


SGS-THOMSON
 MICROELECTRONICS

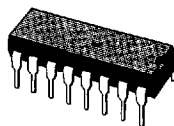
S G S-THOMSON

TSG8550*T-64-05*

SWITCHED CAPACITOR MASK PROGRAMMABLE FILTER

- 6TH ORDER
- SELECTIVITY FACTOR : $Q = 7$
- GAIN AT CENTER FREQUENCY : 0dB (typ)
- LOW STOPBAND ATTENUATION : 40dB (typ)
- HIGH STOPBAND ATTENUATION : 40dB (typ)
- CLOCK TO CENTER FREQ. RATIO : 48
- CLOCK FREQUENCY RANGE : 1 TO 1200kHz
- CENTER FREQUENCY RANGE : 20.8Hz TO 25kHz

Note : For general characteristics, see TSG85XX specifications. For non standard quality level, consult SGS-THOMSON general ordering information.



P
DIP-16
 (Plastic Package)



FP
SO-16
 (Plastic Micropackage)

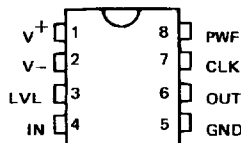


P
DIP-8
 (Plastic Package)

DESCRIPTION

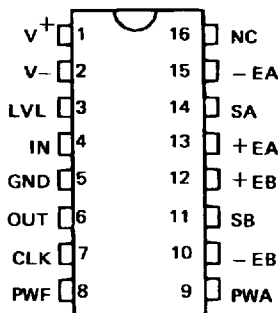
The TSG8550 is a HCMOS Cauer band-pass filter.

PIN CONNECTIONS



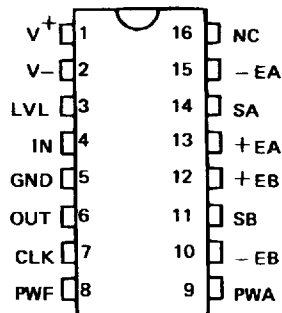
8 pins : FILTER ONLY
 DIP-8 Package

E88TSG8550-01



16 pins : FILTER + 2 OP-AMPS
 DIP-16 Package

E88TSG8550-02

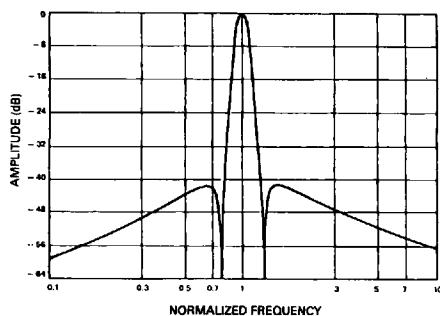


SO-16 Package

E88TSG8550-03

AMPLITUDE RESPONSE CURVE

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E88TSG8550-04

FILTER SPECIFICATIONS

Band-pass Filter : TSG8550 ; Type : CAUER ; Order : 6
 $V^+ = 5V$, $V^- = -5V$, $T = 25^\circ C$, $R_L = 5k\Omega$, $C_L = 100pF$, $I_{PWF} = 50\mu A$

Symbol	Parameter	Typ.	Tested Limits	Unit
Fe	External Clock Frequency	1 1200(*)		kHz (min) kHz (max)
Fi	Internal Sampling Frequency	0.5 600(*)		kHz (min) kHz (max)
Fe/Fo	Clock to Center Frequency Ratio	$48 \pm 1\%$		
Fo	Center Frequency	0.0208 25(*)		kHz (min) kHz (max)
Go	Gain at Center Frequency	Typ. $G_o = -0.2dB$ for $F_e = 48kHz$	0 - 2	dB (max) dB (min)
F _{lc}	Low Cutoff Frequency	$F_{lc} = 0.971 F_o$	0.0204 24.5(*)	kHz (min) kHz (max)
F _{hc}	High Cutoff Frequency	$F_{hc} = 1.035 F_o$	0.0216 25.9(*)	kHz (min) kHz (max)
BW	- 3dB Bandwidth	$[0.926 F_o, 1.07 F_o]$	0.003 3.15(*)	kHz (min) kHz (max)
Q	Selectivity Coefficient	$Q = F_o/BW$	7	
A _p	Passband Ripple		0.05	0.3 dB (max)
A _{ls}	Low Stopband Attenuation	$F < 0.8 F_o$	40.5	40 dB (min)
A _{hs}	High Stopband Attenuation	$F > 1.24 F_o$	40.5	40 dB (min)
V _{off}	Output DC Offset Voltage	LVL = 0V	± 100	± 200 mV (max)
LG	Level Gain		- 1.7	
LVL	DC Level Adjustment		± 118	mV (max)
R _{PWF}	PWF Resistance		10 72	k Ω (min) k Ω (max)
I _{PWF}	Input Current on PWF		50 250	μA (min) μA (max)

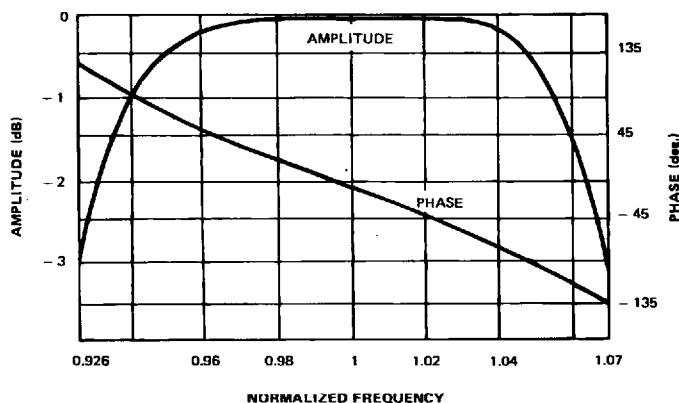
(*) At maximum F_e : - stopband attenuation $A_{ls} > 39dB$ for $F < 0.8F_o$
 (with $I_{PWF} = 250\mu A$) - stopband attenuation $A_{hs} > 42dB$ for $F > 1.24F_o$
 - passband ripple $A_p = 0.3dB$
 - Gain at center freq. $G_o = -1.5dB$
 - - 3dB bandwidth $BW = 3.15kHz [0.926F_o, 1.052F_o]$
 - Selectivity $Q = 7.9$

FILTER SPECIFICATIONS (continued)

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Symbol	Parameter		Typ.	Tested Limits	Unit
I ⁺	V ⁺ Supply Current	Fe = 48kHz Ipwa = 0μA	1.7	5	mA (max)
I ⁻	V ⁻ Supply Current		1.7	5	mA (max)
PSRR ⁺	V ⁺ Supply Rejection Ratio	Fe = 48kHz Fin = 1kHz	9		dB
PSRR ⁻	V ⁻ Supply Rejection Ratio		20		dB
Rin	Input Resistance		3		MΩ
Cin	Input Capacitance		20		pF
Vo	Output Voltage Swing		+ 3.5 - 4.5		Vp-p (max)
Vn	Output Noise	BW = 144kHz CPWF = 33pF Fe = 48kHz Vin = 2Vrms	272		μVrms
SNR	Signal to Noise Ratio		78		dB

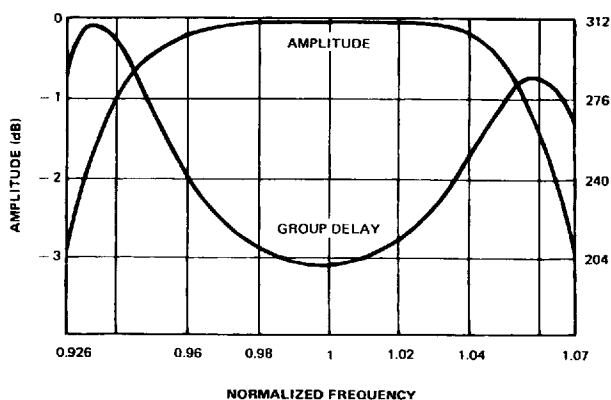
PHASE RESPONSE CURVE (in passband)



E88TSG8550-05

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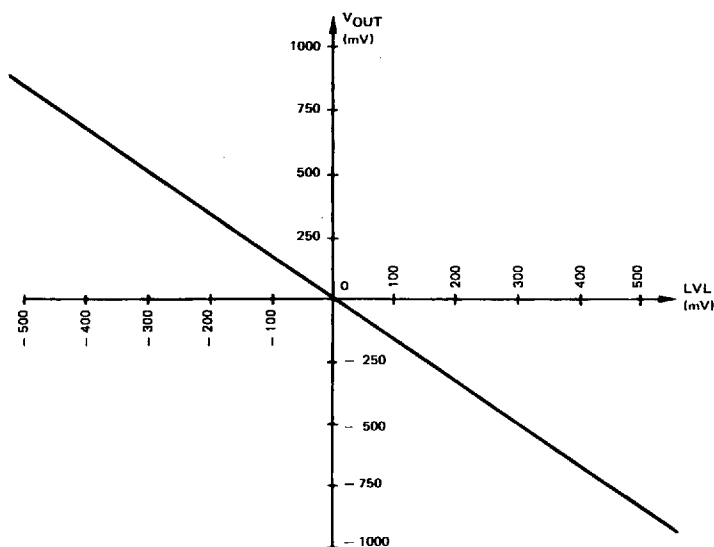
GROUP DELAY CURVE (in passband)



NORMALIZED GROUP DELAY (SEC. HZ)
 NORMALIZED GROUP DELAY
 GROUP DELAY = —————
 EXTERNAL CLOCK FREQUENCY

E88TSG8550-06

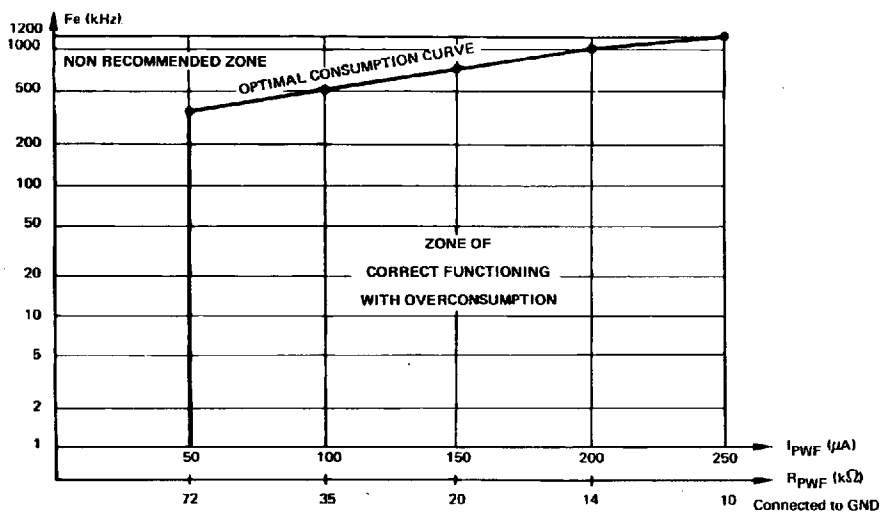
OUTPUT DC VOLTAGE ADJUSTMENT FROM LVL PIN



E88TSG8550-07

USER'S GUIDE FOR I_{PWF} AND R_{PWF} CHOICE

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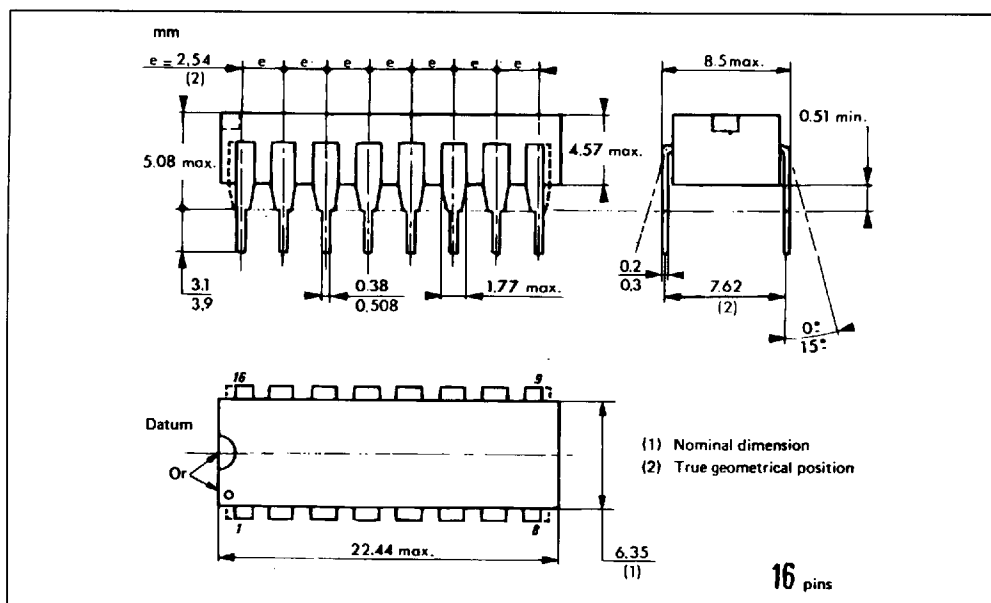


E88TSG8550-08

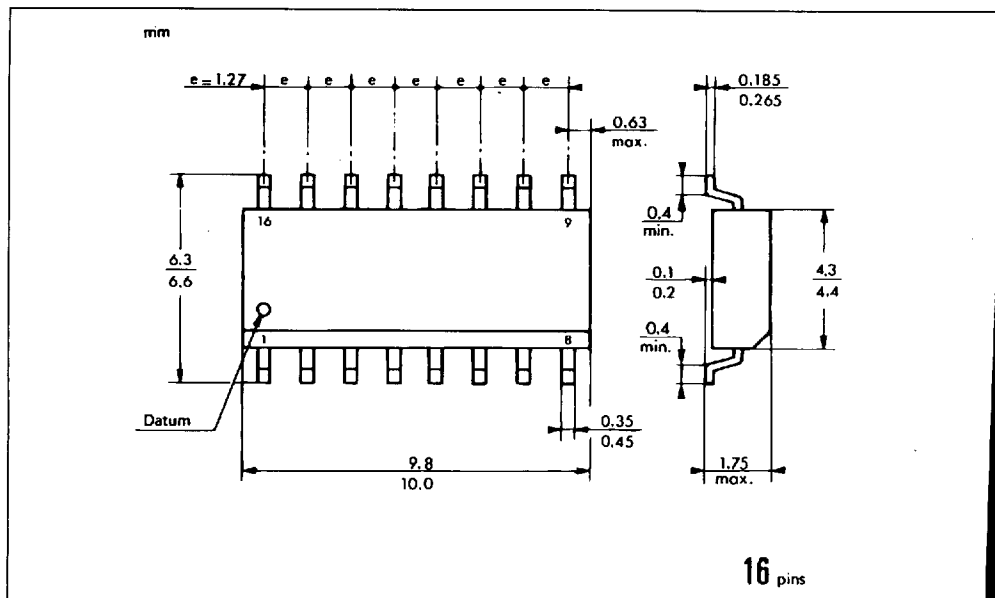
PACKAGE MECHANICAL DATA

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16 PINS - Plastic Dip

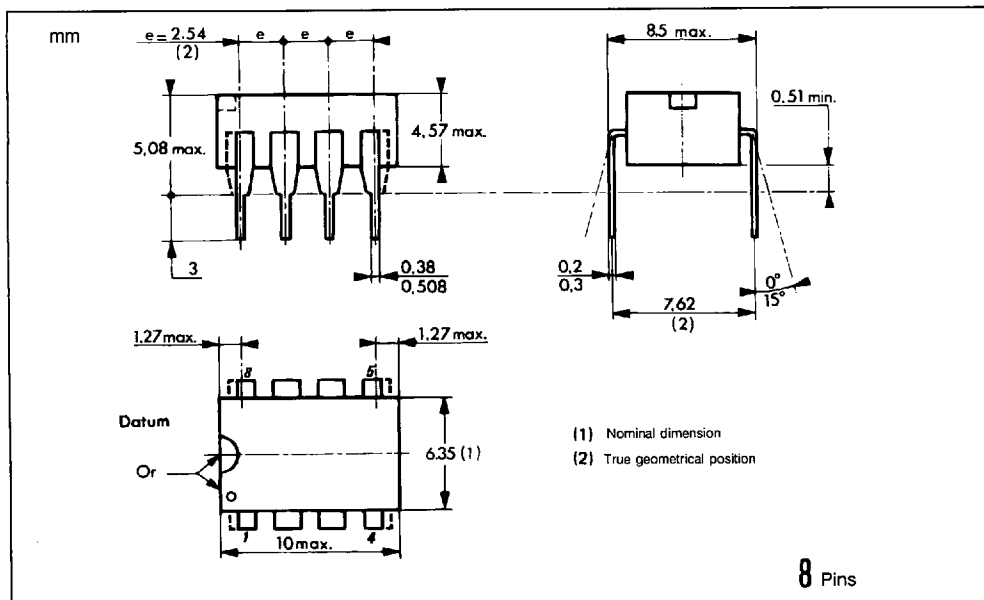


16 PINS - Plastic Micropackage



8 PINS - Plastic Dip

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ORDER CODES

Plastic	16 Pins Package : TSG8550XP
Ceramic	16 Pins Package : TSG8550XC
Cerdip	16 Pins Package : TSG8550XJ
Plastic	8 Pins Package : TSG85501XP

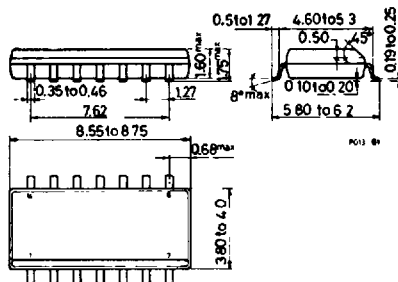
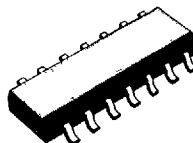
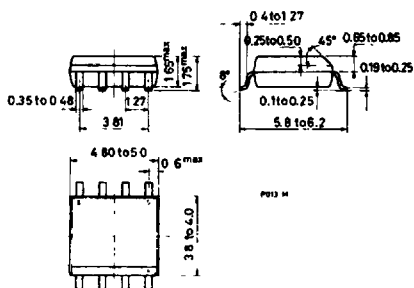
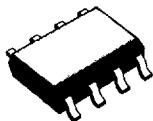
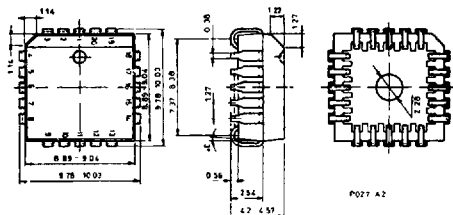
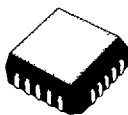
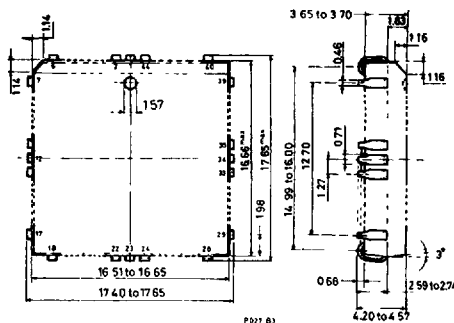
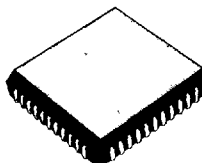
X : Temperature Range = C : 0°C + 70°C
 I : - 25°C + 85°C
 V : - 40°C + 85°C
 M : - 55°C + 125°C

SO-8J

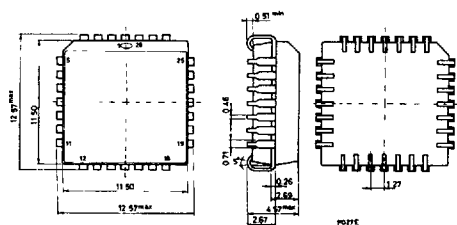
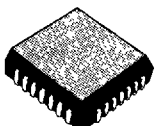
SO-14J

T-90-20

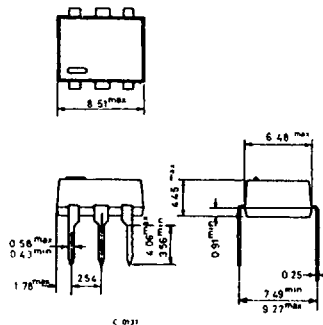
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**PLCC20****PLCC44**

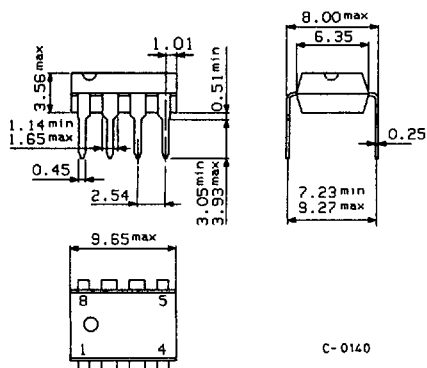
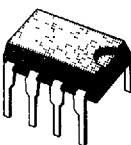
PLCC-28 Plastic Chip Carrier



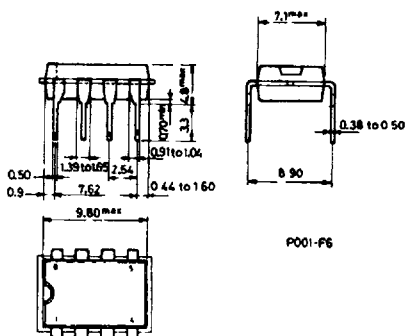
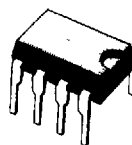
DIP-6



Minidip A Plastic

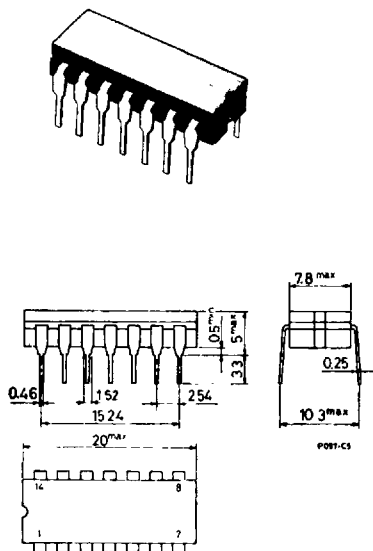


8 lead Plastic Minidip

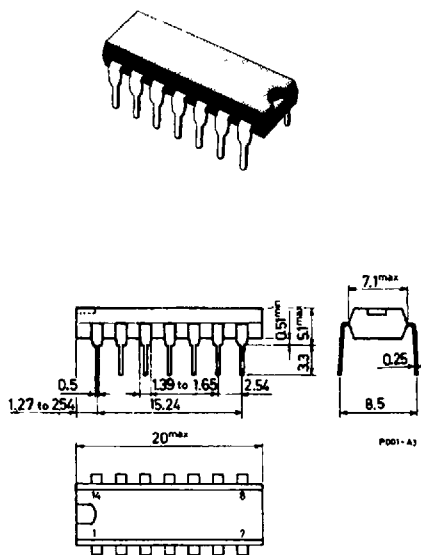


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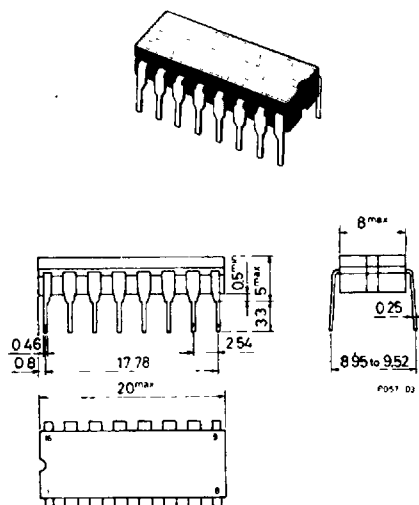
14 lead Ceramic Dip



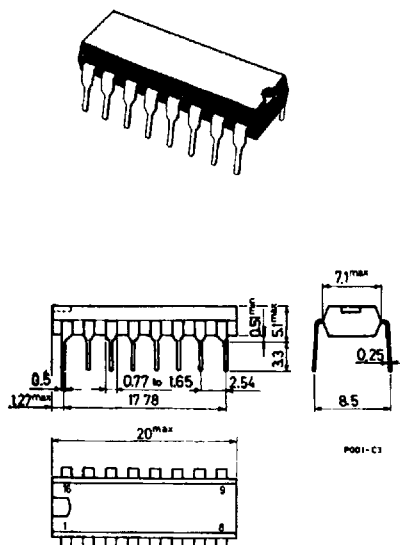
14 lead Plastic Dip



16 lead Ceramic Dip



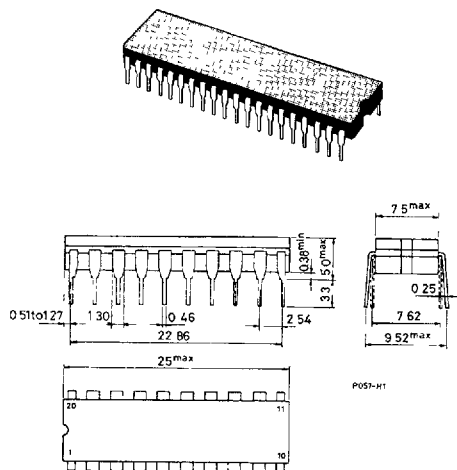
16 lead Plastic Dip (0.25)



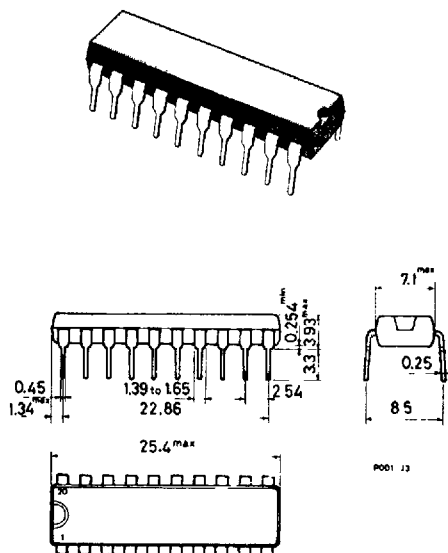
PACKAGES

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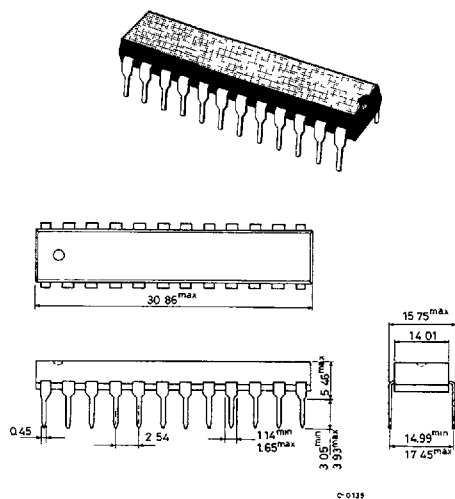
DIP-20 Ceramic



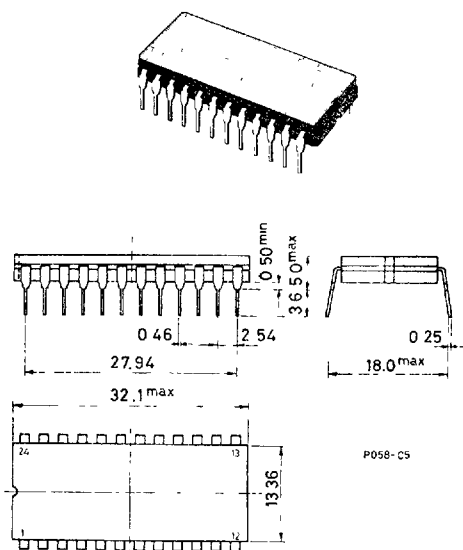
20 lead Plastic Dip (0.25)



DIP-24 Plastic

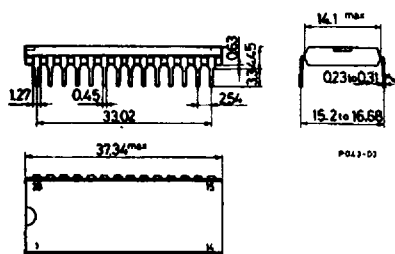
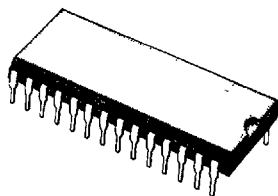


DIP-24 Ceramic (0.25)

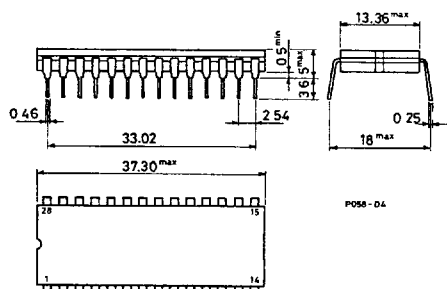
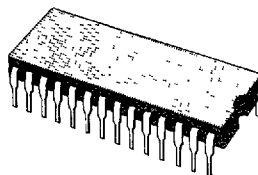


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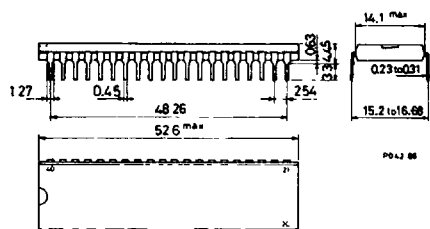
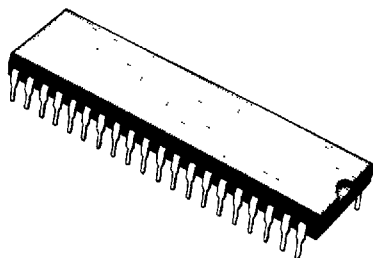
28 lead Plastic Dip



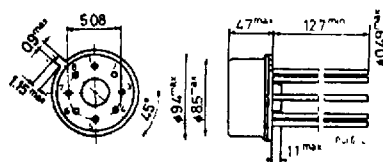
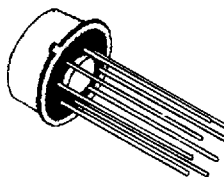
DIP-28 Ceramic (0.25)



40 lead Plastic Dip



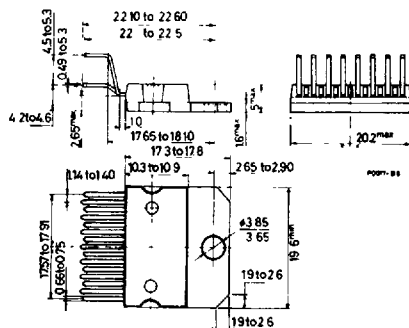
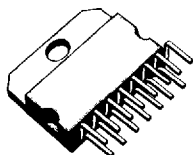
TO-99



PACKAGES

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MULTIWATT-15



FLEXIWATT-15

