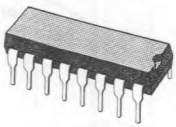
SGS-THOMSON MICROELECTRONICS

TSG8510

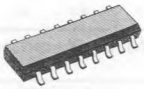
SWITCHED CAPACITOR MASK PROGRAMMABLE FILTER

- CAUER TYPE
- 5TH ORDER
- STOPBAND ATTENUATION : 33dB (typ.)
- PASSBAND RIPPLE : 0.05dB (typ.)
- CLOCK TO CUT-OFF FREQ; RATIO : 75.3
- CLOCK FREQUENCY RANGE : 1 TO 1500kHz
- CUT-OFF FREQUENCY RANGE : 13Hz 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)



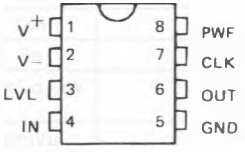
FP
SO-16
(Plastic Micropackage)

P
DIP-8
(Plastic Package)

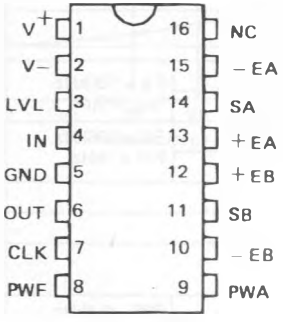
DESCRIPTION

The TSG8510 is a HCMOS lowpass elliptic filter.

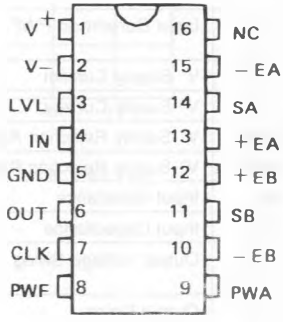
PIN CONNECTIONS



8 pins : FILTER ONLY
DIP-8 Package
E88TSG8510-01

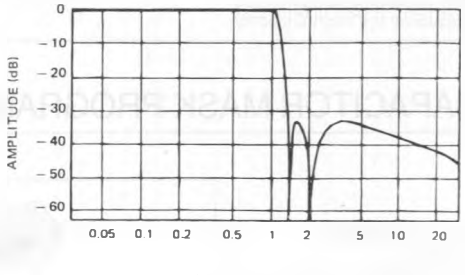


16 pins : FILTER + 2 OP-AMPs
DIP-16 Package
E88TSG8510-02



SO-16 Package
E88TSG8510-03

AMPLITUDE RESPONSE CURVE



E88TSG8510-04

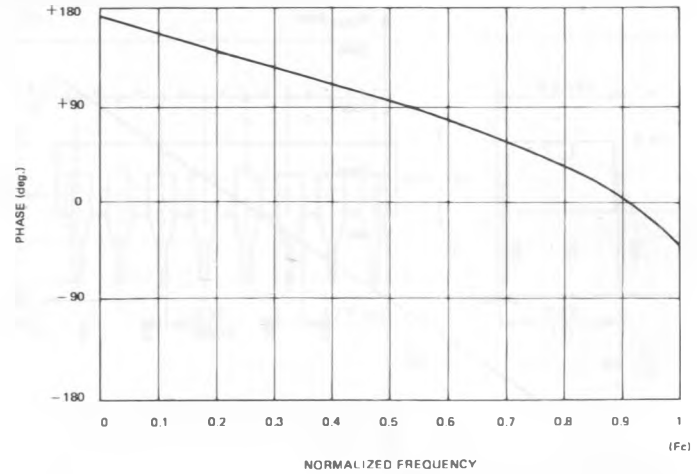
FILTER SPECIFICATIONS

Lowpass Filter : TSG8510 ; Type : Cauer ; Order : 5.
$V^+ = 5V$, $V^- = -5V$, T = 25°C, RL = 5kΩ, CL = 100pF, $I_{PWF} = 100\mu A$

Symbol	Parameter		Typ.	Tested Limits	Unit
F_e	External Clock Frequency		1 1500(*)		kHz (min) kHz (max)
F_i	Internal Sampling Frequency		0.5 750(*)		kHz (min) kHz (max)
F_e/F_c	Clock to Cutoff fr. Ratio		75.3 ± 1%		
F_c	Cutoff Frequency		0.013 20(*)		kHz (min) kHz (max)
G_o	Passband Gain		– 0.3 0		dB (min) dB (max)
Ap	Passband Ripple	Fe = 256kHz	0.05	0.4	dB (max)
As	Stopband Attenuation	Fe = 256kHz F > 1.37 Fc	33	32	dB (min)
Voff	Output DC Offset Voltage	LVL = 0V	± 100	± 200	mV (max)
LVL	DC Level Adjustment		± 60		mV
LG	Level gain		3.3		
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	mA (max)
I^-	V^- Supply Current		3	5	mA (max)
PSRR$^+$	V^+ Supply Rejection Ratio	Fe = 256kHz Fin = 1kHz	35		dB
PSRR$^-$	V^- Supply Rejection Ratio		55		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)
Vn	Output Noise	BW = 3.4kHz Fe = 256kHz Vin = 2Vrms	89		µVrms
SNR	Signal to Noise Ratio		87		dB

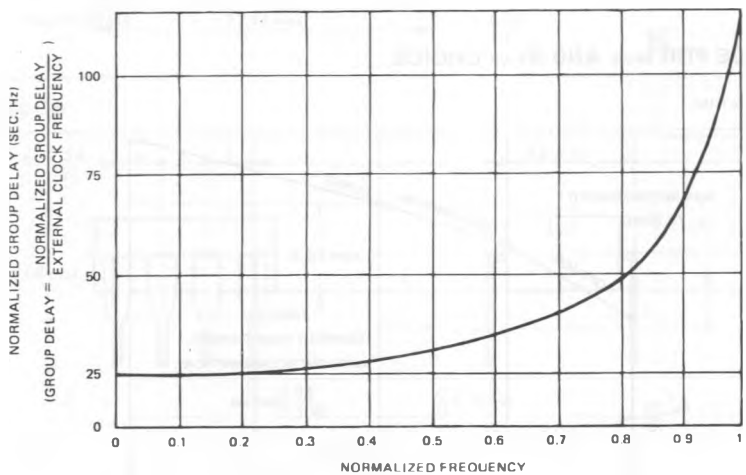
(*) At maximum Fe : - stopband attenuation As > 32dB for F > 1.37Fc
(with $I_{pwf} = 250\mu A$) - passband ripple : $A_p = 0.8dB$
- passband gain : $G_0 = -0.4dB$

PHASE RESPONSE CURVE (in passband)



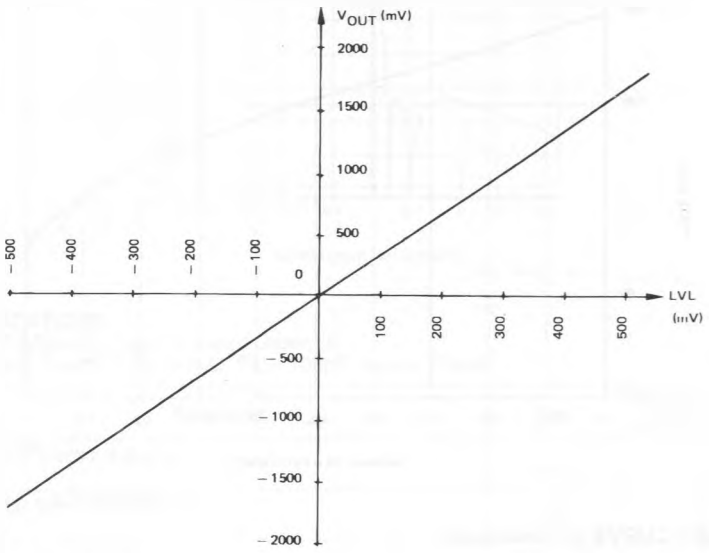
E88TSG8510-05

GROUP DELAY CURVE (in passband)



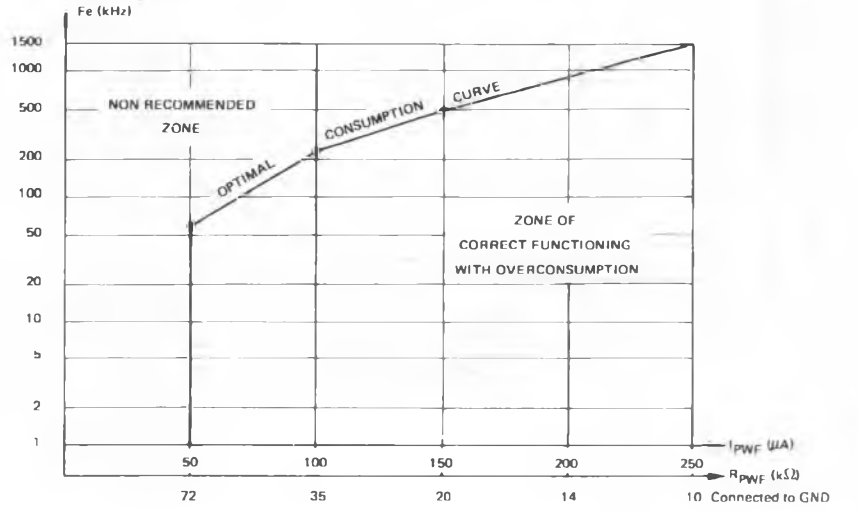
E88TSG8510-06

OUTPUT DC VOLTAGE ADJUSTMENT FROM LVL PIN



E88TSG8510-07

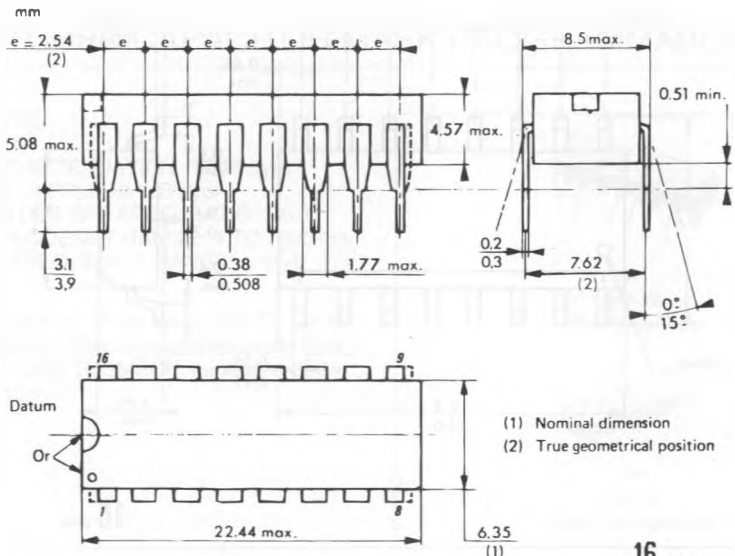
USER'S GUIDE FOR I_{PWF} AND R_{PWF} CHOICE



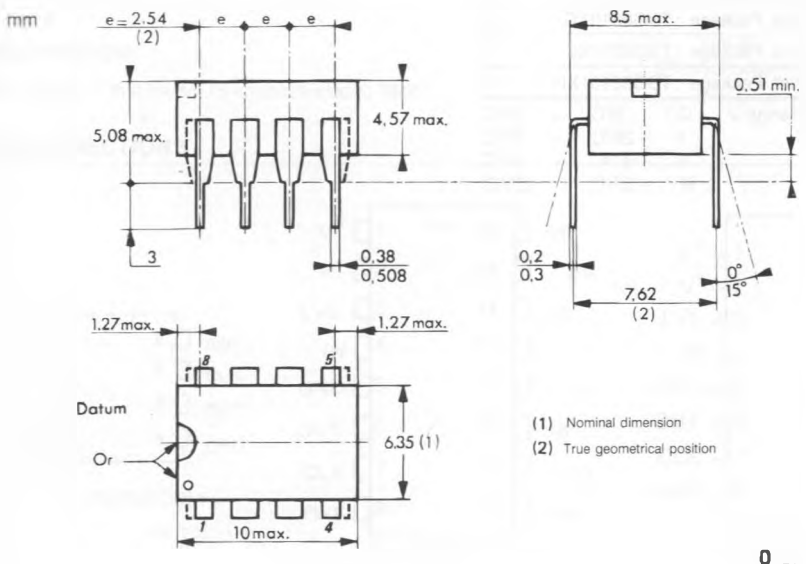
E88TSG8510-08

PACKAGE MECHANICAL DATA

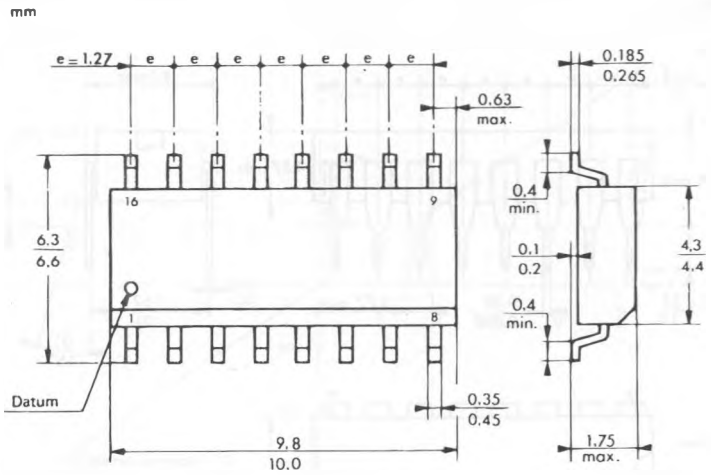
16 PINS - Plastic Dip



8 PINS - Plastic Dip



16 PINS - Plastic Micropackage



16 pins

ORDER CODES

Plastic	16 Pins Package : TSG8510XP
Ceramic	16 Pins Package : TSG8510XC
Cerdip	16 Pins Package : TSG8510XJ
Plastic	8 Pins Package : TSG85101XP

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