

PHILIPS FACTORY VALVE CODES

Revision 8
1 August 2008

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	1949	1950
	1951	1952	1953
	1954	1955	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.

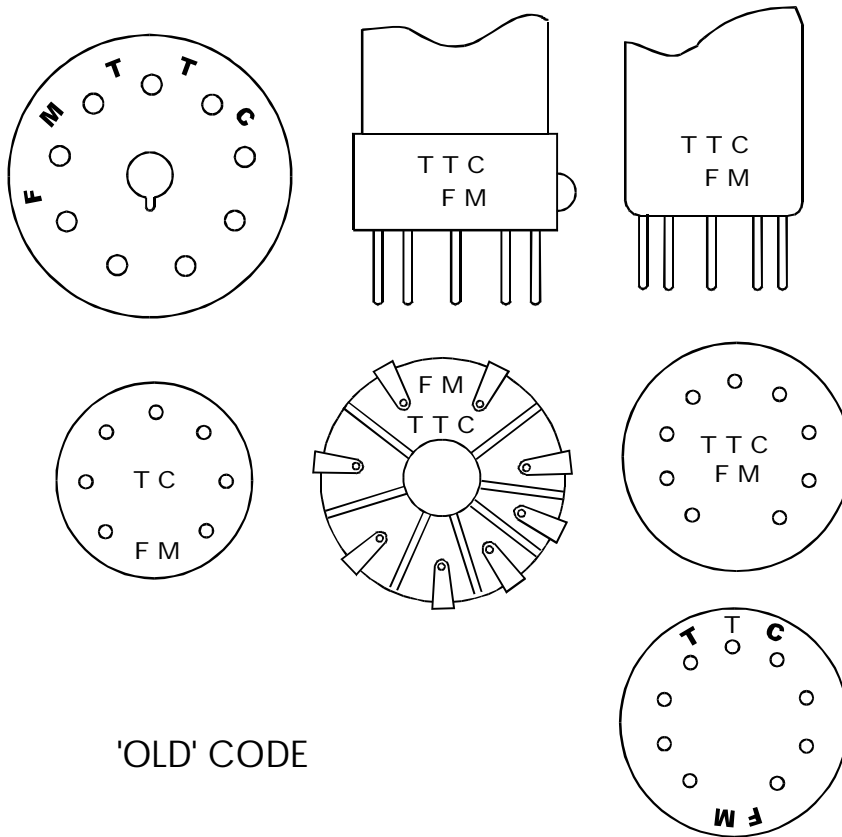
General observations:

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

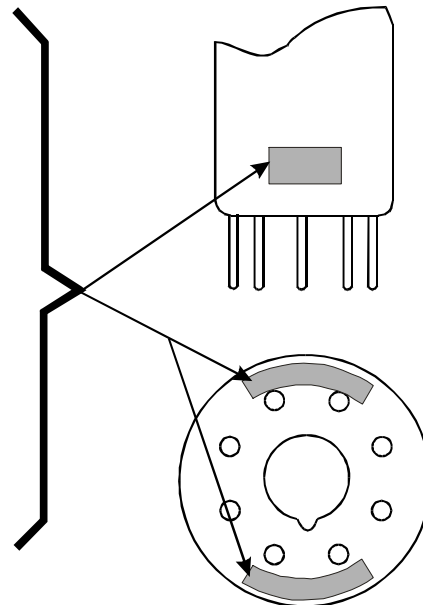
Examples of "correct" code format

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
Ɔ	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 Tungstram)
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
Ƨ	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
Ƨ	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)
⌑	Tungsrām
⌒	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	∩	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	EA	5Y3G
AD	EC88		8233	Cr	E184CC	EB	80 en
AE	EL500	BR	5639	Ct	ECC186		80 dev
	6GB5	BS	2GK5		ECC282	EC	DL93
AF	6EU7	BT	M2EL		7316		3A4
AG	CV4035		38EL	C0	62BTA	ED	DL94
AH	PY33	BU	XL84	C2	18046		3V4
AI	DL97	BW	XCC189	C3	E81L		CV2983
AJ	ECC230	BX	XL36		6686		also
	6080	BY	MX153	C4	V1ELL		MX164
AL	AX50	BZ	YL1000		ELL80	EE	DW2
AM	PC97		M1DL	C5	E288CC	EF	1561
	4FY5	Bf	CV4049		8223	EH	1805
AN	PL1607	B1	M2PE	C6	ECC808	EI	VP4B
AS	LC97	B2	M3DV	C7	EC900	EJ	VX8179
	YC97	B3	M4PCF	C8	PCF801	EK	EB41
	3FY5	B4	M7EF		8GJ7	EL	EC37
AT	LF183	B5	95400	C9	XCF802	EM	ECC31
	YF183	B6	4-OA31	C+	LCF802	EN	ECC32
	4EH7	B7	M9ECC.1		YCF802	EP	EF37A
AU	LF184	B8	M13PCC		6LX8	ER	EF91
	YF184	B9	VX8250				6AM6
	4EJ7	B+	3GK5	DB	VX8252	ES	1883
AW	6GK5			DC	LCF86	ET	EL35
AX	6GK6	CA	35C3		YCF86	EU	EZ35
Ad	85A1	CB	12CU5		5HG8	EV	0A3
Af	CV4011	CC	6CU5	DD	3BA6		CV3798
	M8196	CD	4GK5	DE	6BZ6	EW	FW4-500
A0	347	CE	CV1377	DF	6DE6	EX	PM24M
A2	ZC1000	CF	3CS6	DH	12AL5	EY	PF183
A3	E88C	CG	0KL1B (p)	DI	EL36	EZ	4614
	8255	CH	ECF802		6CM5	Ed	SP13
A4	EC800		6JW8	DJ	PCC88	Ef	VX8194
A5	XL500	CI	PL84 min		7DJ8	Ek	SP13C
A6	EC1000		15CW5	DL	PY300	Em	AZ11
A7	PCF802		also	DM	ECF801	Er	1A7GT
	9JW8		MX154		6GJ7	Et	FC13
A8	6CQ8	CJ	VX8189	DP	PC900	E0	4633
A9	PY83	CK	6AQ5A		4HA5	E1	DAC32
		CL	12AU6A	DR	QV10-P8	E2	4618
BA	XCF86	CM	12C5	DS	7453	E3	UY21
BB	6DK6	CN	PCF806	DT	3BE6	E4	4654
BC	E86C	CP	PEN40DD	DU	3DE6	E5	AL1
BD	ECH800	CR	CZ30	DV	75C1	E6	5Z4
BE	12DT8	CS	6-OA31	DZ	EN33	E8	6A8G
BG	E80CF	CT	8-OA31	Dd	PCF84	E9	6J7
	7643	CU	PCC34		also	E+	4673
BH	7475	CW	18045		PB-1		
BI	PEN4DD	CZ	EC95	Df	6201	FA	4682
BJ	CV4029		6ER5	Dk	PF86	FB	4683
	5902		also	Dm	402	FC	DL35
	M8200		MX155	Dr	3AL5		1C5GT
	also	Cd	6463	Dt	3CB6	FD	4688 C tech
	YL1000		CV5304	D2	3BZ6	FE	4689P C tech
BN	E55L (M5EL)	Cf	VX8205	D+	LL500	FF	6A8
		Ck	EC86		18GB5	FG	VX8114

FH	6K7	GT	CV466+	Hk	EF92	lr	EC158
FI	60EH5	GU	CV467+		6CQ6	lt	PY180
FJ	HCH80	GV	4641	Hm	EL38	l0	ORP11
FK	4699.5 etc	GW	CV468+	Hr	DF21	l1	6211
FL	6J8G	GX	CV469+	Ht	DF22	l2	ORP10
FM	6F6G	GY	CV858+	H0	5ECC dev	l3	PC92
FN	6F6	GZ	CV2129+	H2	DF70	l4	EF183
FP	6V6G	Gf	ECC82	H3	CF50		6EH7
FR	6V6GT		12AU7	H4	DK21	l5	EY180
FS	12SK7	Gk	UCH5	H5	EL44	l6	ECC83
FT	12SQ7	Gm	VX8140	H6	DK40		12AX7
FU	18040	Gr	EC52	H7	DL21	l7	XCF80
FV	PL3C23	G0	EBL31	H8	Z701U	l8	XCH81
FW	25Z5	G1	PCF82	H9	DL40	l9	XF80
FX	25Z6	G2	EC57	H+	DL41	l+	7025
FY	AB2 (V base)	G3	EBF89				
FZ	ABC1 dev		6DC8	IA	ORP20PW	JA	HCC85
Fd	ABL1 dev	G4	EA52	IB	ORP20	JB	EF184
Ff	7AU7	G5	EA52	IC	ECF83		6EJ6
Fk	EA70		6923	ID	E182CC	JC	ORP31
Fm	AD1		1EA dev		7119	JD	PL500
Fr	AF2	G6	EN93	IE	4152-02		27GB5
Ft	AF3		6D4	IF	PC93	JE	PC88
F0	AF7	G+	V2ECC		also		4DL4
F1	43				5876	JF	CBL6
F2	AK2 dev	HA	DF33	IG	6205	JG	EA50
F3	35L6GT	HB	AZ12		CV2432		2B35
F4	AL2	HC	AZ31	IH	185BT	JH	ECF1
F5	AL4	HD	AZ41	II	EL360	JP	EL30
F6	DF91		95104	IJ	VX8240	JU	LCF80
	1T4	HE	41		was used for		YCF80
F7	50L6GT	HF	DK33		Hamburg		6LN8
F8	AZ1	HG	VX8141		PM84 till	JZ	TH2
F9	78	HH	CBL1 dev		3.8.58	Jd	UCC83
F+	AZ4	HI	XC95	IK	PZ36	Jf	ECF806
		HJ	EF97	IL	6286	J0	MX150
GA	ECC88		6ES6	IM	27SU	J7	4069
GB	UM84	HK	CBL31	IN	ORP90		ME1404
GC	VX8167	HL	ECH41	IP	PCC189	J8	3DT6
GD	QV9-P10	HM	UM5	IR	TY86F	J9	V3ECH
GE	EH90	HN	UL43	IS	GZ37	J+	LCL84
	6CS6	HP	UCH41		CV378		YCL84
GF	CV131+	HR	CL4	IT	6BJ6		10DX8
GG	VX8116	HS	GZ40 old	IU	VX8227		also
GH	CV133+	HT	CL33	IV	E180CC		MX108/01
GI	PC95	HU	CY1		7062		
	4ER5	HV	CBC1 dev	IW	E181CC	KA	DL71
GJ	EL81F	HW	CY2 dev	IX	ECC189	KB	DLL21
GK	CV136+		also	IY	PM84		also
	tight cathode		EL521	IZ	EF6N		DLL31
GL	CV136+	HX	CY31		also	KC	DF35
	loose cathode	HY	60FX5		ORP30	KD	E1C
GM	EM81	HZ	CK1 (M)	ld	95398	KE	EL34 old
	6DA5	Hd	ECL80	lf	EC156	KE2	EL34 new
GN	CV138+		6AB8	lk	EC157	KF	DC89
GP	CV140+	Hf	E83CC	lm	PF83	KH	E424N
GR	CV417+		6681		also		A4110
GS	CV465+				MX132		

KI	M8144	LP	DA90	MV	TDD13	NW	UAF100
	CV4033		1A3	MW	EL6/100V	NX	UCH100
KJ	EF98	LR	ECH35 Mull	MX	EL11	NY	UCL11
	6ET6	LS	ECH41	MY	EL12	NZ	UF9
KK	DAC21	LT	ECH80	MZ	EL20	Nd	UF11
	also		6AN7	Md	EL81	Nk	PY80 min
	DAC31	LU	ECL11		6CJ6	Nm	UF41
KL	E443H	LV	TDD4	Mf	PCF82		12AC5
KM	E447	LW	DC79		also	Nr	UF100
KN	EC81	LX	EF93		MX145	Nt	UY2
KP	EA40		6BA6	Mk	PL38	N0	UL100
KS	EA51	LY	EE1	Mm	GZ30 new	N1	UM4
KT	EAF41		EEP1		also	N2	UY1N
KU	EB34	LZ	EF6		GZ40 old	N3	UF21
KV	CBC1 (M)	Ld	EW60	Mr	KB2	N4	EL41 en
		Lf	ECL83	Mt	KBC1	N5	UY41
KW	EB40	Lk	EZ2	M0	EL32	N6	UY100
KX	EY51	Lm	EL91	M1	EL33	N7	UY42
	6X2		6AM5	M2	EBC80	N8	VCL11
KY	EBC3	Lr	EZ4		6BD7	N9	CF2
KZ	EBC33	Lt	EF80	M3	EL39	N+	VY2
Kd	EM1		6BX6	M4	EL41		
Kf	PL83 Bee	L0	EF8		6CK5	PA	DL92
Kk	EM4	L1	EF9	M5	EL42		3S4
	also	L2	E1F		95105	PB	DL72
	EM100	L3	DF65	M6	EL42		also
Km	EM34	L4	EF11	M7	EL8		MX165
	6CD7	L5	EF12	M8	EL51	PC	ECH42
Kt	EQ80	L6	EF22	M9	EL60		6CU7
	6BE7	L7	EF36	M+	EL80 en	PD	EL61
K0	EBF2	L8	EF39			PE	PY80
K1	PCC809	L9	EF40	NA	PL83 en		19X3
K2	EZ41		also	NB	KF3	PF	UF10
K3	EBF11		CV2031	NC	KK2	PG	6007
K4	EBF32	L+	EF41	ND	KL4	PH	Aa
K5	EBF35		6CJ5	NE	AZ50	PK	Ba
K6	EBL1			NF	UAF41	PL	Bas
K7	EBL21	MA	EF42	NG	5651	PM	Ca
K8	EBFS40	MB	EF50	NH	UAF42	PN	Cas
K9	EC40	MC	EF51		12S7	PP	Da
K+	EC41	MD	EF100	NJ	ECH83	PR	Ce
		ME	DL65		6DS8	PS	Ed
LA	DK32	MF	EFM1		also	PT	E2c
	1A7GT	MG	VX8207		MX156	PU	E2d
LB	EC81	MH	EFM11	NK	UL41	PV	EY88
	6R4	MI	EL86		45A5		6AL3
LC	ECC40		6CW5	NL	UBF11	PW	C3b
LD	UY11	MJ	EBF83	NM	UBL1	PX	C3e
LE	ECH3		6DR5	NN	UCH41	PY	5Y3GT
LF	ECH4	MK	DL21S	NP	UBL21	PZ	E452T
LG	VX8206	ML	EFP20	NR	UCH4	Pd	EL6/400V
LH	4671	MM	EFP60		also	Pk	EL12/325V
LI	UBF89	MN	EK2		D3a	Pm	EL12/375V
	19FL8	MP	EK32	NS	UCH11	Pr	EM4/100V
LK	EFF51	MR	EL2	NT	UCH21	Pt	UM4/165V
LL	ECH11	MS	EL3N	NU	UCH42	P0	UM4/200V
LM	ECH21	MT	EBF80 en		14K7	P1	UL44
LN	ECH33	MU	UB41	NV	TDD13C	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		7699
	14L7	SN	EBC41 Bee	Tf	XF85	U0	DY30
RL	C443	SP	DC80	Tk	ECC81		1B3GT
RM	DAF91		6DC	Tm	XL86	U1	XC900
	1S5	SR	EZ40 old	Tr	TD03-10B	U2	AC2
RN	DF92	SS	4060	Tt	EL82	U3	EL520
	1L4	ST	EF41 Bee		6DY5	U4	DF67/5
RP	DK91	SU	UBF80 en	T0	3AT6	U5	E446 (E)
	1R5	SV	18300	T1	PL82	U6	6SA7GT
RR	EAF42	SW	18042 en		16A5	U7	6SK7GT
	6CT7	SX	PL81	T2	KK32 Mull	U8	6SQ7GT
RS	EAF80		21A6	T3	DF74	U9	35Z5GT
RT	EL21	SY	EL34	T4	EL83 en	U+	UY41 Bee
RU	ECC35		6CA7	T5	MX161		
RV	EF55	SZ	EF80	T7	DF67	VA	18042
RW	ECC91	Sd	UCC40	T8	DL67		6086
	6J6	Sf	Z502S	T9	E83F en	VB	E80CC
RX	CCH35	Sk	UF6	T+	UCH81 min		6085
RY	EC91	Sm	EC55			VC	E80F
	6AQ4		TD03-10	UA	UL41 Bee		6084
RZ	EF54	Sr	DCC90	UB	L413S	VD	E80L
Rd	EF55		3A5	UD	A4110		6227
Rf	VX8196C	S0	EL81	UE	DL96	VE	E83F
	6AS6W	S1	CF7		3C4		6689
Rk	EL22	S2	EAF801	UF	DL67/5	VF	ECC81
Rm	EZ22	S3	L416D	UG	6J5G	VG	E81CC
Rr	FW4-800	S4	506	UH	EF43		6201
R0	CY32	S5	EY50	UI	5718	VH	EC92 new
R1	DL33	S6	4684		CV3930	VI	UC92 new
	3Q5GT	S7	4688		also	VJ	ECC89
R2	EAC91	S8	CF3		EL802		6FC7
	M8097	S9	Cf	UJ	37EL	VK	5842
	CV4059	S+	Bh	UK	UF43		417A
R3	EB91			UL	3AV6	VL	E94CC

VM	ORP92	Wk	CV4098	YC	DM70	ZC	UL41 Bee
VN	PC96	Wm	PY82		1M3		Ag plated pins
VP	95124		19Y3		also	ZD	12AD6
VR	E188CC	Wr	EBF81 min		DM71	ZE	E80T
	7308	Wt	DK92	YD	ECH81		6218
VS	EM84		1AC6		6AJ8	ZF	PL81B
	6GF6	W0	EBF81	YE	EC56	ZG	HL90
VT	XCC82	W1	PCL86	YF	EF80 en		12AQ5
	7AU7		14GW8	YG	ECF200	ZH	ECL85
VU	PCF86	W2	XR1-1600A		6X9		6GV8
VV	PL136	W5	E182F	YH	ECL80 en	ZI	EF71 rel
	35FV5	W6	ECC2000	YI	DF60	ZJ	CV3986
VW	EL183	W7	VX8195C		5678		6021
VX	PCL85	W8	18046 Bee	YJ	CV1868	ZK	6AD6
	18GV8	W9	PFL200	YK	ECC81	ZL	6BL6
	Valvo PCL805			YL	PL81 en	ZM	6J8
VY	UY89	XA	401	YM	PL82 en	ZN	12BL6
VZ	6AN7A	XB	XY88	YN	PY80 en	ZP	12J8
Vt	MX149		16AQ3	YP	PY82	ZS	5854
		XC	CV468 Ultra	YR	ECH200	ZX	LFL200
WA	PM22A	XD	CV4086		6V9		11Y9
WB	6BD7 min	XE	M6EF	YS	E186F	ZV	VX8222C
WC	6BH5 min	XF	12DJ8		7737	ZY	LY88
	also	XG	GZ41	YT	XCL84		20AQ3
	6AF9	XH	PCH200	YU	18500	ZZ	4068
WD	6M5 min		9V9	YV	DY87	Zd	5719
	also	XI	5899	YW	18501	Zf	EF40 Bee
	EF800		CV477	YX	18502	Zk	5749
WE	PY32 bant	XJ	5644		also		6BA6W
WF	ORP50	XK	PCF200		MX130	Zm	6005
WG	M3EFP		8X9	YY	EZ90		6AQ5W
WH	9U8	XL	PCF201		6X4	Zr	6080WA
	also		8U9	YZ	EBC90	Zt	ECF201
	EL803S	XN	95106		6AT6		6U9
WI	5840	XR	PY800A	Yd	EK90	Z2	LCF200
WJ	EF730	XT	E235L		6BE6		5X9
	5636	XV	DW4-350	Ym	DL22N	Z3	LCF201
WK	E80CC Bee		DW4-500	Yr	E81L Bee		5U9
	also	XW	E236L	Yt	EC97	Z4	XCF200
	E1T	XX	E282F		6FY5	Z5	XCF201
WL	CV4084	Xf	EL34 bant	Y0	PY81	Z6	PY801
WM	E80F Bee	Xr	E84L		17Z3	Z7	ZP1080
WN	25L6GT		7320	Y2	EC81	Z8	ZP1081
WP	E80L Bee	Xt	PL2D21	Y3	EF85	Z9	4067
WR	UM34	X0	XF184		6BY7	Z+	6111
WS	ECL86	X1	XF183	Y4.0	EABC80 min		
	6GW8	X2	ECC186 (L)	Y4.1	EABC80 en	dA	6112
	also	X3	DL620	Y5	VY1	dB	7895
	CV4011		5672	Y6	6BU8	dC	PL6574
WU	C3JA	X4	EL300	Y7	EFL200	dD	DY86
WV	DW4-350	X5	PL300		6Y9		1S2
WW	18042 Bee	X6	6CY5	Y8	ECH81 en		DY87
WX	EL3	X7	EL502	Y9	EC80		1S2A
WY	18045	X9	E9Z dev		6Q4	dE	6CG7
WZ	UM34/165V	X+	EL504	Y+	PL57	dF	LCH200
Wd	EF94		6GB5A				5V9
	6AU6			ZA	6DT6	dG	12X4
Wf	E83F Bee			ZB	12FK6		

dH	LL86	fE	EL505	kD	EZ40	mP	UF85 min
	10CW5		6GK6		6BT4	mR	UCH81 en
dI	5949	fG	TD1-100A		CV3891	mS	EF80 Bee
dJ	PCL84	fJ	N22LL	kE	GZ40	mT	UABC80 en
	15DQ8		19KF6	kG	UM81	mU	EL83
dK	LL521	fK	ECL82 Bee	kl	EM87		6CK6
dL	GY501		also		6HU6	mV	CV1672
	3BH2		EF802	kJ	MX147	mW	PL83
	V2VY	fL	EL83 Bee		also		15A6
dM	XL521		also		18504		also
dN	LCL85		ECC801S	kK	4662		CV359
	10GV8	fM	PL84 Bee	kM	EL84	mX	E82CC
dP	CV287	fN	UCL82 Bee		6BQ5	mY	G5S6
dR	YL1220	fP	UF86		EL84 Bee	md	UF80
dS	6AU6WB	fR	QQE02/5 Bee	kN	DY51	mk	UF85
dT	EN91		QQV02-6		1BG2	mm	EF85 en
dU	PL435	fS	N22PL	kP	E3LL dev	mr	E280F
dV	LCC189	fT	N22XL	kR	ECF86	mt	EZ40 Bee new
	5ES8	fU	M6ECC		6HG8	m0	EZ80 Bee
	also	fV	LSD2	kU	HN309	m1	PY80
	PL5822Du	fW	Z303C	kV	EY87	m2	EY80
dW	PL522	fX	E33CC	kW	1S4		6U3
dX	EF5000		E35CC?	kZ	5R4GYS	m3	PY82 Bee
dY	CV4108	fY	EM84	kd	ECH84	m4	EABC80
dZ	V6ECC	fZ	EC71		6JX8		6AK8
dd	PD500	fd	EF732	kk	EAM86	m5	E283CC
	9ED4	ff	CV2281		6GX8	m6	ECH81 Bee
df	PY500	fk	EF731	km	XCL86	m7	UCH81 Bee
	42EC4	fm	5609	kr	DF61N	m8	EC8010
dk	PL505	fr	5U8	kt	M4ECC	m9	ECC84
	40GK6	ft	12BY7A	k0	XF86	m+	ECC809
dm	V7PCL	f0	LY81		also		
dr	CV2901		11R3		N7ELL	rA	EF804S
dt	LCL86	f1	5609V	k1	TS65	rB	95107
d0	M8EC	f2	VX8234	k3	D12L	rC	DC80
d1	EA53	f3	GZ34 bant	k4	D20F	rD	PABC80
d2	EL136		CV1377	k5	XCL85		9AK8
	6FV5	f4	ECL84	k6	ECC82	rE	UABC80
d3	E810F		6DX8	k7	XC97	rF	EF805S
	7788	f5	6972	k8	CV4517	rG	K81A
d4	M13PL	f6	M7EC	k9	PY800	rH	QQE03/12Bee
d5	M6DY		EC98				QQV03-10
d6	GY86	f7	EY500	mA	PABC80 en	rl	ME1403
d7	PY81 en		6EC4	mC	ECC83	rJ	UF89 Bee
d8	UABC80 en	f8	24DF	mD	6AM6S	rN	DY86
d9	UCH81 en	f9	ECC83 low	mE	CV302 not		DY87
	also		microphony		finished	rS	GZ33
	EL803		also	mF	CV303 not		CV378
d+	UF80 en		CV4110		finished		GZ34 made in
	also	f+	M10PL	mG	UCL83		Eindhoven
	YL1080			mH	12AU7S	rT	E180F
	YL1081	kA	UF85	ml	CV4039		6688
			also		M8096	rU	HF93
fA	LA4-250		CV4111	mJ	EF89 Bee		12BA6
fB	LB4-2	kB	EZ80 en new		also	rV	E181CC Bee
fC	MX124/01	kC	EZ80		YL1130	rW	EL85
fD	MX133		6V4	mK	AB2 (O)		6BN5
				mN	GZ34	rX	EL84 min

rY	4699N	tm	EF804	09	E95F	2L	EY70
rZ	6BK4	tr	EL81 Bee		5654	2M	EY91
rd	EM85	tt	PL81 Bee		6AK5W	2N	DAF70
rk	XL505	t1	PL508	0+	UBC81	2P	LSD3
rm	LL505	t2	PL504			2R	LSD3A
rr	CV2031	t3	N22EL	1B	03DF dev	2S	LSD5
rt	PCC84	t4	V7PL	1C	04DL dev	2T	LSD7
	7AN7		PL802	1D	CV4011	2U	LSD8
r0	4646	t5	V10PL		also	2V	XCL82
r1	DF64	t6	UL84		03DF dev	2W	LSD24
r2	DL64	t7	EL508	1E	DF62	2Y	ME1401
r3	1AX2		6KW6	1F	DAF92		4065
r4	5814A	t8	6BK4A		1U5	2Z	ME1402
r5	12AT7WB	t9	Z500T		CV3912		4066
r7	PCF80	t+	Z501T	1G	UCL82	2a	7645 Ampx
	9A8				50BM8	2d	GY802
r8	EM80	0B	LY500	1J	CV4009	2f	EL86 Bee
	6BR5	0C	PL5822	1V	PL81F	2k	PCF810
r9	6SN7GT	0D	ECC180	1W	DL69	2m	3A3
r+	ED500		6BQ7A	1Y	AN1	2r	PL521
		0E	PL57K	1f	EBF82	2t	5837A
tA	N23PL	0F	YL1080	1k	EL821	23	MX108
tB	EL503		YL1081		6CH6	24	MX118
tC	UY85	0G	ECL82	1m	CV2507	25	MX119
tD	EY86		6BM8	1r	DC70	27	11AF9
	6S2	0H	EBC81	1t	DF66	28	PCL83
	EY87		6BD7A	10	DF72	29	XY500
	6S2A	0I	EY70 rel	11	DL66	2+	XL508
tE	EF86 Bee	0J	CV4005	12	DL68		
tF	E99F	0K	12SN7GT	13	DL95	3B	TD03-5
	7694	0L	25Z6GT		3Q4	3E	Z300T
tH	25Y5 (J base)	0M	12SA7GT	14	DL73	3F	Z800U
tI	VX8163	0N	18015	15	DL75	3G	E82M
tJ	PL82 Bee	0P	PCC89	16	DL98	3H	Z801U
tK	4694		7EF7		3B4	3I	UF81
tL	M5DY	0S	KT66	17	DY70	3J	CV4019
	DY802	0U	12SK7GT/M	18	EA76	3K	Z900T
tM	PC86	0W	12SQ7GT/M		6489	3L	E91H
	4CM4	0Z	EC83.1	19	EC70		6687
tN	ECC86	0d	LL504	1+	EC90	3M	6CB6
tP	UCC85	0f	DM160		6C4	3N	EL90
tR	EF89		6977				6AQ5
	6DA6	0k	UM80	2A	EF70	3P	85A2
tS	PCL81		19BR5		CV467	3U	EBC91
tT	M11EL	0m	UF89	2B	EF71		6AV6
	EL5070	0r	XL504	2C	EF72	3V	Z70U
tU	ECC85	0t	N55RPY	2D	EF73	3X	150C2
tV	GZ34	00	18016	2E	EF95	3Y	HBC90
tW	4373	02	EY81		6AK5		12AT6
tX	18046 en		6R3	2F	EL70	3Z	HF94
tY	EBC81 Bee	03	6SA7GT/M	2G	EY802		12AU6
tZ	PCC85	04	6SK7GT/M	2H	EN32	3d	HBC91
	9AQ8	05	6SQ7GT/M		also		12AV6
td	6A8GT	06	N54RPY		PL6574	3f	PCL82 Bee
tf	LA4-2	07	UY85 Bee	2I	UBC80	3k	HK90
	VX8168	08	PL95	2J	CV4012		12BE6
tk	75			2K	5643	3m	DC90
	CV614				EN70		

3r	HY90	5I	50EH5	6W	M8097	8D	12K8G
	35W4	5K	ECC33	6X	CV2742	8E	12K8GT
3t	HL92	5L	ECC34	6Y	CV4015	8F	12Q7G
	50C5	5M	EF37		M8161	8G	CV4034
30	E92CC	5N	EL33A	6Z	CV4031	8H	12Q7GT
31	EC92				M8081	8I	E81L en
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		M8195
4F	LL508	5m	UCF80		5726	8Z	PY32
4G	EF83	5r	UL46		6AL5W	8d	CCH3 Mull
4I	UCH80	5t	UR1C	6+	EL180	8f	E90F
4J	CV5029	51	18512				7693
4M	MX112	52	UBF80	7B	6SJ7GT	8k	PY88
4N	MX115		17C8	7C	5U4G		30AE3
4P	CV2246	53	HCH81 en	7D	R199899	8m	DDC38
4R	EBF80	54	01DAF	7E	PCL82	8r	95108
4S	EY82	55	75B1		16A8	8t	EZ81
	6N3	56	95A1	7F	DF97		6CA4
4U	EC93	57	DM71		1AN5	88	5893A
4W	HL94		1N3	7H	DC96		
	30A5		also	7J	M8163	9A	5Z3
4X	ECF82		EL802	7L	E88CC	9B	6AS5
	6U8	59	CV4010		6922	9C	6A7
	CV5065		M8100	7M	17ECC dev	9D	6C5GT
4d	100117	5+	CV4014	7R	5X4G	9E	6F6GT
4f	PY81 Bee		M8083	7S	5Z4G	9F	6J5GT
4k	K51A			7T	5Z4GT	9G	6AS6
	OG82 dev	6A	CV4025	7U	6BG6G	9H	6L6G
4r	EM71		M8079	7W	6J7G	9J	VX8084
41	6263A	6B	7247	7X	6J7GT	9K	6L6GA
43	PL36	6C	DCF60	7Y	6K7G	9L	6X5
	25E5	6D	DF61	7Z	6K7GT	9M	25A6G
44	UY92	6E	DF63	7d	6K8G	9N	42
45	UL44	6H	ME1201AG	7f	M2EC	9P	PP35
47	EB4	6J	Z303C	7k	6K8GT	9R	PP36
48	PL38M		GC10B	7m	6Q7G	9S	PP60
49	2A		DDB32	7r	6Q7GT	9V	5840
4+	CCH3	6K	MX103	7t	12J7G		CV3929
		6L	MX120	70	3AU6	9Z	Z500E
5A	CV9	6M	MX122	71	39EF	9k	UY82
5C	XY81	6N	MX123	76	5876A	9m	EL41 A tech
5D	HCH81	6P	MX124	7+	18503	9r	EF86 en
5E	QE04/10	6R	MX125			9t	PY83
5F	CV1863	6S	MX126	8A	12J7GT	90	ET51
5H	5Z4GT	6T	E180CC Bee	8B	12K7G	92	CV2469
	CV2748	6U	Z50T	8C	12K7GT	93	VCRX437C

97 QQV04-16
99 MX152

*C Z70U
Z700U
*T Z521M
*U Z522M

∩C 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		