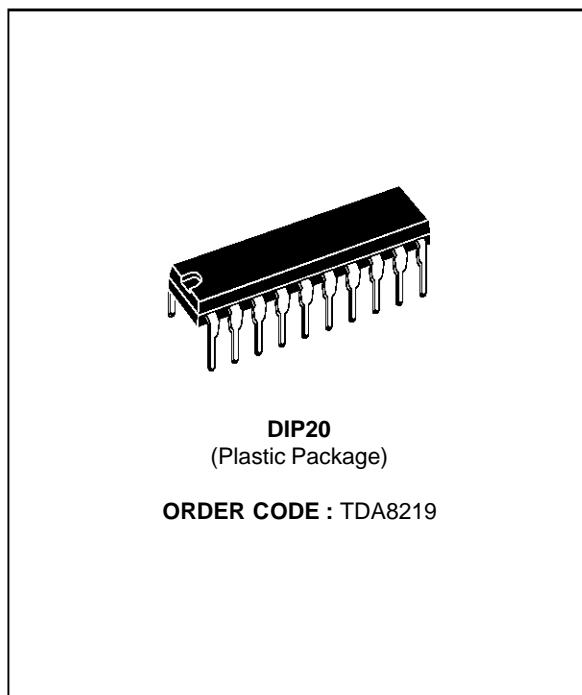


## PAL/NTSC DECODER AND VIDEO PROCESSOR

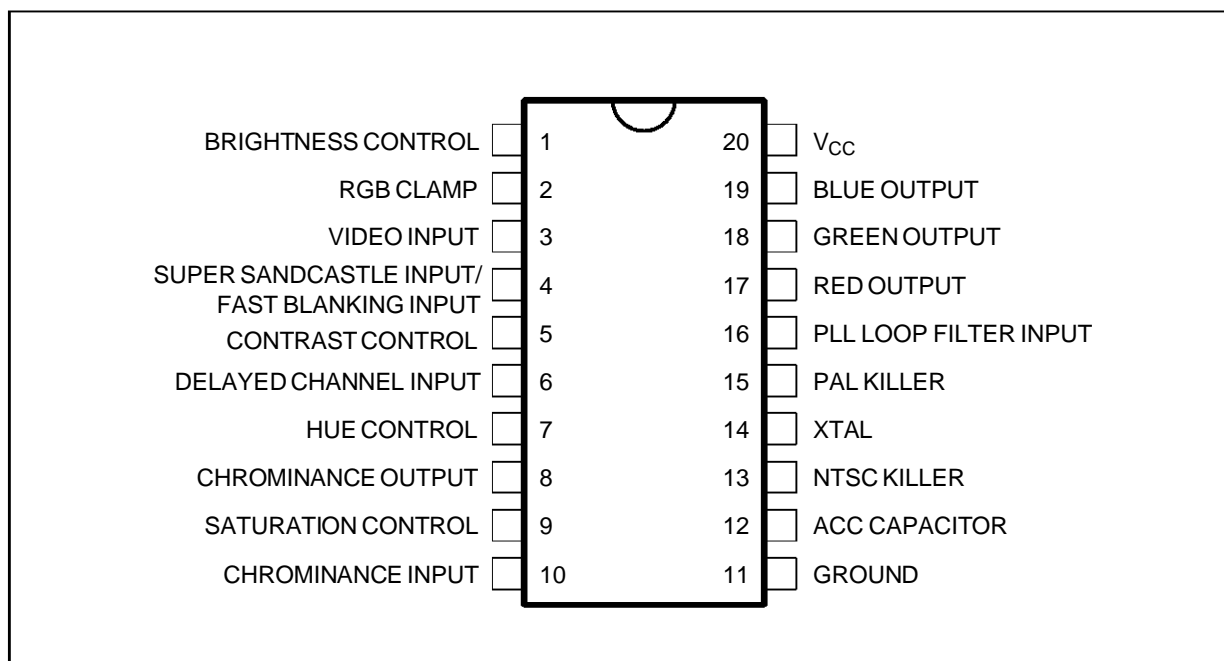
- RGB OUTPUTS
- SINGLE CHIP CHROMA AND LUMINANCE PROCESSOR
- DC CONTROL BRIGHTNESS, CONTRAST, SATURATION AND HUE
- FEW EXTERNAL COMPONENTS
- FAST BLANKING INPUT FOR OSD INSERTION
- SUPER SANDCASTLE INPUT

### DESCRIPTION

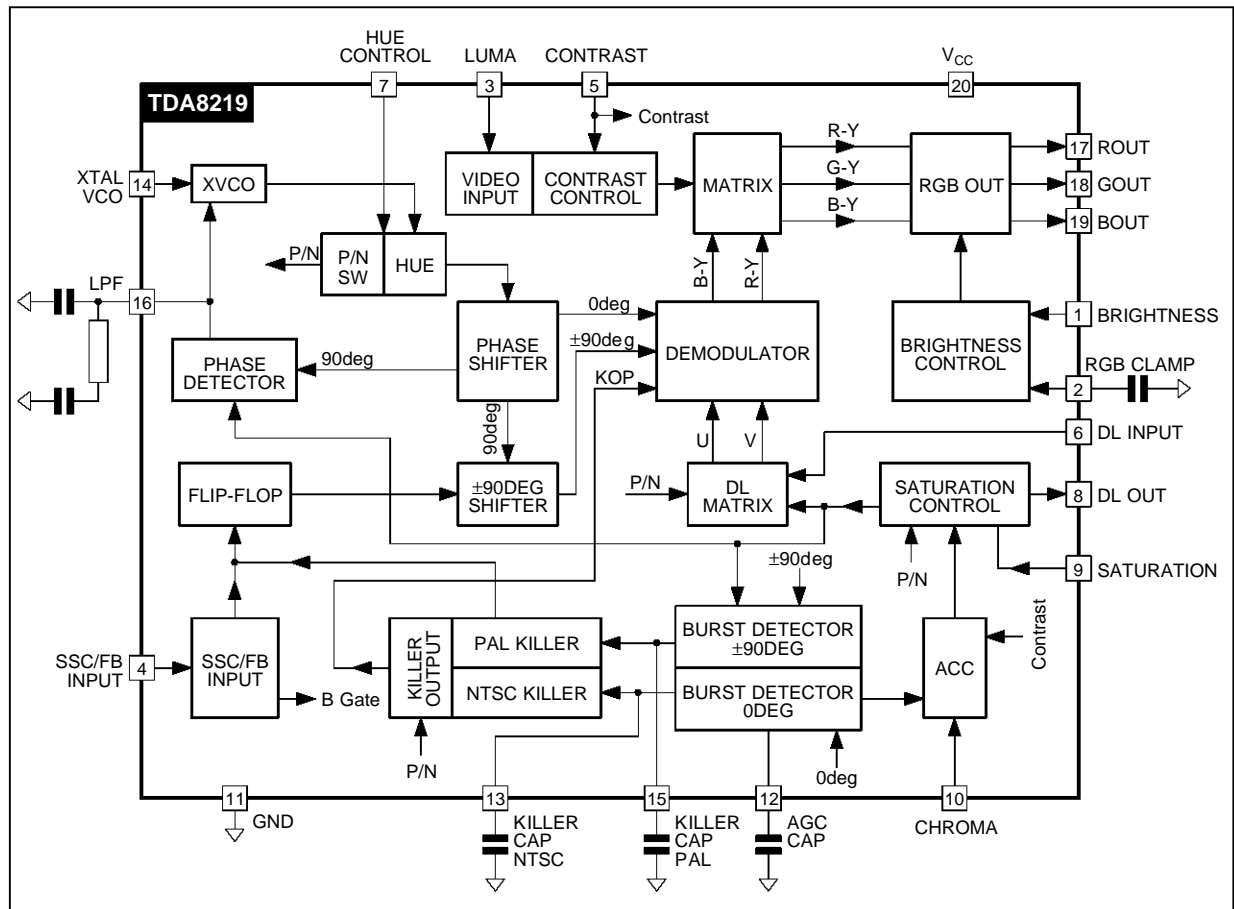
The TDA8219 is a monolithic integrated color decoder for the PAL/NTSC standard. It includes in a 20 pins IC all the functions required for the identification and demodulation of PAL/NTSC signals, and all the videoprocessor functions up to the drive of the video stages. Used with TDA8213 (video & sound IF system) and TDA8214B (H/V deflection circuit), this IC permits a complete low-cost solution for PAL/NTSC applications.



### PIN CONNECTIONS



**BLOCK DIAGRAM**



8219-02.EPS

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply voltage	12	V
T <sub>OPER</sub>	Operating temperature	0 , + 70	°C
T <sub>STG</sub>	Storage temperature	-55 , + 150	°C

8219-01.TBL

**THERMAL DATA**

Symbol	Parameter	Value	Unit
R <sub>TH(j-a)</sub>	Junction to ambient thermal resistance	Max. 80	°C/W

8219-02.TBL

**DC AND AC ELECTRICAL CHARACTERISTICS**

V<sub>CC</sub> = 9V , T<sub>AMB</sub> = 25°C (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>CC</sub>	Supply Voltage		8	9	10	V
I <sub>CC</sub>	Supply Current	No Load at V <sub>CC</sub> = 9V	20	30	40	mA
P <sub>d</sub>	Total Power Dissipation	No Load		270	450	mW

**LUMINANCE INPUT (Pin 3)**

	Input Level (Black to White)			350	500	mV <sub>PP</sub>
	DC Operating Voltage	No Input Signal	2.5	2.8	3.1	V
	Input Current	During Burst Period Out of Burst Period	± 50	± 100	± 150 5	µA µA

8219-03.TBL

**DC AND AC ELECTRICAL CHARACTERISTICS** (continued)V<sub>CC</sub> = 9V , T<sub>AMB</sub> = 25°C (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>CHROMINANCE INPUT (Pin 10)</b>						
	Input Level			300	900	mV <sub>PP</sub>
	ACC Control Range	Change of Burst Signal over whole ACC Control Range < 1dB		30		dB
	Minimum Burst Signal Amplitude within the ACC Control Range			30		mV <sub>PP</sub>
	Input Impedance		6	8	12	kΩ
	DC Operating Voltage	No Input Signal	2.3	2.8	3.3	V
<b>SSC INPUT (Pin 4)</b>						
	Burst Gate Threshold		7.0	7.5	8.0	V
	Line Blanking Threshold		3.1	3.6	3.9	V
	Frame Blanking Threshold / Fast Blanking		0.5	1	1.5	V
	Input Current				60	μA
<b>CONTRAST CONTROL INPUT (Pin 5) (See Figure 1)</b>						
	Input Current				10	μA
	Contrast Control Range		20			dB
<b>SATURATION CONTROL INPUT (Pin 9) (See Figure 2)</b>						
	Input Current				10	μA
	Tracking between Luminance and Chrominance Signals over 10 dB Contrast Control				2	dB
<b>BRIGHTNESS CONTROL INPUT (Pin 1) (See Figure 3)</b>						
	Input Current				10	μA
<b>ACC CAPACITOR (Pin 12)</b>						
	Charging Current	During Burst Gate Period		200		μA
	Discharging Current	During Burst Gate Period			10	μA
	Leakage Current	Out of Burst Gate Period			5	μA
<b>PAL KILLER CAPACITOR (Pin 15)</b>						
	Color off Voltage	No Chroma Signal		5.2		V
	Color on Voltage			5.4		V
	PAL flip-flop inhibition level			3.2		V
	Control Current			200		μA
	Leakage Current				5	μA
	Voltage with Nominal Input Signal			6.0		V
<b>NTSC KILLER CAPACITOR (Pin 13)</b>						
	Color off Voltage	No Chroma Signal		5.2		V
	Color on Voltage			5.4		V
	Control Current			200		μA
	Leakage Current				5	μA
	Voltage with Nominal Input Signal			6.0		V
<b>PLL LOOP FILTER (Pin 16)</b>						
	Control Current			800		μA
	Leakage Current				5	μA
<b>SUBCARRIER OUTPUT (Pin 8)</b>						
	Output Burst Amplitude	Within ACC Control Range	1.6	2.4	3.0	V <sub>PP</sub>

8219-04.TBL

**DC AND AC ELECTRICAL CHARACTERISTICS** (continued)

V<sub>CC</sub> = 9V , T<sub>AMB</sub> = 25°C (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
DELAYED CHANNEL INPUT (Pin 6)						
	DC Operating Voltage	No Input Signal	2.0	2.2	2.4	V
	Input impedance		6	8	12	kΩ

RGB OUTPUTS (Pins 17-18-19)

	Output Signal Amplitude (Black to White)	0.35V B to W, Signal @ Pin 3, Contrast @ 4.2V, Sat. @ 1.6V, Brig. @ 3.5V	2.80	3.15	3.50	V
	Blue Channel Output Amplitude (no Y)	300mV <sub>PP</sub> (B-Y), Signal with 200mV <sub>PP</sub> Burst Amplitude at Pin 10, Contrast @ 4.2V, Sat. @ 4.2V, Brig. @ 3.5V	3.5	3.9	4.3	V <sub>PP</sub>
	Individual Output Sinking Current		1.5	2	2.5	mA
	Maximum Peak White Level		7.4	7.8	8.2	V
	Blanking Level		1.0	1.2	1.4	V
	Black Level Differential Error				350	mV
	Relative Variation in Black Level with Various Saturation, Contrast and Brightness Control Level				10	mV
	Black Level Thermal Drift			0.5		mV/°C
	Differential Black Level Drift over 40°C Temperature Range			5		mV
	Frequency Response(-3dB)			7		MHz

HUE CONTROL INPUT (Pin 7 ) (see Figure 4)

	Control Range		± 20	± 45		deg
	Input Current				10	μA
	NTSC Select Voltage		2.0		6.0	V
	PAL Select Voltage		00		0.5	V

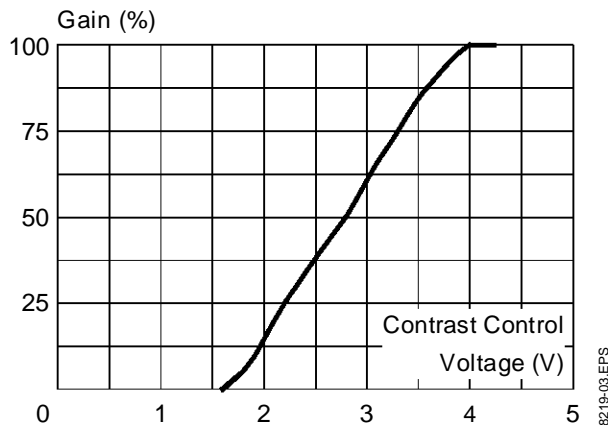
XTAL (Pin 14)

	Catching Range	PAL, XTAL with CM = 13fF NTSC, XTAL with CM = 13fF		± 700	± 700	Hz Hz
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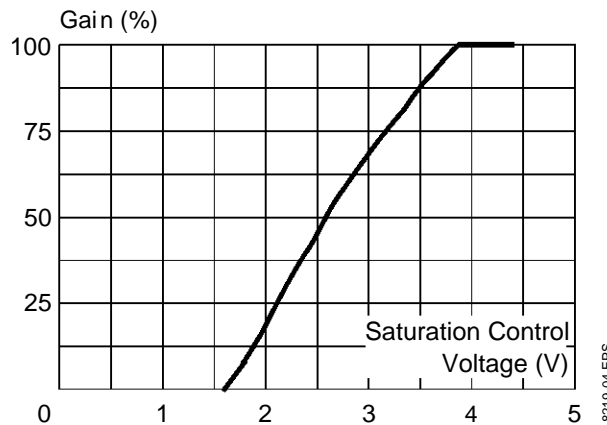
RGB CLAMP CAPACITOR (Pin 2)

	Control Current		50	100	150	μA
	Leakage Current				5	μA

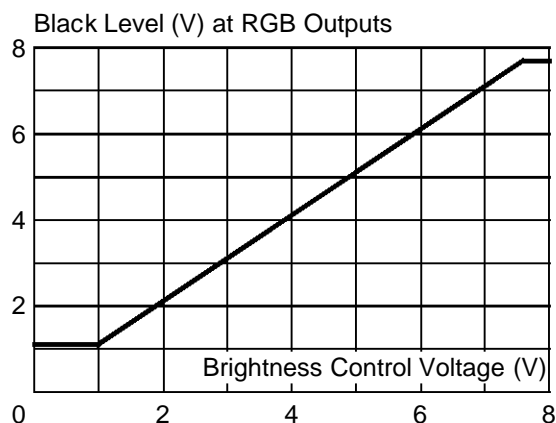
**Figure 1 : Contrast Control Voltage Range**



**Figure 2 : Saturation Control Voltage Range**

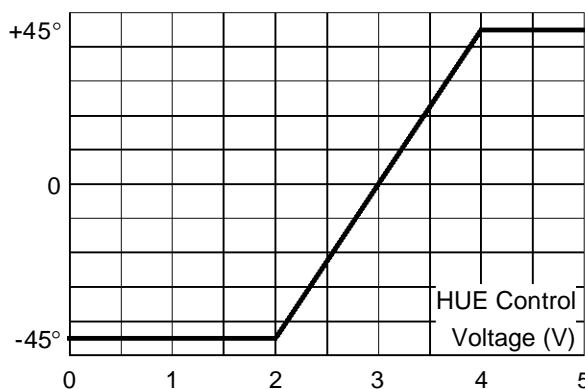


**Figure 3 : Brightness Control Voltage Range**



8219-05.EPS

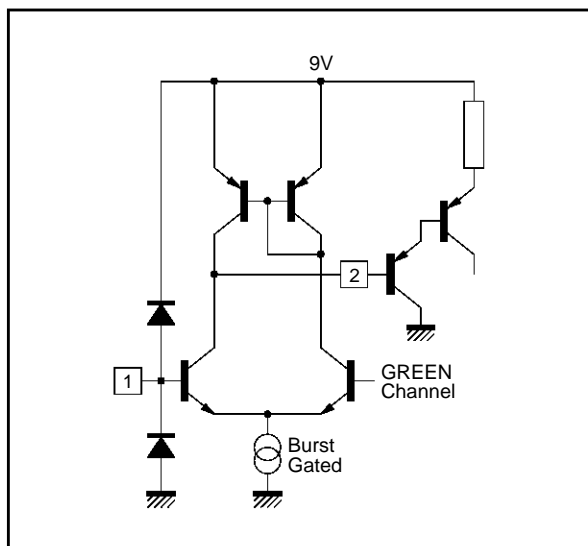
**Figure 4 : Hue Control Voltage Range**



8219-06.EPS

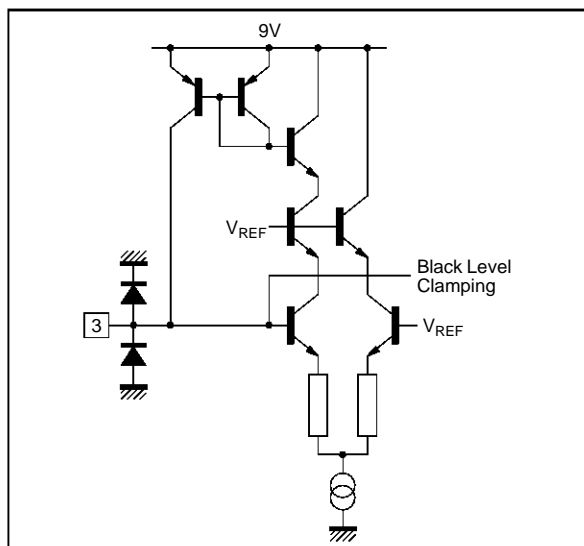
**INPUT / OUTPUT PIN CONFIGURATION**

**Figure 5 : Pins 1 - 2 Configuration**



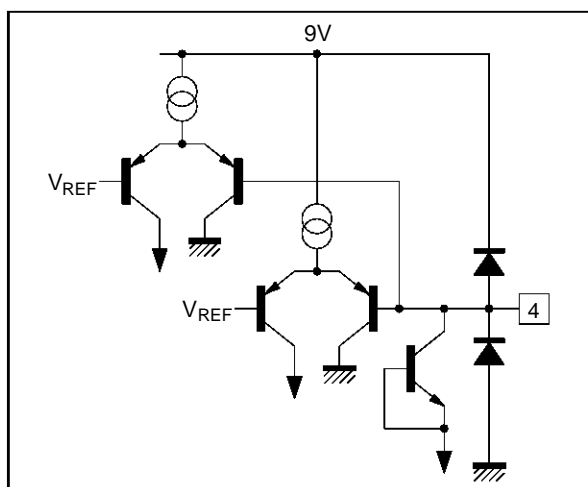
8219-07.EPS

**Figure 6 : Pin 3 Configuration**



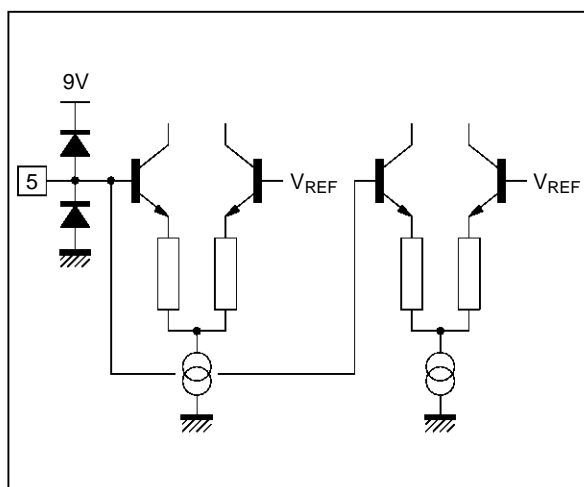
8219-08.EPS

**Figure 7 : Pin 4 Configuration**



8219-09.EPS

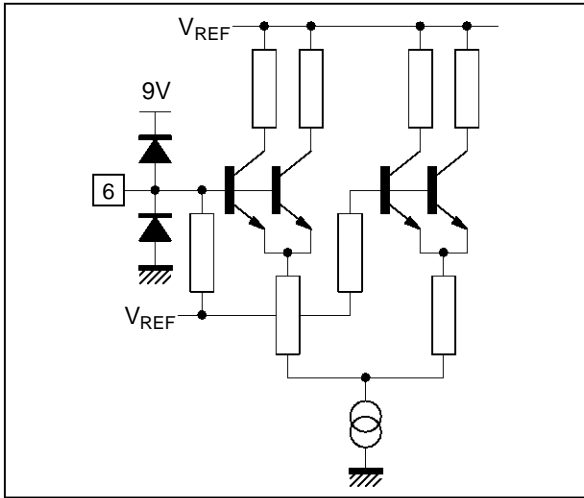
**Figure 8 : Pin 5 Configuration**



8219-10.EPS

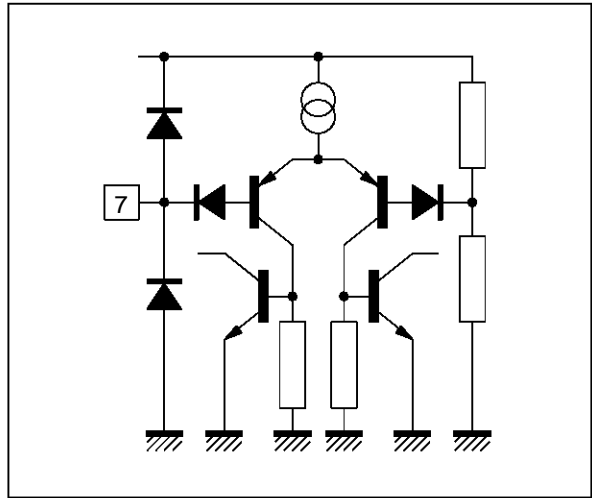
INPUT / OUTPUT PIN CONFIGURATION (continued)

Figure 9 : Pin 6 Configuration



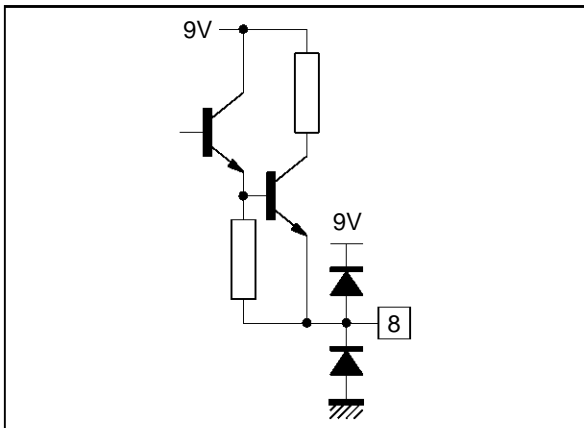
8219-11.EPS

Figure 10 : Pin 7 Configuration



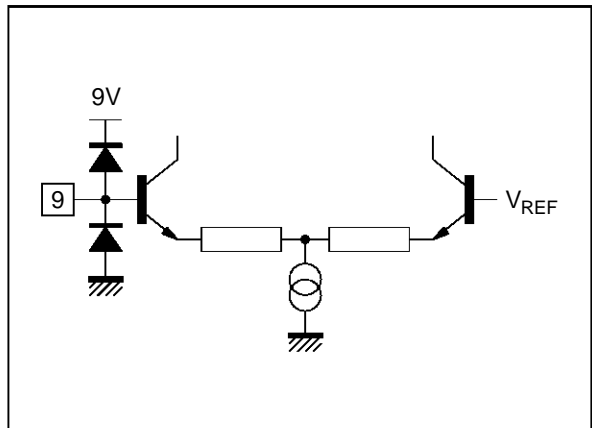
8219-21.EPS

Figure 11 : Pin 8 Configuration



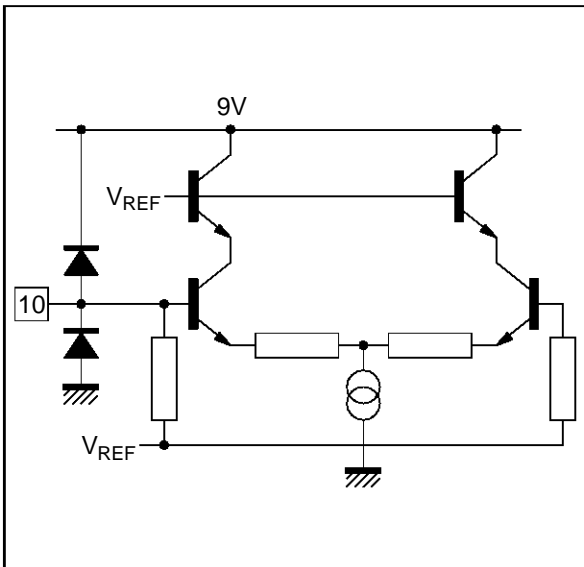
8219-12.EPS

Figure 12 : Pin 9 Configuration



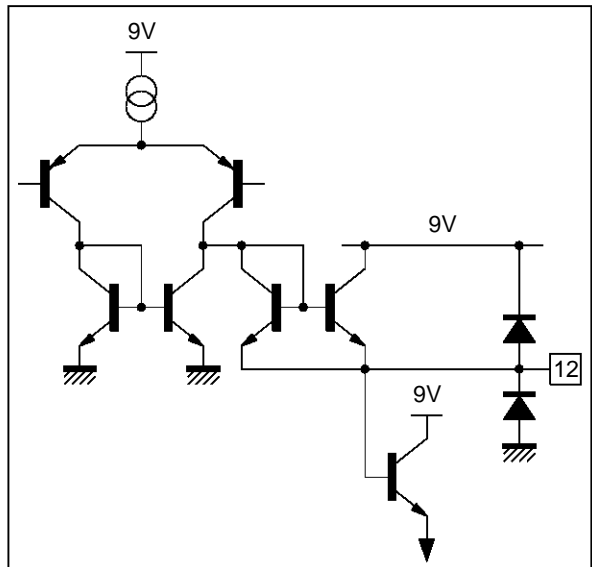
8219-13.EPS

Figure 13 : Pin 10 Configuration



8219-14.EPS

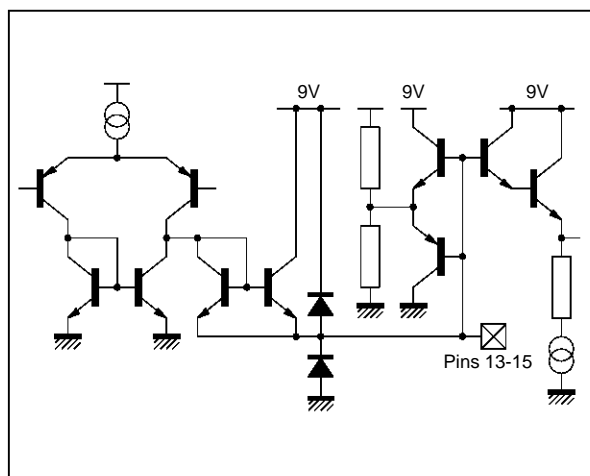
Figure 14 : Pin 12 Configuration



8219-15.EPS

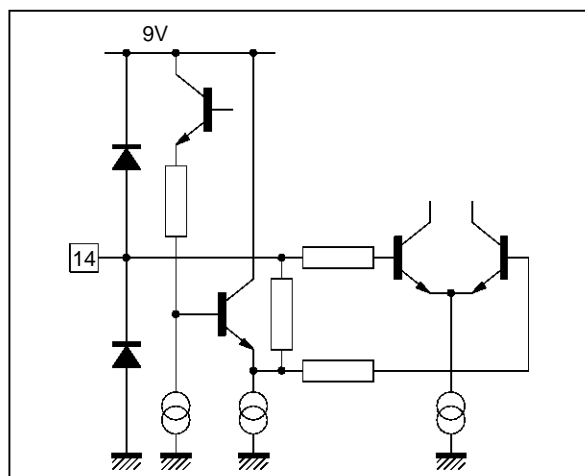
INPUT / OUTPUT PIN CONFIGURATION (continued)

Figure 15 : Pins 13 - 15 Configuration



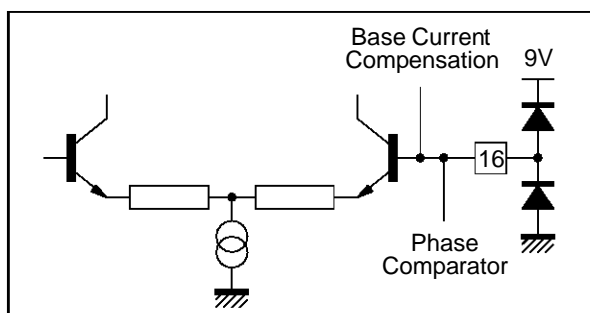
8219-16.EPS

Figure 16 : Pin 14 Configuration



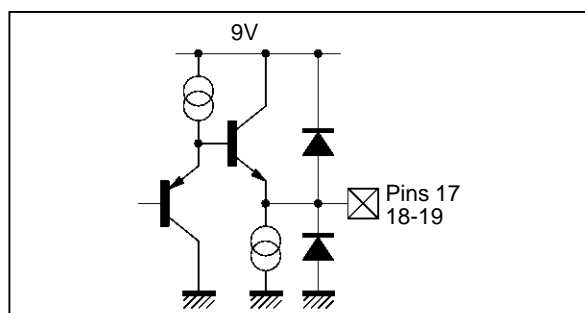
8219-17.EPS

Figure 17 : Pin 16 Configuration



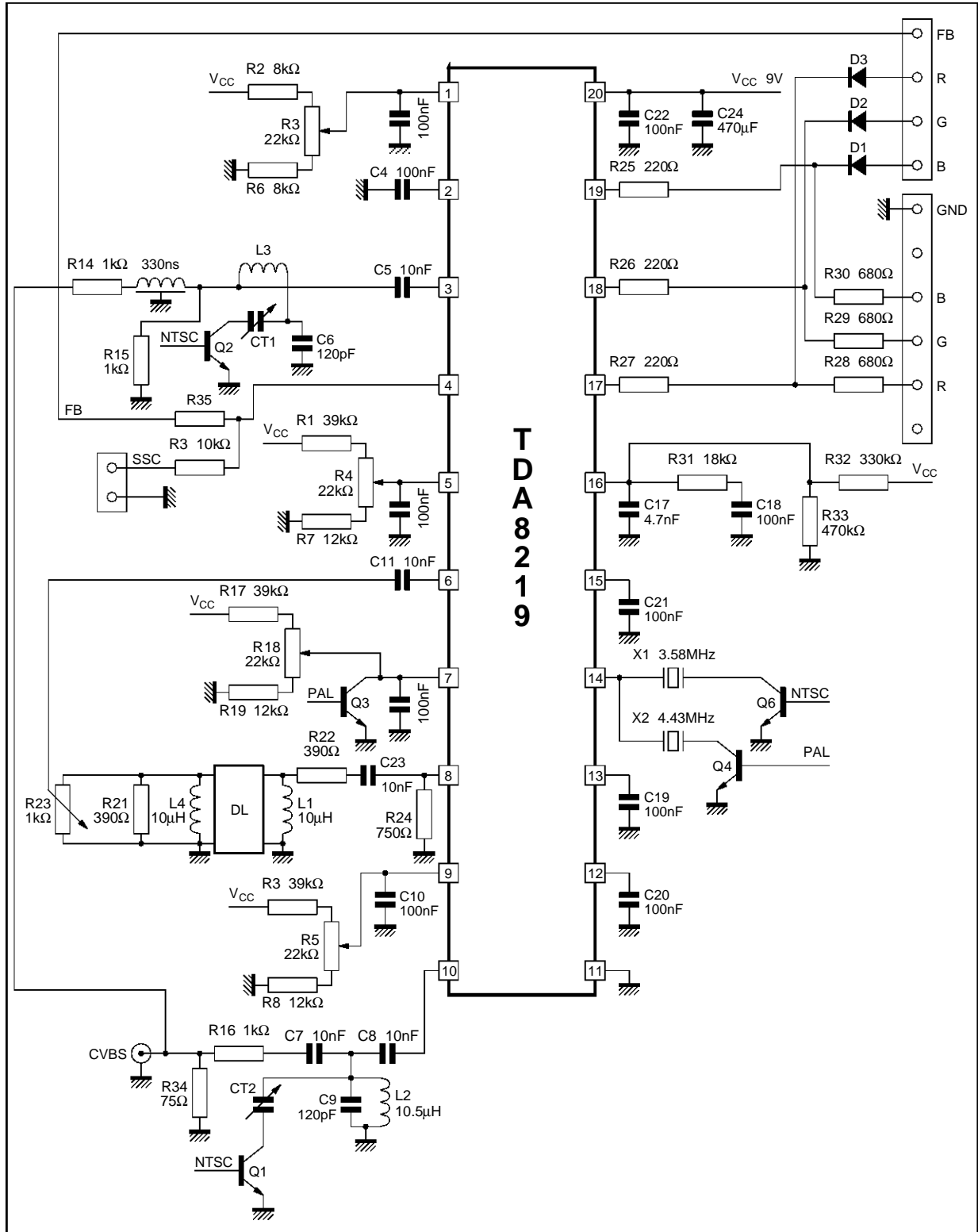
8219-18.EPS

Figure 18 : Pins 17 - 18 - 19 Configuration



8219-19.EPS

APPLICATION DIAGRAM (with OSD capability)

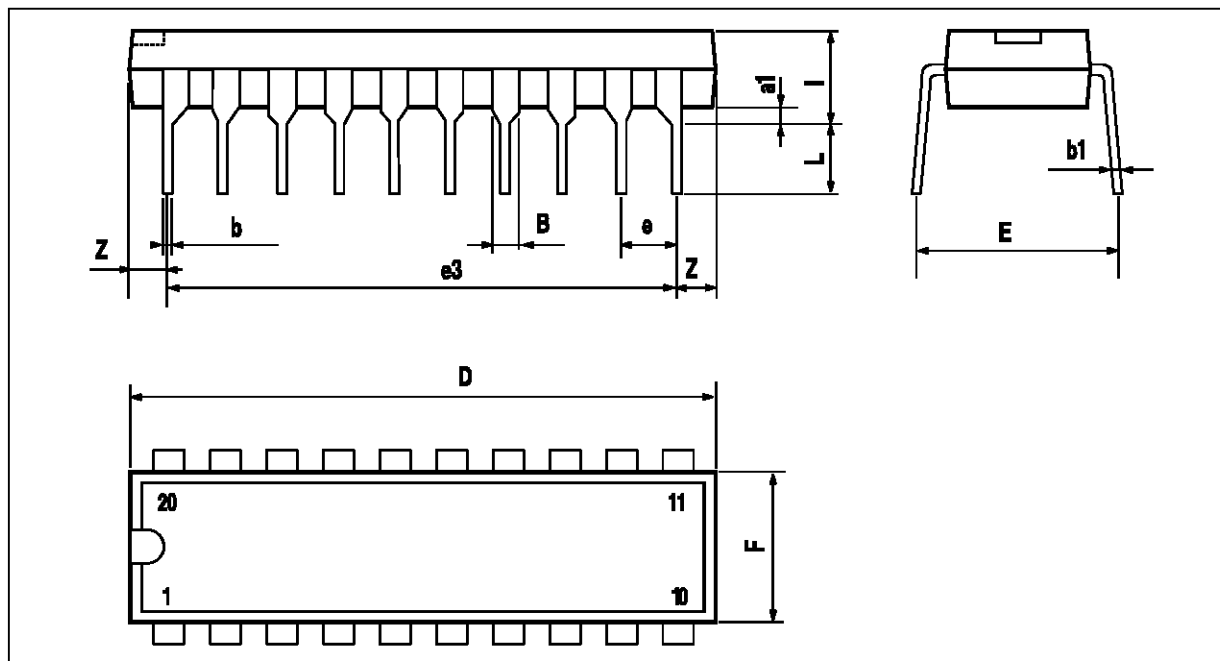


8219-20.EPS



## 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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