

TYPE NUMBER	MFR	APP	COMP	GBP MIN	SLEW RATE MIN	V _{S+} MAX	V _{S-} MAX	T _{OP} MAX	A _{VOL} MIN	V _{IO} MAX	I _B MAX	I _{IO} MAX	P _{TOT} MAX	I _{OUT} MIN	V _{OUT} MIN	V _{ICM} MAX	V _{IDF} MAX	dV _{IO} /dT MAX	P _C MAX	I _O MAX	CM RR MIN	PS RR MIN	R _{IN} MIN
MC1531F	MTU	GPU	EXT	.	0.3V/US	+9V	-9V	125C	68dB	10MV	150NA	25NA	500MWF	5MA	4.5V	2V	5V	30U/C	150MW	.	65dB	74dB	1M
MC1531G	MTU	GPU	EXT	.	0.3V/US	+9V	-9V	125C	68dB	10MV	150NA	25NA	680MWF	5MA	5MV	2V	5V	30U/C	150MW	.	65dB	74dB	1M
MC1531L	MTU	GPU	EXT	.	0.3V/US	+9V	-9V	125C	68dB	10MV	150NA	25NA	1WF	5MA	4.5V	2V	5V	30U/C	150MW	.	65dB	74dB	1M
MC1533F	MTU	GPU	EXT	.	0.2V/US	+20V	-20V	125C	92dB	5MV	1uA	15uA	500MW	6MA	12V	20V	10V	20U/C	170MW	.	90dB	76dB	500K
MC1533F	OBS	GPU	EXT	.	0.2V/US	+20V	-20V	125C	92dB	5MV	1uA	15uA	500MWF	6MA	12V	20V	10V	20U/C	170MW	.	90dB	76dB	500K
MC1533G	MTU	GPU	EXT	.	0.2V/US	+20V	-20V	125C	92dB	5MV	1uA	15uA	680MWF	6MA	12V	20V	10V	20U/C	170MW	.	90dB	76dB	500K
MC1533G	OBS	GPU	EXT	.	0.2V/US	+20V	-20V	125C	92dB	5MV	1uA	15uA	680MWF	6MA	12V	20V	10V	20U/C	170MW	.	90dB	76dB	500K
MC1533L	MTU	GPU	EXT	.	0.2V/US	+20V	-20V	125C	92dB	5MV	1uA	15uA	1WF	6MA	12V	20V	10V	20U/C	170MW	.	90dB	76dB	500K
MC1535F	MTU	DGU	EXT	.	0.2V/US	+10V	-10V	125C	72dB	3MV	3uA	0.3uA	500MWF	.3MA	3V	10V	5V	15U/C	150MW	.	70dB	70dB	10K
MC1535G	MTU	DGU	EXT	.	0.2V/US	+10V	-10V	125C	72dB	3MV	3uA	0.3uA	680MW	.3MA	3V	10V	5V	15U/C	150MW	.	70dB	70dB	10K
MC1535L	MTU	DGU	EXT	.	0.2V/US	+10V	-10V	125C	72dB	3MV	3uA	0.3uA	680MWF	.3MA	3V	10V	5V	15U/C	150MW	.	70dB	70dB	10K
MC1536G	MTU	HVO	INT	.3MHZ	0.5V/US	+40V	-40V	125C	100dB	5MV	20NA	3NA	680MWF	1MA	30V	40V	80V	224MW	4MA	80dB	80dB	3M	
MC1537L	MTU	DGU	EXT	.	0.1V/US	+18V	-18V	125C	94dB	5MV	0.5uA	0.2uA	750MWF	5MA	12V	18V	5V	10U/C	225MW	.	70dB	76dB	150K
MC1539G	MTU	GPU	EXT	.	0.4V/US	+18V	-18V	125C	94dB	3MV	500NA	75NA	680MWF	10MA	10V	18V	36V	10U/C	.	5MA	80dB	76dB	150K
MC1539L	MTU	GPU	EXT	.	0.4V/US	+18V	-18V	125C	94dB	3MV	500NA	75NA	750MWF	10MA	10V	18V	36V	10U/C	.	5MA	80dB	76dB	150K
MC1556F	MUG	SBA	INT	.5MHZ	1V/US	+22V	-22V	125C	100dB	4MV	15NA	2NA	680MWF	6MA	12V	22V	22V	30U/C	45MW	2MA	80dB	80dB	1.5M
MC1556G	MTU	SBA	INT	.5MHZ	1V/US	+22V	-22V	125C	100dB	4MV	15NA	2NA	680MWF	6MA	12V	22V	22V	30U/C	45MW	2MA	80dB	80dB	1.5M
MC1556L	MTU	SBA	INT	.5MHZ	1V/US	+22V	-22V	125C	100dB	4MV	15NA	2NA	680MWF	6MA	12V	22V	22V	30U/C	45MW	2MA	80dB	80dB	1.5M
MC1556N(8)	MUG	SBA	INT	.5MHZ	1V/US	+22V	-22V	125C	100dB	4MV	15NA	2NA	680MWF	6MA	12V	22V	22V	30U/C	45MW	2MA	80dB	80dB	1.5M
MC1556T	MUG	SBA	INT	.5MHZ	1V/US	+22V	-22V	125C	100dB	4MV	15NA	2NA	500MWF	6MA	12V	22V	22V	30U/C	45MW	2MA	80dB	80dB	1.5M
MC1556V	MUG	SBA	INT	.5MHZ	1V/US	+22V	-22V	125C	100dB	4MV	15NA	2NA	680MWF	6MA	12V	22V	22V	30U/C	45MW	2MA	80dB	80dB	1.5M
MC1558G	MTU	DGK	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	680MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558L	MTU	DGK	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	750MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558N(8)	MUG	DGK	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	400MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558NG	MTU	DLN	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	680MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558NL	MTU	DLN	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	750MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558NU	MTU	DLN	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	750MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558SG	MTU	DHS	INT	.5MHZ	3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	680MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558SL	MTU	DHS	INT	.5MHZ	3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	750MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558SU	MTU	DHS	INT	.5MHZ	3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	750MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558T	SJU	DGK	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	500MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558U	MTU	DGK	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	750MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1558V	MUG	DGK	INT	.5MHZ	0.3V/US	+22V	-22V	125C	94dB	5MV	0.5uA	0.2uA	400MWF	5MA	12V	15V	30V	50U/C	150MW	5MA	70dB	76dB	300K
MC1709AF	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	125C	88dB	2MV	200NA	50NA	500MWF	5MA	12V	10V	5V	10U/C	108MW	4MA	80dB	80dB	350K
MC1709AG	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	125C	88dB	2MV	200NA	50NA	680MWF	5MA	12V	10V	5V	10U/C	108MW	4MA	80dB	80dB	350K
MC1709AL	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	125C	88dB	2MV	200NA	50NA	750MWF	5MA	12V	10V	5V	10U/C	108MW	4MA	80dB	80dB	350K
MC1709CF	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	75C	82dB	7.5MV	1.5uA	0.5uA	500MWF	5MA	12V	10V	5V	200MW	.	65dB	74dB	50K	
MC1709CG	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	75C	82dB	7.5MV	1.5uA	0.5uA	680MWF	5MA	12V	10V	5V	200MW	.	65dB	74dB	50K	
MC1709CL	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	75C	82dB	7.5MV	1.5uA	0.5uA	750MWF	5MA	12V	10V	5V	200MW	.	65dB	74dB	50K	
MC1709CP	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	75C	82dB	7.5MV	1.5uA	0.5uA	625MWF	5MA	12V	10V	5V	200MW	.	65dB	74dB	50K	
MC1709CP1	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	75C	82dB	7.5MV	1.5uA	0.5uA	625MWF	5MA	12V	10V	5V	200MW	.	65dB	74dB	50K	
MC1709CP2	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	75C	82dB	7.5MV	1.5uA	0.5uA	625MWF	5MA	12V	10V	5V	200MW	.	65dB	74dB	50K	
MC1709CU	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	75C	82dB	7.5MV	1.5uA	0.5uA	750MWF	5MA	12V	10V	5V	200MW	.	65dB	74dB	50K	
MC1709F	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	125C	88dB	5MV	500NA	200NA	500MWF	5MA	12V	10V	5V	15U/C	165MW	.	70dB	76dB	150K
MC1709G	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	125C	88dB	5MV	500NA	200NA	680MWF	5MA	12V	10V	5V	15U/C	165MW	.	70dB	76dB	150K
MC1709L	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	125C	88dB	5MV	500NA	200NA	750MWF	5MA	12V	10V	5V	15U/C	165MW	.	70dB	76dB	150K
MC1709U	MTU	GPU	EXT	.3MHZ	.15V/US	+18V	-18V	125C	88dB	5MV	500NA	200NA	750MWF	5MA	12V	10V	5V	15U/C	165MW	.	70dB	76dB	150K
MC1710CF	MTU	CPR	EXT	.	.	+14V	-7V	75C	60dB	5MV	25uA	5uA	500MWF	5MA	1V	7V	5V	20U/C	150MW	9MA	70dB	.	.
MC1710CG	MTU	CPR	EXT	.	.	+14V	-7V	75C	60dB	5MV	25uA	5uA	680MWF	5MA	1V	7V	5V	20U/C	150MW	9MA	70dB	.	.
MC1710CL	MTU	CPR	EXT	.	.	+14V	-7V	75C	60dB	5MV	25uA	5uA	625MWF	5MA	1V	7V	5V	20U/C	150MW	9MA	70dB	.	.
MC1710CP	MTU	CPR	EXT	.	.	+14V	-7V	75C	60dB	5MV	25uA	5uA	625MWF	5MA	1V	7V	5V	20U/C	150MW	9MA	70dB	.	.
MC1710F	MTU	CPR	EXT	.	.	+14V	-7V	125C	62dB	2MV	20uA	3uA	500MWF	5MA	1V	7V	5V	10U/C	150MW	9MA	80dB	.	.
MC1710G	MTU	CPR	EXT	.	.	+14V	-7V	125C	62dB	2MV	20uA	3uA	680MWF	5MA	1V	7V	5V	10U/C	150MW	9MA	80dB	.	.
MC1710L	MTU	CPR	EXT	.	.	+14V	-7V	125C	62dB	2MV	20uA	3uA	625MWF	5MA	1V	7V	5V	10U/C	150MW	9MA	80dB	.	.
MC1711CF	MTU	DCP	EXT	.	.	+14V	-7V	75C	57dB	5MV	100uA	25uA	500MWF	5MA	2.5V	7V	5V	20U/C	200MW	.	.	.	.
MC1711CG	MTU	DCP	EXT	.	.	+14V	-7V	75C	57dB	5MV	100uA	25uA	680MWF	5MA	2.5V	7V	5V	20U/C	200MW	.	.	.	.
MC1711CL	MTU	DCP	EXT	.	.	+14V	-7V	75C	57dB	5MV	100uA	25uA	625MWF	5MA	2.5V	7V	5V	20U/C	200MW	.	.	.	.
MC1711CP	MTU	DCP	EXT	.	.	+14V	-7V	75C	57dB	5MV	100uA	25uA	625MWF	5MA	2.5V	7V	5V	20U/C	200MW	.	.	.	.
MC1711F	MTU	DCP	EXT	.	.	+14V	-7V	125C	58dB	3.5MV	75uA	10uA	500MWF	5MA	2.5V	7V	5V	20U/C	200MW	.	.	.	.
MC1711G	MTU	DCP	EXT	.	.	+14V	-7V	125C	58dB	3.5MV	75uA	10uA	680MW	5MA	2.5V	7V	5V	20U/C	200MW	.	.	.	.

For detailed explanations of column heading notations, see App. A

Also for ready references the more important abbreviations used in the column headings are listed below:

LEFT HAND PAGE

APP = application (codes at APP.E.)

CMRR = common mode rejection ratio

CMP = compensation (frequency)

dV_{in}/dT = input offset voltage temperature drift

GBP = gain bandwidth product

I_B = input bias current

I_{B1} = input bias offset current

I_{C1} = quiescent supply current

MFR = manufacturer (codes at App.C.)

P_{D1} = quiescent power consumer

PSRR = power supply rejection ratio

V_{ICM} = common mode input voltage rating

V_{IDP} = differential input voltage rating

V_{IO1} = input offset voltage

V_S = dc supply voltage

RIGHT HAND PAGE

Lead out coding summary (details at APP.G.) for different cases (APP.F.)

A = gain adjust

B = bias adjust

C = case

E- = inverting input

E+ = non-inverting input

F, F* = input frequency compensation

G = ground

J = high level input

K = output, open collector

L = output, open emitter

M = metal case

N = not connected

Q = special terminal

R, R* = outputs

S = strobe

T, T* = offset balance

V+ = +ve dc supply

V- = -ve dc supply

W = guard ring

X = blank position, no lead

++ = +ve supplementary dc supply

-- = -ve supplementary dc supply

ϕ, ϕ^* = output frequency compensation

	CASE (APP.F.)	LD 1	LD 2	LD 3	LD 4	LD 5	LD 6	LD 7	LD 8	LD 9	LD 10	LD 11	LD 12	LD 13	LD 14	LD 15	LD 16	EUROPE SUBSTITUTION	USA SUBSTITUTION	ISSS	TYPE NUMBER		
	FLP-10/3C	E+	E-	G	V-	R	V+	F	F*	ϕ	ϕ^*	.	.	.	.	.	.	.	.	0	MC1531F
	T05-10/1M	E+	E-	G	V-	R	V+	F	F*	ϕ	ϕ^*	.	.	.	.	.	.	.	.	0	MC1531G
	DIL-14/1C	ϕ	ϕ^*	N	E+	N	E-	V-	G	N	N	R	V+	F	F*	.	.	.	.	0	MC1531L
	FLP-10/3G	E+	ϕ	V-	R	V+	V+	V+	F	F*	E-	.	.	.	.	.	.	.	.	0	MC1533F
	FLP-10/3G	E+	ϕ	V-	R	V+	A	T	F	F*	E-	.	.	.	.	.	.	.	.	0	MC1533F
	T05-10/1M	E-	E+	ϕ	V-	R	V+	V+	V+	F	F*	.	.	.	.	.	.	.	.	0	MC1533G
	T05-10/1M	E-	E+	ϕ	V-	R	V+	A	T	F	F*	.	.	.	.	.	.	.	.	0	MC1533G
	DIL-14/1C	N	F	F*	E-	E+	ϕ	V-	N	N	N	R	V+	V+	V+	.	.	.	.	0	MC1533L
	FLP-14/3C	R2	$\phi 2$	F2	F*2	E+2	E-2	V-	E-1	E+1	F1	F*1	$\phi 1$	R1	V+	.	.	.	.	0	MC1535F
	T05-10/1M	V-	E-2	E+2	$\phi 2$	R2	V+	R1	$\phi 1$	E+1	E-1	.	.	.	.	.	.	.	.	0	MC1535G
	DIL-14/1C	R2	$\phi 2$	F2	F*2	E+2	E-2	V-	E-1	E+1	F1	F*1	$\phi 1$	R1	V+	.	.	.	UA749DM	0	MC1535L		
	T05-8/1M	T	E-	E+	V+	T*	R	V+	N	.	.	.	.	.	.	.	.	.	LM143	0	MC1536G
	DIL-14/1C	$\phi 2$	R2	F2	F*2	E-2	E+2	V-	E+1	E-1	F1	F*1	R1	$\phi 1$	V+	.	.	RM1537DC	0	MC1537L			
	T05-8/1M	F	E-	E+	V-	ϕ	R	V+	F*	.	.	.	.	.	.	.	.	TAA522	UA709HM	0	MC1539G
	DIL-14/1C	N	N	F	E-	E+	V-	N	N	ϕ	R	V+	F*	N	N	.	.	LM709J	UA7090M	0	MC1539L		
	DIL-14/1C	N	N	T	E-	E+	V-	N	N	T*	R	V+	N	N	N	.	.	.	MC1556L	0	MC1556F		
	T05-8/1M	T	E-	E+	V-	T*	R	V+	N	.	.	.	.	.	.	.	.	LM143H	MC1556T	0	MC1556G
	DIL-14/1C	N	N	T	E-	E+	V-	N	N	T*	R	V+	N	N	N	.	.	LM143D	MC1556F	0	MC1556L		
	DIL-8/1P	T	E-	E+	V-	T*	R	V+	N	.	.	.	.	.	.	.	.	S5556V	MC1556V	0	MC1556N(8)
	T05-8/1M	T	E-	E+	V-	T*	R	V+	N	.	.	.	.	.	.	.	.	S5556T	MC1556G	0	MC1556T
	DIL-8/1P	T	E-	E+	V-	T*	R	V+	N	.	.	.	.	.	.	.	.	S5556V	MC1556V	0	MC1556V
	T05-8/1M	R1	E-1	E+1	V-	E+2	E-2	R2	V+	.	.	.	.	.	.	.	.	TBC1458	LM1558H	0	MC1558G
	DIL-14/1C	N	R1	N	N	E-1	E+1	V-	E+2	E-2	N	N	R2	N	V+	.	.	.	MC1558U	0	MC1558L		
	DIL-8/1P	R1	E-1	E+1	V-	E+2	E-2	R2	V+	.	.	.	.	.	.	.	.	LM1558J	MC1558U	0	MC1558N(8)
	T05-8/1M	R1	E-1	E+1	V-	E+2	E-2	R2	V+	.	.	.	.	.	.	.	.	.	MC1558U	0	MC1558NG
	DIL-14/1C	N	R1	N	N	E-1	E+1	V-	E+2	E-2	N	N	R2	N	V+	.	.	.	.	0	MC1558NL
	DIL-8/1C	R1	E-1	E+1	V-	E+2	E-2	R2	V+	0	MC1558NU	
	T05-8/1M	R1	E-1	E+1	V-	E+2	E-2	R2	V+	0	MC1558SG	
	DIL-14/1C	N	R1	N	N	E-1	E+1	V-	E+2	E-2	N	N	R2	N	V+	0	MC1558SL	
	DIL-8/1C	R1	E-1	E+1	V-	E+2	E-2	R2	V+	0	MC1558SU
	T05-8/1M	R1	E-1	E+1	V-	E+2	E-2	R2	V+	.	.	.	.	.	.	.	.	TBC1458	MC1558G	0	MC1558T
	DIL-8/1C	R1	E-1	E+1	V-	E+2	E-2	R2	V+	.	.	.	.	.	.	.	.	LM1558J	MC1558U	0	MC1558U
	DIL-8/1P	R1	E-1	E+1	V-	E+2	E-2	R2	V+	.	.	.	.	.	.	.	.	LM1558J	MC1558U	0	MC1558V
	FLP-10/3C	N	F	E-	E+	V-	ϕ	R	V+	F*	N	.	.	.	.	.	.	SN52709AFA	UA709AFM	0	MC1709AF
	T05-8/1M	F	E-	E+	V-	ϕ	R	V+	F*	.	.	.	.	.	.	.	.	.	UA709AHM	0	MC1709AG
	DIL-14/1C	N	N	F	E-	E+	V-	N	N	ϕ	R	V+	F*	N	N	.	.	LM709AJ	UA709ADM	0	MC1709AL		
	FLP-10/3C	N	F	E-	E+	V-	ϕ	R	V+	F*	N	.	.	.	.	.	.	SN52709AFA	UA709FM	0	MC1709CF
	T05-8/1M	F	E-	E+	V-	ϕ	R	V+	F*	.	.	.	.	.	.	.	.	TAA521	UA709HC	0	MC1709CG
	DIL-14/1C	N	N	F	E-	E+	V-	N	N	ϕ	R	V+	F*	N	N	.	.	TAA521A	UA709DC	0	MC1709CL		
	DIL-14/1P	N	N	F	E-	E+	V-	N	N	ϕ	R	V+	F*	N	N	.	.	TAA521A	UA709DC	0	MC1709CP		
	DIL-8/1C	F	E-	E+	V-	ϕ	R	V+	F*	.	.	.	.	.	.	.	.	LM709CN8	UA709TC	0	MC1709CP1
	DIL-14/1P	N	N	F	E-	E+	V-	N	N	ϕ	R	V+	F*	N	N	.	.	TAA521A	UA709DC	0	MC1709CP2		
	DIL-8/1C	F	E-	E+	V-	ϕ	R	V+	F*	.	.	.	.	.	.	.	.	LM709CN8	UA709TC	0	MC1709CU
	FLP-10/3C	N	F	E-	E+	V-	ϕ	R	V+	F*	N	.	.	.	.	.	.	.	UA709FM	0	MC1709F
	T05-8/1M	F	E-	E+	V-	ϕ	R	V+	F*	.	.	.	.	.	.	.	.	TAA522	UA709HM	0	MC1709G
	DIL-14/1C	N	N	F	E-	E+	V-	N	N	ϕ	R	V+	F*	N	N	.	.	LM709J	UA709DM	0	MC1709L		
	DIL-8/1C	F	E-	E+	V-	ϕ	R	V+	F*	.	.	.	.	.	.	.	.	SN52709AJP	MC1709U	0	MC1709U
	FLP-10/3C	G	E+	E-	N	V-	R	N	V+	N	N	.	.	.	.	.	.	SFC2710PM	UA710FM	0	MC1710CF
	T05-8/1M	G	E+	E-	V-	N	N	R	V+	.	.	.	.	.	.	.	.	SFC2710C	UA710HC	0	MC1710CG
	DIL-14/1C	N	G	E+	E-	N	V-	N	N	R	N	V+	N	N	N	.	.	SFC2710EC	UA7100C	0	MC1710CL		
	DIL-14/1P	N	G	E+	E-	N	V-	N	N	R	N	V+	N	N	N	.	.	SFC2710EC	UA7100C	0	MC1710CP		
	FLP-10/3C	G	E+	E-	N	V-	R	N	V+	N	N	.	.	.	.	.	.	SFC2710PM	UA710FM	0	MC1710F
	T05-8/1M	G	E+	E-	N	N	R	N	V+	.	.	.	.	.	.	.	.	SFC2710M	UA710HM	0	MC1710G
	DIL-14/1C	N	G	E+	E-	N	V-	N	N	R	N	V+	N	N	N	.	.	SFC2710KM	UA710DM	0	MC1710L		
	FLP-10/1C	E-1	E+1	V-	E+2	E-2	S2	R	V+	G	S1	.	.	.	.	.	.	SFC2711PM	UA711FM	0	MC1711CF
	T05-10/1M	G	S1	E-1	E+1	V-	E+2	E-2	S2	R	V+	.	.	.	.	.	.	SFC2711C	UA711HC	0	MC1711CG
	DIL-14/1C	N	E-1	E+1	V-	E+2	E-2	N	N	S2	R	V+	G	S1	N	.	.	SFC2711EC	UA711DC	0	MC1711CL		
	DIL-14/1P	N	E-1	E+1	V-	E+2	E-2	N	N	S2	R	V+	G	S1	N	.	.	SFC2711EC	UA711DC	0	MC1711CP		
	FLP-10/1C	E-1	E+1	V-	E+2	E-2	S2	R	V+	G	S1	.	.	.	.	.	.	SFC2711M	UA711HM	0	MC1711F
	T05-10/1M	G	S1	E-1	E+1	V-	E+2	E-2	S2	R	V+	.	.	.	.	.	.	SFC2711M	UA711HM	0	MC1711G

Appendix A

Explanatory notes to tabulations

The general layout plan of the information in the tables of this compendium should be immediately evident from the data tabulation explanatory chart set out overleaf.

Supporting Appendices with additional information are:

- App. B Glossary of *Opamp Terms*
- App. C Tabulation *Codes for Manufacturers*
- App. D IC Manufacturers' *House Numbers*
- App. E Tabulation *Codes for Applications*
- App. F *Case Outline and Leadout Diagrams*
- App. G Codes for *Leadout Connections*

Unit symbols used in the tables are:

- A = amperes
- C = °centigrade
- dB = decibels
- G = gigaohms (megohms $\times 10^3$)
- GHZ = gigahertz (megahertz $\times 10^3$)
- K = kilohms
- KHZ = kilohertz
- M = megohms
- MA = milliamperes, mA
- MAX = maximum
- MHZ = megahertz
- MIN = minimum
- MV = millivolts
- MWC = milliwatts, case at 25C
- MWF = milliwatts, free air at 25C
- MWH = milliwatts, heat sink, 25C
- NA = nanoamps (microamps $\times 10^{-3}$)
- NV = nanovolts (microvolts $\times 10^{-3}$)
- PA = picoamps (microamps $\times 10^{-12}$)
- R = ohms
- T = teraohms (megohms $\times 10^6$)
- V = volts
- WC = watts, case at 25C
- WF = watts, free air at 25C
- WH = watts, heatsink, 25C
- μ A = microamps
- μ S = microseconds
- μ V = microvolts
- μ W = microwatts
- μ WF = microwatts, free air at 25C

Where a unit symbol appears in the middle of a value, it indicates the position of the decimal point, e.g. 3K3 = 3.3K.

Appendix A

TYPE NUMBER	MFR	APP	CMP	GBP MIN	SLEW RATE MIN	V _{S+} MAX	V _{S-} MAX	T _{OP} MAX	A _{VOL} MIN	V _{IO} MAX	I _B MAX	I _{IO} MAX	P _{TOT} MAX	I _{OUT} MIN	V _{OUT} MIN	V _{ICM} MAX	V _{IDF} MAX	dV _{IO} /dT MAX	P _O MAX	I _O MAX	CMRR MIN	PSRR MIN	R _{IN} MIN
(EXAMPLE) LH0022CH	NAU	FET	INT	.3MHZ	1V/US	+22V	-22V	85C	97dB	6MV	25pA	5pA	500MWF	10MA	10V	15V	30V	15uV/C	85MW	3MA	70dB	70dB	0.1T
<p>TYPE No. NUMERO-ALPHABETIC LISTING</p> <p>MFR = MANUFACTURER CODED AS APP. C</p> <p>APP = APPLICATION CODED AS APP. E</p> <p>CMP = FREQUENCY COMPENSATION WITH INT = INTERNAL EXT = EXTERNAL</p> <p>GBP MIN = UNITY GAIN BANDWIDTH PRODUCT, MIN.; IN KHZ, MHZ, or GHZ</p> <p>SLEW RATE, MIN. IN VOLTS PER MICROSECOND. V/μS</p> <p>V_{S+} MAX = MAX. PERMISSIBLE +VE DC SUPPLY VOLTAGE IN VOLTS, V</p> <p>V_{S-} MAX = MAX. PERMISSIBLE -VE DC SUPPLY VOLTAGE IN VOLTS, V</p> <p>T_{OP} MAX = MAX. PERMISSIBLE OPERATIONAL AMBIENT TEMPERATURE IN °C.</p> <p>A_{VOL} MIN = MIN. OPEN-LOOP VOLTAGE GAIN IN DB</p> <p>V_{IO} MAX = MAX INPUT OFFSET VOLTAGE AT 25°C IN MV or μV.</p> <p>I_B MAX = MAX. INPUT BIAS CURRENT AT 25°C IN MA, μA, nA or pA</p>	<p>I_O MAX = MAX. QUIESCENT (NO SIGNAL, NO LOAD) CURRENT CONSUMPTION IN MA</p> <p>P_O MAX = MAX. QUIESCENT (NO SIGNAL, NO LOAD) POWER CONSUMPTION IN MW</p> <p>dV_{IO}/dT MAX = MAX. INPUT OFFSET VOLTAGE TEMPERATURE DRIFT IN μV/C OR MV/C</p> <p>V_{IDF} MAX = MAX. PERMISSIBLE DIFFERENTIAL INPUT VOLTAGE IN V.</p> <p>V_{ICM} MAX = MAX. PERMISSIBLE COMMON-MODE INPUT VOLTAGE IN VOLTS, V</p> <p>V_{OUT} MIN = GUARANTEED MIN. OUTPUT VOLTAGE, PEAK VALUE, IN VOLTS, V</p> <p>I_{OUT} MIN = GUARANTEED MINIMUM OUTPUT CURRENT, PEAK VALUE, IN MA OR μA.</p> <p>P_{TOT} MAX = MAX. PERMISSIBLE POWER DISSIPATION IN W, mW, μW WITH F = FREE AIR 25°C, C = CASE 25°C, H = HEATSINK 25°C.</p> <p>I_{IO} MAX = MAX. INPUT OFFSET CURRENT AT 25°C IN MA, μA, nA, OR pA</p>	<p>R_{IN} MIN = MIN. INPUT RESISTANCE</p> <p>PSRR MIN = MIN. POWER SUPPLY REJECTION RATIO IN DB</p> <p>CMRR MIN = MIN. COMMON MODE REJECTION RATIO IN DB</p>																					
<p>[NOTE: FOR FURTHER EXPLANATION OF SPECIAL TERMS SEE APP. B]</p>	<p>* R_{IN} EXPRESSED AS OHMS (R), KILOHMS (K), MEGOHMS (M), GIGAOHMS (G) OR TERAHMS (T)</p>																						

Appendix A

LEFT HAND PAGE

For detailed explanations of column heading notations, see App. A.

Also for ready references the more important abbreviations used in the column headings are listed below:

- APP = application
(codes at APP.E.)
- CMRR = common mode rejection ratio
- CMP = compensation
(frequency)
- dV_{io}/dT = input offset voltage temperature drift
- GBP = gain bandwidth product
- I_b = input bias current
- I_{io} = input bias offset current
- I_Q = quiescent supply current
- MFR = manufacturer
(codes at App.C.)
- P_Q = quiescent power consumer
- PSRR = power supply rejection ratio
- V_{icm} = common mode input voltage rating
- V_{idc} = differential input voltage rating
- V_{io} = input offset voltage
- V_S = dc supply voltage

RIGHT HAND PAGE

Lead out coding summary (details at APP.G.) for different cases (APP.F.)

- A = gain adjust
- B = bias adjust
- C = case
- E- = inverting input
- E+ = non-inverting input
- F,F* = input frequency compensation
- G = ground
- J = high level input
- K = output, open collector
- L = output, open emitter
- M = metal case
- N = not connected
- Q = special terminal
- R,R* = outputs
- S = strobe
- T,T* = offset balance
- V+ = +ve dc supply
- V- = -ve dc supply
- W = guard ring
- X = blank position, no lead
- + + = +ve supplementary dc supply
- - = -ve supplementary dc supply
- ϕ, ϕ^* = output frequency compensation

CASE (APP. F.)	LD 1	LD 2	LD 3	LD 4	LD 5	LD 6	LD 7	LD 8	LD 9	LD 10	LD 11	LD 12	LD 13	LD 14	LD 15	LD 16	EUROPE SUBSTITUTION	USA SUBSTITUTION	ISS	TYPE NUMBER	
T05-8/1M	T	E-	E+	V-	T*	R	V+	N	LH0022H	0	LH0022CH

CASE = PACKAGE OF DIFFERENT TYPES CODED ACCORDING TO APP. F - FIRST NUMBER INDICATES NUMBER OF LEAD POSITIONS EG DIL-14 = 14 LEAD DUAL-IN-LINE PACKAGE

LD1, LD2, ETC = LEAD NUMBERS WITH CONNECTIONS ACCORDING TO PAGE FOOTNOTE OR APP. G.

EURO SUBSTITUTION = PROELECTRON STANDARD OR OTHER TYPE AVAILABLE IN EUROPE

USA SUBSTITUTION = SUGGESTED ALTERNATIVE AVAILABLE IN USA.

ISS = ISSUE NUMBER OF DATA ENTRY

TYPE No. REPEATED ON R.H. MARGIN

Appendix C

Tabulation Codes for Manufacturers

ADU	Advanced Micro Devices Inc., 901 Thompson Pl., Sunnyvale, CA 94086, USA	ITU	DA14 5HT, UK ITT Semiconductors 74 Commerce Way, Woburn, MA, 01801, USA
ANG	Analog Devices Ltd, Central Ave., East Molesey, KT8 9BR, Surrey, UK	MNG	Mitsubishi Shoji Kaisha Ltd, Bow Bells House, Bread St., London, EC4, UK
ANU	Analog Devices Inc., P.O. Box 280, Norwood, Mass., 02062	MNJ	Mitsubishi Electric Corp., 2-12 Marunouchi, Chiyoda-ku, Tokyo, Japan
BLG	Bell & Howell Ltd, Lennox Road, Basingstoke, Hants, UK	MTG	Motorola Ltd (Semiconductor Products Div.), York House, Empire Way, Wembley, Middlesex, HA9 0PR, UK
BLU	Bell & Howell (Control Products Divison), 706 Bostwick Ave, Bridgeport, Conn. 06605, USA	MTU	Motorola Semiconductor Products Inc., 5005 E. McDowell Road, Phoenix, AZ, 85008, USA
BUG	Burr-Brown International Ltd, 17 Exchange Rd, Watford, WQD1 7EB, Herts., UK	MUG	Mullard Ltd, Mullard House, Torrington Place, London, WC1E 7HD, UK
BUU	Burr-Brown Research Corp., P.O. Box 11400, Tucson, AZ, 85734, USA	NAG	National Semiconductor (UK) Ltd, Harpur Centre, Bedford, MK40 3LF, UK
CMG	Computing Techniques Ltd, Brookers Rd, Billingshurst, Sussex, RH14 9RZ, UK	NAU	National Semiconductor Corp., 2900 Semiconductor Drive, Santa Clara, CA, 95051, USA
DAG	Datel UK Ltd, Stephenson Close, Portway Ind. Estate, Andover, Hants, UK	NIJ	Nippon Electric Co. Ltd, 1753 Shimonumabe, Nakahara-ku, Kawasaki, Japan
DAU	Datel Systems Inc., 1020 Turnpike St., Canton, MA 02021, USA	OAU	Opamp Labs Inc., 1033 N. Sycamore Ave., Los Angeles, CA 90038, USA
FAG	Fairchild Camera & Instrument (UK) Ltd, 230 High St., Potters Bar, Herts., UK	OBS	Obsolete – no longer commercially available.
FAU	Fairchild Semiconductor 464 Ellis St., Mountain View, CA 94042, USA	OTU	Optical Electronics Inc., P.O. Box 11140, Tucson, AZ, 85734, USA
FEG	Ferranti Ltd, (Electronic Department), Gem Mill, Chadderton, Oldham, Lancs., OL9 8NP, UK	PLG	Plessey Semiconductors, Cheney Manor, Swindon, Wilts., SN2 2QW, UK
FUJ	Fujitsu Ltd, 1015 Kamikodanaka, Kawasaki, Japan	PRG	Precision Monolithics (Bourns Trimpot Ltd) 17/27 High St., Hounslow, Middlesex, UK
HAG	Harris Semiconductor (Memec) Ltd, The Firs, Whitchurch, Nr. Aylesbury, Bucks., HP22 4JU, UK	PRU	Precision Monolithics (Bourns) Inc., 1500 Space Park Drive, Santa Clara, CA, 95050, USA
HAU	Harris Semiconductor P.O. Box 883, Melbourne, FL, 32901, USA	RAG	Raytheon Semiconductor The Pinnacles, Harlow, Essex, CM19 5BB, UK
HIJ	Hitachi Ltd (Semiconductor and IC Div.), 1450 Josuihonimachi, Kodaira City, Tokyo, Japan	RAU	Raytheon Semiconductor, 350 Ellis Street, Mountain View, CA, 94042, USA
ING	Intersil Inc., 8 Tessa Rd, Richfield Trading Estate, Reading, Berks., UK	RCG	RCA (Great Britain) Ltd, Lincoln Way, Windmill Road, Sunbury-on- Thames, Middlesex, UK
INU	Intersil Inc., 10900 N. Tantau Ave, Cupertino, CA, 95014, USA	RCU	RCA Solid State Division Route 202, Somerville, NJ, 08876, USA
ITG	ITT Semiconductors Maidstone Rd, Fooks Cray, Sidcup, Kent,	SAJ	Sanken Electric Co. Ltd, 1-22-8 Nishi-Ikebukuro, Toshima-Ku, Tokyo, Japan

Appendix C

SGG	SGS-ATES (UK) Ltd, Planar House, Walton Street, Aylesbury, Bucks., UK	SPU	Sprague Electric Company (Semiconductor Div.), 115 Northeast Cutoff, Worcester, MA, 01606, USA
SGI	SGS-ATES Componenti Spa, Via Olivetti, 2 Agrate Brianza, 20041, Milan, Italy	TDG	Teledyne Semiconductor, Heathrow House, Bath Road, Cranford, Hounslow, Middlesex, TW5 9QP, UK
SHG	Shindengen Hyokuto Boeki Haisha Ltd, St. Alphage House, Fore St., London, EC2Y 5DA, UK	TDU	Teledyne (Amelco) Semiconductor, 1300 Terra Bella Ave, Mountain View, CA, 94032, USA
SHJ	Shindengen Electric Mfg Co., Ltd, New Ohtemachi Bldng, 2-1, 2-chome, Ohtemachi, Chiyoda-ku, Tokyo, Japan	TEB	Teledyne-Philbrick, Heathrow House, Bath Road, Cranford, Hounslow, Middlesex, TW5 9QP, UK
SIG	Siemens Ltd, Great West Road, Brentford, Middlesex, TW8 9DG, UK	TEU	Teledyne-Philbrick, Allied Drive at Route 128, Dedham, MA, 02026, USA
SIW	Siemens Aktiengesellschaft, Richard-Strauss-Strasse 76, D-8000 Munchen 2, Postfach 202109, W. Germany	TGG	Texas Instruments Ltd, Manton Lane, Bedford, UK
SJG	Signetics International Corporation Yeoman House, 63 Croydon Rd, London, SE20, UK	TGU	Texas Instruments Inc. (Components Group), P.O. Box 5012, Dallas, Texas, 75222, USA
SJU	Signetics Corp., 811 East Arques Ave, Sunnydale, CA. 94086, USA	THF	Thomson-CSF (Sescosem), 50 Rue Jean Pierre Timbaud, BP 120, 92403, Courbevoie, France
SKU	Silicon General Inc., 7382 Bolsa Avenue, Westminster, CA, 92683, USA	THG	Thomson-CSF (UK) Ltd, Ringway House, Bell Rd, Daneshill, Basingstoke, Hants., RG24 0QG, UK.
SLG	Siliconix Ltd, 30A High St., Thatcham, Newbury, Berks., RG13 4JG, UK	TKJ	Tokyo Sanyo Electric Co. Ltd (Semiconductor Div.), Oizumachi, Oragun, Gumma, Japan
SLU	Siliconix Incorporated, 2201 Laurelwood Road, Santa Clara, CA, 95054, USA	TOG	Toshiba (UK) Ltd, Toshiba House, Great South West Rd, Feltham, Middlesex, UK
SOJ	Sony Semiconductor Corp., 14-1, Asa hi-sho 4, Atsuigi-shi, Kanagawa-ken, 243, Japan	TOJ	Toshiba (Tokyo Shibaura) Electric Co., 2-1, 5-chome, Ginza Chuo-ku, Tokyo, Japan
SPG	Sprague Electric (UK) Ltd, 159 High St., Yiewsley, W. Drayton, Middlesex, UB7 7RY, UK	TRU	Transitron Electronic Corp., 168 Albion St., Wakefield, MA, 01881, USA
		ZEU	Zeltex Inc., 940 Detroit Ave, Concord, CA, 94518, USA

Appendix D

IC Manufacturers'

House Numbers

(General Note: Manufacturers often adopt their own 'in-house' serial numbering for their ICs. Listed below are the initial letters of numerical series used by different manufacturers.)

AD	Analog Devices	OP	Precision Monolithics
ADO	Analog Devices	P	Teledyne-Philbrick
AM	Advanced Micro Devices; Datel	PF	Teledyne-Philbrick
AMD	Advanced Micro Devices	PG	General Instruments (obs.)
AMLM	Advanced Micro Devices	PP	Teledyne-Philbrick
AMSSS	Advanced Micro Devices	RA	Radiation (now Harris)
AMU	Advanced Micro Devices	RC	Raytheon
C	Bell & Howell	RL	Raytheon
CA	RCA	RM	Raytheon
CIA	Teledyne-Philbrick	RSN	Raytheon
CMP	Precision Monolithics	RV	Raytheon
CN	Ferranti	S	Signetics
DA	Teledyne-Philbrick	SA	Teledyne-Philbrick
EP	Teledyne-Philbrick	SE	Signetics; Mullard
ESL	Teledyne-Philbrick	SFC	Thomson-CSF
FSL	Teledyne-Philbrick	SG	Silicon General
FSS	Ferranti	SH	Fairchild
HA	Harris	SK	RCA
HEPC	Motorola	SL	Plessey; Teledyne-Philbrick
ICH	Intersil	SN	Texas Instruments
ICL	Intersil	SP	Teledyne-Philbrick
JM	Fairchild	SQ	Teledyne-Philbrick
JSF	Thomson-CSF	SSS	Precision Monolithics
L	Analog Devices; SGS-ATES	SU	Signetics; Mullard
LA	Teledyne-Philbrick	T	Teledyne-Philbrick Transitron
LF	National Semiconductor	TA	AEG-Telefunken
LH	National Semiconductor	TAA	Proelectron Standard
LM	National Semiconductor	TBA	Proelectron Standard
M	Mitsubishi	TBB	Proelectron Standard
MC	Motorola Semiconductors	TBC	Proelectron Standard
MCC	Motorola Semiconductors	TBE	Proelectron Standard
MCCF	Motorola Semiconductors	TCA	Proelectron Standard
MCE	Motorola Semiconductors	TDA	Proelectron Standard
MCH	Motorola Semiconductors	TDB	Proelectron Standard
MIC	ITT Semiconductors	TDC	Proelectron Standard
MLF	Motorola; Teledyne-Philbrick	TDE	Proelectron Standard
MLM	Motorola Semiconductors	TL	AEG-Telefunken
MLMC	Motorola Semiconductors	TOA	Transitron
MONO-OP	Precision Monolithics	TSC	Transitron
N	Signetics; Mullard	U	Fairchild
NC	General Instruments (obs.)	ULN	Sprague
NE	Signetics; Mullard	ULS	Sprague
NH	National Semiconductor	USL	Teledyne-Philbrick
		ZA	Zeltex
		ZEL	Zeltex
		ZLD	Ferranti
		ZN	Ferranti
		μA	Fairchild

Appendix E

Tabulation Codes for Applications

BDO	Balanced differential-output amplifier	PAA	Parametric amplifier
CDA	Current-difference amplifier	PIA	Precision instrumentation amplifier
CHP	Chopper-stabilized amplifier	PRA	Programmable opamp
CPR	DC comparator	QCD	Quad current-difference amplifier
DBD	Dual balanced differential-output amplifier	QCP	Quad comparator
DCP	Dual Comparator	QFE	Quad fet-input opamp
DFE	Dual fet-input opamp	Q GK	Quad general-purpose, internally-compensated, opamp
DGK	Dual general purpose opamp	QGU	Quad general-purpose, uncompensated, opamp
DGU	Dual general-purpose uncompensated opamp	QLQ	Quad low-quiescent-power opamp
DHS	Dual high-slew-rate opamp	QPI	Quad precision instrumentation amplifier
DLN	Dual low-noise opamp	QPR	Quad programmable opamp
DPI	Dual precision instrumentation amplifier	QSB	Quad super-beta opamp
DPR	Dual programmable opamp	SBA	Super-beta opamp
DSB	Dual super-beta opamp	TCP	Triple comparator
FET	Fet-input opamp	TFE	Triple fet-input opamp
GPK	General-purpose, internally-compensated, opamp	TGK	Triple general-purpose, internally compensated, opamp
GPU	General-purpose, uncompensated, opamp	TGU	Triple general-purpose, uncompensated, opamp
HCO	High current output opamp	TLN	Triple low-noise opamp
HIR	High input resistance opamp	TLP	Triple low-quiescent-power opamp
HPO	High power output opamp	TOT	Triple operational transconductance amplifier
HSR	High slew rate opamp	TPI	Triple precision instrumentation amplifier
HVO	High voltage output opamp	TPR	Triple programmable opamp
LBC	Low input bias current opamp	TSB	Triple super-beta opamp
LCD	Low input offset current drift opamp	VFA	Voltage-follower amplifier
LNA	Low noise opamp	WBA	Wide-band opamp
LOC	Low input offset current opamp	XHG	Extra-high-gain opamp
LOV	Low input offset voltage opamp	XLP	Extra-low quiescent power opamp
LQP	Low quiescent power opamp	XSR	Extra-high slew rate opamp
LVD	Low input offset voltage drift opamp	XWB	Extra-wide-band opamp
MWB	Medium-wideband opamp		
OTA	Operational transconductance amplifier		

Appendix G

Codes for Leadout Connections

I: Connection Codes in Serial Order

A	= Gain adjust, 1
A*	= Gain adjust, 2
B	= Bias adjust or set
C	= Case, package, screen
E+	= Input, non-inverting, low-level
E-	= Input, inverting, low-level
F	= Input frequency compensation, 1
F*	= Input frequency compensation, 2
G	= Ground, common, earth, zero volts
J+	= Input, non-inverting, high-level
J-	= Input, inverting, high-level
K	= Output, open collector
L	= Output, open emitter
M	= Metal casing
N	= Not connected, i.e. isolated lead
Q	= Special terminal (consult manufacturer's data)
R	= Output, 1
R*	= Output, 2
S	= Strobe
T	= Offset balance, trim or null, 1
T*	= Offset balance, trim or null, 2
V+	= +ve dc supply
V-	= -ve dc supply
W	= Guard ring
X	= Blank position, lead omitted
++	= +ve supplementary dc supply
--	= -ve supplementary dc supply
φ	= Output frequency compensation, 1
φ*	= Output frequency compensation, 2

II: Lead Assignments in Alphabetical Order

Balance, offset, 1 = T
Balance, offset, 2 = T*
Bias adjust = B
Blank position, without lead = X
Case = C
Compensation, input, 1 = F
Compensation, input, 2 = F*
Compensation, output, 1 = φ
Compensation, output, 2 = φ*
DC supply, +ve = V+
DC supply, -ve = V-
Frequency compensation, input, 1 = F
Frequency compensation, input, 2 = F*
Frequency compensation, output, 1 = φ
Frequency compensation, output, 2 = φ*
Gain adjust, 1 = A
Gain adjust, 2 = A*
Ground = G
Guard ring = W
Input, inverting, high-level = J-
Input, non-inverting, high-level = J+
Input, inverting, low-level = E-
Input, non-inverting, low-level = E+
Input offset voltage, adjust, 1 = T
Input offset voltage, adjust, 2 = T*
Lead omitted, blank position = X
Lead in position but not connected = N
Metal case = M
Not connected, but lead in position = N
Null, offset, 1 = T
Null, offset, 2 = T*
Offset voltage adjust, 1 = T
Offset voltage adjust, 2 = T*
Output, 1 = R
Output, 2 = R*
Output, open-collector = K
Output, open-emitter = L
Package = C
Special purpose terminal (data sheet to be consulted) = Q
Strobe = S
Supply, dc, +ve = V+
Supply, dc, -ve = V-
Supply, dc, supplementary, +ve = ++
Supply, dc, supplementary, -ve = --
Trim (offset voltage), 1 = T
Trim (offset voltage), 2 = T*

Appendix F



Appendix F

