

## MULTICHIP MODULE FOR CAR-RADIO APPLICATIONS

### 1 FEATURES

- HIGH-PERFORMANCE ELECTRICALLY ADJUSTED FRONT-END FOR AM/FM RECEIVERS
- HIGH-SPEED PLL FOR OPTIMIZED RDS APPLICATIONS
- IF COUNTER WITH SEARCH-STOP SIGNAL
- IF BANDWIDTH CONTROL FUNCTION
- INTEGRATED AM AND FM DEMODULATORS
- ADJUSTMENT-FREE STEREODECODER
- AM/FM NOISE BLANKERS
- PROGRAMMABLE MULTIPATH AND QUALITY DETECTORS
- 3 STEREO AND 3 MONO INPUTS WITH FULL MIXING CAPABILITY
- BASS, TREBLE AND LOUDNESS CONTROLS
- DYNAMIC COMPRESSION STAGE
- 4 INDEPENDENT SPEAKER OUTPUTS
- 1Kbit EEPROM
- FULL I2C-BUS CONTROL

### 2 DESCRIPTION

The TDA7518 multichip module combines in a single compact 144-pin package the full functionality of a state-of-the-art car-radio AM/FM tuner (from antenna input to processed audio output, plus EEPROM for setup storage) with a minimized number of required external components.

Figure 1. Package

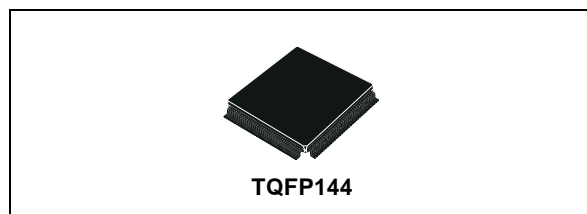


Table 1. Order Codes

Part Number	Temp. range	Package
TDA7518	-40°C to +85°C	TQFP144

The following three devices are included (please refer to the relevant datasheet for specifications):

- **TDA7511**, AM/FM tuner with fully integrated tuning PLL, FM demodulator and IF bandwidth control
- **TDA7412**, digitally controlled stereodecoder and audioprocessor featuring AM/FM noise blanking, multipath and quality detectors; bass, treble, loudness controls as well as dynamic level compression with 3 stereo and 3 mono fully mixable inputs and four independent speaker outputs.
- **M24C01**, 128 x 8 bit EEPROM

All chips are I2C-bus controlled.

Table 2. Thermal Data

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
R <sub>th</sub>	Thermal Resistance	Junction to ambient, soldered on multilayer PCB		40		°C/W
T <sub>amb</sub>	Operating temperature range		-40		85	°C
T <sub>stg</sub>	Storage temperature range		-55		150	°C

Table 3. Pin Configuration

	FM/AM TUNER IC	Audio Processor IC	EEPROM	Symbol
TDA7518	TDA7511	TDA7412	M24C01	
1	1			AM MIX1 IN2
2	2			AM MIX1 IN1
3	3			AM RF AGC IN
4	4			AM RF AGC OUT
5	5			FM PIN DR
6	6			FM MOS DR
7	7			FM MIX1 IN1
8	8			GND RF
9	9			FM MIX1 IN2
10	10			TV1
11	11			FM RF AGC IN
12	12			TV2
13	13			ADJCH
14	14			FSU
15	15			ISSTC
16	16			VCCVCO
17				NOT CONNECTED
18	17			GND VCO
19	18			VCOB
20	19			VCOE
21	20			DEVTC
22	21			XTALD
23	22			XTALG
24	23			GND VCC3
25	24			SSTOP
26	25			SDA(7511)
27	26			SCL(7511)
28	27			VCC3
29	28			LPOUT
30	29			VREF2
31	30			LPAM
32	31			LPFM
33	32			LPHC

Table 3. Pin Configuration (continued)

	FM/AM TUNER IC	Audio Processor IC	EEPROM	Symbol
TDA7518	TDA7511	TDA7412	M24C01	
34				NOT CONNECTED
35				NOT CONNECTED
36				NOT CONNECTED
37			1	E0
38			2	E1
39			3	E2
40				NOT CONNECTED
41				NOT CONNECTED
42			4	VSS
43				NOT CONNECTED
44				NOT CONNECTED
45				NOT CONNECTED
46			5	SDA(24C04)
47			6	SCL(24C04)
48			7	MODE/WC
49			8	VCC
50		23		OUT SSR
51		24		OUT SSL
52		25		OUT SWR
53		26		OUT SWL
54		27		OUT RR
55		28		OUT RF
56		29		OUT LR
57		30		OUT LF
58		31		AC IN RR
59		32		AC IN RF
60		33		AC IN LR
61				NOT CONNECTED
62		34		AC IN LF
63		35		SW IN R
64		36		SW IN L
65		37		AC OUT R
66		38		AC OUT L
67		39		C REF
68		40		MUX/PAUSE
69		41		MD1/SE4R
70		42		MD1G/SE4L
71		43		MD2
72		44		MD2G
73				NOT CONNECTED
74				NOT CONNECTED
75				NOT CONNECTED

Table 3. Pin Configuration (continued)

TDA7518	FM/AM TUNER IC TDA7511	Audio Processor IC TDA7412	EEPROM M24C01	Symbol
76		1		SE1L
77		2		SE1R
78		3		FD1L+/SE3L
79		4		FD1L-/SE2L
80		5		FD1R+/SE3R
81		6		FD1R-/SE2R
82		7		FD2L+
83		8		FD2L-
84		9		FD2R+
85		10		FD2R-
86		11		AM
87				NOT CONNECTED
88		12		AM IF
89		13		MPX
90		14		LEVEL
91		15		MP IN
92		16		MP OUT
93		17		QUAL
94		18		SM
95		19		GND
96		20		SDA(7412)
97		21		SCL(7412)
98		22		VDD
99				NOT CONNECTED
100				NOT CONNECTED
101				NOT CONNECTED
102				NOT CONNECTED
103				NOT CONNECTED
104				NOT CONNECTED
105				NOT CONNECTED
106				NOT CONNECTED
107				NOT CONNECTED
108				NOT CONNECTED
109				NOT CONNECTED
110				NOT CONNECTED
111				NOT CONNECTED
112	33			GND VCC1
113	34			AMST/MP
114	35			FSW
115	36			VCC1
116	37			MPX/AFAM
117	38			AM IF REF

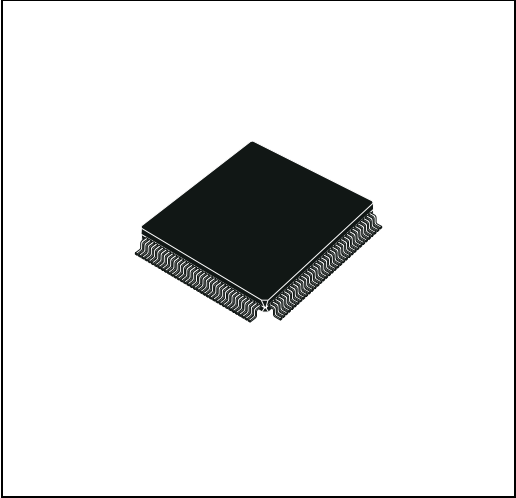
Table 3. Pin Configuration (continued)

	FM/AM TUNER IC	Audio Processor IC	EEPROM	Symbol
TDA7518	TDA7511	TDA7412	M24C01	
118	39			AM IF BPF
119	40			AM AGC2 TC
120	41			AM DET C
121	42			MUTE TC
122	43			AM IF2 IN
123	44			FM DEM C
124	45			FM MIX2 IN2
125	46			FM MIX2 IN1
126	47			GNDDEM
127	48			VREF1
128				NOT CONNECTED
129	49			GND VCC2
130	50			FM AMP2 OUT
131	51			VCC2
132	52			FM AMP2 IN
133	53			FM IF1 REF
134	54			FM AMP1 OUT
135	55			AM MIX2 OUT2
136	56			AM MIX2 OUT1
137	57			FM AMP1 IN
138	58			AM IF1 IN
139	59			GND IF AMP
140	60			FM IF AGC IN
141	61			MIX1 OUT2
142	62			MIX1 OUT1
143	63			AM RF AGC TC
144	64			AM PIN DR

Figure 2. TQFP144 (20 x 20 x 1.4mm) Mechanical Data & Package Dimensions

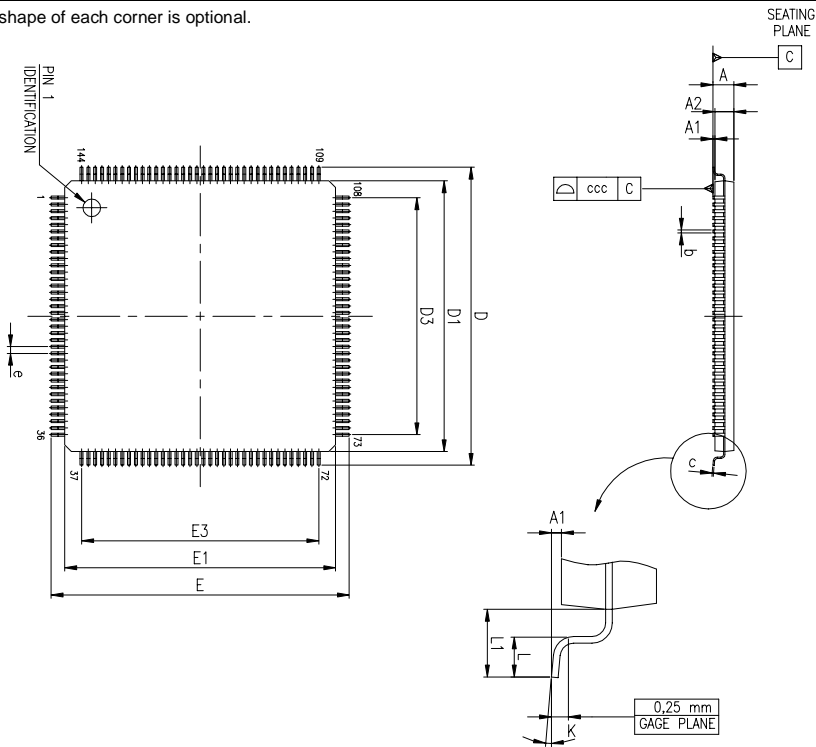
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.60			0.063
A1	0.05		0.15	0.002		0.006
A2	1.35	1.40	1.45	0.053	0.055	0.057
B	0.17	0.22	0.27	0.007	0.009	0.011
C	0.09		0.20	0.003		0.008
D		22.00			0.866	
D1		20.00			0.787	
D3		17.50			0.689	
e		0.50			0.020	
E		22.00			0.866	
E1		20.00			0.787	
E3		17.50			0.689	
L	0.45	0.60	0.75	0.018	0.024	0.030
L1		1.00			0.0393	
K	3.5° (min.), 7° (max.)					

**OUTLINE AND MECHANICAL DATA**



**TQFP144  
(20x20x1.40mm)**

Note 1: Exact shape of each corner is optional.



0099183 B

**Table 4. Revision History**

Date	Revision	Description of Changes
October 2004	1	First Issue

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