

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

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			P _d (mW)	I _C (A)	V _{CEO} V _{CER} *	min max		I _C (mA)	V _{CE} (V)	max (V)	I _C (A)			
						min	max							
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_c=25°C

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			P _d (mW)	I _C (A)	V _{CEO} V _{CER} *	min max		I _C (mA)	V _{CE} (V)	max (V)	I _C (A)			
						(MHz)	(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

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			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	350	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	C _{ob}	COMPLEMENTARY TYPE
			P _d (mW)	I _C (A)	V _{CEO} V _{CER} * (V)	min max		I _C (mA)	V _{CE} (V)	max (V)	I _C (A)	min (MHz)	max (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}^* (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	-

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} *	min max		I _C (mA)	V _{CE} (V)	max (V)	I _C (A)			
						(MHz)	(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 _{FE}				V _{CE(sat)}		f _T	C _{ob}	COMPLEMENTARY TYPE
			P _d	I _C	V _{CEO} V _{CER} *	min		I _C	V _{CE}	max	I _C			
						(mW)	(A)					(V)	(mA)	
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

Medium Power Amplifiers and Switches

TYPE NO.	POLARITY	CASE	MAXIMUM RATINGS			H_{FE}				$V_{CE(sat)}$		f_T min	C_{ub} max	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					(MHz)	(MHz)	
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