



# TDA7332

## RDS FILTER

- HIGH PERFORMANCE, STABLE 57KHz FILTER
- HIGH SELECTIVITY
- FLAT GROUP DELAY
- HIGH PERFORMANCE LIMITER
- VERY FEW EXTERNAL COMPONENTS
- 4.332MHz CLOCK OSCILLATOR (8.664MHz OPTIONAL)

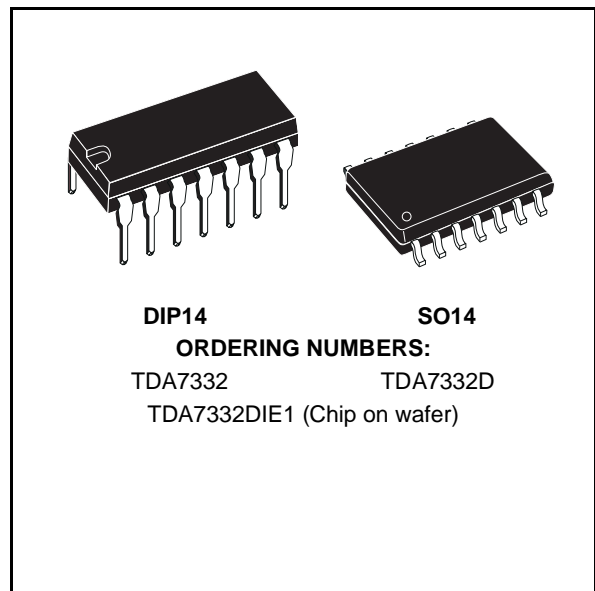
### DESCRIPTION

The TDA7332 is an RDS filter, realized in switched capacitor technique.

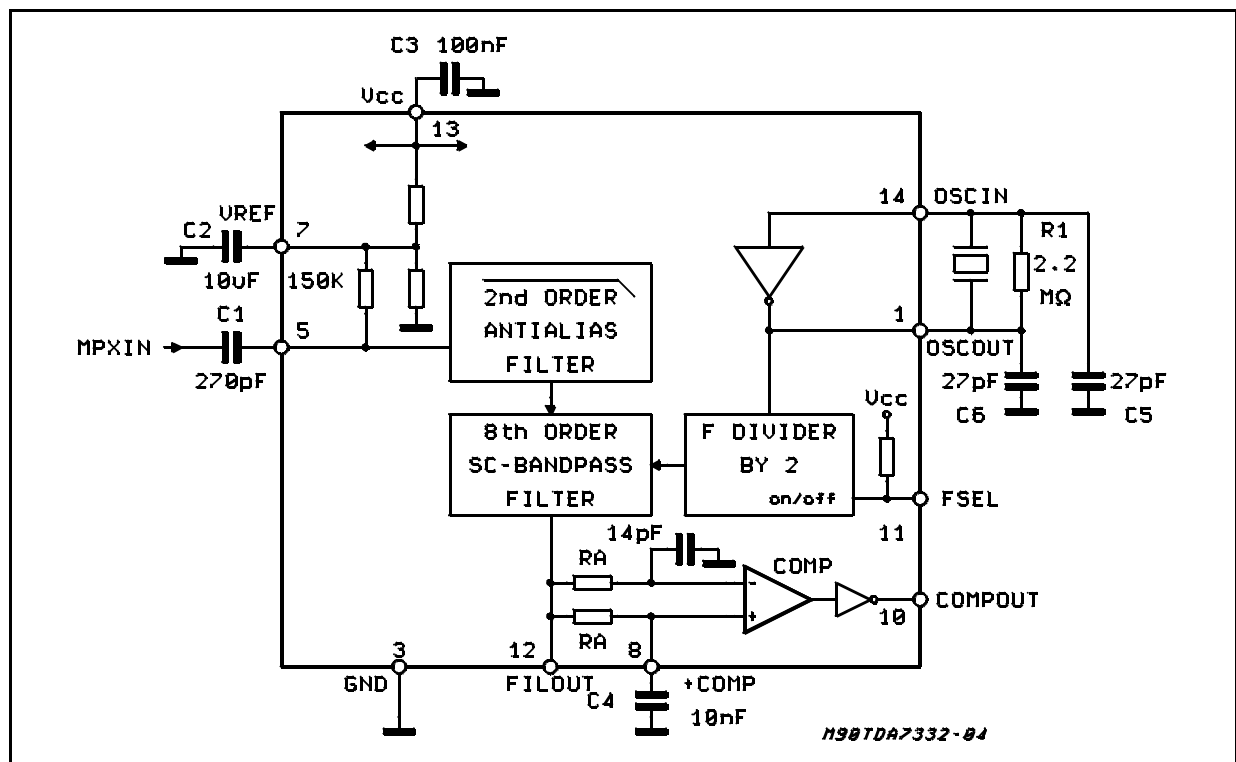
The 4 biquad stage architecture is working with 4.332MHz clock.

Optionally a 8.664MHz xtal can be used.

The filter has a center frequency of 57KHz and a bandwidth of 3KHz. Input 2<sup>nd</sup> order antialiasing filter and output smoothing filter are provided.



### TEST CIRCUIT



# TDA7332

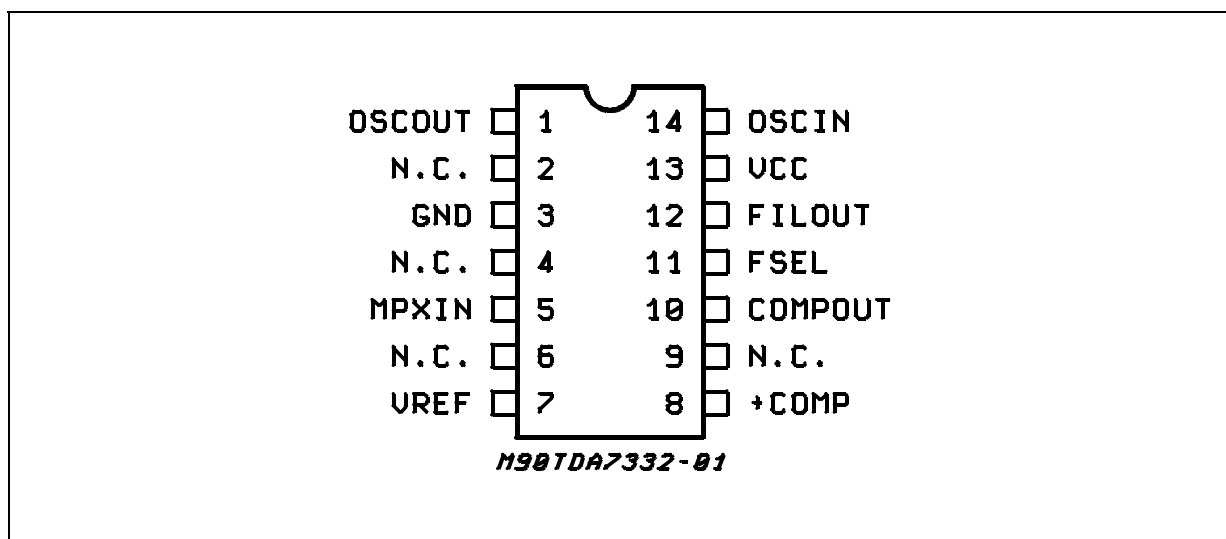
## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_S$	Supply Voltage	7	V
$T_{op}$	Operating Temperature Range	-40 to 85	°C
$T_{stg}$	Storage Temperature	-40 to 150	°C

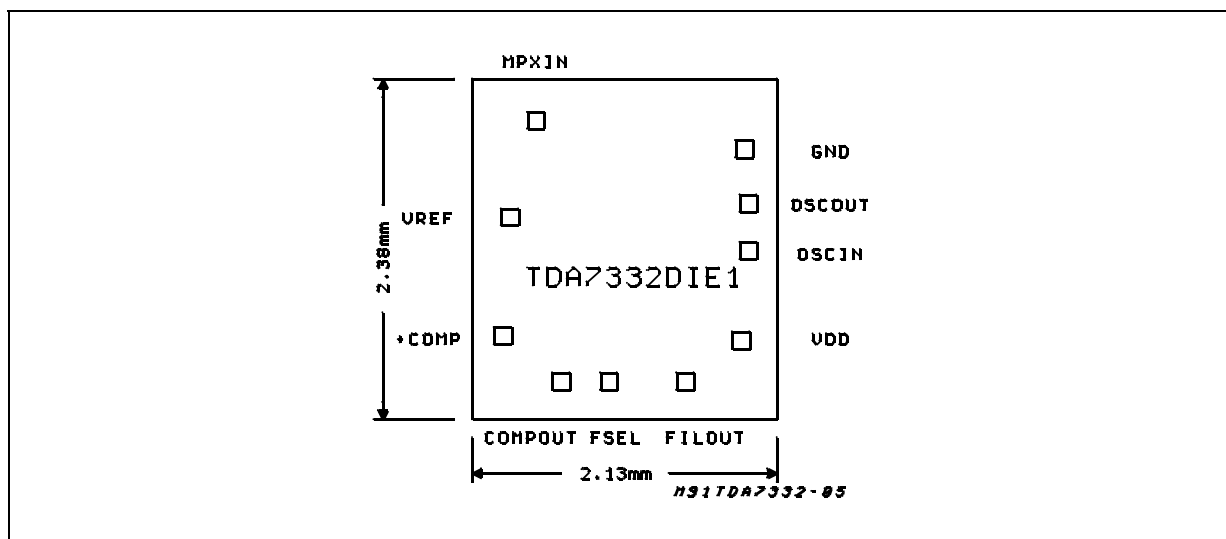
## THERMAL DATA

Symbol	Description	DIP14	SO14	Unit
$R_{th\ j-case}$	Thermal Resistance Junction-case	Typ. 100	200	°C/W

## PIN CONNECTION (Top view)



## BONDING PAD LOCATIONS (Top view)



**ELECTRICAL CHARACTERISTICS** ( $V_{CC} = 5V$ ,  $T_{amb} = 25^{\circ}C$ ;  $f_{osc} = 4.332MHz$ ;  $V_{IN} = 20mV_{rms}$  unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
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## SUPPLY SECTION

$V_{CC}$	Supply Voltage		4.5	5	5.5	V
$I_S$	Supply Current		6	9	14	mA

## FILTER

$F_C$	Center Frequency		56.5	57	57.5	KHz
BW	3dB Bandwidth		2.5	3	3.5	KHz
G	Gain	$f = 57KHz$	18	20	22	dB
A	Attenuation	$\Delta f = \pm 4KHz$ $f = 38KHz$ ; $V_i = 500mV_{rms}$ $f = 67KHz$ ; $V_i = 250mV_{rms}$	18 50 35	22 80 50		dB dB dB
$\Delta Ph$	Phase non linearity	A (see note1) B (see note1) C (see note1)		0.5 1 2	5 7.5 10	DEG DEG DEG
$R_i$	Input Impedance		100	160	200	K $\Omega$
S/N	Signal to Noise Ratio	$V_i = 3mV_{rms}$	30	40		dB
$V_i$	Input Signal	$f = 19KHz$ ; $T_3 \leq -40dB$ (see note2) $f = 57KHz$ (RDS + ARI)			1 50	V $_{rms}$ mV $_{rms}$
$R_L$	Load Impedance	Pin 12	100			K $\Omega$

## LIMITER

RA	Resistance pin 8-12		15	21	28	K $\Omega$
$V_{OL}$	Comp. Output LOW	$I_O = +0.5mA$			1	V
$V_{OH}$	Comp. Output HIGH	$I_O = -0.5mA$	4			V
	Duty Cycle	$V_i = 1mV_{rms}$		50		%

## OSCILLATOR

$F_{OSC}$	Oscillator Frequency	$F_{SEL} = \text{Open}$ $F_{SEL} = \text{Closed to Ground}$		4.332 8.664		MHz MHz
	Output Amplitude			5		V $_{PP}$
$V_{CLL}$	Clock Input Level LOW				1	V
$V_{OLH}$	Clock Input Level HIGH		4			V

CRYSTAL TYPE = EURO QUARTZ

**Note (1):**

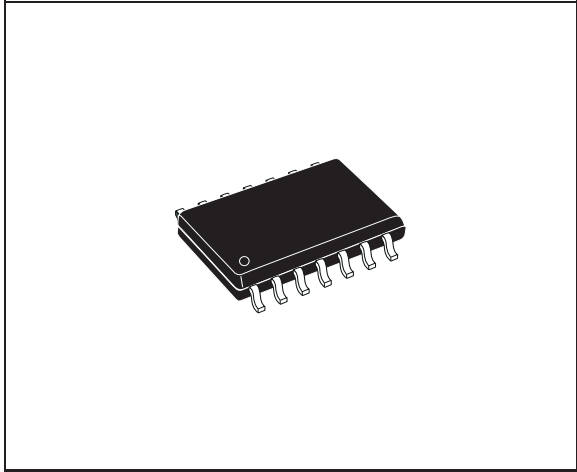
The phase non linearity is defined as:  $\Delta Ph = | -2 \phi f_2 + \phi f_1 + \phi f_3 |$   
where  $\phi f_x$  is the input-output phase difference at the frequency  $f_x$  ( $x = 1,2,3$ )

Measure	f1 (KHz)	f2 (KHz)	f3 (KHz)	$\Delta Ph$ max
A	56.5	57	57.5	<5°
B	56	57	58	<7.5°
C	55.5	57	58.5	<10°

**Note (2):** The 3th harmonic (57KHz) at the output (pin12) must be less than -40dB in respect to the input signal plus gain.

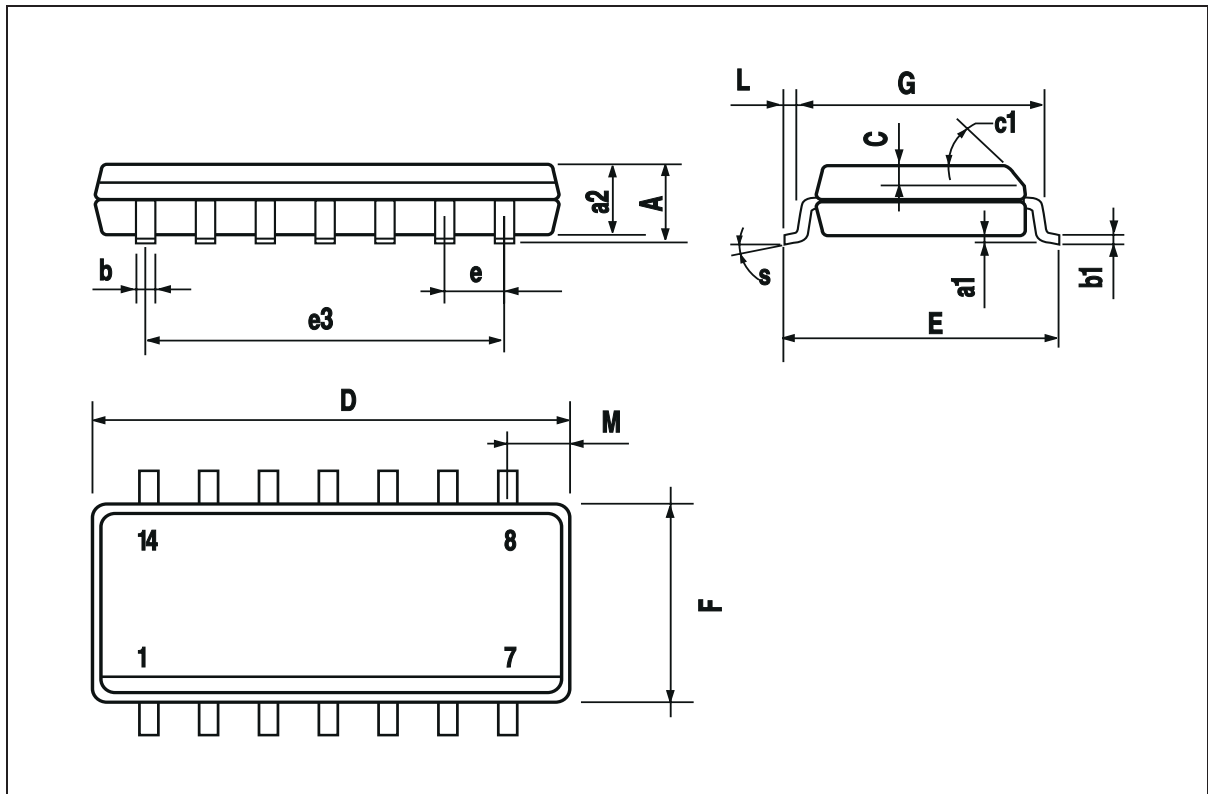
DIM.	mm			inch		
	MIN..	TYP.	MAX..	MIN..	TYP..	MAX..
A			1.75			0.069
a1	0.1		0.25	0.004		0.009
a2			1.6			0.063
b	0.35		0.46	0.014		0.018
b1	0.19		0.25	0.007		0.010
C		0.5			0.020	
c1	45° (typ.)					
D (1)	8.55		8.75	0.336		0.344
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		7.62			0.300	
F (1)	3.8		4	0.150		0.157
G	4.6		5.3	0.181		0.209
L	0.4		1.27	0.016		0.050
M			0.68			0.027
S	8° (max)					

**OUTLINE AND MECHANICAL DATA**



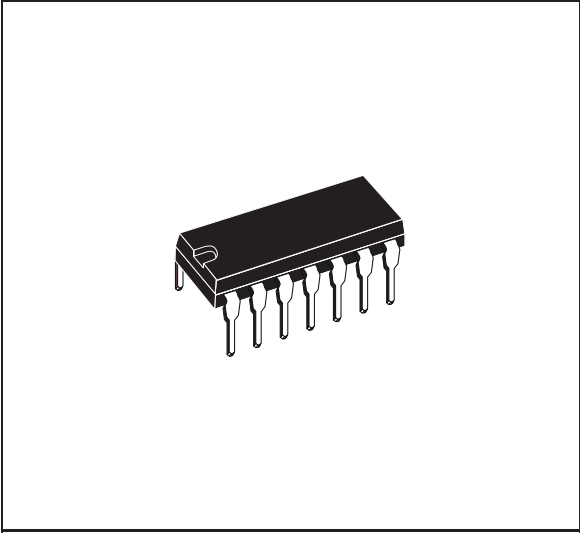
**SO14**

(1) D and F do not include mold flash or protrusions. Mold flash or protrusions shall not exceed 0.15mm (.006inch).

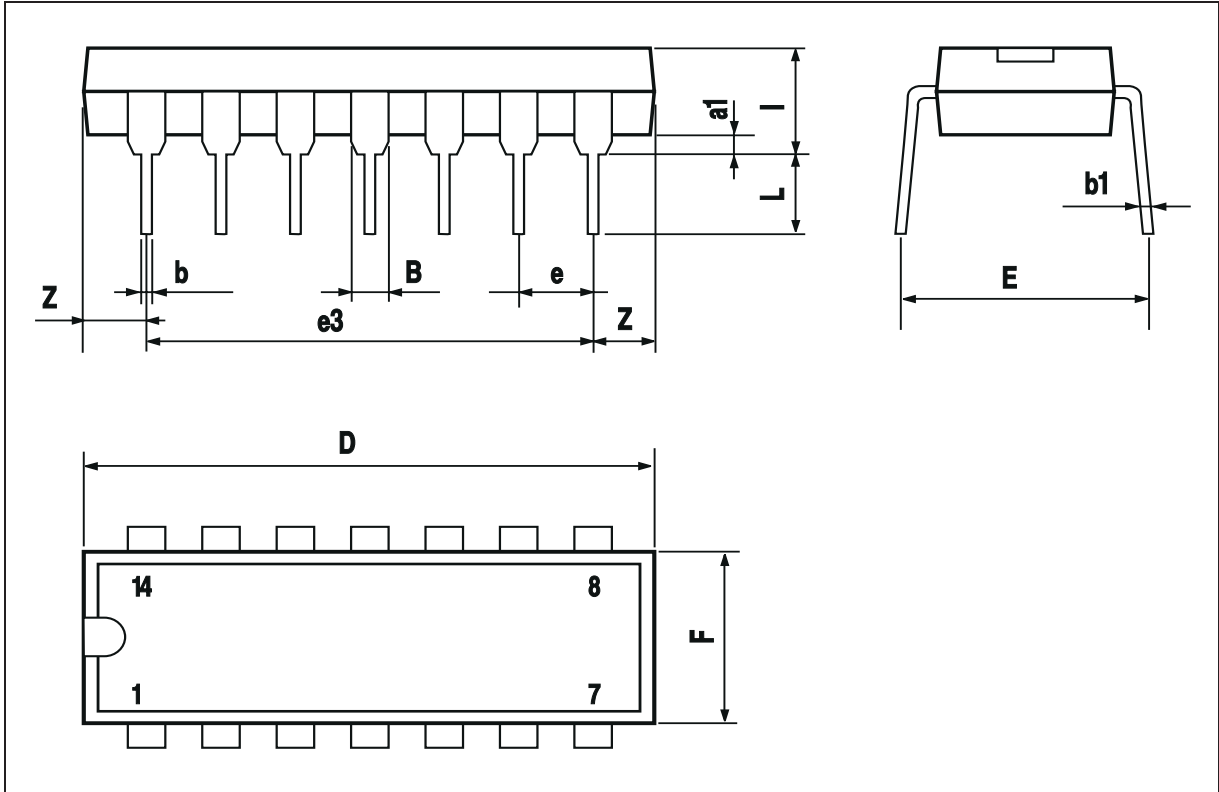


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	1.39		1.65	0.055		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		15.24			0.600	
F			7.1			0.280
I			5.1			0.201
L		3.3			0.130	
Z	1.27		2.54	0.050		0.100

**OUTLINE AND MECHANICAL DATA**



**DIP14**



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