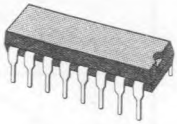
SGS-THOMSON MICROELECTRONICS

TSG8514

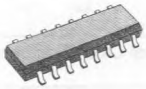
SWITCHED CAPACITOR MASK PROGRAMMABLE FILTER

- BUTTERWORTH TYPE
- 8TH ORDER
- STOPBAND ATTENUATION : 74dB (typ) AT 3.6 x F_c
- PASSBAND RIPPLE : MAXIMALLY FLAT
- CLOCK TO CUT-OFF FREQ. RATIO : 80
- CLOCK FREQUENCY RANGE : 1 TO 1000kHz
- CUT-OFF FREQUENCY RANGE : 12.5Hz TO 12.5kHz

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



P
DIP-16
(Plastic Package)



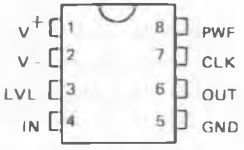
FP
SO-16
(Plastic Micropackage)

P
DIP-8
(Plastic Package)

DESCRIPTION

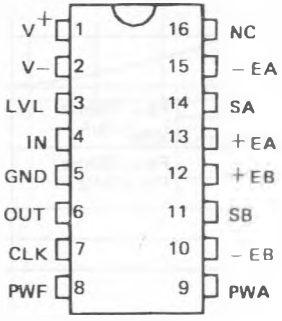
The TSG8514 is a HCMOS lowpass polynomial filter.

PIN CONNECTIONS



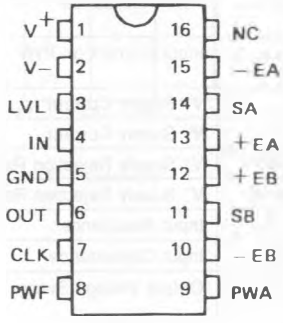
8 pins : FILTER ONLY
DIP-8 Package

E88TSG8514-01



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

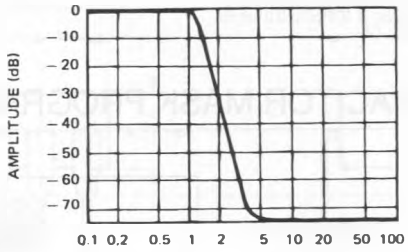
E88TSG8514-02



SO-16 Package

E88TSG8514-03

AMPLITUDE RESPONSE CURVE



E88TSG8514-04

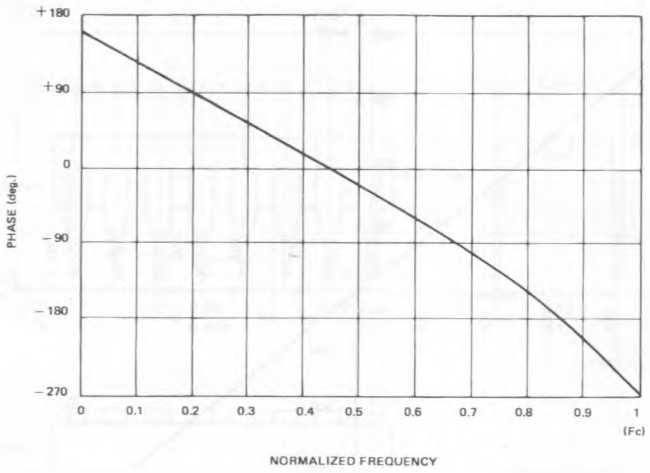
FILTER SPECIFICATIONS

Lowpass Filter : TSG8514 ; Type : Butterworth ; Order : 8.
$V^+ = 5V$, $V^- = -5V$, T = 25°C, RL = 5kΩ, CL = 100pF, $I_{PWF} = 100\mu A$

Symbol	Parameter		Typ.	Tested Limits	Unit
Fe	External Clock Frequency		1 1000(*)		kHz (min) kHz (max)
Fi	Internal Sampling Freq.		0.5 500(*)		kHz (min) kHz (max)
Fe/Fc	Clock to Cutoff fr. Ratio		80 ± 1%		
Fc	Cutoff Frequency		0.0125 12.5(*)		kHz (min) kHz (max)
G_o	Passband Gain		– 0.3 0		dB (min) dB (max)
Ap	Passband Ripple	Fe = 80kHz	maxi mally Flat		dB (max)
As	Stopband Attenuation	Fe = 80kHz F > 3.6 Fc	74	68	dB (min)
Voff	Output DC Offset Voltage	LVL = 0V	± 100	± 200	mV (max)
LVL	DC Level Adjustment		± 100		mV
LG	Level gain		– 2		
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	3.8	5	mA (max)
I^-	V^- Supply Current		3.8	5	mA (max)
$PSRR^+$	V^+ Supply Rejection Ratio	Fe = 160kHz Fin = 1kHz	30		dB
$PSRR^-$	V^- Supply Rejection Ratio		42		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 = 3.4kHz Fe = 256kHz Vin = 2Vrms	86		µVrms
SNR	Signal to Noise Ratio		87		dB

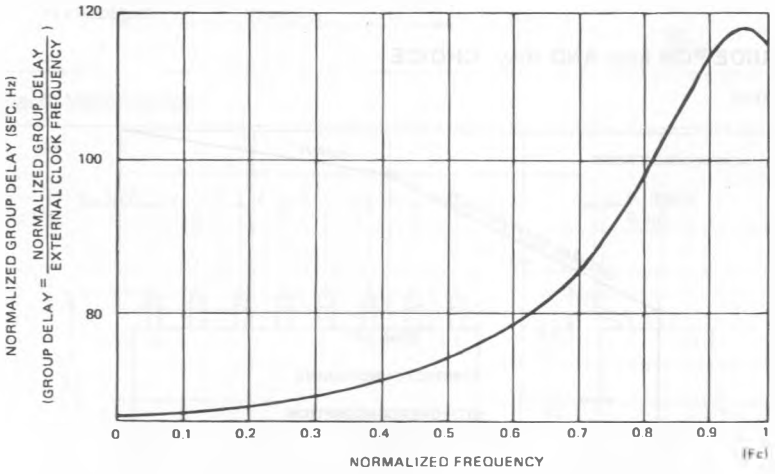
(*) At maximum Fe : - stopband attenuation As > 50dB for F > 3.6Fc
(with I_{pwf} = 250µA) - passband gain : G_o = – 0.5dB

PHASE RESPONSE CURVE (in passband)



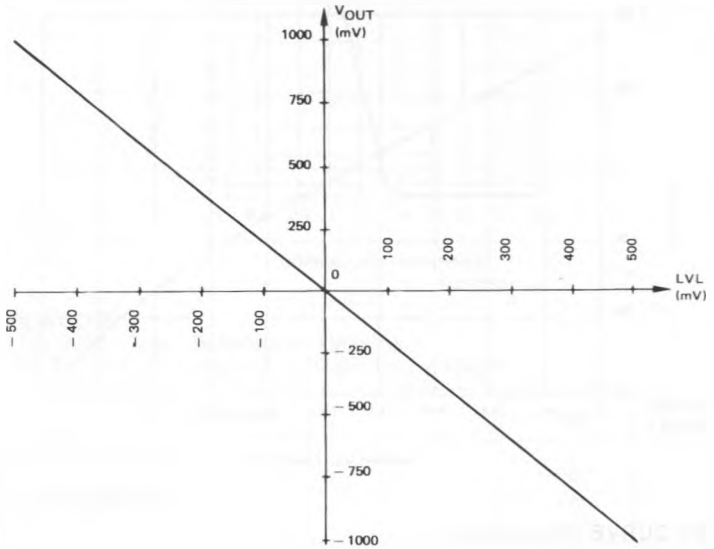
E88TSG8514-05

GROUP DELAY CURVE (in passband)



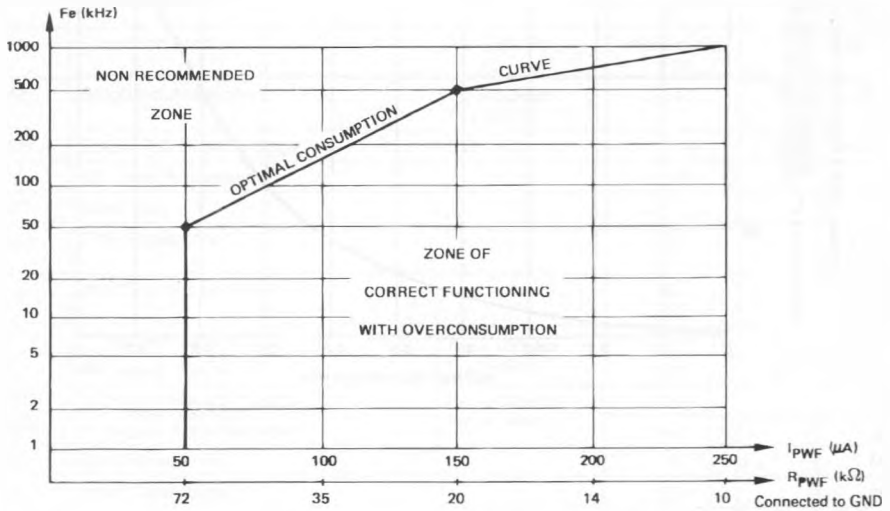
E88TSG8514-06

OUTPUT DC VOLTAGE ADJUSTMENT FROM LVL PIN



E88TSG8514-07

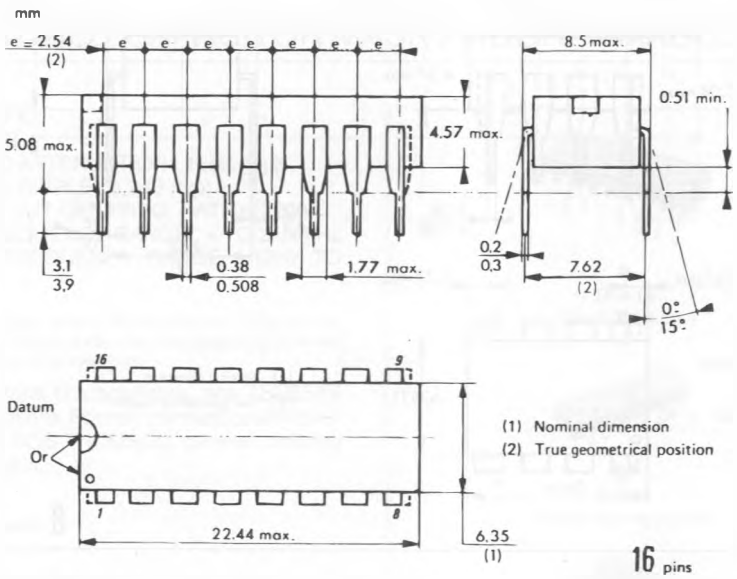
USER'S GUIDE FOR I_{PWF} AND R_{PWF} CHOICE



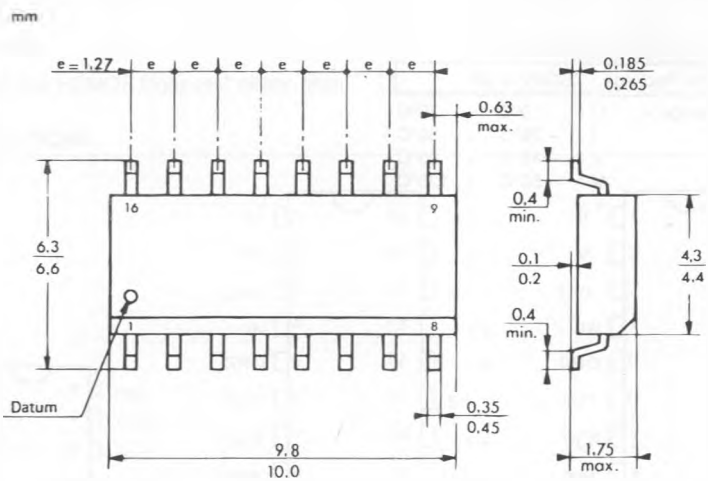
E88TSG8514-08

PACKAGE MECHANICAL DATA

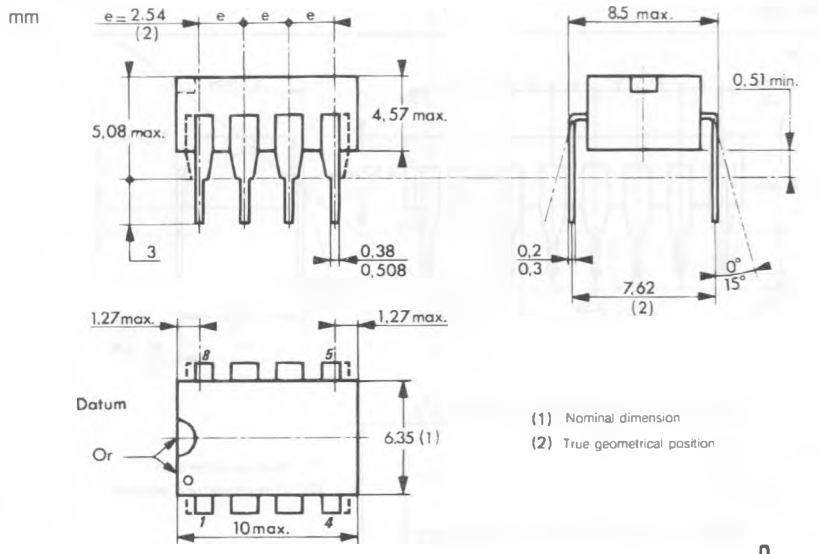
16 PINS - Plastic Dip



16 PINS - Plastic Micropackage



8 PINS - Plastic Dip



ORDER CODES

Plastic	16 Pins Package : TSG8514XP
Ceramic	16 Pins Package : TSG8514XC
Cerdip	16 Pins Package : TSG8514XJ
Plastic	8 Pins Package : TSG85141XP

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