

## 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	–	133
2N4124	TO-92	25	200	500	120	360	300	2N4126	163
2N5088	TO-92	30	100	500	350	>350	50	2N5087	177
2PC945	TO-92	50	100	500	135	600	150	2PA733	208
2PC945K	TO-92	50	100	500	300	600	150	2PA733K	208
2PC945P	TO-92	50	100	500	200	400	150	2PA733P	208
2PC945Q	TO-92	50	100	500	135	270	150	2PA733Q	208
2PC1815	TO-92	50	150	500	120	700	80	2PA1015	210
2PC1815BL	TO-92	50	150	500	350	700	80	2PA1015BL	210
2PC1815GR	TO-92	50	150	500	200	400	80	2PA1015GR	210
2PC1815Y	TO-92	50	150	500	120	240	80	2PA1015Y	210
BC107	TO-18	45	100	300	110	450	100	BC177	224
BC107A	TO-18	45	100	300	110	220	100	BC177A	224
BC107B	TO-18	45	100	300	200	450	100	BC177B	224
BC108	TO-18	20	100	300	110	800	100	–	224
BC108A	TO-18	20	100	300	110	220	100	–	224
BC108B	TO-18	20	100	300	200	450	100	–	224
BC108C	TO-18	20	100	300	420	800	100	–	224
BC109	TO-18	20	100	300	200	800	100	–	224
BC109B	TO-18	20	100	300	200	450	100	–	224
BC109C	TO-18	20	100	300	420	800	100	–	224
BC237	TO-92	45	100	500	120	460	100	BC307	236
BC237B	TO-92	45	100	500	200	460	100	BC307B	236
BC337	TO-92	45	500	625	100	600	100	BC327	246
BC337A	TO-92	60	500	625	100	400	100	BC327A	246
BC337-16	TO-92	45	500	625	100	250	100	BC327-16	246
BC337-25	TO-92	45	500	625	160	400	100	BC327-25	246
BC337-40	TO-92	45	500	625	250	600	100	BC327-40	246
BC338	TO-92	25	500	625	100	600	100	BC328	246
BC338-16	TO-92	25	500	625	100	250	100	BC328-16	246
BC338-25	TO-92	25	500	625	160	400	100	BC328-25	246
BC338-40	TO-92	25	500	625	250	600	100	BC328-40	246
BC546	TO-92	65	100	500	110	450	100	BC556	263
BC546A	TO-92	65	100	500	110	220	100	BC556A	263
BC546B	TO-92	65	100	500	200	450	100	BC556B	263
BC547	TO-92	45	100	500	110	800	100	BC557	263

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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	263
BC547B	TO-92	45	100	500	200	450	100	BC557B	263
BC547C	TO-92	45	100	500	420	800	100	BC557C	263
BC548	TO-92	30	100	500	110	800	100	BC558	263
BC548A	TO-92	30	100	500	110	220	100	BC558A	263
BC548B	TO-92	30	100	500	200	450	100	BC558B	263
BC548C	TO-92	30	100	500	420	800	100	BC558C	263
BC549	TO-92	30	100	500	200	800	100	BC559	268
BC549B	TO-92	30	100	500	200	450	100	BC559B	268
BC549C	TO-92	30	100	500	420	800	100	BC559C	268
BC550	TO-92	45	100	500	200	800	100	BC560	268
BC550B	TO-92	45	100	500	200	450	100	BC560B	268
BC550C	TO-92	45	100	500	420	800	100	BC560C	268
ED1402	TO-92	20	200	500	120	900	100 max.	ED1602	764
ED1402A	TO-92	20	200	500	110	165	100 max.	ED1602A	764
ED1402B	TO-92	20	200	500	150	225	100 max.	ED1602B	764
ED1402C	TO-92	20	200	500	202	318	100 max.	ED1602C	764
ED1402D	TO-92	20	200	500	290	450	100 max.	ED1602D	764
ED1402E	TO-92	20	200	500	410	810	100 max.	ED1602E	764
ED1502	TO-92	20	25	500	36	210	825 max.	-	766
ED1502A	TO-92	20	25	500	36	55	825 max.	-	766
ED1502B	TO-92	20	25	500	48	75	825 max.	-	766
ED1502C	TO-92	20	25	500	66	100	825 max.	-	766
ED1502D	TO-92	20	25	500	84	127	825 max.	-	766
ED1502E	TO-92	20	25	500	105	210	825 max.	-	766
ED1702	TO-92	25	500	625	106	588	80	ED1802	771
ED1702K	TO-92	25	500	625	106	150	80	ED1802K	771
ED1702L	TO-92	25	500	625	132	189	80	ED1802L	771
ED1702M	TO-92	25	500	625	170	233	80	ED1802M	771
ED1702N	TO-92	25	500	625	213	300	80	ED1802N	771
ED1702O	TO-92	25	500	625	263	370	80	ED1802O	771
ED1702P	TO-92	25	500	625	333	476	80	ED1802P	771
ED1702Q	TO-92	25	500	625	435	588	80	ED1802Q	771
JC337	TO-92	45	500	625	100	600	100	JC327	783
JC337A	TO-92	60	500	625	100	600	100	JC327A	783
JC337-16	TO-92	60	500	625	100	250	100	JC327-16	783
JC337-25	TO-92	60	500	625	160	400	100	JC327-25	783
JC337-40	TO-92	60	500	625	250	600	100	JC327-40	783
JC338	TO-92	25	500	625	100	600	100	JC328	783

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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	783
JC338-25	TO-92	25	500	625	160	400	100	JC328-25	783
JC338-40	TO-92	25	500	625	250	600	100	JC328-40	783
JC501	TO-92	45	100	500	90	600	130 typ.	JA101	786
JC501O	TO-92	45	100	500	90	180	130 typ.	—	786
JC501P	TO-92	45	100	500	135	270	130 typ.	JA101P	786
JC501Q	TO-92	45	100	500	200	400	130 typ.	JA101Q	786
JC501R	TO-92	45	100	500	300	600	130 typ.	JA101R	786
JC546	TO-92	65	100	500	110	450	100	JC556	789
JC546A	TO-92	65	100	500	110	220	100	JC556A	789
JC546B	TO-92	65	100	500	200	290	100	JC556B	789
JC547	TO-92	45	100	500	110	800	100	JC557	789
JC547A	TO-92	45	100	500	110	220	100	JC557A	789
JC547B	TO-92	45	100	500	200	450	100	JC557B	789
JC547C	TO-92	45	100	500	420	800	100	JC557C	789
JC548	TO-92	30	100	500	110	800	100	JC558	789
JC548A	TO-92	30	100	500	110	220	100	JC558A	789
JC548B	TO-92	30	100	500	200	450	100	JC558B	789
JC548C	TO-92	30	100	500	420	800	100	JC558C	789
JC549	TO-92	30	100	500	200	800	100	JC559	794
JC549B	TO-92	30	100	500	200	450	100	JC559B	794
JC549C	TO-92	30	100	500	420	800	100	JC559C	794
JC550	TO-92	45	100	500	200	800	100	JC560	794
JC550B	TO-92	45	100	500	200	450	100	JC560B	794
JC550C	TO-92	45	100	500	420	800	100	JC560C	794
MPS8098	TO-92	60	100	500	100	300	150	—	814
MPSA05	TO-92	60	500	625	100	>100	100	MPSA55	816
MPSA06	TO-92	80	500	625	100	>100	100	MPSA56	816

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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	165
2N5087	TO-92	50	100	500	250	>250	40	2N5088	175
2PA733	TO-92	50	100	500	135	600	100	2PC945	192
2PA733K	TO-92	50	100	500	300	600	100	2PC945K	192
2PA733P	TO-92	50	100	500	200	400	100	2PC945P	192
2PA733Q	TO-92	50	100	500	135	270	100	2PC945Q	192
2PA1015	TO-92	50	150	500	120	700	80	2PC1815	194
2PA1015BL	TO-92	50	150	500	350	700	80	2PC1815BL	194
2PA1015GR	TO-92	50	150	500	200	400	80	2PC1815GR	194
2PA1015Y	TO-92	50	150	500	120	240	80	2PC1815Y	194
BC177	TO-18	45	100	300	125	500	100	BC107	233
BC177A	TO-18	45	100	300	125	260	100	BC107A	233
BC177B	TO-18	45	100	300	240	500	100	BC107B	233
BC307	TO-92	45	100	500	125	455	100	BC237	239
BC307B	TO-92	45	100	500	222	455	100	BC237B	239
BC327	TO-92	45	500	625	100	600	80	BC337	242
BC327A	TO-92	60	500	625	100	400	80	BC337A	242
BC327-16	TO-92	45	500	625	100	250	80	BC337-16	242
BC327-25	TO-92	45	500	625	160	400	80	BC337-25	242
BC327-40	TO-92	45	500	625	250	600	80	BC337-40	242
BC328	TO-92	25	500	625	100	600	80	BC338	242
BC328-16	TO-92	25	500	625	100	250	80	BC338-16	242
BC328-25	TO-92	25	500	625	160	400	80	BC338-25	242
BC328-40	TO-92	25	500	625	250	600	80	BC338-40	242
BC556	TO-92	65	100	500	125	475	100	BC546	272
BC556A	TO-92	65	100	500	125	250	100	BC546A	272
BC556B	TO-92	65	100	500	220	475	100	BC546B	272
BC557	TO-92	45	100	500	125	800	100	BC547	272
BC557A	TO-92	45	100	500	125	250	100	BC547A	272
BC557B	TO-92	45	100	500	220	475	100	BC547B	272
BC557C	TO-92	45	100	500	420	800	100	BC547C	272
BC558	TO-92	30	100	500	125	800	100	BC548	272
BC558A	TO-92	30	100	500	125	250	100	BC548A	272
BC558B	TO-92	30	100	500	220	475	100	BC548B	272
BC558C	TO-92	30	100	500	420	800	100	BC548C	272
BC559	TO-92	30	100	500	125	800	100	BC549	277

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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	—	277
BC559B	TO-92	30	100	500	220	475	100	BC549B	277
BC559C	TO-92	30	100	500	420	800	100	BC549C	277
BC560	TO-92	45	100	500	125	800	100	BC550	277
BC560A	TO-92	45	100	500	125	250	100	—	277
BC560B	TO-92	45	100	500	220	475	100	BC550B	277
BC560C	TO-92	45	100	500	420	800	100	BC550C	277
BCY70	TO-18	40	200	350	100	>100	250	—	463
BCY71	TO-18	45	200	350	500	>500	250	—	463
ED1602	TO-92	20	100	500	70	800	100	ED1402	768
ED1602A	TO-92	20	100	500	70	105	100	ED1402A	768
ED1602B	TO-92	20	100	500	90	140	100	ED1402B	768
ED1602C	TO-92	20	100	500	125	190	100	ED1402C	768
ED1602D	TO-92	20	100	500	170	260	100	ED1402D	768
ED1602E	TO-92	20	100	500	223	475	100	ED1402E	768
ED1602F	TO-92	20	100	500	415	800	100	—	768
ED1802	TO-92	25	500	625	106	588	80	ED1702	774
ED1802K	TO-92	25	500	625	106	150	80	ED1702K	774
ED1802L	TO-92	25	500	625	132	189	80	ED1702L	774
ED1802M	TO-92	25	500	625	170	233	80	ED1702M	774
ED1802N	TO-92	25	500	625	213	300	80	ED1702N	774
ED1802O	TO-92	25	500	625	263	370	80	ED1702O	774
ED1802P	TO-92	25	500	625	333	476	80	ED1702P	774
ED1802Q	TO-92	25	500	625	435	588	80	ED1702Q	774
JA101	TO-92	45	100	500	135	600	100	JC501	777
JA101P	TO-92	45	100	500	135	270	100	JC501P	777
JA101Q	TO-92	45	100	500	200	400	100	JC501Q	777
JA101R	TO-92	45	100	500	300	600	100	JC501R	777
JC327	TO-92	45	500	625	100	600	80	JC337	780
JC327A	TO-92	60	500	625	100	400	80	JC337A	780
JC327-16	TO-92	45	500	625	100	250	80	JC337-16	780
JC327-25	TO-92	45	500	625	160	400	80	JC337-25	780
JC327-40	TO-92	45	500	625	250	600	80	JC337-40	780
JC328	TO-92	25	500	625	100	600	80	JC338	780
JC328-16	TO-92	25	500	625	100	250	80	JC338-16	780
JC328-25	TO-92	25	500	625	160	400	80	JC338-25	780
JC328-40	TO-92	25	500	625	250	600	80	JC338-40	780
JC556	TO-92	65	100	500	125	475	100	JC546	798
JC556A	TO-92	65	100	500	125	250	100	JC546A	798

## 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)	NPN COMPL.	PAGE
JC556B	TO-92	65	100	500	220	475	100	JC546B	798
JC557	TO-92	45	100	500	125	800	100	JC547	798
JC557A	TO-92	45	100	500	125	250	100	JC547A	798
JC557B	TO-92	45	100	500	220	475	100	JC547B	798
JC557C	TO-92	45	100	500	420	800	100	JC547C	798
JC558	TO-92	30	100	500	125	800	100	JC548	798
JC558A	TO-92	30	100	500	125	250	100	JC548A	798
JC558B	TO-92	30	100	500	220	475	100	JC548B	798
JC558C	TO-92	30	100	500	420	800	100	JC548C	798
JC559	TO-92	30	100	500	125	800	100	JC549	803
JC559A	TO-92	30	100	500	125	250	100	—	803
JC559B	TO-92	30	100	500	220	475	100	JC549B	803
JC559C	TO-92	30	100	500	420	800	100	JC549C	803
JC560	TO-92	45	100	500	125	800	100	JC550	803
JC560A	TO-92	45	100	500	125	250	100	—	803
JC560B	TO-92	45	100	500	220	475	100	JC550B	803
JC560C	TO-92	45	100	500	420	800	100	JC550C	803
MPSA55	TO-92	60	500	625	100	>100	50	MPSA05	830
MPSA56	TO-92	80	500	625	100	>100	50	MPSA06	830

## 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	470
BCY88	TO-71	40	30	150	100	450	10	matched pair	470
BCY89	TO-71	40	30	150	100	450	10	matched pair	470

## 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	—	—	112
2N1711	TO-39	50	500	800	100	300	70	—	—	115
2N1893	TO-39	80	500	800	40	120	—	—	—	117
2N3019	TO-39	80	1000	800	100	300	100	—	—	148
BC140	TO-39	40	1000	3700	63	250	50	—	BC160	227
BC140-10	TO-39	40	1000	3700	63	160	50	—	BC160-10	227
BC140-16	TO-39	40	1000	3700	100	250	50	—	BC160-16	227
BC141	TO-39	60	1000	3700	63	250	50	—	BC161	227
BC141-10	TO-39	60	1000	3700	63	160	50	—	BC161-10	227
BC141-16	TO-39	60	1000	3700	100	250	50	—	BC161-16	227
BC368	TO-92	20	1000	830	85	375	40	—	BC369	251
BC368-16	TO-92	20	1000	830	100	250	40	—	BC369-16	251
BC368-25	TO-92	20	1000	830	160	>160	40	—	BC369-25	251
BC635	TO-92	45	1000	830	40	250	100	—	BC636	285
BC635-10	TO-92	45	1000	830	63	160	100	—	BC636-10	285
BC635-16	TO-92	45	1000	830	100	250	100	—	BC636-16	285
BC637	TO-92	60	1000	830	40	250	100	—	BC638	285
BC637-10	TO-92	60	1000	830	63	160	100	—	BC638-10	285
BC637-16	TO-92	60	1000	830	100	250	100	—	BC638-16	285
BC639	TO-92	80	1000	830	40	250	100	—	BC640	285
BC639-10	TO-92	80	1000	830	63	160	100	—	BC640-10	285
BC639-16	TO-92	80	1000	830	100	250	100	—	BC640-16	285
BFY50	TO-39	35	1000	800	30	>112	60	—	—	622
BFY51	TO-39	30	1000	800	40	>123	50	—	—	622
BFY52	TO-39	20	1000	800	60	>142	50	—	—	622
BSV64	TO-39	60	2000	5000	40	>40	100 typ.	1200	—	741
BSX45	TO-39	40	1000	6250	63	250	50	850	—	755
BSX45-10	TO-39	40	1000	6250	63	160	50	850	—	755
BSX45-16	TO-39	40	1000	6250	100	250	50	850	—	755
BSX46	TO-39	60	1000	6250	63	250	50	850	—	755
BSX46-10	TO-39	60	1000	6250	63	160	50	850	—	755
BSX46-16	TO-39	60	1000	6250	100	250	50	850	—	755
BSX47	TO-39	80	1000	6250	63	250	50	850	—	755
BSX47-10	TO-39	80	1000	6250	63	160	50	850	—	755
BSX47-16	TO-39	80	1000	6250	100	250	50	850	—	755



## 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	–	158
2N4033	TO-39	80	1000	800	70	>70	150	–	158
BC160	TO-39	40	1000	3700	63	250	50	BC140	230
BC160-10	TO-39	40	1000	3700	63	160	50	BC140-10	230
BC160-16	TO-39	40	1000	3700	100	250	50	BC140-16	230
BC161	TO-39	60	1000	3700	63	250	50	BC141	230
BC161-10	TO-39	60	1000	3700	63	160	50	BC141-10	230
BC161-16	TO-39	60	1000	3700	100	250	50	BC141-16	230
BC369	TO-92	20	1000	830	85	375	40	BC368	254
BC369-16	TO-92	20	1000	830	100	250	40	BC368-16	254
BC369-25	TO-92	20	1000	830	160	>160	40	BC368-25	254
BC636	TO-92	45	1000	830	40	250	100	BC635	288
BC636-10	TO-92	45	1000	830	63	160	100	BC635-10	288
BC636-16	TO-92	45	1000	830	100	250	100	BC635-16	288
BC638	TO-92	60	1000	830	40	250	100	BC637	288
BC638-10	TO-92	60	1000	830	63	160	100	BC637-10	288
BC638-16	TO-92	60	1000	830	100	250	100	BC637-16	288
BC640	TO-92	80	1000	830	40	250	100	BC639	288
BC640-10	TO-92	80	1000	830	63	160	100	BC639-10	288
BC640-16	TO-92	80	1000	830	100	250	100	BC639-16	288
BSV15	TO-39	40	1000	800	63	250	50	–	738
BSV15-10	TO-39	40	1000	800	63	160	50	–	738
BSV15-16	TO-39	40	1000	800	100	250	50	–	738
BSV16	TO-39	60	1000	800	63	250	50	–	738
BSV16-10	TO-39	60	1000	800	63	160	50	–	738
BSV16-16	TO-39	60	1000	800	100	250	50	–	738
BSV17	TO-39	80	1000	800	63	250	50	–	738
BSV17-10	TO-39	80	1000	800	63	160	50	–	738

## 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	473
BD135	TO-126	45	1500	8000	40	250	190 typ.	BD136	479
BD135-10	TO-126	45	1500	8000	63	160	190 typ.	BD136-10	479
BD135-16	TO-126	45	1500	8000	100	250	190 typ.	BD136-16	479
BD137	TO-126	60	1500	8000	40	250	190 typ.	BD138	479
BD137-10	TO-126	60	1500	8000	63	160	190 typ.	BD138-10	479
BD137-16	TO-126	60	1500	8000	100	250	190 typ.	BD138-16	479
BD139	TO-126	80	1500	8000	40	250	190 typ.	BD140	479
BD139-10	TO-126	80	1500	8000	63	160	190 typ.	BD140-10	479
BD139-16	TO-126	80	1500	8000	100	250	190 typ.	BD140-16	479
BD226	TO-126	45	1500	12500	40	250	125 typ.	BD227	485
BD228	TO-126	60	1500	12500	40	250	125 typ.	BD229	485
BD230	TO-126	80	1500	12500	40	250	125 typ.	BD231	485
BD329	TO-126	20	3000	15000	85	375	130 typ.	BD330	491
BD825	TO-202	45	1000	2000	40	250	250 typ.	BD826	497
BD825-10	TO-202	45	1000	2000	63	160	250 typ.	BD826-10	497
BD825-16	TO-202	45	1000	2000	100	250	250 typ.	BD826-16	497
BD829	TO-202	80	1000	2000	40	250	250 typ.	BD830	497
BD829-10	TO-202	80	1000	2000	63	160	250 typ.	BD830-10	497
BD829-16	TO-202	80	1000	2000	100	250	250 typ.	BD830-16	497

## 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	476
BD136	TO-126	45	1500	8000	40	250	160 typ.	BD135	482
BD136-10	TO-126	45	1500	8000	63	160	160 typ.	BD135-10	482
BD136-16	TO-126	45	1500	8000	100	250	160 typ.	BD135-16	482
BD138	TO-126	60	1500	8000	40	250	160 typ.	BD137	482
BD138-10	TO-126	60	1500	8000	63	160	160 typ.	BD137-10	482
BD138-16	TO-126	60	1500	8000	100	250	160 typ.	BD137-16	482
BD140	TO-126	80	1500	8000	40	250	160 typ.	BD139	482
BD140-10	TO-126	80	1500	8000	63	160	160 typ.	BD139-10	482
BD140-16	TO-126	80	1500	8000	100	250	160 typ.	BD139-16	482
BD227	TO-126	45	1500	12500	40	250	50 typ.	BD226	488
BD229	TO-126	60	1500	12500	40	250	50 typ.	BD228	488
BD231	TO-126	80	1500	12500	40	250	50 typ.	BD230	488
BD330	TO-126	20	3000	15000	85	375	100 typ.	BD329	494
BD826	TO-202	45	1000	2000	40	250	75 typ.	BD825	500
BD826-10	TO-202	45	1000	2000	63	160	75 typ.	BD825-10	500
BD826-16	TO-202	45	1000	2000	100	250	75 typ.	BD825-16	500
BD828	TO-202	60	1000	2000	40	250	75 typ.	—	500
BD828-10	TO-202	60	1000	2000	63	160	75 typ.	—	500
BD828-16	TO-202	60	1000	2000	100	250	75 typ.	—	500
BD830	TO-202	80	1000	2000	40	250	75 typ.	BD829	500
BD830-10	TO-202	80	1000	2000	63	160	75 typ.	BD830-10	500
BD830-16	TO-202	80	1000	2000	100	250	75 typ.	BD830-16	500

## 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	895
PDTC114TS	TO-92	50	100	500	100	600	10	–	PDTA114TS	905
PDTC124ES	TO-92	50	100	500	56	>56	22	1	PDTA124ES	915
PDTC143ES	TO-92	50	100	500	20	>20	4.7	1	PDTA143ES	925
PDTC144ES	TO-92	50	100	500	68	>68	47	1	PDTA144ES	935

## 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	PNP COMPL.	PAGE
PDTA114ES	TO-92	50	100	500	30	>30	10	1	PDTC114ES	842
PDTA114TS	TO-92	50	100	500	100	600	10	–	PDTC114TS	852
PDTA124ES	TO-92	50	100	500	56	>56	22	1	PDTC124ES	862
PDTA143ES	TO-92	50	100	500	20	>20	4.7	1	PDTC143ES	872
PDTA144ES	TO-92	50	100	500	68	>68	47	1	PDTC144ES	882

## Small-signal Transistors

## Selection guide

## LEADED DEVICES (continued)

## NPN LOW-POWER SWITCHING TRANSISTORS

TYPE NUMBER	PACKAGE	V <sub>CE0</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	123
2N2222A	TO-18	40	800	500	100	300	300	250	2N2907A	123
2N2369	TO-18	15	200	360	40	120	500	30	—	127
2N2369A	TO-18	15	200	360	40	>40	500	30	—	127
2N3904	TO-92	40	200	500	100	300	300	240	2N3906	152
2N4401	TO-92	40	600	630	150	300	250	250	2N4403	167
BCY58	TO-18	32	100	340	120	630	150	800	BCY78	460
BCY58/VII	TO-18	32	100	340	120	220	150	800	BCY78/VII	460
BCY58/VIII	TO-18	32	100	340	180	310	150	800	BCY78/VIII	460
BCY58/IX	TO-18	32	100	340	250	460	150	800	BCY78/IX	460
BCY58/X	TO-18	32	100	340	380	630	150	800	BCY78/X	460
BCY59	TO-18	45	100	340	120	630	150	800	BCY79	460
BCY59/VII	TO-18	45	100	340	120	220	150	800	BCY79/VII	460
BCY59/VIII	TO-18	45	100	340	180	310	150	800	BCY79/VIII	460
BCY59/IX	TO-18	45	100	340	250	460	150	800	BCY79/IX	460
BCY59/X	TO-18	45	100	340	380	630	150	800	BCY79/X	460
BSX20	TO-18	15	200	360	40	120	500	30	—	749
MPS3904	TO-92	40	100	500	100	300	180	990	MPS3906	808
PH2222	TO-92	30	600	500	75	>75	250	250	PH2907	944
PH2222A	TO-92	40	600	500	75	>75	300	250	PH2907A	944
PH2369	TO-92	15	200	500	40	120	500	30	—	948
PH2369A	TO-92	15	200	500	40	120	500	30	—	948
PN2222	TO-92	30	600	500	100	300	250	250	—	1076
PN2222A	TO-92	40	600	500	100	300	300	250	PN2907A	1076
PN2369	TO-92	15	200	500	40	120	500	30	—	1080
PN2369A	TO-92	15	600	500	40	120	500	30	—	1080

## 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	136
2N2905A	TO-39	60	600	600	100	300	200	300	2N2219A	136
2N2906	TO-18	40	600	400	40	120	200	300	2N2222	140
2N2906A	TO-18	60	600	400	40	120	200	300	2N2222A	140
2N2907	TO-18	40	600	400	100	300	200	300	2N2222	144
2N2907A	TO-18	60	600	400	100	300	200	300	2N2222A	144
2N3906	TO-92	40	200	500	100	300	250	300	2N3904	154
2N4403	TO-92	40	600	630	100	300	200	350	2N4401	171
BCY78	TO-18	32	100	340	120	630	100	400	BCY58	466
BCY78/VII	TO-18	32	100	340	120	220	100	400	BCY58/VII	466
BCY78/VIII	TO-18	32	100	340	180	310	100	400	BCY58/VIII	466
BCY78/IX	TO-18	32	100	340	250	460	100	400	BCY58/IX	466
BCY78/X	TO-18	32	100	340	380	630	100	400	BCY58/X	466
BCY79	TO-18	45	100	340	120	630	100	400	BCY59	466
BCY79/VII	TO-18	45	100	340	120	220	100	400	BCY59/VII	466
BCY79/VIII	TO-18	45	100	340	180	310	100	400	BCY59/VIII	466
BCY79/IX	TO-18	45	100	340	250	460	100	400	BCY59/IX	466
BCY79/X	TO-18	45	100	340	380	630	100	400	BCY59/X	466
BFX30	TO-39	65	600	600	50	200	100	300	-	613
MPS3906	TO-92	40	100	500	100	300	150	690	MPS3904	811
PH2907	TO-92	40	600	500	100	300	200	365	PH2222	952
PH2907A	TO-92	60	600	500	100	300	200	365	PH2222A	952
PN2907A	TO-92	60	600	500	100	300	200	365	PN2222A	1083

## 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	119
2N2219A	TO-39	40	800	800	100	300	300	250	2N2905A	119
BFX34	TO-39	60	2000	870	40	150	70	1200	–	616
BFX85	TO-39	60	1000	800	70	>70	50	360 typ.	–	618
BSW66A	TO-39	100	1000	800	30	>30	130 typ.	900 typ.	–	746
BSW67A	TO-39	120	1000	800	30	>30	130 typ.	900 typ.	–	746
BSW68A	TO-39	150	1000	800	30	>30	130 typ.	900 typ.	–	746
BSX32	TO-39	40	1000	800	20	>60	300	60	–	752
BSX59	TO-39	45	1000	800	30	90	250	60	–	758
BSX61	TO-39	45	1000	800	30	90	250	100	–	758
BSX62	TO-39	40	3000	5000	63	250	70 typ.	1500	–	761
BSX62-10	TO-39	40	3000	5000	63	160	70 typ.	1500	–	761
BSX62-16	TO-39	40	3000	5000	100	250	70 typ.	1500	–	761
BSX63	TO-39	60	3000	5000	63	250	70 typ.	1500	–	761
BSX63-10	TO-39	60	3000	5000	63	160	70 typ.	1500	–	761
BSX63-16	TO-39	60	3000	5000	100	250	70 typ.	1500	–	761

## 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>mc</sub> = ≤25 °C	161

## 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	515
BDX36	TO-126	60	5000	1250	45	450	350 typ.	500	515
BDX37	TO-126	80	5000	1250	45	450	350 typ.	500	515

## 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	—	—	190
BC517	TO-92	30	500	500	30000	>30000	220 typ.	—	BC516	260
BC617	TO-92	40	800	500	4000	>4000	155	—	—	281
BC618	TO-92	55	800	500	2000	>2000	155	—	—	281
MPSA13	TO-92	30	500	500	5000	>5000	125	—	MPSA63	818
MPSA14	TO-92	30	500	500	10000	>10000	125	—	MPSA64	818
MPSA25	TO-92	40	500	500	10000	>10000	125	—	MPSA75	821
MPSA26	TO-92	50	500	500	10000	>10000	125	—	MPSA76	821
MPSA27	TO-92	60	500	500	10000	>10000	125	—	MPSA77	821

## 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	257
MPSA63	TO-92	30	500	500	5000	>5000	125	MPSA13	832
MPSA64	TO-92	30	500	500	10000	>10000	125	MPSA14	832



## 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	365
BC877	TO-92	60	1000	830	1000	>1000	200 typ.	1300	BC878	365
BC879	TO-92	80	1000	830	1000	>1000	200 typ.	1300	BC880	365
BSR50	TO-92	45	1000	830	2000	>2000	200 typ.	1300	BSR60	707
BSR51	TO-92	60	1000	830	2000	>2000	200 typ.	1300	BSR61	707
BSR52	TO-92	80	1000	830	2000	>2000	200 typ.	1300	BSR62	707
BSS50	TO-39	45	1000	800	2000	>2000	200 typ.	1500 typ.	–	715
BSS51	TO-39	60	1000	800	2000	>2000	200 typ.	1500 typ.	BSS61	715
BSS52	TO-39	80	1000	800	2000	>2000	200 typ.	1500 typ.	BSS62	715

## 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	368
BC878	TO-92	60	1000	830	1000	>1000	200 typ.	700	BC877	368
BC880	TO-92	80	1000	830	1000	>1000	200 typ.	700	BC879	368
BSR60	TO-92	45	1000	830	2000	>2000	200 typ.	–	BSR50	711
BSR61	TO-92	60	1000	830	2000	>2000	200 typ.	–	BSR51	711
BSR62	TO-92	80	1000	830	2000	>2000	200 typ.	–	BSR52	711
BSS61	TO-39	60	1000	800	2000	>2000	200 typ.	–	BSS51	718
BSS62	TO-39	80	1000	800	2000	>2000	200 typ.	–	BSS52	718

## 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	518
BDX43	TO-126	60	1000	1250	2000	>2000	200 typ.	–	–	518
BDX44	TO-126	80	1000	1250	2000	>2000	200 typ.	–	BDX47	518

## 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	522
BDX47	TO-126	80	1000	1250	2000	>2000	200 typ.	–	BDX44	522

## 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.	544
BF240	TO-92	40	25	300	67	220	150	528
BF240B	TO-92	40	25	300	100	220	150	528
BF370	TO-92	15	100	500	40	>40	490	532
BF370R	TO-92	15	100	500	40	>40	490	532
BF494	TO-92	20	30	300	67	220	120	558
BF494B	TO-92	20	30	300	100	220	120	558
BF495	TO-92	20	30	300	35	125	120	558
BF495B	TO-92	20	30	300	11	125	120	558
BFR54	TO-92	15	100	500	40	>40	500	598

## 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.	530
BF450	TO-92	40	25	300	50	>50	350	544

## 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	186
2N5551	TO-92	160	300	630	80	>80	100	2N5401	186
BF420L	TO-92	300	50	625	50	>50	60	BF421L	538
BF422L	TO-92	250	50	625	50	>50	60	BF423L	538
MPSA42	TO-92	300	100	500	40	>40	50	MPSA92	824
MPSA43	TO-92	200	100	500	40	>40	50	MPSA93	824
MPSA44	TO-92	400	300	625	40	>40	20	—	827
MPSA45	TO-92	350	300	625	40	>40	20	—	827
PN3439	TO-92	350	100	500	30	>30	70	MPSA93	1086
PN3440	TO-92	250	100	500	40	>40	70	MPSA92	1086

## 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)	PNP COMPL.	PAGE
2N5400	TO-92	120	300	630	40	>40	100	2N5550	179
2N5401	TO-92	150	300	630	60	>60	100	2N5551	179
BF421L	TO-92	300	50	625	50	>50	60	BF420L	542
BF423L	TO-92	250	50	625	50	>50	60	BF422L	542
MPSA92	TO-92	300	500	625	25	>25	50	MPSA42	835
MPSA93	TO-92	200	500	625	25	>25	50	MPSA43	835
PH5416	TO-92	300	1000	500	30	120	15	—	956

## 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	536
BF422	TO-92	250	50	830	50	>50	60	BF423	545
BF483	TO-92	250	50	830	50	>50	70	–	553
BF485	TO-92	300	50	830	50	>50	70	–	553
BF487	TO-92	350	50	830	50	>50	70	–	553
BFV420	TO-92	100	100	830	150	>150	150	BFV421; video appl.	606

## 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	–	183
2N5416	TO-39	300	200	1000	30	120	15	–	183
BF421	TO-92	300	50	830	50	>50	60	BF420	540
BF423	TO-92	250	50	830	50	>50	60	BF422	540
BF486	TO-92	300	50	830	50	>50	70	–	540
BF488	TO-92	350	50	830	50	>50	70	–	555
BFT45	TO-39	250	500	5000	50	150	70 typ.	–	604
BFV421	TO-92	100	100	830	150	>150	150	BFV420; video appl.	608

## 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	—	534
BF457	TO-126	160	100	6000	26	>26	90 typ.	—	546
BF458	TO-126	250	100	6000	26	>26	90 typ.	—	546
BF459	TO-126	300	100	6000	26	>26	90 typ.	—	546
BF469	TO-126	250	50	1800	50	>50	60	BF470	549
BF471	TO-126	300	50	1800	50	>50	60	BF472	549
BF583	TO-202	250	50	1600	50	>50	70	—	564
BF585	TO-202	300	50	1600	50	>50	70	—	564
BF587	TO-202	350	50	1600	50	>50	70	—	564
BF591	TO-202	170	150	1300	30	>30	30	—	568
BF593	TO-202	210	150	1300	30	>30	30	—	568
BF819	TO-202	250	100	1200	45 typ.	>45	90 typ.	—	578
BF857	TO-202	160	100	2000	26	>26	90	—	592
BF858	TO-202	250	100	2000	26	>26	90	—	592
BF859	TO-202	300	100	2000	26	>26	90	—	592
BF869	TO-202	250	50	1600	50	>50	60	BF870	594
BF871	TO-202	300	50	1600	50	>50	60	BF872	594
BFV469	TO-126	100	100	2000	150	>150	150	video applications	610

## 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	551
BF472	TO-126	300	50	1800	50	>50	60	BF471	551
BF588	TO-202	300	50	1600	50	>50	70	—	566
BF870	TO-202	250	50	1600	50	>50	60	BF869	596
BF872	TO-202	300	50	1600	50	>50	60	BF871	596

## 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	630
BRY56	TO-92	70	175	2500	300	20	0.2	2	80	641

## 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	–	–	626
BRY39	TO-72	70	175	2500	275	1.4	1	0.25	15	630

## 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	212
2PC4081Q	SC-70	40	100	200	120	270	100	2PA1576Q	212
2PC4081R	SC-70	40	100	200	180	390	100	2PA1576R	212
2PC4081S	SC-70	40	100	200	270	560	100	2PA1576S	212
2PC4617	SC-75	50	100	150	120	560	100	2PA1774	214
2PC4617Q	SC-75	50	100	150	120	270	100	2PA1774Q	214
2PC4617R	SC-75	50	100	150	180	390	100	2PA1774R	214
2PC4617S	SC-75	50	100	150	270	560	100	2PA1774S	214
2PD601A	SC-59	50	100	250	160	460	100	2PB709A	216
2PD601AQ	SC-59	50	100	250	160	260	100	2PB709AQ	216
2PD601AR	SC-59	50	100	250	210	340	120	2PB709AR	216
2PD601AS	SC-59	50	100	250	290	460	140	2PB709AS	216
2PD602A	SC-59	50	500	250	85	340	140	2PB710A	219
2PD602AQ	SC-59	50	500	250	85	170	140	2PB710AQ	219
2PD602AR	SC-59	50	500	250	120	240	160	2PB710AR	219
2PD602AS	SC-59	50	500	250	170	340	180	2PB710AS	219
2PD1820A	SC-70	50	500	200	85	340	150	2PB1219A	222
2PD1820AQ	SC-70	50	500	200	85	170	150	2PB1219AQ	222
2PD1820AR	SC-70	50	500	200	120	240	150	2PB1219AR	222
2PD1820AS	SC-70	50	500	200	170	340	150	2PB1219AS	222
BC817	SOT23	45	500	250	100	600	100	BC807	299
BC817W	SOT323	45	500	200	100	600	100	BC807W	303
BC817-16	SOT23	45	500	250	100	250	100	BC807-16	299
BC817-16W	SOT323	45	500	200	100	250	100	BC807-16W	303
BC817-25	SOT23	45	500	250	160	400	100	BC807-25	299
BC817-25W	SOT323	45	500	200	160	400	100	BC807-25W	303
BC817-40	SOT23	45	500	250	250	600	100	BC807-40	299
BC817-40W	SOT323	45	500	200	250	600	100	BC807-40W	303
BC818	SOT23	25	500	250	100	600	100	BC808	299
BC818W	SOT323	25	500	200	100	600	100	BC808W	303
BC818-16	SOT23	25	500	250	100	250	100	BC808-16	299
BC818-16W	SOT323	25	500	200	100	250	100	BC808-16W	303
BC818-25	SOT23	25	500	250	160	400	100	BC808-25	299
BC818-25W	SOT323	25	500	200	160	400	100	BC808-25W	303
BC818-40	SOT23	25	500	250	250	600	100	BC808-40	299
BC818-40W	SOT323	25	500	200	250	600	100	BC808-40W	303

## Small-signal Transistors

## Selection guide

TYPE NUMBER	PACKAGE	V <sub>CE0</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	307
BC846A	SOT23	65	100	250	110	220	100	BC856A	307
BC846AT	SC-75	65	100	150	110	220	100	BC856AT	312
BC846AW	SOT323	65	100	200	110	220	100	BC856AW	315
BC846B	SOT23	65	100	250	200	450	100	BC856B	307
BC846BT	SC-75	65	100	150	200	450	100	BC856BT	312
BC846BW	SOT323	65	100	200	200	450	100	BC856BW	315
BC846W	SOT323	65	100	200	110	450	100	BC856W	315
BC847	SOT23	45	100	250	110	800	100	BC857	307
BC847A	SOT23	45	100	250	110	220	100	BC857A	307
BC847AT	SC-75	45	100	150	110	220	100	BC857AT	312
BC847AW	SOT323	45	100	200	110	220	100	BC857AW	312
BC847B	SOT23	45	100	250	200	450	100	BC857B	307
BC847BT	SC-75	45	100	150	200	450	100	BC857BT	312
BC847BW	SOT323	45	100	200	200	450	100	BC857BW	312
BC847C	SOT23	45	100	250	420	800	100	BC857C	307
BC847CT	SC-75	45	100	150	420	800	100	BC857CT	312
BC847CW	SOT323	45	100	200	420	800	100	BC857CW	315
BC847W	SOT323	45	100	200	110	800	100	BC857W	315
BC848	SOT23	30	100	250	110	800	100	BC858	307
BC848A	SOT23	30	100	250	110	220	100	BC858A	307
BC848AT	SC-75	30	100	150	110	220	100	BC858AT	312
BC848AW	SOT323	30	100	200	110	220	100	BC858AW	315
BC848B	SOT23	30	100	250	200	450	100	BC858B	307
BC848BT	SC-75	30	100	150	200	450	100	BC858BT	312
BC848BW	SOT323	30	100	200	200	450	100	BC858BW	315
BC848C	SOT23	30	100	250	420	800	100	BC858C	307
BC848CT	SC-75	30	100	150	420	800	100	BC858CT	312
BC848CW	SOT323	30	100	200	420	800	100	BC858CW	315
BC848W	SOT323	30	100	200	110	800	100	BC858W	315
BC849	SOT23	30	100	250	200	800	100	BC859	326
BC849B	SOT23	30	100	250	200	450	100	BC859B	326
BC849BW	SOT323	30	100	200	200	450	100	BC859BW	330
BC849C	SOT23	30	100	250	420	800	100	BC859C	326
BC849CW	SOT323	30	100	200	420	800	100	BC859CW	330
BC849W	SOT323	30	100	200	200	800	100	BC859W	330
BC850	SOT23	45	100	250	200	800	100	BC860	326
BC850B	SOT23	45	100	250	200	450	100	BC860B	326
BC850BW	SOT323	45	100	200	200	450	100	BC860BW	330



## 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	326
BC850CW	SOT323	45	100	200	420	800	100	BC860CW	330
BC850W	SOT323	45	100	200	200	800	100	BC860W	330
BCF32	SOT23	32	100	250	200	450	100	BCF29	374
BCF33	SOT23	32	100	250	420	800	100	BCF30	374
BCF81	SOT23	45	100	250	420	800	100	–	377
BCV71	SOT23	60	100	250	110	220	100	–	420
BCV72	SOT23	60	100	250	200	450	100	–	420
BCW31	SOT23	32	100	250	110	220	100	BCW29	424
BCW32	SOT23	32	100	250	200	450	100	BCW30	424
BCW33	SOT23	32	100	250	420	800	100	–	424
BCW60 series	SOT23	32	100	250	120	630	100	BCW61 series	427
BCW60A	SOT23	32	100	250	120	220	100	BCW61A	427
BCW60B	SOT23	32	100	250	180	310	100	BCW61B	427
BCW60C	SOT23	32	100	250	250	460	100	BCW61C	427
BCW60D	SOT23	32	100	250	380	630	100	BCW61D	427
BCW71	SOT23	45	100	250	110	220	100	BCW69	436
BCW72	SOT23	45	100	250	200	450	100	BCW70	436
BCW81	SOT23	45	100	250	420	800	100	–	438
BCX19	SOT23	45	500	250	100	600	100	BCX17	445
BCX20	SOT23	25	500	250	100	600	100	BCX18	445
BCX70 series	SOT23	45	100	250	120	630	100	BCX71 series	454
BCX70G	SOT23	45	100	250	120	220	100	BCX71G	454
BCX70H	SOT23	45	100	250	180	310	100	BCX71H	454
BCX70J	SOT23	45	100	250	250	460	100	BCX71J	454
BCX70K	SOT23	45	100	250	380	630	100	BCX71K	454
PMBS3904	SOT23	40	100	250	100	300	180	PMBS3906	958
PMBT5088	SOT23	30	100	250	350	>350	–	–	990
PMBT6428	SOT23	50	100	250	250	650	100	–	1001
PMBT6429	SOT23	45	100	250	500	1250	100	–	1001
PMBT A06	SOT23	80	500	250	50	>50	100	PMBTA56	1004
PMST5088	SOT323	30	100	200	350	>350	100	–	1053
PMST5089	SOT323	25	100	200	450	>450	100	–	1053
PMST6428	SOT323	50	100	200	250	650	100	–	1063
PMST6429	SOT323	45	100	200	500	1250	100	–	1063
PMSTA05	SOT323	60	500	200	50	>50	100	PMSTA55	1066
PMSTA06	SOT323	80	500	200	50	>50	100	PMSTA56	1066

## 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	196
2PA1576Q	SC-70	40	100	200	120	270	100	2PC4081Q	196
2PA1576R	SC-70	40	100	200	180	390	100	2PC4081R	196
2PA1576S	SC-70	40	100	200	270	560	100	2PC4081S	196
2PA1774	SC-75	40	100	150	120	560	100	2PC4617	198
2PA1774Q	SC-75	40	100	150	120	270	100	2PC4617Q	198
2PA1774R	SC-75	40	100	150	180	390	100	2PC4617R	198
2PA1774S	SC-75	40	100	150	270	560	100	2PC4617S	198
2PB709A	SC-59	45	200	250	160	460	80	2PB601A	200
2PB709AQ	SC-59	45	100	250	160	260	60	2PB601AQ	200
2PB709AR	SC-59	45	100	250	210	340	70	2PB601AR	200
2PB709AS	SC-59	45	100	250	290	460	80	2PB601AS	200
2PB710A	SC-59	50	500	250	85	340	100	2PD602A	202
2PB710AQ	SC-59	50	500	250	85	170	100	2PD602AQ	202
2PB710AR	SC-59	50	500	250	120	240	120	2PD602AR	202
2PB710AS	SC-59	50	500	250	170	340	140	2PD602AS	202
2PB1219A	SC-70	50	500	200	85	340	100	2PD1820A	205
2PB1219AQ	SC-70	50	500	200	85	170	100	2PD1820AQ	205
2PB1219AR	SC-70	50	500	200	120	240	120	2PD1820AR	205
2PB1219AS	SC-70	50	500	200	170	340	140	2PD1820AS	205
BC807	SOT23	45	500	250	100	600	80	BC817	291
BC807W	SOT323	45	500	200	100	600	80	BC817W	295
BC807-16	SOT23	45	500	250	100	250	80	BC817-16	291
BC807-16W	SOT323	45	500	200	100	250	80	BC817-16W	295
BC807-25	SOT23	45	500	250	160	400	80	BC817-25	291
BC807-25W	SOT323	45	500	200	160	400	80	BC817-25W	295
BC807-40	SOT23	45	500	250	250	600	80	BC817-40	291
BC807-40W	SOT323	45	500	200	250	600	80	BC817-40W	295
BC808	SOT23	25	500	250	100	600	80	BC818	291
BC808W	SOT323	25	500	200	100	600	80	BC818W	295
BC808-16	SOT23	25	500	250	100	250	80	BC818-16	291
BC808-16W	SOT323	25	500	200	100	250	80	BC818-16W	295
BC808-25	SOT23	25	500	250	160	400	80	BC818-25	291
BC808-25W	SOT323	25	500	200	160	400	80	BC818-25W	295
BC808-40	SOT23	25	500	250	250	600	80	BC818-40	291
BC808-40W	SOT323	25	500	200	250	600	80	BC818-40W	295

## 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	334
BC856A	SOT23	65	100	250	125	250	100	BC846A	334
BC856AT	SC-75	65	100	150	125	250	100	BC846AT	339
BC856AW	SOT323	65	100	200	125	250	100	BC846AW	342
BC856B	SOT23	65	100	250	220	475	100	BC846B	334
BC856BT	SC-75	65	100	150	220	475	100	BC846BT	339
BC856BW	SOT323	65	100	200	220	475	100	BC846BW	342
BC856W	SOT323	65	100	200	125	475	100	BC846W	342
BC857	SOT23	45	100	250	125	800	100	BC847	334
BC857A	SOT23	45	100	250	125	250	100	BC847A	334
BC857AT	SC-75	45	100	150	125	250	100	BC847AT	339
BC857AW	SOT323	45	100	200	125	250	100	BC847AW	342
BC857B	SOT23	45	100	250	220	475	100	BC847B	334
BC857BT	SC-75	45	100	150	220	475	100	BC847BT	339
BC857BW	SOT323	45	100	200	220	475	100	BC847BW	342
BC857C	SOT23	45	100	250	420	800	100	BC847C	334
BC857CT	SC-75	45	100	150	420	800	100	BC847CT	339
BC857CW	SOT323	45	100	200	420	800	100	BC847CW	342
BC857W	SOT323	45	100	200	125	800	100	BC847W	342
BC858	SOT23	30	100	250	125	800	100	BC848	334
BC858A	SOT23	30	100	250	125	250	100	BC848A	334
BC858AT	SC-75	30	100	150	125	250	100	BC848AT	339
BC858AW	SOT323	30	100	200	125	250	100	BC848AW	342
BC858B	SOT23	30	100	250	220	475	100	BC848B	334
BC858BT	SC-75	30	100	150	220	475	100	BC848BT	339
BC858BW	SOT323	30	100	200	220	475	100	BC848BW	342
BC858C	SOT23	30	100	250	420	800	100	BC848C	334
BC858CT	SC-75	30	100	150	420	800	100	BC848CT	339
BC858CW	SOT323	30	100	200	420	800	100	BC848CW	342
BC858W	SOT323	30	100	200	125	800	100	BC848W	342
BC859	SOT23	30	100	250	125	800	100	BC849	349
BC859A	SOT23	30	100	250	125	250	100	-	349
BC859AW	SOT323	30	100	200	125	250	100	-	354
BC859B	SOT23	30	100	250	220	475	100	BC849B	349
BC859BW	SOT323	30	100	200	220	475	100	BC849BW	354
BC859C	SOT23	30	100	250	420	800	100	BC849C	349
BC859CW	SOT323	30	100	200	420	800	100	BC849CW	354
BC859W	SOT323	30	100	200	125	800	100	BC849W	354
BC860	SOT23	45	100	250	125	800	100	BC850	349

## Small-signal Transistors

## Selection guide

TYPE NUMBER	PACKAGE	V <sub>CE0</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	—	349
BC860AW	SOT323	45	100	200	125	250	100	—	354
BC860B	SOT23	45	100	250	220	475	100	BC850B	349
BC860BW	SOT323	45	100	200	220	475	100	BC850BW	354
BC860C	SOT23	45	100	250	420	800	100	BC850C	349
BC860CW	SOT323	45	100	200	420	800	100	BC850CW	354
BC860W	SOT323	45	100	200	125	800	100	BC850W	354
BCF29	SOT23	32	100	250	120	260	100	BCF32	371
BCF30	SOT23	32	100	250	215	500	100	BCF33	371
BCW29	SOT23	32	100	250	120	260	100	BCW31	422
BCW30	SOT23	32	100	250	215	500	100	BCW32	422
BCW61 series	SOT23	32	100	250	120	630	100	BCW60 series	430
BCW61A	SOT23	32	100	250	120	220	100	BCW60A	430
BCW61B	SOT23	32	100	250	180	310	100	BCW60B	430
BCW61C	SOT23	32	100	250	250	460	100	BCW60C	430
BCW61D	SOT23	32	100	250	380	630	100	BCW60D	430
BCW69	SOT23	45	100	250	120	260	100	BCW71	433
BCW70	SOT23	45	100	250	215	500	100	BCW72	433
BCW89	SOT23	60	100	250	120	260	100	—	440
BCX17	SOT23	45	500	250	100	600	80	BCX19	442
BCX18	SOT23	25	500	250	100	600	80	BCX20	442
BCX71 series	SOT23	45	100	250	120	630	100	BCX70 series	457
BCX71G	SOT23	45	100	250	120	220	100	BCX70G	457
BCX71H	SOT23	45	100	250	180	310	100	BCX70H	457
BCX71J	SOT23	45	100	250	250	460	100	BCX70J	457
BCX71K	SOT23	45	100	250	380	630	100	BCX70K	457
PMBS3906	SOT23	40	100	250	100	300	150	PMBS3904	961
PMBTA55	SOT23	60	500	250	100	>100	50	—	1012
PMBTA56	SOT23	80	500	250	100	>100	50	PMBTA06	1012
PMSTA55	SOT323	60	500	200	50	>50	50	PMSTA05	1071
PMSTA56	SOT323	80	500	200	50	>50	50	PMSTA06	1071

## 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	323
BCV61	SOT143B	30	100	250	100	>100	100	BCV62; matched pair	404
BCV61A	SOT143B	30	100	250	110	220	100	BCV62A; matched pair	404
BCV61B	SOT143B	30	100	250	200	450	100	BCV62B; matched pair	404
BCV61C	SOT143B	30	100	250	420	800	100	BCV62C; matched pair	404
BCV63	SOT143B	30	100	250	110	800	100	–	410
BCV63B	SOT143B	30	100	250	200	450	100	BCV64B	410
PUMX1	SC-88	40	100	200	120	>120	100	PUMT1	1102

## 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)	PNP COMPL./ REMARKS	PAGE
BC857BS	SC-88	45	100	200	200	450	100	BC847BS; matched pair	347
BCV62	SOT143B	30	100	250	100	>100	100	BCV61; matched pair	408
BCV62A	SOT143B	30	100	250	125	250	100	BCV61A; matched pair	408
BCV62B	SOT143B	30	100	250	220	475	100	BCV61B; matched pair	408
BCV62C	SOT143B	30	100	250	420	800	100	BCV61C; matched pair	408
BCV64B	SOT143B	30	100	250	220	475	100	BCV63B	414
PUMT1	SC-88	40	100	200	120	>120	100	PUMX1	1100

## 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	320
BCV65	SOT143B	30	100	250	75	800	–	matched pair	418
BCV65B	SOT143B	30	100	250	200	475	–	matched pair	418
PUMZ1	SC-88	40	100	200	120	>120	100	–	1104

## 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	359
BC868-10	SOT89	20	1000	1400	100	160	40	–	–	359
BC868-16	SOT89	20	1000	1400	100	250	40	–	BC869-16	359
BC868-25	SOT89	20	1000	1400	160	>250	40	–	BC869-25	359
BCP54	SOT223	45	1000	1330	40	250	130 typ.	–	BCP51	382
BCP54-10	SOT223	45	1000	1330	63	160	130 typ.	–	BCP51-10	382
BCP54-16	SOT223	45	1000	1330	100	250	130 typ.	–	BCP51-16	382
BCP55	SOT223	60	1000	1330	40	250	130 typ.	–	BCP52	382
BCP55-10	SOT223	60	1000	1330	63	160	130 typ.	–	BCP52-10	382
BCP55-16	SOT223	60	1000	1330	100	250	130 typ.	–	BCP52-16	382
BCP56	SOT223	80	1000	1330	40	250	130 typ.	–	BCP53	382
BCP56-10	SOT223	80	1000	1330	63	160	130 typ.	–	BCP53-10	382
BCP56-16	SOT223	80	1000	1330	100	250	130 typ.	–	BCP53-16	382
BCP68	SOT223	20	1000	1370	85	375	40	–	BCP69	385
BCP68-10	SOT223	20	1000	1370	–	160	40	–	BCP69-10	385
BCP68-16	SOT223	20	1000	1370	100	250	40	–	BCP69-16	385
BCP68-25	SOT223	20	1000	1370	160	>160	40	–	BCP69-25	385
BCX54	SOT89	45	1000	1390	40	250	130 typ.	–	BCX51	451
BCX54-10	SOT89	45	1000	1390	63	160	130 typ.	–	BCX51-10	451
BCX54-16	SOT89	45	1000	1390	100	250	130 typ.	–	BCX51-16	451
BCX55	SOT89	60	1000	1390	40	250	130 typ.	–	BCX52	451
BCX55-10	SOT89	60	1000	1390	63	160	130 typ.	–	BCX52-10	451
BCX55-16	SOT89	60	1000	1390	100	250	130 typ.	–	BCX52-16	451
BCX56	SOT89	80	1000	1390	40	250	130 typ.	–	BCX53	451
BCX56-10	SOT89	80	1000	1390	63	160	130 typ.	–	BCX53-10	451
BCX56-16	SOT89	80	1000	1390	100	250	130 typ.	–	BCX53-16	451
BDL31	SOT223	10	5000	1350	200	>200	100	–	BDL32	503
BDP31	SOT223	45	3000	1350	40	>40	60	–	BDP32	509
BSP40	SOT223	60	1000	1300	40	120	100	–	BSP30	666
BSP41	SOT223	60	1000	1300	100	300	100	–	BSP31	666
BSP42	SOT223	80	1000	1300	40	120	100	–	BSP32	666
BSP43	SOT223	80	1000	1300	100	300	100	–	BSP33	666
BSR40	SOT89	60	1000	1000	40	120	100	1000	BSR30	704
BSR41	SOT89	60	1000	1000	100	300	100	1000	BSR31	704
BSR42	SOT89	80	1000	1000	40	120	100	1000	BSR32	704
BSR43	SOT89	80	1000	1000	100	300	100	1000	BSR33	704
PZTA06	SOT223	80	500	1200	100	>100	100	–	PZTA56	1159

## 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	362
BC869-16	SOT89	20	1000	1400	100	250	40	—	BC868-16	362
BC869-25	SOT89	20	1000	1400	160	>160	40	—	BC868-25	362
BCP51	SOT223	45	1000	1300	40	250	115 typ.	—	BCP54	379
BCP51-10	SOT223	45	1000	1300	63	160	115 typ.	—	BCP54-10	379
BCP51-16	SOT223	45	1000	1300	100	250	115 typ.	—	BCP54-16	379
BCP52	SOT223	60	1000	1300	40	250	115 typ.	—	BCP55	379
BCP52-10	SOT223	60	1000	1300	63	160	115 typ.	—	BCP55-10	379
BCP52-16	SOT223	60	1000	1300	100	250	115 typ.	—	BCP55-16	379
BCP53	SOT223	80	1000	1300	40	250	115 typ.	—	BCP56	379
BCP53-10	SOT223	80	1000	1300	63	160	115 typ.	—	BCP56-10	379
BCP53-16	SOT223	80	1000	1300	100	250	115 typ.	—	BCP56-16	379
BCP69	SOT223	20	1000	1350	85	375	40	—	BCP68	388
BCP69-10	SOT223	20	1000	1350	—	160	40	—	BCP68-10	388
BCP69-16	SOT223	20	1000	1350	100	250	40	—	BCP68-16	388
BCP69-25	SOT223	20	1000	1350	160	>160	40	—	BCP68-25	388
BCX51	SOT89	45	1000	1300	40	250	50 typ.	—	BCX54	448
BCX51-10	SOT89	45	1000	1300	63	160	50 typ.	—	BCX54-10	448
BCX51-16	SOT89	45	1000	1300	100	250	50 typ.	—	BCX54-16	448
BCX52	SOT89	60	1000	1300	40	250	50 typ.	—	BCX55	448
BCX52-10	SOT89	60	1000	1300	63	160	50 typ.	—	BCX55-10	448
BCX52-16	SOT89	60	1000	1300	100	250	50 typ.	—	BCX55-16	448
BCX53	SOT89	80	1000	1300	40	250	50 typ.	—	BCX56	448
BCX53-10	SOT89	80	1000	1300	63	160	50 typ.	—	BCX56-10	448
BCX53-16	SOT89	80	1000	1300	100	250	50 typ.	—	BCX56-16	448
BDL32	SOT223	10	5000	1350	180	>180	100	—	BDL31	506
BDP32	SOT223	45	3000	1350	40	>40	60	—	BDP31	512
BSP30	SOT223	60	1000	1300	40	120	100	650	BSP40	663
BSP31	SOT223	60	1000	1300	100	300	100	650	BSP41	663
BSP32	SOT223	80	1000	1300	40	120	100	650	BSP42	663
BSP33	SOT223	80	1000	1300	100	300	100	650	BSP43	663
BSR30	SOT89	60	1000	1400	40	120	100	—	BSR40	701
BSR31	SOT89	60	1000	1400	100	300	100	—	BSR41	701
BSR32	SOT89	80	1000	1400	40	120	100	—	BSR42	701
BSR33	SOT89	80	1000	1400	100	300	100	—	BSR43	701
PZTA56	SOT223	80	500	1200	100	>100	50	—	PZTA06	1170

## 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	891
PDTC114EK	SC-59	50	100	250	30	>30	10	1	PDTA114EK	893
PDTC114ET	SOT23	50	100	250	30	>30	10	1	PDTA114ET	897
PDTC114EU	SOT323	50	100	200	30	>30	10	1	PDTA114EU	899
PDTC114TE	SC-75	50	100	150	100	600	10	–	PDTA114TE	901
PDTC114TK	SC-59	50	100	250	100	600	10	–	PDTA114TK	903
PDTC114TT	SOT23	50	100	250	100	600	10	–	PDTA114TT	907
PDTC114TU	SOT323	50	100	200	100	600	10	–	PDTA114TU	909
PDTC124EE	SC-75	50	100	150	56	>56	22	1	PDTA124EE	911
PDTC124EK	SC-59	50	100	250	56	>56	22	1	PDTA124EK	913
PDTC124ET	SOT23	50	100	250	56	>56	22	1	PDTA124ET	917
PDTC124EU	SOT323	50	100	200	56	>56	22	1	PDTA124EU	919
PDTC143EE	SC-75	50	100	150	20	>20	4.7	1	PDTA143EE	921
PDTC143EK	SC-59	50	100	250	20	>20	4.7	1	PDTA143EK	923
PDTC143ET	SOT23	50	100	250	20	>20	4.7	1	PDTA143ET	927
PDTC143EU	SOT323	50	100	200	20	>20	4.7	1	PDTA143EU	929
PDTC144EE	SC-75	50	100	150	68	>68	47	1	PDTA144EE	931
PDTC144EK	SC-59	50	100	250	68	>68	47	1	PDTA144EK	933
PDTC144ET	SOT23	50	100	250	68	>68	47	1	PDTA144ET	937
PDTC144EU	SOT323	50	100	200	68	>68	47	1	PDTA144EU	939
PDTD114ET	SOT23	50	500	250	56	>56	10	1	PDTB144ET	941



## 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	838
PDTA114EK	SC-59	50	100	250	30	>30	10	1	PDTC114EK	840
PDTA114ET	SOT23	50	100	250	30	>30	10	1	PDTC114ET	844
PDTA114EU	SOT323	50	100	200	30	>30	10	1	PDTC114EU	846
PDTA114TE	SC-75	50	100	150	100	600	10	–	PDTC114TE	848
PDTA114TK	SC-59	50	100	250	100	600	10	–	PDTC114TK	850
PDTA114TT	SOT23	50	100	250	100	600	10	–	PDTC114TT	854
PDTA114TU	SOT323	50	100	200	100	600	10	–	PDTC114TU	856
PDTA124EE	SC-75	50	100	150	56	>56	22	1	PDTC124EE	858
PDTA124EK	SC-59	50	100	250	56	>56	22	1	PDTC124EK	860
PDTA124ET	SOT23	50	100	250	56	>56	22	1	PDTC124ET	864
PDTA124EU	SOT323	50	100	200	56	>56	22	1	PDTC124EU	866
PDTA143EE	SC-75	50	100	150	20	>20	4.7	1	PDTC143EE	868
PDTA143EK	SC-59	50	100	250	20	>20	4.7	1	PDTC143EK	870
PDTA143ET	SOT23	50	100	250	20	>20	4.7	1	PDTC143ET	874
PDTA143EU	SOT323	50	100	200	20	>20	4.7	1	PDTC143EU	876
PDTA144EE	SC-75	50	100	150	68	>68	47	1	PDTC144EE	878
PDTA144EK	SC-59	50	100	250	68	>68	47	1	PDTC144EK	880
PDTA144ET	SOT23	50	100	250	68	>68	47	1	PDTC144ET	884
PDTA144EU	SOT323	50	100	200	68	>68	47	1	PDTC144EU	886
PDTB114ET	SOT23	50	500	250	56	>56	10	1	PDTC114ET	888

## 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	1089
PUMD2	SC-88	50	100	200	56	>56	22	1	NPN/PNP	1091
PUMD3	SC-88	50	100	200	30	>30	10	1	NPN/PNP	1094
PUMH11	SC-88	50	100	200	30	>30	10	1	NPN double transistor	1097

## 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	677
BSR14	SOT23	40	800	250	40	>40	300	250	BSR16	677
BSR17A	SOT23	40	100	250	100	300	300	240	BSR18A	685
BSV52	SOT23	12	100	250	40	120	500 typ.	30	—	741
PMBT2222	SOT23	30	600	250	100	300	250	250	PMBT2907	964
PMBT2222A	SOT23	40	600	250	100	300	300	250	PMBS2907A	964
PMBT2369	SOT23	15	200	250	40	120	500	30	—	968
PMBT3904	SOT23	40	100	250	100	300	300	240	PMBT3906	974
PMBT4401	SOT23	40	600	250	100	300	250	250	PMBT4403	982
PMSS3904	SOT323	40	100	200	100	300	180	1200	PMSS3906	1020
PMST2222	SOT323	30	600	200	100	300	250	250	—	1027
PMST2222A	SOT323	40	600	200	100	300	300	250	PMST2907A	1027
PMST2369	SOT323	15	200	200	40	120	500	30	—	1031
PMST3904	SOT323	40	200	200	100	300	300	240	PMST3906	1037
PMST4401	SOT323	40	600	200	100	300	250	285	PMST4403	1045

## 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	681
BSR16	SOT23	60	600	250	50	>50	200	365	BSR14	681
BSR18A	SOT23	40	100	250	100	300	250	300	BSR17A	689
PMBT2907	SOT23	40	600	250	100	300	200	365	PMBT2222	971
PMBT2907A	SOT23	60	600	250	100	300	200	365	PMBT2222A	971
PMBT3906	SOT23	40	100	250	100	300	250	300	PMBT3904	978
PMBT4403	SOT23	40	600	250	100	300	200	350	PMBT4401	986
PMSS3906	SOT323	40	100	200	100	300	150	700	PMSS3904	1024
PMST2907A	SOT323	60	200	200	50	>50	200	300	PMST2222A	1034
PMST3906	SOT323	40	100	200	100	300	250	300	PMST3904	1041
PMST4403	SOT323	40	600	200	100	300	200	350	PMST4401	1049

## 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	1106
PXT3904	SOT89	40	100	1150	100	300	300	240	PXT3906	1114
PXT4401	SOT89	40	600	1200	100	300	250	250	PXT4403	1122
PZT2222A	SOT223	40	600	1150	100	300	300	250	PZT2907A	1145
PZT3904	SOT223	40	200	1050	100	300	300	240	PZT3906	1151

## 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	1109
PXT3906	SOT89	40	100	1150	100	300	250	300	PXT3904	1118
PXT4403	SOT89	40	600	1250	100	300	200	350	PXT4401	1126
PZT2907A	SOT223	60	600	1150	100	300	200	365	PZT2222A	1148
PZT3906	SOT223	40	100	1050	100	300	250	300	PZT3904	1155

## 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	394
BCV47	SOT23	60	500	250	10000	>10000	220 typ.	BCV46	394
PMBTA13	SOT23	30	500	250	5000	>5000	125	PMBTA63	1006
PMBTA14	SOT23	30	500	250	10000	>10000	125	PMBTA64	1006

## 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	391
BCV46	SOT23	60	500	250	10000	>10000	220 typ.	BCV47	391
PMBTA63	SOT23	30	500	250	5000	>5000	125	PMBTA13	1014
PMBTA64	SOT23	30	500	250	10000	>10000	125	PMBTA14	1014

## 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	401
BCV49	SOT89	60	500	1340	10000	>10000	220 typ.	–	BCV48	401
BSP50	SOT223	45	1000	1250	2000	>2000	200 typ.	1300 typ.	BSP60	669
BSP51	SOT223	60	1000	1250	2000	>2000	200 typ.	1300 typ.	BSP61	669
BSP52	SOT223	80	1000	1250	2000	>2000	200 typ.	1300 typ.	BSP62	669
BST50	SOT89	45	500	1350	2000	>2000	200 typ.	1500 typ.	BST60	730
BST51	SOT89	60	500	1350	2000	>2000	200 typ.	1500 typ.	BST61	730
BST52	SOT89	80	500	1350	2000	>2000	200 typ.	1500 typ.	BST62	730
PXTA14	SOT89	30	500	1300	20000	>20000	125	–	PXTA64	1130
PXTA27	SOT89	60	500	1300	10000	>10000	125	–	–	1133
PZTA14	SOT223	30	500	1250	10000	>10000	125	–	PZTA64	1161

## 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
BCV28	SOT89	30	500	1300	20000	>20000	220 typ.	–	BCV29	397
BCV48	SOT89	60	500	1300	10000	>10000	220 typ.	–	BCV49	397
BSP60	SOT223	45	500	1250	2000	>2000	200 typ.	1500 typ.	BSP50	673
BSP61	SOT223	60	500	1250	2000	>2000	200 typ.	1500 typ.	BSP51	673
BSP62	SOT223	80	500	1250	2000	>2000	200 typ.	1500 typ.	BSP52	673
BST60	SOT89	45	500	1350	2000	>2000	200 typ.	700 typ.	BST50	734
BST61	SOT89	60	500	1350	2000	>2000	200 typ.	700 typ.	BST51	734
BST62	SOT89	80	500	1350	2000	>2000	200 typ.	700 typ.	BST52	734
PXTA64	SOT89	30	500	1300	10000	>10000	125	–	PXTA14	1139
PZTA64	SOT223	30	500	1250	10000	>10000	125	–	PZTA14	1172

## 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	562
BF840	SOT23	40	25	250	76	222	380 typ.	600
BF841	SOT23	40	25	250	36	125	380 typ.	600
BFS19	SOT23	20	30	250	65	225	260 typ.	600
BFS20	SOT23	20	25	250	40	>85	450 typ.	602

## 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.	560
BF824	SOT23	30	25	250	25	>50	450 typ.	586
BF824W	SC-70	30	25	200	25	>25	400	589

## 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	580
BF820W	SC-70	300	50	200	50	>50	60	—	582
BF822	SOT23	250	50	250	50	>50	60	BF823	580
BF822W	SC-70	250	50	200	50	>50	60	—	582
BSR19	SOT23	140	300	250	60	>60	100	BSR20	693
BSR19A	SOT23	160	300	250	80	>80	100	BSR20A	693
BSS64	SOT23	80	100	250	20	80	60	BSS63	723
PMBT5550	SOT23	140	300	250	60	250	100	PMBT5401	995
PMBT5551	SOT23	160	300	250	80	250	100	PMBT5401	998
PMBTA42	SOT23	300	100	250	40	>40	50	PMBTA92	1009
PMBTA43	SOT23	200	100	250	40	>40	50	PMBTA93	1009
PMST5550	SOT323	140	300	200	60	250	100	PMST5401	1059
PMST5551	SOT323	160	300	200	80	250	100	PMST5401	1059
PMSTA42	SOT323	300	500	200	40	>40	50	PMSTA92	1068
PMSTA43	SOT323	200	500	200	40	>40	50	PMSTA93	1068

## 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	584
BF823	SOT23	250	50	250	50	>50	60	BF822	584
BSR20	SOT23	120	300	250	40	180	100	BSR19	697
BSR20A	SOT23	150	300	250	60	240	100	BSR19A	697
BSS63	SOT23	100	100	250	30	>30	85 typ.	BSS64	721
PMBT5401	SOT23	150	300	250	60	240	100	PMBT5550	992
PMBTA92	SOT23	300	100	250	40	>40	50	PMBTA42	1017
PMBTA93	SOT23	200	100	250	40	>40	50	PMBTA43	1017
PMST5401	SOT323	150	300	200	60	240	100	PMST5550 PMST5551	1056
PMSTA92	SOT323	300	500	200	40	>40	50	PMSTA42	1073
PMSTA93	SOT323	200	500	200	40	>40	50	PMSTA43	1073

## 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	570
BF622	SOT89	250	50	1200	50	>50	60	BF623	570
BF720	SOT223	300	50	1200	50	>50	60	BF721	574
BF722	SOT223	250	50	1200	50	>50	60	BF723	574
BSP19	SOT223	350	50	1200	40	>40	70	BSP15	661
BSP20	SOT223	250	50	1200	40	>40	70	BSP16	661
BST39	SOT89	350	100	1250	40	>40	70	BST15	728
BST40	SOT89	250	100	1250	40	>40	70	BST16	728
PXTA42	SOT89	300	100	1250	40	>40	50	PXTA92	1136
PXTA43	SOT89	200	100	1250	40	>40	50	PXTA93	1136
PZTA42	SOT223	300	100	1200	40	>40	50	PZTA92	1164
PZTA43	SOT223	200	100	1200	40	>40	50	–	1164
PZTA44	SOT223	400	300	1350	40	>40	20	–	1167
PZTA45	SOT223	350	300	1350	40	>40	20	–	1167

## 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	572
BF623	SOT89	250	50	1200	50	>50	60	BF622	572
BF721	SOT223	300	50	1200	50	>50	60	BF720	576
BF723	SOT223	250	50	1200	50	>50	60	BF722	576
BSP15	SOT223	200	50	1280	30	150	15	BSP19	658
BSP16	SOT223	300	50	1280	30	120	15	BSP20	658
BST15	SOT89	200	200	1350	30	150	15	BST39	725
BST16	SOT89	300	200	1350	30	120	15	BST40	725
PXTA92	SOT89	300	100	1250	40	>40	50	PXTA42	1142
PXTA93	SOT89	200	100	1250	40	>40	50	PXTA43	1142
PZTA92	SOT223	300	100	1200	40	>40	50	PZTA42	1175

## 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	646

## 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	651