



Agilent Technologies

Advanced Design System 2001

**Vendor Component Libraries
RF Transistor Library**

August 2001

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Chapter 1: RF Transistor Library

The RF Transistor Library contains the following types of nonlinear models:

- Packaged GaAs FETs
- Packaged Power MOSFETs
- Packaged BJTs

Note The library itself is a binary file named *RFTransistorLibrary.library* which can be found in *\$HPEESOF_DIR/ComponentLibs/models*.

Packaged GaAs FETs

The Packaged GaAs FETs consists of nonlinear models representing 65 parts from 8 manufacturers. The FETs available for selection from the Schematic window are:

- Fujitsu GaAs FETs
- Agilent Technologies GaAs FETs
- Microwave Technology GaAs FETs
- Mitsubishi GaAs FETs
- NEC GaAs FETs
- Oki GaAs FETs
- Siemens GaAs FETs
- Toshiba GaAs FETs

The library components are listed in tables organized by manufacturer library group, and the individual components provided in each group are listed by component name along with relevant physical and electrical characteristics.

The tabulated Physical Specifications include:

Gw: Gate width, microns

Gl: Gate length, microns

Maximum Electrical Specifications include:

Pdiss: Maximum dissipated power, mW

Vbr: Breakdown voltage, V

Typical Electrical Specifications include:

Vds: Typical drain-source operating voltage, V

Idss: Saturation current, mA, simulated using the model at typical Vds

Vt: Threshold gate voltage, V, simulated using the model at typical Vds

Model Validation data has been provided as a simple large-signal figure of merit for the model. The validation was based on simulations of the model and measurements of the associated device, conducted at 1 GHz. Validation data includes:

Vds: Drain-source operating voltage, V

Ids: Operating drain current, mA

P1dB, Sim: Output power for 1dB compression, dBm, simulated using the model at validation Vds, Ids. Values listed as na denote that the associated P1dB simulation was not performed.

P1dB, Error: Error, in dB, between P1dB, Sim and P1dB measured, at the validation Vds, Ids. Values listed as na denote that the associated P1dB measurement is not available.

Fujitsu Packaged FETs

The Fujitsu Packaged FETs include 2 components, representing individual parts. The naming convention for these components is *pf_fuj_<part number>_<extraction date>*.

[Table A-1. Fujitsu Packaged FETs](#)

Agilent Technologies Packaged FETs

The Agilent Technologies Packaged FETs include 5 components, representing individual parts. The naming convention for these components is *pf_hpa_<part number>_<extraction date>*.

[Table A-2. Agilent Technologies Packaged FETs](#)

Microwave Technology Packaged FETs

The Microwave Technology Packaged FETs include 11 components, representing individual parts. The naming convention for these components is *pf_mwt_<part number>_<extraction date>*.

[Table A-3. Microwave Technology Packaged FETs](#)

Mitsubishi Packaged FETs

The Mitsubishi Packaged FETs include 19 components, representing individual parts. The naming convention for these components is *pf_mit_<part number>_<extraction date>*.

[Table A-4. Mitsubishi Packaged FETs](#)

NEC Packaged FETs

The NEC Packaged FETs include 17 components, representing individual parts. The naming convention for these components is *pf_nec_<part number>_<extraction date>*.

Five of the parts are also directly selectable from the library group by their EIAJ cross-referenced part designation. The underlying models are identical. These parts are paired with their CEL part designated equivalents in the table.

[Table A-5. NEC Packaged FETs](#)

Okidata Packaged FETs

The Okidata Packaged FETs include a single component installed in the library group. The naming convention is *pf_oki_<part number>_<extraction date>*.

[Table A-6. Okidata Packaged FETs](#)

Siemens Packaged FETs

The Siemens Packaged FETs include 5 components, representing individual parts. The naming convention for these components is *pf_sms_<part number>_<extraction date>*.

[Table A-7. Siemens Packaged FETs](#)

Toshiba Packaged FETs

The Toshiba Packaged FETs include 5 components, representing individual parts. The naming convention for these components is *pf_tsb_<part number>_<extraction date>*.

Table A-8. Toshiba Packaged FETs

Packaged Power MOSFETs

The Packaged Power MOSFET consists of nonlinear models representing 17 parts from 3 manufacturers. The MOSFETs available for selection from the Schematic window are:

- Motorola MOSFETs
- M/A-com MOSFETs
- PolyFet MOSFETs

The library components are listed in tables in the following sections. The tables are organized by manufacturer library group and the individual items provided in each group are listed by component name along with relevant physical and electrical characteristics.

The tabulated Physical Specifications include a package designation and terminal type designation of 3, 4, or 5.

Maximum Electrical Specifications include:

P_{diss} : maximum dissipated power, mWVbr:

breakdown voltage, V

Typical Electrical Specifications include:

V_t : threshold gate voltage, V

V_{gs} : gate voltage, V, for peak G_m

V_{ds} : drain voltage, V, for peak G_m

I_{ds} : drain current, V, for peak G_m

$G_{m,peak}$: peak G_m , mS, simulated at specified V_{gs} , V_{ds}

Motorola MOSFETs

The Motorola MOSFETs include 4 components, representing individual parts. The naming convention for these components is *mf_mot__<part number>_<extraction date>*.

[Table B-1. Motorola MOSFETs](#)

M/A-Com MOSFETs

The M/A-Com MOSFETs include 9 components, representing individual parts. The naming convention for these components is *mf_phi__<part number>_<extraction date>*.

[Table B-2. M/A-Com MOSFETs](#)

PolyFet MOSFETs

The PolyFet MOSFETs include 4 components, representing individual parts. The naming convention for these components is *mf_ply__<part number>_<extraction date>*.

[Table B-3. PolyFet MOSFETs](#)

Packaged BJTs

The Packaged BJTs consist of nonlinear models representing 661 parts from 9 manufacturers. The BJTs available for selection from the Schematic window are:

- Bipolarics Packaged BJTs
- Hitachi Packaged BJTs
- Agilent Technologies Packaged BJTs
- Motorola Packaged BJTs
- NEC Packaged BJTs
- Panasonic Packaged BJTs
- Philips Packaged BJTs
- Siemens Packaged BJTs

- Toshiba Packaged BJTs

The library components are listed in tables in the following sections. The tables are organized by manufacturer library group and the individual components provided in each group are listed by component name along with relevant physical and electrical characteristics.

The tabulated Physical Specifications include:

Package: Package type

Type: 3- or 4-terminal

Polarity: NPN or PNP

Maximum Electrical Specifications include:

Pdiss: Maximum dissipated power, mW

Vce: Maximum collector-emitter voltage, V

Ic: Maximum collector current, mA

Typical Electrical Specifications include:

Vce: Typical collector operating voltage, V

Ic: Typical collector operating current, mA

Hfe: DC current gain at typical operating bias

Ft: Frequency at which Hfe is 3 dB below maximum value, GHz

Agilent Technologies Packaged BJTs

The Agilent Technologies Packaged BJTs include 34 components, representing individual parts. The naming convention for these components is *pb_hpa_<part number>_<extraction date>*.

[Table C-1. Agilent Technologies Packaged BJTs](#)

Bipolarics Packaged BJTs

The Bipolarics Packaged BJTs include 9 components, representing individual parts. The naming convention for these components is *pb_bit_<part number>_<extraction date>*.

Table C-2. Bipolarics Packaged BJTs

Hitachi Packaged BJTs

The Hitachi Packaged BJTs include 3 components, representing individual parts. The naming convention for these components is *pb_hit_<part number>_<extraction date>*.

Table C-3. Hitachi Packaged BJTs

Motorola Packaged BJTs

The Motorola Packaged BJTs include 97 components, representing individual parts. The naming convention for these components is *pb_mot_<part number>_<extraction date>*.

Table C-4. Motorola Packaged BJTs

NEC Packaged BJTs

The NEC Packaged BJTs include 143 components, representing individual parts. Of these, 66 components represent devices that have both CEL and EIAJ part designations. Two components represent CEL parts with no corresponding EIAJ designation. One component represents an EIAJ-numbered part with no CEL designation. The naming convention for these components is *pb_nec_<part number>_<extraction date>*.

CEL part numbers with an E suffix designate a common-emitter package configuration, as opposed to common-base (B suffix) versions of the same transistor available from CEL under the same part number.

Table C-5. NEC Packaged BJTs

Panasonic Packaged BJTs

The Panasonic Packaged BJTs include 13 components, representing individual parts. The naming convention for these components is *pb_pan_<part number>_<extraction date>*.

Table C-6. Panasonic Packaged BJTs

Philips Packaged BJTs

The Philips Packaged BJTs include 66 components, representing individual parts. The naming convention for these components is *pb_phl_<part number>_<extraction date>*.

[Table D-1. Philips Packaged BJTs](#)

Siemens Packaged BJTs

The Siemens Packaged BJTs include 283 components, representing individual parts. The naming convention for these components is *pb_sms_<part number>_<extraction date>*.

[Table D-2. Siemens Packaged BJTs](#)

Toshiba Packaged BJTs

The Toshiba Packaged BJTs include 13 components, representing individual parts. The naming convention for these components is *pb_tsb_<part number>_<extraction date>*.

[Table D-3. Toshiba Packaged BJTs](#)

Appendix A: RF Transistor Library Data

Table A-1. Fujitsu Packaged FETs

Component Name	Physical Specification						Maximum Electrical Specification		Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V	
pf_fuj_FLL101ME_19931021	FLL101ME	ME	3	eefet3	na	na	4160	19	10	370.89	-2.71	
pf_fuj_FLL351ME_19931021	FLL351ME	ME	3	eefet3	na	na	15000	19	10	1279.64	-2.21	
na = not available												

Table A-2. Agilent Technologies Packaged FETs

Component Name	Physical Specification						Maximum Electrical Specification		Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V	
pf_hp_ATF13136_19931014	ATF13136	ATF36	4	eefet3	250	0.3	225	7	4	46.37	-1.4	
pf_hp_ATF13284_19931014	ATF13284	ATF84	4	eefet3	250	0.3	225	7	4	29.47	-1.44	
pf_hp_ATF13786_19931015	ATF13786	ATF86	4	eefet3	250	0.3	225	6	3	60.66	-1.55	
pf_hp_ATF21170_19931015	ATF21170	ATF70	4	eefet3	750	0.3	600	9	5	97.42	-1.24	
pf_hp_ATF26884_19931015	ATF26884	ATF84	4	eefet3	250	0.3	275	7.5	5	41.28	-1.88	

Table A-3. Microwave Technology Packaged FETs

Component Name	Physical Specification						Maximum Electrical Specification		Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V	
pf_mwt_MWT_1171HP_19931020	MWT-1171HP	MWT71	3	eefet3	2400	0.3	5000	15	6	630.62	-2.45	
pf_mwt_MWT_170_19931015	MWT-170	MWT70	4	eefet3	630	0.3	1200	8	6	163.96	-2.61	
pf_mwt_MWT_270_19931015	MWT-270	MWT70	4	eefet3	630	0.3	1500	11	6	156.46	-2.45	
pf_mwt_MWT_370HP_19931015	MWT-370HP	MWT70	4	eefet3	300	0.3	750	11	6	83.58	-2.63	
pf_mwt_MWT_470LN_19931015	MWT-470LN	MWT70	4	eefet3	180	0.3	360	8	4.5	38.43	-1.76	
pf_mwt_MWT_671HP_19931015	MWT-671HP	MWT71	3	eefet3	900	0.3	2250	15	6	273.37	-3.74	

Table A-3. Microwave Technology Packaged FETs (continued)

Component Name	Physical Specification						Maximum Electrical Specification		Typical Electrical Specification		
	Part Number	Package	Term. Type	Model	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V
pf_mwt_MWT_770HP_19931015	MWT-770HP	MWT70	4	eefet3	250	0.3	600	8.5	4	80.18	-2.13
pf_mwt_MWT_770LN_19931020	MWT-770LN	MWT70	4	eefet3	250	0.3	600	7	4	61.81	-1.98
pf_mwt_MWT_773HP_19931015	MWT-773HP	MWT73	3	eefet3	250	0.3	600	15	6	81.66	-2.06
pf_mwt_MWT_871HP_19931015	MWT-871HP	MWT71	3	eefet3	1200	0.3	3000	15	6	280.63	-3.07
pf_mwt_MWT_971_19931020	MWT-971	MWT71	3	eefet3	750	0.3	1750	11	6	198.63	-2.68

Table A-4. Mitsubishi Packaged FETs

Component Name	Physical Specification						Maximum Electrical Specification		Typical Electrical Specification		
	Part Number	Package	Term. Type	Model	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V
pf_mit_MGF0904A_19931015	MGF0904A	GF7	3	eefet3	na	na	3750	18	8	542.76	-3.31
pf_mit_MGF0905A_19931019	MGF0905A	GF7	3	eefet3	na	na	21500	17	8	2299.21	-2.52
pf_mit_MGF0906A_19931019	MGF0906A	GF21	3	eefet3	na	na	23000	21	10	2786.99	-4.15
pf_mit_MGF1302_19921216	MGF1302	GD4	4	eefet3	400	0.8	360	5	3	45.51	-0.97
pf_mit_MGF1303B_19921216	MGF1303B	GD4	4	eefet3	300	0.5	240	5	3	61.62	-1.63
pf_mit_MGF1304A_19921216	MGF1304A	GD4	4	eefet3	300	0.5	200	5	3	24.92	-0.71
pf_mit_MGF1305_19921216	MGF1305	GD4	4	eefet3	300	0.4	200	5	3	36.52	-1.08
pf_mit_MGF1402_19921216	MGF1402	GD9	4	eefet3	400	0.8	360	5	3	64.83	-1.35
pf_mit_MGF1403_19921216	MGF1403	GD9	4	eefet3	300	0.5	240	5	3	55.78	-1.24
pf_mit_MGF1412_19931022	MGF1412	GD9	4	eefet3	400	0.7	360	5	3	81.65	-1.52
pf_mit_MGF1423_19931015	MGF1423	GD9	4	eefet3	300	0.5	240	6	3	68.16	-1.91
pf_mit_MGF1425_19921216	MGF1425	GD9	4	eefet3	250	0.4	200	5	3	39.81	-1.09
pf_mit_MGF1801_19931015	MGF1801	GD11	4	eefet3	800	0.8	1200	11	3	212.83	-2.73
pf_mit_MGF1902B_19921216	MGF1902B	GD7	4	eefet3	400	0.8	360	15	8	49.47	-1.12
pf_mit_MGF1903B_19931018	MGF1903B	GD7	4	eefet3	300	0.5	240	15	8	40.73	-1.4
pf_mit_MGF2148_19931019	MGF2148	GF4	4	eefet3	750	0.6	10000	17	3	1290.24	-3.83
pf_mit_MGF2407A_19931018	MGF2407A	GF1	3	eefet3	750	0.7	1500	19	3	178.68	-3.06
pf_mit_MGF2415A_19931015	MGF2415A	GF1	3	eefet3	1500	0.6	2500	19	3	353.51	-3.17
pf_mit_MGF2430A_19931015	MGF2430A	GF1	3	eefet3	3000	0.6	5000	19	3	601.86	-2.54
na = not available											

Table A-5. NEC Packaged FETs

Component Name	Physical Specification							Maximum Electrical Specification		Typical Electrical Specification	
	Part Number	Package	Term. Type	Mode I	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V
pf_nec_2SK354A_19921216	2SK354A	NEC89	4	eefet3	400	1	300	5	3	46.48	-1.27
pf_nec_2SK406_19931022	2SK406	NEC83	4	eefet3	300	0.5	270	5	3	60.34	-1.4
pf_nec_2SK407_19921216	2SK407	NEC84	4	eefet3	300	0.5	270	5	3	24.58	-0.77
pf_nec_2SK571_19921216	2SK571	NEC84	4	eefet3	400	1	300	5	3	68.06	-1.86
pf_nec_2SK609_19921216	2SK609	NEC84	4	eefet3	300	0.5	270	5	3	58.26	-1.43
pf_nec_NE67383_19921216	NE67383	NEC83	4	eefet3	300	0.5	270	5	3	24.58	-0.77
pf_nec_NE71083_19931022	NE71083	NEC83	4	eefet3	300	0.5	270	5	3	60.34	-1.4
pf_nec_NE71084_19921216	NE71084	NEC84	4	eefet3	300	0.5	270	5	3	58.26	-1.43
pf_nec_NE72084_19921216	NE72084	NEC84	4	eefet3	400	1	300	5	3	68.06	-1.86
pf_nec_NE72089A_19921216	NE72089A	NEC89A	4	eefet3	400	1	300	5	3	46.48	-1.27
pf_nec_NE76038_19921216	NE76038	NEC38	4	eefet3	280	0.3	240	7.5	3	27.38	-0.9
pf_nec_NE76084_19921216	NE76084	NEC84	4	eefet3	280	0.3	240	7.5	3	25.5	-0.8
pf_nec_NE76184A_19921216	NE76184A	NEC84A	4	eefet3	na	na	300	4.5	3	68.24	-1.36
pf_nec_NE900075_19931018	NE900075	NEC75	3	eefet3	400	0.5	800	15	8	102.64	-3.28
pf_nec_NE900089A_19931018	NE900089A	NEC89A	4	eefet3	400	0.5	800	13	8	128.22	-3.79
pf_nec_NE900175_19931018	NE900175	NEC75	3	eefet3	750	0.5	1500	18	8	230.64	-3.5
pf_nec_NE900275_19931018	NE900275	NEC75	3	eefet3	1500	0.5	3000	18	8	385.32	-3.1

Table A-6. Okidata Packaged FETs

Component Name	Physical Specification							Maximum Electrical Specification		Typical Electrical Specification	
	Part Number	Package	Term. Type	Mode I	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V
pf_oki_KGF1305_19931020	KGF1305	OKI_1	3	eefet3	na	na	3000	9.8	5.4	1469.99	-3.16
na = not available											

Table A-7. Siemens Packaged FETs

Component Name	Physical Specification							Maximum Electrical Specification		Typical Electrical Specification		
	Part Number	Package	Term. Type	Model	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V	
pf_sms_CFY19_18_19921216	CFY19-18	CERECXF	4	eefet3	na	na	300	8	3.5	65.39	-3.05	
pf_sms_CFY25_17_19921216	CFY25-17	CERECXF	4	eefet3	na	na	250	6.5	3	34.58	-1.25	
pf_sms_CFY30_19931018	CFY30	SOT143	3	eefet3	na	na	250	7	4	37.64	-2.86	
pf_sms_CFY35_20_19931018	CFY35-20	MW4	4	eefet3	na	na	180	4	2.5	15.39	-0.86	
pf_sms_CFY35_23_19931018	CFY35-23	MW4	4	eefet3	na	na	180	7	2.5	21.01	-1.03	
na = not available												

Table A-8. Toshiba Packaged FETs

Component Name	Physical Specification							Maximum Electrical Specification		Typical Electrical Specification		
	Part Number	Package	Term. Type	Model	Gw μm	Gi μm	Pdiss mW	Vbr V	Vds V	Idss mA	Vt V	
pf_tsb_S8834_19931018	S8834	2D3H1A	3	eefet3	na	na	1500	19	10	89.05	-3.82	
pf_tsb_S8835B_19931018	S8835	2D3H1A	3	eefet3	na	na	2500	17	10	193.5	-4.07	
pf_tsb_S8835_19931018	S8835B	2D3H1A	3	eefet3	na	na	2500	17	10	193.5	-4.07	
pf_tsb_S8836A_19931018	S8836A	2D7C1A	3	eefet3	na	na	5000	21	10	569.74	-4.58	
pf_tsb_S8837A_19931021	S8837A	2D7C1A	3	eefet3	na	na	7500	19	10	1090.19	-3.79	
na = not available												

Appendix B: RF Transistor Library Data

Table B-1. Motorola MOSFETs

Component Name	Physical Specification				Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Pdiss W	Vbr V	Vt V	Vgs V	Vds V	Ids mA	Gm, peak mS
mf_mot_MRF134_19930106	MRF134	C211D07	4	eemos1	17.5	65	3.14	6.7	28	351.8	143
mf_mot_MRF136Y_19930106	MRF136Y	C319BD01	5	eemos1	100	65	2.88	6.2	28	962	424.3
mf_mot_MRF136_19930106	MRF136	C211D07	3	eemos1	55	65	2.88	6.2	28	962	424.3
mf_mot_MRF161_19930106	MRF161	C244D04	3	eemos1	17.5	65	3.1	6.82	28	368.8	143.8

Table B-2. M/A-Com MOSFETs

Component Name	Physical Specification				Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Pdiss W	Vbr V	Vt V	Vgs V	Vds V	Ids mA	Gm, peak mS
mf_phi_DU2805S_19930106	DU2805S	SFLANGE	4	eemos1	15.8	65	4.8	7.44	28	268.2	145.5
mf_phi_DU2810S_19930106	DU2810S	SFLANGE	3	eemos1	35	65	4.12	6.72	28	582.2	325
mf_phi_LF2802A_19930106	LF2802A	AFLANGE	3	eemos1	8	65	4.06	7.22	28	188.3	84.7
mf_phi_LF2805A_19930106	LF2805A	AFLANGE	3	eemos1	14.4	65	4.16	7.04	28	293.2	146.3
mf_phi_LF2810A_19930106	LF2810A	AFLANGE	3	eemos1	26.5	65	4.14	6.98	28	555.5	284.7
mf_phi_UF2805B_19930106	UF2805B	BFLANGE	3	eemos1	14.4	65	3.94	6.72	28	296.1	153
mf_phi_UF2810P_19930106	UF2810P	PFLANGE	3	eemos1	26.9	65	4.24	7	28	281.3	145.8
mf_phi_UF2815B_19930106	UF2815B	BFLANGE	3	eemos1	48.6	65	3.5	6.42	28	874.4	433.9
mf_phi_UF2820P_19930106	UF2820P	PFLANGE	4	eemos1	53	65	4.58	7	28	448.8	267.6

Table B-3. PolyFet MOSFETs

Component Name	Physical Specification				Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Pdiss W	Vbr V	Vt V	Vgs V	Vds V	Ids mA	Gm, peak mS
mf_ply_F2001_19930106	F2001	AP	3	eemos 1	20	70	1.98	4.26	28	383.3	239.7
mf_ply_F2002_19930106	F2002	AP	3	eemos 1	30	70	0.9	3.98	28	680.9	321.8
mf_ply_F2003_19930106	F2003	AQ	5	eemos 1	30	70	1.98	4.26	28	383.3	239.7
mf_ply_F2004_19930106	F2004	AK	5	eemos 1	60	70	0.9	3.98	28	680.9	321.8

Appendix C: RF Transistor Library Data

Table C-1. Agilent Technologies Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Packag e	Term. Type	Model	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_hp_AT00510_19921101	AT00510	NEC07	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT00511_19931202	AT00511	SOT143	4	eebjt2	NPN	230	12	50	8	15	150	7
pb_hp_AT00535_19921101	AT00535	AVNK35	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT00570_19921101	AT00570	AVNK70	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT01610_19921101	AT01610	NEC07	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT01635_19921101	AT01635	AVNK35	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT01670_19921101	AT01670	AVNK70	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT41410_19921101	AT41410	NEC07	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT41411_19921101	AT41411	SOT143	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT41411_19931124	AT41411	SOT143	4	eebjt2	NPN	225	12	50	8	20	150	7
pb_hp_AT41435_19911003	AT41435	AVNK35	4	bjt_gp	NPN	500	12	50	8	20	150	8
pb_hp_AT41435_19921101	AT41435	AVNK35	4	eebjt2	NPN	500	12	60	8	20	150	8
pb_hp_AT41470_19921101	AT41470	AVNK70	4	bjt_gp	NPN	500	12	60	8	25	150	8
pb_hp_AT41470_19931202	AT41470	AVNK70	na	eebjt2	NPN	500	12	60	8	25	150	8
pb_hp_AT41485_19921101	AT41485	AVNK85	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT41486_19921101	AT41486	AVNK86	4	bjt_gp	NPN	500	12	60	8	25	150	8
pb_hp_AT41486_19931202	AT41486	AVNK86	4	eebjt2	NPN	500	12	60	8	25	150	8
pb_hp_AT41511_19931202	AT41511	SOT143	4	eebjt2	NPN	225	12	50	8	25	150	8
pb_hp_AT41586_19931202	AT41586	AVNK86	4	eebjt2	NPN	500	12	60	8	25	150	8
pb_hp_AT42010_19921101	AT42010	NEC07	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT42035_19911003	AT42035	AVNK35	4	bjt_gp	NPN	500	12	60	8	25	150	8
pb_hp_AT42035_19921101	AT42035	AVNK35	4	eebjt2	NPN	500	12	60	8	25	150	8
pb_hp_AT42070_19921101	AT42070	AVNK70	4	bjt_gp	NPN	600	12	80	8	35	150	8
pb_hp_AT42070_19931202	AT42070	AVNK70	4	eebjt2	NPN	600	12	80	8	35	150	8
pb_hp_AT42085_19911003	AT42085	AVNK85	4	bjt_gp	NPN	600	12	80	8	35	150	8
pb_hp_AT42085_19921101	AT42085	AVNK85	4	eebjt2	NPN	600	12	80	8	35	150	8
pb_hp_AT42086_19911008	AT42086	AVNK86	4	bjt_gp	NPN	500	12	80	8	35	150	8

Table C-1. Agilent Technologies Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Polarity	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_hp_AT42086_19921101	AT42086	AVNK86	4	eebjt2	NPN	500	12	80	8	35	150	8
pb_hp_AT60510_19921101	AT60510	NEC07	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT60535_19911003	AT60535	AVNK35	4	bjt_gp	NPN	500	12	80	8	35	150	8
pb_hp_AT60535_19921101	AT60535	AVNK35	4	eebjt2	NPN	500	12	80	8	35	150	8
pb_hp_AT60570_19921101	AT60570	AVNK70	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT60585_19921101	AT60585	AVNK85	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_hp_AT60586_19921101	AT60586	AVNK86	na	bjt_gp	NPN	na	na	na	na	na	na	na
na = not available												

Table C-2. Bipolarics Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Polarity	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_bit_B12V105d02_19921215	B12V105-02	SOT143	4	eebjt2	NPN	na	12	40	8	10	100	10
pb_bit_B12V105d05_19921215	B12V105-05	MICROX	4	eebjt2	NPN	na	12	40	8	10	100	10
pb_bit_B12V114d02_19931202	B12V114-02	SOT143	4	eebjt2	NPN	na	12	60	8	25	150	10
pb_bit_B12V114d05_19921215	B12V114-05	MICROX	4	eebjt2	NPN	na	12	60	8	25	150	10
pb_bit_B15V140d09_19931202	B15V140-09	SOT223	4	eebjt2	NPN	na	15	120	5	70	100	8
pb_bit_B15V140d10_19921215	B15V140-10	145MILXP	4	eebjt2	NPN	na	15	120	8	60	100	8
pb_bit_BT114d05_19911003	BT114-05	MICROX	4	eebjt2	NPN	na	12	60	8	25	150	10
pb_bit_BT114d10_19911001	BT114-10	145ML4PK	4	eebjt2	NPN	na	12	60	8	25	150	10
pb_bit_BT114d12_19911001	BT114-12	SOT23	3	eebjt2	NPN	na	12	60	8	25	150	10

na = not available

Table C-3. Hitachi Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Polarity	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_hit_2SC2712_19921217	2SC2712	SOT23	3	eebjt2	NPN	150	50	150	10	1	70-700	0.08
pb_hit_2SC2734_19921213	2SC2734	SOT23	3	eebjt2	NPN	150	11	50	10	10	90	3.5
pb_hit_2SC3793_19921215	2SC3793	SOT23	3	eebjt2	NPN	150	20	50	10	10	80	3.5

Table C-4. Motorola Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Model	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_mot_2N2857_19911017	2N2857	TO206AF	3	eebjt2	NPN	300	15	40	6	5	64	1.6
pb_mot_2N3903_19921211	2N3903	TO92	3	eebjt2	NPN	1500	40	200	20	10	50-200	0.25
pb_mot_2N3904_19921211	2N3904	TO92	na	eebjt2	NPN	1500	40	200	20	10	100-400	0.3
pb_mot_2N5179_19921211	2N5179	TO72	3	eebjt2	NPN	300	12	50	6	5	25-300	0.9
pb_mot_2N6603_19921101	2N6603	NEC07	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_2N6604_19921101	2N6604	NEC07	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_BF430L_19921101	BF430L	SOT143	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_BF431L_19921101	BF431L	SOT143V7_3	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_BFR90_19911003	BFR90	MACROT	3	eebjt2	NPN	180	15	30	10	14	25-250	5
pb_mot_BFR91_19911003	BFR91	MACROT	3	eebjt2	NPN	180	12	35	5	30	25-250	5
pb_mot_BFR92_19961218	BFR92	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_BFR93_19961218	BFR93	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_BFR96_19911003	BFR96	MACROT	3	eebjt2	NPN	500	15	100	10	50	30-200	4.5
pb_mot_BFS17_19961218	BFS17	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_BFW92A_19911003	BFW92A	MACROT	3	eebjt2	NPN	180	15	35	10	10	50	4.5
pb_mot_BFY90_19911017	BFY90	C2003	3	eebjt2	NPN	200	15	50	5	25	20-125	1.3
pb_mot_MM4049_19931122	MM4049	C2003	3	eebjt2	PNP	200	-10	-30	-5	-20	20-200	4

Table C-4. Motorola Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Model	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_mot_MMBR5031_19961218	MMBR5031	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR521_19961218	MMBR521	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_mot_MMBR571L_19921101	MMBR571L	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR571_19961218	MMBR571	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR901L_19911003	MMBR901L	SOT23	na	eebjt2	NPN	350	15	30	6	5	30-200	na
pb_mot_MMBR901L_19921101	MMBR901L	SOT23	na	bjt_gp	NPN	350	15	30	6	5	30-200	na
pb_mot_MMBR901_19961218	MMBR901	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR911_19961218	MMBR911	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR920L_19911017	MMBR920L	SOT23	na	eebjt2	NPN	350	15	35	10	14	25-250	4.5
pb_mot_MMBR920_19961218	MMBR920	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR930L_19921101	MMBR930L	SOT23	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR930_19911003	MMBR930	SOT23	3	eebjt2	NPN	350	12	35	5	30	25-250	na
pb_mot_MMBR930_19921101	MMBR930	SOT23	na	bjt_gp	NPN	350	12	35	5	30	25-250	na
pb_mot_MMBR931_19961218	MMBR931	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR941L_19911003	MMBR941L	SOT23	na	bjt_gp	NPN	400	10	50	6	15	50-200	8
pb_mot_MMBR941L_19921101	MMBR941L	SOT23	na	eebjt2	NPN	400	10	50	6	15	50-200	8
pb_mot_MMBR941_19961020	MMBR941	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MMBR951L_19911007	MMBR951L	SOT23	na	eebjt2	NPN	580	10	100	8	30	50-200	8

Table C-4. Motorola Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Model	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_mot_MMBR951L_19921101	MMBR951L	SOT23	na	bjt_gp	NPN	580	10	100	8	30	50-200	8
pb_mot_MMBR951_19961218	MMBR951	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MPS536_19931122	MPS536	TO226AA	3	eebjt2	PNP	625	-10	-30	-5	-20	20-200	4.5
pb_mot_MPS571_19911009	MPS571	TO226AA	3	eebjt2	NPN	625	10	80	5	50	50-300	6
pb_mot_MPS901_19911003	MPS901	TO206AA	3	eebjt2	NPN	300	15	30	10	15	80	4.5
pb_mot_MPS911_19911009	MPS911	TO206AA	3	eebjt2	NPN	625	12	60	10	30	30-200	7
pb_mot_MPS918_19911018	MPS918	TO92	3	eebjt2	NPN	625	15	50	10	8	20-200	0.6
pb_mot_MRF2369_19911003	MRF2369	MACROX	4	eebjt2	NPN	750	15	70	10	40	50-300	6
pb_mot_MRF237_19931202	MRF237	TO39	3	eebjt2	NPN	8000	18	1000	5	250	5	na
pb_mot_MRF501_19921211	MRF501	C2003	3	eebjt2	NPN	200	15	50	6	5	30-250	1
pb_mot_MRF5211L_19921101	MRF5211L	SOT143	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_mot_MRF5211_19961023	MRF5211	SOT143	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_mot_MRF522_19921101	MRF522	NEC07	4	bjt_gp	PNP	na	na	na	na	na	na	na
pb_mot_MRF524_19931123	MRF524	C2003	3	eebjt2	PNP	200	-10	-50	-8	-50	25-125	4.2
pb_mot_MRF536_19931123	MRF536	MACROX	4	eebjt2	PNP	300	-10	-30	-5	-20	20-200	5
pb_mot_MRF553_19911007	MRF553	C317D02	4	eebjt2	NPN	3000	16	500	5	250	30-200	na
pb_mot_MRF555_19911007	MRF555	C317D02	4	eebjt2	NPN	3000	16	400	5	100	90	na
pb_mot_MRF557_19911007	MRF557	C317D02	4	eebjt2	NPN	3000	16	400	5	100	90	na

Table C-4. Motorola Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Model	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_mot_MRF559_19911007	MRF559	MACROX	4	eebjt2	NPN	2000	16	150	10	100	90	3
pb_mot_MRF5711L_19911004	MRF5711L	SOT143	na	bjt_gp	NPN	580	10	70	8	50	50-300	8
pb_mot_MRF5711L_19921101	MRF5711L	SOT143	na	eebjt2	NPN	580	10	70	8	50	50-300	8
pb_mot_MRF5711_19961023	MRF5711	SOT143	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF571_19911007	MRF571	SOT143	na	eebjt2	NPN	1000	10	70	8	50	50-300	8
pb_mot_MRF572_19911007	MRF572	NEC07	na	bjt_gp	NPN	750	10	70	8	50	50-300	8
pb_mot_MRF572_19921101	MRF572	NEC07	4	eebjt2	NPN	750	10	70	8	50	50-300	8
pb_mot_MRF580A_19911008	MRF580A	MACROT	3	eebjt2	NPN	1200	15	200	10	75	90-250	5
pb_mot_MRF580_19911008	MRF580	MACROT	3	eebjt2	NPN	1200	18	200	10	75	50-200	5
pb_mot_MRF5812_19961023	MRF5812	C751D03	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF581A_19911008	MRF581A	MACROX	4	eebjt2	NPN	1200	15	200	10	75	90-250	5
pb_mot_MRF581_19911008	MRF581	MACROX	4	eebjt2	NPN	1200	18	200	10	75	50-200	5
pb_mot_MRF586_19911008	MRF586	C7904	3	eebjt2	NPN	2500	17	200	15	90	50-200	4.5
pb_mot_MRF607_19931202	MRF607	C7904	3	eebjt2	NPN	3500	160	330	5	50	150	na
pb_mot_MRF8372_19911008	MRF8372	C751D03	8	eebjt2	NPN	na	na	na	na	na	na	na
pb_mot_MRF8372_19931202	MRF8372	C751D03	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF8372_19961023	MRF8372	C751D03	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF837_19911008	MRF837	C751D03	8	eebjt2	NPN	2500	16	200	10	50	90	na

Table C-4. Motorola Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Model	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_mot_MRF9011L_19921101	MRF9011L	SOT143	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF9011_19961023	MRF9011	SOT143	na	eebjt2	NPN	na	na	na	na	na	na	na
pb_mot_MRF901_19911021	MRF901	SOT143	na	bjt_gp	NPN	375	15	30	10	15	80	4.5
pb_mot_MRF904_19911009	MRF904	C2003	3	eebjt2	NPN	200	15	30	10	15	30-200	4
pb_mot_MRF911_19911008	MRF911	MACROX	4	eebjt2	NPN	400	12	40	10	30	30-200	5
pb_mot_MRF914_19911009	MRF914	C2003	3	eebjt2	NPN	200	12	40	10	20	30-200	4.5
pb_mot_MRF917_19961218	MRF917	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF927_19961218	MRF927	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF931_19911011	MRF931	MACROX	4	eebjt2	NPN	50	5	5	1	1	30-150	3
pb_mot_MRF9331_19961023	MRF9331	SOT143	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF9411L_19921101	MRF9411L	SOT143	na	bjt_gp	NPN	200	10	50	6	15	50-200	8
pb_mot_MRF9411L_19931202	MRF9411L	SOT143	na	eebjt2	NPN	200	10	50	6	15	50-200	8
pb_mot_MRF9411_19961025	MRF9411	SOT143	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF942_19911009	MRF942	NEC07	4	bjt_gp	NPN	300	10	40	6	15	50-200	8
pb_mot_MRF942_19921101	MRF942	NEC07	4	eebjt2	NPN	300	10	40	6	15	50-200	8
pb_mot_MRF947_19921213	MRF947	SOT323	3	eebjt2	NPN	175	10	50	6	5	50-200	8
pb_mot_MRF947_19961030	MRF947	SOT323	na	bjt_gp	NPN	175	10	50	6	5	50-200	8
pb_mot_MRF949_19961023	MRF949	SC-90	na	bjt_gp	NPN	na	na	na	na	na	na	na

Table C-4. Motorola Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Model	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_mot_MRF9511L_19921101	MRF9511L	SOT143	na	eebjt2	NPN	na	na	na	na	na	na	na
pb_mot_MRF9511_19911017	MRF9511	SOT143	na	bjt_gp	NPN	500	10	100	8	30	50-200	8
pb_mot_MRF9511_19961023	MRF9511	SOT143	na	bjt_gp	NPN	500	10	100	8	30	50-200	8
pb_mot_MRF951_19911008	MRF951	SOT143	na	eebjt2	NPN	1000	10	100	8	30	50-200	8
pb_mot_MRF952_19921101	MRF952	NEC07	4	bjt_gp	NPN	na	na	na	na	na	na	na
pb_mot_MRF957_19921213	MRF957	SOT323	na	eebjt2	NPN	175	10	100	8	30	50-200	8
pb_mot_MRF961_19911008	MRF961	MACROX	4	eebjt2	NPN	500	15	100	10	50	30-200	4.5
pb_mot_MRF962_19911009	MRF962	C30301	4	eebjt2	NPN	750	15	100	10	50	30-200	4.5
na = not available												

Table C-5. NEC Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_nec_2SC1252_19911016	2SC1252	NEC14	3	eebjt2	NPN	5000	25	300	15	70	80	1.7
pb_nec_2SC1253_19911016	2SC1253	NEC14	3	eebjt2	NPN	5000	25	300	15	50	100	2
pb_nec_2SC1365_19911016	2SC1365	NEC13	3	eebjt2	NPN	5000	25	300	15	70	80	1.7
pb_nec_2SC1949_19911002	2SC1949	NEC03	4	eebjt2	NPN	580	18	100	10	50	100	3.5
pb_nec_2SC1988_19911007	2SC1988	NEC12	3	eebjt2	NPN	700	12	70	10	20	70	4.5
pb_nec_2SC2148_19921101	2SC2148	MICROX	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC2149_19921101	2SC2149	MICROX	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC2218_19911007	2SC2218	NEC08	4	eebjt2	NPN	350	10	80	8	20	100	8
pb_nec_2SC2272_19911007	2SC2272	NEC08	4	eebjt2	NPN	260	10	35	6	5	100	10
pb_nec_2SC2351_19921101	2SC2351	NEC33	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC2351dL_19911002	2SC2351-L	NEC33	3	eebjt2	NPN	150	12	70	10	20	70	4.5
pb_nec_2SC2367_19911007	2SC2367	MICROX	na	bjt_gp	NPN	580	10	80	8	20	100	8
pb_nec_2SC2367_19921101	2SC2367	MICROX	4	eebjt2	NPN	580	10	80	8	20	100	8
pb_nec_2SC2570A_19911009	2SC2570A	NEC32	3	eebjt2	NPN	250	12	70	10	20	70	4.5
pb_nec_2SC2585_19911007	2SC2585	NEC35	4	eebjt2	NPN	400	12	65	8	20	100	8.5
pb_nec_2SC2757_19921215	2SC2757	SOT23	3	eebjt2	NPN	150	20	50	10	5	120	1.1
pb_nec_2SC2759_19921101	2SC2759	NEC33	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC2759dL_19921213	2SC2759-L	NEC33	3	eebjt2	NPN	200	14	50	10	10	100	2
pb_nec_2SC3355_19931201	2SC3355	NEC32	3	eebjt2	NPN	600	12	100	10	20	120	6.5
pb_nec_2SC3356_19921101	2SC3356	SOT23	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC3356dL_19921213	2SC3356-L	SOT23	3	eebjt2	NPN	200	12	100	10	20	120	7
pb_nec_2SC3357_19921216	2SC3357	SOT89	3	eebjt2	NPN	2000	12	100	10	20	120	6.5
pb_nec_2SC3583_19921101	2SC3583	NEC33	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC3583dL_19911007	2SC3583-L	NEC33	3	eebjt2	NPN	200	10	65	8	20	100	9
pb_nec_2SC3585_19921101	2SC3585	NEC33	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC3585dL_19911001	2SC3585-L	NEC33	3	eebjt2	NPN	200	10	35	6	10	100	10
pb_nec_2SC3587_19921101	2SC3587	NEC35	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC3603_19921101	2SC3603	NEC35	na	bjt_gp	NPN	580	12	100	10	20	120	7
pb_nec_2SC3603_19921210	2SC3603	NEC35	4	eebjt2	NPN	580	12	100	10	20	120	7

Table C-5. NEC Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_nec_2SC3604_19911002	2SC3604	NEC35	na	bjt_gp	NPN	295	10	65	8	20	100	9
pb_nec_2SC3604_19921101	2SC3604	NEC35	4	eebjt2	NPN	295	10	65	8	20	100	9
pb_nec_2SC4090_19921101	2SC4090	NEC39	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC4091_19921101	2SC4091	NEC39	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_2SC4092_19911007	2SC4092	NEC39	na	bjt_gp	NPN	200	12	70	10	20	70	4.5
pb_nec_2SC4092_19921101	2SC4092	NEC39	4	eebjt2	NPN	200	12	70	10	20	70	4.5
pb_nec_2SC4093_19911002	2SC4093	NEC39	4	eebjt2	NPN	200	12	100	10	20	120	9
pb_nec_2SC4094_19911002	2SC4094	NEC39	4	eebjt2	NPN	200	10	65	8	20	100	9
pb_nec_2SC4095_19911007	2SC4095	NEC39	4	eebjt2	NPN	200	10	35	6	10	100	10
pb_nec_2SC4225_19911017	2SC4225	NEC30	3	eebjt2	NPN	150	12	70	10	20	100	0.5
pb_nec_2SC4226_19921213	2SC4226	NEC30	3	eebjt2	NPN	150	12	100	3	7	110	4.5
pb_nec_2SC4227_19921215	2SC4227	NEC30	3	eebjt2	NPN	150	10	65	3	7	40-240	7
pb_nec_2SC4228_19921211	2SC4228	NEC30	3	eebjt2	NPN	150	10	35	3	5	50-250	8.5
pb_nec_2SC5006_19931201	2SC5006	NEC19	3	eebjt2	NPN	100	12	100	3	7	80-160	4.5
pb_nec_2SC5007_19931201	2SC5007	NEC19	3	eebjt2	NPN	100	10	65	3	7	80-160	7
pb_nec_2SC5008_19931130	2SC5008	NEC19	3	eebjt2	NPN	100	10	35	3	7	80-160	8
pb_nec_2SC5010_19931201	2SC5010	NEC19	3	eebjt2	NPN	100	6	30	3	10	65-175	12
pb_nec_2SC5012_19931201	2SC5012	NEC18	4	eebjt2	NPN	150	10	65	6	10	100	10
pb_nec_2SC5015_19931201	2SC5015	NEC18	4	eebjt2	NPN	150	6	30	3	10	110	12
pb_nec_NE02107_19921101	NE02107	NEC07	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE02112_19911007	NE02112	NEC12	3	eebjt2	NPN	700	12	70	10	20	70	4.5
pb_nec_NE02130_19911017	NE02130	NEC30	3	eebjt2	NPN	150	12	70	10	20	100	0.5
pb_nec_NE02132E_19911009	NE02132E	NEC32	3	eebjt2	NPN	250	12	70	10	20	70	4.5
pb_nec_NE02133_19911002	NE02133	NEC33	3	bjt_gp	NPN	150	12	70	10	20	70	4.5
pb_nec_NE02133_19921101	NE02133	NEC33	3	eebjt2	NPN	150	12	70	10	20	70	4.5
pb_nec_NE02135_19921101	NE02135	MICROX_3	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE02139_19911007	NE02139	NEC39	na	bjt_gp	NPN	200	12	70	10	20	70	4.5
pb_nec_NE02139_19921101	NE02139	NEC39	4	eebjt2	NPN	200	12	70	10	20	70	4.5
pb_nec_NE21908_19911007	NE21908	NEC08	4	eebjt2	NPN	350	10	80	8	20	100	8

Table C-5. NEC Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_nec_NE21935_19911007	NE21935	NEC35	na	bjt_gp	NPN	580	10	80	8	20	100	8
pb_nec_NE21935_19921101	NE21935	NEC35	4	eebjt2	NPN	580	10	80	8	20	100	8
pb_nec_NE33353E_19921213	NE33353E	NEC53E	3	eebjt2	NPN	5000	14	200	10	100	40	4.5
pb_nec_NE41603_19911002	NE41603	NEC03	4	eebjt2	NPN	580	18	100	10	50	100	3.5
pb_nec_NE41607_19911007	NE41607	NEC07	na	bjt_gp	NPN	580	18	100	10	50	100	3.5
pb_nec_NE41607_19921101	NE41607	NEC07	4	eebjt2	NPN	580	18	100	10	50	100	3.5
pb_nec_NE41635_19921101	NE41635	MICROX_3	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE46134_19950901	NE46134	NEC34	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE64408_19911007	NE64408	NEC08	4	eebjt2	NPN	260	10	35	6	5	100	10
pb_nec_NE64535_19911007	NE64535	NEC35	4	eebjt2	NPN	400	12	65	8	20	100	8.5
pb_nec_NE68018_19960501	NE68018	NEC18	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68019D_19950901	NE68019D	NEC19	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68019_19931130	NE68019	NEC19	3	eebjt2	NPN	100	10	35	3	7	80-160	8
pb_nec_NE68019_19960501	NE68019	NEC19	na	bjt_gp	NPN	100	10	35	3	7	80-160	8
pb_nec_NE68030D_19950901	NE68030D	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68030_19921211	NE68030	NEC30	3	eebjt2	NPN	150	10	35	3	5	50-250	8.5
pb_nec_NE68030_19961001	NE68030	NEC30	na	bjt_gp	NPN	150	10	35	3	5	50-250	8.5
pb_nec_NE68033_19911001	NE68033	NEC33	3	bjt_gp	NPN	200	10	35	6	10	100	10
pb_nec_NE68033_19921101	NE68033	NEC33	3	eebjt2	NPN	200	10	35	6	10	100	10
pb_nec_NE68035_19921101	NE68035	NEC35	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68035_19961101	NE68035	NEC35	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68039_19911007	NE68039	NEC39	na	bjt_gp	NPN	200	10	35	6	10	100	10
pb_nec_NE68039_19921101	NE68039	NEC39	4	eebjt2	NPN	200	10	35	6	10	100	10
pb_nec_NE68118_19931201	NE68118	NEC18	4	eebjt2	NPN	150	10	65	6	10	100	10
pb_nec_NE68118_19960501	NE68118	NEC18	na	bjt_gp	NPN	150	10	65	6	10	100	10
pb_nec_NE68119_19931201	NE68119	NEC19	3	eebjt2	NPN	100	10	65	3	7	80-160	7
pb_nec_NE68119_19960501	NE68119	NEC19	na	bjt_gp	NPN	100	10	65	3	7	80-160	7
pb_nec_NE68130_19921215	NE68130	NEC30	3	eebjt2	NPN	150	10	65	3	7	40-240	7
pb_nec_NE68130_19961001	NE68130	NEC30	na	bjt_gp	NPN	150	10	65	3	7	40-240	7

Table C-5. NEC Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_nec_NE68133_19911007	NE68133	NEC33	3	bjt_gp	NPN	200	10	65	8	20	100	9
pb_nec_NE68133_19921101	NE68133	NEC33	3	eebjt2	NPN	200	10	65	8	20	100	9
pb_nec_NE68133_19951001	NE68133	NE33	na	bjt_gp	NPN	200	10	65	8	20	100	9
pb_nec_NE68135_19911002	NE68135	NEC35	na	bjt_gp	NPN	295	10	65	8	20	100	9
pb_nec_NE68135_19921101	NE68135	NEC35	4	eebjt2	NPN	295	10	65	8	20	100	9
pb_nec_NE68135_19961101	NE68135	NEC35	na	bjt_gp	NPN	295	10	65	8	20	100	9
pb_nec_NE68139_19911002	NE68139	NEC39	na	bjt_gp	NPN	200	10	65	8	20	100	9
pb_nec_NE68139_19921101	NE68139	NEC39	4	eebjt2	NPN	200	10	65	8	20	100	9
pb_nec_NE68139_19960601	NE68139	NEC39	na	bjt_gp	NPN	200	10	65	8	20	100	9
pb_nec_NE68339_19921101	NE68339	NEC39	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68518_19931201	NE68518	NEC18	4	eebjt2	NPN	150	6	30	3	10	110	12
pb_nec_NE68518_19960501	NE68518	NEC18	na	bjt_gp	NPN	150	6	30	3	10	110	12
pb_nec_NE68519_19931201	NE68519	NEC19	3	eebjt2	NPN	100	6	30	3	10	65-175	12
pb_nec_NE68519_19960501	NE68519	NEC19	na	bjt_gp	NPN	100	6	30	3	10	65-175	12
pb_nec_NE68530D_19950901	NE68530D	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68530F_19961001	NE68530F	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68530_19961001	NE68530	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68533_19950901	NE68533	NEC33	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68539_19960601	NE68539	NE39	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68618_19960601	NE68618	NEC18_3	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68619_19960601	NE68619	NEC19	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68630_19960601	NE68630	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68718_19960501	NE68718	NEC18	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68719_19960501	NE68719	NEC19	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68730_19961001	NE68730	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68819_19960501	NE68819	NEC19	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68830_19961001	NE68830	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE68839_19961001	NE68839	NEC39	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE696M01_19970201	NE696M01	NEC01	na	bjt_gp	NPN	na	na	na	na	na	na	na

Table C-5. NEC Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_nec_NE73433_19911002	NE73433	NEC33	3	bjt_gp	NPN	200	14	50	10	10	100	2
pb_nec_NE73433_19921101	NE73433	NEC33	3	eebjt2	NPN	200	14	50	10	10	100	2
pb_nec_NE73435_19921101	NE73435	NEC35	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE73439_19921101	NE73439	NEC39	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE74014_19911016	NE74014	NEC14	3	eebjt2	NPN	5000	25	300	15	50	100	2
pb_nec_NE74113_19911016	NE74113	NEC13	3	eebjt2	NPN	5000	25	300	15	70	80	1.7
pb_nec_NE74114_19911016	NE74114	NEC14	3	eebjt2	NPN	5000	25	300	15	70	80	1.7
pb_nec_NE85618_19960601	NE85618	NEC18	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE85619_19931201	NE85619	NEC19	3	eebjt2	NPN	100	12	100	3	7	80-160	4.5
pb_nec_NE85619_19960501	NE85619	NEC19	na	bjt_gp	NPN	100	12	100	3	7	80-160	4.5
pb_nec_NE85630_19921213	NE85630	NEC30	3	eebjt2	NPN	150	12	100	3	7	110	4.5
pb_nec_NE85630_19961001	NE85630	NEC30	na	bjt_gp	NPN	150	12	100	3	7	110	4.5
pb_nec_NE85632_19931201	NE85632	NEC32	3	eebjt2	NPN	600	12	100	10	20	120	6.5
pb_nec_NE85633_19911002	NE85633	SOT23	3	bjt_gp	NPN	200	12	100	10	20	120	7
pb_nec_NE85633_19921101	NE85633	SOT23	3	eebjt2	NPN	200	12	100	10	20	120	7
pb_nec_NE85633_19960601	NE85633	NEC33	na	bjt_gp	NPN	200	12	100	10	20	120	7
pb_nec_NE85634_19921211	NE85634	SOT89	3	eebjt2	NPN	2000	12	100	10	20	120	6.5
pb_nec_NE85634_19950901	NE85634	NE34	na	bjt_gp	NPN	2000	12	100	10	20	120	6.5
pb_nec_NE85635_19921101	NE85635	NEC35	na	bjt_gp	NPN	580	12	100	10	20	120	7
pb_nec_NE85635_19921210	NE85635	NEC35	4	eebjt2	NPN	580	12	100	10	20	120	7
pb_nec_NE85635_19961101	NE85635	NEC35	na	bjt_gp	NPN	580	12	100	10	20	120	7
pb_nec_NE85639_19911002	NE85639	NEC39	na	bjt_gp	NPN	200	12	100	10	20	120	9
pb_nec_NE85639_19921101	NE85639	NEC39	4	eebjt2	NPN	200	12	100	10	20	120	9
pb_nec_NE85639_19960601	NE85639	NEC39	na	bjt_gp	NPN	200	12	100	10	20	120	9
pb_nec_NE94430_19960601	NE94430	NEC30	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_NE94433_19960601	NE94433	NEC33	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_nec_UPA800T_19960801	UPA800T	SOT363	na	bjt_gp	NPN	na	na	na	na	na	na	na

na = not available

Table C-6. Panasonic Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Mode I	Polarity	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_pan_2SC3110_19921211	2SC3110	SOT23	3	eebjt2	NPN	200	12	30	10	10	40	4.5
pb_pan_2SC3704_19921211	2SC3704	SOT23	3	eebjt2	NPN	200	10	80	8	20	150	6
pb_pan_2SC3930dB_19921211	2SC3930-B	SOT323	3	eebjt2	NPN	150	20	30	10	1	70-140	0.25
pb_pan_2SC3930dC_19921211	2SC3930-C	SOT323	3	eebjt2	NPN	150	20	30	10	1	110-220	0.25
pb_pan_2SC3931dD_19921211	2SC3931-D	SOT323	3	eebjt2	NPN	150	20	15	6	1	100-260	0.65
pb_pan_2SC3932dT_19921211	2SC3932-T	SOT323	3	eebjt2	NPN	150	20	50	10	15	25-250	0.8
pb_pan_2SC3934_19921214	2SC3934	SOT323	3	eebjt2	NPN	150	12	30	10	10	40	4.5
pb_pan_2SC3935dP_19921215	2SC3935-P	SOT323	3	eebjt2	NPN	150	10	50	4	5	75-130	1.9
pb_pan_2SC3935dQ_19921215	2SC3935-Q	SOT323	3	eebjt2	NPN	150	10	50	4	5	110-120	1.9
pb_pan_2SC3936dB_19921211	2SC3936-B	SOT323	3	eebjt2	NPN	150	20	30	10	1	70-160	0.23
pb_pan_2SC3936dC_19921211	2SC3936-C	SOT323	3	eebjt2	NPN	150	20	30	10	1	110-250	0.23
pb_pan_2SC3967_19921215	2SC3967	SOT23	3	eebjt2	NPN	200	20	20	3.4	1.8	40-200	1.5
pb_pan_2SC4068_19921214	2SC4068	SOT323	3	eebjt2	NPN	150	20	20	3.4	1.8	40-200	1.5

Appendix D: RF Transistor Library Data

Table D-1. Philips Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Mode I	Polarity	Pdis s mW	Vc e V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_phl_BC847B_19921215	BC847B	SOT23	3	eebjt2	NPN	330	30	100	5	2	200-450	0.3
pb_phl_BFG134_19911011	BFG134	SOT103	4	eebjt2	NPN	1000	15	150	10	100	80	7
pb_phl_BFG135_19911011	BFG135	SOT223	4	eebjt2	NPN	1000	15	150	10	100	120	7
pb_phl_BFG195_19911014	BFG195	SOT103	4	eebjt2	NPN	500	10	100	8	50	40	7.5
pb_phl_BFG197X_19911010	BFG197X	SOT143	4	eebjt2	NPN	300	10	100	4	50	90	7.5
pb_phl_BFG197_19911011	BFG197	SOT143	4	eebjt2	NPN	300	10	100	4	50	90	7.5
pb_phl_BFG198_19911009	BFG198	SOT223	4	eebjt2	NPN	1000	10	100	8	50	100	8
pb_phl_BFG23_19931201	BFG23	SOT103	4	eebjt2	PNP	180	-12	-35	-5	-30	20	5
pb_phl_BFG25AX_19911002	BFG25AX	SOT143	4	eebjt2	NPN	50	5	6.5	na	na	na	5
pb_phl_BFG31_19931130	BFG31	SOT223	na	eebjt2	PNP	1500	-15	-100	-10	-70	25	5
pb_phl_BFG33X_19911002	BFG33X	SOT143	4	eebjt2	NPN	300	7	20	5	14	25	12
pb_phl_BFG33_19911002	BFG33	SOT143	4	eebjt2	NPN	300	7	20	5	14	25	12
pb_phl_BFG34_19911003	BFG34	SOT103	4	eebjt2	NPN	1000	18	150	10	100	25	3.7
pb_phl_BFG35_19911003	BFG35	SOT223	4	eebjt2	NPN	1000	18	150	10	100	140	4
pb_phl_BFG505XR_19921213	BFG505XR	SOT143R	4	eebjt2	NPN	150	15	18	6	5	120	9
pb_phl_BFG505X_19921213	BFG505X	SOT143R	4	eebjt2	NPN	150	15	18	6	5	120	9
pb_phl_BFG505_19921213	BFG505	SOT143R	4	eebjt2	NPN	150	15	18	6	5	120	9
pb_phl_BFG51_19931123	BFG51	SOT103	4	eebjt2	PNP	180	-15	-25	-10	-14	20	5
pb_phl_BFG520XR_19921214	BFG520XR	SOT143R	4	eebjt2	NPN	300	15	70	6	20	120	9
pb_phl_BFG520X_19921215	BFG520X	SOT143R	4	eebjt2	NPN	300	15	70	6	20	120	9
pb_phl_BFG520_19921215	BFG520	SOT143R	4	eebjt2	NPN	300	15	70	6	20	120	9
pb_phl_BFG55_19931123	BFG55	SOT223	4	eebjt2	PNP	2700	-18	-150	-10	-100	25	4
pb_phl_BFG591_19921214	BFG591	SOT223	4	eebjt2	NPN	1200	15	200	10	90	120	8
pb_phl_BFG65_19911002	BFG65	SOT103	4	eebjt2	NPN	300	10	50	8	15	60	7.5
pb_phl_BFG67R_19911002	BFG67R	SOT143RV2	4	eebjt2	NPN	300	10	50	8	15	100	7.5
pb_phl_BFG67XR_19921211	BFG67XR	SOT143R	4	eebjt2	NPN	300	10	50	8	15	100	7.5

Table D-1. Philips Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Mode I	Polarity	Pdis s mW	Vc e V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_phl_BFG67X_19911002	BFG67X	SOT143R	4	eebjt2	NPN	300	10	50	8	15	100	7.5
pb_phl_BFG67_19911002	BFG67	SOT143RV2	4	eebjt2	NPN	300	10	50	8	15	100	7.5
pb_phl_BFG90A_19911002	BFG90A	SOT103	4	eebjt2	NPN	180	15	25	10	14	40	5
pb_phl_BFG91A_19911002	BFG91A	SOT103	4	eebjt2	NPN	300	12	35	5	30	40	6
pb_phl_BFG92AXR_19921211	BFG92AXR	SOT143R	4	eebjt2	NPN	300	15	25	10	14	90	5
pb_phl_BFG92AX_19911002	BFG92AX	SOT143R	4	eebjt2	NPN	300	15	25	10	14	90	5
pb_phl_BFG92A_19911008	BFG92A	SOT143R	4	eebjt2	NPN	300	15	25	10	14	90	5
pb_phl_BFG93AXR_19921214	BFG93AXR	SOT143R	4	eebjt2	NPN	300	12	35	5	30	90	6
pb_phl_BFG93AX_19911002	BFG93AX	SOT143R	4	eebjt2	NPN	300	12	35	5	30	90	6
pb_phl_BFG93A_19911002	BFG93A	SOT143R	4	eebjt2	NPN	300	12	35	5	30	90	6
pb_phl_BFG94_19911002	BFG94	SOT223	4	eebjt2	NPN	700	12	60	5	30	90	6
pb_phl_BFG96_19911008	BFG96	SOT103	4	eebjt2	NPN	700	15	75	10	50	25	5
pb_phl_BFG97_19911008	BFG97	SOT223	4	eebjt2	NPN	1000	15	100	10	70	90	5.5
pb_phl_BFQ19_19911025	BFQ19	SOT89V2	3	eebjt2	NPN	500	15	75	10	50	50	5
pb_phl_BFQ23_19931201	BFQ23	SOT37	3	eebjt2	PNP	180	-12	-35	-5	-30	20	5
pb_phl_BFQ32S_19931124	BFQ32S	SOT37	3	eebjt2	PNP	700	-15	-100	-10	-70	20	4.5
pb_phl_BFQ34T_19911008	BFQ34T	SOT37	3	eebjt2	NPN	1000	18	150	10	100	25	3.7
pb_phl_BFQ51_19931130	BFQ51	SOT37	3	eebjt2	PNP	180	-15	-25	-10	-14	20	5
pb_phl_BFQ65_19911003	BFQ65	SOT37	3	eebjt2	NPN	300	10	50	8	15	100	7.5
pb_phl_BFQ67W_19921215	BFQ67W	SOT323	3	eebjt2	NPN	300	10	50	8	15	100	8
pb_phl_BFQ67_19911017	BFQ67	SOT323	3	eebjt2	NPN	300	10	50	8	15	100	8
pb_phl_BFR106_19911008	BFR106	SOT23	3	eebjt2	NPN	350	15	100	8	20	25	3.3
pb_phl_BFR134_19911011	BFR134	SOT37	3	eebjt2	NPN	1000	15	150	10	100	80	7
pb_phl_BFR520_19921214	BFR520	SOT23	3	eebjt2	NPN	300	15	70	6	20	120	9
pb_phl_BFR90A_19911008	BFR90A	SOT37	3	eebjt2	NPN	180	15	25	10	14	90	5
pb_phl_BFR91A_19911003	BFR91A	SOT37	3	eebjt2	NPN	300	12	35	5	30	90	6
pb_phl_BFR92A_19921214	BFR92A	SOT23	3	eebjt2	NPN	300	15	25	10	14	90	5
pb_phl_BFR93AW_19921214	BFR93AW	SOT323	3	eebjt2	NPN	300	12	35	5	30	90	6
pb_phl_BFR93A_19911003	BFR93A	SOT323	3	eebjt2	NPN	300	12	35	5	30	90	6

Table D-1. Philips Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Mode I	Polarity	Pdis s mW	Vc e V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_phl_BFR93_19911003	BFR93	SOT323	3	eebjt2	NPN	300	12	35	5	30	50	6
pb_phl_BFR96S_19911014	BFR96S	SOT37	3	eebjt2	NPN	700	15	100	10	70	25	5
pb_phl_BFS20_19910228	BFS20	SOT23	3	eebjt2	NPN	200	20	25	10	5	85	0.45
pb_phl_BFS25A_19921211	BFS25A	SOT323	3	eebjt2	NPN	32	5	6.5	1	0.5	80	5
pb_phl_BFS505_19921214	BFS505	SOT323	3	eebjt2	NPN	150	15	18	6	5	120	9
pb_phl_BFS520_19921214	BFS520	SOT323	3	eebjt2	NPN	300	15	70	6	20	120	9
pb_phl_BFT25A_19911003	BFT25A	SOT23	3	eebjt2	NPN	300	5	6.5	1	1	30	2.3
pb_phl_BFT92_19931130	BFT92	SOT23	3	eebjt2	PNP	200	-15	-25	-10	-14	50	5
pb_phl_BLT80_19921214	BLT80	SOT223	4	eebjt2	NPN	2000	10	250	5	150	25	na
pb_phl_BLU98_19911008	BLU98	SOT103	4	eebjt2	NPN	1000	16	150	13	100	25	4

na = not available

Table D-2. Siemens Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BC327_19961209	BC327	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC328_19961209	BC328	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC337_19961209	BC337	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC338_19961209	BC338	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC368_19961209	BC368	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC369_19961209	BC369	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC635_19961209	BC635	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC636_19961209	BC636	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC637_19961209	BC637	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC638_19961209	BC638	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC639_19961209	BC639	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC640_19961209	BC640	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC807_19961209	BC807	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC808_19961209	BC808	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC817_19961209	BC817	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC818_19961209	BC818	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC846_19961209	BC846	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC847_19961209	BC847	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC848_19961209	BC848	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC849_19961209	BC849	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC850_19961209	BC850	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BC856_19961209	BC856	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC857_19961209	BC857	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC858_19961209	BC858	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC859_19961209	BC859	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BC860_19961209	BC860	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCP51_19961209	BCP51	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCP52_19961209	BCP52	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCP53_19961209	BCP53	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BCP54_19961209	BCP54	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCP55_19961209	BCP55	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCP68_19961209	BCP68	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCP69_19961209	BCP69	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCV61_19961209	BCV61	SOT143	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCW60_19961209	BCW60	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCW61_19961209	BCW61	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCW65_19961209	BCW65	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCW66_19961209	BCW66	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCW68_19961209	BCW68	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCX41_19961209	BCX41	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCX42_19961209	BCX42	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCX51_19961209	BCX51	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCX52_19961209	BCX52	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCX53_19961209	BCX53	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCX54_19961209	BCX54	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCX55_19961209	BCX55	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCX56_19961209	BCX56	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCX58_19961209	BCX58	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCX59_19961209	BCX59	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCX68_19961209	BCX68	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCX69_19961209	BCX69	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BCX70_19961209	BCX70	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BCX71_19961209	BCX71	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BF420_19961209	BF420	TO92	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BF421_19961209	BF421	TO92	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BF422_19961209	BF422	TO92	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BF423_19961209	BF423	TO92	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BF550_19931122	BF550	SOT23	3	eebjt2	PNP	280	-40	-25	-10	-1	50-250	0.35

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BF554_19911021	BF554	SOT23	3	eebjt2	NPN	280	20	30	10	1	60-250	0.25
pb_sms_BF569_19931122	BF569	SOT23	3	eebjt2	PNP	280	-35	-30	-10	-3	50	0.95
pb_sms_BF579_19931130	BF579	SOT23	3	eebjt2	PNP	280	-20	-30	-10	-10	20	1.6
pb_sms_BF599_19921213	BF599	SOT23	3	eebjt2	NPN	280	25	25	10	5	70	0.55
pb_sms_BF603_19961209	BF603	TO72	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BF622_19961209	BF622	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BF623_19961209	BF623	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BF660_19931122	BF660	SOT23	3	eebjt2	PNP	280	-30	-25	-10	-5	30	0.7
pb_sms_BF720_19961209	BF720	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BF721_19961209	BF721	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BF722_19961209	BF722	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BF723_19961209	BF723	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BF775A_19921101	BF775A	SOT23	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BF799W_19961209	BF799W	SOT23	3	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BF799_19911017	BF799	SOT23	na	eebjt2	NPN	280	20	35	8	20	100	1.1
pb_sms_BF799_19961209	BF799	SOT23	na	bjt_gp	NPN	280	20	35	8	20	100	1.1
pb_sms_BFG135A_19911008	BFG135A	SOT223	na	bjt_gp	NPN	280	20	35	8	20	50-250	1.1
pb_sms_BFG135A_19921101	BFG135A	SOT223	4	eebjt2	NPN	280	20	35	8	20	50-250	1.1
pb_sms_BFG135A_19960901	BFG135A	SOT2232	na	bjt_gp	NPN	280	20	35	8	20	50-250	1.1
pb_sms_BFG193_19911008	BFG193	SOT223	na	eebjt2	NPN	600	12	80	8	50	100	8
pb_sms_BFG193_19960901	BFG193	SOT223	na	bjt_gp	NPN	600	12	80	8	50	100	8
pb_sms_BFG194_19931201	BFG194	SOT223	4	eebjt2	PNP	1000	-15	-100	-10	-70	50	4.5
pb_sms_BFG194_19960901	BFG194	SOT223	na	bjt_gp	PNP	1000	-15	-100	-10	-70	50	4.5
pb_sms_BFG196_19911008	BFG196	SOT223	na	bjt_gp	NPN	1000	-15	-100	-10	-70	50-250	4.5
pb_sms_BFG196_19921101	BFG196	SOT223	4	eebjt2	NPN	1000	-15	-100	-10	-70	50-250	4.5
pb_sms_BFG196_19960901	BFG196	SOT223	na	bjt_gp	NPN	1000	-15	-100	-10	-70	50-250	4.5
pb_sms_BFG19S_19911008	BFG19S	SOT223	4	eebjt2	NPN	1000	15	100	10	70	95	1.5
pb_sms_BFG19S_19960901	BFG19S	SOT223	na	bjt_gp	NPN	1000	15	100	10	70	95	1.5
pb_sms_BFG235_19911008	BFG235	SOT223	4	eebjt2	NPN	2000	12	300	8	240	125	6

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BFG235_19960901	BFG235	SOT223	na	bjt_gp	NPN	2000	12	300	8	240	125	6
pb_sms_BFN16_19961209	BFN16	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFN17_19961209	BFN17	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFN18_19961209	BFN18	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFN19_19961209	BFN19	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFN21_19961209	BFN21	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFN22_19961209	BFN22	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFN23_19961209	BFN23	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFN24_19961209	BFN24	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFN25_19961209	BFN25	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFN26_19961209	BFN26	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFN27_19961209	BFN27	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFN36_19961209	BFN36	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFN37_19961209	BFN37	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFN39_19961209	BFN39	SOT223	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFP136W_19960901	BFP136W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP180W_19960901	BFP180W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP180_19911014	BFP180	SOT143	na	bjt_gp	NPN	2000	12	300	8	240	50-250	6
pb_sms_BFP180_19921101	BFP180	SOT143	4	eebjt2	NPN	2000	12	300	8	240	50-250	6
pb_sms_BFP180_19960901	BFP180	SOT143	na	bjt_gp	NPN	2000	12	300	8	240	50-250	6
pb_sms_BFP181W_19960901	BFP181W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP181_19911010	BFP181	SOT143	na	bjt_gp	NPN	175	12	20	8	10	100	8
pb_sms_BFP181_19921101	BFP181	SOT143	4	eebjt2	NPN	175	12	20	8	10	100	8
pb_sms_BFP181_19960901	BFP181	SOT143	na	bjt_gp	NPN	175	12	20	8	10	100	8
pb_sms_BFP182W_19960901	BFP182W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP182_19911010	BFP182	SOT143	na	bjt_gp	NPN	175	12	20	8	10	50-250	8
pb_sms_BFP182_19921101	BFP182	SOT143	4	eebjt2	NPN	175	12	20	8	10	50-250	8
pb_sms_BFP182_19960901	BFP182	SOT143	na	bjt_gp	NPN	175	12	20	8	10	50-250	8
pb_sms_BFP183W_19960901	BFP183W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BFP183_19911010	BFP183	SOT143	na	bjt_gp	NPN	250	12	35	8	30	50-250	8
pb_sms_BFP183_19921101	BFP183	SOT143	4	eebjt2	NPN	250	12	35	8	30	50-250	8
pb_sms_BFP183_19960901	BFP183	SOT143	na	bjt_gp	NPN	250	12	35	8	30	50-250	8
pb_sms_BFP193W_19960901	BFP193W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP193_19911010	BFP193	SOT143	na	bjt_gp	NPN	450	12	65	8	30	50-250	8
pb_sms_BFP193_19921101	BFP193	SOT143	4	eebjt2	NPN	450	12	65	8	30	50-250	8
pb_sms_BFP193_19960901	BFP193	SOT143	na	bjt_gp	NPN	450	12	65	8	30	50-250	8
pb_sms_BFP194_19960901	BFP194	SOT143	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFP196W_19960901	BFP196W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP196_19911008	BFP196	SOT143	na	bjt_gp	NPN	400	12	80	8	30	50-250	8
pb_sms_BFP196_19921101	BFP196	SOT143	4	eebjt2	NPN	400	12	80	8	30	50-250	8
pb_sms_BFP196_19960901	BFP196	SOT143	na	bjt_gp	NPN	400	12	80	8	30	50-250	8
pb_sms_BFP22_19961209	BFP22	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP23_19961209	BFP23	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFP25_19961209	BFP25	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP26_19961209	BFP26	DIE	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFP280W_19960901	BFP280W	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP280_19911010	BFP280	SOT143	4	eebjt2	NPN	80	8	10	5	6	100	7
pb_sms_BFP280_19960901	BFP280	SOT143	na	bjt_gp	NPN	80	8	10	5	6	100	7
pb_sms_BFP405_19960901	BFP405	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP420_19960901	BFP420	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP450_19960901	BFP450	SOT343	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFP81_19911008	BFP81	SOT143	na	bjt_gp	NPN	280	16	30	10	15	50	5.8
pb_sms_BFP81_19921101	BFP81	SOT143	4	eebjt2	NPN	280	16	30	10	15	50	5.8
pb_sms_BFP81_19960901	BFP81	SOT143	na	bjt_gp	NPN	280	16	30	10	15	50	5.8
pb_sms_BFP93A_19911009	BFP93A	SOT143	4	eebjt2	NPN	280	12	50	8	30	90	5.5
pb_sms_BFP93A_19960901	BFP93A	SOT143	na	bjt_gp	NPN	280	12	50	8	30	90	5.5
pb_sms_BFQ17P_19911008	BFQ17P	SOT89V2	3	eebjt2	NPN	1000	25	150	5	150	>25	1.2
pb_sms_BFQ180_19921101	BFQ180	CERECX	na	bjt_gp	NPN	1000	25	150	5	150	50-250	1.2

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BFQ181_19911008	BFQ181	CERECX	4	eebjt2	NPN	175	12	20	8	10	100	8
pb_sms_BFQ182_19911009	BFQ182	CERECX	4	bjt_gp	NPN	175	12	20	8	10	50-250	8
pb_sms_BFQ182_19921101	BFQ182	CERECX	4	eebjt2	NPN	175	12	20	8	10	50-250	8
pb_sms_BFQ193_19911009	BFQ193	SOT89V2	3	eebjt2	NPN	600	12	80	8	50	100	7.5
pb_sms_BFQ194_19931122	BFQ194	CERECX	4	eebjt2	PNP	650	-15	-100	-10	-70	50	4.5
pb_sms_BFQ196_19911008	BFQ196	CERECX	na	bjt_gp	NPN	650	-15	-100	-10	-70	50-250	4.5
pb_sms_BFQ196_19921101	BFQ196	CERECX	4	eebjt2	NPN	650	-15	-100	-10	-70	50-250	4.5
pb_sms_BFQ19S_19911009	BFQ19S	SOT89V2	3	eebjt2	NPN	1000	15	75	10	70	70	5.1
pb_sms_BFQ29P_19911009	BFQ29P	SOT23	3	bjt_gp	NPN	1000	15	75	10	70	50-250	5.1
pb_sms_BFQ29P_19921101	BFQ29P	SOT23	3	eebjt2	NPN	1000	15	75	10	70	50-250	5.1
pb_sms_BFQ645_19911009	BFQ645	CERECX	4	eebjt2	NPN	400	12	40	8	15	100	9
pb_sms_BFQ64_19911008	BFQ645	CERECX	4	eebjt2	NPN	400	12	40	8	15	100	9
pb_sms_BFQ69_19911009	BFQ69	TPLAST	3	eebjt2	NPN	300	15	30	10	15	100	5.8
pb_sms_BFQ70_19911009	BFQ70	CERECX	na	bjt_gp	NPN	300	15	30	10	15	100	5.8
pb_sms_BFQ70_19921101	BFQ70	CERECX	4	eebjt2	NPN	300	15	30	10	15	100	5.8
pb_sms_BFQ71_19911009	BFQ71	CERECX	4	eebjt2	NPN	300	15	30	6	20	100	5.2
pb_sms_BFQ72_19911009	BFQ72	CERECX	4	eebjt2	NPN	350	15	50	5	50	90	4.7
pb_sms_BFQ73S_19911008	BFQ73S	CERECX	4	eebjt2	NPN	500	15	100	5	75	90	5.4
pb_sms_BFQ74_19911009	BFQ74	CERECX	4	bjt_gp	NPN	500	15	100	5	75	90	5.4
pb_sms_BFQ74_19921101	BFQ74	CERECX	4	eebjt2	NPN	500	15	100	5	75	90	5.4
pb_sms_BFQ75_19931122	BFQ75	CERECX	4	eebjt2	PNP	350	-12	-50	-5	-30	50	5
pb_sms_BFQ76_19931201	BFQ76	CERECX	4	eebjt2	PNP	250	-15	-30	-10	-14	50	5
pb_sms_BFQ81_19911008	BFQ81	SOT23	3	eebjt2	NPN	280	16	30	10	15	50	5.8
pb_sms_BFQ81_19960901	BFQ81	SOT23	na	bjt_gp	NPN	280	16	30	10	15	50	5.8
pb_sms_BFQ82_19911008	BFQ82	CERECX	na	bjt_gp	NPN	280	16	30	10	15	50	5.8
pb_sms_BFQ82_19921101	BFQ82	CERECX	4	eebjt2	NPN	280	16	30	10	15	50	5.8
pb_sms_BFR106_19911009	BFR106	SOT23	3	eebjt2	NPN	350	15	100	8	20	25	3.3
pb_sms_BFR106_19960901	BFR106	SOT23	na	bjt_gp	NPN	350	15	100	8	20	25	3.3
pb_sms_BFR15A_19911017	BFR15A	TO72V2	3	eebjt2	NPN	200	12	30	6	10	25	4.5

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BFR180W_19960901	BFR180W	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR180_19911011	BFR180	SOT23	3	bjt_gp	NPN	200	12	30	6	10	50-250	4.5
pb_sms_BFR180_19921101	BFR180	SOT23	3	eebjt2	NPN	200	12	30	6	10	50-250	4.5
pb_sms_BFR180_19960901	BFR180	SOT23	na	bjt_gp	NPN	200	12	30	6	10	50-250	4.5
pb_sms_BFR181W_19960901	BFR181W	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR181_19911009	BFR181	SOT23	3	bjt_gp	NPN	30	8	4	3	2	50-250	6.2
pb_sms_BFR181_19921101	BFR181	SOT23	3	eebjt2	NPN	30	8	4	3	2	50-250	6.2
pb_sms_BFR181_19960901	BFR181	SOT23	na	bjt_gp	NPN	30	8	4	3	2	50-250	6.2
pb_sms_BFR182W_19960901	BFR182W	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR182_19911009	BFR182	SOT23	3	bjt_gp	NPN	175	12	20	8	10	50-250	8
pb_sms_BFR182_19921101	BFR182	SOT23	3	eebjt2	NPN	175	12	20	8	10	50-250	8
pb_sms_BFR182_19960901	BFR182	SOT23	na	bjt_gp	NPN	175	12	20	8	10	50-250	8
pb_sms_BFR183W_19960901	BFR183W	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR183_19911014	BFR183	SOT23	3	bjt_gp	NPN	250	12	35	8	20	50-250	8
pb_sms_BFR183_19921101	BFR183	SOT23	3	eebjt2	NPN	250	12	35	8	20	50-250	8
pb_sms_BFR183_19960901	BFR183	SOT23	na	bjt_gp	NPN	250	12	35	8	20	50-250	8
pb_sms_BFR193W_19960901	BFR193W	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR193_19911009	BFR193	SOT23	3	bjt_gp	NPN	450	12	65	8	30	50-250	8
pb_sms_BFR193_19921101	BFR193	SOT23	3	eebjt2	NPN	450	12	65	8	30	50-250	8
pb_sms_BFR193_19960901	BFR193	SOT23	na	bjt_gp	NPN	450	12	65	8	30	50-250	8
pb_sms_BFR194_19931122	BFR194	SOT23	3	eebjt2	PNP	700	-15	-100	-10	-70	50	4.5
pb_sms_BFR194_19960901	BFR194	SOT23	na	bjt_gp	PNP	700	-15	-100	-10	-70	50	4.5
pb_sms_BFR280W_19960901	BFR280W	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR280_19911009	BFR280	SOT23	3	eebjt2	NPN	80	8	10	5	6	100	7
pb_sms_BFR280_19960901	BFR280	SOT23	na	bjt_gp	NPN	80	8	10	5	6	100	7
pb_sms_BFR34A_19911014	BFR34A	TPLAST	3	eebjt2	NPN	200	12	30	10	20	40	5
pb_sms_BFR35AP_19911009	BFR35AP	SOT23	3	eebjt2	NPN	280	12	30	6	20	90	4.9
pb_sms_BFR90_19911009	BFR90	TPLAST	3	eebjt2	NPN	200	15	30	10	20	40	5
pb_sms_BFR91A_19911009	BFR91A	SOT37	3	eebjt2	NPN	300	12	35	5	30	90	6

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BFR91_19911014	BFR91	TPLAST	3	eebj2	NPN	250	15	50	8	25	30	5
pb_sms_BFR92P_19911009	BFR92P	SOT23	3	eebj2	NPN	280	15	30	10	14	100	5
pb_sms_BFR92P_19960901	BFR92P	SOT23	na	bjt_gp	NPN	280	15	30	10	14	100	5
pb_sms_BFR92W_19960901	BFR92W	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR93AW_19960901	BFR93AW	SOT323	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR93A_19960901	BFR93A	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFR93P_19911009	BFR93P	SOT23	3	eebj2	NPN	280	15	50	5	50	100	4.7
pb_sms_BFR96S_19911009	BFR96S	SOT37	3	eebj2	NPN	700	15	100	10	70	25	5
pb_sms_BFS17P_19911009	BFS17P	SOT23	3	eebj2	NPN	280	15	25	5	25	70	2.5
pb_sms_BFS17P_19960901	BFS17P	SOT23	na	bjt_gp	NPN	280	15	25	5	25	70	2.5
pb_sms_BFS17S_19960901	BFS17S	SOT363	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFS17W_19960901	BFS17W	SOT363	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFS480_19960901	BFS480	SOT363	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFS481_19960901	BFS481	SOT363	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFS482_19960901	BFS482	SOT363	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFS483_19960901	BFS483	SOT363	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BFS55A_19911017	BFS55A	TO72	3	eebj2	NPN	250	15	50	8	25	30	4.5
pb_sms_BFT65_19911017	BFT65	TPLAST	3	eebj2	NPN	250	15	50	8	25	30	5
pb_sms_BFT66_19911009	BFT66	TO72V2	3	eebj2	NPN	200	15	30	6	20	50-250	4.9
pb_sms_BFT92W_19960901	BFT92W	SOT323	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_BFT92_19931122	BFT92	SOT23	3	eebj2	PNP	200	-15	-25	-10	-14	50	5
pb_sms_BFT92_19960901	BFT92	SOT23	na	bjt_gp	PNP	200	-15	-25	-10	-14	50	5
pb_sms_BFT93_19931122	BFT93	SOT23	3	eebj2	PNP	200	-12	-35	-5	-30	50	5
pb_sms_BFT93_19960901	BFT93	SOT23	na	bjt_gp	PNP	200	-12	-35	-5	-30	50	5
pb_sms_BFT97_19911017	BFT97	TPLAST	3	eebj2	NPN	200	15	30	6	20	30	5
pb_sms_BFT98T_19911009	BFT98T	TPLAST	3	eebj2	NPN	800	20	150	8	80	50	3.2
pb_sms_BFW92_19911017	BFW92	TPLAST	3	eebj2	NPN	200	15	25	5	14	20-150	2.4
pb_sms_BFY90_19911009	BFY90	TO72V2	3	eebj2	NPN	200	15	25	5	25	20-125	1.5
pb_sms_BSS63_19961209	BSS63	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_BSS64_19961209	BSS64	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BSS79_19961209	BSS79	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BSS80_19961209	BSS80	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BSS81_19961209	BSS81	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_BSS82_19961209	BSS82	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_MPSA42_19961209	MPSA42	TO92	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_MPSA43_19961209	MPSA43	TO92	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_MPSA92_19961209	MPSA92	TO92	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_MPSA93_19961209	MPSA93	TO92	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_PZT2222A_19961209	PZT2222A	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_PZT2222_19961209	PZT2222	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_PZT2907A_19961209	PZT2907A	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_PZT2907_19961209	PZT2907	SOT223	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_PZT3904_19961209	PZT3904	SOT223_3	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_PZT3906_19961209	PZT3906	SOT223_3	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_PZT43_19961209	PZT43	SOT223_3	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_PZTA42_19961209	PZTA42	SOT223_3	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_PZTA92_19961209	PZTA92	SOT223_3	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_PZTA93_19961209	PZTA93	SOT223_3	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBT2222A_19961209	SMBT2222A	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT2907A_19961209	SMBT2907A	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT2907_19961209	SMBT2907	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT3903_19961209	SMBT3903	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT3904_19961209	SMBT3904	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT3906_19961209	SMBT3906	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBT4124_19961209	SMBT4124	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT4126_19961209	SMBT4126	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBT4401_19961209	SMBT4401	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT4403_19961209	SMBT4403	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na

Table D-2. Siemens Packaged BJTs (continued)

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term . Type	Mode l	Polarit y	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_sms_SMBT5086_19961209	SMBT5086	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBT5087_19961209	SMBT5087	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBT6428_19961209	SMBT6428	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBT6429_19961209	SMBT6429	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBTA05_19961209	SMBTA05	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBTA06_19961209	SMBTA06	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBTA20_19961209	SMBTA20	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBTA42_19961209	SMBTA42	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBTA43_19961209	SMBTA43	SOT23	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SMBTA55_19961209	SMBTA55	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBTA56_19961209	SMBTA56	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBTA70_19961209	SMBTA70	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBTA92_19961209	SMBTA92	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SMBTA93_19961209	SMBTA93	SOT23	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SXT2222A_19961209	SXT2222A	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SXT2907A_19961209	SXT2907A	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SXT3904_19961209	SXT3904	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SXT3906_19961209	SXT3906	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SXTA42_19961209	SXTA42	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SXTA43_19961209	SXTA43	SOT89	na	bjt_gp	NPN	na	na	na	na	na	na	na
pb_sms_SXTA92_19961209	SXTA92	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na
pb_sms_SXTA93_19961209	SXTA93	SOT89	na	bjt_gp	PNP	na	na	na	na	na	na	na

na = not available

Table D-3. Toshiba Packaged BJTs

Component Name	Physical Specification					Maximum Electrical Specification			Typical Electrical Specification			
	Part Number	Package	Term. Type	Model	Polarity	Pdiss mW	Vce V	Ic mA	Vce V	Ic mA	Hfe	Ft GHz
pb_tsb_2SC2753_19921210	2SC2753	TO92	3	eebjt2	NPN	300	12	70	10	20	30-180	5
pb_tsb_2SC3011_19921213	2SC3011	SOT23	3	eebjt2	NPN	150	7	30	5	10	120	6.5
pb_tsb_2SC3124_19921213	2SC3124	SOT23	3	eebjt2	NPN	150	15	50	10	8	100	1.1
pb_tsb_2SC3429_19921213	2SC3429	SOT23	3	eebjt2	NPN	150	12	70	10	20	>25	5
pb_tsb_2SC3606_19921214	2SC3606	SOT23	3	eebjt2	NPN	150	12	80	10	20	30-250	7
pb_tsb_2SC3609_19921214	2SC3609	2D3J1C	4	eebjt2	NPN	150	12	80	10	20	30-250	7
pb_tsb_2SC4248_19921214	2SC4248	SOT323	3	eebjt2	NPN	100	12	30	10	10	70-300	4
pb_tsb_2SC4315_19921214	2SC4315	2D3J1C	4	eebjt2	NPN	150	12	80	10	20	30-250	7
pb_tsb_2SC4320_19921214	2SC4320	2D3J1C	4	eebjt2	NPN	150	10	40	8	20	50-250	10
pb_tsb_2SC4321_19921214	2SC4321	SOT323	3	eebjt2	NPN	100	10	40	8	20	50-250	10
pb_tsb_2SC4322_19921215	2SC4322	SOT23	3	eebjt2	NPN	150	10	15	6	7	50-250	10
pb_tsb_2SC4394_19921211	2SC4394	SOT323	3	eebjt2	NPN	100	12	80	10	20	30-250	7
pb_tsb_RN2405_19930119	RN2405	SOT23	3	eebjt2	PNP	200	-50	-100	-10	-5	80	0.2

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