REGULATION		LOAD REGULATION		RIPPLE REJECTION
		P <sub>d</sub> (W)	I <sub>o</sub> (A)	V <sub>i</sub> (V)	(V)			V <sub>i</sub> (V)	(mV)	Δ V <sub>i</sub> (V)	(mV)	Δ I <sub>o</sub> (mA)	(dB)
					min	typ	max		max		max		min
ML78L05A	TO-92	0.5	0.1	30	4.8	5.0	5.2	10	150	7 - 20	60	1-100	41
ML78L06A	TO-92	0.5	0.1	30	5.75	6.0	6.25	11	175	8 - 20	80	1-100	40
ML78L08A	TO-92	0.5	0.1	30	7.7	8.0	8.3	14	175	10.5 - 23	80	1-100	38
ML78L09A	TO-92	0.5	0.1	30	8.6	9.0	9.4	16	175	12 - 24	90	1-100	38
ML78L12A	TO-92	0.5	0.1	35	11.5	12.0	12.5	19	250	14.5 - 27	100	1-100	37
ML78L15A	TO-92	0.5	0.1	35	14.4	15.0	15.6	23	300	17.5 - 30	150	1-100	34
ML78L18A	TO-92	0.5	0.1	35	17.3	18.0	18.7	26	360	20.5 - 33	180	1-100	32
ML78L24A	TO-92	0.5	0.1	40	23	24.0	25	32	480	26.5 - 39	240	1-100	30
ML78M05A	TO-220	7.5*	0.5	35	4.8	5.0	5.2	10	100	7 - 25	100	5-1500	62
ML78M06A	TO-220	7.5*	0.5	35	5.75	6.0	6.25	11	120	8 - 25	120	5-1500	59
ML78M08A	TO-220	7.5*	0.5	35	7.7	8.0	8.3	14	160	10.5 - 25	160	5-1500	55
ML78M09A	TO-220	7.5*	0.5	35	8.65	9.0	9.35	16	180	11.5 - 27	180	5-1500	55
ML78M12A	TO-220	7.5*	0.5	35	11.5	12.0	12.5	19	240	14.5 - 30	240	5-1500	55
ML78M15A	TO-220	7.5*	0.5	35	14.4	15.0	15.6	23	300	17.5 - 30	300	5-1500	54
ML78M18A	TO-220	7.5*	0.5	35	17.3	18.0	18.7	27	360	21 - 33	360	5-1500	53
ML78M24A	TO-220	7.5*	0.5	40	23.0	24.0	25.0	33	480	27 - 38	480	5-1500	50
ML7805A	TO-220	15*	1	35	4.8	5.0	5.2	10	100	7 - 25	100	5-1500	62
ML7805FA	TO-220F	15*	1	35	4.8	5.0	5.2	10	100	7 - 25	100	5-1500	62
ML7806A	TO-220	15*	1	35	5.75	6.0	6.25	11	120	8 - 25	120	5-1500	59
ML7806FA	TO-220F	15*	1	35	5.75	6.0	6.25	11	120	8 - 25	120	5-1500	59
ML7808A	TO-220	15*	1	35	7.7	8.0	8.3	14	160	10.5 - 25	160	5-1500	55
ML7808FA	TO-220F	15*	1	35	7.7	8.0	8.3	14	160	10.5 - 25	160	5-1500	55
ML7809A	TO-220	15*	1	35	8.65	9.0	9.35	16	180	11.5 - 27	180	5-1500	55
ML7809FA	TO-220F	15*	1	35	8.65	9.0	9.35	16	180	11.5 - 27	180	5-1500	55
ML7812A	TO-220	15*	1	35	11.5	12.0	12.5	19	240	14.5 - 30	240	5-1500	55
ML7812FA	TO-220F	15*	1	35	11.5	12.0	12.5	19	240	14.5 - 30	240	5-1500	55
ML7815A	TO-220	15*	1	35	14.4	15.0	15.6	23	300	17.5 - 30	300	5-1500	54
ML7815FA	TO-220F	15*	1	35	14.4	15.0	15.6	23	300	17.5 - 30	300	5-1500	54
ML7818A	TO-220	15*	1	35	17.3	18.0	18.7	27	360	21 - 33	360	5-1500	53
ML7818FA	TO-220F	15*	1	35	17.3	18.0	18.7	27	360	21 - 33	360	5-1500	53
ML7820A	TO-220	15*	1	35	19.2	20.0	20.8	29	400	23 - 35	400	5-1500	51
ML7820FA	TO-220F	15*	1	35	19.2	20.0	20.8	29	400	23 - 35	400	5-1500	51
ML7824A	TO-220	15*	1	40	23.0	24.0	25.0	33	480	27 - 38	480	5-1500	50
ML7824FA	TO-220F	15*	1	40	23.0	24.0	25.0	33	480	27 - 38	480	5-1500	50

\* T<sub>c</sub>=25°C



# Three Terminals Voltage Regulators

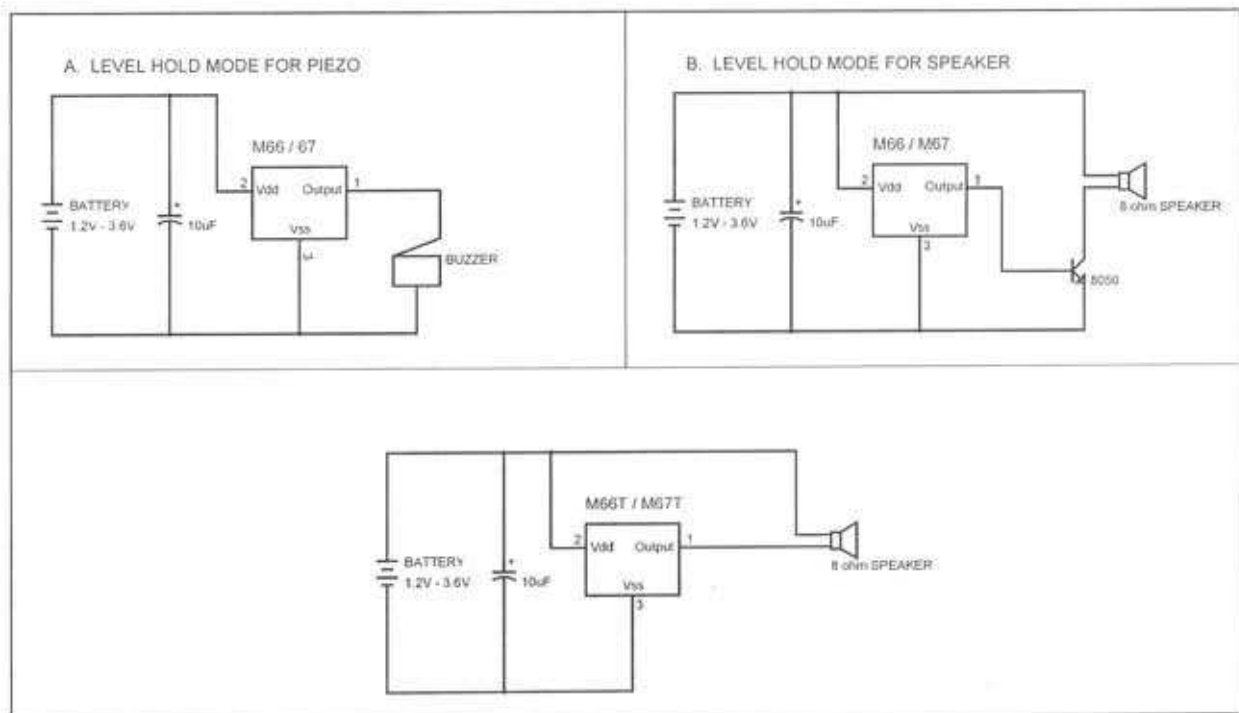
TYPE NO.	CASE	MAXIMUM RATINGS			OUTPUT VOLTAGE				LINE REGULATION		LOAD REGULATION		RIPPLE REJECTION
		P <sub>d</sub> (W)	I <sub>O</sub> (A)	V <sub>I</sub> (V)	(V)			V <sub>I</sub> (V)	(mV)	ΔV <sub>I</sub> (V)	(mV)	ΔI <sub>O</sub> (mA)	(dB)
					min	typ	max		max		max		min
ML79L05A	TO-92	0.5	0.1	-30	-4.8	-5.0	-5.2	-10	150	-7 ~ -20	60	1-100	41
ML79L09A	TO-92	0.5	0.1	-30	-8.64	-9.0	-9.36	-15	200	-11.5 ~ -24	90	1-100	38
ML79L12A	TO-92	0.5	0.1	-30	-11.5	-12.0	-12.5	-19	250	-14.5 ~ -27	100	1-100	37
ML79L15A	TO-92	0.5	0.1	-30	-14.4	-15.0	-15.6	-23	300	-17.5 ~ -30	150	1-100	34
ML79L18A	TO-92	0.5	0.1	-40	-17.3	-18.0	-18.7	-27	325	-20.7 ~ -33	170	1-100	33
ML79L24A	TO-92	0.5	0.1	-40	-23.0	-24.0	-25	-33	350	-27 ~ -38	200	1-100	31
ML79M05A	TO-220	7.5*	0.5	-35	-4.8	-5.0	-5.2	-10	50	-7 ~ -25	100	5-1500	54
ML79M06A	TO-220	7.5*	0.5	-35	-5.75	-6.0	-6.25	-11	120	-8 ~ -25	120	5-1500	54
ML79M08A	TO-220	7.5*	0.5	-35	-7.7	-8.0	-8.3	-14	160	-10.5 ~ -25	160	5-1500	54
ML79M09A	TO-220	7.5*	0.5	-35	-8.65	-9.0	-9.35	-16	180	-11.5 ~ -25	180	5-1500	54
ML79M12A	TO-220	7.5*	0.5	-35	-11.5	-12.0	-12.5	-19	240	-14.5 ~ -30	200	5-1500	54
ML79M15A	TO-220	7.5*	0.5	-35	-14.4	-15.0	-15.6	-23	300	-17.5 ~ -30	200	5-1500	54
ML79M18A	TO-220	7.5*	0.5	-35	-17.3	-18.0	-18.7	-27	360	-21 ~ -33	360	5-1500	54
ML79M24A	TO-220	7.5*	0.5	-40	-23.0	-24.0	-25.0	-33	480	-27 ~ -38	480	5-1500	54
ML7905A	TO-220	15*	1	-35	-4.8	-5.0	-5.2	-10	50	-7 ~ -25	100	5-1500	54
ML7905FA	TO-220F	15*	1	-35	-4.8	-5.0	-5.2	-10	50	-7 ~ -25	100	5-1500	54
ML7906A	TO-220	15*	1	-35	-5.75	-6.0	-6.25	-11	120	-8 ~ -25	120	5-1500	54
ML7906FA	TO-220F	15*	1	-35	-5.75	-6.0	-6.25	-11	120	-8 ~ -25	120	5-1500	54
ML7908A	TO-220	15*	1	-35	-7.7	-8.0	-8.3	-14	160	-10.5 ~ -25	160	5-1500	54
ML7908FA	TO-220F	15*	1	-35	-7.7	-8.0	-8.3	-14	160	-10.5 ~ -25	160	5-1500	54
ML7909A	TO-220	15*	1	-35	-8.65	-9.0	-9.35	-16	180	-11.5 ~ -25	180	5-1500	54
ML7909FA	TO-220F	15*	1	-35	-8.65	-9.0	-9.35	-16	180	-11.5 ~ -25	180	5-1500	54
ML7912A	TO-220	15*	1	-35	-11.5	-12.0	-12.5	-19	240	-14.5 ~ -30	200	5-1500	54
ML7912FA	TO-220F	15*	1	-35	-11.5	-12.0	-12.5	-19	240	-14.5 ~ -30	200	5-1500	54
ML7915A	TO-220	15*	1	-35	-14.4	-15.0	-15.6	-23	300	-17.5 ~ -30	200	5-1500	54
ML7915FA	TO-220F	15*	1	-35	-14.4	-15.0	-15.6	-23	300	-17.5 ~ -30	200	5-1500	54
ML7918A	TO-220	15*	1	-35	-17.3	-18.0	-18.7	-27	360	-21 ~ -33	360	5-1500	54
ML7918FA	TO-220F	15*	1	-35	-17.3	-18.0	-18.7	-27	360	-21 ~ -33	360	5-1500	54
ML7924A	TO-220	15*	1	-40	-23.0	-24.0	-25.0	-33	480	-27 ~ -38	480	5-1500	54
ML7924FA	TO-220F	15*	1	-40	-23.0	-24.0	-25.0	-33	480	-27 ~ -38	480	5-1500	54

\* T<sub>c</sub>=25°C

# Simple Melody Generator

TYPE NO.	OPERATING VOLTAGE		STAND BY CURRENT MAX ( $\mu$ A)	OPERATING CURRENT MAX ( $\mu$ A)	INPUT CURRENT MAX ( $\mu$ A)		OSCILLATOR FREQ (KHz)		OSCILLATOR START VOLTAGE MIN (V)	CASE NO.
	(V) MIN	(V) MAX			LOW	HIGH	MIN	MAX		
	M66 M66T	1.2	3.6	1	50	1	2	63	117	
M67 M67T	1.2	3.6	1	50	1	2	63	117	1.3	TO-92

## Application Circuit



# Simple Melody Generator

## Song List

NO.	SONG NAME	NO.	SONG NAME
M66/T-01S	Happy Birthday <once>	M66/T-205	I'd Like To Teach The World To Sing
M66/T-02	Twinkle Twinkle Little Star	M66/T-207	Ave Maria
M66/T-03	Jingle Bell / O Tannenbaus / Rudolph / The Red-nosed Reindeer	M66/T-208	London Bridge is Falling Down / Old McDonald Had A Farm / Twinkle Twinkle Little Star
M66/T-04	It is A Small World	M66/T-209	Music Box Dancer
M66/T-05B	Jingle Bell	M66/T-210	You Are My Sunshine
M66/T-06	For Elise	M66/T-211	Melody of Memorial
M66/T-08	Jingle Bell / Santa Clause / We Wish You A Merry X'mas	M66/T-212	Titoli
M66/T-11	Rock-a-bye Baby	M66/T-213	I Saw Monny Kissing Santa Claus
M66/T-17	Brahm's Lullaby	M66/T-214	White X'mas
M66/T-18	Let Me Call You Sweet Heart	M66/T-215	Warning Tone
M66/T-30	Silent Night	M66/T-216	San Bao Yu He Zan
M66/T-31	Hong Hu Shui	M66/T-217	Sing Ho Chong
M66/T-32A	Shi Wu De Yue Liang	M66/T-218	Lutajze, Jezuniu
M66/T-33	Ji Gong Zhuan	M66/T-219	Przybieżeli do Betlejem
M66/T-34	London Bridge Is Falling Down / Twinkle Twinkle Little Star	M66/T-220	Wśród Nocnej Ciszy
M66/T-35	Are You Sleeping/Three Blind Mice/Row Your Boat	M66/T-221	Edelweiss
M66/T-36	Old McDonald Had A Farm	M66/T-222	Korean Song
M66/T-37	We Wish You A Merry X'mas / Silent Night	M66/T-223	We Wish You A Merry X'mas / Midnight Clear / Joy to the World
M66/T-39A	Feliz Navidad / We Wish You A Merry X'mas	M66/T-224	Thai Song (Custom Made)
M66/T-41	Love Story / Love Me Tender	M66/T-226	This Old Man
M66/T-42	Love Me Tender	M66/T-228	Mendelson
M66/T-44	Easter Parade / Peter Cottontail	M66/T-229	You Light Up My Life
M66/T-45	Home Sweet Home	M66/T-230	My Way
M66/T-46	Las Posa Das / Noche De Paz / Feliz Navidad	M66/T-231	Do Konca Nas Umizowaz
M66/T-48	Wedding March	M66/T-232	Pan Jezus Juz Sig Zblizo
M66/T-49	Yun Dong Yuan Jin Xing Qu	M66/T-233	Here We Go Round the Mulberry Bush
M66/T-50	Las Manaitas (Part II)	M66/T-234	Farmer in the Dell
M66/T-51	Let's Twist Again	M66/T-235	Hockey Pokey
M66/T-52	Las Manaitas (Part I)	M66/T-236	The Ants Go Marching One by One
M66/T-54	Xue Ran De Feng Cai	M66/T-237	I'm a Little Teapot
M66/T-56	Las Posa Das / Cantas De Posadas / Feliz Navidad	M66/T-238	Otrzyjcie Yuz Tzy Ptaczacy
M66/T-58	Indian Song	M66/T-239	I'll be Home for X'mas
M66/T-61	Tian Xian Pei	M66/T-240	Holy Song
M66/T-65	Easter Parade	M66/T-242	It's a Small World / Rock-a-bye Baby
M66/T-68	Ya Zhou Xiong Feng	M66/T-243	Home Sweet Home / Old McDonald Had a Farm
M66/T-71	Shi Shang Zhi You Ma Ma Hao	M66/T-244	Happy Birthday / Lambada
M66/T-72	Thanv's Robert	M66/T-245	Santa Claus is Coming to Town
M66/T-73	Lambada	M66/T-246	A Man and a Woman
M66/T-79	Love Story	M66/T-247	Telephone Ring
M66/T-80	Congratulation	M66/T-248	Bashana Haba'a
M66/T-81	Lan Hua Cao	M66/T-250	Monkey Song
M66/T-83	Jin She Kuang Wu	M66/T-251	How Much is That Doggy/D188It's a Small World Picnic
M66/T-84	Chun Jiang Hua Yue Ye	M66/T-252	Asturias
M66/T-86	Feliz Navidad / Silent Night	M66/T-253	Le Vieux Chafet
M66/T-88	Over The Rainbow	M66/T-254	Das Olper Schutzenfelfied
M66/T-92	Ke Wang	M66/T-255	You Are Special
M66/T-93	Army	M66/T-256	Always Coca-Cola
M66/T-99	Wang Xiao Er Bai Nian	M66/T-259	If You're Happy and You Know It
M66/T-111	Sound of Bee	M66/T-260	This Old Man
M66/T-112	Sound of Cricket	M66/T-261	Clementine
M66/T-114	Sound of Chick	M66/T-262	Livre de la Jungle
M66/T-119	Sound of Frog	M66/T-263	Turn Little Top
M66/T-120	Six Bi	M66/T-264	A Song That Doesn't End
M66/T-121	Sound of Bird	M66/T-265	I'm a Little Teapot
M66/T-122	Sound of Chick 2	M66/T-266	Turn Little Top
M66/T-123	Sound of Chick 3	M66/T-267	Bolero
M66/T-124	Sound of Cicada	M66/T-268	O X'mas Tree
M66/T-125	Di Di 1	M66/T-269	IBU
M66/T-126	Di Di 2	M66/T-270	San Bao Yu He Zan
M66/T-128	Bi	M66/T-271	Thai Happy New Year
M66/T-201	Dong Fang Hong	M66/T-272	Flames of Love
M66/T-204	We Wish You A Merry X'mas	M66/T-273	Yukiya Kon Kow

# Simple Melody Generator

## Song List

<u>NO.</u>	<u>SONG NAME</u>	<u>NO.</u>	<u>SONG NAME</u>
M66/T-274	Mero Nomi	M66/T-358	Can't Help Failling in Love
M66/T-276	Ken Song	M66/T-359	Tots TV Opening Titles
M66/T-279	Castille	M66/T-361	Football Crazy
M66/T-280	A Whole New World	M66/T-362	Gone Fishing
M66/T-281	Calliope	M66/T-363	Aglae Et Sidonie
M66/T-282	No Se Tu / La Barca	M66/T-364	O-Renjise
M66/T-283	Looney Tune	M66/T-365	Bi-Fuaita
M66/T-284	The Wheels on the Bus	M66/T-366	Singing In The Rain
M66/T-285	Blue Hawaii	M66/T-368	Winnie The Pooh
M66/T-286	Flintstones	M66/T-369	Gnammy
M66/T-287	Mighty Morphin Rangers	M66/T-370	Frosty The Snowman
M66/T-288	Humpty-Dumpty	M66/T-371	God Bless America
M66/T-289	Mary Had a Little Lamb	M66/T-372	Frosty The Snowman (Part I)
M66/T-290	The Muffin Man	M66/T-373	Rudolph, The Red-nosed Reindeer
M66/T-291	Twinkle Twinkle Little Star	M66/T-374	Thomas The Tank Engine
M66/T-292	Mo Si Ke Jiao Wai De Wan Shang	M66/T-377	M' m! M' m! Good!
M66/T-293	Parade of Wooden Soldier	M66/T-378	Hock Soll Er Leben
M66/T-294	Jolly Old St. Nicholas	M66/T-379	Rodendanska Piesma
M66/T-295	Armour Hot Dog Melody	M66/T-381	Andanman March
M66/T-296	National Song of China	M66/T-386	Di Di / Happy Birthday
M66/T-297	Turpen Uit Amsterdam	M66/T-387	What shall we do with the Drunken sailor?
M66/T-298	In the Bleak Mid-winter	M66/T-388	Mother's Love
M66/T-299	Shi-Furetto Gafurenjise	M66/T-389	Dance & Twirl Esmeralda
M66/T-300	Gone With The Wind	M66/T-390	Old MacDonald
M66/T-301	Take Me Out to the Ballgame	M66/T-391	Tequila
M66/T-302	Golden Crisp Theme	M66/T-392	Can't Buy Me Love
M66/T-303	Football Team	M66/T-395	Yankee Doodle
M66/T-304	Friend Like Me	M66/T-396	Can we just stop and talk a while
M66/T-305	I Left My Heart in San Francisco	M66/T-397	Be My Lady
M66/T-306	Moonlight Densetu	M66/T-398	MID
M66/T-307	Dreidle, Draydel, Dreydl	M66/T-399	What will be will be
M66/T-308	Deutschland	M66/T-400	Sana Kahit Minsan
M66/T-309	Sammen Vender Vi Stormmen	M66/T-401	When You Wish Upon a Star
M66/T-312	O Tannenbaum	M66/T-408	Enoglasno
M66/T-314	Cheng Yuen Song	M66/T-409	Jesus Loves Me
M66/T-315	Snow White	M66/T-410	Hey Diddle Diddle
M66/T-316	Funeral March	M66/T-411	Funeral March of a Marionette
M66/T-317	Lucky Charms	M66/T-412	Toccata in D Minor
M66/T-318	It's a Small, Small World	M66/T-413	Pop Goes The Weasel
M66/T-320	S' lamdunk	M66/T-415	Brooch - 2
M66/T-321	Here Comes Peter Cottontail	M66/T-416	Corinthians
M66/T-323	Wild Thing	M66/T-417	Palemeiras
M66/T-324	Three Little Pigs	M66/T-418	Flamengo
M66/T-325	Narito	M66/T-419	Deck The Halls
M66/T-326	Sana Maulit Muli	M66/T-420	Noel
M66/T-327	Sana, Ay Ikaw Na Nga	M66/T-421	Joy to the world
M66/T-328	Plwase Be Careful with My Heart	M66/T-423	Deck The Halls
M66/T-329	Dohah Ya Dohah	M66/T-424	The Farmer In The Dell
M66/T-330	My Old Kentucky Home	M66/T-426	Perfect Christmas
M66/T-331	Pop Goes The Weasel	M66/T-427	Misa de Galls
M66/T-332	Soccer Club Song	M66/T-428	You and Me
M66/T-333	Lebaran / Schamat Hair Raya	M66/T-431	Himig Pasko
M66/T-335	I Wanna Be Love By You	M66/T-432	Each Day With You
M66/T-342	Teddy Bear's Picnic	M66/T-433	Bakit Labis Kitang Mahal
M66/T-344	Music Box	M66/T-434	Mahal Kita Walang Iba
M66/T-346	You're The One That I Want	M66/T-435	World in Motion
M66/T-350	The Wheels On The Bus	M66/T-436	Match of the day
M66/T-351	I've Been Working On The Railway	M66/T-437	Winnie The Pooh
M66/T-352	Over The River and Through The Wood	M66/T-438	Dahil Mahal Kita
M66/T-353	Morgen, Kinder, Wird's was geben / Labt Uns Froh Und Munter	M66/T-439	Star Trek Theme
M66/T-354	Three Blind Mice	M66/T-440	Winnie The Pooh
M66/T-355	Take Me Out to the Ballgame	M66/T-441	Brady Bunch Song
M66/T-356	Salut D' amour	M66/T-445	I'll Never Go
M66/T-357	Doo Doo Doo .....	M66/T-446	Your Love
		M66/T-447	Forever More

# Simple Melody Generator

## Song List

<u>NO.</u>	<u>SONG NAME</u>	<u>NO.</u>	<u>SONG NAME</u>
M66/T-448	With a Smile	M67/T-01	Happy Birthday <Twice>
M66/T-449	Dr. Zhivago	M67/T-01S	Happy Birthday <Once>
M66/T-451	James Bond Theme	M67/T-47	Door Bell
M66/T-453	Lion Sleeps Tonight	M67/T-77	Westminster Bell
M66/T-454	California Girls	M67/T-115	Telephone Ring
M66/T-455	Santos F.C.	M67/T-204	We Wish You a Merry X'mas
M66/T-456	Sao Paula Futebol Clube	M67/T-225	Pump & Circumstances
M66/T-458	Mickey Mouse March	M67/T-227	Hemglass
M66/T-459	Mo Si Ke Jiao Wai De Wan Shang	M67/T-241	Mackay Logo
M66/T-465	The Blue Danube Waltz	M67/T-257	Jack and Jill
M66/T-466	Petit Papa Noel	M67/T-258	London Bridge
M66/T-467	Jingle Bells / Joy to the World / We wish you a merry X'mas	M67/T-258A	London Bridge
M66/T-469	National Melody	M67/T-338	Daewoo
M66/T-470	The Alphabet Song		
M66/T-471	Round Hat		
M66/T-472	Only Me and You		
M66/T-473	Dahil Tanging Ikaw		
M66/T-474	Here I am		
M66/T-476	Opening Theme 1		
M66/T-478	Laging Naro'n Ka		
M66/T-481	Mint Song		
M66/T-488	Sesame Street Theme		
M66/T-491	Gorenja		
M66/T-492	Kamen Rider		
M66/T-493	Ganbare Bobokon		
M66/T-496	Redial / Telephone ring		
M66/T-497	Koinobori		
M66/T-500	Tge Buble / Jesus Loves Me		
M66/T-501	Tatts Pokies		
M66/T-506	Mexican Hat		
M66/T-507	Ryssian Sailor's Dance		
M66/T-509	Jackpot Sound		
M66/T-510	Stars and Stripes		
M66/T-511	The Washington Post March		
M66/T-514	Winnie The Pooh		
M66/T-516	I am a Child of God		