SGS-THOMSON MICROELECTRONICS

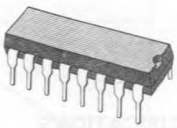
TSG8531

SWITCHED CAPACITOR MASK PROGRAMMABLE FILTER

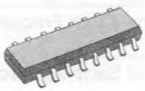
- CAUER TYPE
- 6TH ORDER
- STOPBAND ATTENUATION : 32dB (typ)
- PASSBAND RIPPLE : 0.15dB (typ)
- CLOCK TO CUT-OFF FREQ. RATIO : 400
- CLOCK FREQUENCY RANGE : 4 TO 1800kHz
- CUT-OFF FREQUENCY RANGE : 10Hz to 4.5kHz

* According to spectrum aliasing phenomenon, the TSG8531 must be considered as a highpass filter only in the range [Fc, Fi/2], where Fi is the internal sampling frequency.

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



P
DIP-16
(Plastic Package)



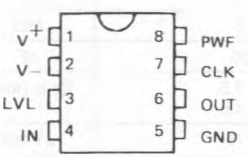
FP
SO-16
(Plastic Micropackage)

P
DIP-8
(Plastic Package)

DESCRIPTION

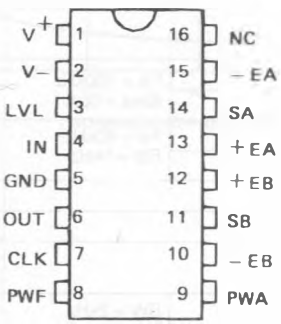
The TSG8531 is a HCMOS highpass* elliptic filter.

PIN CONNECTIONS



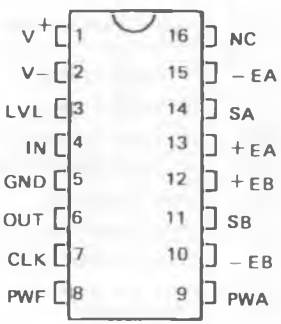
8 pins : FILTER ONLY
DIP-8 Package

E88TSG8531-01



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

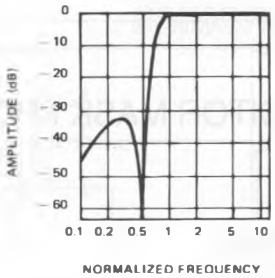
E88TSG8531-02



SO-16 Package

E88TSG8531-03

AMPLITUDE RESPONSE CURVE



E88TSG8531-04

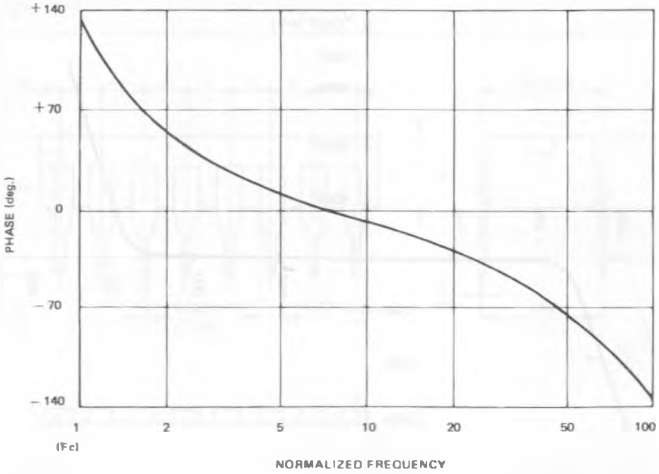
FILTER SPECIFICATIONS

Highpass Filter : TSG8531 : Type : Cauer ; Order : 6.
$V^+ = 5V$, $V^- = -5V$, T = 25°C, RL = 5kΩ, CL = 100pF, $I_{PWF} = 100\mu A$

Symbol	Parameter		Typ.	Tested Limits	Unit
Fe	External Clock Frequency		4 1800(*)		kHz (min) kHz (max)
Fi	Internal Sampling Freq.		2 900(*)		kHz (min) kHz (max)
Fe/Fc	Clock to Cutoff fr. Ratio		400 ± 1%		
Fc	Cutoff Frequency		0.01 4.5(*)		kHz (min) kHz (max)
G_o	Passband Gain		− 0.1 0.1		dB (min) dB (max)
Ap	Passband Ripple	[Fc, 30Fc] Fe = 400kHz	0.15	0.4	dB (max)
As	Stopband Attenuation	F < 0.55Fc Fe = 400kHz	32	30	dB (min)
Voff	Output DC Offset Voltage	LVL = 0V	± 100	± 200	mV (max)
LVL	DC Level Adjustment		± 300		mV
LG	Level gain		0.1		
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 = 40kHz Fin = 1kHz	36		dB
$PSRR^-$	V^- Supply Rejection Ratio		48		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 = 2kHz Fe = 40kHz Vin = 2Vrms	178		µVrms
SNR	Signal to Noise Ratio		80		dB

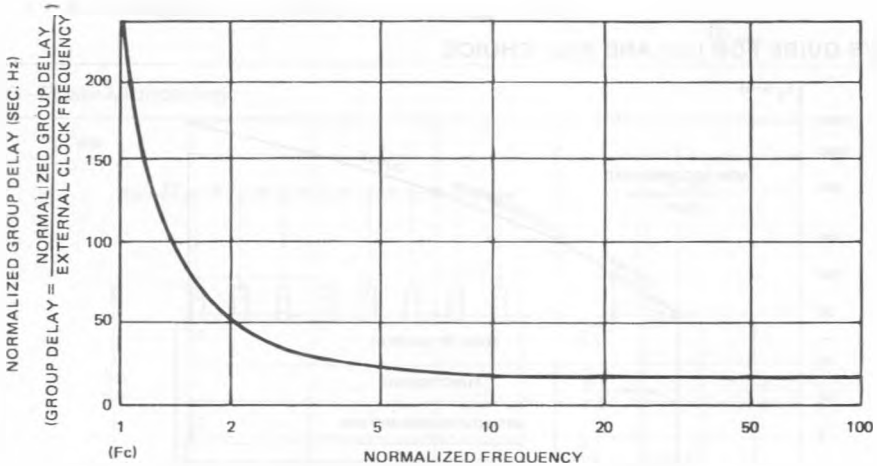
(*) At maximum Fe : - stopband attenuation As > 30dB for F < 0.55Fc
(with $I_{pwf} = 250\mu A$) - passband ripple : $A_p = 0.3dB$
- passband gain : $G_o = -1dB$

PHASE RESPONSE CURVE (in passband)



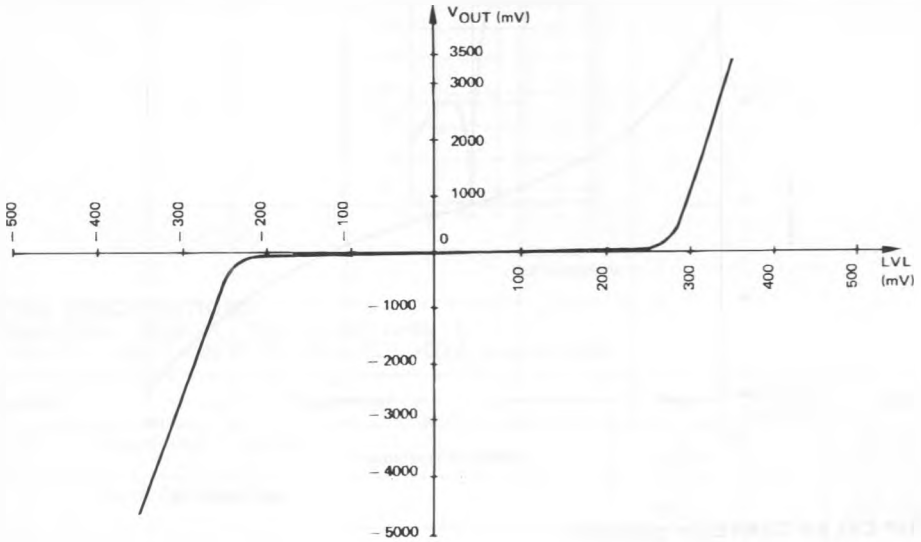
E88TSG8531-05

GROUP DELAY CURVE (in passband)



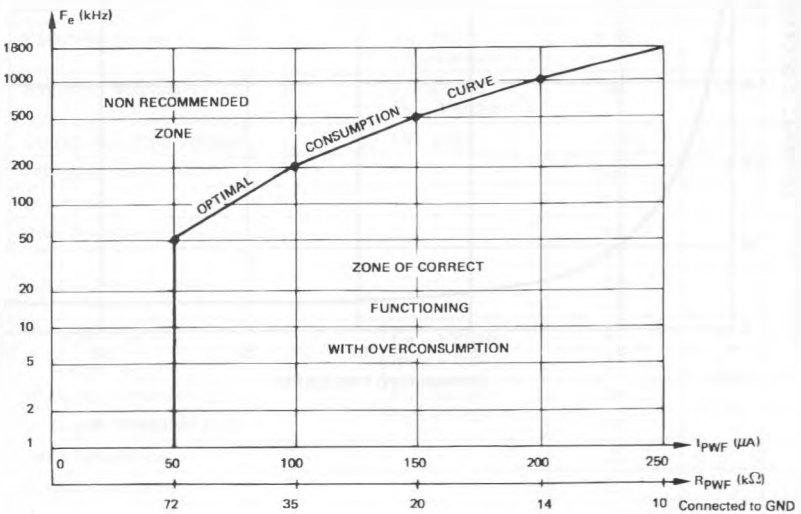
E88TSG8531-06

OUTPUT DC VOLTAGE ADJUSTMENT FROM LVL PIN



E88TSG8531-07

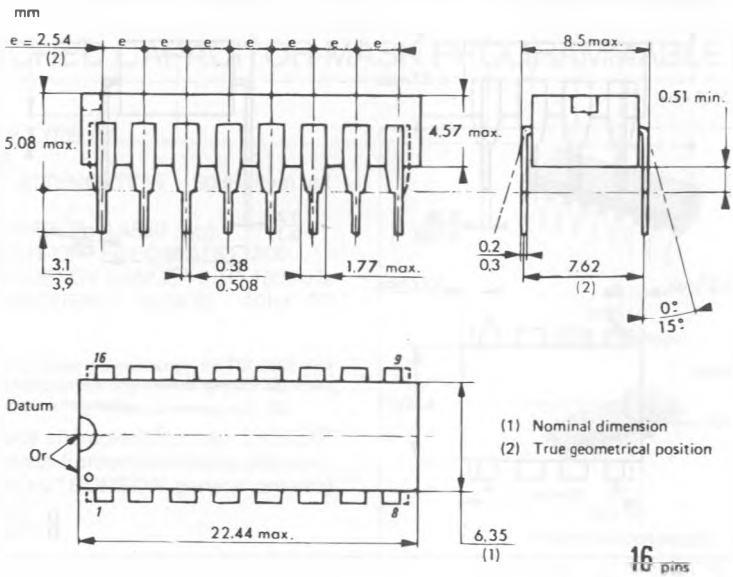
USER'S GUIDE FOR I_{PWF} AND R_{PWF} CHOICE



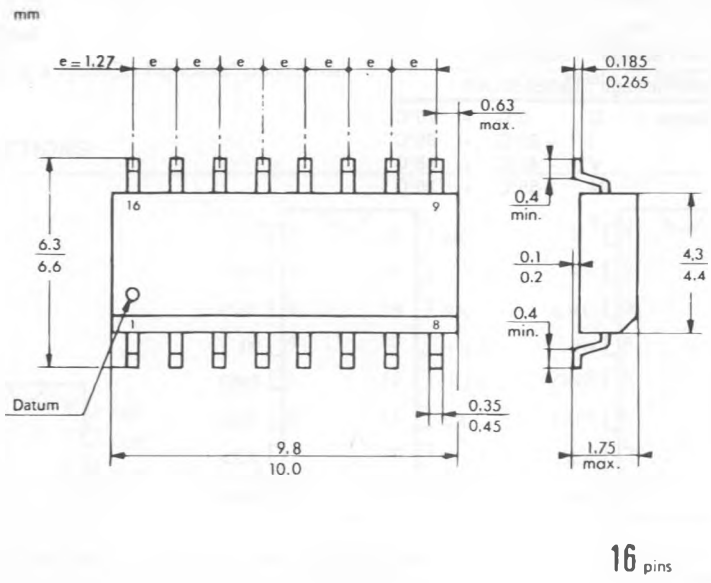
E88TSG8531-08

PACKAGE MECHANICAL DATA

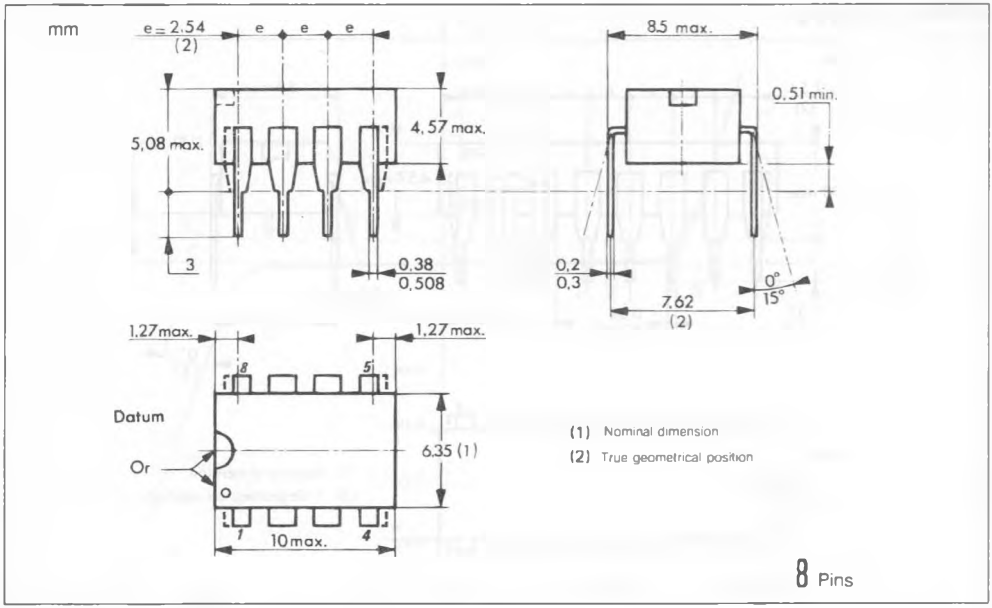
16 PINS - Plastic Dip



16 PINS - Plastic Micropackage



8 PINS - Plastic Dip



ORDER CODES

Plastic	16 Pins Package : TSG8531XP
Ceramic	16 Pins Package : TSG8531XC
Cerdip	16 Pins Package : TSG8531XJ
Plastic	8 Pins Package : TSG85311XP

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