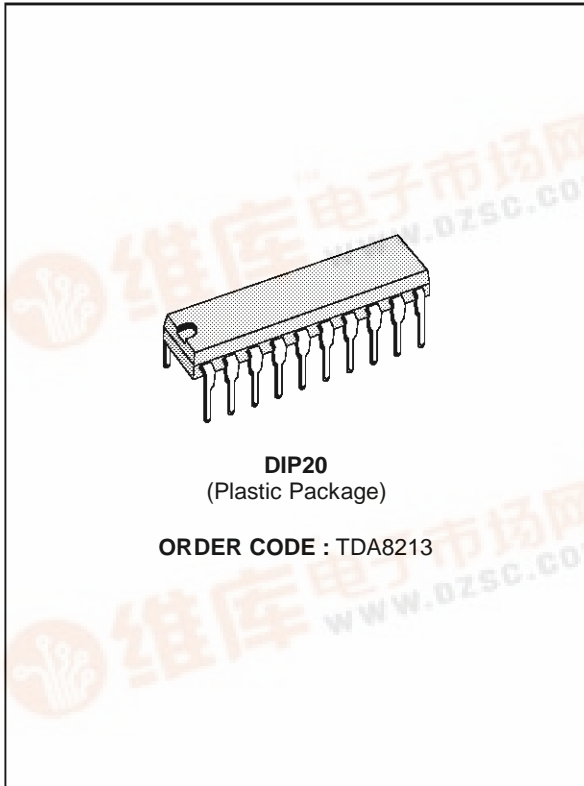




TDA8213

VIDEO & SOUND IF SYSTEM

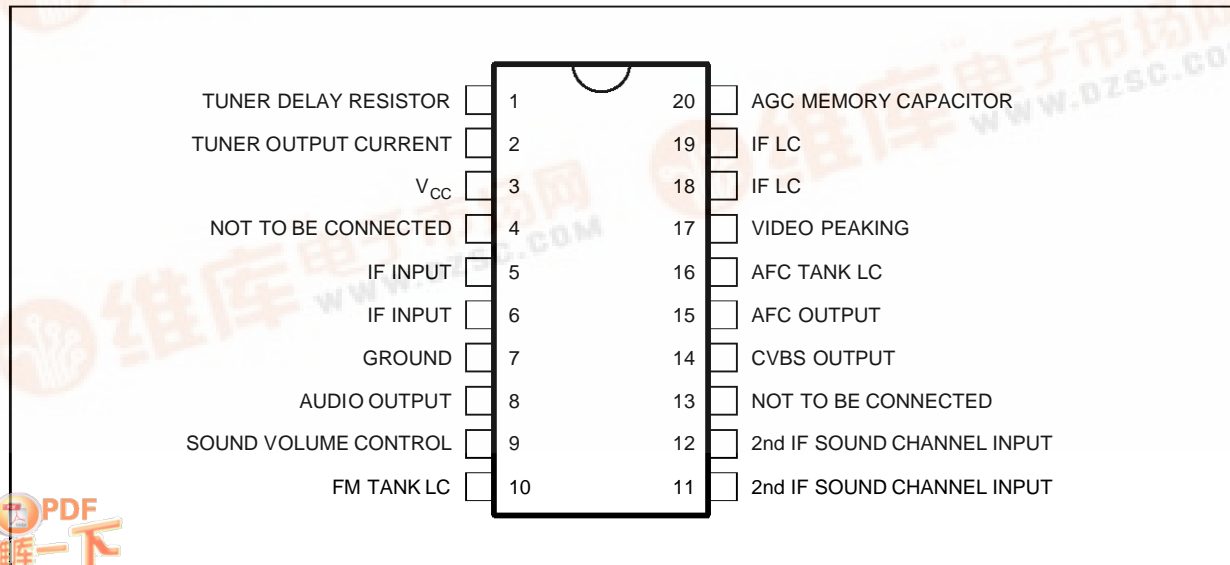
- VERY LOW CURRENT ABSORPTION
- 3 STAGE IF GAIN CONTROLLED AMPLIFIER
- SYNCHRONOUS VIDEO DEMODULATOR
- WHITE SPOT AND NOISE INVERTER
- AGC CIRCUIT WITH NOISE GATING
- TUNER AGC OUTPUT FOR PNP TUNERS
- FM DETECTOR
- AF AMPLIFIER WITH DC VOLUME CONTROL
- AFC
- 2 V_{PP} ON VIDEO OUTPUT



DESCRIPTION

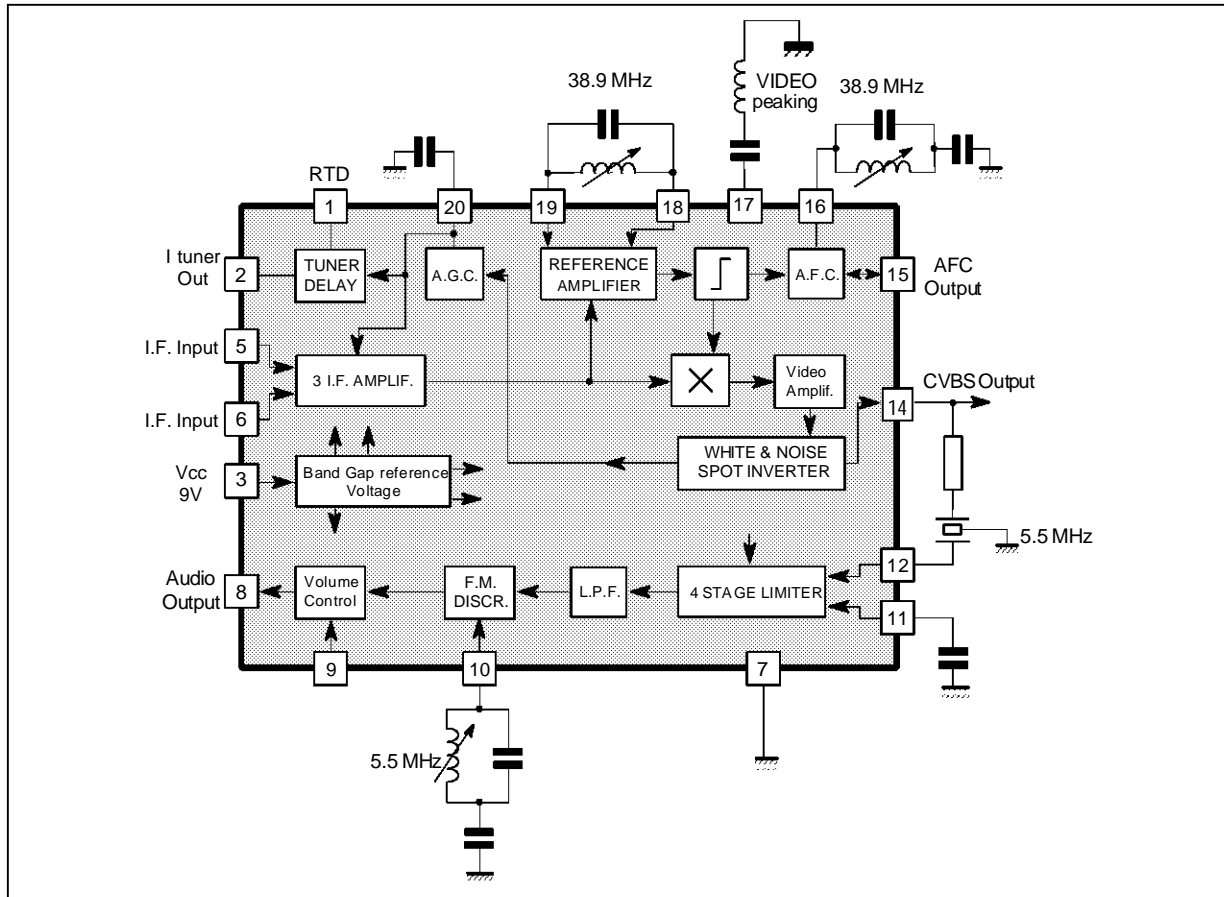
The TDA8213 is a monolithic integrated circuit in DIP20 package for colour and black & white television receivers using PNP tuners. It is intended to operate with a negatively modulated vision carrier and frequency modulated sound carrier. Used with TDA8214/15 (H/V deflection circuit) and TDA8217 (Pal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

PIN CONNECTIONS



TDA8213

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 $T_{AMB} = 70^\circ\text{C}$	880	mW
T_{STG}	Storage temperature range	- 40, + 150	$^\circ\text{C}$

8213-01.TBL

THERMAL DATA

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

8213-02.TBL

ELECTRICAL CHARACTERISTICS

($T_{amb} = 25^\circ\text{C}$, $V_{CC} = 9\text{V}$, IF input = 10mV_{RMS} top sync, $D = 90\%$, Video BW = 5MHz, Sound carrier input : 5.5MHz, 10mV_{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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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 = 10mV_{RMS} top sync, $D = 90\%$, Video BW = 5MHz,
Sound carrier input : 5.5MHz, 10mV_{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
--------	-----------	-----------------	------	------	------	------

IF AMPLIFIER

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

DEMODULATED VIDEO OUTPUT

	S/N video (BW = 5MHz)	IF inp. = 10mV_{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	μA
	Maximum I discharge		14	20	26	μA
	$I_{\text{CH}} / I_{\text{DISCH}}$ 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		μV
	$\frac{S + N}{N}$	$\Delta f = \pm 25\text{kHz}$ 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	Ω
	Volume Control versus V_g	See Figure 4				
		$V_g = 4.5\text{V}$		0		dB
		$V_g = 2.5\text{V}$	12	18	24	dB
		$V_g = 0.9\text{V}$	65	74		dB

TEST CIRCUIT

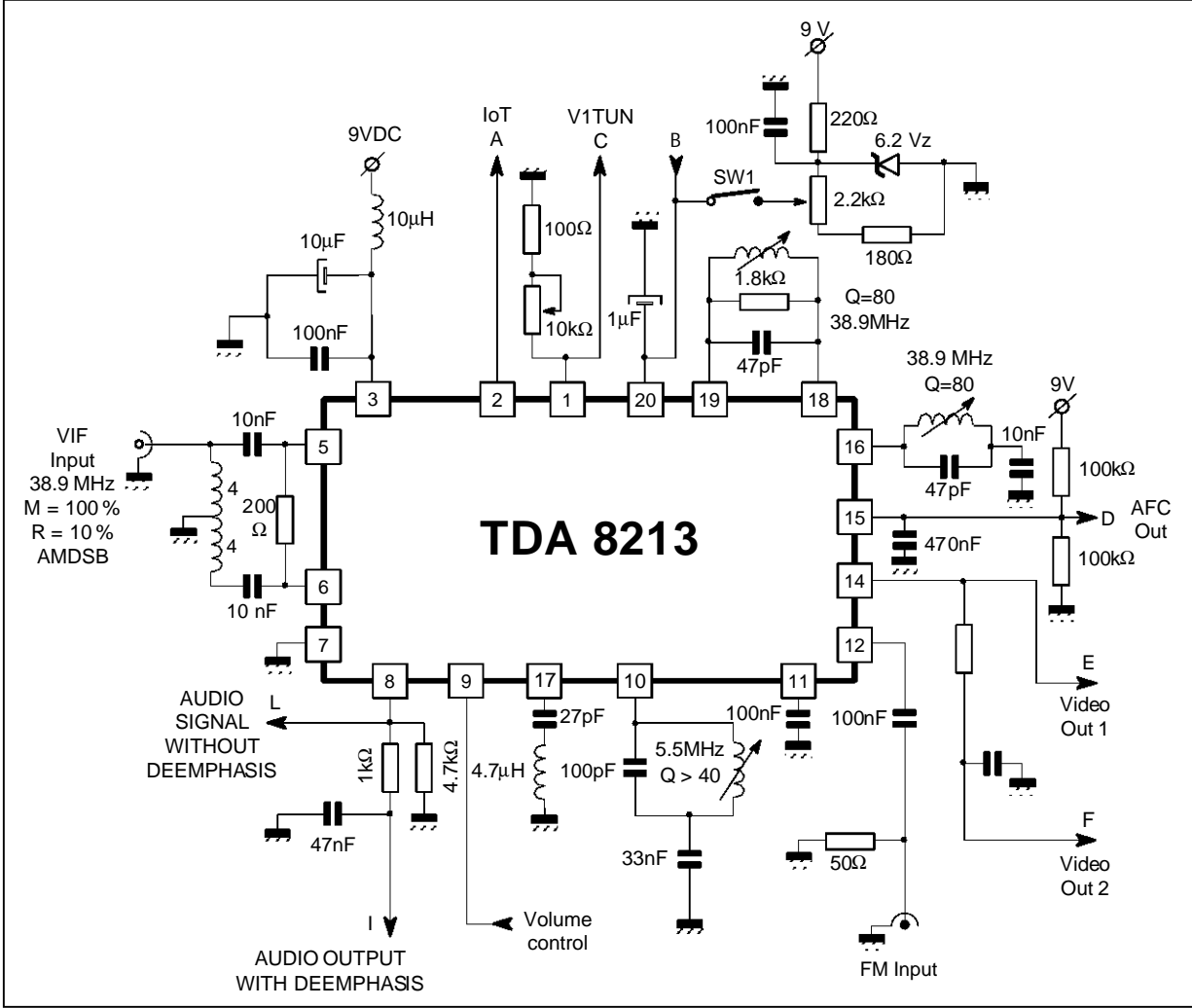


Figure 1 : Output Signal Bandwidth without Video peaking

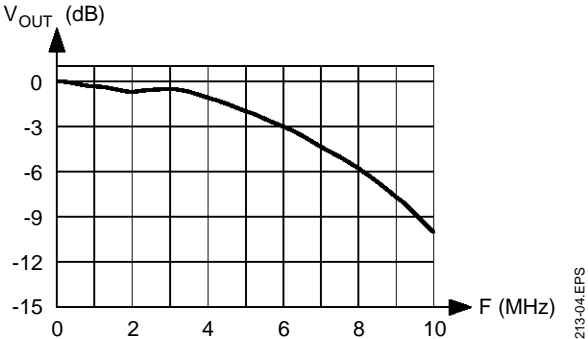


Figure 2 : Output Signal Bandwidth with Video peaking

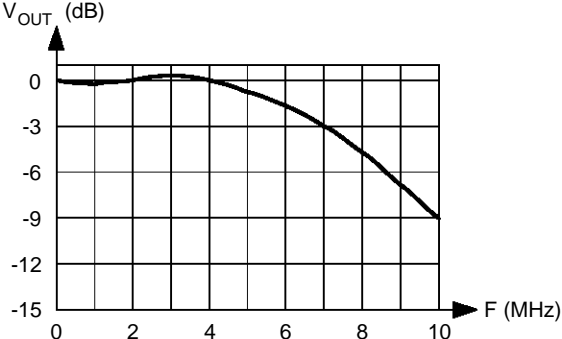


Figure 3 : AFC Voltage versus Input Frequency

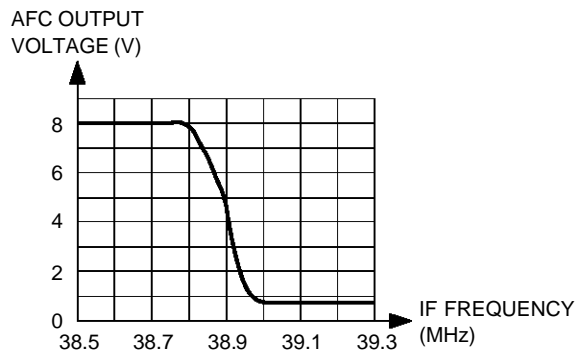


Figure 4 : Volume Control Attenuation versus Voltage in Pin 9

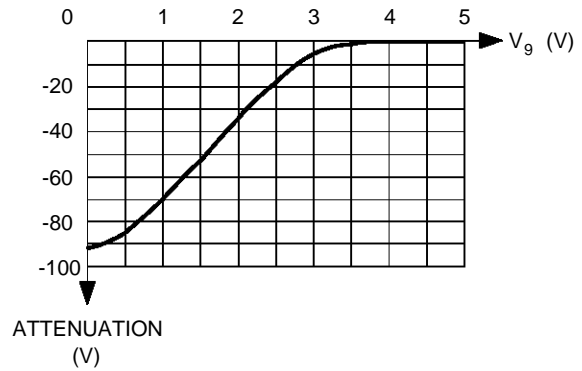


Figure 5 : Typical Connection from μP to TDA8213 for Remote Volume Control (Pin 9)

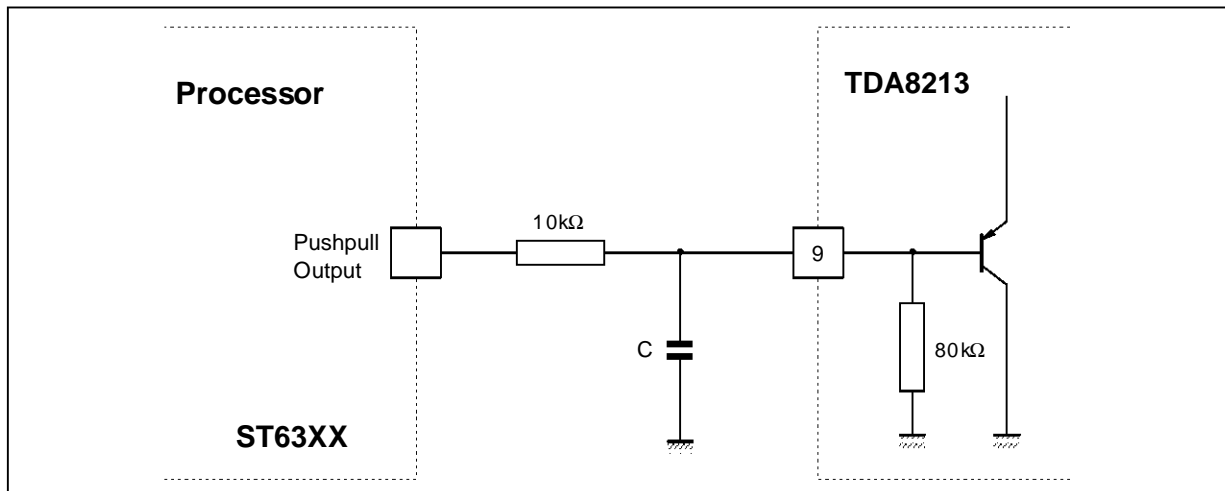
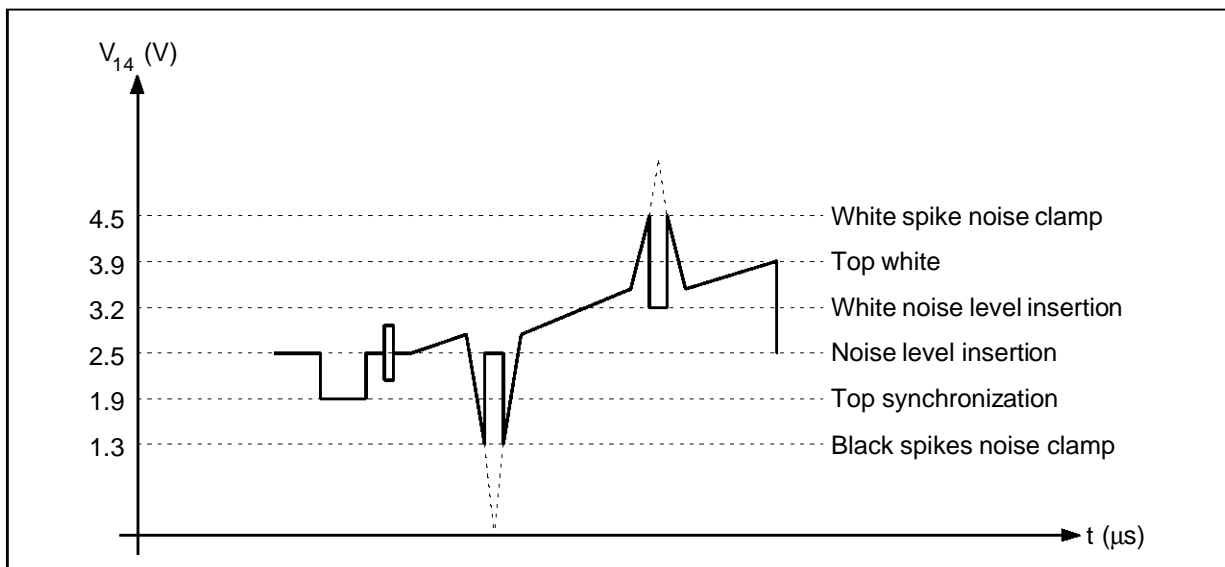
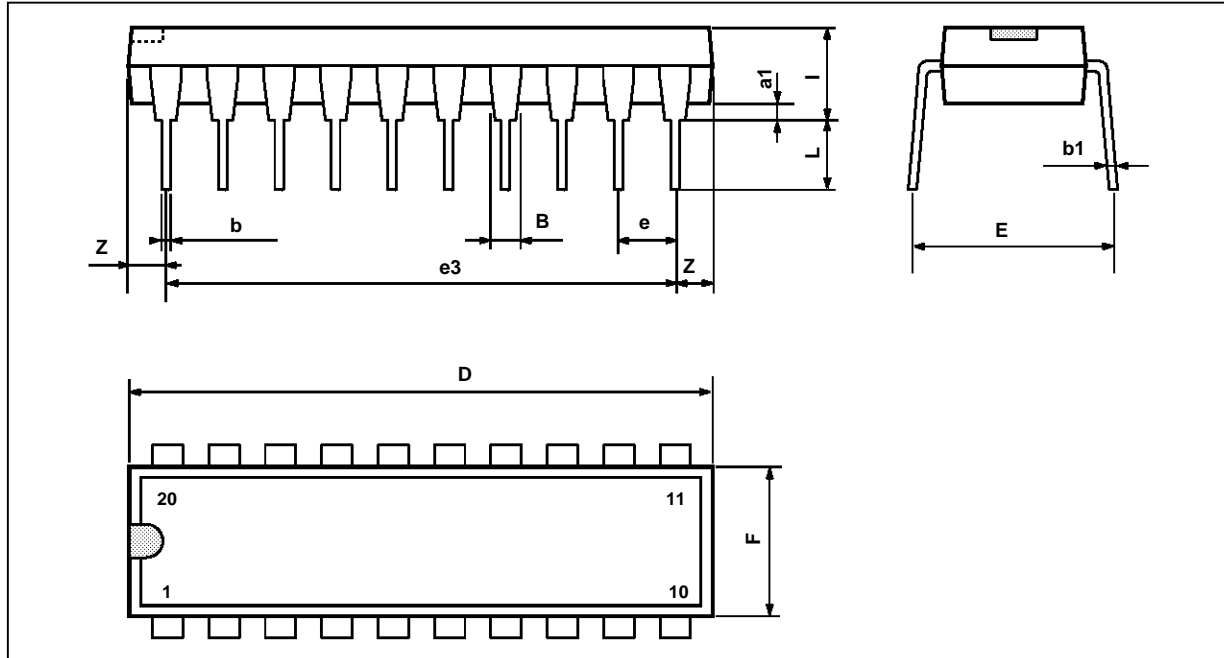


Figure 6 : Black and White Noise Inverter



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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