

## SELECTION GUIDE

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## Small-signal Transistors

## Selection guide

## LEADED DEVICES

## NPN GENERAL PURPOSE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
2N2484	TO-18	60	50	360	250	800	60	–	131
2N4124	TO-92	25	200	500	120	360	300	2N4126	161
2N5088	TO-92	30	100	500	350	>350	50	2N5087	175
2PC945	TO-92	50	100	500	135	600	150	2PA733	206
2PC945K	TO-92	50	100	500	300	600	150	2PA733K	206
2PC945P	TO-92	50	100	500	200	400	150	2PA733P	206
2PC945Q	TO-92	50	100	500	135	270	150	2PA733Q	206
2PC1815	TO-92	50	150	500	120	700	80	2PA1015	208
2PC1815BL	TO-92	50	150	500	350	700	80	2PA1015BL	208
2PC1815GR	TO-92	50	150	500	200	400	80	2PA1015GR	208
2PC1815Y	TO-92	50	150	500	120	240	80	2PA1015Y	208
BC107	TO-18	45	100	300	110	450	100	BC177	222
BC107A	TO-18	45	100	300	110	220	100	BC177A	222
BC107B	TO-18	45	100	300	200	450	100	BC177B	222
BC108	TO-18	20	100	300	110	800	100	–	222
BC108A	TO-18	20	100	300	110	220	100	–	222
BC108B	TO-18	20	100	300	200	450	100	–	222
BC108C	TO-18	20	100	300	420	800	100	–	222
BC109	TO-18	20	100	300	200	800	100	–	222
BC109B	TO-18	20	100	300	200	450	100	–	222
BC109C	TO-18	20	100	300	420	800	100	–	222
BC237	TO-92	45	100	500	120	460	100	BC307	234
BC237B	TO-92	45	100	500	200	460	100	BC307B	234
BC337	TO-92	45	500	625	100	600	100	BC327	244
BC337A	TO-92	60	500	625	100	400	100	BC327A	244
BC337-16	TO-92	45	500	625	100	250	100	BC327-16	244
BC337-25	TO-92	45	500	625	160	400	100	BC327-25	244
BC337-40	TO-92	45	500	625	250	600	100	BC327-40	244
BC338	TO-92	25	500	625	100	600	100	BC328	244
BC338-16	TO-92	25	500	625	100	250	100	BC328-16	244
BC338-25	TO-92	25	500	625	160	400	100	BC328-25	244
BC338-40	TO-92	25	500	625	250	600	100	BC328-40	244
BC546	TO-92	65	100	500	110	450	100	BC556	261
BC546A	TO-92	65	100	500	110	220	100	BC556A	261
BC546B	TO-92	65	100	500	200	450	100	BC556B	261
BC547	TO-92	45	100	500	110	800	100	BC557	261

## Small-signal Transistors

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TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BC547A	TO-92	45	100	500	110	220	100	BC557A	261
BC547B	TO-92	45	100	500	200	450	100	BC557B	261
BC547C	TO-92	45	100	500	420	800	100	BC557C	261
BC548	TO-92	30	100	500	110	800	100	BC558	261
BC548A	TO-92	30	100	500	110	220	100	BC558A	261
BC548B	TO-92	30	100	500	200	450	100	BC558B	261
BC548C	TO-92	30	100	500	420	800	100	BC558C	261
BC549	TO-92	30	100	500	200	800	100	BC559	266
BC549B	TO-92	30	100	500	200	450	100	BC559B	266
BC549C	TO-92	30	100	500	420	800	100	BC559C	266
BC550	TO-92	45	100	500	200	800	100	BC560	266
BC550B	TO-92	45	100	500	200	450	100	BC560B	266
BC550C	TO-92	45	100	500	420	800	100	BC560C	266
ED1402	TO-92	20	200	500	120	900	100 max.	ED1602	762
ED1402A	TO-92	20	200	500	110	165	100 max.	ED1602A	762
ED1402B	TO-92	20	200	500	150	225	100 max.	ED1602B	762
ED1402C	TO-92	20	200	500	202	318	100 max.	ED1602C	762
ED1402D	TO-92	20	200	500	290	450	100 max.	ED1602D	762
ED1402E	TO-92	20	200	500	410	810	100 max.	ED1602E	762
ED1502	TO-92	20	25	500	36	210	825 max.	–	764
ED1502A	TO-92	20	25	500	36	55	825 max.	–	764
ED1502B	TO-92	20	25	500	48	75	825 max.	–	764
ED1502C	TO-92	20	25	500	66	100	825 max.	–	764
ED1502D	TO-92	20	25	500	84	127	825 max.	–	764
ED1502E	TO-92	20	25	500	105	210	825 max.	–	764
ED1702	TO-92	25	500	625	106	588	80	ED1802	769
ED1702K	TO-92	25	500	625	106	150	80	ED1802K	769
ED1702L	TO-92	25	500	625	132	189	80	ED1802L	769
ED1702M	TO-92	25	500	625	170	233	80	ED1802M	769
ED1702N	TO-92	25	500	625	213	300	80	ED1802N	769
ED1702O	TO-92	25	500	625	263	370	80	ED1802O	769
ED1702P	TO-92	25	500	625	333	476	80	ED1802P	769
ED1702Q	TO-92	25	500	625	435	588	80	ED1802Q	769
JC337	TO-92	45	500	625	100	600	100	JC327	781
JC337A	TO-92	60	500	625	100	600	100	JC327A	781
JC337-16	TO-92	60	500	625	100	250	100	JC327-16	781
JC337-25	TO-92	60	500	625	160	400	100	JC327-25	781
JC337-40	TO-92	60	500	625	250	600	100	JC327-40	781
JC338	TO-92	25	500	625	100	600	100	JC328	781

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TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
JC338-16	TO-92	25	500	625	100	250	100	JC328-16	781
JC338-25	TO-92	25	500	625	160	400	100	JC328-25	781
JC338-40	TO-92	25	500	625	250	600	100	JC328-40	781
JC501	TO-92	45	100	500	90	600	130 typ.	JA101	784
JC501O	TO-92	45	100	500	90	180	130 typ.	–	784
JC501P	TO-92	45	100	500	135	270	130 typ.	JA101P	784
JC501Q	TO-92	45	100	500	200	400	130 typ.	JA101Q	784
JC501R	TO-92	45	100	500	300	600	130 typ.	JA101R	784
JC546	TO-92	65	100	500	110	450	100	JC556	787
JC546A	TO-92	65	100	500	110	220	100	JC556A	787
JC546B	TO-92	65	100	500	200	290	100	JC556B	787
JC547	TO-92	45	100	500	110	800	100	JC557	787
JC547A	TO-92	45	100	500	110	220	100	JC557A	787
JC547B	TO-92	45	100	500	200	450	100	JC557B	787
JC547C	TO-92	45	100	500	420	800	100	JC557C	787
JC548	TO-92	30	100	500	110	800	100	JC558	787
JC548A	TO-92	30	100	500	110	220	100	JC558A	787
JC548B	TO-92	30	100	500	200	450	100	JC558B	787
JC548C	TO-92	30	100	500	420	800	100	JC558C	787
JC549	TO-92	30	100	500	200	800	100	JC559	792
JC549B	TO-92	30	100	500	200	450	100	JC559B	792
JC549C	TO-92	30	100	500	420	800	100	JC559C	792
JC550	TO-92	45	100	500	200	800	100	JC560	792
JC550B	TO-92	45	100	500	200	450	100	JC560B	792
JC550C	TO-92	45	100	500	420	800	100	JC560C	792
MPS8098	TO-92	60	100	500	100	300	150	–	812
MPSA05	TO-92	60	500	625	100	>100	100	MPSA55	814
MPSA06	TO-92	80	500	625	100	>100	100	MPSA56	814

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## LEADED DEVICES (continued)

## PNP GENERAL PURPOSE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
2N4126	TO-92	25	200	500	120	360	250	2N4124	163
2N5087	TO-92	50	100	500	250	>250	40	2N5088	173
2PA733	TO-92	50	100	500	135	600	100	2PC945	190
2PA733K	TO-92	50	100	500	300	600	100	2PC945K	190
2PA733P	TO-92	50	100	500	200	400	100	2PC945P	190
2PA733Q	TO-92	50	100	500	135	270	100	2PC945Q	190
2PA1015	TO-92	50	150	500	120	700	80	2PC1815	192
2PA1015BL	TO-92	50	150	500	350	700	80	2PC1815BL	192
2PA1015GR	TO-92	50	150	500	200	400	80	2PC1815GR	192
2PA1015Y	TO-92	50	150	500	120	240	80	2PC1815Y	192
BC177	TO-18	45	100	300	125	500	100	BC107	231
BC177A	TO-18	45	100	300	125	260	100	BC107A	231
BC177B	TO-18	45	100	300	240	500	100	BC107B	231
BC307	TO-92	45	100	500	125	455	100	BC237	237
BC307B	TO-92	45	100	500	222	455	100	BC237B	237
BC327	TO-92	45	500	625	100	600	80	BC337	240
BC327A	TO-92	60	500	625	100	400	80	BC337A	240
BC327-16	TO-92	45	500	625	100	250	80	BC337-16	240
BC327-25	TO-92	45	500	625	160	400	80	BC337-25	240
BC327-40	TO-92	45	500	625	250	600	80	BC337-40	240
BC328	TO-92	25	500	625	100	600	80	BC338	240
BC328-16	TO-92	25	500	625	100	250	80	BC338-16	240
BC328-25	TO-92	25	500	625	160	400	80	BC338-25	240
BC328-40	TO-92	25	500	625	250	600	80	BC338-40	240
BC556	TO-92	65	100	500	125	475	100	BC546	270
BC556A	TO-92	65	100	500	125	250	100	BC546A	270
BC556B	TO-92	65	100	500	220	475	100	BC546B	270
BC557	TO-92	45	100	500	125	800	100	BC547	270
BC557A	TO-92	45	100	500	125	250	100	BC547A	270
BC557B	TO-92	45	100	500	220	475	100	BC547B	270
BC557C	TO-92	45	100	500	420	800	100	BC547C	270
BC558	TO-92	30	100	500	125	800	100	BC548	270
BC558A	TO-92	30	100	500	125	250	100	BC548A	270
BC558B	TO-92	30	100	500	220	475	100	BC548B	270
BC558C	TO-92	30	100	500	420	800	100	BC548C	270
BC559	TO-92	30	100	500	125	800	100	BC549	275

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TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BC559A	TO-92	30	100	500	125	250	100	–	275
BC559B	TO-92	30	100	500	220	475	100	BC549B	275
BC559C	TO-92	30	100	500	420	800	100	BC549C	275
BC560	TO-92	45	100	500	125	800	100	BC550	275
BC560A	TO-92	45	100	500	125	250	100	–	275
BC560B	TO-92	45	100	500	220	475	100	BC550B	275
BC560C	TO-92	45	100	500	420	800	100	BC550C	275
BCY70	TO-18	40	200	350	100	>100	250	–	461
BCY71	TO-18	45	200	350	500	>500	250	–	461
ED1602	TO-92	20	100	500	70	800	100	ED1402	766
ED1602A	TO-92	20	100	500	70	105	100	ED1402A	766
ED1602B	TO-92	20	100	500	90	140	100	ED1402B	766
ED1602C	TO-92	20	100	500	125	190	100	ED1402C	766
ED1602D	TO-92	20	100	500	170	260	100	ED1402D	766
ED1602E	TO-92	20	100	500	223	475	100	ED1402E	766
ED1602F	TO-92	20	100	500	415	800	100	–	766
ED1802	TO-92	25	500	625	106	588	80	ED1702	772
ED1802K	TO-92	25	500	625	106	150	80	ED1702K	772
ED1802L	TO-92	25	500	625	132	189	80	ED1702L	772
ED1802M	TO-92	25	500	625	170	233	80	ED1702M	772
ED1802N	TO-92	25	500	625	213	300	80	ED1702N	772
ED1802O	TO-92	25	500	625	263	370	80	ED1702O	772
ED1802P	TO-92	25	500	625	333	476	80	ED1702P	772
ED1802Q	TO-92	25	500	625	435	588	80	ED1702Q	772
JA101	TO-92	45	100	500	135	600	100	JC501	775
JA101P	TO-92	45	100	500	135	270	100	JC501P	775
JA101Q	TO-92	45	100	500	200	400	100	JC501Q	775
JA101R	TO-92	45	100	500	300	600	100	JC501R	775
JC327	TO-92	45	500	625	100	600	80	JC337	778
JC327A	TO-92	60	500	625	100	400	80	JC337A	778
JC327-16	TO-92	45	500	625	100	250	80	JC337-16	778
JC327-25	TO-92	45	500	625	160	400	80	JC337-25	778
JC327-40	TO-92	45	500	625	250	600	80	JC337-40	778
JC328	TO-92	25	500	625	100	600	80	JC338	778
JC328-16	TO-92	25	500	625	100	250	80	JC338-16	778
JC328-25	TO-92	25	500	625	160	400	80	JC338-25	778
JC328-40	TO-92	25	500	625	250	600	80	JC338-40	778
JC556	TO-92	65	100	500	125	475	100	JC546	796
JC556A	TO-92	65	100	500	125	250	100	JC546A	796

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TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
JC556B	TO-92	65	100	500	220	475	100	JC546B	796
JC557	TO-92	45	100	500	125	800	100	JC547	796
JC557A	TO-92	45	100	500	125	250	100	JC547A	796
JC557B	TO-92	45	100	500	220	475	100	JC547B	796
JC557C	TO-92	45	100	500	420	800	100	JC547C	796
JC558	TO-92	30	100	500	125	800	100	JC548	796
JC558A	TO-92	30	100	500	125	250	100	JC548A	796
JC558B	TO-92	30	100	500	220	475	100	JC548B	796
JC558C	TO-92	30	100	500	420	800	100	JC548C	796
JC559	TO-92	30	100	500	125	800	100	JC549	801
JC559A	TO-92	30	100	500	125	250	100	–	801
JC559B	TO-92	30	100	500	220	475	100	JC549B	801
JC559C	TO-92	30	100	500	420	800	100	JC549C	801
JC560	TO-92	45	100	500	125	800	100	JC550	801
JC560A	TO-92	45	100	500	125	250	100	–	801
JC560B	TO-92	45	100	500	220	475	100	JC550B	801
JC560C	TO-92	45	100	500	420	800	100	JC550C	801
MPSA55	TO-92	60	500	625	100	>100	50	MPSA05	828
MPSA56	TO-92	80	500	625	100	>100	50	MPSA06	828

## LEADED DEVICES (continued)

## NPN GENERAL PURPOSE TRANSISTOR ARRAYS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	REMARKS	PAGE
BCY87	TO-71	40	30	150	100	450	10	matched pair	468
BCY88	TO-71	40	30	150	100	450	10	matched pair	468
BCY89	TO-71	40	30	150	100	450	10	matched pair	468

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN GENERAL PURPOSE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
2N1613	TO-39	50	500	800	40	120	60	–	–	110
2N1711	TO-39	50	500	800	100	300	70	–	–	113
2N1893	TO-39	80	500	800	40	120	–	–	–	115
2N3019	TO-39	80	1000	800	100	300	100	–	–	146
BC140	TO-39	40	1000	3700	63	250	50	–	BC160	225
BC140-10	TO-39	40	1000	3700	63	160	50	–	BC160-10	225
BC140-16	TO-39	40	1000	3700	100	250	50	–	BC160-16	225
BC141	TO-39	60	1000	3700	63	250	50	–	BC161	225
BC141-10	TO-39	60	1000	3700	63	160	50	–	BC161-10	225
BC141-16	TO-39	60	1000	3700	100	250	50	–	BC161-16	225
BC368	TO-92	20	1000	830	85	375	40	–	BC369	249
BC368-16	TO-92	20	1000	830	100	250	40	–	BC369-16	249
BC368-25	TO-92	20	1000	830	160	>160	40	–	BC369-25	249
BC635	TO-92	45	1000	830	40	250	100	–	BC636	283
BC635-10	TO-92	45	1000	830	63	160	100	–	BC636-10	283
BC635-16	TO-92	45	1000	830	100	250	100	–	BC636-16	283
BC637	TO-92	60	1000	830	40	250	100	–	BC638	283
BC637-10	TO-92	60	1000	830	63	160	100	–	BC638-10	283
BC637-16	TO-92	60	1000	830	100	250	100	–	BC638-16	283
BC639	TO-92	80	1000	830	40	250	100	–	BC640	283
BC639-10	TO-92	80	1000	830	63	160	100	–	BC640-10	283
BC639-16	TO-92	80	1000	830	100	250	100	–	BC640-16	283
BFY50	TO-39	35	1000	800	30	>112	60	–	–	620
BFY51	TO-39	30	1000	800	40	>123	50	–	–	620
BFY52	TO-39	20	1000	800	60	>142	50	–	–	620
BSV64	TO-39	60	2000	5000	40	>40	100 typ.	1200	–	739
BSX45	TO-39	40	1000	6250	63	250	50	850	–	753
BSX45-10	TO-39	40	1000	6250	63	160	50	850	–	753
BSX45-16	TO-39	40	1000	6250	100	250	50	850	–	753
BSX46	TO-39	60	1000	6250	63	250	50	850	–	753
BSX46-10	TO-39	60	1000	6250	63	160	50	850	–	753
BSX46-16	TO-39	60	1000	6250	100	250	50	850	–	753
BSX47	TO-39	80	1000	6250	63	250	50	850	–	753
BSX47-10	TO-39	80	1000	6250	63	160	50	850	–	753
BSX47-16	TO-39	80	1000	6250	100	250	50	850	–	753



## Small-signal Transistors

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## LEADED DEVICES (continued)

## PNP GENERAL PURPOSE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
2N4031	TO-39	80	1000	800	25	>25	100	–	156
2N4033	TO-39	80	1000	800	70	>70	150	–	156
BC160	TO-39	40	1000	3700	63	250	50	BC140	228
BC160-10	TO-39	40	1000	3700	63	160	50	BC140-10	228
BC160-16	TO-39	40	1000	3700	100	250	50	BC140-16	228
BC161	TO-39	60	1000	3700	63	250	50	BC141	228
BC161-10	TO-39	60	1000	3700	63	160	50	BC141-10	228
BC161-16	TO-39	60	1000	3700	100	250	50	BC141-16	228
BC369	TO-92	20	1000	830	85	375	40	BC368	252
BC369-16	TO-92	20	1000	830	100	250	40	BC368-16	252
BC369-25	TO-92	20	1000	830	160	>160	40	BC368-25	252
BC636	TO-92	45	1000	830	40	250	100	BC635	286
BC636-10	TO-92	45	1000	830	63	160	100	BC635-10	286
BC636-16	TO-92	45	1000	830	100	250	100	BC635-16	286
BC638	TO-92	60	1000	830	40	250	100	BC637	286
BC638-10	TO-92	60	1000	830	63	160	100	BC637-10	286
BC638-16	TO-92	60	1000	830	100	250	100	BC637-16	286
BC640	TO-92	80	1000	830	40	250	100	BC639	286
BC640-10	TO-92	80	1000	830	63	160	100	BC639-10	286
BC640-16	TO-92	80	1000	830	100	250	100	BC639-16	286
BSV15	TO-39	40	1000	800	63	250	50	–	736
BSV15-10	TO-39	40	1000	800	63	160	50	–	736
BSV15-16	TO-39	40	1000	800	100	250	50	–	736
BSV16	TO-39	60	1000	800	63	250	50	–	736
BSV16-10	TO-39	60	1000	800	63	160	50	–	736
BSV16-16	TO-39	60	1000	800	100	250	50	–	736
BSV17	TO-39	80	1000	800	63	250	50	–	736
BSV17-10	TO-39	80	1000	800	63	160	50	–	736

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN GENERAL PURPOSE POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BD131	TO-126	45	3000	15000	40	>40	60	BD132	471
BD135	TO-126	45	1500	8000	40	250	190 typ.	BD136	477
BD135-10	TO-126	45	1500	8000	63	160	190 typ.	BD136-10	477
BD135-16	TO-126	45	1500	8000	100	250	190 typ.	BD136-16	477
BD137	TO-126	60	1500	8000	40	250	190 typ.	BD138	477
BD137-10	TO-126	60	1500	8000	63	160	190 typ.	BD138-10	477
BD137-16	TO-126	60	1500	8000	100	250	190 typ.	BD138-16	477
BD139	TO-126	80	1500	8000	40	250	190 typ.	BD140	477
BD139-10	TO-126	80	1500	8000	63	160	190 typ.	BD140-10	477
BD139-16	TO-126	80	1500	8000	100	250	190 typ.	BD140-16	477
BD226	TO-126	45	1500	12500	40	250	125 typ.	BD227	483
BD228	TO-126	60	1500	12500	40	250	125 typ.	BD229	483
BD230	TO-126	80	1500	12500	40	250	125 typ.	BD231	483
BD329	TO-126	20	3000	15000	85	375	130 typ.	BD330	489
BD825	TO-202	45	1000	2000	40	250	250 typ.	BD826	495
BD825-10	TO-202	45	1000	2000	63	160	250 typ.	BD826-10	495
BD825-16	TO-202	45	1000	2000	100	250	250 typ.	BD826-16	495
BD829	TO-202	80	1000	2000	40	250	250 typ.	BD830	495
BD829-10	TO-202	80	1000	2000	63	160	250 typ.	BD830-10	495
BD829-16	TO-202	80	1000	2000	100	250	250 typ.	BD830-16	495

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## PNP GENERAL PURPOSE POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BD132	TO-126	45	3000	15000	40	>40	60	BD131	474
BD136	TO-126	45	1500	8000	40	250	160 typ.	BD135	480
BD136-10	TO-126	45	1500	8000	63	160	160 typ.	BD135-10	480
BD136-16	TO-126	45	1500	8000	100	250	160 typ.	BD135-16	480
BD138	TO-126	60	1500	8000	40	250	160 typ.	BD137	480
BD138-10	TO-126	60	1500	8000	63	160	160 typ.	BD137-10	480
BD138-16	TO-126	60	1500	8000	100	250	160 typ.	BD137-16	480
BD140	TO-126	80	1500	8000	40	250	160 typ.	BD139	480
BD140-10	TO-126	80	1500	8000	63	160	160 typ.	BD139-10	480
BD140-16	TO-126	80	1500	8000	100	250	160 typ.	BD139-16	480
BD227	TO-126	45	1500	12500	40	250	50 typ.	BD226	486
BD229	TO-126	60	1500	12500	40	250	50 typ.	BD228	486
BD231	TO-126	80	1500	12500	40	250	50 typ.	BD230	486
BD330	TO-126	20	3000	15000	85	375	100 typ.	BD329	492
BD826	TO-202	45	1000	2000	40	250	75 typ.	BD825	498
BD826-10	TO-202	45	1000	2000	63	160	75 typ.	BD825-10	498
BD826-16	TO-202	45	1000	2000	100	250	75 typ.	BD825-16	498
BD828	TO-202	60	1000	2000	40	250	75 typ.	–	498
BD828-10	TO-202	60	1000	2000	63	160	75 typ.	–	498
BD828-16	TO-202	60	1000	2000	100	250	75 typ.	–	498
BD830	TO-202	80	1000	2000	40	250	75 typ.	BD829	498
BD830-10	TO-202	80	1000	2000	63	160	75 typ.	BD830-10	498
BD830-16	TO-202	80	1000	2000	100	250	75 typ.	BD830-16	498

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN RESISTOR-EQUIPPED TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>o</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	INPUT RES. (KΩ)	RES. RATIO	PNP COMPL.	PAGE
PDTC114ES	TO-92	50	100	500	30	>30	10	1	PDTA114ES	893
PDTC114TS	TO-92	50	100	500	100	600	10	–	PDTA114TS	903
PDTC124ES	TO-92	50	100	500	56	>56	22	1	PDTA124ES	913
PDTC143ES	TO-92	50	100	500	20	>20	4.7	1	PDTA143ES	923
PDTC144ES	TO-92	50	100	500	68	>68	47	1	PDTA144ES	933

## PNP RESISTOR-EQUIPPED TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>c</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	INPUT RES. (KΩ)	RES. RATIO	NPN COMPL.	PAGE
PDTA114ES	TO-92	50	100	500	30	>30	10	1	PDTC114ES	840
PDTA114TS	TO-92	50	100	500	100	600	10	–	PDTC114TS	850
PDTA124ES	TO-92	50	100	500	56	>56	22	1	PDTC124ES	860
PDTA143ES	TO-92	50	100	500	20	>20	4.7	1	PDTC143ES	870
PDTA144ES	TO-92	50	100	500	68	>68	47	1	PDTC144ES	880

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN LOW-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
2N2222	TO-18	30	800	500	100	300	250	250	2N2907A	121
2N2222A	TO-18	40	800	500	100	300	300	250	2N2907A	121
2N2369	TO-18	15	200	360	40	120	500	30	–	125
2N2369A	TO-18	15	200	360	40	>40	500	30	–	125
2N3904	TO-92	40	200	500	100	300	300	240	2N3906	150
2N4401	TO-92	40	600	630	150	300	250	250	2N4403	165
BCY58	TO-18	32	100	340	120	630	150	800	BCY78	458
BCY58/VII	TO-18	32	100	340	120	220	150	800	BCY78/VII	458
BCY58/VIII	TO-18	32	100	340	180	310	150	800	BCY78/VIII	458
BCY58/IX	TO-18	32	100	340	250	460	150	800	BCY78/IX	458
BCY58/X	TO-18	32	100	340	380	630	150	800	BCY78/X	458
BCY59	TO-18	45	100	340	120	630	150	800	BCY79	458
BCY59/VII	TO-18	45	100	340	120	220	150	800	BCY79/VII	458
BCY59/VIII	TO-18	45	100	340	180	310	150	800	BCY79/VIII	458
BCY59/IX	TO-18	45	100	340	250	460	150	800	BCY79/IX	458
BCY59/X	TO-18	45	100	340	380	630	150	800	BCY79/X	458
BSX20	TO-18	15	200	360	40	120	500	30	–	747
MPS3904	TO-92	40	100	500	100	300	180	990	MPS3906	806
PH2222	TO-92	30	600	500	75	>75	250	250	PH2907	942
PH2222A	TO-92	40	600	500	75	>75	300	250	PH2907A	942
PH2369	TO-92	15	200	500	40	120	500	30	–	946
PH2369A	TO-92	15	200	500	40	120	500	30	–	946
PN2222	TO-92	30	600	500	100	300	250	250	–	1074
PN2222A	TO-92	40	600	500	100	300	300	250	PN2907A	1074
PN2369	TO-92	15	200	500	40	120	500	30	–	1078
PN2369A	TO-92	15	600	500	40	120	500	30	–	1078

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## PNP LOW-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	NPN COMPL.	PAGE
2N2905	TO-39	40	600	600	100	300	200	300	2N2219	134
2N2905A	TO-39	60	600	600	100	300	200	300	2N2219A	134
2N2906	TO-18	40	600	400	40	120	200	300	2N2222	138
2N2906A	TO-18	60	600	400	40	120	200	300	2N2222A	138
2N2907	TO-18	40	600	400	100	300	200	300	2N2222	142
2N2907A	TO-18	60	600	400	100	300	200	300	2N2222A	142
2N3906	TO-92	40	200	500	100	300	250	300	2N3904	152
2N4403	TO-92	40	600	630	100	300	200	350	2N4401	169
BCY78	TO-18	32	100	340	120	630	100	400	BCY58	464
BCY78/VII	TO-18	32	100	340	120	220	100	400	BCY58/VII	464
BCY78/VIII	TO-18	32	100	340	180	310	100	400	BCY58/VIII	464
BCY78/IX	TO-18	32	100	340	250	460	100	400	BCY58/IX	464
BCY78/X	TO-18	32	100	340	380	630	100	400	BCY58/X	464
BCY79	TO-18	45	100	340	120	630	100	400	BCY59	464
BCY79/VII	TO-18	45	100	340	120	220	100	400	BCY59/VII	464
BCY79/VIII	TO-18	45	100	340	180	310	100	400	BCY59/VIII	464
BCY79/IX	TO-18	45	100	340	250	460	100	400	BCY59/IX	464
BCY79/X	TO-18	45	100	340	380	630	100	400	BCY59/X	464
BFX30	TO-39	65	600	600	50	200	100	300	–	611
MPS3906	TO-92	40	100	500	100	300	150	690	MPS3904	809
PH2907	TO-92	40	600	500	100	300	200	365	PH2222	950
PH2907A	TO-92	60	600	500	100	300	200	365	PH2222A	950
PN2907A	TO-92	60	600	500	100	300	200	365	PN2222A	1081

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN MEDIUM-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
2N2219	TO-39	30	800	800	100	300	250	250	2N2905	117
2N2219A	TO-39	40	800	800	100	300	300	250	2N2905A	117
BFX34	TO-39	60	2000	870	40	150	70	1200	–	614
BFX85	TO-39	60	1000	800	70	>70	50	360 typ.	–	616
BSW66A	TO-39	100	1000	800	30	>30	130 typ.	900 typ.	–	744
BSW67A	TO-39	120	1000	800	30	>30	130 typ.	900 typ.	–	744
BSW68A	TO-39	150	1000	800	30	>30	130 typ.	900 typ.	–	744
BSX32	TO-39	40	1000	800	20	>60	300	60	–	750
BSX59	TO-39	45	1000	800	30	90	250	60	–	756
BSX61	TO-39	45	1000	800	30	90	250	100	–	756
BSX62	TO-39	40	3000	5000	63	250	70 typ.	1500	–	759
BSX62-10	TO-39	40	3000	5000	63	160	70 typ.	1500	–	759
BSX62-16	TO-39	40	3000	5000	100	250	70 typ.	1500	–	759
BSX63	TO-39	60	3000	5000	63	250	70 typ.	1500	–	759
BSX63-10	TO-39	60	3000	5000	63	160	70 typ.	1500	–	759
BSX63-16	TO-39	60	3000	5000	100	250	70 typ.	1500	–	759

## PNP MEDIUM-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	REMARKS	PAGE
2N4036	TO-39	65	1000	7000	20	200	60	700	P <sub>tot</sub> @ T <sub>mb</sub> = ≤25 °C	159

## NPN POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PAGE
BDX35	TO-126	60	5000	1250	45	450	350 typ.	500	513
BDX36	TO-126	60	5000	1250	45	450	350 typ.	500	513
BDX37	TO-126	80	5000	1250	45	450	350 typ.	500	513

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN LOW-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
2N6427	TO-92	30	500	625	10000	100000	125	–	–	188
BC517	TO-92	30	500	500	30000	>30000	220 typ.	–	BC516	258
BC617	TO-92	40	800	500	4000	>4000	155	–	–	279
BC618	TO-92	55	800	500	2000	>2000	155	–	–	279
MPSA13	TO-92	30	500	500	5000	>5000	125	–	MPSA63	816
MPSA14	TO-92	30	500	500	10000	>10000	125	–	MPSA64	816
MPSA25	TO-92	40	500	500	10000	>10000	125	–	MPSA75	819
MPSA26	TO-92	50	500	500	10000	>10000	125	–	MPSA76	819
MPSA27	TO-92	60	500	500	10000	>10000	125	–	MPSA77	819

## PNP LOW-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BC516	TO-92	30	500	500	30000	>30000	220 typ.	BC517	255
MPSA63	TO-92	30	500	500	5000	>5000	125	MPSA13	830
MPSA64	TO-92	30	500	500	10000	>10000	125	MPSA14	830



## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN MEDIUM-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
BC875	TO-92	45	1000	830	1000	>1000	200 typ.	1300	BC876	363
BC877	TO-92	60	1000	830	1000	>1000	200 typ.	1300	BC878	363
BC879	TO-92	80	1000	830	1000	>1000	200 typ.	1300	BC880	363
BSR50	TO-92	45	1000	830	2000	>2000	200 typ.	1300	BSR60	705
BSR51	TO-92	60	1000	830	2000	>2000	200 typ.	1300	BSR61	705
BSR52	TO-92	80	1000	830	2000	>2000	200 typ.	1300	BSR62	705
BSS50	TO-39	45	1000	800	2000	>2000	200 typ.	1500 typ.	–	713
BSS51	TO-39	60	1000	800	2000	>2000	200 typ.	1500 typ.	BSS61	713
BSS52	TO-39	80	1000	800	2000	>2000	200 typ.	1500 typ.	BSS62	713

## PNP MEDIUM-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
BC876	TO-92	45	1000	830	1000	>1000	200 typ.	700	BC875	366
BC878	TO-92	60	1000	830	1000	>1000	200 typ.	700	BC877	366
BC880	TO-92	80	1000	830	1000	>1000	200 typ.	700	BC879	366
BSR60	TO-92	45	1000	830	2000	>2000	200 typ.	–	BSR50	709
BSR61	TO-92	60	1000	830	2000	>2000	200 typ.	–	BSR51	709
BSR62	TO-92	80	1000	830	2000	>2000	200 typ.	–	BSR52	709
BSS61	TO-39	60	1000	800	2000	>2000	200 typ.	–	BSS51	716
BSS62	TO-39	80	1000	800	2000	>2000	200 typ.	–	BSS52	716

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
BDX42	TO-126	45	1000	1250	2000	>2000	200 typ.	–	BDX45	516
BDX43	TO-126	60	1000	1250	2000	>2000	200 typ.	–	–	516
BDX44	TO-126	80	1000	1250	2000	>2000	200 typ.	–	BDX47	516

## PNP POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	NPN COMPL.	PAGE
BDX45	TO-126	45	1000	1250	2000	>2000	200 typ.	–	BDX42	520
BDX47	TO-126	80	1000	1250	2000	>2000	200 typ.	–	BDX44	520

## LEADED DEVICES (continued)

## NPN MEDIUM-FREQUENCY TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PAGE
BF199	TO-92	25	25	500	38	>38	550 typ.	542
BF240	TO-92	40	25	300	67	220	150	526
BF240B	TO-92	40	25	300	100	220	150	526
BF370	TO-92	15	100	500	40	>40	490	530
BF370R	TO-92	15	100	500	40	>40	490	530
BF494	TO-92	20	30	300	67	220	120	556
BF494B	TO-92	20	30	300	100	220	120	556
BF495	TO-92	20	30	300	35	125	120	556
BF495B	TO-92	20	30	300	11	125	120	556
BFR54	TO-92	15	100	500	40	>40	500	596

## PNP MEDIUM-FREQUENCY TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PAGE
BF324	TO-92	30	25	300	25	>25	450 typ	528
BF450	TO-92	40	25	300	50	>50	350	542

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN HIGH-VOLTAGE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
2N5550	TO-92	140	300	630	60	>60	100	2N5400	184
2N5551	TO-92	160	300	630	80	>80	100	2N5401	184
BF420L	TO-92	300	50	625	50	>50	60	BF421L	536
BF422L	TO-92	250	50	625	50	>50	60	BF423L	536
MPSA42	TO-92	300	100	500	40	>40	50	MPSA92	822
MPSA43	TO-92	200	100	500	40	>40	50	MPSA93	822
MPSA44	TO-92	400	300	625	40	>40	20	–	825
MPSA45	TO-92	350	300	625	40	>40	20	–	825
PN3439	TO-92	350	100	500	30	>30	70	MPSA93	1084
PN3440	TO-92	250	100	500	40	>40	70	MPSA92	1084

## PNP HIGH-VOLTAGE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
2N5400	TO-92	120	300	630	40	>40	100	2N5550	177
2N5401	TO-92	150	300	630	60	>60	100	2N5551	177
BF421L	TO-92	300	50	625	50	>50	60	BF420L	540
BF423L	TO-92	250	50	625	50	>50	60	BF422L	540
MPSA92	TO-92	300	500	625	25	>25	50	MPSA42	833
MPSA93	TO-92	200	500	625	25	>25	50	MPSA43	833
PH5416	TO-92	300	1000	500	30	120	15	–	954

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN HIGH-VOLTAGE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BF420	TO-92	300	50	830	50	>50	60	BF421	534
BF422	TO-92	250	50	830	50	>50	60	BF423	543
BF483	TO-92	250	50	830	50	>50	70	–	551
BF485	TO-92	300	50	830	50	>50	70	–	551
BF487	TO-92	350	50	830	50	>50	70	–	551
BFV420	TO-92	100	100	830	150	>150	150	BFV421; video appl.	604

## PNP HIGH-VOLTAGE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
2N5415	TO-39	200	200	1000	30	150	15	–	181
2N5416	TO-39	300	200	1000	30	120	15	–	181
BF421	TO-92	300	50	830	50	>50	60	BF420	538
BF423	TO-92	250	50	830	50	>50	60	BF422	538
BF486	TO-92	300	50	830	50	>50	70	–	553
BF488	TO-92	350	50	830	50	>50	70	–	553
BFT45	TO-39	250	500	5000	50	150	70 typ.	–	602
BFV421	TO-92	100	100	830	150	>150	150	BFV420; video appl.	606

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN HIGH-VOLTAGE POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BF419	TO-126	250	300	6000	45 typ.	>45	90	–	532
BF457	TO-126	160	100	6000	26	>26	90 typ.	–	544
BF458	TO-126	250	100	6000	26	>26	90 typ.	–	544
BF459	TO-126	300	100	6000	26	>26	90 typ.	–	544
BF469	TO-126	250	50	1800	50	>50	60	BF470	547
BF471	TO-126	300	50	1800	50	>50	60	BF472	547
BF583	TO-202	250	50	1600	50	>50	70	–	562
BF585	TO-202	300	50	1600	50	>50	70	–	562
BF587	TO-202	350	50	1600	50	>50	70	–	562
BF591	TO-202	170	150	1300	30	>30	30	–	566
BF593	TO-202	210	150	1300	30	>30	30	–	566
BF819	TO-202	250	100	1200	45 typ.	>45	90 typ.	–	576
BF857	TO-202	160	100	2000	26	>26	90	–	590
BF858	TO-202	250	100	2000	26	>26	90	–	590
BF859	TO-202	300	100	2000	26	>26	90	–	590
BF869	TO-202	250	50	1600	50	>50	60	BF870	592
BF871	TO-202	300	50	1600	50	>50	60	BF872	592
BFV469	TO-126	100	100	2000	150	>150	150	video applications	608

## PNP HIGH-VOLTAGE POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BF470	TO-126	250	50	1800	50	>50	60	BF469	549
BF472	TO-126	300	50	1800	50	>50	60	BF471	549
BF588	TO-202	300	50	1600	50	>50	70	–	564
BF870	TO-202	250	50	1600	50	>50	60	BF869	594
BF872	TO-202	300	50	1600	50	>50	60	BF871	594

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## PROGRAMMABLE UNIJUNCTION TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>GA</sub> max. (V)	I <sub>A</sub> max. (mA)	I <sub>ARM</sub> max. (mA)	P <sub>tot</sub> max. (mW)	di <sub>A</sub> /dt max. (A/μs)	I <sub>P</sub> max. (μA)	I <sub>V</sub> min. (μA)	t <sub>r</sub> max. (ns)	PAGE
BRY39	TO-72	70	175	2500	275	20	0.2	2	80	628
BRY56	TO-92	70	175	2500	300	20	0.2	2	80	639

## SILICON CONTROLLED SWITCHES

TYPE NUMBER	PACKAGE	V <sub>CB0</sub> max. (V)	I <sub>E</sub> max. (mA)	I <sub>ERM</sub> max. (mA)	P <sub>tot</sub> max. (mW)	V <sub>AK</sub> max. (V)	I <sub>H</sub> max. (mA)	t <sub>on</sub> max. (μs)	t <sub>off</sub> max. (μs)	PAGE
BR101	TO-72	50	175	2500	275	1.4	1	–	–	624
BRY39	TO-72	70	175	2500	275	1.4	1	0.25	15	628

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES

## NPN GENERAL PURPOSE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
2PC4081	SC-70	40	100	200	120	560	100	2PA1576	210
2PC4081Q	SC-70	40	100	200	120	270	100	2PA1576Q	210
2PC4081R	SC-70	40	100	200	180	390	100	2PA1576R	210
2PC4081S	SC-70	40	100	200	270	560	100	2PA1576S	210
2PC4617	SC-75	50	100	150	120	560	100	2PA1774	212
2PC4617Q	SC-75	50	100	150	120	270	100	2PA1774Q	212
2PC4617R	SC-75	50	100	150	180	390	100	2PA1774R	212
2PC4617S	SC-75	50	100	150	270	560	100	2PA1774S	212
2PD601A	SC-59	50	100	250	160	460	100	2PB709A	214
2PD601AQ	SC-59	50	100	250	160	260	100	2PB709AQ	214
2PD601AR	SC-59	50	100	250	210	340	120	2PB709AR	214
2PD601AS	SC-59	50	100	250	290	460	140	2PB709AS	214
2PD602A	SC-59	50	500	250	85	340	140	2PB710A	217
2PD602AQ	SC-59	50	500	250	85	170	140	2PB710AQ	217
2PD602AR	SC-59	50	500	250	120	240	160	2PB710AR	217
2PD602AS	SC-59	50	500	250	170	340	180	2PB710AS	217
2PD1820A	SC-70	50	500	200	85	340	150	2PB1219A	220
2PD1820AQ	SC-70	50	500	200	85	170	150	2PB1219AQ	220
2PD1820AR	SC-70	50	500	200	120	240	150	2PB1219AR	220
2PD1820AS	SC-70	50	500	200	170	340	150	2PB1219AS	220
BC817	SOT23	45	500	250	100	600	100	BC807	297
BC817W	SOT323	45	500	200	100	600	100	BC807W	301
BC817-16	SOT23	45	500	250	100	250	100	BC807-16	297
BC817-16W	SOT323	45	500	200	100	250	100	BC807-16W	301
BC817-25	SOT23	45	500	250	160	400	100	BC807-25	297
BC817-25W	SOT323	45	500	200	160	400	100	BC807-25W	301
BC817-40	SOT23	45	500	250	250	600	100	BC807-40	297
BC817-40W	SOT323	45	500	200	250	600	100	BC807-40W	301
BC818	SOT23	25	500	250	100	600	100	BC808	297
BC818W	SOT323	25	500	200	100	600	100	BC808W	301
BC818-16	SOT23	25	500	250	100	250	100	BC808-16	297
BC818-16W	SOT323	25	500	200	100	250	100	BC808-16W	301
BC818-25	SOT23	25	500	250	160	400	100	BC808-25	297
BC818-25W	SOT323	25	500	200	160	400	100	BC808-25W	301
BC818-40	SOT23	25	500	250	250	600	100	BC808-40	297
BC818-40W	SOT323	25	500	200	250	600	100	BC808-40W	301

## Small-signal Transistors

## Selection guide

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BC846	SOT23	65	100	250	110	450	100	BC856	305
BC846A	SOT23	65	100	250	110	220	100	BC856A	305
BC846AT	SC-75	65	100	150	110	220	100	BC856AT	310
BC846AW	SOT323	65	100	200	110	220	100	BC856AW	313
BC846B	SOT23	65	100	250	200	450	100	BC856B	305
BC846BT	SC-75	65	100	150	200	450	100	BC856BT	310
BC846BW	SOT323	65	100	200	200	450	100	BC856BW	313
BC846W	SOT323	65	100	200	110	450	100	BC856W	313
BC847	SOT23	45	100	250	110	800	100	BC857	305
BC847A	SOT23	45	100	250	110	220	100	BC857A	305
BC847AT	SC-75	45	100	150	110	220	100	BC857AT	310
BC847AW	SOT323	45	100	200	110	220	100	BC857AW	310
BC847B	SOT23	45	100	250	200	450	100	BC857B	305
BC847BT	SC-75	45	100	150	200	450	100	BC857BT	310
BC847BW	SOT323	45	100	200	200	450	100	BC857BW	310
BC847C	SOT23	45	100	250	420	800	100	BC857C	305
BC847CT	SC-75	45	100	150	420	800	100	BC857CT	310
BC847CW	SOT323	45	100	200	420	800	100	BC857CW	313
BC847W	SOT323	45	100	200	110	800	100	BC857W	313
BC848	SOT23	30	100	250	110	800	100	BC858	305
BC848A	SOT23	30	100	250	110	220	100	BC858A	305
BC848AT	SC-75	30	100	150	110	220	100	BC858AT	310
BC848AW	SOT323	30	100	200	110	220	100	BC858AW	313
BC848B	SOT23	30	100	250	200	450	100	BC858B	305
BC848BT	SC-75	30	100	150	200	450	100	BC858BT	310
BC848BW	SOT323	30	100	200	200	450	100	BC858BW	313
BC848C	SOT23	30	100	250	420	800	100	BC858C	305
BC848CT	SC-75	30	100	150	420	800	100	BC858CT	310
BC848CW	SOT323	30	100	200	420	800	100	BC858CW	313
BC848W	SOT323	30	100	200	110	800	100	BC858W	313
BC849	SOT23	30	100	250	200	800	100	BC859	324
BC849B	SOT23	30	100	250	200	450	100	BC859B	324
BC849BW	SOT323	30	100	200	200	450	100	BC859BW	328
BC849C	SOT23	30	100	250	420	800	100	BC859C	324
BC849CW	SOT323	30	100	200	420	800	100	BC859CW	328
BC849W	SOT323	30	100	200	200	800	100	BC859W	328
BC850	SOT23	45	100	250	200	800	100	BC860	324
BC850B	SOT23	45	100	250	200	450	100	BC860B	324
BC850BW	SOT323	45	100	200	200	450	100	BC860BW	328



## Small-signal Transistors

## Selection guide

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BC850C	SOT23	45	100	250	420	800	100	BC860C	324
BC850CW	SOT323	45	100	200	420	800	100	BC860CW	328
BC850W	SOT323	45	100	200	200	800	100	BC860W	328
BCF32	SOT23	32	100	250	200	450	100	BCF29	372
BCF33	SOT23	32	100	250	420	800	100	BCF30	372
BCF81	SOT23	45	100	250	420	800	100	–	375
BCV71	SOT23	60	100	250	110	220	100	–	418
BCV72	SOT23	60	100	250	200	450	100	–	418
BCW31	SOT23	32	100	250	110	220	100	BCW29	422
BCW32	SOT23	32	100	250	200	450	100	BCW30	422
BCW33	SOT23	32	100	250	420	800	100	–	422
BCW60 series	SOT23	32	100	250	120	630	100	BCW61 series	425
BCW60A	SOT23	32	100	250	120	220	100	BCW61A	425
BCW60B	SOT23	32	100	250	180	310	100	BCW61B	425
BCW60C	SOT23	32	100	250	250	460	100	BCW61C	425
BCW60D	SOT23	32	100	250	380	630	100	BCW61D	425
BCW71	SOT23	45	100	250	110	220	100	BCW69	434
BCW72	SOT23	45	100	250	200	450	100	BCW70	434
BCW81	SOT23	45	100	250	420	800	100	–	436
BCX19	SOT23	45	500	250	100	600	100	BCX17	443
BCX20	SOT23	25	500	250	100	600	100	BCX18	443
BCX70 series	SOT23	45	100	250	120	630	100	BCX71 series	452
BCX70G	SOT23	45	100	250	120	220	100	BCX71G	452
BCX70H	SOT23	45	100	250	180	310	100	BCX71H	452
BCX70J	SOT23	45	100	250	250	460	100	BCX71J	452
BCX70K	SOT23	45	100	250	380	630	100	BCX71K	452
PMBS3904	SOT23	40	100	250	100	300	180	PMBS3906	956
PMBT5088	SOT23	30	100	250	350	>350	–	–	988
PMBT6428	SOT23	50	100	250	250	650	100	–	999
PMBT6429	SOT23	45	100	250	500	1250	100	–	999
PMBTA06	SOT23	80	500	250	50	>50	100	PMBTA56	1002
PMST5088	SOT323	30	100	200	350	>350	100		1051
PMST5089	SOT323	25	100	200	450	>450	100		1051
PMST6428	SOT323	50	100	200	250	650	100	–	1061
PMST6429	SOT323	45	100	200	500	1250	100	–	1061
PMSTA05	SOT323	60	500	200	50	>50	100	PMSTA55	1064
PMSTA06	SOT323	80	500	200	50	>50	100	PMSTA56	1064

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## PNP GENERAL PURPOSE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
2PA1576	SC-70	40	100	200	120	560	100	2PC4081	194
2PA1576Q	SC-70	40	100	200	120	270	100	2PC4081Q	194
2PA1576R	SC-70	40	100	200	180	390	100	2PC4081R	194
2PA1576S	SC-70	40	100	200	270	560	100	2PC4081S	194
2PA1774	SC-75	40	100	150	120	560	100	2PC4617	196
2PA1774Q	SC-75	40	100	150	120	270	100	2PC4617Q	196
2PA1774R	SC-75	40	100	150	180	390	100	2PC4617R	196
2PA1774S	SC-75	40	100	150	270	560	100	2PC4617S	196
2PB709A	SC-59	45	200	250	160	460	80	2PB601A	198
2PB709AQ	SC-59	45	100	250	160	260	60	2PB601AQ	198
2PB709AR	SC-59	45	100	250	210	340	70	2PB601AR	198
2PB709AS	SC-59	45	100	250	290	460	80	2PB601AS	198
2PB710A	SC-59	50	500	250	85	340	100	2PD602A	200
2PB710AQ	SC-59	50	500	250	85	170	100	2PD602AQ	200
2PB710AR	SC-59	50	500	250	120	240	120	2PD602AR	200
2PB710AS	SC-59	50	500	250	170	340	140	2PD602AS	200
2PB1219A	SC-70	50	500	200	85	340	100	2PD1820A	203
2PB1219AQ	SC-70	50	500	200	85	170	100	2PD1820AQ	203
2PB1219AR	SC-70	50	500	200	120	240	120	2PD1820AR	203
2PB1219AS	SC-70	50	500	200	170	340	140	2PD1820AS	203
BC807	SOT23	45	500	250	100	600	80	BC817	289
BC807W	SOT323	45	500	200	100	600	80	BC817W	293
BC807-16	SOT23	45	500	250	100	250	80	BC817-16	289
BC807-16W	SOT323	45	500	200	100	250	80	BC817-16W	293
BC807-25	SOT23	45	500	250	160	400	80	BC817-25	289
BC807-25W	SOT323	45	500	200	160	400	80	BC817-25W	293
BC807-40	SOT23	45	500	250	250	600	80	BC817-40	289
BC807-40W	SOT323	45	500	200	250	600	80	BC817-40W	293
BC808	SOT23	25	500	250	100	600	80	BC818	289
BC808W	SOT323	25	500	200	100	600	80	BC818W	293
BC808-16	SOT23	25	500	250	100	250	80	BC818-16	289
BC808-16W	SOT323	25	500	200	100	250	80	BC818-16W	293
BC808-25	SOT23	25	500	250	160	400	80	BC818-25	289
BC808-25W	SOT323	25	500	200	160	400	80	BC818-25W	293
BC808-40	SOT23	25	500	250	250	600	80	BC818-40	289
BC808-40W	SOT323	25	500	200	250	600	80	BC818-40W	293

## Small-signal Transistors

## Selection guide

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BC856	SOT23	65	100	250	125	475	100	BC846	332
BC856A	SOT23	65	100	250	125	250	100	BC846A	332
BC856AT	SC-75	65	100	150	125	250	100	BC846AT	337
BC856AW	SOT323	65	100	200	125	250	100	BC846AW	340
BC856B	SOT23	65	100	250	220	475	100	BC846B	332
BC856BT	SC-75	65	100	150	220	475	100	BC846BT	337
BC856BW	SOT323	65	100	200	220	475	100	BC846BW	340
BC856W	SOT323	65	100	200	125	475	100	BC846W	340
BC857	SOT23	45	100	250	125	800	100	BC847	332
BC857A	SOT23	45	100	250	125	250	100	BC847A	332
BC857AT	SC-75	45	100	150	125	250	100	BC847AT	337
BC857AW	SOT323	45	100	200	125	250	100	BC847AW	340
BC857B	SOT23	45	100	250	220	475	100	BC847B	332
BC857BT	SC-75	45	100	150	220	475	100	BC847BT	337
BC857BW	SOT323	45	100	200	220	475	100	BC847BW	340
BC857C	SOT23	45	100	250	420	800	100	BC847C	332
BC857CT	SC-75	45	100	150	420	800	100	BC847CT	337
BC857CW	SOT323	45	100	200	420	800	100	BC847CW	340
BC857W	SOT323	45	100	200	125	800	100	BC847W	340
BC858	SOT23	30	100	250	125	800	100	BC848	332
BC858A	SOT23	30	100	250	125	250	100	BC848A	332
BC858AT	SC-75	30	100	150	125	250	100	BC848AT	337
BC858AW	SOT323	30	100	200	125	250	100	BC848AW	340
BC858B	SOT23	30	100	250	220	475	100	BC848B	332
BC858BT	SC-75	30	100	150	220	475	100	BC848BT	337
BC858BW	SOT323	30	100	200	220	475	100	BC848BW	340
BC858C	SOT23	30	100	250	420	800	100	BC848C	332
BC858CT	SC-75	30	100	150	420	800	100	BC848CT	337
BC858CW	SOT323	30	100	200	420	800	100	BC848CW	340
BC858W	SOT323	30	100	200	125	800	100	BC848W	340
BC859	SOT23	30	100	250	125	800	100	BC849	347
BC859A	SOT23	30	100	250	125	250	100	–	347
BC859AW	SOT323	30	100	200	125	250	100	–	352
BC859B	SOT23	30	100	250	220	475	100	BC849B	347
BC859BW	SOT323	30	100	200	220	475	100	BC849BW	352
BC859C	SOT23	30	100	250	420	800	100	BC849C	347
BC859CW	SOT323	30	100	200	420	800	100	BC849CW	352
BC859W	SOT323	30	100	200	125	800	100	BC849W	352
BC860	SOT23	45	100	250	125	800	100	BC850	347

## Small-signal Transistors

## Selection guide

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BC860A	SOT23	45	100	250	125	250	100	–	347
BC860AW	SOT323	45	100	200	125	250	100	–	352
BC860B	SOT23	45	100	250	220	475	100	BC850B	347
BC860BW	SOT323	45	100	200	220	475	100	BC850BW	352
BC860C	SOT23	45	100	250	420	800	100	BC850C	347
BC860CW	SOT323	45	100	200	420	800	100	BC850CW	352
BC860W	SOT323	45	100	200	125	800	100	BC850W	352
BCF29	SOT23	32	100	250	120	260	100	BCF32	369
BCF30	SOT23	32	100	250	215	500	100	BCF33	369
BCW29	SOT23	32	100	250	120	260	100	BCW31	420
BCW30	SOT23	32	100	250	215	500	100	BCW32	420
BCW61 series	SOT23	32	100	250	120	630	100	BCW60 series	428
BCW61A	SOT23	32	100	250	120	220	100	BCW60A	428
BCW61B	SOT23	32	100	250	180	310	100	BCW60B	428
BCW61C	SOT23	32	100	250	250	460	100	BCW60C	428
BCW61D	SOT23	32	100	250	380	630	100	BCW60D	428
BCW69	SOT23	45	100	250	120	260	100	BCW71	431
BCW70	SOT23	45	100	250	215	500	100	BCW72	431
BCW89	SOT23	60	100	250	120	260	100	–	438
BCX17	SOT23	45	500	250	100	600	80	BCX19	440
BCX18	SOT23	25	500	250	100	600	80	BCX20	440
BCX71 series	SOT23	45	100	250	120	630	100	BCX70 series	455
BCX71G	SOT23	45	100	250	120	220	100	BCX70G	455
BCX71H	SOT23	45	100	250	180	310	100	BCX70H	455
BCX71J	SOT23	45	100	250	250	460	100	BCX70J	455
BCX71K	SOT23	45	100	250	380	630	100	BCX70K	455
PMBS3906	SOT23	40	100	250	100	300	150	PMBS3904	959
PMBTA55	SOT23	60	500	250	100	>100	50	–	1010
PMBTA56	SOT23	80	500	250	100	>100	50	PMBTA06	1010
PMSTA55	SOT323	60	500	200	50	>50	50	PMSTA05	1069
PMSTA56	SOT323	80	500	200	50	>50	50	PMSTA06	1069

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN GENERAL PURPOSE TRANSISTOR ARRAYS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL. / REMARKS	PAGE
BC847BS	SC-88	45	100	200	200	450	100	BC857BS; matched pair	321
BCV61	SOT143B	30	100	250	100	>100	100	BCV62; matched pair	402
BCV61A	SOT143B	30	100	250	110	220	100	BCV62A; matched pair	402
BCV61B	SOT143B	30	100	250	200	450	100	BCV62B; matched pair	402
BCV61C	SOT143B	30	100	250	420	800	100	BCV62C; matched pair	402
BCV63	SOT143B	30	100	250	110	800	100	–	408
BCV63B	SOT143B	30	100	250	200	450	100	BCV64B	408
PUMX1	SC-88	40	100	200	120	>120	100	PUMT1	1100

## PNP GENERAL PURPOSE TRANSISTOR ARRAYS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL./ REMARKS	PAGE
BC857BS	SC-88	45	100	200	200	450	100	BC847BS; matched pair	345
BCV62	SOT143B	30	100	250	100	>100	100	BCV61; matched pair	406
BCV62A	SOT143B	30	100	250	125	250	100	BCV61A; matched pair	406
BCV62B	SOT143B	30	100	250	220	475	100	BCV61B; matched pair	406
BCV62C	SOT143B	30	100	250	420	800	100	BCV61C; matched pair	406
BCV64B	SOT143B	30	100	250	220	475	100	BCV63B	412
PUMT1	SC-88	40	100	200	120	>120	100	PUMX1	1098

## NPN/PNP GENERAL PURPOSE TRANSISTOR ARRAYS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	REMARKS	PAGE
BC847BPN	SC-88	45	100	200	200	450	100	matched pair	318
BCV65	SOT143B	30	100	250	75	800	–	matched pair	416
BCV65B	SOT143B	30	100	250	200	475	–	matched pair	416
PUMZ1	SC-88	40	100	200	120	>120	100	–	1102

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN GENERAL PURPOSE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
BC868	SOT89	20	1000	1400	85	375	40	–	BC869	357
BC868-10	SOT89	20	1000	1400	100	160	40	–	–	357
BC868-16	SOT89	20	1000	1400	100	250	40	–	BC869-16	357
BC868-25	SOT89	20	1000	1400	160	>250	40	–	BC869-25	357
BCP54	SOT223	45	1000	1330	40	250	130 typ.	–	BCP51	380
BCP54-10	SOT223	45	1000	1330	63	160	130 typ.	–	BCP51-10	380
BCP54-16	SOT223	45	1000	1330	100	250	130 typ.	–	BCP51-16	380
BCP55	SOT223	60	1000	1330	40	250	130 typ.	–	BCP52	380
BCP55-10	SOT223	60	1000	1330	63	160	130 typ.	–	BCP52-10	380
BCP55-16	SOT223	60	1000	1330	100	250	130 typ.	–	BCP52-16	380
BCP56	SOT223	80	1000	1330	40	250	130 typ.	–	BCP53	380
BCP56-10	SOT223	80	1000	1330	63	160	130 typ.	–	BCP53-10	380
BCP56-16	SOT223	80	1000	1330	100	250	130 typ.	–	BCP53-16	380
BCP68	SOT223	20	1000	1370	85	375	40	–	BCP69	383
BCP68-10	SOT223	20	1000	1370	–	160	40	–	BCP69-10	383
BCP68-16	SOT223	20	1000	1370	100	250	40	–	BCP69-16	383
BCP68-25	SOT223	20	1000	1370	160	>160	40	–	BCP69-25	383
BCX54	SOT89	45	1000	1390	40	250	130 typ.	–	BCX51	449
BCX54-10	SOT89	45	1000	1390	63	160	130 typ.	–	BCX51-10	449
BCX54-16	SOT89	45	1000	1390	100	250	130 typ.	–	BCX51-16	449
BCX55	SOT89	60	1000	1390	40	250	130 typ.	–	BCX52	449
BCX55-10	SOT89	60	1000	1390	63	160	130 typ.	–	BCX52-10	449
BCX55-16	SOT89	60	1000	1390	100	250	130 typ.	–	BCX52-16	449
BCX56	SOT89	80	1000	1390	40	250	130 typ.	–	BCX53	449
BCX56-10	SOT89	80	1000	1390	63	160	130 typ.	–	BCX53-10	449
BCX56-16	SOT89	80	1000	1390	100	250	130 typ.	–	BCX53-16	449
BDL31	SOT223	10	5000	1350	200	>200	100	–	BDL32	501
BDP31	SOT223	45	3000	1350	40	>40	60	–	BDP32	507
BSP40	SOT223	60	1000	1300	40	120	100	–	BSP30	664
BSP41	SOT223	60	1000	1300	100	300	100	–	BSP31	664
BSP42	SOT223	80	1000	1300	40	120	100	–	BSP32	664
BSP43	SOT223	80	1000	1300	100	300	100	–	BSP33	664
BSR40	SOT89	60	1000	1000	40	120	100	1000	BSR30	702
BSR41	SOT89	60	1000	1000	100	300	100	1000	BSR31	702
BSR42	SOT89	80	1000	1000	40	120	100	1000	BSR32	702
BSR43	SOT89	80	1000	1000	100	300	100	1000	BSR33	702
PZTA06	SOT223	80	500	1200	100	>100	100	–	PZTA56	1157

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## PNP GENERAL PURPOSE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	NPN COMPL.	PAGE
BC869	SOT89	20	1000	1400	100	375	40	–	BC868	360
BC869-16	SOT89	20	1000	1400	100	250	40	–	BC868-16	360
BC869-25	SOT89	20	1000	1400	160	>160	40	–	BC868-25	360
BCP51	SOT223	45	1000	1300	40	250	115 typ.	–	BCP54	377
BCP51-10	SOT223	45	1000	1300	63	160	115 typ.	–	BCP54-10	377
BCP51-16	SOT223	45	1000	1300	100	250	115 typ.	–	BCP54-16	377
BCP52	SOT223	60	1000	1300	40	250	115 typ.	–	BCP55	377
BCP52-10	SOT223	60	1000	1300	63	160	115 typ.	–	BCP55-10	377
BCP52-16	SOT223	60	1000	1300	100	250	115 typ.	–	BCP55-16	377
BCP53	SOT223	80	1000	1300	40	250	115 typ.	–	BCP56	377
BCP53-10	SOT223	80	1000	1300	63	160	115 typ.	–	BCP56-10	377
BCP53-16	SOT223	80	1000	1300	100	250	115 typ.	–	BCP56-16	377
BCP69	SOT223	20	1000	1350	85	375	40	–	BCP68	386
BCP69-10	SOT223	20	1000	1350	–	160	40	–	BCP68-10	386
BCP69-16	SOT223	20	1000	1350	100	250	40	–	BCP68-16	386
BCP69-25	SOT223	20	1000	1350	160	>160	40	–	BCP68-25	386
BCX51	SOT89	45	1000	1300	40	250	50 typ.	–	BCX54	446
BCX51-10	SOT89	45	1000	1300	63	160	50 typ.	–	BCX54-10	446
BCX51-16	SOT89	45	1000	1300	100	250	50 typ.	–	BCX54-16	446
BCX52	SOT89	60	1000	1300	40	250	50 typ.	–	BCX55	446
BCX52-10	SOT89	60	1000	1300	63	160	50 typ.	–	BCX55-10	446
BCX52-16	SOT89	60	1000	1300	100	250	50 typ.	–	BCX55-16	446
BCX53	SOT89	80	1000	1300	40	250	50 typ.	–	BCX56	446
BCX53-10	SOT89	80	1000	1300	63	160	50 typ.	–	BCX56-10	446
BCX53-16	SOT89	80	1000	1300	100	250	50 typ.	–	BCX56-16	446
BDL32	SOT223	10	5000	1350	180	>180	100	–	BDL31	504
BDP32	SOT223	45	3000	1350	40	>40	60	–	BDP31	510
BSP30	SOT223	60	1000	1300	40	120	100	650	BSP40	661
BSP31	SOT223	60	1000	1300	100	300	100	650	BSP41	661
BSP32	SOT223	80	1000	1300	40	120	100	650	BSP42	661
BSP33	SOT223	80	1000	1300	100	300	100	650	BSP43	661
BSR30	SOT89	60	1000	1400	40	120	100	–	BSR40	699
BSR31	SOT89	60	1000	1400	100	300	100	–	BSR41	699
BSR32	SOT89	80	1000	1400	40	120	100	–	BSR42	699
BSR33	SOT89	80	1000	1400	100	300	100	–	BSR43	699
PZTA56	SOT223	80	500	1200	100	>100	50	–	PZTA06	1168

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN RESISTOR-EQUIPPED TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>o</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	INPUT RES. (KΩ)	RES. RATIO	PNP COMPL.	PAGE
PDTC114EE	SC-75	50	100	150	30	>30	10	1	PDTA114EE	889
PDTC114EK	SC-59	50	100	250	30	>30	10	1	PDTA114EK	891
PDTC114ET	SOT23	50	100	250	30	>30	10	1	PDTA114ET	895
PDTC114EU	SOT323	50	100	200	30	>30	10	1	PDTA114EU	897
PDTC114TE	SC-75	50	100	150	100	600	10	–	PDTA114TE	899
PDTC114TK	SC-59	50	100	250	100	600	10	–	PDTA114TK	901
PDTC114TT	SOT23	50	100	250	100	600	10	–	PDTA114TT	905
PDTC114TU	SOT323	50	100	200	100	600	10	–	PDTA114TU	907
PDTC124EE	SC-75	50	100	150	56	>56	22	1	PDTA124EE	909
PDTC124EK	SC-59	50	100	250	56	>56	22	1	PDTA124EK	911
PDTC124ET	SOT23	50	100	250	56	>56	22	1	PDTA124ET	915
PDTC124EU	SOT323	50	100	200	56	>56	22	1	PDTA124EU	917
PDTC143EE	SC-75	50	100	150	20	>20	4.7	1	PDTA143EE	919
PDTC143EK	SC-59	50	100	250	20	>20	4.7	1	PDTA143EK	921
PDTC143ET	SOT23	50	100	250	20	>20	4.7	1	PDTA143ET	925
PDTC143EU	SOT323	50	100	200	20	>20	4.7	1	PDTA143EU	927
PDTC144EE	SC-75	50	100	150	68	>68	47	1	PDTA144EE	929
PDTC144EK	SC-59	50	100	250	68	>68	47	1	PDTA144EK	931
PDTC144ET	SOT23	50	100	250	68	>68	47	1	PDTA144ET	935
PDTC144EU	SOT323	50	100	200	68	>68	47	1	PDTA144EU	937
PDTD114ET	SOT23	50	500	250	56	>56	10	1	PDTB144ET	939



## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## PNP RESISTOR-EQUIPPED TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	INPUT RES. (KΩ)	RES. RATIO	NPN COMPL.	PAGE
PDTA114EE	SC-75	50	100	150	30	>30	10	1	PDTC114EE	836
PDTA114EK	SC-59	50	100	250	30	>30	10	1	PDTC114EK	838
PDTA114ET	SOT23	50	100	250	30	>30	10	1	PDTC114ET	842
PDTA114EU	SOT323	50	100	200	30	>30	10	1	PDTC114EU	844
PDTA114TE	SC-75	50	100	150	100	600	10	–	PDTC114TE	846
PDTA114TK	SC-59	50	100	250	100	600	10	–	PDTC114TK	848
PDTA114TT	SOT23	50	100	250	100	600	10	–	PDTC114TT	852
PDTA114TU	SOT323	50	100	200	100	600	10	–	PDTC114TU	854
PDTA124EE	SC-75	50	100	150	56	>56	22	1	PDTC124EE	856
PDTA124EK	SC-59	50	100	250	56	>56	22	1	PDTC124EK	858
PDTA124ET	SOT23	50	100	250	56	>56	22	1	PDTC124ET	862
PDTA124EU	SOT323	50	100	200	56	>56	22	1	PDTC124EU	864
PDTA143EE	SC-75	50	100	150	20	>20	4.7	1	PDTC143EE	866
PDTA143EK	SC-59	50	100	250	20	>20	4.7	1	PDTC143EK	868
PDTA143ET	SOT23	50	100	250	20	>20	4.7	1	PDTC143ET	872
PDTA143EU	SOT323	50	100	200	20	>20	4.7	1	PDTC143EU	874
PDTA144EE	SC-75	50	100	150	68	>68	47	1	PDTC144EE	876
PDTA144EK	SC-59	50	100	250	68	>68	47	1	PDTC144EK	878
PDTA144ET	SOT23	50	100	250	68	>68	47	1	PDTC144ET	882
PDTA144EU	SOT323	50	100	200	68	>68	47	1	PDTC144EU	884
PDTB114ET	SOT23	50	500	250	56	>56	10	1	PDTD114ET	886

## NPN, PNP AND NPN/PNP RESISTOR-EQUIPPED TRANSISTOR ARRAYS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	INPUT RES. (KΩ)	RES. RATIO	POLARITY	PAGE
PUMB4	SC-88	50	100	200	100	600	10	–	PNP double transistor	1087
PUMD2	SC-88	50	100	200	56	>56	22	1	NPN/PNP	1089
PUMD3	SC-88	50	100	200	30	>30	10	1	NPN/PNP	1092
PUMH11	SC-88	50	100	200	30	>30	10	1	NPN double transistor	1095

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN LOW-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
BSR13	SOT23	30	800	250	30	>30	250	250	BSR15	675
BSR14	SOT23	40	800	250	40	>40	300	250	BSR16	675
BSR17A	SOT23	40	100	250	100	300	300	240	BSR18A	683
BSV52	SOT23	12	100	250	40	120	500 typ.	30	–	739
PMBT2222	SOT23	30	600	250	100	300	250	250	PMBT2907	962
PMBT2222A	SOT23	40	600	250	100	300	300	250	PMBS2907A	962
PMBT2369	SOT23	15	200	250	40	120	500	30	–	966
PMBT3904	SOT23	40	100	250	100	300	300	240	PMBT3906	972
PMBT4401	SOT23	40	600	250	100	300	250	250	PMBT4403	980
PMSS3904	SOT323	40	100	200	100	300	180	1200	PMSS3906	1018
PMST2222	SOT323	30	600	200	100	300	250	250	–	1025
PMST2222A	SOT323	40	600	200	100	300	300	250	PMST2907A	1025
PMST2369	SOT323	15	200	200	40	120	500	30	–	1029
PMST3904	SOT323	40	200	200	100	300	300	240	PMST3906	1035
PMST4401	SOT323	40	600	200	100	300	250	285	PMST4403	1043

## PNP LOW-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	NPN COMPL.	PAGE
BSR15	SOT23	40	600	250	30	>30	200	365	BSR13	679
BSR16	SOT23	60	600	250	50	>50	200	365	BSR14	679
BSR18A	SOT23	40	100	250	100	300	250	300	BSR17A	687
PMBT2907	SOT23	40	600	250	100	300	200	365	PMBT2222	969
PMBT2907A	SOT23	60	600	250	100	300	200	365	PMBT2222A	969
PMBT3906	SOT23	40	100	250	100	300	250	300	PMBT3904	976
PMBT4403	SOT23	40	600	250	100	300	200	350	PMBT4401	984
PMSS3906	SOT323	40	100	200	100	300	150	700	PMSS3904	1022
PMST2907A	SOT323	60	200	200	50	>50	200	300	PMST2222A	1032
PMST3906	SOT323	40	100	200	100	300	250	300	PMST3904	1039
PMST4403	SOT323	40	600	200	100	300	200	350	PMST4401	1047

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN MEDIUM-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
PXT2222A	SOT89	40	600	1200	100	300	300	250	PXT2907A	1104
PXT3904	SOT89	40	100	1150	100	300	300	240	PXT3906	1112
PXT4401	SOT89	40	600	1200	100	300	250	250	PXT4403	1120
PZT2222A	SOT223	40	600	1150	100	300	300	250	PZT2907A	1143
PZT3904	SOT223	40	200	1050	100	300	300	240	PZT3906	1149

## PNP MEDIUM-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	NPN COMPL.	PAGE
PXT2907A	SOT89	60	600	1250	100	300	200	365	PXT2222A	1107
PXT3906	SOT89	40	100	1150	100	300	250	300	PXT3904	1116
PXT4403	SOT89	40	600	1250	100	300	200	350	PXT4401	1124
PZT2907A	SOT223	60	600	1150	100	300	200	365	PZT2222A	1146
PZT3906	SOT223	40	100	1050	100	300	250	300	PZT3904	1153

## SURFACE-MOUNT DEVICES (continued)

## NPN LOW-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BCV27	SOT23	30	500	250	20000	>20000	220 typ.	BCV26	392
BCV47	SOT23	60	500	250	10000	>10000	220 typ.	BCV46	392
PMBTA13	SOT23	30	500	250	5000	>5000	125	PMBTA63	1004
PMBTA14	SOT23	30	500	250	10000	>10000	125	PMBTA64	1004

## SURFACE-MOUNT DEVICES (continued)

## PNP LOW-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BCV26	SOT23	30	500	250	20000	>20000	220 typ.	BCV27	389
BCV46	SOT23	60	500	250	10000	>10000	220 typ.	BCV47	389
PMBTA63	SOT23	30	500	250	5000	>5000	125	PMBTA13	1012
PMBTA64	SOT23	30	500	250	10000	>10000	125	PMBTA14	1012

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN MEDIUM-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	PNP COMPL.	PAGE
BCV29	SOT89	30	500	1340	20000	>20000	220 typ.	–	BCV28	399
BCV49	SOT89	60	500	1340	10000	>10000	220 typ.	–	BCV48	399
BSP50	SOT223	45	1000	1250	2000	>2000	200 typ.	1300 typ.	BSP60	667
BSP51	SOT223	60	1000	1250	2000	>2000	200 typ.	1300 typ.	BSP61	667
BSP52	SOT223	80	1000	1250	2000	>2000	200 typ.	1300 typ.	BSP62	667
BST50	SOT89	45	500	1350	2000	>2000	200 typ.	1500 typ.	BST60	728
BST51	SOT89	60	500	1350	2000	>2000	200 typ.	1500 typ.	BST61	728
BST52	SOT89	80	500	1350	2000	>2000	200 typ.	1500 typ.	BST62	728
PXTA14	SOT89	30	500	1300	20000	>20000	125	–	PXTA64	1128
PXTA27	SOT89	60	500	1300	10000	>10000	125	–	–	1131
PZTA14	SOT223	30	500	1250	10000	>10000	125	–	PZTA64	1159

## PNP MEDIUM-POWER DARLINGTON TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CES</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	t <sub>off</sub> max. (ns)	NPN COMPL.	PAGE
BCV28	SOT89	30	500	1300	20000	>20000	220 typ.	–	BCV29	395
BCV48	SOT89	60	500	1300	10000	>10000	220 typ.	–	BCV49	395
BSP60	SOT223	45	500	1250	2000	>2000	200 typ.	1500 typ.	BSP50	671
BSP61	SOT223	60	500	1250	2000	>2000	200 typ.	1500 typ.	BSP51	671
BSP62	SOT223	80	500	1250	2000	>2000	200 typ.	1500 typ.	BSP52	671
BST60	SOT89	45	500	1350	2000	>2000	200 typ.	700 typ.	BST50	732
BST61	SOT89	60	500	1350	2000	>2000	200 typ.	700 typ.	BST51	732
BST62	SOT89	80	500	1350	2000	>2000	200 typ.	700 typ.	BST52	732
PXTA64	SOT89	30	500	1300	10000	>10000	125	–	PXTA14	1137
PZTA64	SOT223	30	500	1250	10000	>10000	125	–	PZTA14	1170

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN MEDIUM-FREQUENCY TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>c</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PAGE
BF570	SOT23	15	100	250	40	>40	490	560
BF840	SOT23	40	25	250	76	222	380 typ.	588
BF841	SOT23	40	25	250	36	125	380 typ.	588
BFS19	SOT23	20	30	250	65	225	260 typ.	598
BFS20	SOT23	20	25	250	40	>85	450 typ.	600

## PNP MEDIUM-FREQUENCY TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>c</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PAGE
BF550	SOT23	40	25	250	50	>50	325 typ.	558
BF824	SOT23	30	25	250	25	>50	450 typ.	584
BF824W	SC-70	30	25	200	25	>25	400	587

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN HIGH-VOLTAGE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BF820	SOT23	300	50	250	50	>50	60	BF821	578
BF820W	SC-70	300	50	200	50	>50	60	–	580
BF822	SOT23	250	50	250	50	>50	60	BF823	578
BF822W	SC-70	250	50	200	50	>50	60	–	580
BSR19	SOT23	140	300	250	60	>60	100	BSR20	691
BSR19A	SOT23	160	300	250	80	>80	100	BSR20A	691
BSS64	SOT23	80	100	250	20	80	60	BSS63	721
PMBT5550	SOT23	140	300	250	60	250	100	PMBT5401	993
PMBT5551	SOT23	160	300	250	80	250	100	PMBT5401	996
PMBTA42	SOT23	300	100	250	40	>40	50	PMBTA92	1007
PMBTA43	SOT23	200	100	250	40	>40	50	PMBTA93	1007
PMST5550	SOT323	140	300	200	60	250	100	PMST5401	1057
PMST5551	SOT323	160	300	200	80	250	100	PMST5401	1057
PMSTA42	SOT323	300	500	200	40	>40	50	PMSTA92	1066
PMSTA43	SOT323	200	500	200	40	>40	50	PMSTA93	1066

## PNP HIGH-VOLTAGE LOW-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BF821	SOT23	300	50	250	50	>50	60	BF820	582
BF823	SOT23	250	50	250	50	>50	60	BF822	582
BSR20	SOT23	120	300	250	40	180	100	BSR19	695
BSR20A	SOT23	150	300	250	60	240	100	BSR19A	695
BSS63	SOT23	100	100	250	30	>30	85 typ.	BSS64	719
PMBT5401	SOT23	150	300	250	60	240	100	PMBT5550	990
PMBTA92	SOT23	300	100	250	40	>40	50	PMBTA42	1015
PMBTA93	SOT23	200	100	250	40	>40	50	PMBTA43	1015
PMST5401	SOT323	150	300	200	60	240	100	PMST5550 PMST5551	1054
PMSTA92	SOT323	300	500	200	40	>40	50	PMSTA42	1071
PMSTA93	SOT323	200	500	200	40	>40	50	PMSTA43	1071

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## NPN HIGH-VOLTAGE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	PNP COMPL.	PAGE
BF620	SOT89	300	50	1200	50	>50	60	BF621	568
BF622	SOT89	250	50	1200	50	>50	60	BF623	568
BF720	SOT223	300	50	1200	50	>50	60	BF721	572
BF722	SOT223	250	50	1200	50	>50	60	BF723	572
BSP19	SOT223	350	50	1200	40	>40	70	BSP15	659
BSP20	SOT223	250	50	1200	40	>40	70	BSP16	659
BST39	SOT89	350	100	1250	40	>40	70	BST15	726
BST40	SOT89	250	100	1250	40	>40	70	BST16	726
PXTA42	SOT89	300	100	1250	40	>40	50	PXTA92	1134
PXTA43	SOT89	200	100	1250	40	>40	50	PXTA93	1134
PZTA42	SOT223	300	100	1200	40	>40	50	PZTA92	1162
PZTA43	SOT223	200	100	1200	40	>40	50	–	1162
PZTA44	SOT223	400	300	1350	40	>40	20	–	1165
PZTA45	SOT223	350	300	1350	40	>40	20	–	1165

## PNP HIGH-VOLTAGE MEDIUM-POWER TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CEO</sub> max. (V)	I <sub>C</sub> max. (mA)	P <sub>tot</sub> max. (mW)	h <sub>FE</sub> min.	h <sub>FE</sub> max.	f <sub>T</sub> min. (MHz)	NPN COMPL.	PAGE
BF621	SOT89	300	50	1200	50	>50	60	BF620	570
BF623	SOT89	250	50	1200	50	>50	60	BF622	570
BF721	SOT223	300	50	1200	50	>50	60	BF720	574
BF723	SOT223	250	50	1200	50	>50	60	BF722	574
BSP15	SOT223	200	50	1280	30	150	15	BSP19	656
BSP16	SOT223	300	50	1280	30	120	15	BSP20	656
BST15	SOT89	200	200	1350	30	150	15	BST39	723
BST16	SOT89	300	200	1350	30	120	15	BST40	723
PXTA92	SOT89	300	100	1250	40	>40	50	PXTA42	1140
PXTA93	SOT89	200	100	1250	40	>40	50	PXTA43	1140
PZTA92	SOT223	300	100	1200	40	>40	50	PZTA42	1173

## Small-signal Transistors

## Selection guide

## SURFACE-MOUNT DEVICES (continued)

## PROGRAMMABLE UNIJUNCTION TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>GA</sub> max. (V)	I <sub>A</sub> max. (mA)	I <sub>ARM</sub> max. (mA)	P <sub>tot</sub> max. (mW)	di <sub>A</sub> /dt max. (A/μs)	I <sub>P</sub> max. (μA)	I <sub>V</sub> min. (μA)	t <sub>r</sub> max. (ns)	PAGE
BRY61	SOT23	70	175	2500	250	20	0.2	2	80	644

## SILICON CONTROLLED SWITCHES

TYPE NUMBER	PACKAGE	V <sub>CBO</sub> max. (V)	I <sub>E</sub> max. (mA)	I <sub>ERM</sub> max. (mA)	P <sub>tot</sub> max. (mW)	V <sub>AK</sub> max. (V)	I <sub>H</sub> max. (mA)	t <sub>on</sub> max. (μs)	t <sub>off</sub> max. (μs)	PAGE
BRY62	SOT143B	70	175	2500	250	1.4	1	0.25	15	649