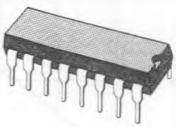
SGS-THOMSON MICROELECTRONICS

TSG8512

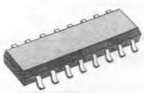
SWITCHED CAPACITOR MASK PROGRAMMABLE FILTER

- 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.



P
DIP-16
(Plastic Package)



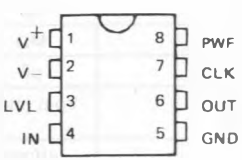
FP
SO-16
(Plastic Micropackage)

P
DIP-8
(Plastic Package)

DESCRIPTION

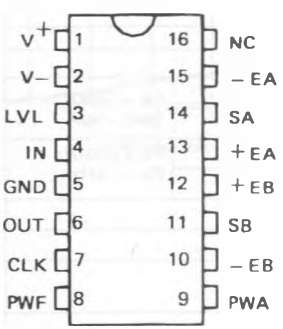
The TSG8512 is a HCMOS lowpass elliptic filter.

PIN CONNECTIONS



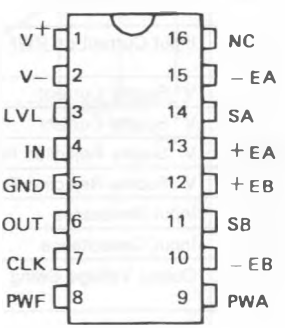
8 pins : FILTER ONLY
DIP-8 Package

E88TSG8512-01



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

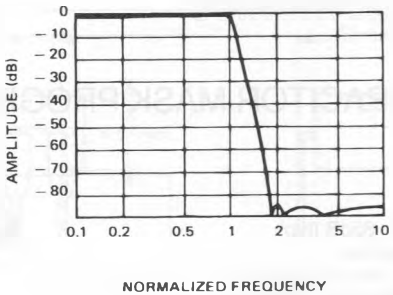
E88TSG8512-02



SO-16 Package

E88TSG8512-03

AMPLITUDE RESPONSE CURVE



E88TSG8512-04

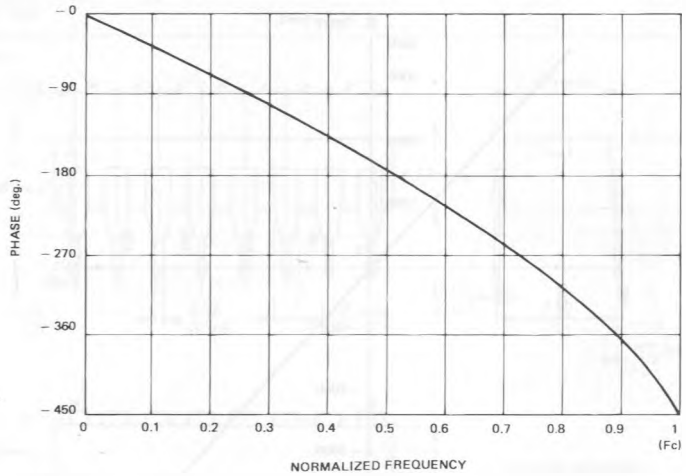
FILTER SPECIFICATIONS

Lowpass Filter : TSG8512 ; Type : Cauer ; Order : 7.
$V^+ = 5V$, $V^- = -5V$, T = 25°C, RL = 5kΩ, CL = 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_o	Passband Gain		– 0.3 0		dB (min) dB (max)
Ap	Passband Ripple	Fe = 100kHz	0.15	0.5	dB (max)
As	Stopband Attenuation	Fe = 100kHz F > 1.8Fc	85	75	dB (min)
Voff	Output DC Offset Voltage	LVL = 0V	± 150	± 250	mV (max)
LVL	DC Level Adjustment		± 22.5		mV
LG	Level gain		– 11.1		
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 Ipwa = 0µA	3.5	5	mA (max)
I^-	V^- Supply Current		3.5	5	mA (max)
$PSRR^+$	V^+ Supply Rejection Ratio	Fe = 200kHz Fin = 1kHz	20		dB
$PSRR^-$	V^- Supply Rejection Ratio		35		dB
R_{IN}	Input Resistance		3		MΩ
C_{IN}	Input Capacitance		20		pF
Vo	Output Voltage Swing		+ 3.5 – 4.5		Vp-p (max)
Vn	Output Noise	BW = 1kHz Fe = 100kHz Vin = 2Vrms	112		µVrms
SNR	Signal to Noise Ratio		85		dB

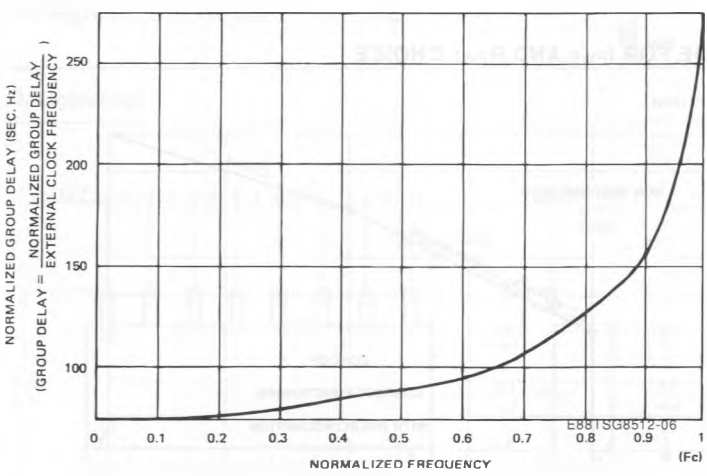
(*) At maximum Fe : - stopband attenuation As > 62dB for F > 1.8Fc
(with $I_{pwf} = 250\mu A$) - passband ripple : $A_p = 0.6dB$
- passband gain : $G_0 = -0.4dB$

PHASE RESPONSE CURVE (in passband)



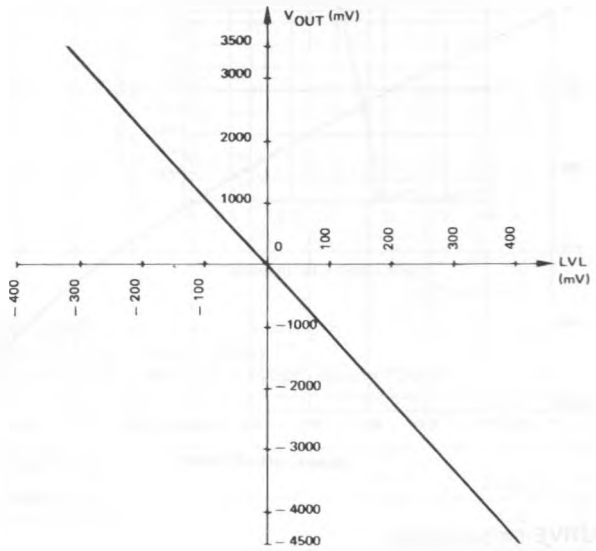
E88TSG8512-05

GROUP DELAY CURVE (in passband)



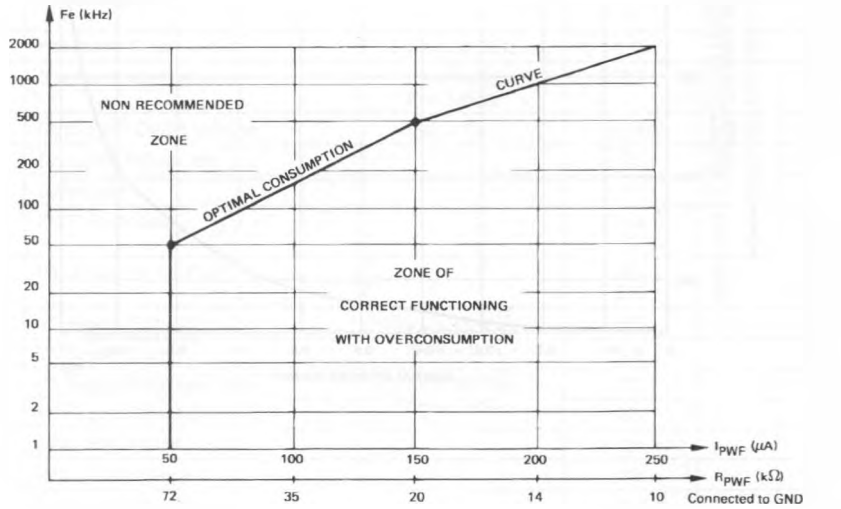
E88TSG8512-06

OUTPUT DC VOLTAGE ADJUSTMENT FROM LVL PIN



E88TSG8512-07

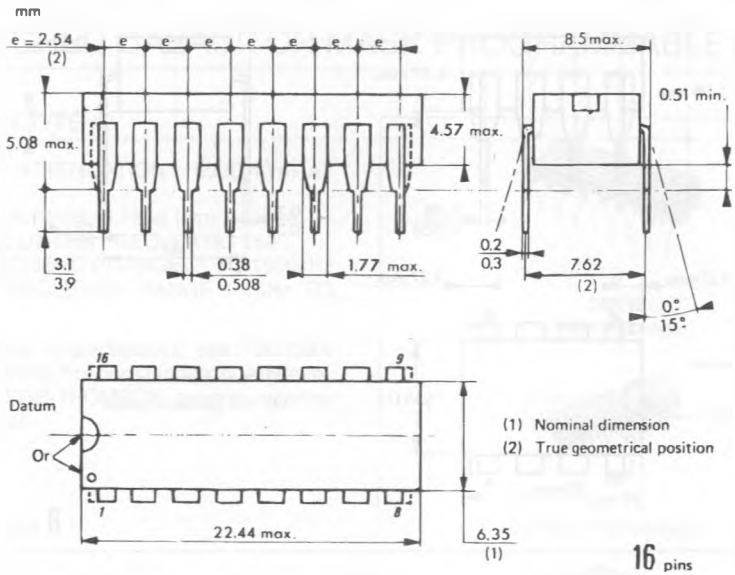
USER'S GUIDE FOR I_{PWF} AND R_{PWF} CHOICE



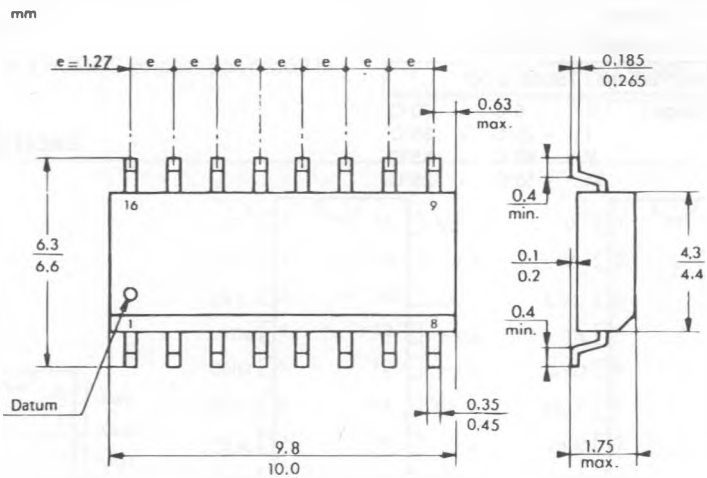
E88TSG8512-08

PACKAGE MECHANICAL DATA

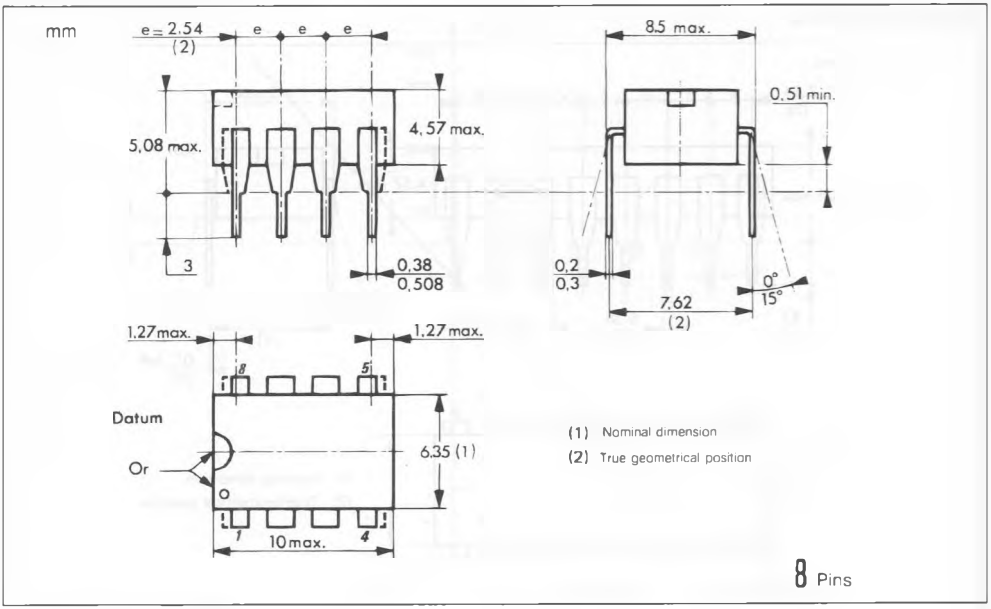
16 PINS - Plastic Dip



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°C	+	70°C
I :	– 25°C	+	85°C
V :	– 40°C	+	85°C
M :	– 55°C	+	125°C