



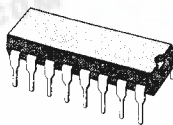
SGS-THOMSON
MICROELECTRONICS

TSG8511

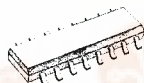
SWITCHED CAPACITOR MASK PROGRAMMABLE FILTER

- CAUER TYPE
- 7TH ORDER
- STOPBAND ATTENUATION : 55dB (typ)
- PASSBAND RIPPLE : 0.1dB (typ)
- CLOCK TO CUT-OFF FREQ. RATIO : 75.3
- CLOCK FREQUENCY RANGE : 1 TO 1300kHz
- CUT-OFF FREQUENCY RANGE : 13Hz TO 17.3kHz

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)

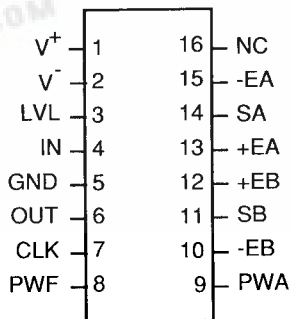
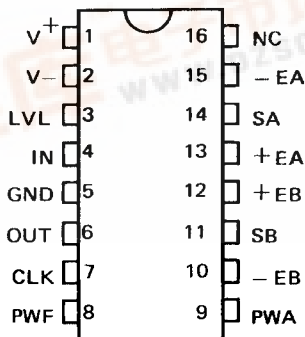
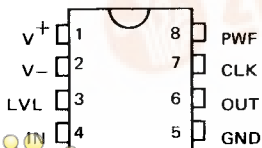


P
DIP-8
(Plastic Package)

DESCRIPTION

The TSG8511 is a HCMOS lowpass elliptic filter.

PIN CONNECTIONS



16 pins : FILTER + 2 OP-AMPS

SO-16 Package

DIP Package

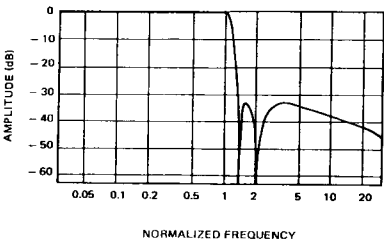
E88TSG8511-02

E88TSG8511-03

DIP Package

TSG8511

AMPLITUDE RESPONSE CURVE



E88TSG8511-04

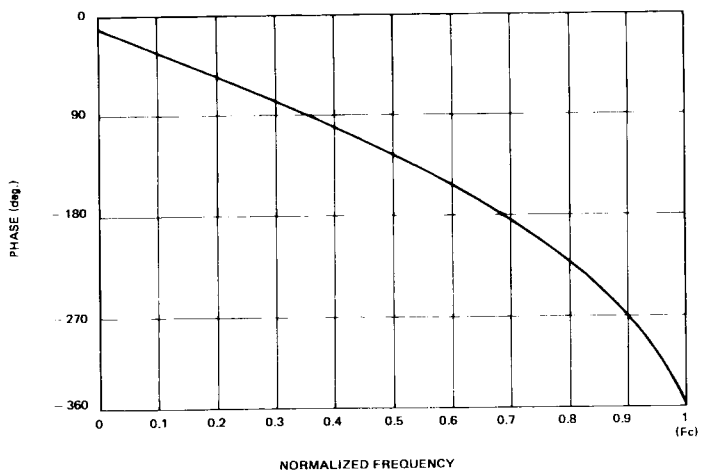
FILTER SPECIFICATIONS

Lowpass Filter : TSG8511 ; Type : Cauer ; Order : 7.
V⁺ = 5V, V⁻ = -5V, T = 25°C, RL = 5kΩ, CL = 100pF, I_{PWF} = 100μA

Symbol	Parameter		Typ.	Tested Limits	Unit
Fe	External Clock Freq.		1 1300(*)		kHz (min) kHz (max)
Fi	Internal Sampling Freq.		0.5 650(*)		kHz (min) kHz (max)
Fe/Fc	Clock to Cutoff fr. Ratio		75.3 ± 1%		
Fc	Cutoff Frequency		0.013 17.3(*)		kHz (min) kHz (max)
G _o	Passband Gain		− 0.3 0		dB (min) dB (max)
A _p	Passband Ripple	Fe = 256kHz	0.1	0.5	dB (max)
A _s	Stopband Attenuation	Fe = 256kHz F > 1.3Fc;	55	50	dB (min)
V _{off}	Output DC Offset Voltage	LVL = 0V	± 150	± 300	mV (max)
LVL	DC Level Adjustment		± 64		mV
LG	Level gain		− 4.7		
R _{PWF}	PWF Resistance		10 72		kΩ (min) kΩ (max)
I _{PWF}	Input Current on PWF		50 250		μA (min) μA (max)
I ⁺	V ⁺ Supply Current	Fe = 100kHz I _{pwa} = 0μA	3.5	5	mA (max)
I [−]	V [−] Supply Current		3.5	5	mA (max)
PSRR ⁺	V ⁺ Supply Rejection Ratio	Fe = 256kHz F _{in} = 1kHz	32		dB
PSRR [−]	V [−] Supply Rejection Ratio		47		dB
R _{IN}	Input Resistance		3		MΩ
C _{IN}	Input Capacitance		20		pF
V _o	Output Voltage Swing		+ 3.5 − 4.5		Vp-p (max)
V _n	Output Noise	BW = 3.4kHz Fe = 256kHz V _{in} = 2V _{rms}	158		μV _{rms}
SNR	Signal to Noise Ratio		82		dB

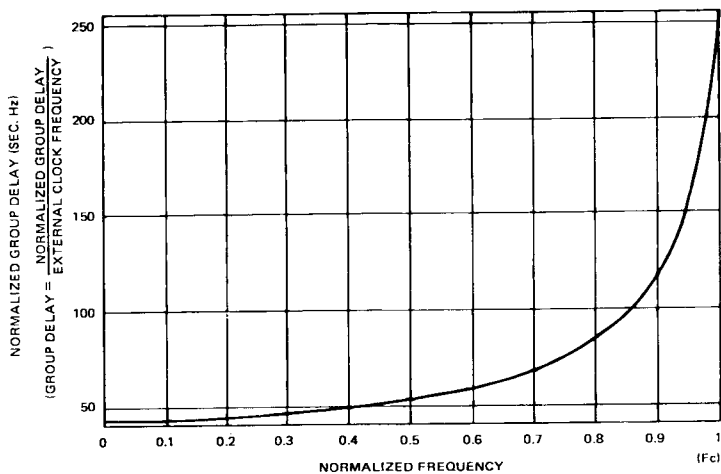
(*) At maximum Fe : - stopband attenuation As > 50dB for F > 1.3Fc
(with I_{pwt} = 250μA) - passband ripple : A_p = 0.5dB
- passband gain : G_o = - 0.7dB

PHASE RESPONSE CURVE (in passband)



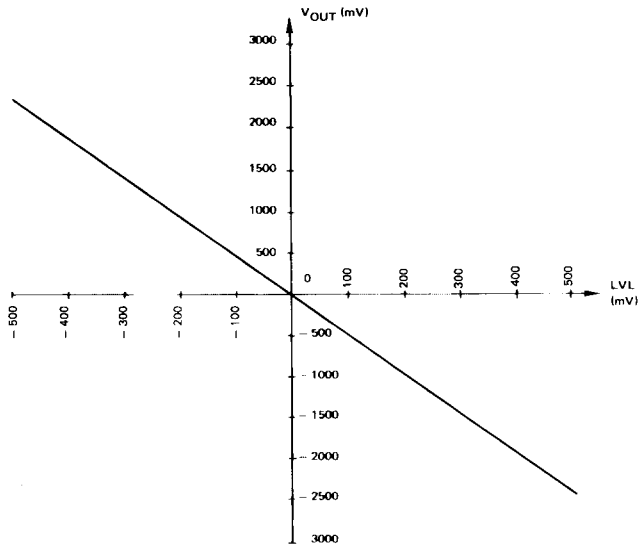
E88TSG8511-05

GROUP DELAY CURVE (in passband)



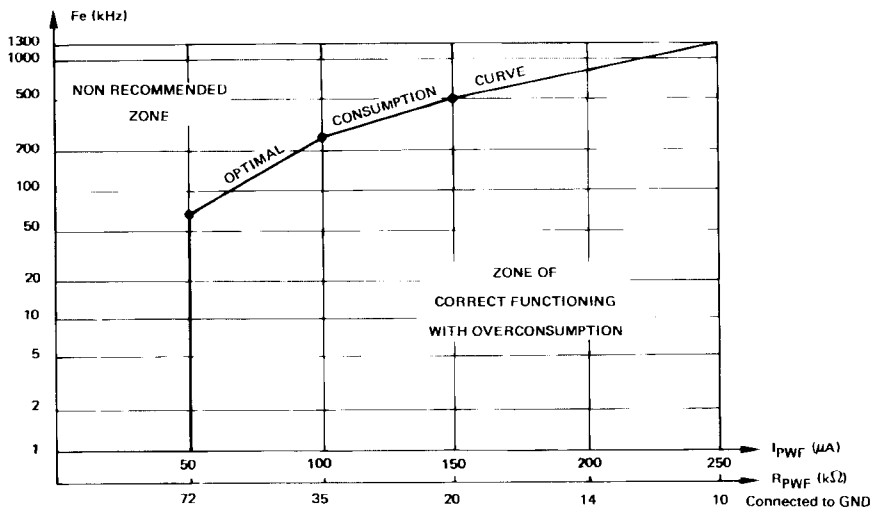
E88TSG8511-06

OUTPUT DC VOLTAGE ADJUSTMENT FROM LVL PIN



E88TSG8511-07

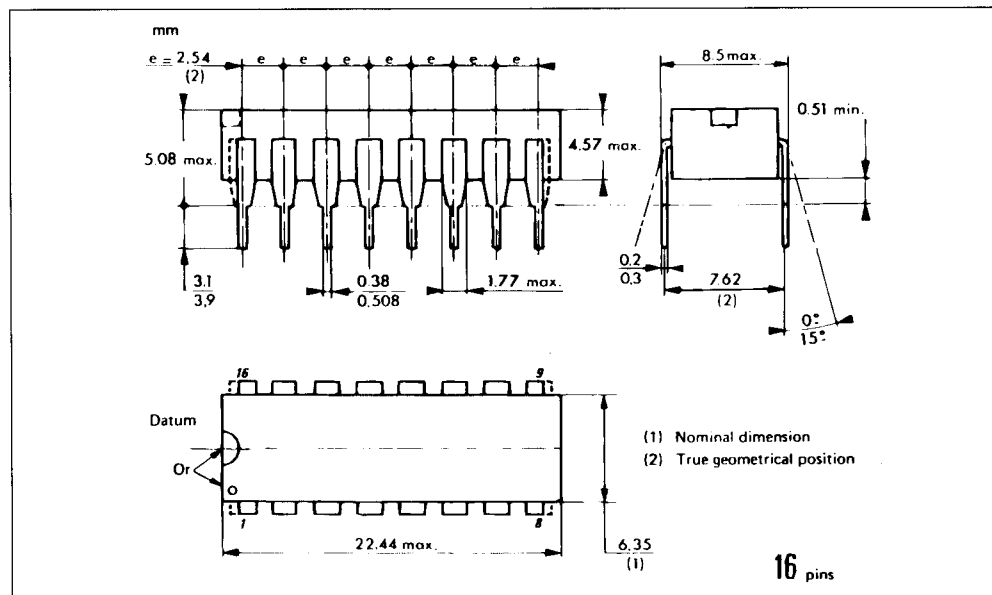
USER'S GUIDE FOR I_{PWF} AND R_{PWF} CHOICE



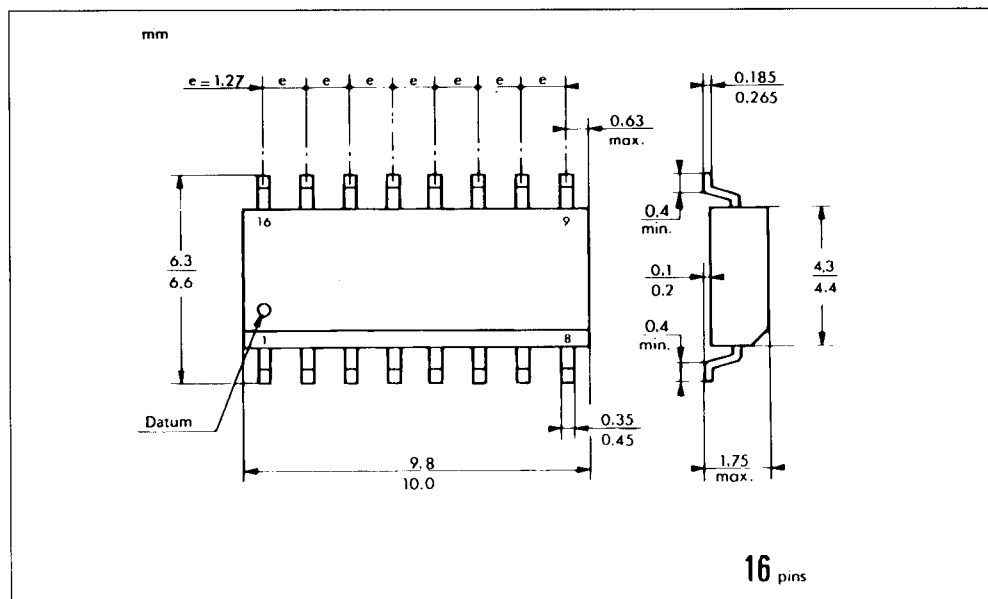
E88TSG8511-08

PACKAGE MECHANICAL DATA

16 PINS - Plastic Dip

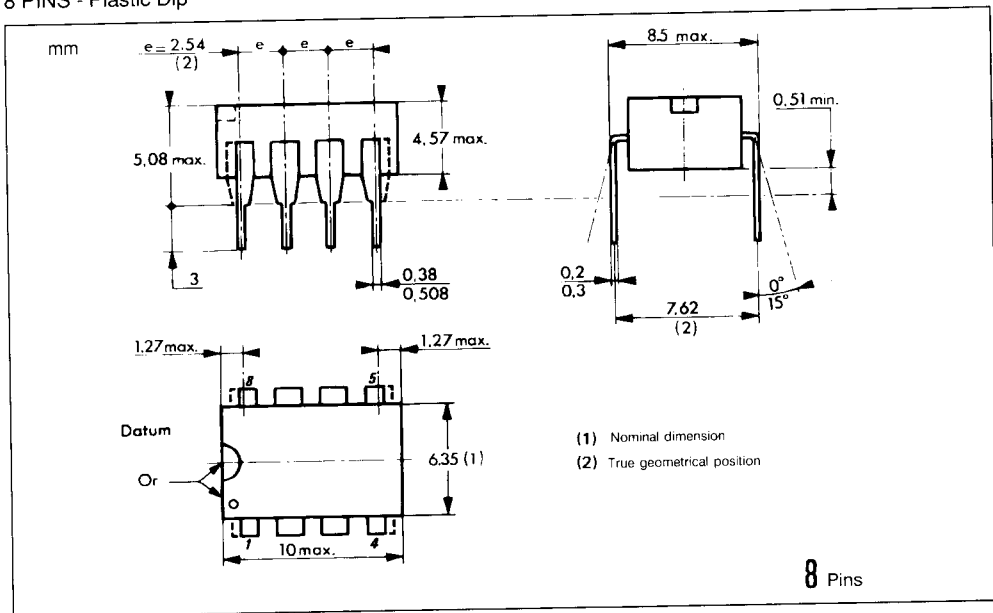


16 PINS - Plastic Micropackage



TSG8511

8 PINS - Plastic Dip



ORDER CODES

Plastic	16 Pins Package : TSG8511XP
Ceramic	16 Pins Package : TSG8511XC
Cerdip	16 Pins Package : TSG8511XJ
Plastic	8 Pins Package : TSG85111XP

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

56E D ■ 7929237 0039666 865 ■ S6TH

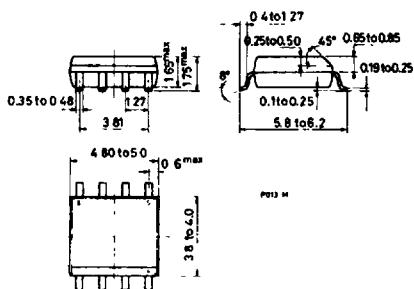
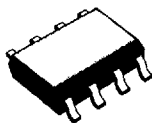
PACKAGES

SO-8J

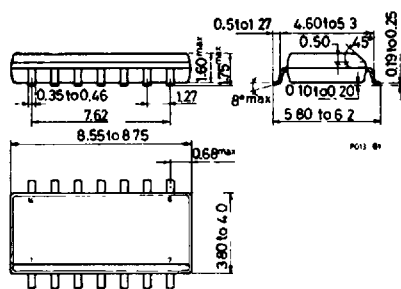
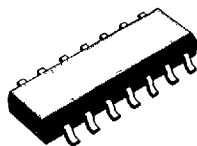
SO-14J

T-90-20

S G S-THOMSON



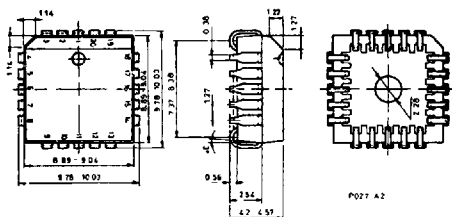
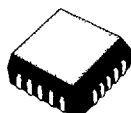
P013 M



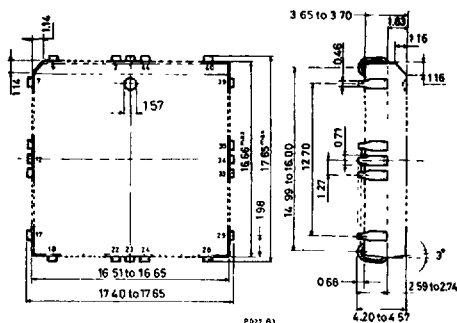
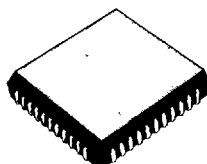
P013 M

PLCC20

PLCC44



P021 A2



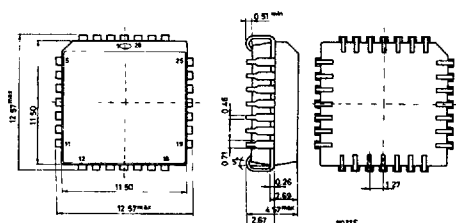
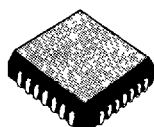
P021 B3

PACKAGES

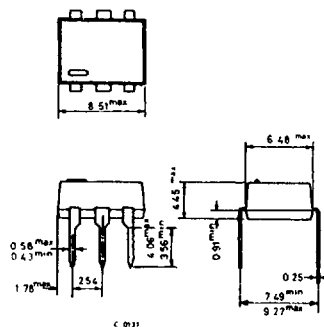
56E D ■ 7929237 0039667 7T1 ■ SGTH

S G S-THOMSON

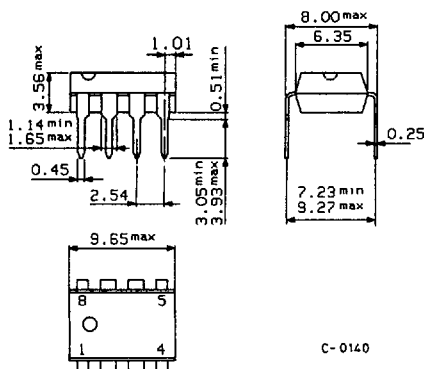
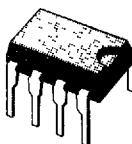
PLCC-28 Plastic Chip Carrier



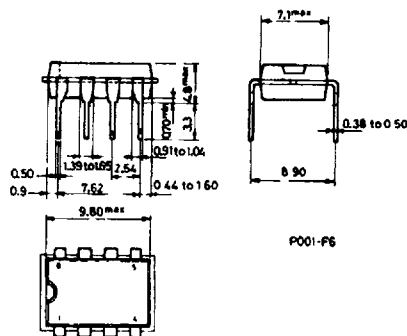
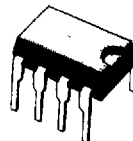
DIP-6



Minidip A Plastic

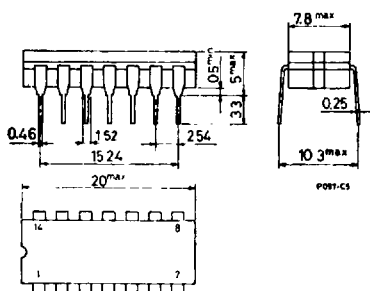
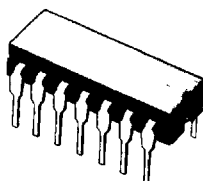


8 lead Plastic Minidip

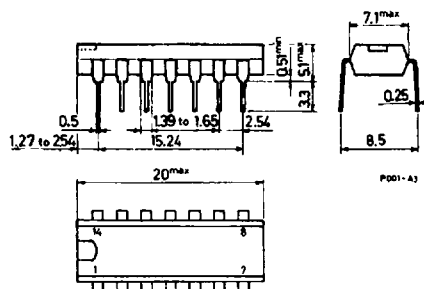
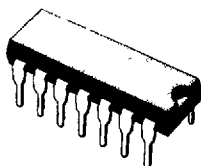


S G S-THOMSON

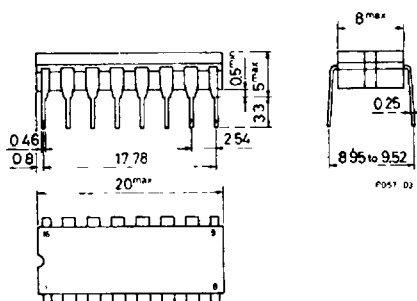
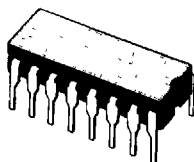
14 lead Ceramic Dip



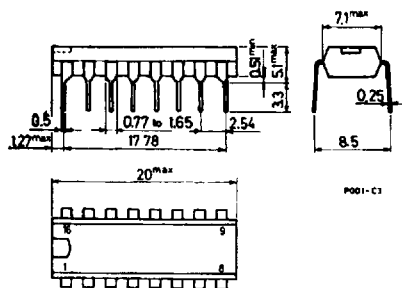
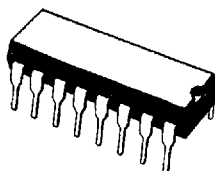
14 lead Plastic Dip



16 lead Ceramic Dip



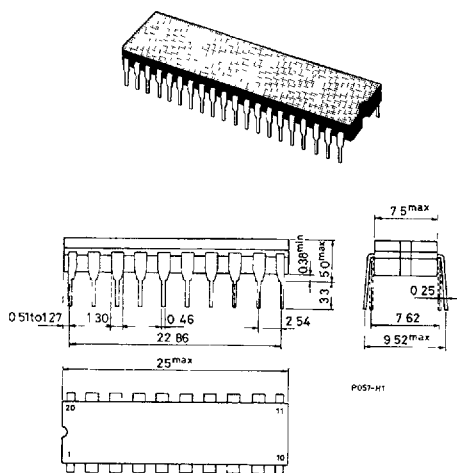
16 lead Plastic Dip (0.25)



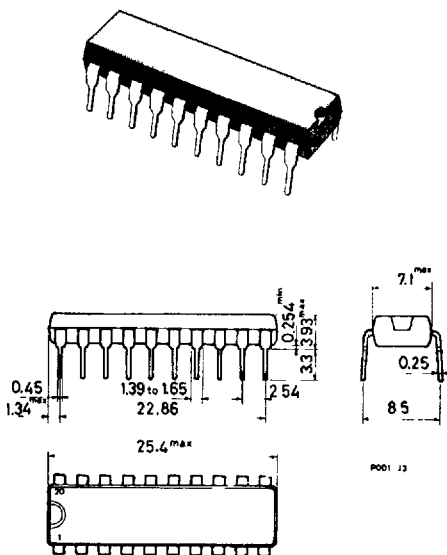
PACKAGES

S G S-THOMSON

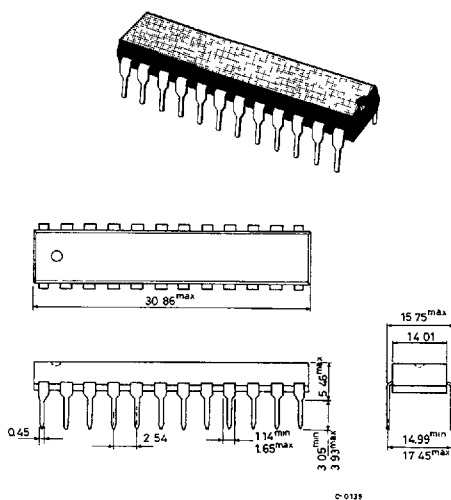
DIP-20 Ceramic



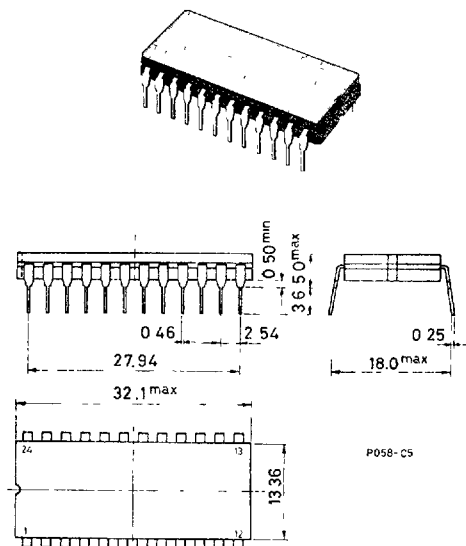
20 lead Plastic Dip (0.25)



DIP-24 Plastic



DIP-24 Ceramic (0.25)

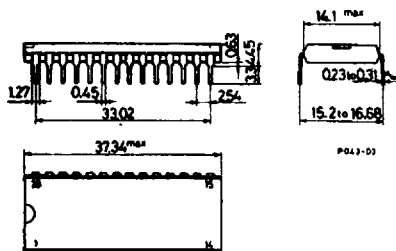
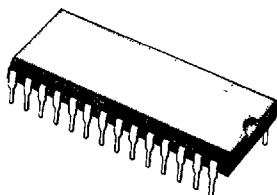


56E D ■ 7929237 0039670 296 ■ SGTH

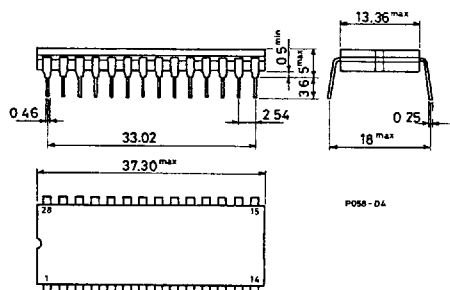
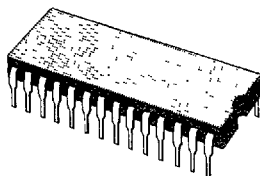
PACKAGES

S G S-THOMSON

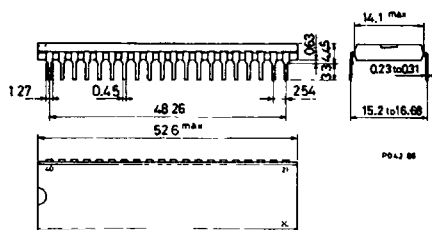
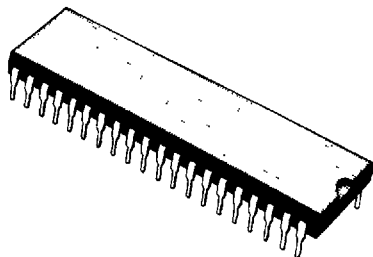
28 lead Plastic Dip



DIP-28 Ceramic (0.25)



40 lead Plastic Dip

**TO-99**