

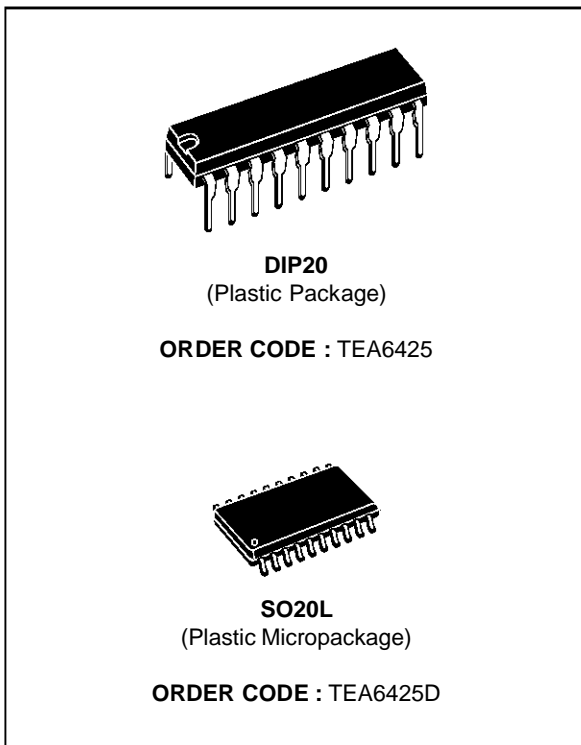
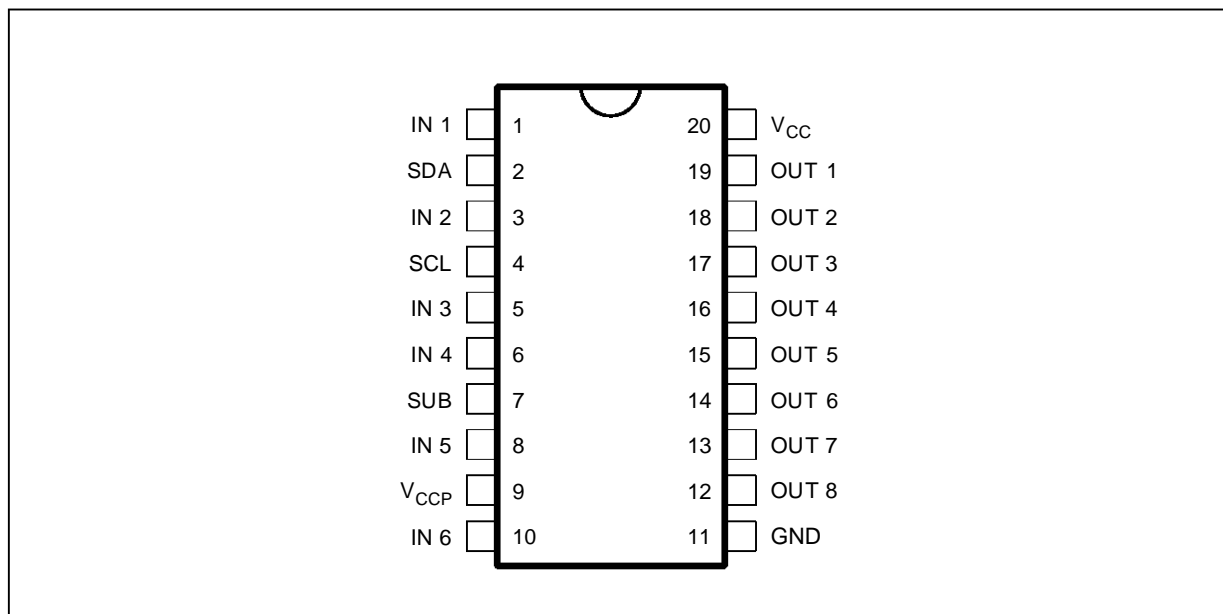
VIDEO CELLULAR MATRIX

- 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
- I²C BUS CONTROL

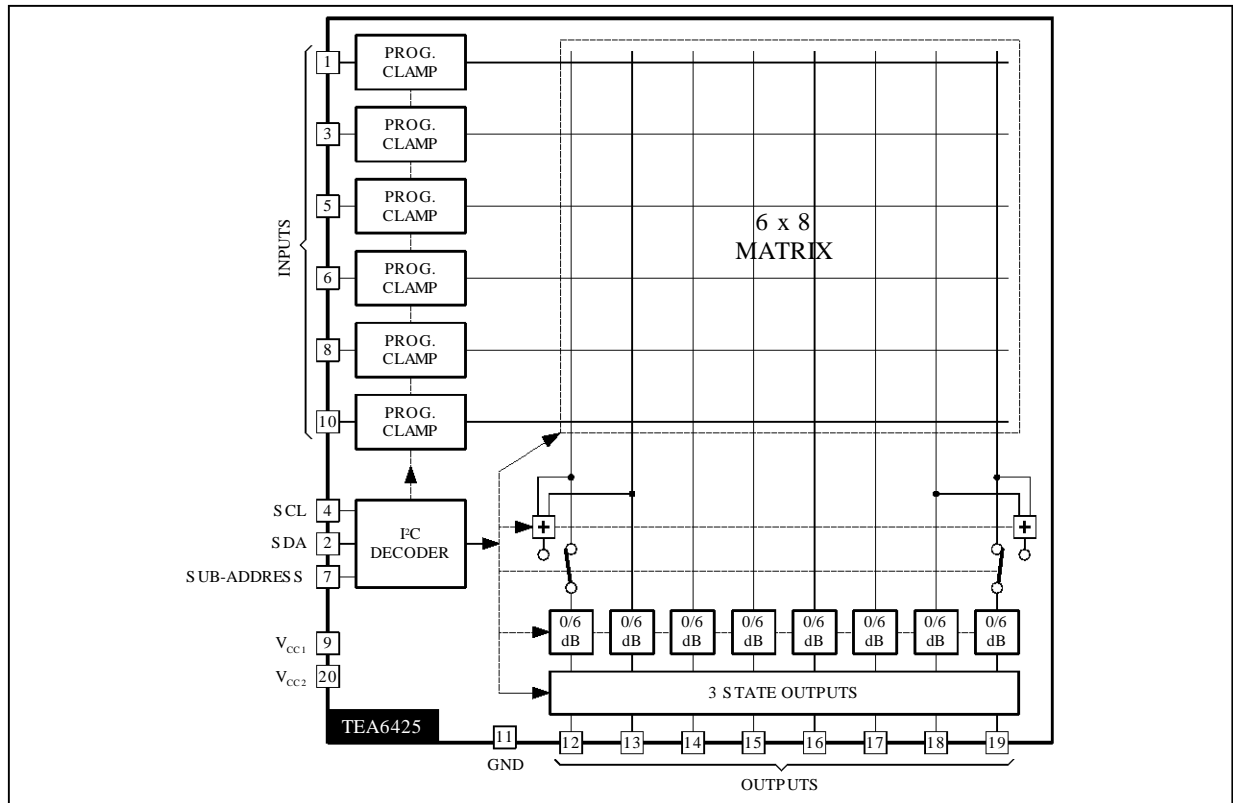
DESCRIPTION

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 I²C 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

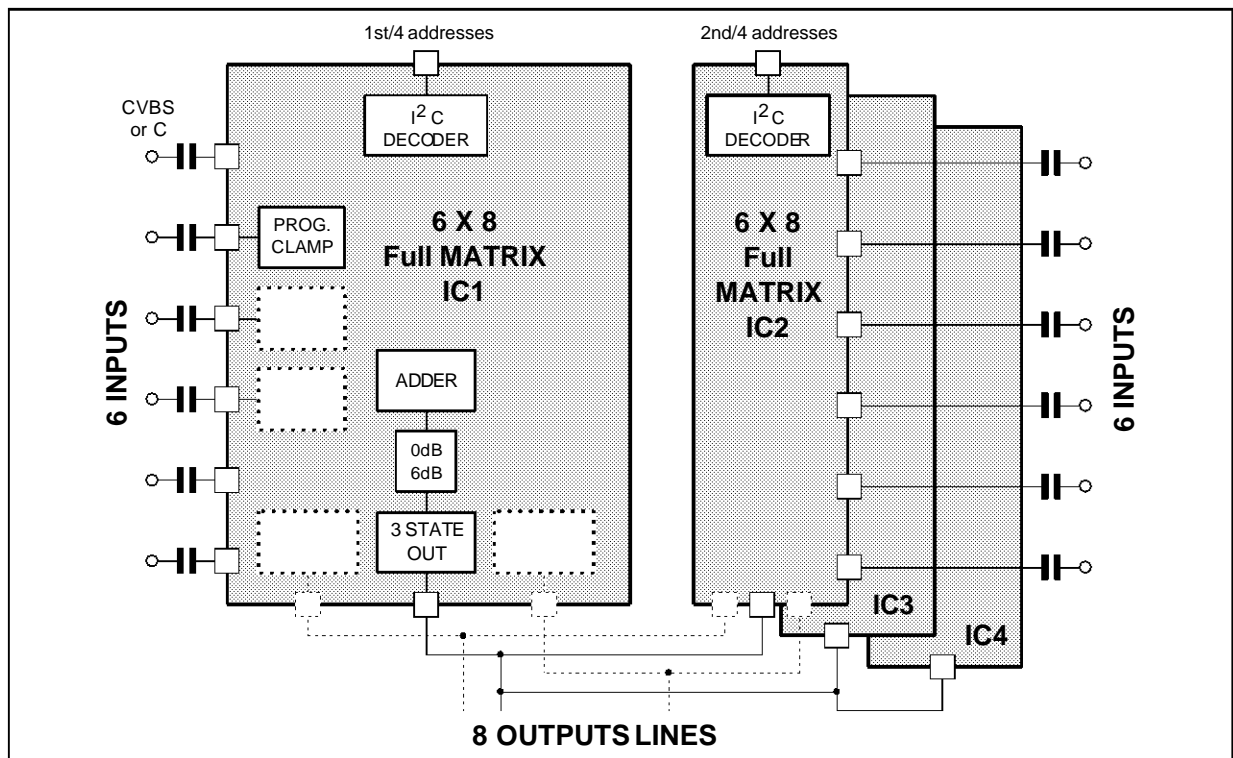


BLOCK DIAGRAM



6425-02.EPS

CELLULAR MATRICE CONNECTIONS



6425-03.EPS

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-------------------|-------------------------------|--------------------|------|
| V _{CC} | Supply Voltage | 12 | V |
| V _I | Voltage at Pin i to GND | 0, V _{CC} | V |
| T _{oper} | Operating Ambient Temperature | 0, + 70 | °C |
| T _{stg} | Storage Temperature | -20, + 150 | °C |

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THERMAL DATA

| Symbol | Parameter | Value | Unit |
|----------------------|-------------------------------------|---------|------|
| R _{th(j-a)} | Junction-ambient Thermal Resistance | Min. 80 | °C/W |

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ELECTRICAL CHARACTERISTICS (V_{CC} = 8V, T_{amb} = 25°C, V_{IN} = 1V, Gain = 6.5dB, C_{load} = 20pF, R_{load} = 4.7kΩ ; Gain condition, clamp and 3-state are controlled by I²C bus, unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--------------------------|-----------------|------|------|------|------|
| SUPPLY | | | | | | |
| V _{CC} | Supply Voltage | | 7.2 | 8 | 8.8 | V |
| I _{CC} | Supply Current | | | 45 | 60 | mA |
| RR | Supply Voltage Rejection | f = 1kHz | 40 | 46 | | dB |

VIDEO INPUTS (clamping at bottom sync level)

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

VIDEO OUTPUTS

| | | | | | | |
|-------------------|--|---|----|------|----|----|
| R _{OUT} | Output Resistance | | | 15 | 50 | Ω |
| Z _{HI} | Output "off" Impedance | no load | 50 | | | kΩ |
| C _{HI} | C _{OUT} 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 _{sync} | Top Level Sync (Y or CVBS) | G = 6.5dB, Clamp Active | 1 | 1.25 | 2 | V |
| V _{bias} | 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 _{load} = 20pF, G = 6.5dB at ± 0.5dB at ± 1dB at - 3dB | | | | |
| | | | | 5 | | |
| | | | | 10 | | |
| | | | | 21 | | |

6425-03.TBL

FUNCTIONAL DESCRIPTION

This device is controlled via the I²C bus. 4 addresses can be selected by a 4-level detector on Pin 7, thus enabling parallel connection of 4 devices.

Via the I²C 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.

I²C BUS CHARACTERISTICS

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

SCL

| | | | | | | | |
|------------------|--------------------------|---------------------------------------|-------|-----------------------|-------|-----------------------|-----|
| V _{IL} | Low Level Input Voltage | | - 0.3 | + 1.5 | - 0.3 | + 1.5 | V |
| V _{IH} | High Level Input Voltage | | 3.0 | V _{CC} + 0.5 | 3.0 | V _{CC} + 0.5 | V |
| I _{LI} | Input Leakage Current | V _I = 0 to V _{DD} | - 10 | + 10 | - 10 | + 10 | μA |
| f _{SCL} | Clock Frequency | | 0 | 100 | 0 | 400 | kHz |
| t _R | Input Rise Time | 1.5V to 3V | | 1000 | | 300 | ns |
| t _F | Input Fall Time | 1.5V to 3V | | 300 | | 300 | ns |
| C _I | Input Capacitance | | | 10 | | 10 | pF |

SDA

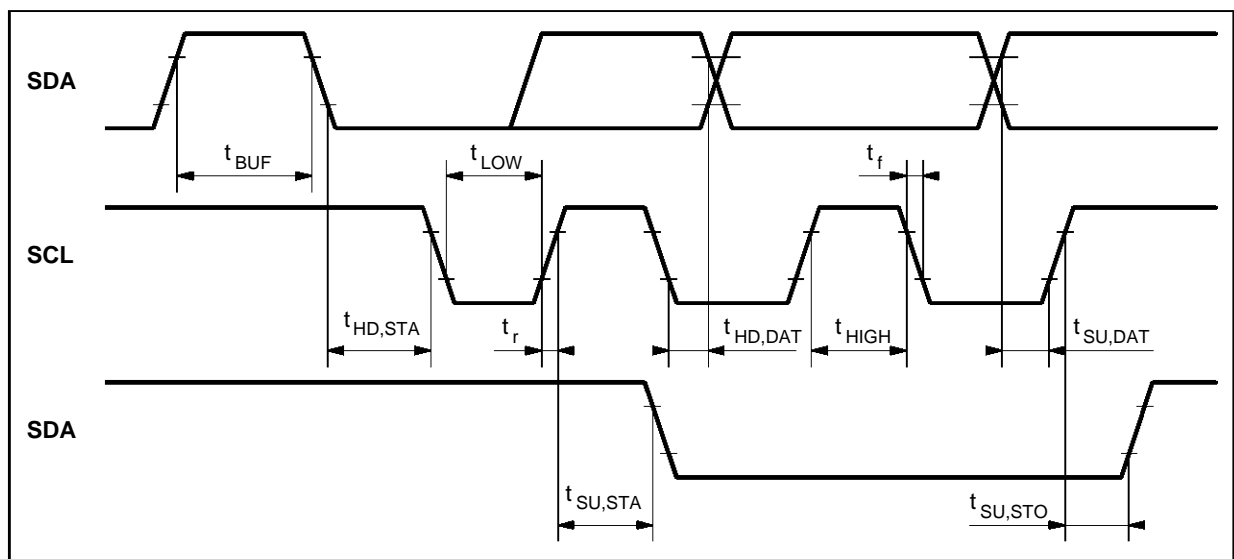
| | | | | | | | |
|-----------------|--------------------------|---------------------------------------|-------|-----------------------|-------|-----------------------|----|
| V _{IL} | Low Level Input Voltage | | - 0.3 | + 1.5 | - 0.3 | + 1.5 | V |
| V _{IH} | High Level Input Voltage | | 3.0 | V _{CC} + 0.5 | 3.0 | V _{CC} + 0.5 | V |
| I _{LI} | Input Leakage Current | V _I = 0 to V _{DD} | - 10 | + 10 | - 10 | + 10 | μA |
| C _I | Input Capacitance | | | 10 | | 10 | pF |
| t _R | Input Rise Time | 1.5V to 3V | | 1000 | | 300 | ns |
| t _F | Input Fall Time | 1.5V to 3V | | 300 | | 300 | ns |
| V _{OL} | Low Level Output Voltage | I _{OL} = 3mA | | 0.4 | | 0.4 | V |
| t _F | Output Fall Time | 3V to 1.5V | | 250 | | 250 | ns |
| C _L | Load Capacitance | | | 400 | | 400 | pF |

TIMING

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

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Figure 1 : I²C Bus Timing



6425-04.EPS

I²C BUS SELECTION

I²C Bus Slave Address

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

Sub-address I²C

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

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 |

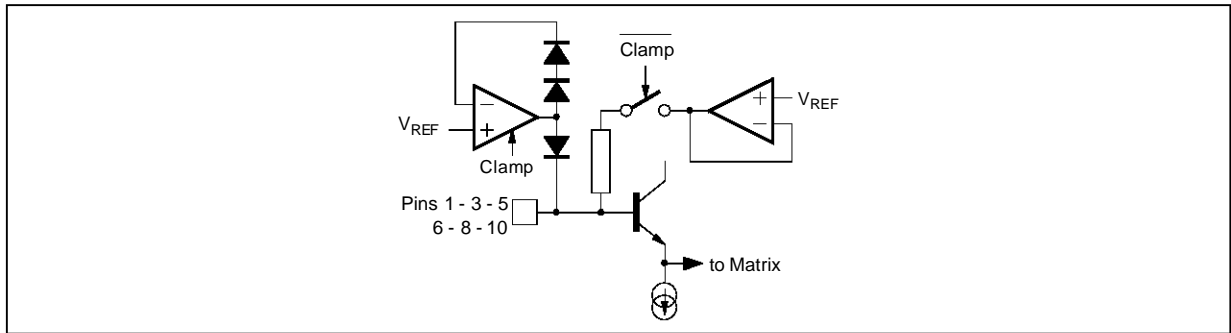
Power On Reset

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

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------|----------------|-----------------------|------|------|------|------|
| Reset | Start of Reset | Incr. V _{CC} | | | 2.5 | V |
| | | Decr. V _{CC} | | | 4.2 | V |
| | End of Reset | Incr. V _{CC} | 4.5 | | | V |

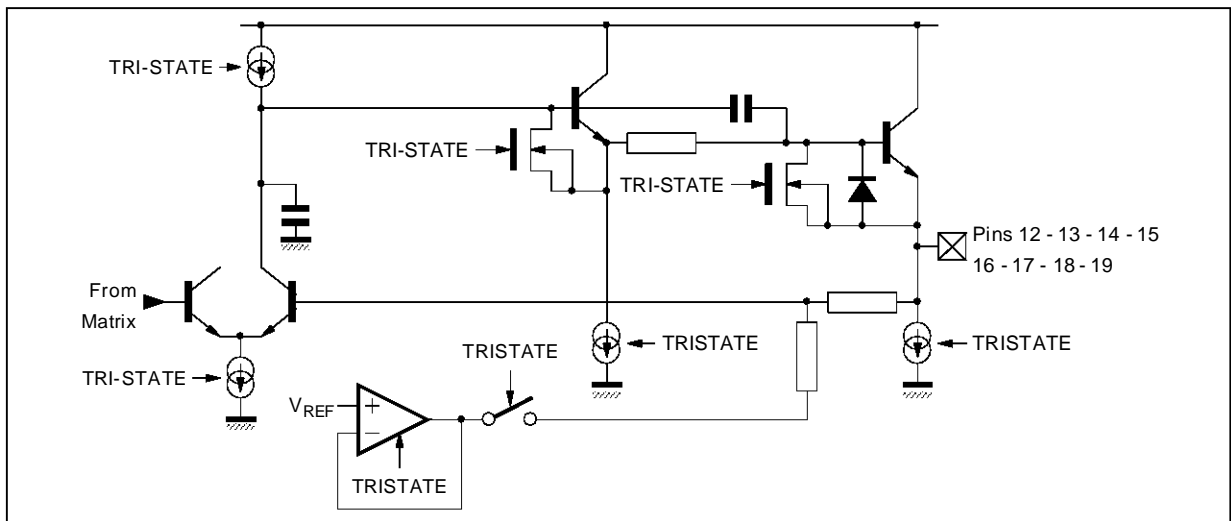
PIN CONFIGURATIONS

Figure 2 : Video IN



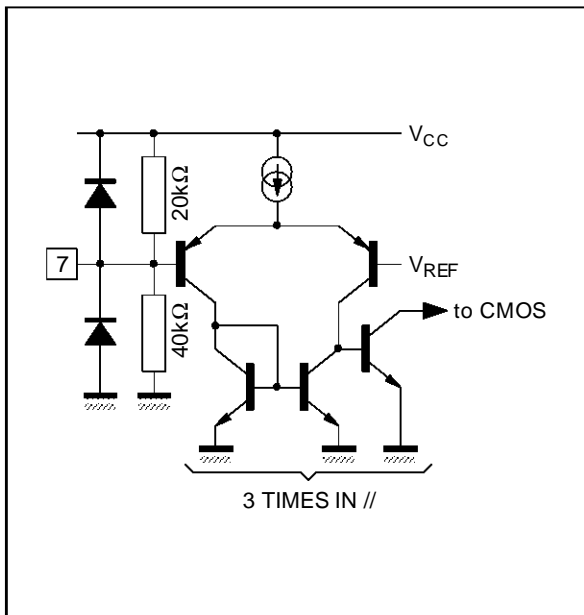
6425-05.EPS

Figure 3 : Video OUT



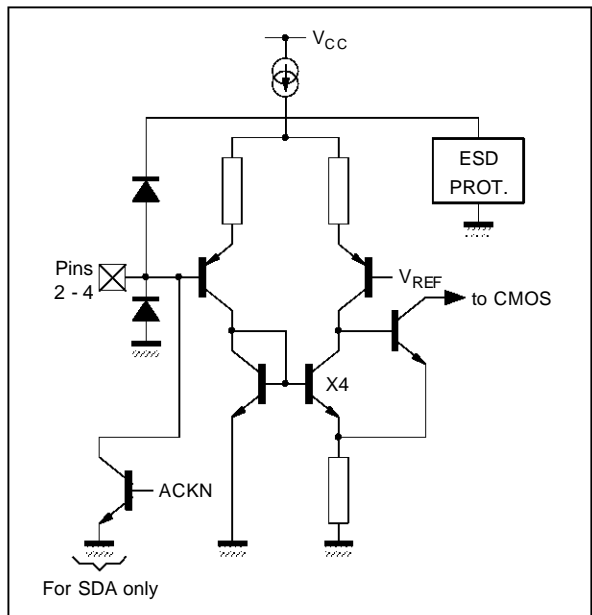
6425-06.EPS

Figure 4 : PROG Pin



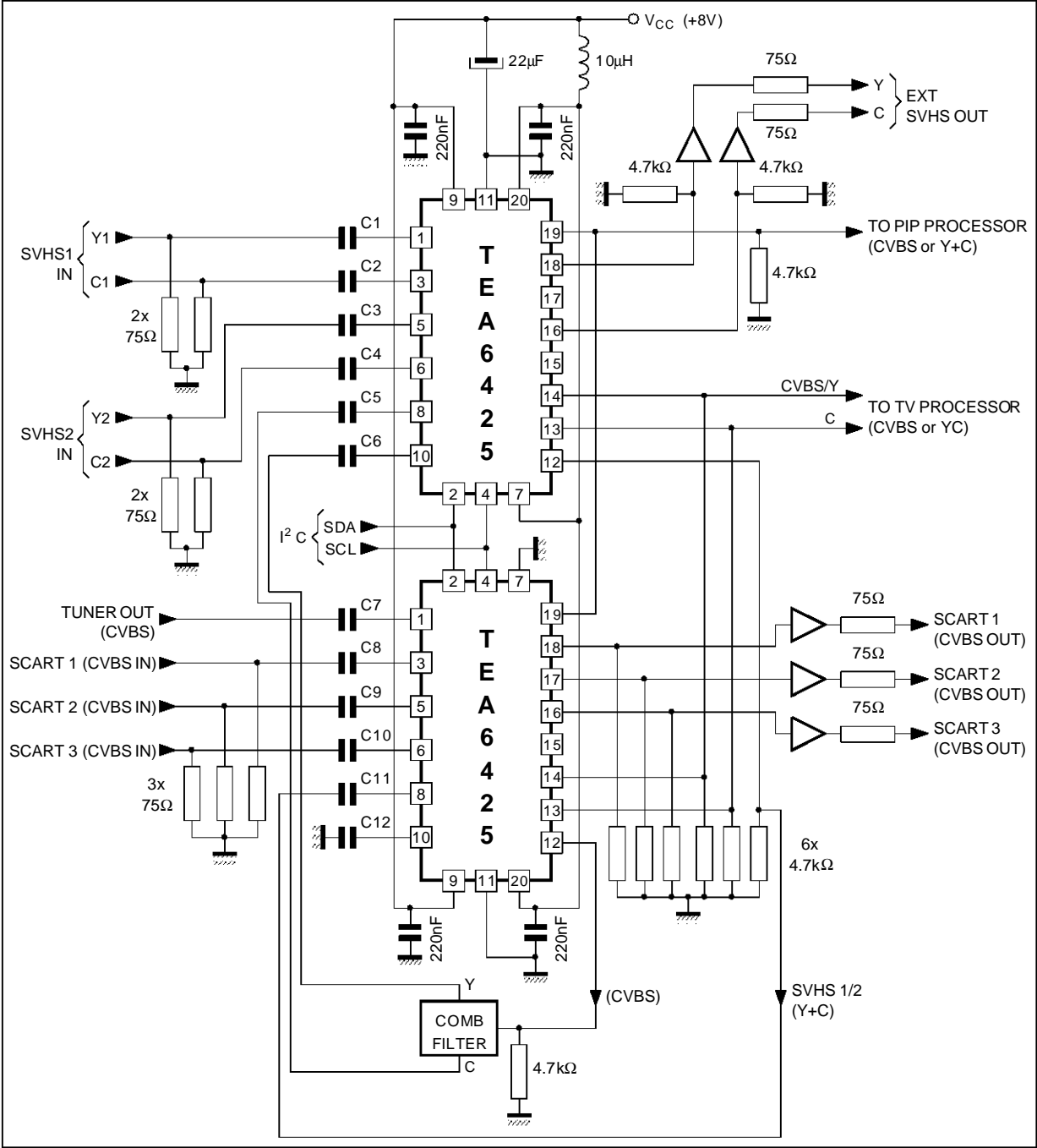
6425-07.EPS

Figure 5 : Bus Inputs



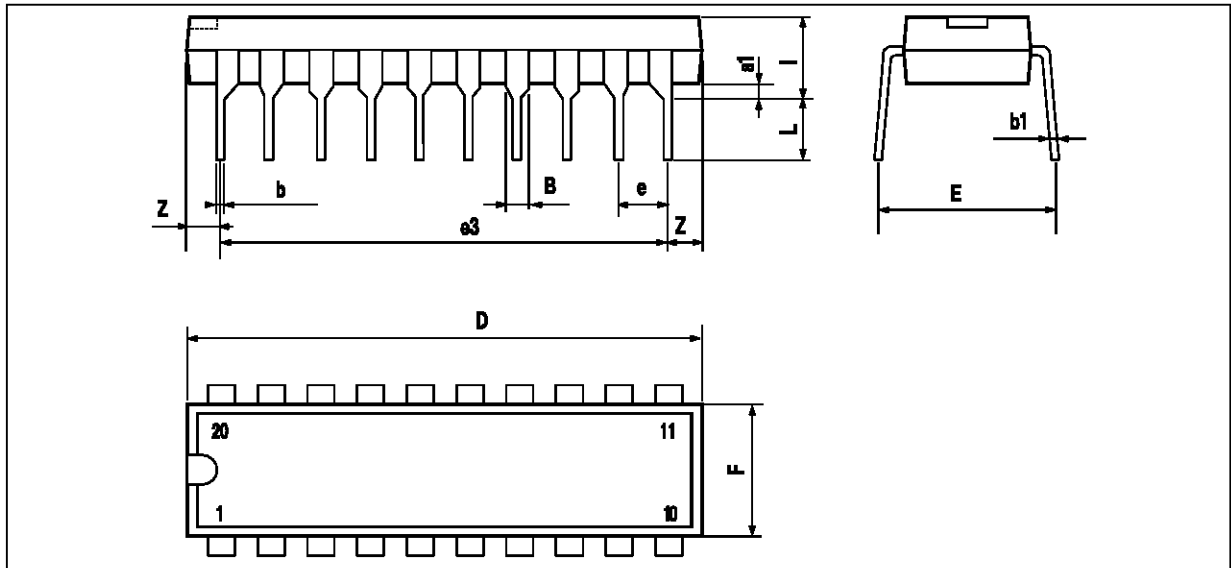
6425-08.EPS

TYPICAL APPLICATION



6425-09.EPS

PACKAGE MECHANICAL DATA
20 PINS - PLASTIC DIP

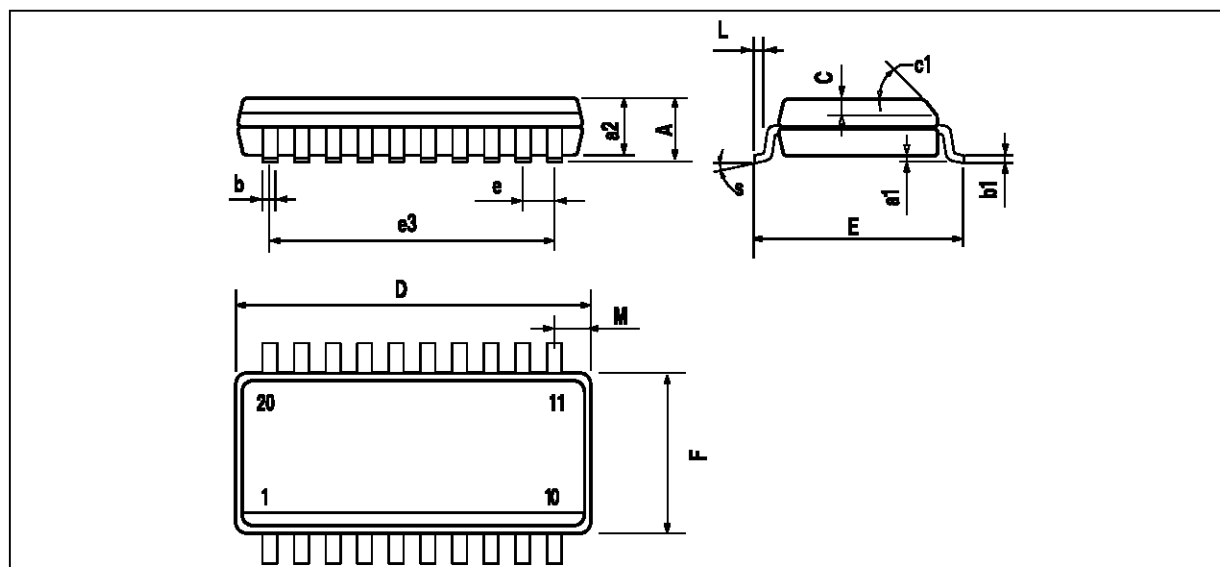


PM-DIP20.EPS

| 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 |
| l | | | 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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