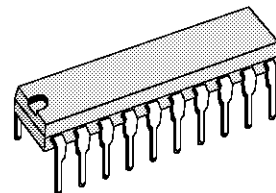


**VIDEO & SOUND IF SYSTEM**

- VERY LOW CURRENT ABSORPTION
- 3 STAGE IF GAIN CONTROLLED AMPLIFIER
- SYNCHRONOUS VIDEO DEMODULATOR
- WHITE SPOT AND NOISE INVERTER
- AGC CIRCUIT WITH NOISE GATING
- TUNER AGC OUTPUT FOR PNP TUNERS
- FM DETECTOR
- AF AMPLIFIER WITH DC VOLUME CONTROL
- AFC
- 2 V<sub>PP</sub> ON VIDEO OUTPUT

**DESCRIPTION**

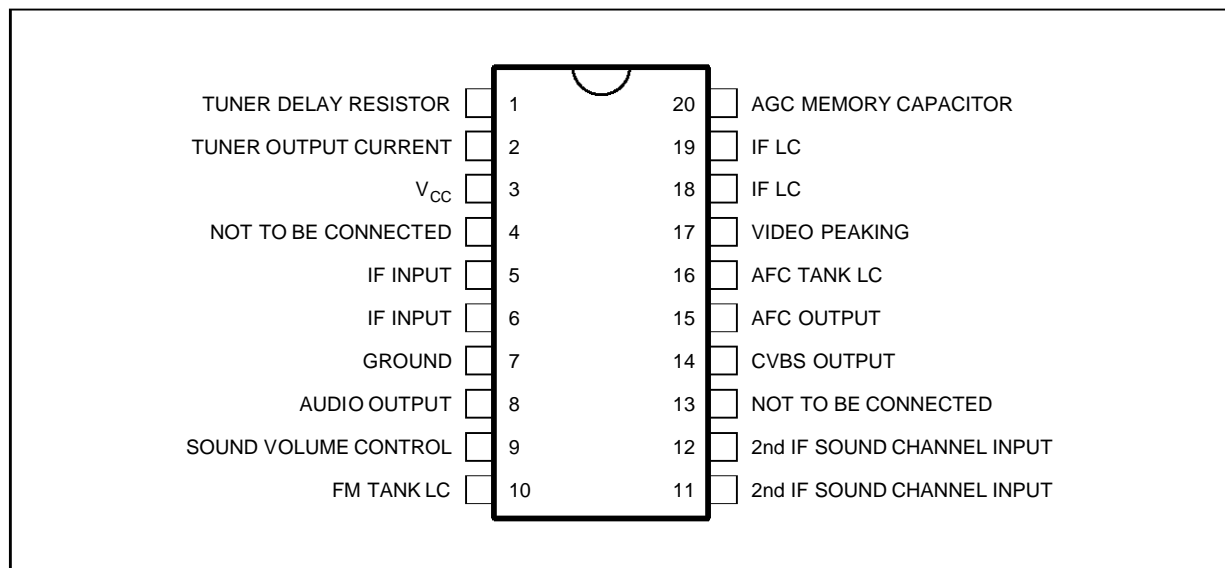
The TDA8213 is a monolithic integrated circuit in DIP20 package for colour and black & white television receivers using PNP tuners. It is intended to operate with a negatively modulated vision carrier and frequency modulated sound carrier. Used with TDA8214/15 (H/V deflection circuit) and TDA8217 (Pal decoder and video processor), this IC permits a complete low-cost solution for PAL applications.



**DIP20**  
(Plastic Package)

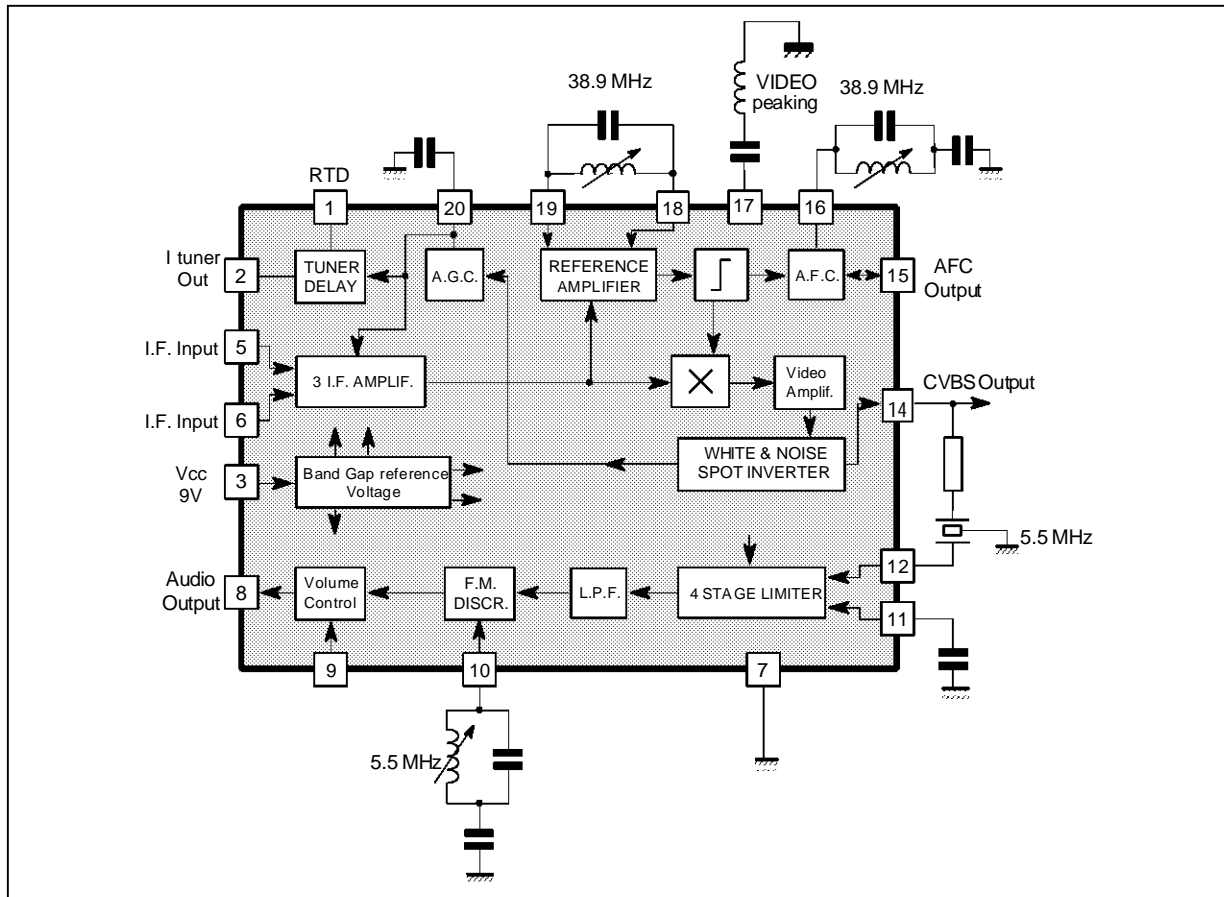
**ORDER CODE : TDA8213**

**PIN CONNECTIONS**



8213-01.EPS

**BLOCK DIAGRAM**



8213-02.EPS

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_S$	Supply voltage	13.5	V
$V_X$	Tuner AGC voltage	$V_S$	V
P	Power dissipation at $T_{AMB} = 70^{\circ}C$	880	mW
$T_{STG}$	Storage temperature range	- 40, + 150	$^{\circ}C$

8213-01.TBL

**THERMAL DATA**

Symbol	Parameter	Value	Unit
$R_{TH(j-a)}$	Junction-ambient thermal resistance	80	$^{\circ}C/W$

8213-02.TBL

**ELECTRICAL CHARACTERISTICS**

( $T_{amb} = 25^{\circ}C$ ,  $V_{CC} = 9V$ , IF input =  $10mV_{RMS}$  top sync,  $D = 90\%$ , Video BW = 5MHz, Sound carrier input : 5.5MHz,  $10mV_{RMS}$ ,  $f_m = 1kHz$ , Audio BW = 20kHz,  $\Delta f = \pm 25kHz$ , Volume attenuation = 0dB, unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
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**SUPPLY**

	Supply voltage		8	9	12.8	V
	Supply current		14	20	28	mA

8213-03.TBL

**ELECTRICAL CHARACTERISTICS**

( $T_{amb} = 25^{\circ}\text{C}$ ,  $V_{CC} = 9\text{V}$ , IF input =  $10\text{mV}_{\text{RMS}}$  top sync,  $D = 90\%$ , Video BW = 5MHz,  
Sound carrier input : 5.5MHz,  $10\text{mV}_{\text{RMS}}$ ,  $f_m = 1\text{kHz}$ , Audio BW = 20kHz,  $\Delta f = \pm 25\text{kHz}$ ,  
Volume attenuation = 0dB, unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
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**IF AMPLIFIER**

	AGC range		58	64	67	dB
	IF - sensitivity (RMS)	Video out -3dB		70		$\mu\text{V}$
	R input differential	Guaranteed by process	1	1.5	2	$\text{k}\Omega$
	C input Stray				2	$\text{pF}$

**DEMODULATED VIDEO OUTPUT**

	S/N video (BW = 5MHz)	IF inp. = $10\text{mV}_{\text{RMS}}$ , $20 \log_{10} \frac{(WH - BL)}{N_{\text{RMS}}}$	49	55		dB
	Intermodulation 1.07MHz	AGC open loop, Picture carrier = 0dB, Chrominance carrier = -3.2dB, Sound carrier = -20dB		50		dB
	Detected video output peak to peak (positive)		1.8	2	2.4	V
	Top synchro output level			1.9		V
	Video Bandwidth with output filter	-3dB, see Figures 1 and 2		7		MHz
	Differential phase			3	7	Degree
	Differential gain			3	7	%
	White noise clamp	Referred to the video output see Figure 6		4.5		V
	White noise insertion			3.2		V
	Video output current capability		1.2	2	2.6	mA
	Residual output carrier (RMS)	At 38.9MHz At 77.8MHz			10 20	mV mV

**AFC**

	AFC slope	With $R_{\text{Load}} = 200\text{k}\Omega$ , see Figure 3	25	40	60	mV/kHz
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**AGC CIRCUIT**

	Maximum I charge		550	900	1200	$\mu\text{A}$
	Maximum I discharge		14	20	26	$\mu\text{A}$
	$I_{\text{CH}} / I_{\text{DISCH}}$ Ratio			45		-

**TUNER AGC**

	Sinked Current	Suitable for Mosfet-NCH	1.15	2	2.6	mA
	Slope	RTD = $0 \div 10\text{k}\Omega$			600	$\mu\text{A}/\text{dB}$

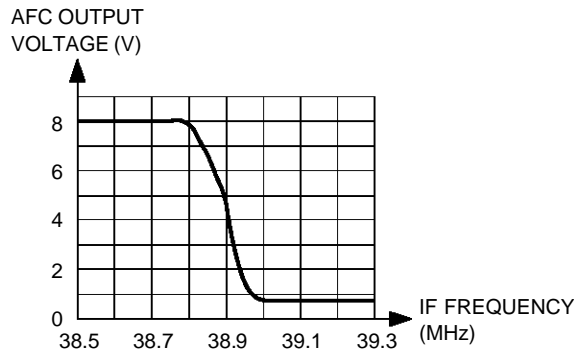
**DEMODULATED AUDIO OUTPUT**

	Detected output audio signal (RMS)		120	270	350	mV
	Total harmonic distortion			0.5	2	%
	Amplitude modulation rejection	$m = 30\%$	40	53		dB
	2nd IF sound sensitivity -3dB FM detected audio signal (RMS)			200		$\mu\text{V}$
	$\frac{S + N}{N}$	$\Delta f = \pm 25\text{kHz}$ for signal $\Delta f = 0$ after deemphasis (BW = 20kHz)	50	60		dB
	Thermal drift of volume			0.05		$\frac{\text{dB}}{^{\circ}\text{C}}$
	Input resistance limiter		400	560	720	$\Omega$
	Volume Control versus $V_9$	See Figure 4		0	24	dB
		$V_9 = 4.5\text{V}$	12	18		dB
		$V_9 = 2.5\text{V}$				dB
		$V_9 = 0.9\text{V}$	65	74		dB

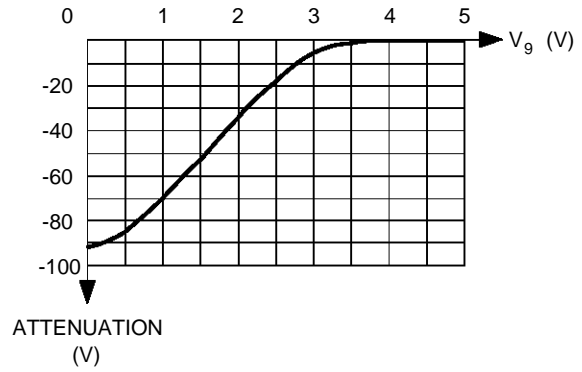
8213-04-TBL



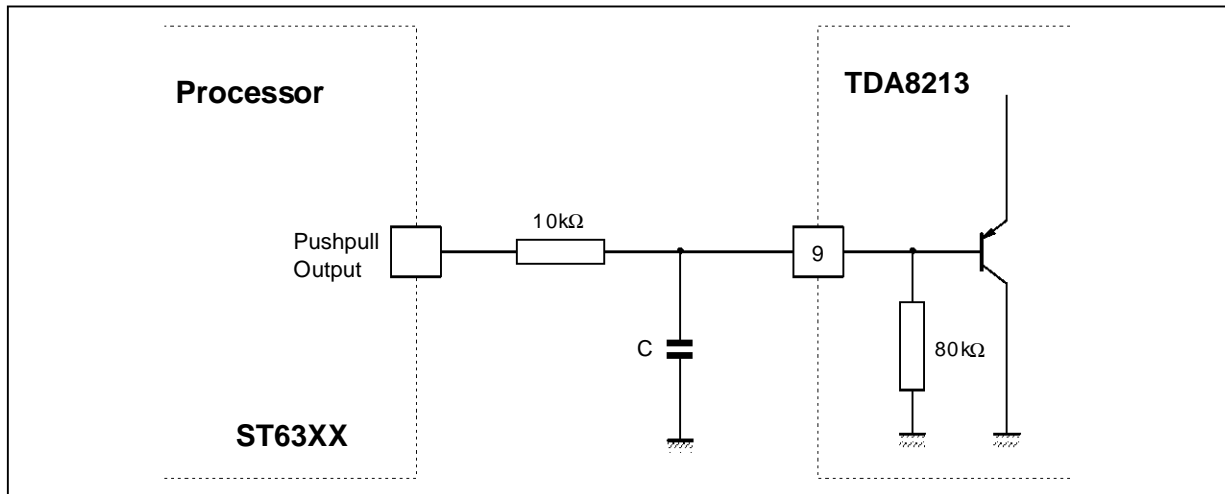
**Figure 3 : AFC Voltage versus Input Frequency**



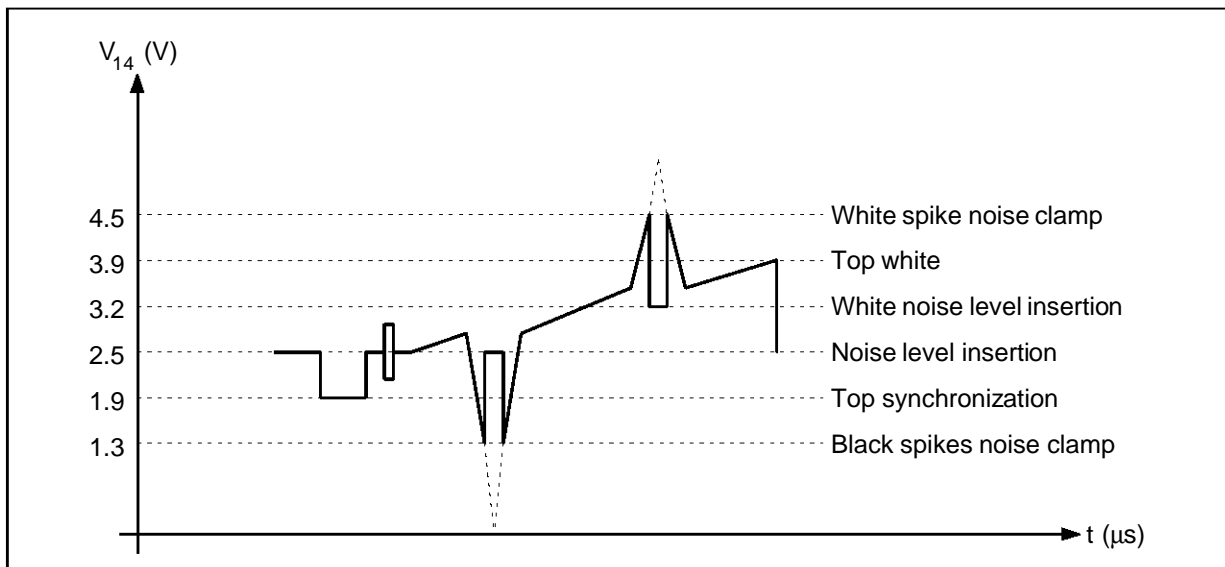
**Figure 4 : Volume Control Attenuation versus Voltage in Pin 9**



**Figure 5 : Typical Connection from μP to TDA8213 for Remote Volume Control (Pin 9)**



**Figure 6 : Black and White Noise Inverter**



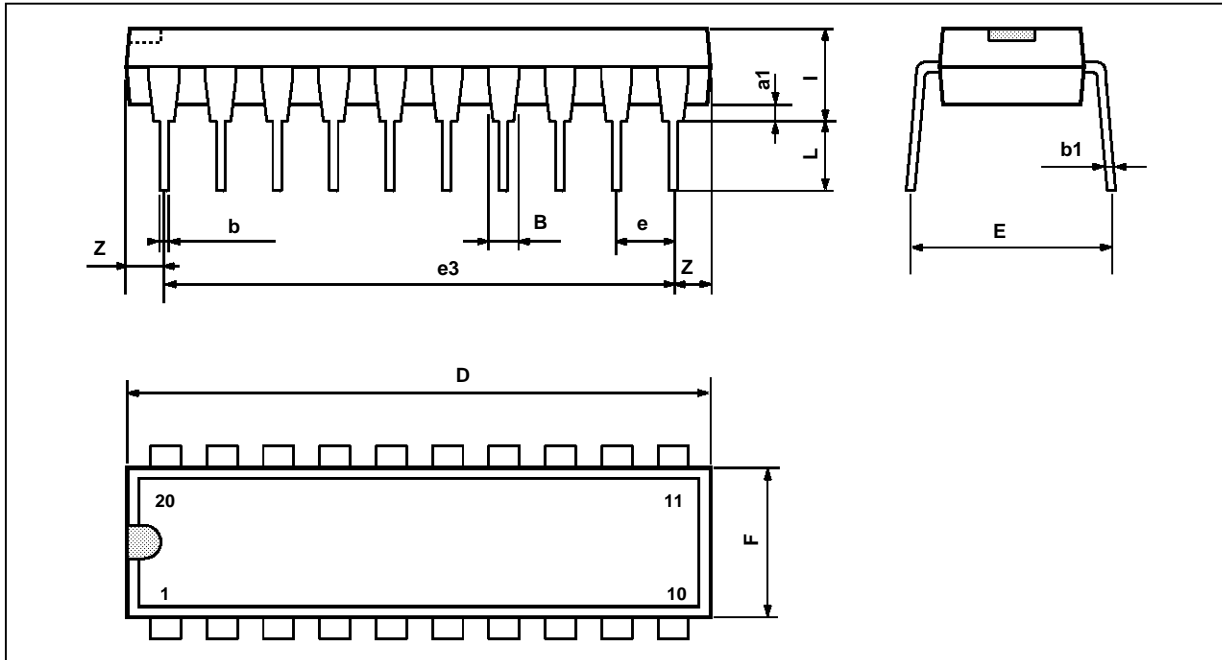




# TDA8213

## PACKAGE MECHANICAL DATA

20 PINS - PLASTIC DIP



PM-DIP20.EPS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.254			0.010		
B	1.39		1.65	0.055		0.065
b		0.45			0.018	
b1		0.25			0.010	
D			25.4			1.000
E		8.5			0.335	
e		2.54			0.100	
e3		22.86			0.900	
F			7.1			0.280
i			3.93			0.155
L		3.3			0.130	
Z			1.34			0.053

DIP20.TBL

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