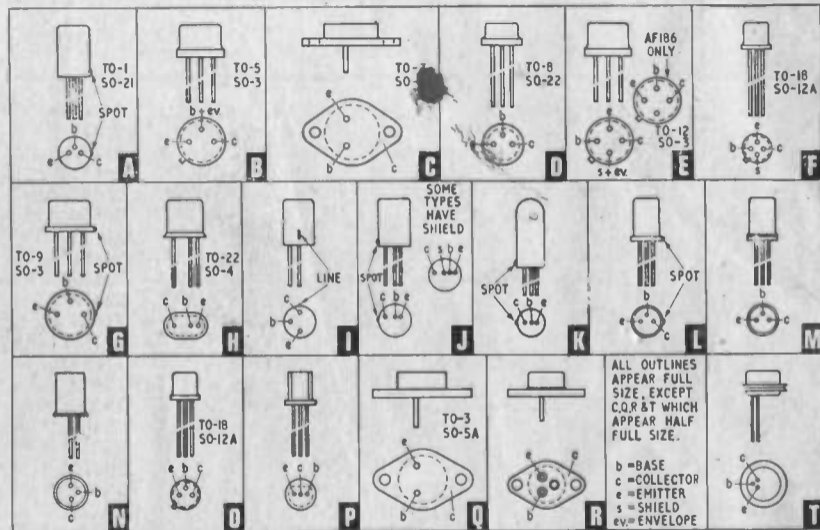


PRACTICAL ELECTRONICS TRANSISTOR GUIDE



Over 200 transistors are listed in this booklet. An attempt has been made to include most of the types that are readily available through the usual retail channels. While this list is obviously not exhaustive, it should satisfy the majority of normal amateur requirements.

All possible care has been taken in the preparation of this booklet and no responsibility can be accepted for any errors or omissions that may have occurred inadvertently.

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Type No.

Apart from the many house codes which exist, there are two main systems for numbering transistors in use at present:

JEDEC. This system is a sequential one, instigated in America, with a 2N prefix, and the numbers represent the transistor specifications which have been registered with the body known as the "Joint Electron Device Engineering Council".

PRO-ELECTRON. This is a system used on the Continent, and becoming widely accepted by users and manufacturers in this country. The letters and figures are all representative of a feature of a device.

The first letter could be **A**, meaning germanium, or **B** silicon.

The second letter indicates the construction or application of the device—for example: **C**—audio, **D**—power transistor for audio applications, **F**—for r.f., **L**—a power transistor for r.f. applications, **R**—a switching device, **S**—a transistor for switching applications, **U**—a power transistor for switching applications.

The figures are serial numbers of one of two groups. Devices primarily for entertainment applications (radio and television receivers, audio amplifiers, etc.), use three digits. In the case of other devices, for

example, those intended for industrial or professional use, the remaining three characters consist of a letter **Z**, **Y**, **X**, etc. followed by two figures.

I_c (max)

Collector current in mA, except where "A" indicates amperes.

V_{CEs}

Collector-to-emitter voltage; base and emitter short circuited.

V_{CB0} (max)

Collector-to-base voltage; emitter open circuit.

P_{tot}

Maximum total dissipation in the transistor. In mW, except where "W" indicates watts.

T_j (max)

Junction temperature in degrees C.

α', β, or h_{FE}

Small current gain in common emitter circuit at specified collector current. Letters "FE" against particular entries indicate d.c. current gain, i.e. h_{FE}.

f_a, f_i or f_{hfb}

Common base cut-off frequency in Mc/s unless otherwise indicated.

Case

Component outlines are given on the last page of this booklet and are recognisable from the alphabetical code. (This coding A-T has no significance apart from in this booklet.)

Further code numbers appear against some of these outline drawings.

TO-1, TO-5, etc. are JEDEC codes.

British VASCA equivalents are indicated by SO-3, SO-12A, etc.

Outlines identified by a single letter code only are individual manufacturer's special outlines.

Comparables

The word used as the heading for this column has been chosen advisedly. Types listed here may generally be used as satisfactory substitutes. It is not however implied that such types are necessarily exact or even close equivalents. When any doubt exists, compare all relevant parameters as given in columns 2 and 9.

Style

First letter:

g = germanium } material
s = silicon }

Second letter:

n = npn } polarity
p = pnp }

Third letter:

a = alloy } method of fabrication
d = diffused
e = epitaxial
m = micro alloy
p = PADT
g = grown }

Make

A Thorn-A.E.I.	N Newmarket
E A.E.I. (obsolete)	R Sinclair Radionics
F Ferranti	S S.T.C.
M Mullard	T Texas

The absence of a code letter means either that the manufacturer cannot be established, or that the transistor is made by more than one company. Those transistors coded according to the JEDEC and PRO-ELECTRON systems are, in many instances, manufactured by a number of companies, although only one maker has been quoted in the table.

Type No	I _c (max) mA	V _{CE} Volts	V _{CB0} (max) Volts	P _{tot} mW	T _J (max) °C	α', β or h _{fe}	at I _c mA
AFI26	10	20	20	60	70-80	150	I
AFI27	10	20	20	60	70-80	150	I
AFI39	8	15	20	60	70-80	10	I
AFI86	15	—	25	90	—	—	—
AFY19	300	32	32	800	90	FE 80	80
AFZ11	10	20	—	50	75	—	—
AFZ12	10	20	—	50	75	—	—
ASY28	100	25	30	125	185-100	FE 30	20
ASY82	800	16	26	200	85	FE 120	125
ASY83	800	16	26	200	85	FE 350	125
ASY84	800	20	40	200	85	FE 120	125
ASY85	800	20	40	200	85	FE 350	125
ASY86	800	12	16	200	85	FE 120	125
ASY87	800	12	16	200	85	FE 350	125
ASY88	800	16	26	200	85	FE 120	125
ASY89	800	16	26	200	85	FE 350	125
AUY10	700	60	70	4-5W	75	—	—
BCZ11	50	25	25	250	140-165	35	I
BSY53	750	30	75	800	200	FE 40-120	150
BSY95A	100	15	20	300	175	FE 50	10
GET102	—	—	30	200	85-100	100	I
GET103	—	—	30	200	85-100	55	I

f _α , f _i or f _{hfb} Mc/s	Case	Comparables	Style	Make	Type No
75	F	NKT676	g p p	M	AFI26
75	F	NKT677	g p p	M	AFI27
250	F	GM290	g p p	E	AFI39
—	E	GM290	g p d	M	AFI86
350	B	—	g p p	M	AFY19
100	E	—	g p p	M	AFZ11
200	E	GM378	g p p	M	AFZ12
4.0	B	2N1302, NKT128	g p a	M	ASY28
1.5	I	—	g p a	A	ASY82
2.5	I	—	g p a	A	ASY83
1.5	I	—	g p a	A	ASY84
2.5	I	—	g p a	A	ASY85
2	I	—	g p a	A	ASY86
4	I	—	g p a	A	ASY87
2	I	—	g p a	A	ASY88
4	I	—	g p a	A	ASY89
120	C	—	—	M	AUY10
3.0	J	2S323	s p a	M	BCZ11
100	B	2N2411	s n e	S	BSY53
200	—	2S512	s n e	S	BSY95A
1.5	—	NKT211, OC84, AC156, ASY59	g p a	M	GET102
1	—	NKT218, OC83, XCI21, AC156, ASY30	g p a	M	GET103

Type No	I_c (max) mA	V_{CES} Volts	V_{CBO} (max) Volts	P_{tot} mW	T (max) °C	α', β or h_e	at I_c mA
GET104	1A	—	30	200	85-100	—	—
GET105	1A	—	40	800	85-100	—	—
GET106	100	—	15	200	85-100	55	1
GET111	1A	—	60	200	85-100	—	—
MAT100	50	9	9	50	85	25-75	0.5
MAT101	50	9	9	50	85	75-200	0.5
MAT120	50	9	9	50	85	25-75	5
MAT121	50	9	9	50	85	75-200	5
MGT400	8A	25	—	1.3W	90	FE 75-350	6A
MGT600	8A	100	—	1.3W	90	FE 75-350	6A
NKT121	500	20	20	75	75	FE 50	500
NKT124	500	20	20	75	75	FE 50	25
NKT125	500	20	20	75	75	FE 50	25
NKT126	500	20	20	75	75	FE 50	25
NKT128	500	20	20	75	75	FE 50	1
NKT141	25	15	15	125	75	50	1
NKT142	25	15	15	125	75	40	1
NKT162	25	9	9	75	75	100	1
NKT211	500	32	32	200	90	FE 50-150	300
NKY212	125	32	32	200	90	FE 50-150	25
NKT213	125	32	32	200	90	50-125	1
NKT214	125	32	32	200	90	30-75	1

f_{α}, f_i or f_{hfb} Mc/s	Case	Comparables	Style	Make	Type No
1	—	NKT228, AC154, ACY30	g pa	M	GET104
1	—	NKT304	g pa	M	GET105
1	—	NKT226, AC154, ACY29	g pa	M	GET106
1	—	NKT227, ACY30	g pa	M	GET111
60	A		g pm	R	MAT100
60	A		g pm	R	MAT101
120	A		g pm	R	MAT120
120	A		g pm	R	MAT121
0.6	C		g pa	R	MGT400
0.6	C		g pa	R	MGT600
15	B		g pa	N	NKT121
15	B	ASY59	g pa	N	NKT124
7-15	B	ASY125	g pa	N	NKT125
3-7	B	ASY57	g pa	N	NKT126
7-15	B		g pa	N	NKT128
15-30	B		g pa	N	NKT141
8-15	B		g pa	N	NKT142
11	B		g pa	N	NKT162
0.9-3.5	A	2G302, OC84	g pa	N	NKT211
0.9-3.5	A	OC72	g pa	N	NKT212
0.9-3.5	A	2G374G, OC75	g pa	N	NKT213
0.9-3.5	A	OC71	g pa	N	NKT214

Type No	I _c (max) mA	V _{CES} Volts	V _{CBO} (max) Volts	P _{tot} mW	T _J (max) °C	α', β or h _{FE}	at I _c mA
NKT215	125	32	32	200	90	15-45	1
NKT216	125	32	32	200	90	50-125	1
NKT217	125	60	60	200	90	FE 50-150	25
NKT218	500	32	32	200	90	FE 50-250	300
NKT219	125	32	32	200	90	85-250	1
NKT221	1A	30	30	300	85	FE 30-90	500
NKT222	125	30	30	300	85	50-200	25
NKT223	250	30	30	180	85	50-200	1
NKT224	125	30	30	300	85	30-90	1
NKT225	250	30	30	180	85	15-45	1
NKT226	125	30	30	300	85	50-150	1
NKT227	125	60	60	300	85	FE 50-200	25
NKT228	1A	20	30	300	85	FE 30-90	500
NKT263	500	15	15	300	85	FE 25	200
NKT264	125	15	15	300	85	85-250	1
NKT265	125	15	15	300	85	25-90	1
NKT271	500	15	15	200	90	FE 50	200
NKT272	125	15	15	200	90	35-90	1
NKT273	500	15	15	200	90	FE 25	200
NKT274	125	15	15	200	90	85-250	1
NKT275	125	15	15	200	90	25-90	1
NKT304	2.5A	30	30	750	90	50-200	50

f _α , f _i or f _{hfb} Mc/s	Case	Comparables	Style	Make	Type No
0.9-3.5	A	OC70	g pa	Z	NKT215
0.9-3.5	A	AC107	g pa	Z	NKT216
0.9-3.5	A	OC77	g pa	Z	NKT217
0.9-3.5	A	2G382, OC83	g pa	Z	NKT218
0.9-3.5	A	AC156	g pa	Z	NKT219
1.5	B	XC121	g pa	Z	NKT221
0.75-3.5	B	AC154, XC101, OC72, OC74	g pa	Z	NKT222
1.25	B	AC156, GET102	g pa	Z	NKT223
0.75-3.5	B	AC113, XB103, GET103	g pa	Z	NKT224
0.75	B	AC155, XB102, OC70	g pa	Z	NKT225
0.75-3.5	B	GET106	g pa	Z	NKT226
0.75-3.5	B	TK23C	g pa	Z	NKT227
1.5	B	2G382	g pa	Z	NKT228
1	B	AC154	g pa	Z	NKT263
1	B	AC154	g pa	Z	NKT264
1	B	AC113	g pa	Z	NKT265
1.0	A	AC154, OC81, 2G308	g pa	Z	NKT271
1.0	A	AC113, OC81D, 2G371	g pa	Z	NKT272
1	A	AC154, 2G381	g pa	Z	NKT273
1	A	AC154, 2G374	g pa	Z	NKT274
1	A	AC154, 2G308	g pa	Z	NKT275
1.0	D		g pa	Z	NKT304

Type No	I_c (max) mA	V_{CES} Volts	V_{CBO} (max) Volts	P_{tot} mW	T_j (max) °C	α, β or h_{ie}	at I_c mA
NKT362	2A	15	15	750	90	—	—
NKT401	8A	60	80	1.3W	90	FE 15-50	6A
NKT402	8A	45	60	1.3W	90	FE 30-90	6A
NKT403	8A	80	80	1.3W	90	FE 50-150	1A
NKT404	8A	45	60	1.3W	90	FE 50-150	1A
NKT405	8A	45	60	1.3W	90	FE 100-200	1A
NKT452	3A	36	36	—	90	FE 35-90	1A
NKT453	3A	36	36	—	90	FE 15-45	1A
NKT612	10	40	40	80	75	40	1
NKT613	10	40	40	80	75	40	1
NKT674	10	30	—	80	75	40	1
NKT675	10	20	—	80	75	40	1
NKT676	10	20	—	80	75	40	1
NKT677	10	20	—	80	75	40	1
NKT713	300	25	25	150	80	—	—
NKT773	300	15	15	150	85	—	—
OC16	1.5A	16	—	6W	75	45	10
OC22	2A	32	47	15W	90	FE 150	1A
OC23	2A	24	55	16W	70-80	FE 50-150	1A
OC24	2A	40	47	15W	90	FE 150	1A
OC25	4A	40	40	23W	85-100	FE 15-80	1A
OC26	3.5A	—	32	12.5W	90	FE 20-60	1A

f_α, f_β or f_{hfb} Mc/s	Case	Comparables	Style	Make	Type No
—	T	—	g pa	Z	NKT362
600kc/s	C	2N511B	g pa	Z	NKT401
600kc/s	C	2N457A, OC28	g pa	Z	NKT402
600kc/s	C	AD140, OC29	g pa	Z	NKT403
600kc/s	C	2G222	g pa	Z	NKT404
900kc/s	C	—	g pa	Z	NKT405
—	C	OC26	g pa	Z	NKT452
—	C	2N456A	g pa	Z	NKT453
140	A	OC170	g pp	Z	NKT612
140	A	OC171	g pp	Z	NKT613
140	A	AF114	g pp	Z	NKT674
140	A	AF115	g pp	Z	NKT675
140	A	AF116	g pp	Z	NKT676
140	A	AF117	g pp	Z	NKT677
2	A	AC157, AC127	g na	Z	NKT713
—	A	—	g na	Z	NKT773
0.2	—	NKT453, AD140	g pa	M	OC16
2	C	2N1907	g pa	M	OC22
2.5	C	2N1907	g pa	M	OC23
2.5	C	2N1907	g pa	M	OC24
—	C	NKT453, AD140, 2N456A	g pa	M	OC25
150kc/s	C	NKT452, AD140, 2N456A	g pa	M	OC26

Type No	I _c (max) mA	V _{CES} Volts	V _{CBO} (max) Volts	P _{to} mW	T _j (max) °C	α', β or h _o	at I _c mA
OC28	8A	60	80	30W	85-100	FE 32	1A
OC29	8A	48	60	30W	90	FE 90	1A
OC30	1-4A	—	32	3-6W	70-80	FE 35	100
OC35	8A	48	60	30W	85-100	FE 50	1A
OC36	8A	60	80	30W	90	FE 70	1A
OC41	150	—	16	50	70-80	FE 20-80	50
OC42	150	—	16	50	70-80	FE 70	50
OC43	150	—	15	80	70-80	FE 50-200	50
OC44	10	—	15	83	70-80	100	—
OC45	10	15	15	83	75	50	—
OC70	50	30	—	75	75	30	—
OC71	50	30	—	75	75	47	—
OC72	125	—	32	125	75	—	—
OC73	10	30	—	35	60	30-65	I
OC75	50	30	30	125	75	90	—
OC76	250	32	32	125	70-80	45	—
OC77	250	—	60	125	70-80	45	—
OC78	70	20	—	—	75	—	—
OC78D	10	18	—	—	—	—	—
OC81	500	32	16	240	85	FE 80	I
OC82	200	32	—	300	85	—	—
OC81D	10	16	—	—	—	25	I

f _α , f _i or f _{hfb} Mc/s	Case	Comparables	Style	Make	Type No
250kc/s	C	2G210, NKT401, ADI40	g pa	M	OC28
250kc/s	C	2N457A, NKT402	g pa	M	OC29
300kc/s	R	V30/30NP, NKT452	g pa	M	OC30
250kc/s	C	GET572, NKT404, 2N456	g pa	M	OC35
250kc/s	C	2N457A, NKT402	g pa	M	OC36
4	J	2G301, GET871, NKT126, ASY56	g pa	M	OC41
7	J	2G302, GET872, MKT125, ASY57	g pa	M	OC42
18	J	2G306, GET875, NKT124, ASY58	g pa	M	OC43
15	K	NKT142, 2G302, GET874, XA111	g pa	M	OC44
6	K	2G301, GET873, NKT142, V6/2R	g pa	M	OC45
—	K	NKT215, XA104, ACY34	g pa	M	OC70
—	K	NKT214, XA103, ACI55, ACY31	g pa	M	OC71
—	J	GET114, NKT212, 2G381, ACI54	g pa	M	OC72
0.5	K	NKT214, ACI56, 2G373	g pa	M	OC73
—	K	GET113, NKT213, ACI56, ACY30	g pa	M	OC75
0.35	J	GET103, NKT212, ACY28, ASY59	g pa	M	OC76
—	J	GET111, NKT227, ASY51, ASY52	g pa	M	OC77
—	J	NKT222, ACI54	g pa	M	OC78
—	—	—	g pa	M	OC78D
750kc/s	—	2G381, NKT271, ACI54	g pa	M	OC81
750kc/s	—	2G382, NKT271, ACI28	g pa	M	OC82
—	—	ACI13, NKT272, GET113	g pa	M	OC81D

Type No	I _c (max) mA	V _{CES} Volts	V _{CBO} (max) Volts	P _{tot} mW	T _i (max) °C	α', β or h _{fe}	at I _c mA
OC81M	—	—	—	—	—	—	—
OC81DM	—	—	—	—	—	—	—
OC82D	10	32	—	150	85	—	—
OC83	1A	32	32	160	85	FE 50	300
OC84	1A	32	32	160	85	FE 60	300
OC139	250	—	20	140	75	FE 20-84	15
OC140	400	—	20	140	75	FE 50-150	15
OC141	400	—	20	130	70-80	FE 80-200	15
OC169	10	—	20	50	70-80	100	—
OC170	10	—	20	50	70-80	150	—
OC171	10	—	20	50	70-80	150	—
OC200	100	25	—	100	150	28	—
OC201	100	25	—	100	150	30	—
OC202	50	15	—	100	150	70	—
OC203	50	60	60	100	150	15	1
OC204	500	32	32	125	150	24	150
OC205	500	60	60	125	150	24	150
OC206	500	32	32	125	150	40	150
OC430	50	—	10	200	140-165	15	—
TK20B	—	12	—	200	—	43	1
V10/ISJ	500	—	10	75	70-80	—	—
V6/2R	30	6	—	125	—	50	1

f _α , f _i or f _{hfb} Mc/s	Case	Comparables	Style	Make	Type No
—	—	—	g pa	M	OC81M
—	—	—	g pa	M	OC81DM
—	—	—	g pa	M	OC82D
0.85	—	GET103, NKT218, ACY30, ASY58	g pa	M	OC83
1	J	GET102, NKT211	g pa	M	OC84
3.5	K	2N1302	g na	M	OC139
4.5	K	2N1304	g na	M	OC140
90	K	—	g na	M	OC141
70	J	NKT677	g pp	M	OC169
75	J	2G401, NKT612	g pp	M	OC170
75	J	2G402, NKT613	g pp	M	OC171
0.7	J	2S322	s pa	M	OC200
3.2	J	2S323	s pa	M	OC201
3.2	J	2S324	s pa	M	OC202
1.0	J	2S321	s pa	M	OC203
1.5	J	—	s pa	M	OC204
1.5	J	—	s pa	M	OC205
2.0	J	2S3220	s pa	M	OC206
0.6	L	—	s pa	M	OC430
6.3	—	—	g pa	S	TK20B
10	B	—	g pa	N	V10/ISJ
—	H	OC45, GET873, NKT142, 2G301	g pa	N	V6/2R

Type No	I_C (max) mA	V_{CES} Volts	V_{CBO} (max) Volts	P_{tot} mW	T_J (max) °C	α' , β or h_{fe}	at I_C mA
V6/4R	30	6	—	125	—	100	1
V6/8R	30	6	—	125	—	200	1
V10/15A	30	10	—	200	—	30	1
V10/30A	30	10	—	200	—	50	1
V10/50A	30	10	—	200	—	125	1
V15/10P	3A	15	—	1W	—	20	200
V15/20P	3A	15	—	1W	—	30	200
V15/20R	12	15	—	75	—	150	1
V15/30P	3A	15	—	1W	—	40	200
V15/201P	2A	15	—	500	—	100	20
V30/10P	3A	30	—	1W	—	20	200
V30/15NP	6A	30	—	1.5W	—	30	100
V30/20P	3A	30	—	1W	—	30	100
V30/30NP	6A	30	—	1.5W	—	60	100
V30/201P	2A	30	—	500	—	100	20
XA101	—	16	—	60	—	35	1
XA102	—	16	—	60	—	60	1
XA111	—	16	—	60	—	35	1
XA112	—	16	—	60	—	60	1
XA151	—	16	—	66	—	—	—
XB102	—	16	—	90	—	30	1
XB103	—	16	—	90	—	66	1

f_α , f_i or f_{hfb} Mc/s	Case	Comparables	Style	Make	Type No
—	H	NKT128	gpa	N	V6/4R
—	H	NKT128	gpa	N	V6/8R
—	—	NKT215, AC113	gpa	N	V10/15A
—	—	NKT214, AC113	gpa	N	V10/30A
—	—	NKT213, AC113	gpa	N	V10/50A
—	C	NKT453	gpa	N	V15/10P
—	C	NKT453	gpa	N	V15/20P
—	—	NKT677	gpd	N	V15/20R
—	C	NKT452	gpa	N	V15/30P
—	T	NKT362	gpa	N	V15/201P
—	C	OC16, NKT453	gpa	N	V30/10P
—	C	OC26, NKT452	gpa	N	V30/15NP
—	C	NKT452	gpa	N	V30/20P
—	C	NKT452	gpa	N	V30/30NP
—	T	OC30	gpa	N	V30/201P
5	—	OC45, 2G301, GET873, NKT142	gpa	E	XA101
8	—	OC44, NKT142, XA111, GET874	gpa	E	XA102
5	—	NKT142	gpa	E	XA111
8	—	GET874, NKT141, 2G302, OC44	gpa	E	XA112
3	—	GET871, NKT126, 12G301, OC41	gpa	E	XA151
—	—	NKT215, AC156	gpa	E	XB102
—	—	OC71, NKT214, AC113	gpa	E	XB103

Type No	I _c (max) mA	V _{CES} Volts	V _{CBO} (max) Volts	P _{tot} mW	T _j (max) °C	α' , β or h _{FE}	at I _c mA
XB104	—	16	—	90	—	66	1
XB105	—	16	—	60	—	30	1
XC101	—	16	—	100	—	FE 66	8
XC121	—	16	—	150	—	—	—
XC141	1-5A	16	—	11W	—	FE 62	0.7A
ZT23	50	45	45	350	—	50	1
ZT24	50	45	45	350	—	65	1
ZT697	500	40	60	600	—	FE 75	150
ZT706A	10	20	25	300	—	FE 20	10
ZT2270	1A	60	60	1.0W	—	FE 50-200	0.15A
2G210	6	—	60	—	85-100	—	—
2G301	50	—	15	75	85-100	60	—
2G302	50	—	15	75	85-100	130	—
2G303	100	—	15	75	85-100	40	1
2G306	200	—	15	150	—	160	1
2G371	100	—	20	150	85-100	—	—
2G381	400	—	20	250	85-100	—	—
2G382	400	—	20	250	85-100	—	—
2G401	25	—	20	200	85-100	—	—
2G402	25	—	20	200	85-100	—	—
2G414	10	20	20	100	85-100	50	1
2G415	10	20	20	100	85-100	50	1

f _α , f _i or f _{hfb} Mc/s	Case	Comparables	Style	Make	Type No
—	—	OC70, NKT215	g pa	E	XB104
—	—	—	g pa	E	XB105
—	—	NKT222	g pa	E	XC101
—	—	GET103, NKT221, OC83	g pa	E	XC121
—	—	GET572, NKT404, 2N456A, OC35	g pa	E	XC141
110	B	2S004, 2S103	s nd	F	ZT23
110	B	2S005, 2S104	s nd	F	ZT24
100	B	2N697	s nd	F	ZT697
200	B	2N706A	s nd	F	ZT706A
—	B	2S019	s nd	F	ZT2270
400kc/s	Q	NKT401, OC28	g pa	T	2G210
7.20	M	NKT126, OC41, GET871, AC156	g pa	T	2G301
14.4	M	NKT125, ASY58	g pa	T	2G302
7.2	M	GET875, AC156, ASY54	g pa	T	2G303
18	M	GET875, NKT124, OC43, AC157	g pa	T	2G306
5	N	NKT272, AC155, ACY28	g pa	T	2G371
5	N	NKT271, OC81, AC154	g pa	T	2G381
5	—	NKT271, OC82, AC154	g pa	T	2G382
80	B	NKT612, OC170	g pp	T	2G401
80	B	OC171, NKT613	g pp	T	2G402
120	F	AF114, NKT674	g pp	T	2G414
120	F	AF115, NKT675	g pp	T	2G415

Type No	I_c (max) mA	V_{CES} Volts	$V_{CBO, max}$ Volts	P_{tot} mW	T_c (max) °C	α', β or h_{fe}	at I_c mA
2G416	10	20	20	100	85-100	50	1
2N410	15	—	13	80	70-80	48	—
2N412	15	—	13	80	70-80	75	—
2N428	400	—	30	170	85-100	—	—
2N456A	7A	—	40	90	85-100	FE 30-90	5
2N457A	7A	—	60	90	85-100	FE 30-90	5
2N585	200	—	25	120	—	FE 40	20
2N697	—	—	60	600	140-165	FE 40	150
2N706A	—	—	25	300	170-200	FE 20	10
2N1091	400	—	25	120	—	FE 70	20
2N1302	300	—	25	150	85-100	—	—
2N1613	—	—	75	800	—	FE 80	150
2N2926	100	18	18	200	100-125	35-470	2
2S002	25	—	45	150	170-200	25	—
2S004	25	—	—	600	—	—	—
2S005	20	—	40	125	140-165	100	—
2S013	2A	80	—	70W	—	30	—
2S019	14	—	60	2.0W	170-200	FE 30-90	0.2A
2S321	50	—	80	300	—	15	—
2S322	50	—	40	300	—	20	—
2S323	50	—	25	300	—	35	—
2S324	50	—	15	300	—	75	—

f_α, f_i or f_{hfb} Mc/s	Case	Comparables	Style	Make	Type No
120	F	AF116, NKT676	g p p	T	2G416
6.8	A		g p a	T	2N410
16.5	A		g p a	T	2N412
17	B		g p a	T	2N428
200kc/s	C	NKT404, GET572, OC35	g p a	T	2N456A
200kc/s	C	OC29, NKT402, OC36	g p a	T	2N457A
5	G	XA701	g n a	T	2N585
80	B	ZT697, 2N1711	s n d	—	2N697
200	O	ZT706A	s n d	—	2N706A
13	G	XA703	g n a	—	2N1091
3	B	ASY28	g n a	—	2N1302
130	B		s p a	—	2N1613
200	P	2N2921 to 2N2925	s n d	—	2N2926
4	B		s n g	T	2S002
—	—	ZT23	s n g	T	2S004
30	B	ZT24	s n g d	T	2S005
3	—		s n d	T	2S013
4.7	B	ZT2270	s n d	T	2S019
1	N	OC203	s p a	T	2S321
1	N	OC200	s p a	T	2S322
2	N	OC201	s p a	T	2S323
3	N	OC202	s p a	T	2S324