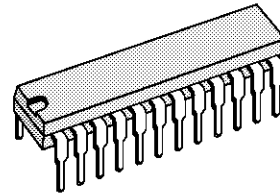


## 3V AM/FM ONE-CHIP RADIO

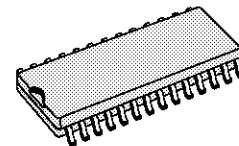
### ADVANCE DATA

- BUILT-IN FM F/E, AM/FM IF AND FM MPX
- AM DETECTOR COIL AND IF COUPLING CAPACITOR ARE NOT NEEDED
- COMPACT PACKAGE : 24-Pin Shrink
- OPERATING SUPPLY VOLTAGE RANGE  
 $V_{CC(opr)} = 1.8 \text{ to } 7.0\text{V}$  ( $T_A = 25^\circ\text{C}$ )
- LED DRIVE CIRCUIT FOR TUNING INDICATION



**SHRINK DIP24**  
(Plastic Package)

**ORDER CODE : TDA7222A**



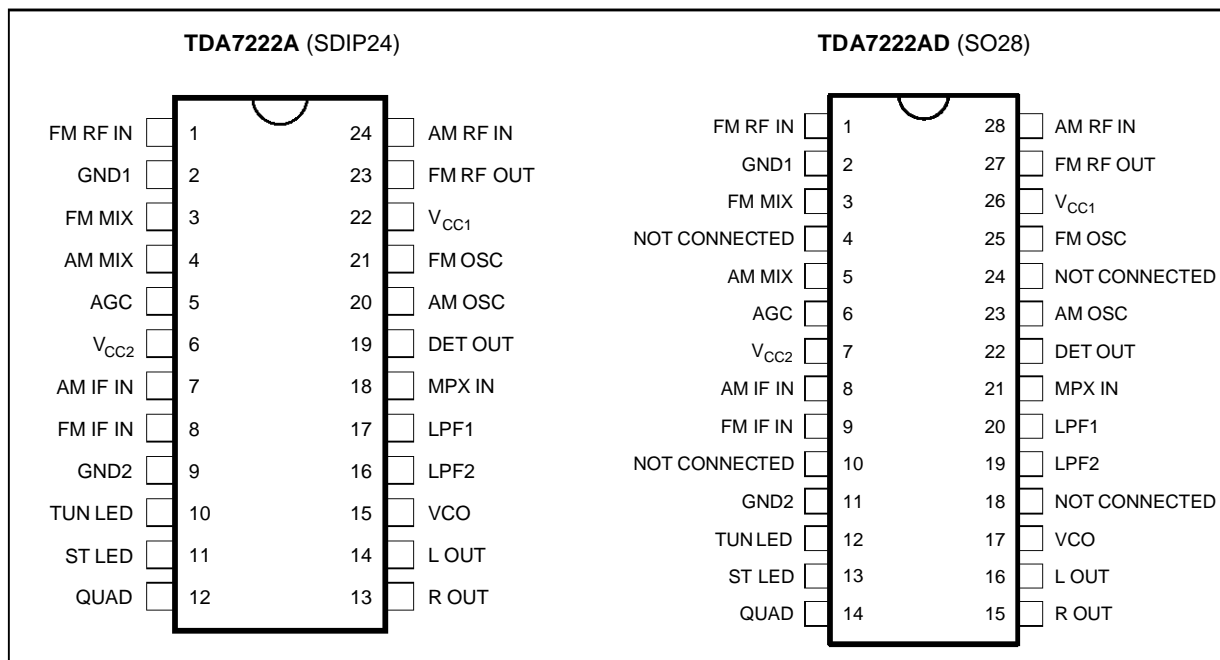
**SO28**  
(Plastic Micropackage)

**ORDER CODE : TDA7222AD**

### DESCRIPTION

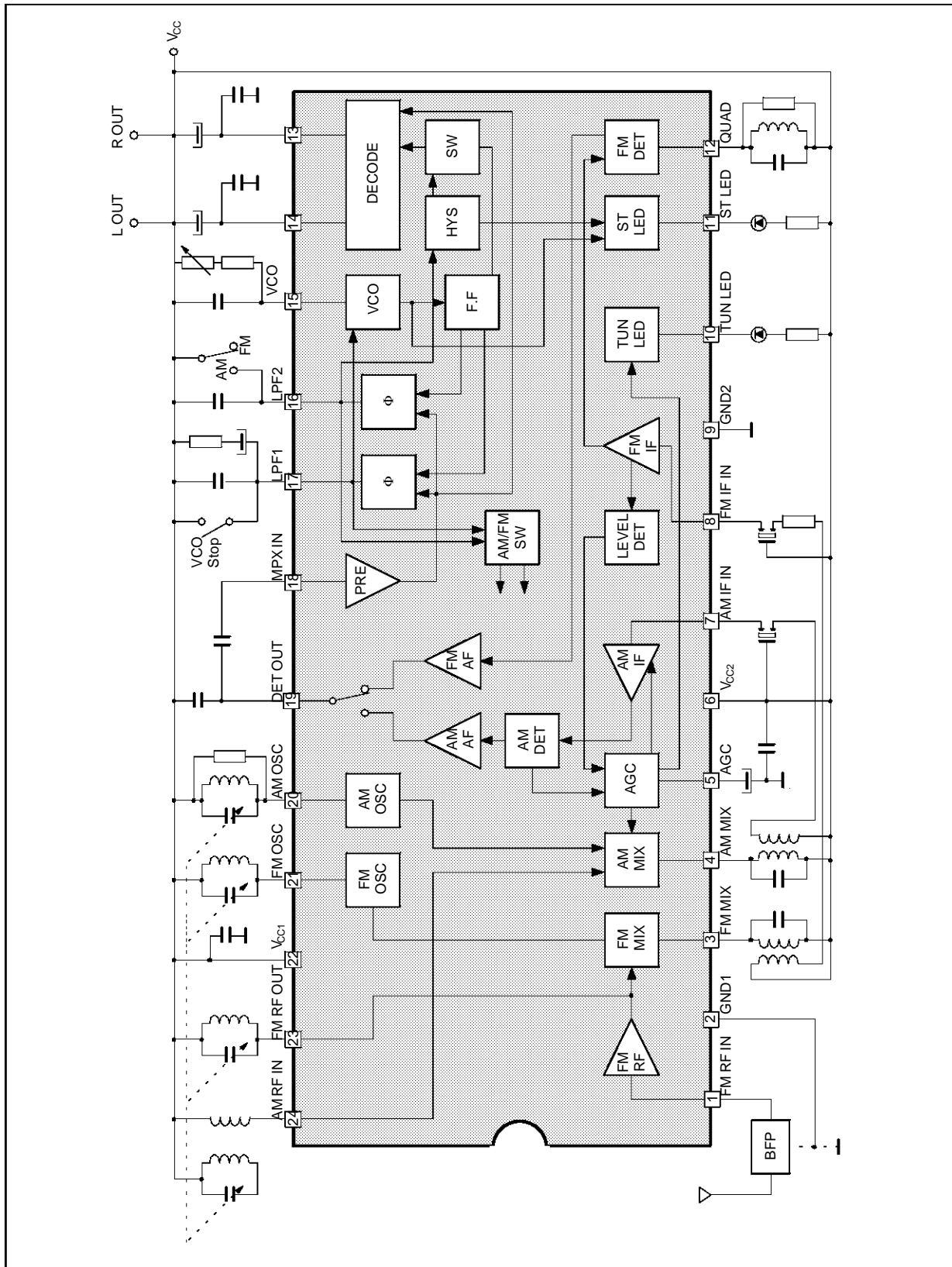
TDA7222A and TDA7222AD are AM/FM chip tuner ICs, which are designed for portable radios and 3V headphone radios.

### PIN CONNECTIONS



7222A-01.EPS / 7222AD01.EPS

BLOCK DIAGRAM



7222A-02.EPS

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V <sub>S</sub>	Supply Voltage	9	V
I <sub>LED</sub>	LED Current	10	mA
V <sub>LED</sub>	LED Voltage	10	V
T <sub>oper</sub>	Operating Temperature	-20, +70	°C
T <sub>stg</sub>	Storage Temperature	-55, +150	°C

7222A-01.TBL

**RECOMMENDED OPERATING CONDITIONS**

Symbol	Parameter	Value	Unit
V <sub>S</sub>	Supply Voltage	1.8 to 7	V
T <sub>oper</sub>	Operating Temperature	0, +70	°C

7222A-02.TBL

**ELECTRICAL CHARACTERISTICS** (unless otherwise specified)

T<sub>A</sub> = 25°C, V<sub>CC</sub> = 3V F/E : f = 83MHz, f<sub>m</sub> = 1kHz  
 FM IF : f = 10.7MHz, Δf = ± 22.5kHz, f<sub>m</sub> = 1kHz  
 AM : f = 1MHz, MOD = 30%, f<sub>m</sub> = 1kHz  
 MPX : f<sub>m</sub> = 1kHz

Symbol	Parameter		Test Conditions	Min.	Typ.	Max.	Unit	
I <sub>CC</sub> (FM)	Supply Current		V <sub>IN</sub> = 0, FM mode		13.2	20	mA	
I <sub>CC</sub> (AM)			V <sub>IN</sub> = 0, AM mode		8.4	13.5	mA	
V <sub>IN</sub> (lim)	F/E	Input Limiting Voltage	- 3dB limiting		10.0		dBμ	
V <sub>OSC</sub>		Local OSC Voltage	f <sub>OSC</sub> = 72.3MHz		105		mV <sub>RMS</sub>	
V <sub>IN</sub> (lim) IF	FM IF	Input Limiting Voltage	- 3dB limiting	40	46	53	dBμ	
V <sub>OD</sub>		Recovered Output Voltage	V <sub>IN</sub> = 80dBμ	55	80	110	mV <sub>RMS</sub>	
S/N		Signal to Noise Ratio	V <sub>IN</sub> = 80dBμ		70		dB	
THD		Total Harmonic Distortion	V <sub>IN</sub> = 80dBμ		0.4		%	
AMR		AM Rejection Ratio	V <sub>IN</sub> = 80dBμ		32		dB	
V <sub>L</sub>		Lamp ON Sensitivity	I <sub>L</sub> = 1mA	45	51	56	dBμ	
G <sub>V</sub>		AM	Gain	V <sub>IN</sub> = 26dBμ	40	70	110	mV <sub>RMS</sub>
V <sub>OD</sub>	Recovered Output Voltage		V <sub>IN</sub> = 60dBμ	55	80	110	mV <sub>RMS</sub>	
S/N	Signal to Noise Ratio		V <sub>IN</sub> = 60dBμ		42		dB	
THD	Total Harmonic Distortion		V <sub>IN</sub> = 60dBμ		1.0		%	
V <sub>L</sub>	Lamp ON Sensitivity		I <sub>L</sub> = 1mA	20	25	30	dBμ	
R <sub>19</sub>	Pin 19 Output Resistance		FM mode AM mode		0.75 12.75		kΩ kΩ	
R <sub>IN</sub>		Input Resistance			24		kΩ	
R <sub>OUT</sub>		Output Resistance			5		kΩ	
V <sub>IN</sub> (Max.) Stereo	MPX	Max. Composite Signal Input Voltage		L + R = 90%, P = 10% f <sub>m</sub> = 1kHz, THD = 3%		350	mV <sub>RMS</sub>	
Sep		Separation	f <sub>m</sub> = 100Hz f <sub>m</sub> = 1kHz f <sub>m</sub> = 10kHz	L + R = 135mV <sub>RMS</sub> P = 15mV <sub>RMS</sub>	25	32 32 32	dB dB dB	
THD Monaural		Total Harmonic Distortion (monaural)		V <sub>IN</sub> = 150mV <sub>RMS</sub>		0.2		%
THD Stereo		Total Harmonic Distortion (stereo)		L + R = 135mV <sub>RMS</sub> P = 15mV <sub>RMS</sub>		0.2		%
G <sub>V</sub> (MPX)		Voltage Gain		V <sub>IN</sub> = 150mV <sub>RMS</sub>	-5	-3	-1	dB
C.B.		Channel Balance		V <sub>IN</sub> = 150mV <sub>RMS</sub>	-2	0	2	dB

7222A-03.TBL

# TDA7222A - TDA7222AD

## ELECTRICAL CHARACTERISTICS (unless otherwise specified) (continued)

$T_A = 25^\circ\text{C}$ ,  $V_{CC} = 3\text{V}$     F/E :  $f = 83\text{MHz}$ ,  $f_m = 1\text{kHz}$   
                                               FM IF :  $f = 10.7\text{MHz}$ ,  $\Delta f = \pm 22.5\text{kHz}$ ,  $f_m = 1\text{kHz}$   
                                               AM :  $f = 1\text{MHz}$ ,  $\text{MOD} = 30\%$ ,  $f_m = 1\text{kHz}$   
                                               MPX :  $f_m = 1\text{kHz}$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_L$ (ON)	MPX	Pilot Input	2	6		$\text{mV}_{\text{RMS}}$
$V_L$ (OFF)						
$V_H$		Stereo Lamp (OFF) Sensitivity		2		$\text{mV}_{\text{RMS}}$
C.R.		Stereo Lamp Hysteresis		3		$\text{mV}_{\text{RMS}}$
S/N		Capture Range	$P = 15\text{mV}_{\text{RMS}}$		$\pm 3$	%
	Signal to Noise Ratio			70		dB

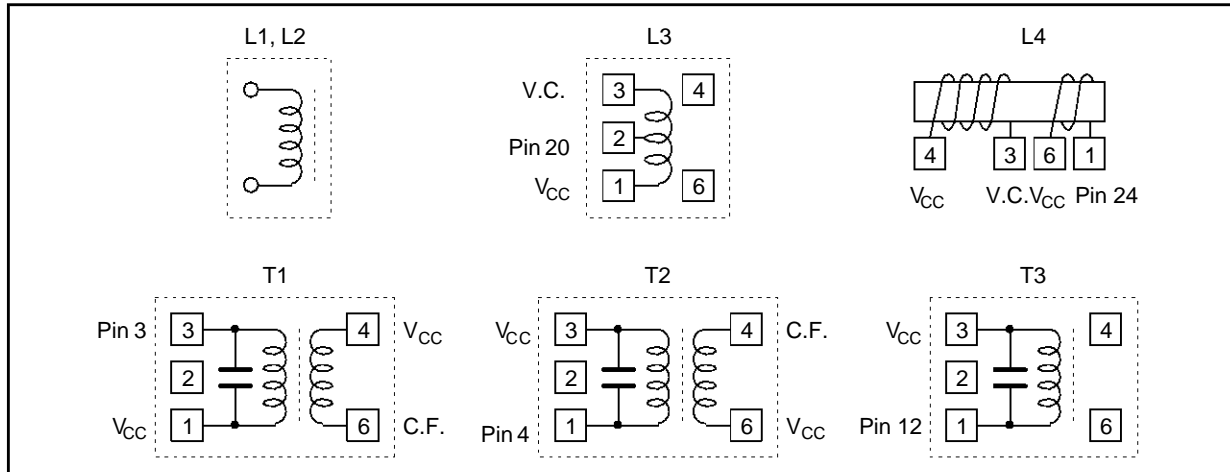
7222A-04.TBL

## COIL DATA

Coil N°		f (Hz)	L ( $\mu\text{H}$ )	$C_o$ (pF)	$Q_o$	Turns					Wire	Ref. *
						1 - 2	2 - 3	1 - 3	1-4	4 - 6		
L <sub>1</sub>	FM RF	100M			100				2 $\frac{1}{2}$		0.5 $\varnothing$ UEW	S-53T-037-202
L <sub>2</sub>	FM OSC	100M			100			2 $\frac{3}{4}$			0.5 $\varnothing$ UEW	S-0258-24
L <sub>3</sub>	AM OSC	796k	238		115	13	73				0.08 $\varnothing$ UEW	S-4147-1356-038
T <sub>1</sub>	FM MIX	10.7M		75	100			13		2	0.1 $\varnothing$ UEW	S-2153-414-041
T <sub>2</sub>	AM MIX	455k		180	120			180		15	0.08 $\varnothing$ UEW	S-2150-2162-165
T <sub>3</sub>	FM DET	10.7M		47	165			16			0.09 $\varnothing$ MUEW	S-2153-4095-122

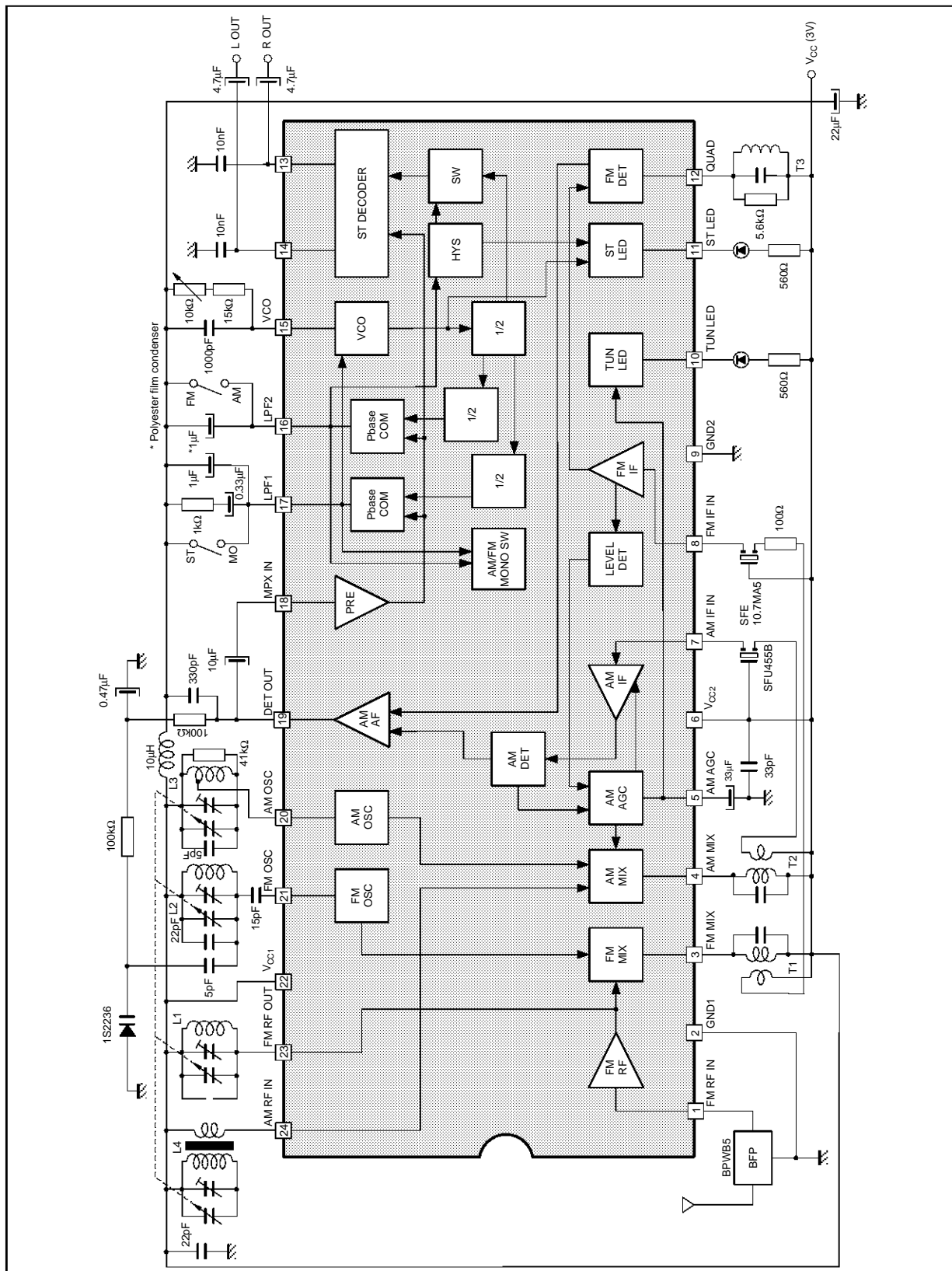
7222A-05.TBL

\* S : Sumida Electric CO, LTD.



7222A-03.EPS

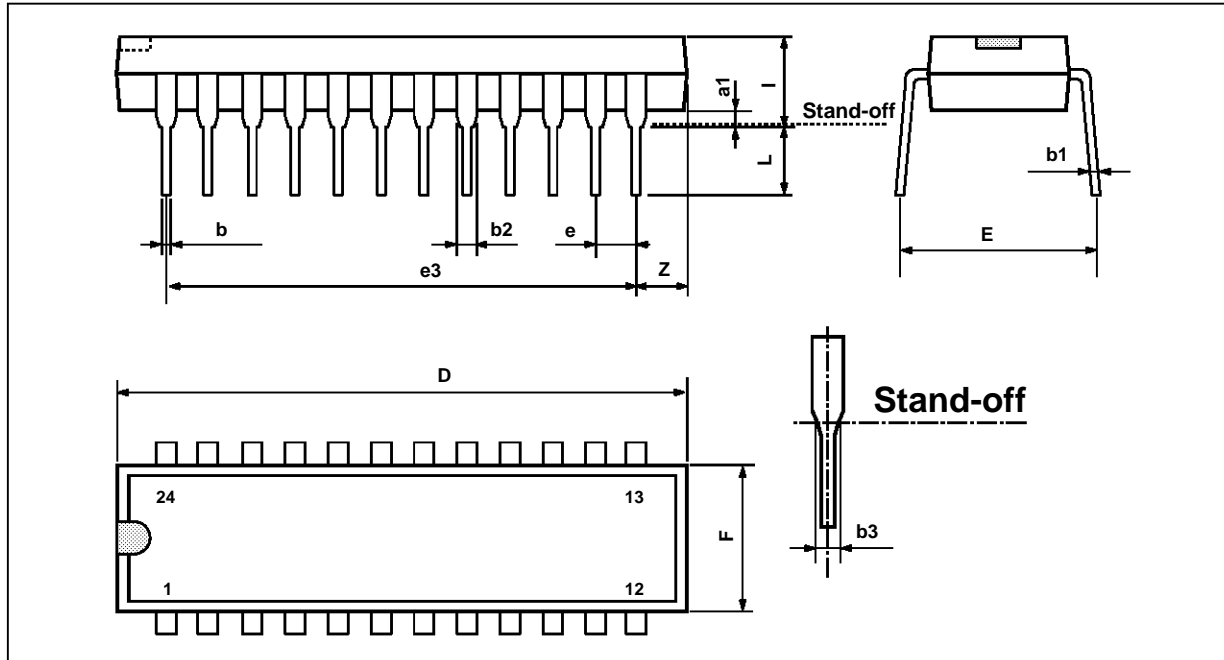
APPLICATION CIRCUIT



7222A-04.EPS

# TDA7222A - TDA7222AD

## PACKAGE MECHANICAL DATA (TDA7222A) 24 PINS - PLASTIC SHRINK DIP

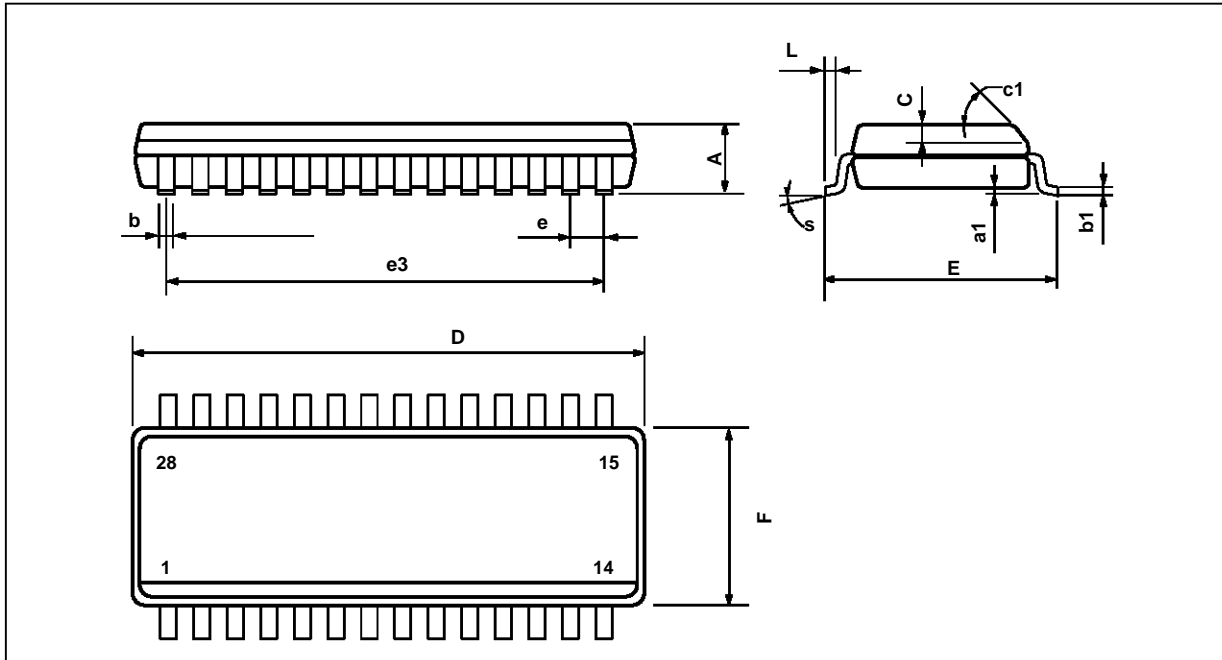


PMSDIP24.EPS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.3			0.130	
a1	0.51			0.020		
b	0.35		0.59	0.014		0.023
b1	0.2		0.36	0.008		0.014
b2	0.75		1.42	0.030		0.056
b3	0.75			0.030		
D			23.11			0.910
E	7.95		9.73	0.313		0.383
e		1.778			0.070	
e3		19.558			0.770	
e4		7.62			0.300	
F			6.86			0.270
i			5.08			0.200
L	2.54			0.100		

SDIP24.TBL

**PACKAGE MECHANICAL DATA (TDA7222AD)**  
 28 PINS - PLASTIC MICROPACKAGE (SO)



PM-SO28EFS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			2.65			0.104
a1	0.1		0.3	0.004		0.012
b	0.35		0.49	0.014		0.019
b1	0.23		0.32	0.009		0.013
C		0.5			0.020	
c1	45° (typ.)					
D	17.7		18.1	0.697		0.713
E	10		10.65	0.394		0.419
e		1.27			0.050	
e3		16.51			0.65	
F	7.4		7.6	0.291		0.299
L	0.4		1.27	0.016		0.050
S	8° (max.)					

SO28.TBL

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