

# SWITCHED CAPACITOR MASK PROGRAMMABLE FILTER

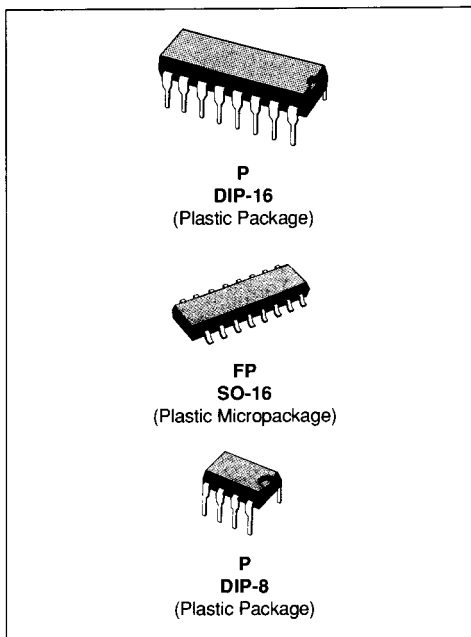
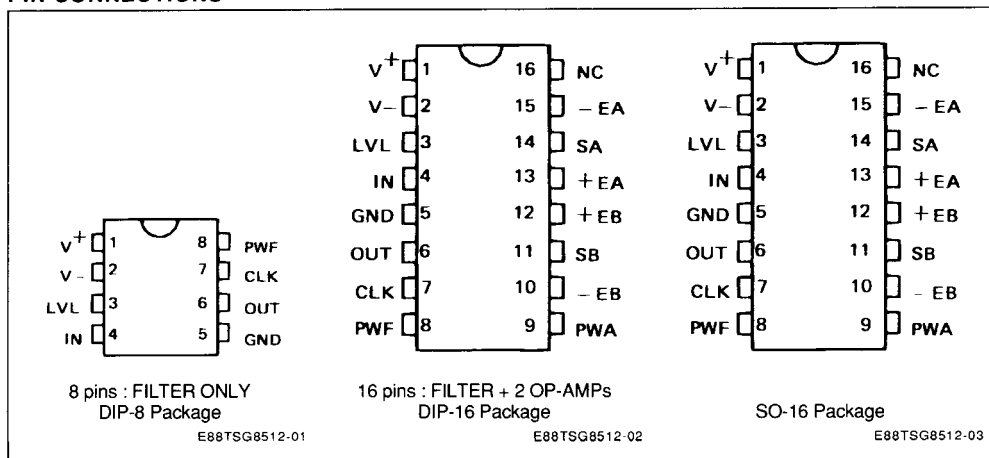
- CAUER TYPE
- 7TH ORDER
- STOPBAND ATTENUATION : 85dB (typ)
- PASSBAND RIPPLE : 0.15dB (typ)
- CLOCK TO CUT-OFF FREQ. RATIO : 100
- CLOCK FREQUENCY RANGE : 1 TO 2000kHz
- CUT-OFF FREQUENCY RANGE : 10Hz TO 20kHz

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

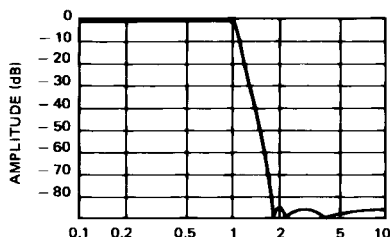
## DESCRIPTION

The TSG8512 is a HCMOS lowpass elliptic filter.

## PIN CONNECTIONS



## AMPLITUDE RESPONSE CURVE



NORMALIZED FREQUENCY

EB8TSG8512-04

## FILTER SPECIFICATIONS

Lowpass Filter : TSG8512 ; Type : Cauer ; Order : 7.

 $V^+ = 5V$ ,  $V^- = -5V$ ,  $T = 25^\circ C$ ,  $R_L = 5k\Omega$ ,  $C_L = 100pF$ ,  $I_{PWF} = 100\mu A$ 

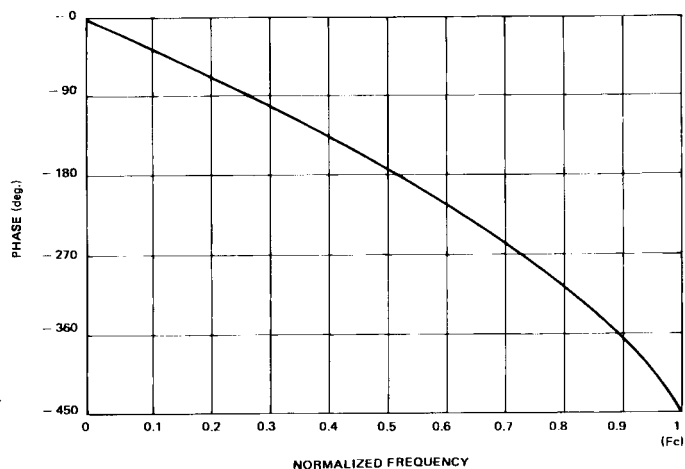
Symbol	Parameter		Typ.	Tested Limits	Unit
Fe	External Clock Freq.		1 2000(*)		kHz (min) kHz (max)
Fi	Internal Sampling Freq.		0.5 1000(*)		kHz (min) kHz (max)
Fe/Fc	Clock to Cutoff fr. Ratio		100 ± 1%		
Fc	Cutoff Frequency		0.010 20(*)		kHz (min) kHz (max)
G <sub>o</sub>	Passband Gain		- 0.3 0		dB (min) dB (max)
A <sub>p</sub>	Passband Ripple	Fe = 100kHz	0.15	0.5	dB (max)
A <sub>s</sub>	Stopband Attenuation	Fe = 100kHz F > 1.8Fc	85	75	dB (min)
V <sub>off</sub>	Output DC Offset Voltage	LVL = 0V	± 150	± 250	mV (max)
LVL	DC Level Adjustment		± 22.5		mV
LG	Level gain		- 11.1		
R <sub>PWF</sub>	PWF Resistance		10 72		kΩ (min) kΩ (max)
I <sub>PWF</sub>	Input Current on PWF		50 250		μA (min) μA (max)
I <sup>+</sup>	V <sup>+</sup> Supply Current	Fe = 100kHz I <sub>pwa</sub> = 0μA	3.5	5	mA (max)
I <sup>-</sup>	V <sup>-</sup> Supply Current		3.5	5	mA (max)
PSRR <sup>+</sup>	V <sup>+</sup> Supply Rejection Ratio	Fe = 200kHz F <sub>in</sub> = 1kHz	20		dB
PSRR <sup>-</sup>	V <sup>-</sup> Supply Rejection Ratio		35		dB
R <sub>IN</sub>	Input Resistance		3		MΩ
C <sub>IN</sub>	Input Capacitance		20		pF
V <sub>o</sub>	Output Voltage Swing		+ 3.5 - 4.5		V <sub>p-p</sub> (max)
V <sub>n</sub>	Output Noise	BW = 1kHz Fe = 100kHz	112		μV <sub>rms</sub>
SNR	Signal to Noise Ratio	V <sub>in</sub> = 2V <sub>rms</sub>	85		dB

(\*) At maximum Fe : - stopband attenuation As &gt; 62dB for F &gt; 1.8Fc

(with Ipwt = 250 $\mu A$ ) - passband ripple : Ap = 0.6dB

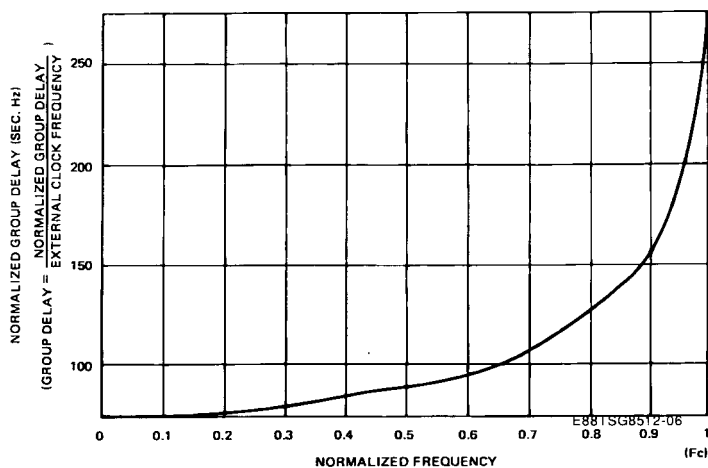
- passband gain : Go = - 0.4dB

## PHASE RESPONSE CURVE (in passband)



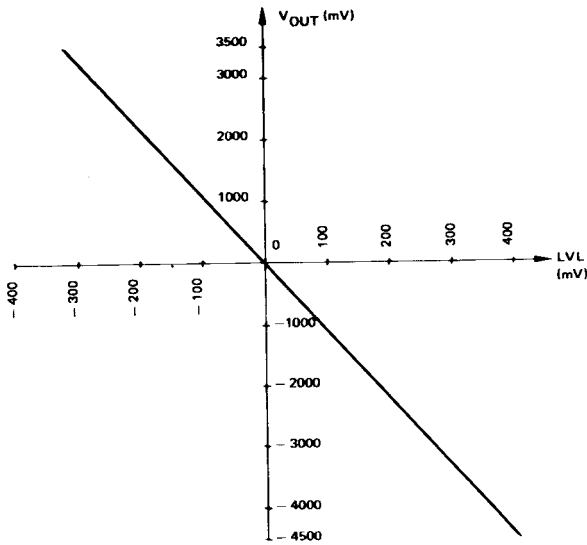
E88TSG8512-05

## GROUP DELAY CURVE (in passband)



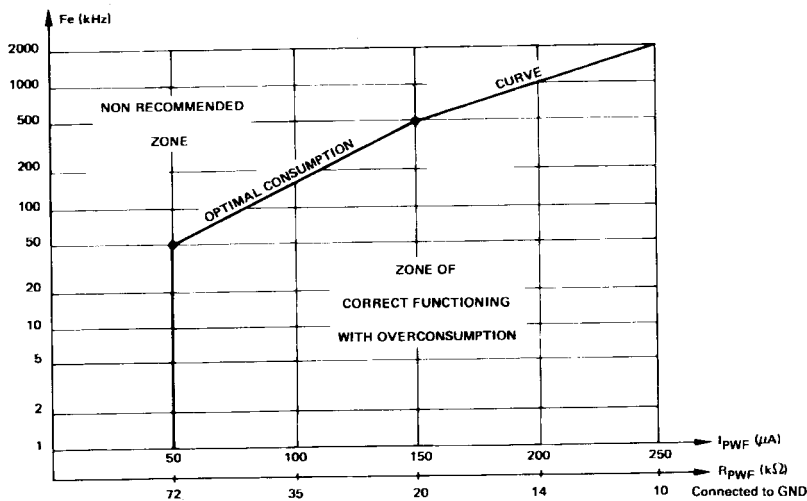
E88TSG8512-06

OUTPUT DC VOLTAGE ADJUSTMENT FROM LVL PIN



E88TSG8512-07

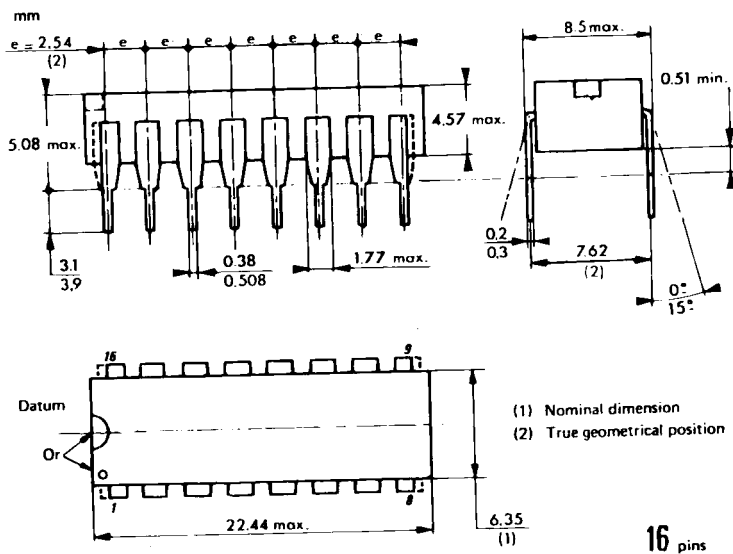
USER'S GUIDE FOR I<sub>PWF</sub> AND R<sub>PWF</sub> CHOICE



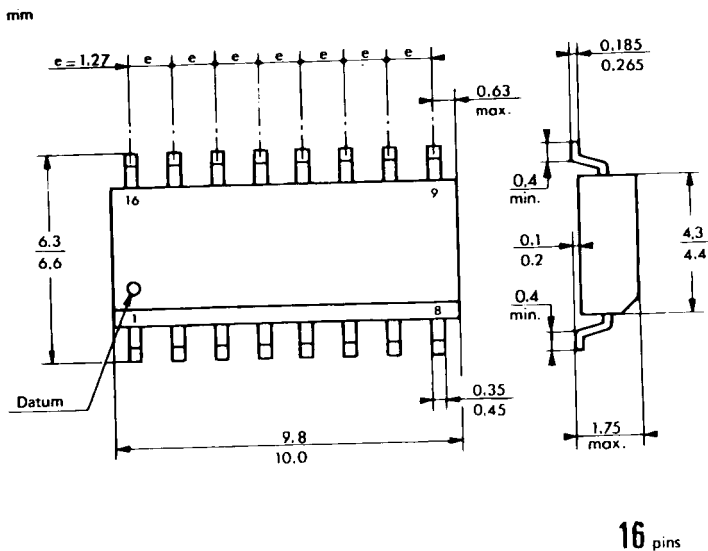
E88TSG8512-08

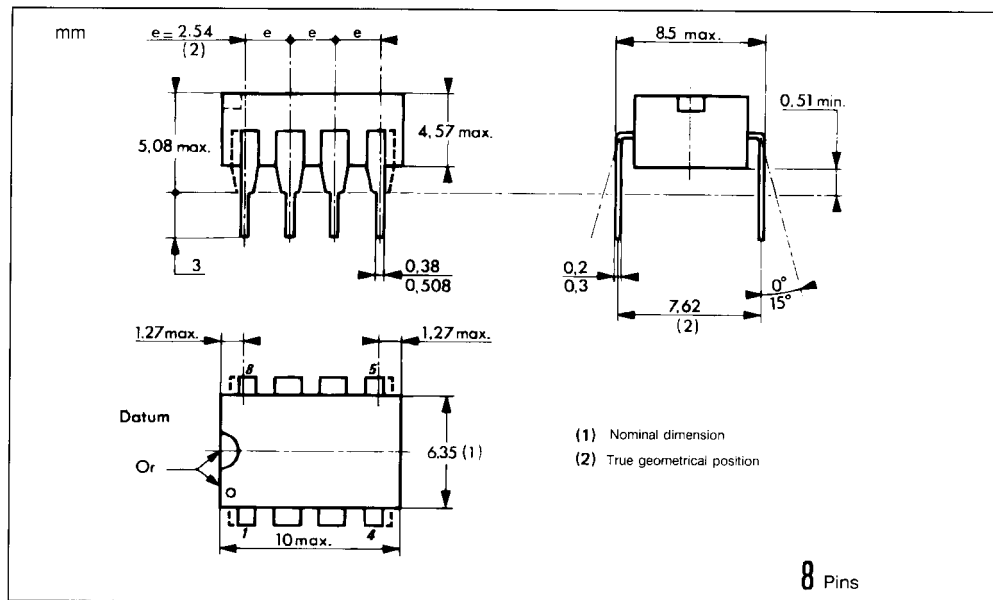
## PACKAGE MECHANICAL DATA

## 16 PINS - Plastic Dip



## 16 PINS - Plastic Micropackage



**8 PINS - Plastic Dip**

**ORDER CODES**

Plastic	16 Pins Package : TSG8512XP
Ceramic	16 Pins Package : TSG8512XC
Cerdip	16 Pins Package : TSG8512XJ
Plastic	8 Pins Package : TSG85121XP

X : Temperature Range :

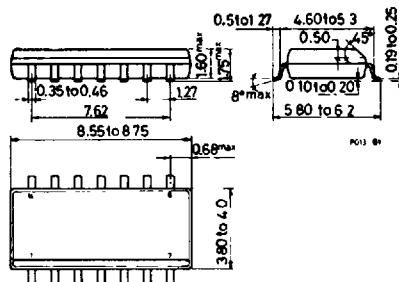
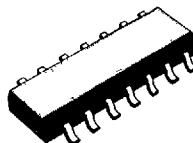
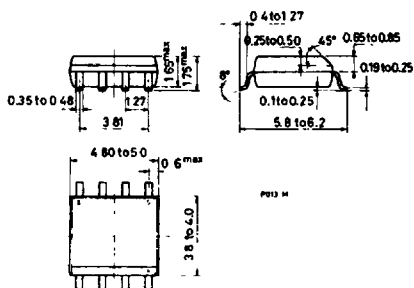
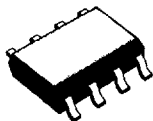
- C :  $0^\circ\text{C} + 70^\circ\text{C}$
- I :  $-25^\circ\text{C} + 85^\circ\text{C}$
- V :  $-40^\circ\text{C} + 85^\circ\text{C}$
- M :  $-55^\circ\text{C} + 125^\circ\text{C}$

SO-8J

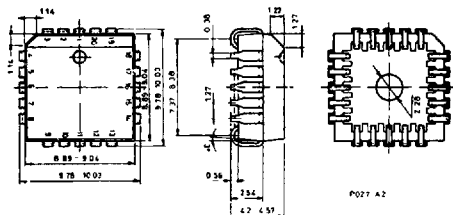
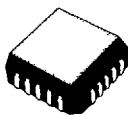
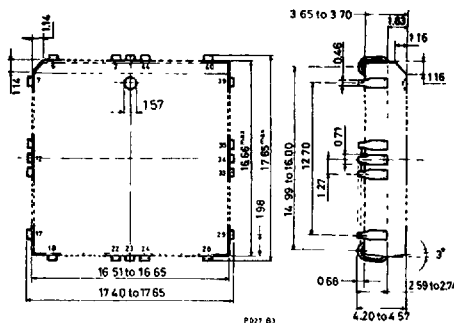
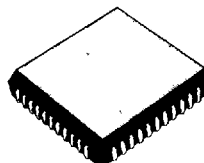
SO-14J

T-90-20

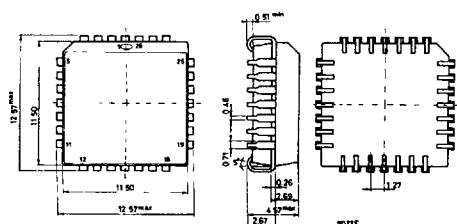
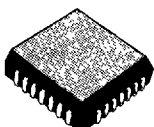
S G S-THOMSON



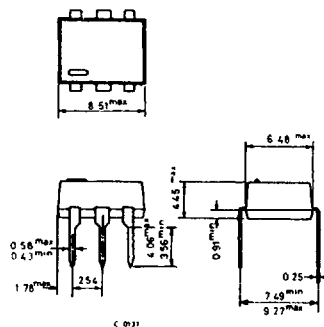
## PLCC20

**PLCC44**

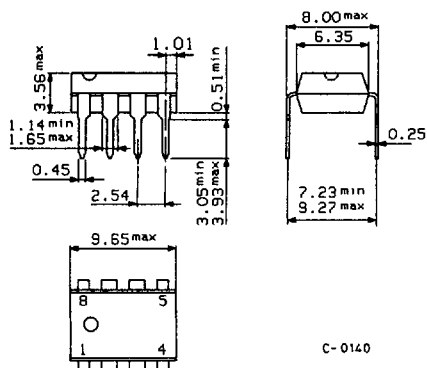
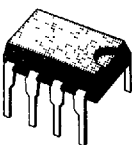
## PLCC-28 Plastic Chip Carrier



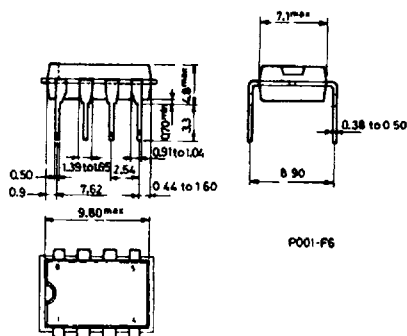
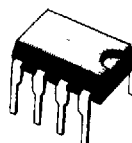
## DIP-6



## Minidip A Plastic



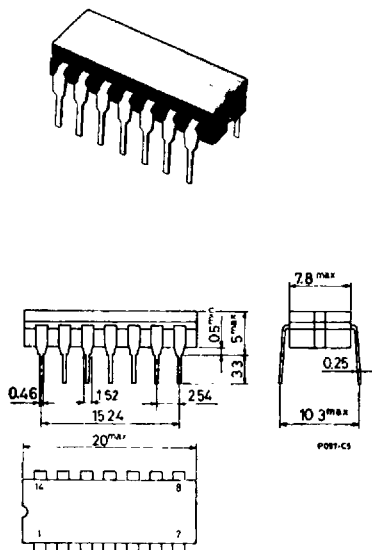
## 8 lead Plastic Minidip



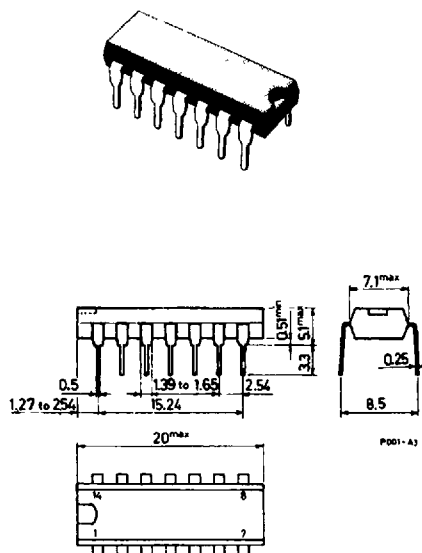


S G S-THOMSON

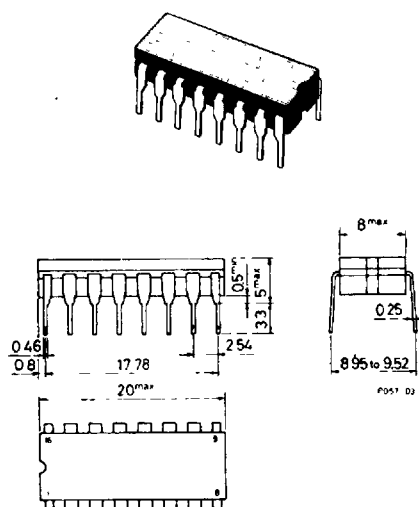
## 14 lead Ceramic Dip



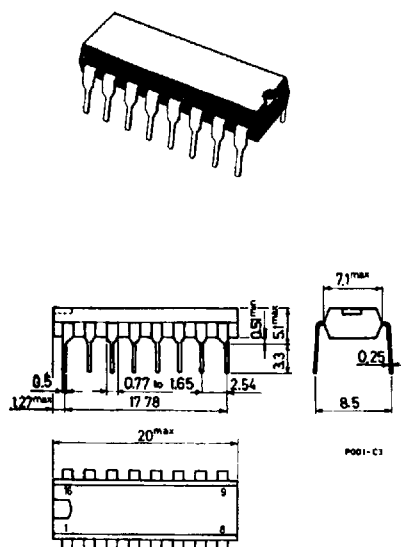
## 14 lead Plastic Dip



## 16 lead Ceramic Dip



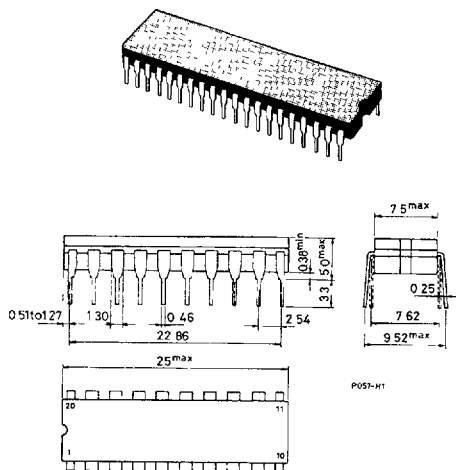
## 16 lead Plastic Dip (0.25)



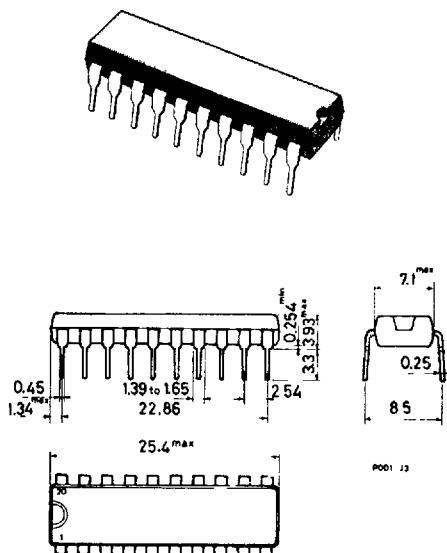
# PACKAGES

S G S-THOMSON

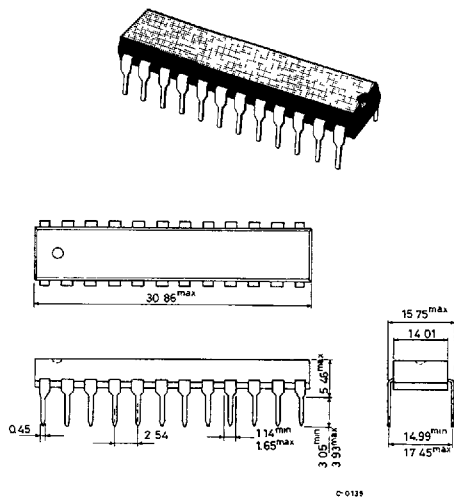
## DIP-20 Ceramic



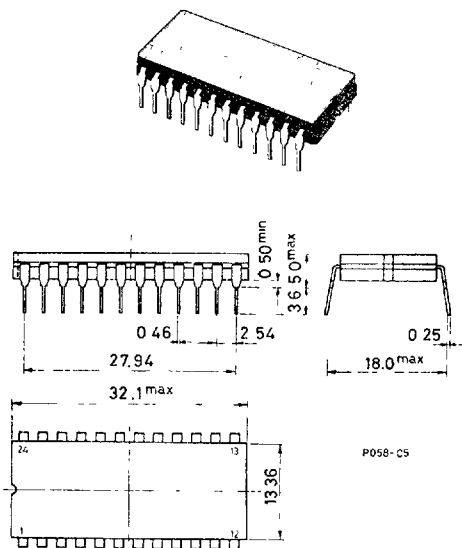
## 20 lead Plastic Dip (0.25)



## DIP-24 Plastic

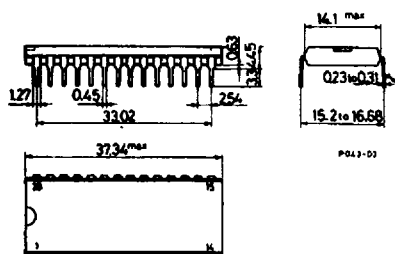
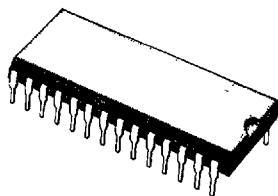


## DIP-24 Ceramic (0.25)

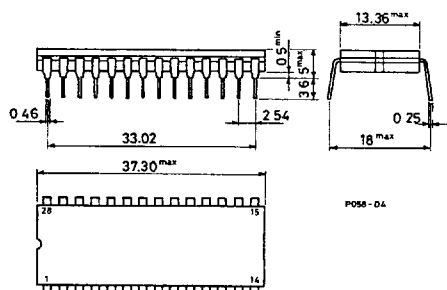
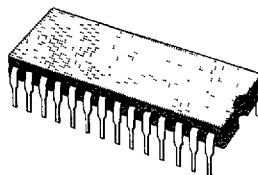


S G S-THOMSON

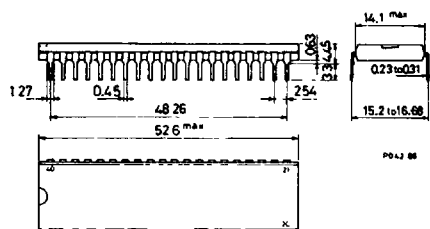
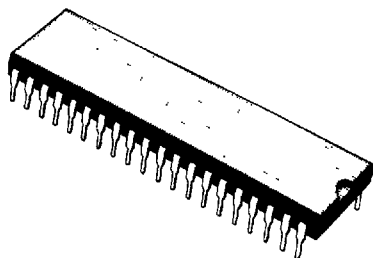
## 28 lead Plastic Dip



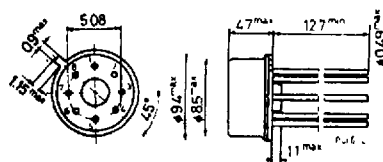
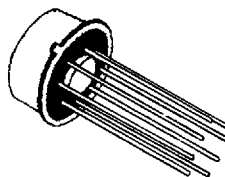
## DIP-28 Ceramic (0.25)



## 40 lead Plastic Dip



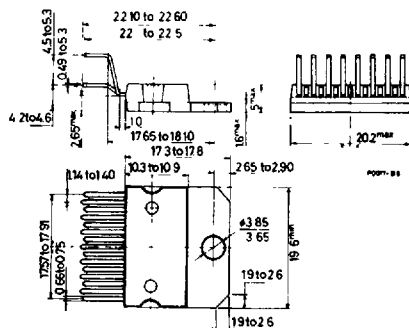
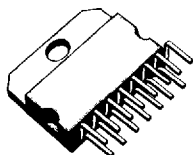
## TO-99



## PACKAGES

S G S-THOMSON

## MULTIWATT-15



## FLEXIWATT-15

