

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)

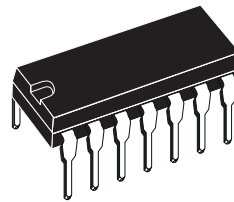
DESCRIPTION

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

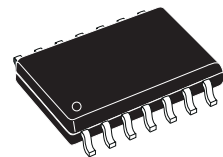
The 4 biquad stage architecture is working with 4.332MHz clock.

Optionally a 8.664MHz xtal can be used.

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



DIP14



SO14

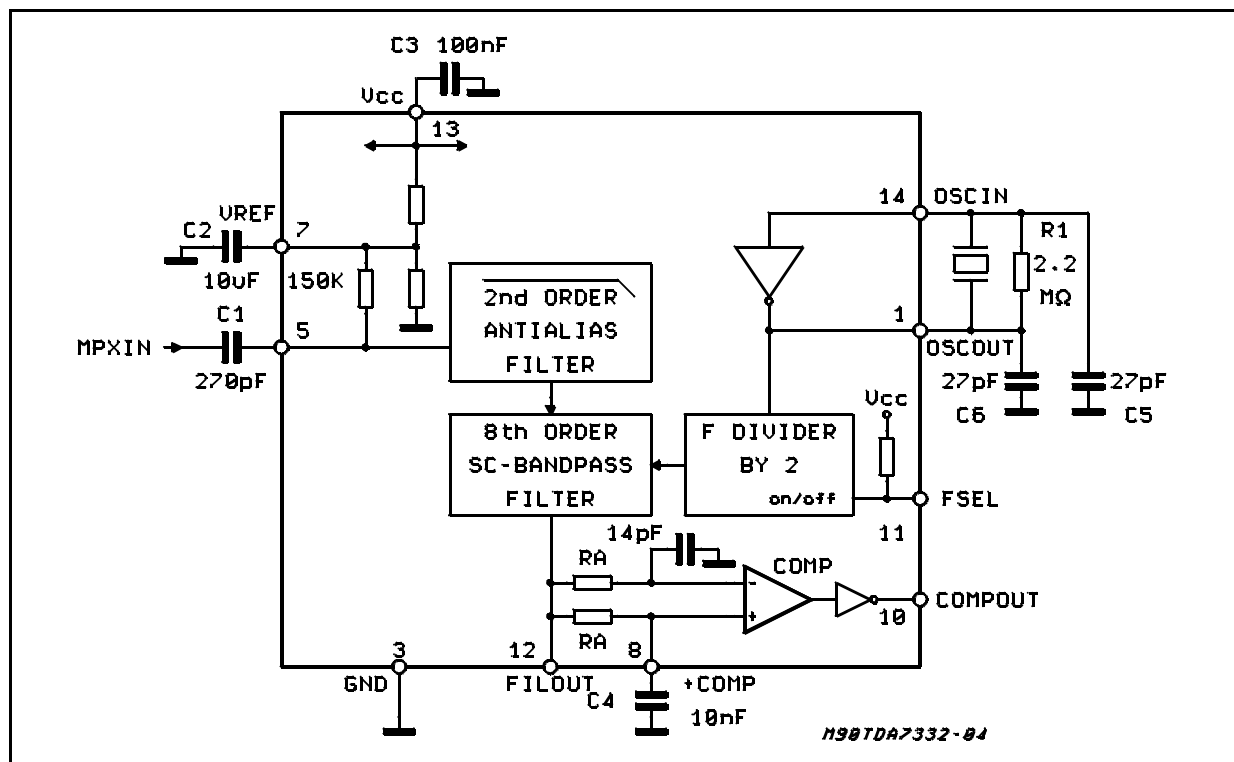
ORDERING NUMBERS:

TDA7332

TDA7332D

TDA7332DIE1 (Chip on wafer)

TEST CIRCUIT



TDA7332

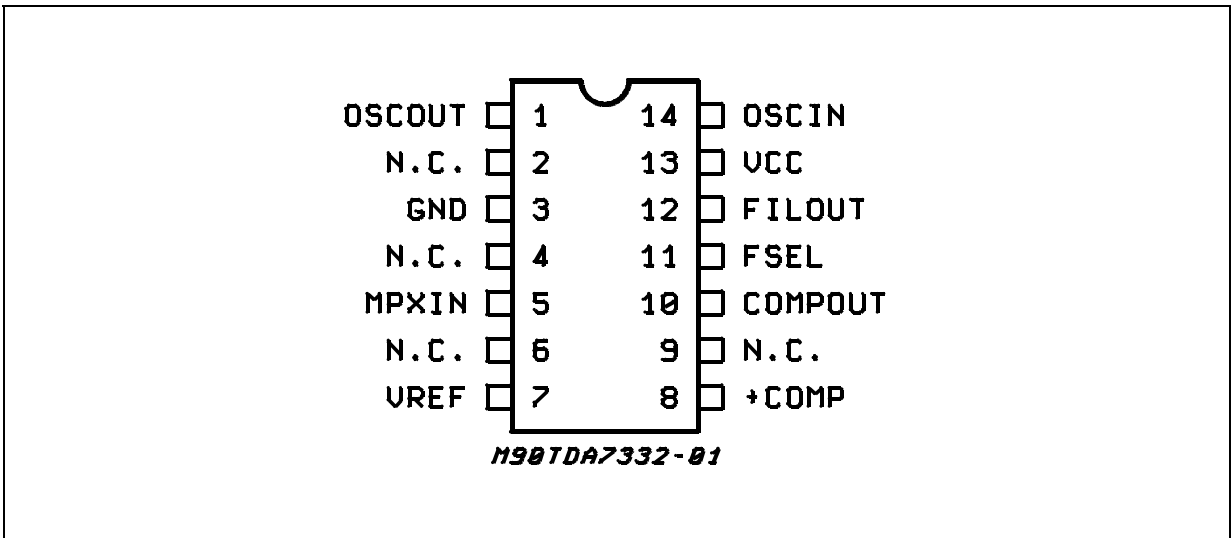
ABSOLUTE MAXIMUM RATINGS

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

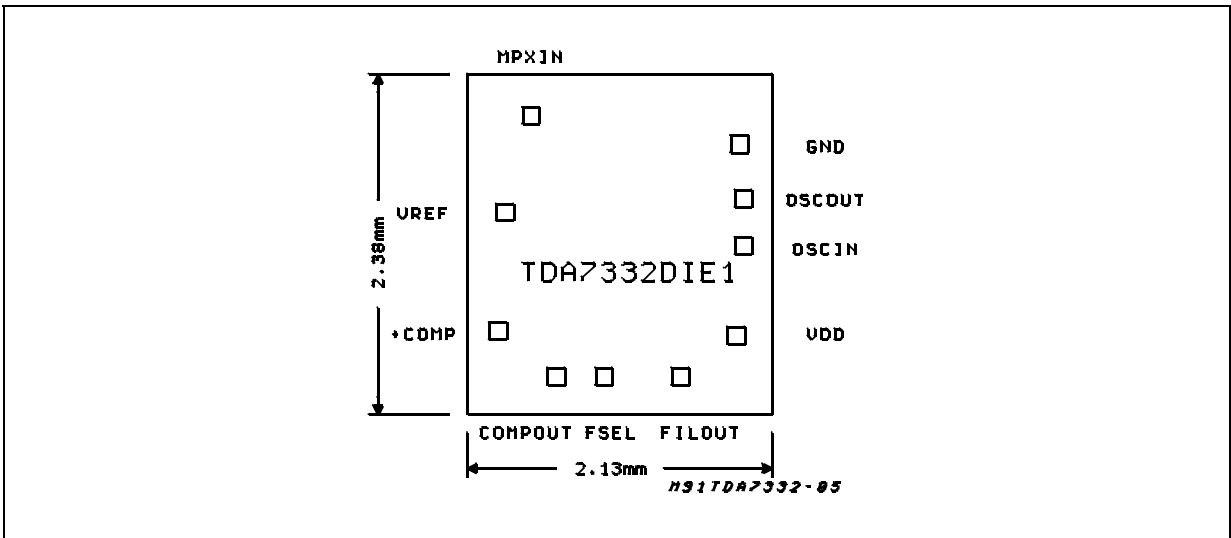
THERMAL DATA

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
ΔPh	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 Ω
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	Vrms mVrms
R_L	Load Impedance	Pin 12	100			K Ω

LIMITER

RA	Resistance pin 8-12		15	21	28	K Ω
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 ϕf_x is the input-output phase difference at the frequency f_x ($x = 1,2,3$)

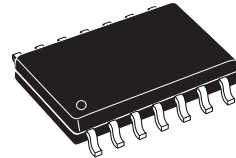
Measure	f1 (KHz)	f2 (KHz)	f3 (KHz)	ΔPh max
A	56.5	57	57.5	$<5^{\circ}$
B	56	57	58	$<7.5^{\circ}$
C	55.5	57	58.5	$<10^{\circ}$

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

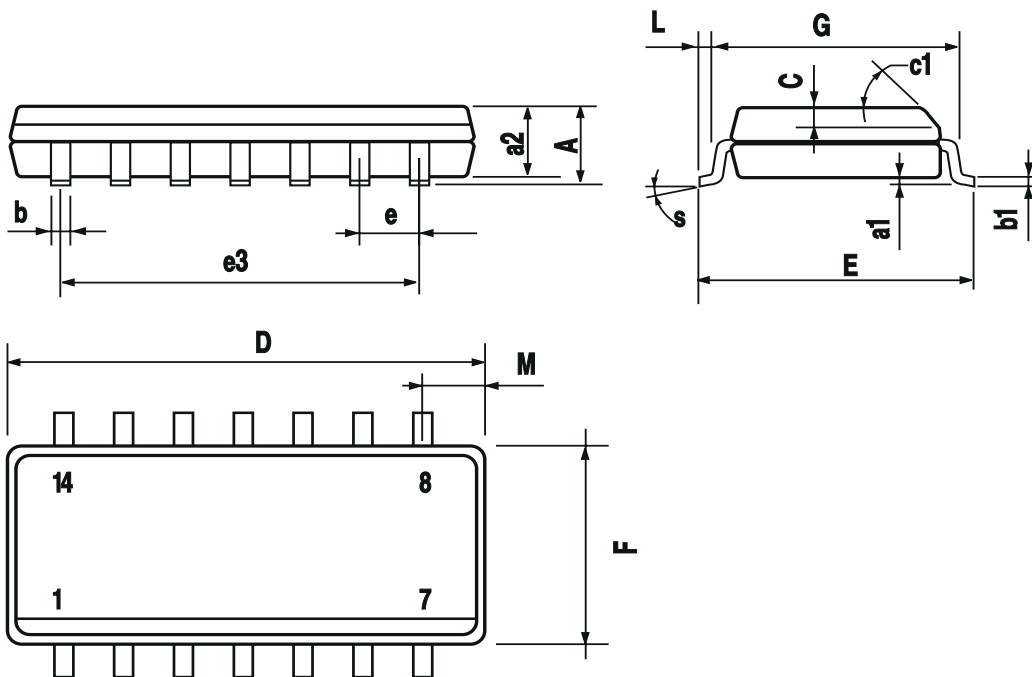
DIM.	mm			inch		
	MIN..	TYP.	MAX..	MIN..	TYP..	MAX..
A			1.75			0.069
a1	0.1		0.25	0.004		0.009
a2			1.6			0.063
b	0.35		0.46	0.014		0.018
b1	0.19		0.25	0.007		0.010
C		0.5			0.020	
c1	45° (typ.)					
D (1)	8.55		8.75	0.336		0.344
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		7.62			0.300	
F (1)	3.8		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)					

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

OUTLINE AND MECHANICAL DATA

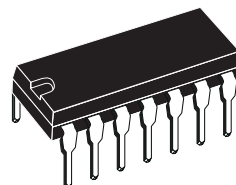


SO14

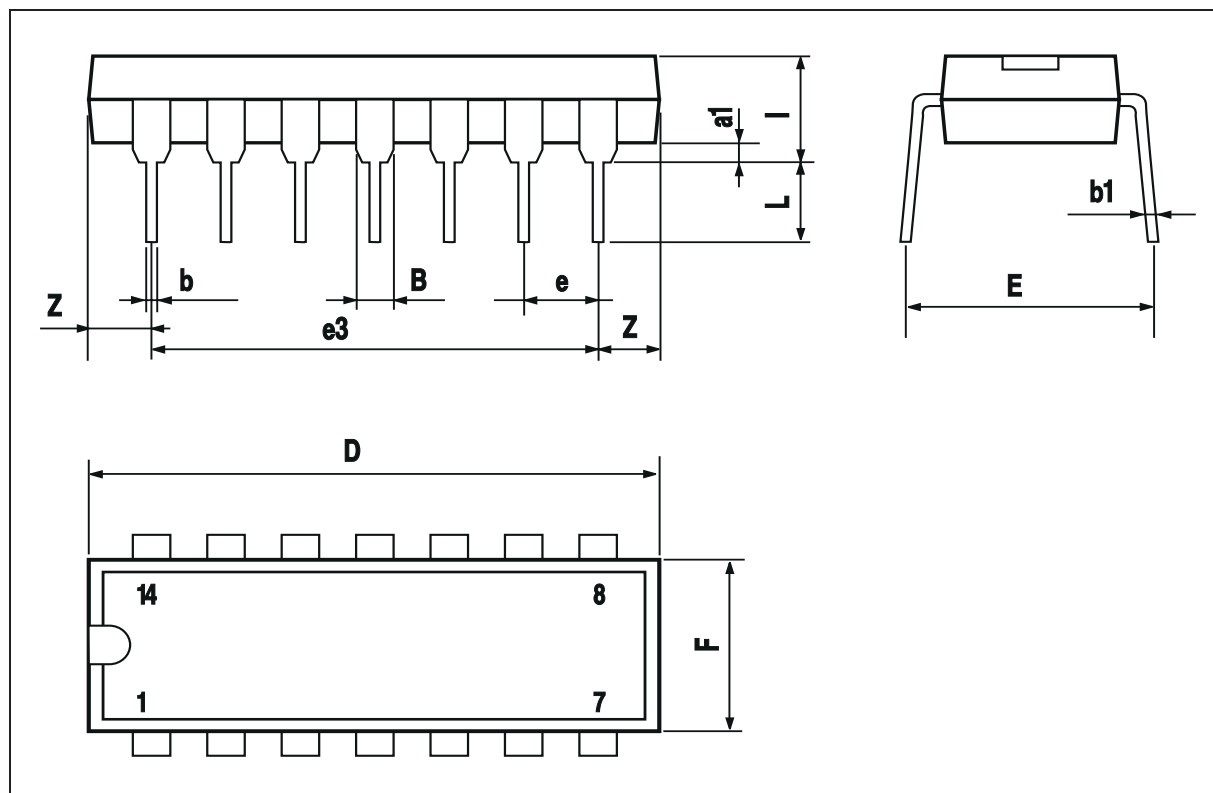


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	1.39		1.65	0.055		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		15.24			0.600	
F			7.1			0.280
I			5.1			0.201
L		3.3			0.130	
Z	1.27		2.54	0.050		0.100

OUTLINE AND MECHANICAL DATA



DIP14



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