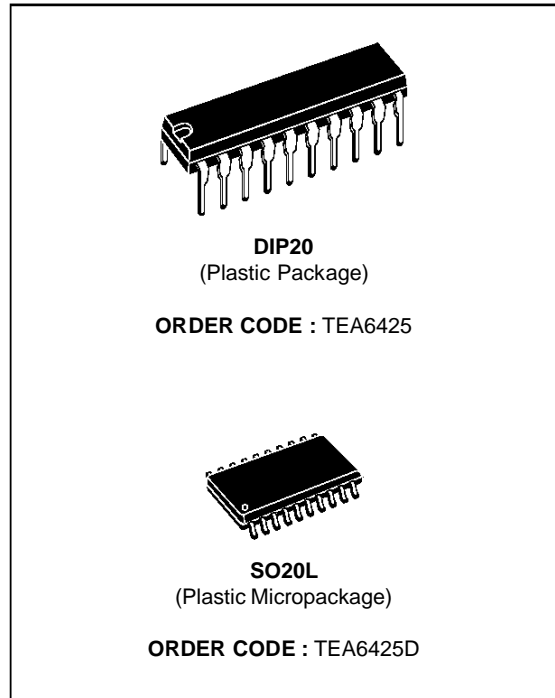


**VIDEO CELLULAR MATRIX**

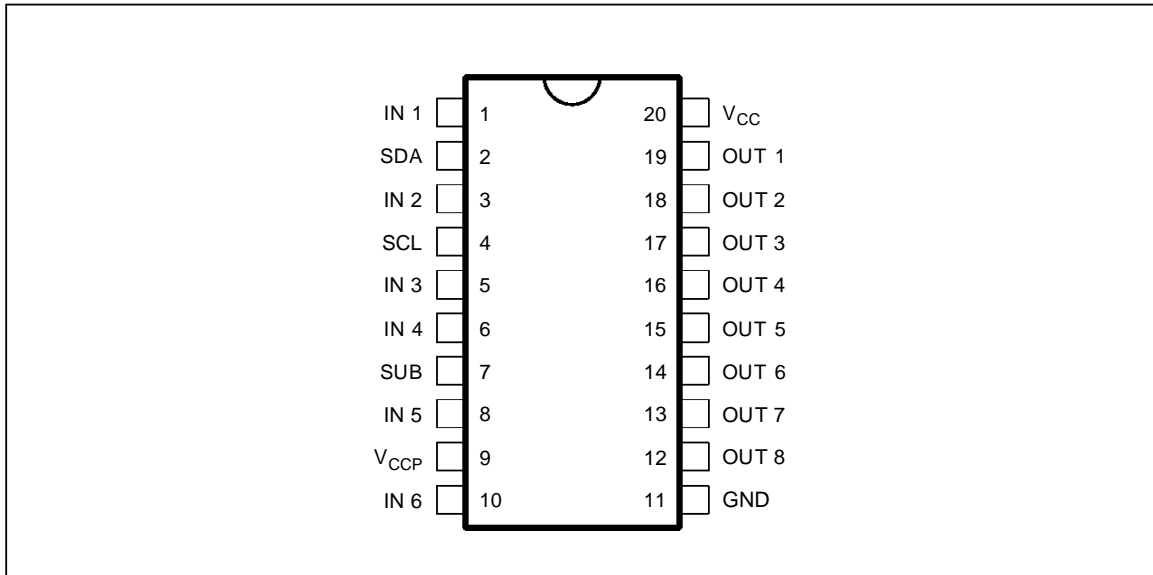
- 6 VIDEO INPUTS - 8 VIDEO OUTPUTS
- 2 INTERNAL SELECTABLE YC ADDERS
- 15MHz BANDWIDTH @ -3dB
- SELECTABLE 0.5/6.5dB GAIN FOR EACH OUTPUT
- HIGH IMPEDANCE SWITCH FOR EACH OUTPUT (3-state operation)
- PROGRAMMABLE CLAMP MODE ON EACH INPUT (sync bottom or average value)
- -60dB CROSSTALK @ 5MHz
- 4 SUB-ADDRESS CAPABILITY
- I<sup>2</sup>C BUS CONTROL

**DESCRIPTION**

This device is intended for switching between video and chroma signals such as CVBS, SVHS, base-band CVBS, MAC. Each input clamp mode, each output gain, all switching are controlled through the I<sup>2</sup>C bus. The 8 outputs can be set separately in high impedance state, to enable parallel DC connection of several devices (up to 4).

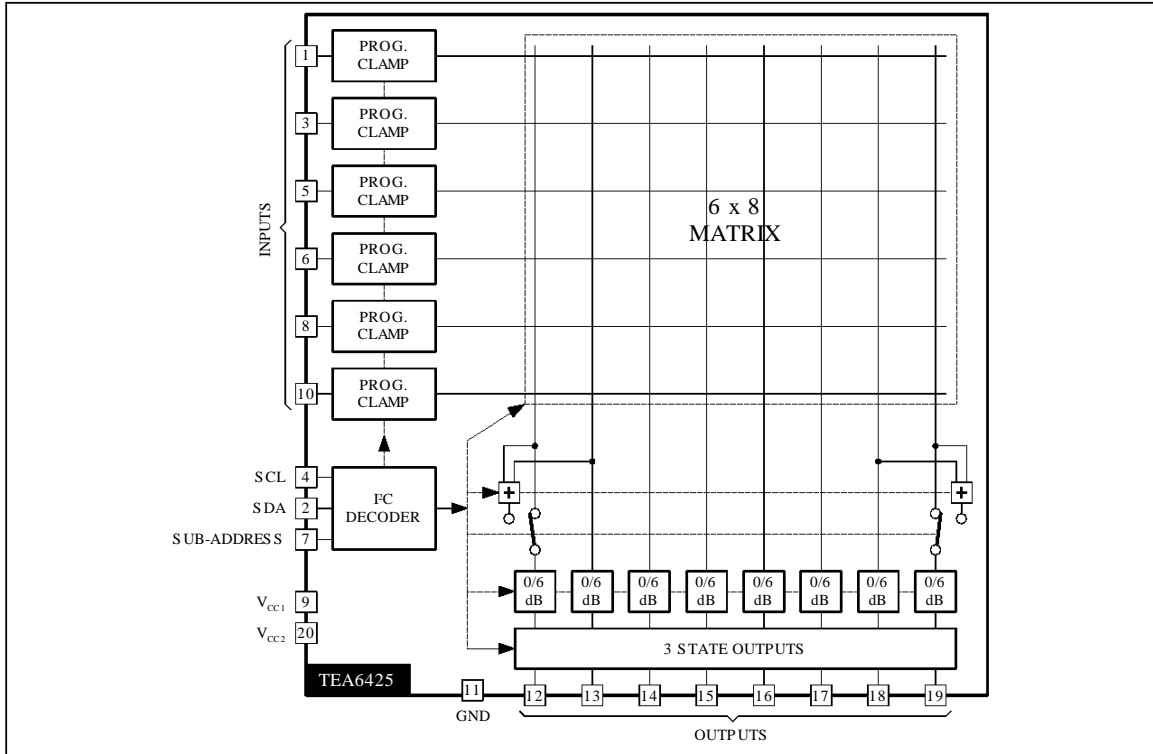


**PIN CONNECTIONS**



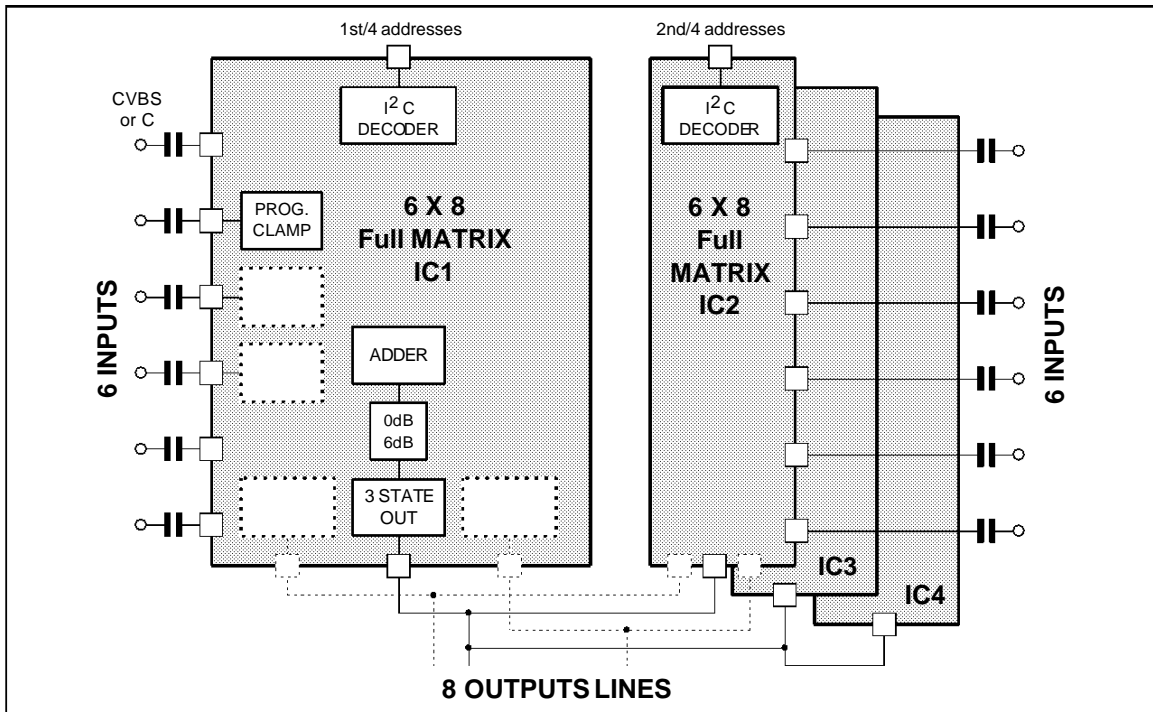
6425-01.EPS

**BLOCK DIAGRAM**



6425-02.EPS

**CELLULAR MATRICE CONNECTIONS**



6425-03.EPS

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply Voltage	12	V
V <sub>I</sub>	Voltage at Pin i to GND	0, V <sub>CC</sub>	V
T <sub>oper</sub>	Operating Ambient Temperature	0, + 70	°C
T <sub>stg</sub>	Storage Temperature	-20, + 150	°C

6425-01.TBL

## THERMAL DATA

Symbol	Parameter	Value	Unit
R <sub>th(j-a)</sub>	Junction-ambient Thermal Resistance	Min. 80	°C/W

6425-02.TBL

**ELECTRICAL CHARACTERISTICS** (V<sub>CC</sub> = 8V, T<sub>amb</sub> = 25°C, V<sub>IN</sub> = 1V, Gain = 6.5dB, C<sub>load</sub> = 20pF, R<sub>load</sub> = 4.7kΩ ; Gain condition, clamp and 3-state are controlled by I<sup>2</sup>C bus, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
SUPPLY						
V <sub>CC</sub>	Supply Voltage		7.2	8	8.8	V
I <sub>CC</sub>	Supply Current			45	60	mA
RR	Supply Voltage Rejection	f = 1kHz	40	46		dB

VIDEO INPUTS (clamping at bottom sync level)

V <sub>IN</sub>	Max. Signal Amplitude	Clamp Active	2			V <sub>PP</sub>
V <sub>clamp</sub>	Clamp Level	Clamp Active	1.7	2	2.3	V
V <sub>DC</sub>	Input DC Level	Clamp Inactive	2.7	3	3.3	V
I <sub>IN</sub>	Leakage Current	1 input connected to 1 output		2	5	μA
I <sub>clamp</sub>	Clamp Current	V <sub>clamp</sub> - 200mV		0.9	3	mA

VIDEO OUTPUTS

R <sub>OUT</sub>	Output Resistance			15	50	Ω
Z <sub>HI</sub>	Output "off" Impedance	no load	50			kΩ
C <sub>HI</sub>	C <sub>OUT</sub> in 3-state	no load		3		pF
G1	Voltage Gain	f = 100kHz	0	0.5	1	dB
G2	Voltage Gain	f = 100kHz	6	6.5	7	dB
V <sub>sync</sub>	Top Level Sync (Y or CVBS)	G = 6.5dB, Clamp Active	1	1.25	2	V
V <sub>bias</sub>	Output Mean Level (chroma)	G = 0.5dB, Clamp Inactive	2	2.4	3	V
		G = 6.5dB, Clamp Inactive	3	3.4	4	V
	Isolation "off" State	f = 5MHz	60			dB
	Crosstalk Attenuation between Channels	f = 5MHz	50	60		dB
B	Bandwidth	C <sub>load</sub> = 20pF, G = 6.5dB at ± 0.5dB at ± 1dB at - 3dB		5		MHz
				10		
				21		

6425-03.TBL

## FUNCTIONAL DESCRIPTION

This device is controlled via the I<sup>2</sup>C bus. 4 addresses can be selected by a 4-level detector on Pin 7, thus enabling parallel connection of 4 devices.

Via the I<sup>2</sup>C bus :

- The input signals can be clamped at their negative peak (top sync).
- The gain factor of the outputs can be selected

between 0.5 and 6.5dB.

- Each of the 6 inputs can be connected to the 8 outputs.
- Each output can individually be set in a high impedance state.

Two internal SVHS mixers will add the selected Y and C inputs. Two dedicated outputs will have the option to select this added signal also.

I<sup>2</sup>C BUS CHARACTERISTICS

Symbol	Parameter	Test Conditions	Standard Mode		Fast Mode		Unit
			Min.	Max.	Min.	Max.	

## SCL

V <sub>IL</sub>	Low Level Input Voltage		- 0.3	+ 1.5	- 0.3	+ 1.5	V
V <sub>IH</sub>	High Level Input Voltage		3.0	V <sub>CC</sub> + 0.5	3.0	V <sub>CC</sub> + 0.5	V
I <sub>LI</sub>	Input Leakage Current	V <sub>I</sub> = 0 to V <sub>DD</sub>	- 10	+ 10	- 10	+ 10	μA
f <sub>SCL</sub>	Clock Frequency		0	100	0	400	kHz
t <sub>R</sub>	Input Rise Time	1.5V to 3V		1000		300	ns
t <sub>F</sub>	Input Fall Time	1.5V to 3V		300		300	ns
C <sub>I</sub>	Input Capacitance			10		10	pF

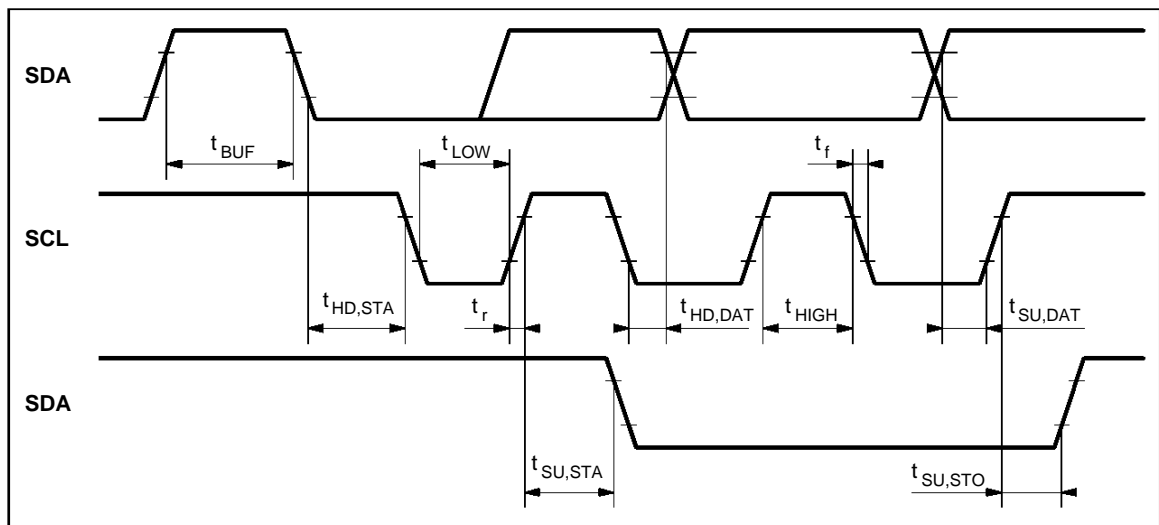
## SDA

V <sub>IL</sub>	Low Level Input Voltage		- 0.3	+ 1.5	- 0.3	+ 1.5	V
V <sub>IH</sub>	High Level Input Voltage		3.0	V <sub>CC</sub> + 0.5	3.0	V <sub>CC</sub> + 0.5	V
I <sub>LI</sub>	Input Leakage Current	V <sub>I</sub> = 0 to V <sub>DD</sub>	- 10	+ 10	- 10	+ 10	μA
C <sub>I</sub>	Input Capacitance			10		10	pF
t <sub>R</sub>	Input Rise Time	1.5V to 3V		1000		300	ns
t <sub>F</sub>	Input Fall Time	1.5V to 3V		300		300	ns
V <sub>OL</sub>	Low Level Output Voltage	I <sub>OL</sub> = 3mA		0.4		0.4	V
t <sub>F</sub>	Output Fall Time	3V to 1.5V		250		250	ns
C <sub>L</sub>	Load Capacitance			400		400	pF

## TIMING

t <sub>LOW</sub>	Clock Low Period		4.7		1.3		μs
t <sub>HIGH</sub>	Clock High Period		4.0		0.6		μs
t <sub>SU, DAT</sub>	Data Set-up Time		250		100		ns
t <sub>HD, DAT</sub>	Data Hold Time		0	340	0	340	ns
t <sub>SU, STO</sub>	Set-up Time from Clock High to Stop		4.0		0.6		μs
t <sub>BUF</sub>	Start Set-up Time following a Stop		4.7		1.3		μs
t <sub>HD, STA</sub>	Start Hold Time		4.0		0.6		μs
t <sub>SU, STA</sub>	Start Set-up Time following Clock Low-to High Transition		4.7		0.6		μs

6425-04.TBL

Figure 1 : I<sup>2</sup>C Bus Timing

6425-04.EPS

## I<sup>2</sup>C BUS SELECTION

### I<sup>2</sup>C Bus Slave Address

Address	A6	A5	A4	A3	A2	A1	A0	R/W
Value	1	0	0	1	0	A1	A0	0

### Sub-address I<sup>2</sup>C

Symbol	Parameter	Conditions	Pin 7 Voltage (typ.)	Unit
Vsub	Slave address HEXA	Sub-address (see note)		
1	90	A1 A0 0 0	GND	V
2	96	1 1	V <sub>CC</sub>	V
3	94	1 0	1/3	V <sub>CC</sub>
4	92	0 1	2/3	V <sub>CC</sub>

**Note :** The first 3 levels are defined by connecting the sub-address pin to the appropriate level. Sub-address 4 will be selected when this pin is left open.

### 1st Data Byte

	b7	b6	b5	b4	b3	b2	b1	b0	Selected Output
	a2	a1	a0	*	*	*	*	I	
Output Select	0	0	0	*	*	*	*	0	OUT1
	0	0	1	*	*	*	*	0	OUT2
	0	1	0	*	*	*	*	0	OUT3
	0	1	1	*	*	*	*	0	OUT4
	1	0	0	*	*	*	*	0	OUT5
	1	0	1	*	*	*	*	0	OUT6
	1	1	0	*	*	*	*	0	OUT7
	1	1	1	*	*	*	*	0	OUT8

### 2nd Data Byte

	b7	b6	b5	b4	b3	b2	b1	b0	Action
	a2	a1	a0	*	*	*	*	I	
Input Select	0	0	0	*	*	*	*	1	IN1
	0	0	1	*	*	*	*	1	IN2
	0	1	0	*	*	*	*	1	IN3
	0	1	1	*	*	*	*	1	IN4
	1	0	0	*	*	*	*	1	IN5
	1	0	1	*	*	*	*	1	IN6
Clamp	*	*	*	0	*	*	*	1	Free
	*	*	*	1	*	*	*	1	Clamped
Gain	*	*	*	*	0	*	*	1	0.5dB
	*	*	*	*	1	*	*	1	6.5dB
Mixer	*	*	*	*	*	0	*	1	Disabled
	*	*	*	*	*	1	*	1	Enabled
Tri-state	*	*	*	*	*	*	0	1	Low impedance
	*	*	*	*	*	*	1	1	Tri-state

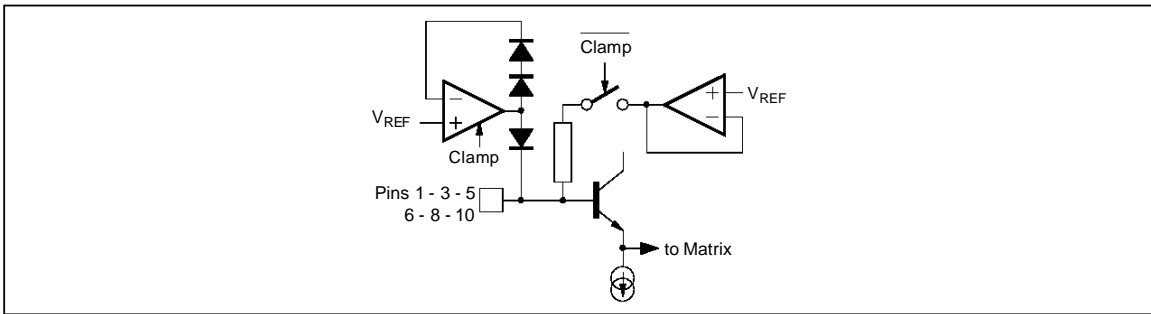
### Power On Reset

When active : outputs in 3-state, inputs are clamped.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Reset	Start of Reset	Incr. V <sub>CC</sub>			2.5	V
	End of Reset	Decr. V <sub>CC</sub> Incr. V <sub>CC</sub>	4.5		4.2	V

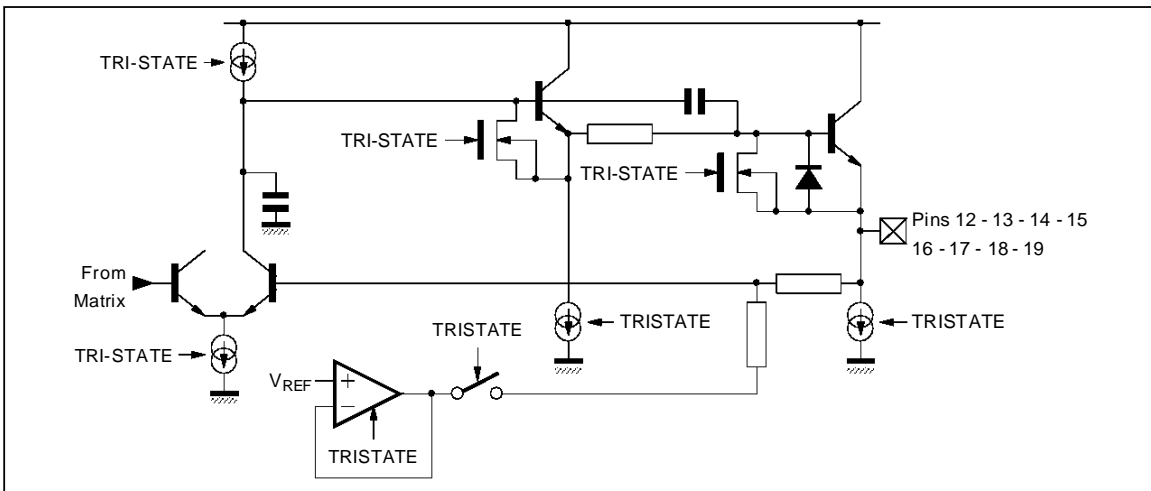
**PIN CONFIGURATIONS**

**Figure 2 : Video IN**



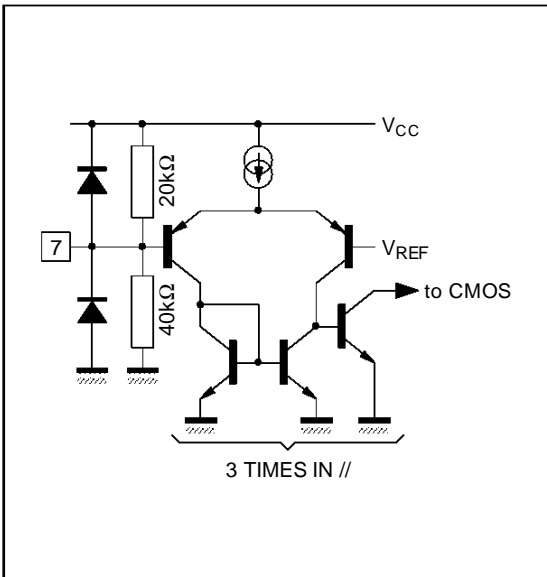
6425-06.EPS

**Figure 3 : Video OUT**



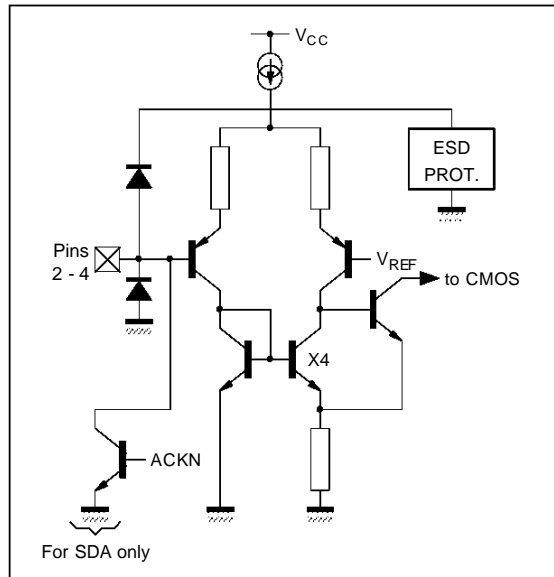
6425-06.EPS

**Figure 4 : PROG Pin**



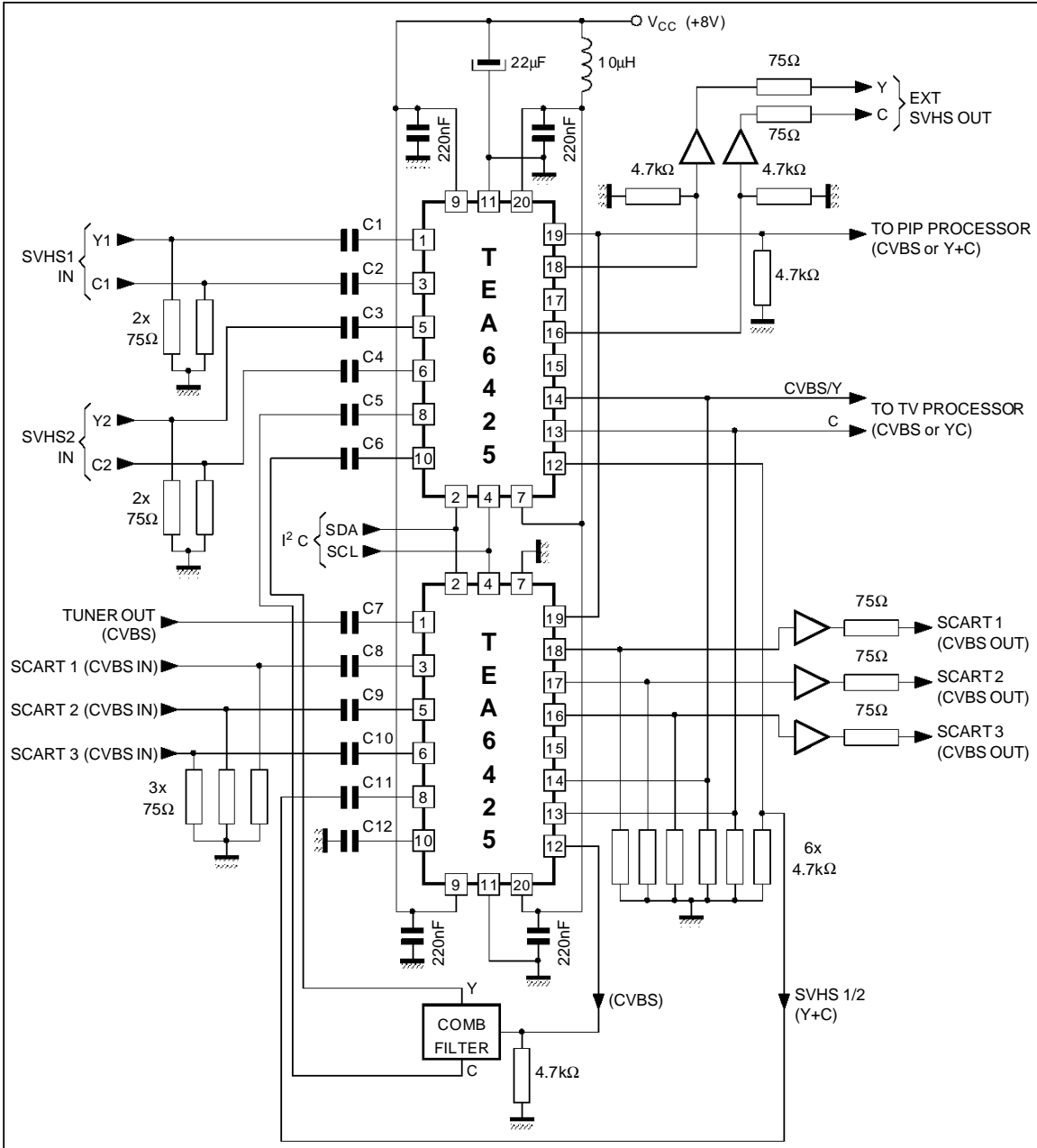
6425-07.EPS

**Figure 5 : Bus Inputs**



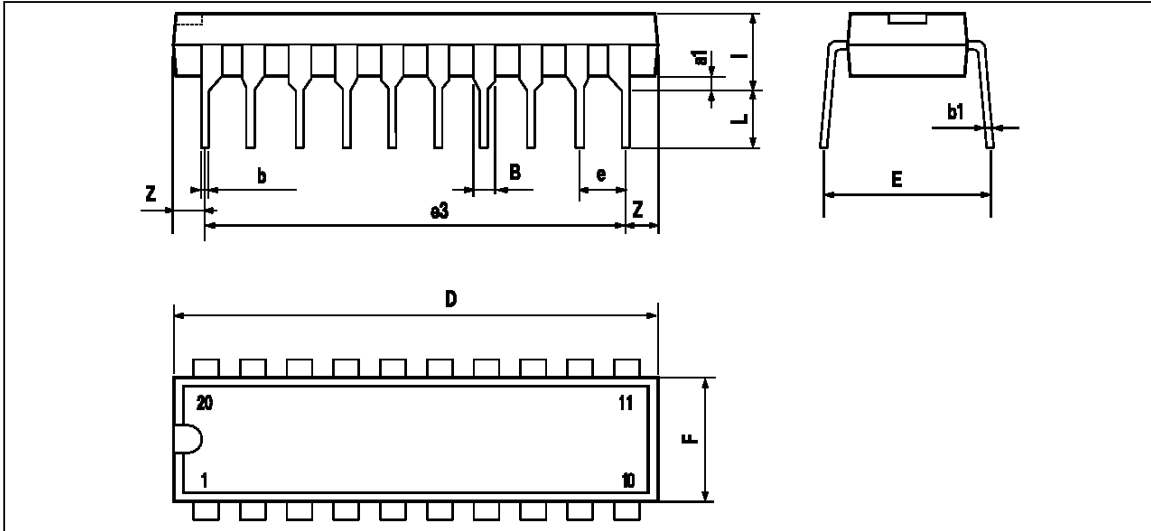
6425-08.EPS

TYPICAL APPLICATION



6425-09.EPS

**PACKAGE MECHANICAL DATA**  
20 PINS - PLASTIC DIP

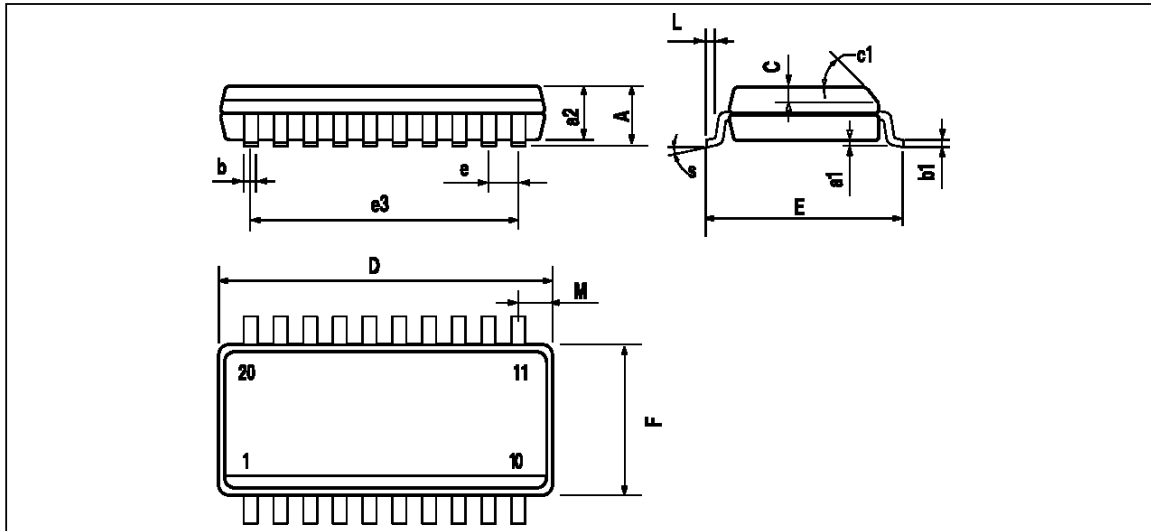


PM-DIP20.EPS

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

**PACKAGE MECHANICAL DATA**  
20 PINS - PLASTIC MICROPACKAGE



PM-SO20.EPS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			2.65			0.104
a1	0.1		0.3	0.004		0.012
a2			2.45			0.096
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	12.6		13.0	0.496		0.512
E	10		10.65	0.394		0.419
e		1.27			0.050	
e3		11.43			0.450	
F	7.4		7.6	0.291		0.299
L	0.5		1.27	0.020		0.050
M			0.75			0.030
S	8° (Max.)					

SO20.TBL

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