

PHILIPS FACTORY VALVE CODES

Revision 7
17 May 2005

1. Introduction

Most Philips valves are marked with a group of symbols which contain coded information relating to the type, place of manufacture or country of origin in the case of bought in valves, and the date of manufacture. Apart from the interest of knowing when and where a valve was made, the code group can still provide useful type identification when the commercial markings have become illegible.

This document details two code formats using the same type identifiers which were in use from 1948 to the end of manufacture of receiving valves. The code format changed from the 'old' to the 'new' system around 1955/6. From examination of actual valves it is clear that whatever may have been the decree from Eindhoven, there were apparent deviations on the ground at manufacturing plants in other locations. Again based on examination it seems that prior to the coding system described herein, a purely numerical system was in use for encoding the type and that for its own production, Mullard continued to use this until adopting the 'new' code in 1955.

Some of the information herein is open to interpretation, translation from fairly terse Dutch original documents or based on examination of actual valves. No claims of absolute accuracy are made.

2. The code

The code has the following elements, represented in the generic layout guide by the bold letters:

- T** Type. May consist of one, two or three symbols.
- F** Manufacturer or country of origin. One symbol.
- Y** The least significant digit of the year of manufacture. This is only present in the 'new' code.
- M** Month of manufacture. In the 'old' code this was represented by a sequence of 36 symbols which repeated every three years according to the following table:

Month	1948 1951 1954	1949 1952 1955	1950 1953 1956
Jan	A	R	t
Feb	B	S	0
Mar	C	T	1
Apr	D	U	2
May	E	W	3
Jun	F	X	4
Jly	H	Y	5
Aug	K	Z	6
Sep	L	d	7
Oct	M	k	8
Nov	N	m	9
Dec	P	r	+

In the 'new' code each month is represented by a simple sequential letter:

Jan	A	May	E	Sep	I
Feb	B	Jun	F	Oct	J
Mar	C	Jly	G	Nov	K
Apr	D	Aug	H	Dec	L

- W** Week of manufacture within month. 1 first, 2 second etc. This seems to have only been added

from 1961 onwards although that does not mean that all valves made from 1961 bear it. A valve from Whyteleafe has been noted to have what looks like open week of year coding: □027.

- C** Change symbol. The intention of this is not clear but it may have been a symbol that was to be changed for each batch produced. In the 'old' code there was no year but the change symbol sequence was replaced in three year cycles such that this, taken together with the month symbol, would be a unique combination for any particular year. For example: Month W with change T would be unique to May 1955. The change sequence was as follows:

Batch:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20
1948-1950	0	1	2	3	4	5	6	7	8	9	=	□	%	t	⌢	△	⊙
1951-1953	A	B	C	D	E	F	H	K	L	M	≡	>	d	r	~	↗	
1954-1956	N	P	R	S	T	U	W	X	Y	Z	+	k	⌋	m	∇	L	

In the 'new' code this was just a sequence of symbols which appear to have no purpose other than perhaps provide batch traceability. Evidence indicates that this aspect of the code may not have been applied too rigorously at some locations. It is found to be missing on examined valves of Australian Philips manufacture for example. It was not applied to bought in valves. The sequence to be applied was:

0 1 2 3 4 5 6 7 8 9 A B C D E F H K L M N P R S T U V W X Y Z d f m r t

Presumably this sequence was then repeated if necessary.

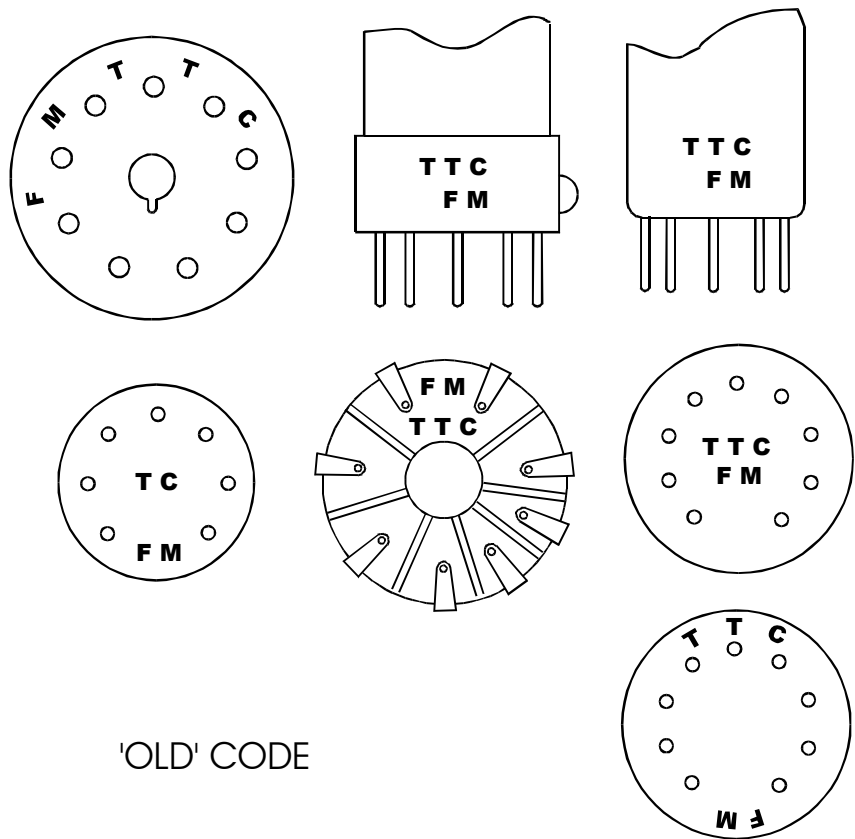
General observations:

In the type code list there are several examples of valves having two or more codes. This is generally due to differences in construction but there were errors of multiple allocation. There are also instances of two valves sharing one code. These may have been errors but the bulk of the listing here is taken from original documents "Codes for Receiving and SQ Tubes". One or more other list(s) existed and some codes were probably used again for other devices like CRTs or geiger-müller tubes for which there would be little likelihood of mistaken identity. In the list herein most types under one code are equivalents but where they are not, the word 'also' has been inserted to clarify the point. A few valves having very similar characteristics do sometimes have the same code, at least until another is allocated e.g. DY86 and DY87.

Suffixes are used to denote some characteristic of construction where this is shown in original documents, as follows:

bant	"Bantam" or "bantal".
Bee	The significance of this is not mentioned in original documents.
dev	Development or provisional number
en	'mit Einschmeltz-emaille'
min	Miniature.
new	New or revised construction.
old	Old construction

3. Code application



'OLD' CODE

Examples of deviations

Brasil
F Y M
T T C

Australia
T T
F Y M

Eindhoven
T T C
W F Y M

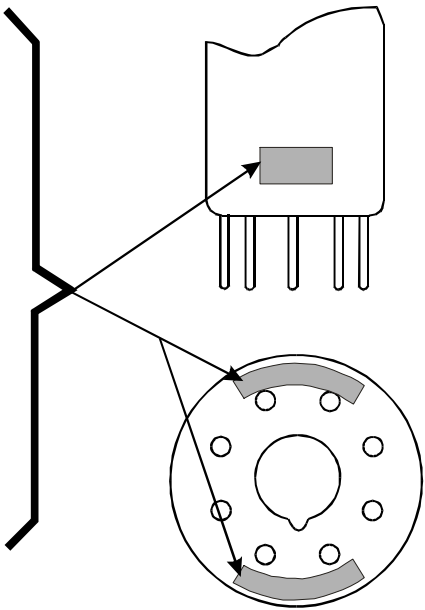
Examples of "correct" code format

T T C
F Y M

T T C
F Y M W

T T T C
F Y M W

T T T C
F Y M



'NEW' CODE

4. Factory symbols

A	Wiener Radio Werke "WIRAG", Wien
B	Mullard, Blackburn
C	Hendon Works, Alberton, Australia
D	Valvo, Hamburg
d	Ned. Instituut voor Fysisch Onderzoek
E	Hyperlec Brive (Correza)
F	La Radiotechnique, Suresnes
Ƨ	Marconi .Osram Valve Co.
f	Standard telephones and Cables Ltd. (later Thorn) East German origin (after 1 Jan 1970)
G	Mullard, Fleetwood Loewe Opta (after 22 Feb 1954)
I	Thorn-AEI Radio valve Co. Ltd. (Ediswan) , Mullard supply
J	Mullard, Tottenham (formerly Tungsram)
K	?
L	M.B.L.E., Bruxelles (Mazda)
m	?
N	Matsushita Electronics Corp., Takatsuki, Japan G.E.C. Mullard supply
n	Matsushita Electronics Corp., Kyoto, Japan
P	Papesa, Buenos Aires
R	Mullard Radio valve Co., Mitcham
r	Philips Electronics Industries Ltd., Ontario, Canada
S	Lampara "Z", Barcelona
T	Philips, Eindhoven, afd 22652
t	T.I.C. Philips Export Corp., New York
Ƨ	C.I.F.T.E., Courbevoie
U	Thorn-AEI Radio Valve Co. Ltd. (Formerly B.T.H.)
V	Bharat Electronics (Private) Ltd, Bangalore 13, India
X	Philips, Sittard, afd 22127
x	Philips, Chilena de Productos Electronicos, Chile
Y	Philips, Sittard, afd 22117 and 22118
Z	Philips, Monza
1	Philips, Eindhoven, afd 22020
2	Philips, Eindhoven, afd 22021
3	Ferranti (Mullard supply)
3	Philips Eindhoven, volgroepen I and II, Schouwbroekseweg Fivre, Italy (after 1 Jan 1970)
ε	Marconi, Chelmsford (Mullard supply)
4	Venolanda S.A., Venezuela
4	English Electric Valve Co. (Mullard supply)
5	Toshiba, Japan
⌘	Cinema Television (Mullard Supply)
6	Philips, Eindhoven. Radio valve lab. receiving valve technology group Russian origin
⊖	Mullard Fleetwood (after 18 Nov 1954)

7	Philips, Eindhoven Radio valve lab. physics group. Hitachi, Japan
∇	Electrical and Musical Industries. (Mullard supply)
8	Philips, Eindhoven. Radio valve lab. glass group
9	Philips, Heerlen Radio valve lab. receiving valve technology group.
+	Philips, Sittard afd 22126
=	La Radiotechnique, Clichy (Neotron)
*	Amperex Electronic Corp., New York
%	Philips Eindhoven , afd 22851
Δ	Philips, Copenhagen
<	Philips Electrical Lamps Inc., Philipines Co. des Lampes
>	Visseaux, France Polish origin (after 1 Jan 1970)
±	La Radiotechnique, Chartres
≡	Electronic Tubes Ltd., (Mullard supply) IPERPESA, Peru (after 1 Jan 1970)
≠	Siemens und Halske, München
↖	Mullard Radio Valve Co. Ltd., Croydon (Waddon)
⊠	Mullard Whyteleafe "A"
⊘	Philips, Heerlen
⌞	Mullard, Salfords
Ψ	IBRAPE, Sao Paulo, Brasil
⌒	Purchases from third parties by Mullard
⊙	Mullard Whyteleafe "B" (Kenley)
⌑	Tungsram
⌒	Telefunken and Telefunken Berlin
	Loewe Opta for Valvo, Hamburg
⌒	Elektronski Industija, Nis, Yugoslavia
:	Philips, Eindhoven. Radiation detector development

5. Single symbol type codes

These codes were applied to B7G types only.

A	DA90	T	E90CC	4	EC92	□	HK90
B	DAF91	U	EAC91	5	UC92	⊠	HY90
C	DAF96	V	12X4	6	DK92	⊘	HF94
D	DCC90	W	EB91	7	DK92	⌒	DL95
E	DF91	X	EBC90	9	E92CC	⌒	PL5727
F	DF92	Y	EC91	9	DK93	⌞	85A2 Bee
G	EC93	Z	ECC91	+	DC90	↖	150B2 Bee
H	DF96	d	EF91	=	PL21 Bee	Ψ	150C2 Bee
J	5654	f	HL94	%	HF93	⊙	150B2 min
K	DK91	k	EF92	&	85A2 min	≈	6CB6
L	DK92	m	EF93	≡	90CV	⌞	UY92
M	DK96	r	EK90	⊘	150C2 min	Σ	5726
N	DL92	t	EL91	=	HBC90	ε	EAA91
P	DL93	0	EZ90	>	HBC91	⌒	5726
R	DL94	1	EL90	~	90CG	*	EF95
S	DL96	2	EF94	↖	HL92		108C1
		3	EBC91			≠	E91H

6. Two symbol type codes

AC	AW43-89	BP	E55L (M6EL)	Cm	ECC88 Bee	D+	LL500
AD	EC88		8233	Cr	E184CC		18GB5
AE	EL500	BR	5639	Ct	ECC186		
	6GB5	BS	2GK5		7316	EA	5Y3G
AF	6EU7	BT	M2EL		also	EB	80 en
AG	CV4035		38EL		ECC282		80 dev
AH	PY33	BU	XL84	C0	62BTA	EC	DL93
AI	DL97	BW	XCC189	C2	18046		3A4
AJ	ECC230	BX	XL36	C3	E81L	ED	DL94
	6080	BY	MX153		6686		3V4
AL	AX50	BZ	YL1000	C4	V1ELL		CV2983
AM	PC97		M1DL		ELL80		also
	4FY5	Bf	CV4049	C5	E288CC		MX164
AN	PL1607	B1	M2PE		8223	EE	DW2
AS	LC97	B2	M3DV	C6	ECC808	EF	1561
	YC97	B3	M4PCF	C7	EC900	EH	1805
	3FY5	B4	M7EF	C8	PCF801	EI	VP4B
AT	LF183	B5	95400		8GJ7	EJ	VX8179
	YF183	B6	4-OA31	C9	XCF802	EK	EB41
	4EH7	B7	M9ECC.1	C+	LCF802	EL	EC37
AU	LF184	B8	M13PCC		YCF802	EM	ECC31
	YF184	B9	VX8250		6LX8	EN	ECC32
	4EJ7	B+	3GK5			EP	EF37A
AW	6GK5			DB	VX8252	ER	EF91
AX	6GK6	CA	35C3	DC	LCF86		6AM6
Ad	85A1	CB	12CU5		YCF86	ES	1883
Af	CV4011	CC	6CU5		5HG8	ET	EL35
	M8196	CD	4GK5	DD	3BA6	EU	EZ35
A0	347	CE	CV1377	DE	6BZ6	EV	0A3
A2	ZC1000	CF	3CS6	DF	6DE6		CV3798
A3	E88C	CG	0KL1B (p)	DH	12AL5	EW	FW4-500
	8255	CH	ECF802	DI	EL36	EX	PM24M
A4	EC800		6JW8		6CM5	EY	PF183
A5	XL500	CI	PL84 min	DJ	PCC88	EZ	4614
A6	EC1000		15CW5		7DJ8	Ed	SP13
A7	PCF802		also	DL	PY300	Ef	VX8194
	9JW8		MX154	DM	ECF801	Ek	SP13C
A8	6CQ8	CJ	VX8189		6GJ7	Em	AZ11
A9	PY83	CK	6AQ5A	DP	PC900	Er	1A7GT
		CL	12AU6A		4HA5	Et	FC13
BA	XCF86	CM	12C5	DR	QV10-P8	E0	4633
BB	6DK6	CN	PCF806	DS	7453	E1	DAC32
BC	E86C	CP	PEN40DD	DT	3BE6	E2	4618
BD	ECH800	CR	CZ30	DU	3DE6	E3	UY21
BE	12DT8	CS	6-OA31	DV	75C1	E4	4654
BG	E80CF	CT	8-OA31	DZ	EN33	E5	AL1
	7643	CU	PCC34	Dd	PCF84	E6	5Z4
BH	7475	CW	18045		also	E8	6A8G
BI	PEN4DD	CZ	EC95		PB-1	E9	6J7
BJ	CV4029		6ER5	Df	6201	E+	4673
	5902		also	Dk	PF86		
	M8200		MX155	Dm	402	FA	4682
	also	Cd	6463	Dr	3AL5	FB	4683
	YL1000		CV5304	Dt	3CB6	FC	DL35
BN	E55L (M5EL)	Cf	VX8205	D2	3BZ6		1C5GT
		Ck	EC86			FD	4688 C tech

FE	4689P C tech	GP	CV140+	Hf	E83CC	Im	PF83
FF	6A8	GR	CV417+		6681		also
FG	VX8114	GS	CV465+	Hk	EF92		MX132
FH	6K7	GT	CV466+		6CQ6		
FI	60EH5	GU	CV467+	Hm	EL38	Ir	EC158
FJ	HCH80	GV	4641	Hr	DF21	It	PY180
FK	4699.5 etc	GW	CV468+	Ht	DF22	I0	ORP11
FL	6J8G	GX	CV469+	H0	5ECC dev	I1	6211
FM	6F6G	GY	CV858+	H2	DF70	I2	ORP10
FN	6F6	GZ	CV2129+	H3	CF50	I3	PC92
FP	6V6G	Gf	ECC82	H4	DK21	I4	EF183
FR	6V6GT		12AU7	H5	EL44		6EH7
FS	12SK7	Gk	UCH5	H6	DK40	I5	EY180
FT	12SQ7	Gm	VX8140	H7	DL21	I6	ECC83
FU	18040	Gr	EC52	H8	Z701U		12AX7
FV	PL3C23	G0	EBL31	H9	DL40	I7	XCF80
FW	25Z5	G1	PCF82	H+	DL41	I8	XCH81
FX	25Z6	G2	EC57			I9	XF80
FY	AB2 (V base)	G3	EBF89	IA	ORP20PW	I+	7025
FZ	ABC1 dev		6DC8	IB	ORP20		
Fd	ABL1 dev	G4	EA52	IC	ECF83	JA	HCC85
Ff	7AU7	G5	EA52	ID	E182CC	JB	EF184
Fk	EA70		6923		7119		6EJ6
Fm	AD1		1EA	IE	4152-02	JC	ORP31
Fr	AF2	G6	EN93	IF	PC93	JD	PL500
Ft	AF3		6D4		also		27GB5
F0	AF7	G+	V2ECC		5876	JE	PC88
F1	43			IG	6205		4DL4
F2	AK2 dev	HA	DF33		CV2432	JF	CBL6
F3	35L6GT	HB	AZ12	IH	185BT	JG	EA50
F4	AL2	HC	AZ31	II	EL360		2B35
F5	AL4	HD	AZ41	IJ	VX8240	JH	ECF1
F6	DF91		95104		was used for	JP	EL30
	1T4	HE	41		Hamburg	JU	LCF80
F7	50L6GT	HF	DK33		PM84 till		YCF80
F8	AZ1	HG	VX8141		3.8.58		6LN8
F9	78	HH	CBL1 dev	IK	PZ36	JZ	TH2
F+	AZ4	HI	XC95	IL	6286	Jd	UCC83
		HJ	EF97	IM	27SU	Jf	ECF806
GA	ECC88		6ES6	IN	ORP90	J0	MX150
GB	UM84	HK	CBL31	IP	PCC189	J7	4069
GC	VX8167	HL	ECH41	IR	TY86F		ME1404
GD	QV9-P10	HM	UM5	IS	GZ37	J8	3DT6
GE	EH90	HN	UL43		CV378	J9	V3ECH
	6CS6	HP	UCH41	IT	6BJ6	J+	LCL84
GF	CV131+	HR	CL4	IU	VX8227		YCL84
GG	VX8116	HS	GZ40 old	IV	E180CC		10DX8
GH	CV133+	HT	CL33		7062		also
GI	PC95	HU	CY1	IW	E181CC		MX108/01
	4ER5	HV	CBC1 dev	IX	ECC189		
GJ	EL81F	HW	CY2 dev	IY	PM84	KA	DL71
GK	CV136+		also	IZ	EF6N	KB	DLL21
	tight cathode		EL521		also		also
GL	CV136+	HX	CY31		ORP30		DLL31
	loose cathode	HY	60FX5	Id	95398	KC	DF35
GM	EM81	HZ	CK1 (M)	If	EC156	KD	E1C
	6DA5	Hd	ECL80	Ik	EC157	KE	EL34 old
GN	CV138+		6AB8			KE2	EL34 new

KF	DC89	LP	DA90	MV	TDD13	NX	UCH100
KH	E424N		1A3	MW	EL6	NY	UCL11
	A4110	LR	ECH35 Mull	MX	EL11	NZ	UF9
KI	M8144	LS	ECH41	MY	EL12	Nd	UF9
	CV4033	LT	ECH80	MZ	EL20		UF11?
KJ	EF98		6AN7	Md	EL81	Nk	PY80 min
	6ET6	LU	ECL11		6CJ6	Nm	UF41
KK	DAC21	LV	TDD4	Mf	PCF82		12AC5
KL	E443H	LW	DC79		also	Nr	UF100
KM	E447	LX	EF93		MX145	Nt	UY2
KN	EC81		6BA6	Mk	PL38	N0	UL100
KP	EA40	LY	EE1	Mm	GZ30 new	N1	UM4
KS	EA51		EEP1		GZ40?	N2	UY1N
KT	EAF41	LZ	EF6	Mr	KB2	N3	UF21
KU	EB34	Ld	EW60	Mt	KBC1	N4	EL41 en
KV	CBC1 (M)	Lf	ECL83	M0	EL32	N5	UY41
		Lk	EZ2	M1	EL33	N6	UY100
KW	EB40	Lm	EL91	M2	EBC80	N7	UY42
KX	EY51		6AM5		6BD7	N8	VCL11
	6X2	Lr	EZ4	M3	EL39	N9	CF2
KY	EBC3	Lt	EF80	M4	EL41	N+	VY2
KZ	EBC33		6BX6		6CK5		
Kd	EM1	L0	EF8	M5	EL42	PA	DL92
Kf	PL83 Bee	L1	EF9		95105		3S4
Kk	EM4	L2	E1F	M6	EL42	PB	DL72
Km	EM34	L3	DF65	M7	EL8		also
	6CD7	L4	EF11	M8	EL51		MX165
Kt	EQ80	L5	EF12	M9	EL60	PC	ECH42
	6BE7	L6	EF22	M+	EL80 en		6CU7
K0	EBF2	L7	EF36			PD	EL61
K1	PCC809	L8	EF39	NA	PL83 en	PE	PY80
K2	EZ41	L9	EF40	NB	KF3		19X3
K3	EBF11		also	NC	KK2	PF	UF10
K4	EBF32		CV2031	ND	KL4	PG	6007
K5	EBF35	L+	EF41	NE	AZ50	PH	Aa
K6	EBL1		6CJ5	NF	UAF41	PK	Ba
K7	EBL21			NG	5651	PL	Bas
K8	EBFS40	MA	EF42	NH	UAF42	PM	Ca
K9	EC40	MB	EF50		12S7	PN	Cas
K+	EC41	MC	EF51	NJ	ECH83	PP	Da
		MD	EF100		6DS8	PR	Ce
LA	DK32	ME	DL65		also	PS	Ed
	1A7GT	MF	EFM1		MX156	PT	E2c
LB	EC81	MG	VX8207	NK	UL41	PU	E2d
	6R4	MH	EFM11		45A5	PV	EY88
LC	ECC40	MI	EL86	NL	UBF11		6AL3
LD	UY11		6CW5	NM	UBL1	PW	C3b
LE	ECH3	MJ	EBF83	NN	UCH41	PX	C3e
LF	ECH4		6DR5	NP	UBL21	PY	5Y3GT
LG	VX8206	MK	DL21S	NR	UCH4	PZ	E452T
LH	4671	ML	EFP20		also	Pd	EL6/400V
LI	UBF89	MM	EFP60		D3a	Pk	EL12/325V
	19FL8	MN	EK2	NS	UCH11	Pm	EL12/375V
LK	EFF51	MP	EK32	NT	UCH21	Pr	EM4/100V
LL	ECH11	MR	EL2	NU	UCH42	Pt	UM4/165V
LM	ECH21	MS	EL3N		14K7	P0	UM4/200V
LN	ECH33	MT	EBF80 en	NV	TDD13C	P1	UL44
		MU	UB41	NW	UAF100	P2	EL43

P3	EBC41 6CV7	R4	EC53	TA	UY3	UM	6BQ6GBT
		R5	DL70	TB	1832		6CU6
		R6	EL37	TC	UBC41 Bee	UN	LC900
P4	4689K	R7	GZ32	TD	UF5		3HA5
P5	EL43		5AQ4	TE	DF96	UP	EF81
P6	UL44 en	R8	EL44		1AJ4	UR	ECH4G
P7	4654K	R9	E446 (O)	TG	XCF801	US	DL67/65
P8	UBL3	R+	CV273	TH	DAF96	UT	UQ80
P9	UCH5				1AH5	UU	EAF42 Bee
P+	ABC1	SA	EC80 en		also	UV	AZ32
		SB	EZ80		MX142	UW	12SK7GT
RA	AF2	SC	UL2	TJ	LCF801	UX	DK96
RB	AL5	SD	DAF40		5GJ7		1AB6
RC	EL5	SE	EL45	TK	UCH42 Bee	UZ	E447 (E)
RD	VCL11	SF	AZ41 Bee	TM	UY42 Bee	Ud	12SQ7GT
RE	VY2	SG	5V4G	TP	UAF42 Bee	Uf	QQE03/12Bee
RF	X13	SH	ECH42 Bee	TR	UCH81	Uk	12SA7GT
	also	SI	EL95		19D8	Um	E90CC
	MX151		6DL5	TS	ECH34		5920
RG	M1EL	SJ	CV4109	TT	AY1		CV5214
	EL131	SK	DAF41	TU	EL50	Ur	LC95
RH	UF42		with add F	TV	AZ2		YC95
RI	E130L		DAF40	TY	Z805U		3ER5
	7534	SL	EL41 Bee	TZ	UF41 Bee	Ut	QQE02/5 Bee
RK	UBC41	SM	UY4	Td	EY80 min	U0	DY30
	14L7	SN	EBC41 Bee	Tf	XF85		1B3GT
RL	C443	SP	DC80	Tk	ECC81	U1	XC900
RM	DAF91		6DC	Tm	XL86	U2	AC2
	1S5	SR	EZ40 old	Tr	TD03-10B	U3	EL520
RN	DF92	SS	4060	Tt	EL82	U4	DF67/5
	1L4	ST	EF41 Bee		6DY5	U5	E446 (E)
RP	DK91	SU	UBF80 en	T0	3AT6	U6	6SA7GT
	1R5	SV	18300	T1	PL82	U7	6SK7GT
RR	EAF42	SW	18042 en		16A5	U8	6SQ7GT
	6CT7	SX	PL81	T2	KK32 Mull	U9	35Z5GT
RS	EAF80		21A6	T3	DF74	U+	UY41 Bee
RT	EL21	SY	EL34	T4	EL83 en		
RU	ECC35		6CA7	T5	MX161	VA	18042
RV	EF55	SZ	EF80	T7	DF67		6086
RW	ECC91	Sd	UCC40	T8	DL67	VB	E80CC
	6J6	Sf	Z502S	T9	E83F en		6085
RX	CCH35	Sk	UF6	T+	UCH81 min	VC	E80F
RY	EC91	Sm	EC55				6084
	6AQ4		TD03-10	UA	UL41 Bee	VD	E80L
RZ	EF54	Sr	DCC90	UB	L413S		6227
Rd	EF55		3A5	UD	A4110	VE	E83F
Rf	VX8196C	S0	EL81	UE	DL96		6689
	6AS6W	S1	CF7		3C4	VF	ECC81
Rk	EL22	S2	EAF801	UF	DL67/5	VG	E81CC
Rm	EZ22	S3	L416D	UG	6J5G		6201
Rr	FW4-800	S4	506	UH	EF43	VH	EC92 new
R0	CY32	S5	EY50	UI	5718	VI	UC92 new
R1	DL33	S6	4684		CV3930	VJ	ECC89
	3Q5GT	S7	4688		also		6FC7
R2	EAC91	S8	CF3		EL802	VK	5842
	M8097	S9	Cf	UJ	37EL		417A
	CV4059	S+	Bh	UK	UF43	VL	E94CC
R3	EB91			UL	3AV6	VM	ORP92

VN	PC96	Wr	EBF81 min	YD	ECH81	ZE	E80T
VP	95124	Wt	DK92		6AJ8		6218
VR	E188CC		1AC6	YE	EC56	ZF	PL81B
	7308	W0	EBF81	YF	EF80 en	ZG	HL90
VS	EM84	W1	PCL86	YG	ECF200		12AQ5
	6GF6		14GW8		6X9	ZH	ECL85
VT	XCC82	W2	XR1-1600A	YH	ECL80 en		6GV8
	7AU7	W5	E182F	YI	DF60	ZI	EF71 rel
VU	PCF86	W6	ECC2000		5678	ZJ	CV3986
VV	PL136	W7	VX8195C	YJ	CV1868		6021
	35FV5	W8	18046 Bee	YK	ECC81	ZK	6AD6
VW	EL183	W9	PFL200	YL	PL81 en	ZL	6BL6
VX	PCL85			YM	PL82 en	ZM	6J8
	18GV8	XA	401	YN	PY80 en	ZN	12BL6
	Valvo PCL805	XB	XY88	YP	PY82	ZP	12J8
VY	UY89		16AQ3	YR	ECH200	ZS	5854
VZ	6AN7A	XC	CV468 Ultra		6V9	ZX	LFL200
Vt	MX149	XD	CV4086	YS	E186F		11Y9
		XE	M6EF		7737	ZV	VX8222C
WA	PM22A	XF	12DJ8	YT	XCL84	ZY	LY88
WB	6BD7 min	XG	GZ41	YU	18500		20AQ3
WC	6BH5 min	XH	PCH200	YV	DY87	ZZ	4068
WD	6M5 min		9V9	YW	18501	Zd	5719
	also	XI	5899	YX	18502	Zf	EF40 Bee
	EF800		CV477		also	Zk	5749
WE	PY32 bant	XJ	5644		MX130		6BA6W
WF	ORP50	XK	PCF200	YY	EZ90	Zm	6005
WG	M3EFP		8X9		6X4		6AQ5W
WH	9U8	XL	PCF201	YZ	EBC90	Zr	6080WA
	also		8U9		6AT6	Zt	ECF201
	EL803S	XN	95106	Yd	EK90		6U9
WI	5840	XR	PY800A		6BE6	Z2	LCF200
WJ	EF730	XT	E235L	Ym	DL22N		5X9
	5636	XV	DW4-350	Yr	E81L Bee	Z3	LCF201
WK	E80CC Bee		DW4-500	Yt	EC97		5U9
	also	XW	E236L		6FY5	Z4	XCF200
	E1T	XX	E282F	Y0	PY81	Z5	XCF201
WL	CV4084	Xf	EL34 bant		17Z3	Z6	PY801
WM	E80F Bee	Xr	E84L	Y2	EC81	Z7	ZP1080
WN	25L6GT		7320	Y3	EF85	Z8	ZP1081
WP	E80L Bee	Xt	PL2D21		6BY7	Z9	4067
WR	UM34	X0	XF184	Y4.0	EABC80 min	Z+	6111
WS	ECL86	X1	XF183	Y4.1	EABC80 en		
	6GW8	X2	ECC186 (L)	Y5	VY1	dA	6112
	also	X3	DL620	Y6	6BU8	dB	7895
	CV4011		5672	Y7	EFL200	dC	PL6574
WU	C3JA	X4	EL300		6Y9	dD	DY86
WV	DW4-350	X5	PL300	Y8	ECH81 en		1S2
WW	18042 Bee	X6	6CY5	Y9	EC80		DY87
WX	EL3	X7	EL502		6Q4		1S2A
WY	18045	X9	E9Z dev	Y+	PL57	dE	6CG7
WZ	UM34/165V	X+	EL504			dF	LCH200
Wd	EF94		6GB5A	ZA	6DT6		5V9
	6AU6			ZB	12FK6	dG	12X4
Wf	E83F Bee	YC	DM70	ZC	UL41 Bee	dH	LL86
Wk	CV4098		1M3		Ag plated pins		10CW5
Wm	PY82		also	ZD	12AD6	dl	5949
	19Y3		DM71				

dJ	PCL84	fJ	N22LL	kl	EM87	mU	EL83
	15DQ8		19KF6		6HU6		6CK6
dK	LL521	fK	ECL82 Bee	kJ	MX147	mV	CV1672
dL	GY501		also		also	mW	PL83
	3BH2		EF802		18504		15A6
	V2VY	fL	EL83 Bee	kK	4662		also
dM	XL521		also	kM	EL84		CV359
dN	LCL85		ECC801S		6BQ5	mX	E82CC
	10GV8	fM	PL84 Bee		EL84 Bee	mY	G5S6
dP	CV287	fN	UCL82 Bee	kN	DY51	md	UF80
dR	YL1220	fP	UF86		1BG2	mk	UF85
dS	6AU6WB	fR	QQE02/5 Bee	kP	E3LL dev	mm	EF85 en
dT	EN91		QQV02-6	kR	ECF86	mr	E280F
dU	PL435	fS	N22PL		6HG8	mt	EZ40 Bee new
dV	LCC189	fT	N22XL	kU	HN309	m0	EZ80 Bee
	5ES8	fU	M6ECC	kV	EY87	m1	PY80
	also	fV	LSD2	kW	1S4	m2	EY80
	PL5822Du	fW	Z303C	kZ	5R4GYS		6U3
dW	PL522	fX	E35CC	kd	ECH84	m3	PY82 Bee
dX	EF5000	fY	EM84		6JX8	m4	EABC80
dY	CV4108	fZ	EC71	kk	EAM86		6AK8
dZ	V6ECC	fd	EF732		6GX8	m5	E283CC
dd	PD500	ff	CV2281	km	XCL86	m6	ECH81 Bee
	9ED4	fk	EF731	kr	DF61N	m7	UCH81 Bee
df	PY500	fm	5609	kt	M4ECC	m8	EC8010
	42EC4	fr	5U8	k0	XF86	m9	ECC84
dk	PL505	ft	12BY7A		also	m+	ECC809
	40GK6	f0	LY81		N7ELL		
dm	V7PCL		11R3	k1	TS65	rA	EF804S
dr	CV2901	f1	5609V	k3	D12L	rB	95107
dt	LCL86	f2	VX8234	k4	D20F	rC	DC80
d0	M8EC	f3	GZ34 bant	k5	XCL85	rD	PABC80
d1	EA53		CV1377	k6	ECC82		9AK8
d2	EL136	f4	ECL84	k7	XC97	rE	UABC80
	6FV5		6DX8	k8	CV4517	rF	EF805S
d3	E810F	f5	6972	k9	PY800	rG	K81A
	7788	f6	M7EC			rH	QQE03/12Bee
d4	M13PL		EC98	mA	PABC80 en		QQV03-10
d5	M6DY	f7	EY500	mC	ECC83	rl	ME1403
d6	GY86		6EC4	mD	6AM6S	rJ	UF89 Bee
d7	PY81 en	f8	24DF	mE	CV302 not	rN	DY86
d8	UABC80 en	f9	ECC83 low		finished		DY87
d9	UCH81 en		microphony	mF	CV303 not	rS	GZ33
	also		also		finished		CV378
	EL803		CV4110	mG	UCL83		GZ34 made in
d+	UF80 en	f+	M10PL	mH	12AU7S		Eindhoven
	also			ml	CV4039	rT	E180F
	YL1080	kA	UF85		M8096		6688
	YL1081		also	mJ	EF89 Bee	rU	HF93
			CV4111		also		12BA6
fA	LA4-250	kB	EZ80 en new		YL1130	rV	E181CC Bee
fB	LB4-2	kC	EZ80	mK	AB2 (O)	rW	EL85
fC	MX124/01		6V4	mN	GZ34		6BN5
fD	MX133	kD	EZ40	mP	UF85 min	rX	EL84 min
fE	EL505		6BT4	mR	UCH81 en	rY	4699N
	6GK6		CV3891	mS	EF80 Bee	rZ	6BK4
fG	TD1-100A	KE	GZ40	mT	UABC80 en	rd	EM85
		kG	UM81			rk	XL505

rm	LL505	t2	PL504	1C	04DL dev	2S	LSD5
rr	CV2031	t3	N22EL	1D	CV4011	2T	LSD7
rt	PCC84	t4	V7PL		also	2U	LSD8
	7AN7		PL802		03DF dev	2V	XCL82
r0	4646	t5	V10PL	1E	DF62	2W	LSD24
r1	DF64	t6	UL84	1F	DAF92	2Y	ME1401
r2	DL64	t7	EL508		1U5		4065
r3	1AX2		6KW6		CV3912	2Z	ME1402
r4	5814A	t8	6BK4A	1G	UCL82		4066
r5	12AT7WB	t9	Z500T		50BM8	2d	GY802
r7	PCF80	t+	Z501T	1J	CV4009	2f	EL86 Bee
	9A8			1V	PL81F	2k	PCF810
r8	EM80	0B	LY500	1W	DL69	2m	3A3
	6BR5	0C	PL5822	1Y	AN1	2r	PL521
r9	6SN7GT	0D	ECC180	1f	EBF82	2t	5837A
r+	ED500		6BQ7A	1k	EL821	23	MX108
		0E	PL57K		6CH6	24	MX118
tA	N23PL	0F	YL1080	1m	CV2507	25	MX119
tB	EL503		YL1081	1r	DC70	27	11AF9
tC	UY85	0G	ECL82	1t	DF66	28	PCL83
tD	EY86		6BM8	10	DF72	29	XY500
	6S2	0H	EBC81	11	DL66	2+	XL508
	EY87		6BD7A	12	DL68		
	6S2A	0I	EY70 rel	13	DL95	3B	TD03-5
tE	EF86 Bee	0J	CV4005		3Q4	3E	Z300T
tF	E99F	0K	12SN7GT	14	DL73	3F	Z800U
	7694	0L	25Z6GT	15	DL75	3G	E82M
tH	25Y5 (J base)	0M	12SA7GT	16	DL98	3H	Z801U
tI	VX8163	0N	18015		3B4	3I	UF81
tJ	PL82 Bee	0P	PCC89	17	DY80	3J	CV4019
tK	4694		7EF7		DY70?	3K	Z900T
tL	M5DY	0S	KT66	18	EA76	3L	E91H
	DY802	0U	12SK7GT		6489		6687
tM	PC86	0W	12SQ7GT	19	EC70	3M	6CB6
	4CM4	0Z	EC83.1	1+	EC90	3N	EL90
tN	ECC86	0d	LL504		6C4		6AQ5
tP	UCC85	0f	DM160			3P	85A2
tR	EF89		6977	2A	EF70	3V	Z70U
	6DA6	0k	UM80		CV467	3U	EBC91
tS	PCL81		19BR5	2B	EF71		6AV6
tT	M11EL	0m	UF89	2C	EF72	3X	150C2
	EL5070	0r	XL504	2D	EF73	3Y	HBC90
tU	ECC85	0t	N55RPY	2E	EF95		12AT6
tV	GZ34	00	18016		6AK5	3Z	HF94
tW	4373	02	EY81	2F	EL70		12AU6
tX	18046 en		6R3	2G	EY802	3d	HBC91
tY	EBC81 Bee	03	6SA7GT	2H	EN32		12AV6
tZ	PCC85	04	6SK7GT		also	3f	PCL82 Bee
	9AQ8	05	6SQ7GT		PL6574	3k	HK90
td	6A8GT	06	N54RPY	2I	UBC80		12BE6
tf	LA4-2	07	UY85 Bee	2J	CV4012	3m	DC90
	VX8168	08	PL95	2K	5643	3r	HY90
tk	75	09	E95F		EN70		35W4
	CV614		5654	2L	EY70	3t	HL92
tm	EF804		6AK5W	2M	EY91		50C5
tr	EL81 Bee	0+	UBC81	2N	DAF70	30	E92CC
tt	PL81 Bee			2P	LSD3	31	EC92
t1	PL508	1B	03DF	2R	LSD3A		

32	UC92	5P	EL38M	6f	EZ36	8K	12SJ7GT
	9AB4	5R	EL820		11EZ	8L	19BG6G
33	EAA91	5S	EY84	6r	EL822	8M	25Y5G
	EB91		6374	60	VX8124	8P	25Z6G
	6AL5	5T	IW4-350	62	VX8182	8R	CV4007
34	DK93	5U	ME1400	63	VX8136C	8S	35Z4GT
35	K50A	5V	CV4050	64	VX8137C	8T	35Z5G
38	6BZ6	5W	PEN-A4		CV4004	8U	CV2204
39	ECF80	5X	PEN36C	65	M8162	8W	C3m
	6BL8	5Y	PL33		VX8162C		R20F
3+	UCC84	5Z	PL820	66	EL85 min		CV5232
		5d	PY31	67	4383	8Y	EF86
4A	EF74	5f	UL84 Bee	68	55395		6267
4E	CV521	5k	PZ30	69	E91AA	8Z	PY32
4F	LL508	5m	UCF80		5726	8d	CCH3 Mull
4G	EF83	5r	UL46		6AL5W	8f	E90F
4I	UCH80	5t	UR1C	6+	EL180		7693
4J	CV5029	51	18512			8k	PY88
4M	MX112	52	UBF80	7B	6SJ7GT		30AE3
4N	MX115		17C8	7C	5U4G	8m	DDC38
4P	CV2246	53	HCH81 en	7D	R199899	8r	95108
4R	EBF80	54	01DAF	7E	PCL82	8t	EZ81
4S	EY82	55	75B1		16A8		6CA4
	6N3	56	95A1	7F	DF97	88	5893A
4U	EC93	57	DM71		1AN5		
4W	HL94		1N3	7H	DC96	9A	5Z3
	30A5		also	7J	M8163	9B	6AS5
4X	ECF82		EL802	7L	E88CC	9C	6A7
	6U8	59	CV4010		6922	9D	6C5GT
	CV5065		M8100	7M	17ECC dev	9E	6F6GT
4d	100117	5+	CV4014	7R	5X4G	9F	6J5GT
4f	PY81 Bee		M8083	7S	5Z4G	9G	6AS6
4k	K51A			7T	5Z4GT	9H	6L6G
	OG82 dev	6A	CV4025	7U	6BG6G	9J	VX8084
4r	EM71		M8079	7W	6J7G	9K	6L6GA
41	6263A	6B	7247	7X	6J7GT	9L	6X5
43	PL36	6C	DCF60	7Y	6K7G	9M	25A6G
	25E5	6D	DF61	7Z	6K7GT	9N	42
44	UY92	6E	DF63	7d	6K8G	9P	PP35
45	UL44	6H	ME1201AG	7f	M2EC	9R	PP36
47	EB4	6J	Z303C	7k	6K8GT	9S	PP60
48	PL38M		GC10B	7m	6Q7G	9V	5840
49	2A		DDB32	7r	6Q7GT		CV3929
4+	CCH3	6K	MX103	7t	12J7G	9Z	Z500E
		6L	MX120	70	3AU6	9k	UY82
5A	CV9	6M	MX122	71	39EF	9m	EL41 A tech
5C	XY81	6N	MX123	76	5876A	9r	EF86 en
5D	HCH81	6P	MX124	7+	18503	9t	PY83
5E	QE04/10	6R	MX125			90	ET51
5F	CV1863	6S	MX126	8A	12J7GT	92	CV2469
5H	5Z4GT	6T	E180CC Bee	8B	12K7G	93	VCRX437C
	CV2748	6U	Z50T	8C	12K7GT	97	QQV04-16
5I	50EH5	6W	M8097	8D	12K8G	99	MX152
5K	ECC33	6X	CV2742	8E	12K8GT		
5L	ECC34	6Y	CV4015	8F	12Q7G	*C	Z70U
5M	EF37		M8161	8G	CV4034		Z700U
5N	EL33A	6Z	CV4031	8H	12Q7GT	*T	Z521M
			M8081	8I	E81L en	*U	Z522M

AC Z70U

7. Three symbol type codes

AAA	PL509	ACL	PB1
AAB	LL802	ACM	D3a
AAC	ECF80A		7721
	6GH8A	ACN	5876
AAD	EL509	ACR	6FQ7
	6GK6A	ACS	12AD6A
AAE	LL509	ACT	12BX6
AAF	XL509	ACU	25AV5GA
AAG	N30EL	ACV	20LF6
	6LF6	ACW	XCF80A
AAH	10GK6	ACY	8AF9
AAK	6HT5	ACZ	ECC801S
AAL	CV9620		
AAM	3HQ5	ADA	40LF6
AAN	6HQ5		7984
AAP	ECF202	ADB	CV6189
	6AJ9	ADC	PY500A
AAR	PCL805 Siem	ADD	EY500A
AAS	27LF6	ADE	LY500A
AAT	7586	ADF	XY500A
AAU	5893	ADG	EL91N
AAV	6263	ADH	15GK6
AAW	6264	ADK	N25PC
AAX	5676	ADR	N20PL
AAY	5687	ADS	PCF808
AAZ	5751	ADU	6LV6
ABA	7587	AEA	16AF9
ABB	50B5		
ABC	1817	AHA	PD510
ABD	N1EFL		
	6AF9	MCH	CV6189
ABE	5963	MCT	PL95
ABG	6264A	MER	TH2
ABK	5642	MES	YL1220
ABL	12BY7	MET	ZP1080
ABM	12AT5	MEU	ZP1081
ABP	5R4GY	MEW	K81A
ABR	ECC8100	MEX	N54RPY
ABS	12AU7WA	MFC	6D4
	6189	MFD	CV287
ABT	EL805	MFF	N55RPY
ABU	ECL805	MFZ	CV359
ABV	LD500	MGC	VX8250
ABW	XD500	MGF	VX8252
ABY	CV4110		
ABZ	CV4111		
ACB	DW4-500		
ACC	EF800		
ACD	EF802		
ACE	6CF6		
ACF	EL521		
ACG	EL802		
ACH	EL803		
ACK	EL803S		