# DATA SHEET

| Part No. | AN15876A |
|---|---|
| Package Code No. | QFS100-P-1414A |

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## Contents

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# AN15876A
## The video switch IC for HDTV

### ■ Overview

AN15876A has the video switch portion which consists of a seven-channel output in a nineteen-channel input, first blanking selection switch, HV through output, Low-pass filter function and a 75 Ω-driver output function.  It contributes to the rationalization design of a television system.

### ■ Features
- 75 Ω-driver output for YCV (Output 3, Output 4, Output 5)
- Output 1 & Output 2 can be switched between LPF (6.75 MHz, 13.5 MHz, or 27 MHz) & through
- Output 3, Output 4 & Output 5 always have LPF (6.75 MHz)
- Output 7 can be switched between LPF (6.75 MHz or 13.5 MHz) & through
- Output 1 can be switched among 0 dB, 1.12 dB, 0.94 dB or mute
- Output 2 can be switched among 0 dB, 6.0 dB, 5.85 dB or mute
- Output 6, Output 7 can be switched among 0 dB, 6.0 dB, or mute
- Various input mode can be selected by using flexible internal switch
- Comparators for S-pin detection × 3
- Comparators for D-pin detection × 7
- Comparators for Aspect ratio × 5 (4 : 3 / 4 : 3 letter box / 16 : 9)
- Each output channel has a power save mode
- HV through output
- First blanking pulse selection switch
- General output × 4
- Display flag of state change
- High frequency (0 dB at 100 MHz  (OUT1))
- Support the I$^2$C-bus
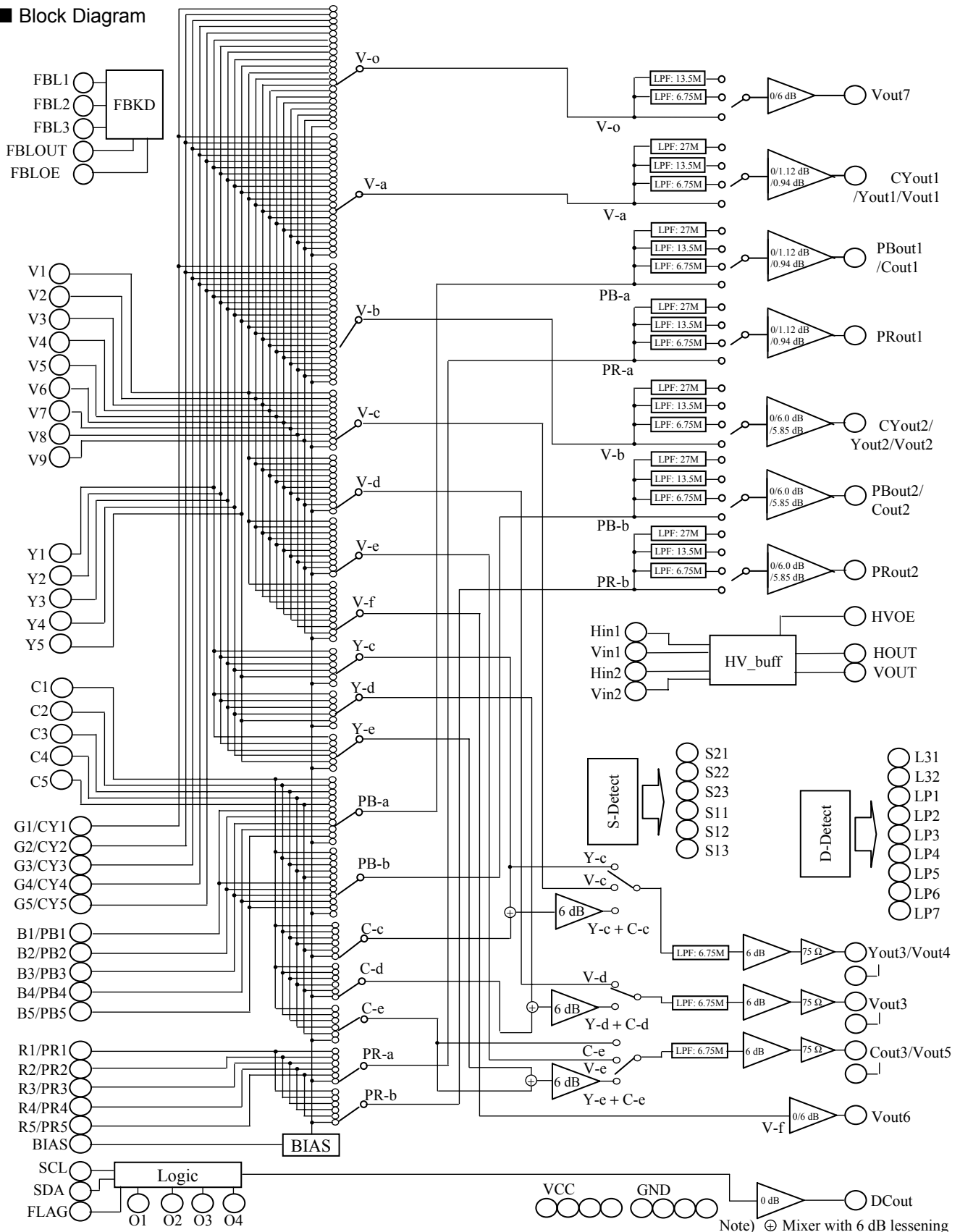
### ■ Applications
- For color TV

### ■ Package
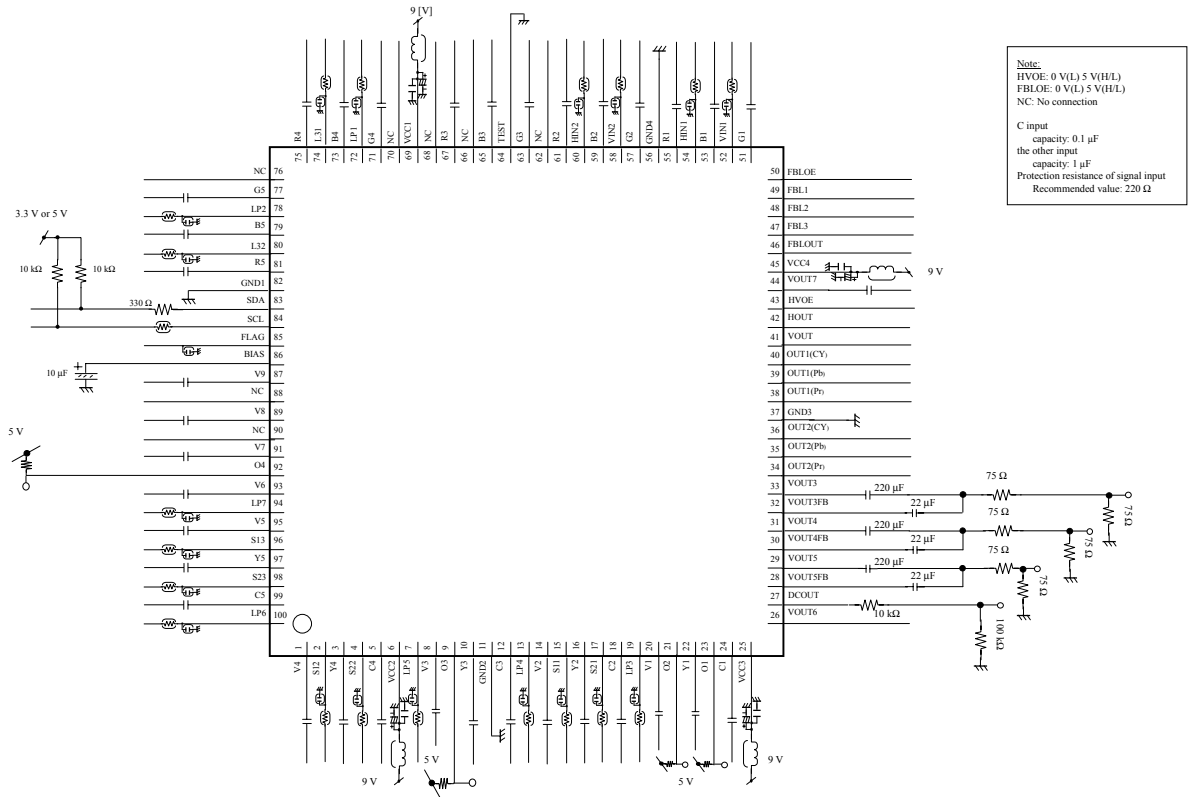- 100-pin plastic quad flat package (QFP type)

### ■ Type
- Silicon monolithic Bi-CMOS IC

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■ Block Diagram

Note) ⊕ Mixer with 6 dB lessening

■ Application Circuit Example

9 [V]

Note:
HVOE: 0 V(L) 5 V(H/L)
FBLOE: 0 V(L) 5 V(H/L)
NC: No connection

C input
    capacity: 0.1 μF
the other input
    capacity: 1 μF
Protection resistance of signal input
    Recommended value: 220 Ω

R4 | L31 | B4 | LP1 | G4 | NC | VCC1 | NC | R3 | NC | B3 | TEST | G3 | NC | R2 | HIN2 | B2 | VIN2 | G2 | GND4 | R1 | HIN1 | B1 | VIN1 | G1

75 | 74 | 73 | 72 | 71 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51

NC 76    50 FBLOE
G5 77    49 FBL1
LP2 78    48 FBL2
B5 79    47 FBL3
L32 80    46 FBLOUT
R5 81    45 VCC4
GND1 82    44 VOUT7
SDA 83    43 HVOE
SCL 84    42 HOUT
FLAG 85    41 VOUT
BIAS 86    40 OUT1(CY)
V9 87    39 OUT1(Pb)
NC 88    38 OUT1(Pr)
V8 89    37 GND3
NC 90    36 OUT2(CY)
V7 91    35 OUT2(Pb)
O4 92    34 OUT2(Pr)
V6 93    33 VOUT3
LP7 94    32 VOUT3FB
V5 95    31 VOUT4
S13 96    30 VOUT4FB
Y5 97    29 VOUT5
S23 98    28 VOUT5FB
C5 99    27 DCOUT
LP6 100    26 VOUT6

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25

V4 | S12 | Y4 | S22 | C4 | VCC2 | LP5 | V3 | Y3 | GND2 | LP4 | V2 | S11 | Y2 | S21 | C2 | LP3 | V1 | O2 | Y1 | O1 | C1 | VCC3

3.3 V or 5 V
10 kΩ   10 kΩ
330 Ω
10 μF
5 V

9 V

220 μF
22 μF
220 μF
22 μF
220 μF
22 μF

75 Ω
75 Ω
75 Ω
75 Ω
75 Ω
75 Ω
75 Ω
100 kΩ
10 kΩ

9 V
5 V
9 V
5 V

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■ Pin Descriptions

| Pin No. | Pin name | Type | Description |
|---|---|---|---|
| 1 | V4 | Input | V4 signal input |
| 2 | S12 | Input | Pin Status detection |
| 3 | Y4 | Input | Y4 signal input |
| 4 | S22 | Input | Aspect ratio detection |
| 5 | C4 | Input | C4 signal input |
| 6 | VCC2 | Power supply | 9.0 V power supply |
| 7 | LP5 | Input | Pin Status detection |
| 8 | V3 | Input | V3 signal input |
| 9 | O3 | Output | Control signal output pin |
| 10 | Y3 | Input | Y3 signal input |
| 11 | GND2 | Ground | Ground |
| 12 | C3 | Input | C3 signal input |
| 13 | LP4 | Input | Pin Status detection |
| 14 | V2 | Input | V2 signal input |
| 15 | S11 | Input | Pin Status detection |
| 16 | Y2 | Input | Y2 signal input |
| 17 | S21 | Input | Aspect ratio detection |
| 18 | C2 | Input | C2 signal input |
| 19 | LP3 | Input | Pin Status detection |
| 20 | V1 | Input | V1 signal input |
| 21 | O2 | Output | Control signal output pin |
| 22 | Y1 | Input | Y1 signal input |
| 23 | O1 | Output | Control signal output pin |
| 24 | C1 | Input | C1 signal input |
| 25 | VCC3 | Power supply | 9.0 V power supply |
| 26 | VOUT6 | Output | VOUT6 signal output |
| 27 | DCOUT | Output | Output DC voltage that can be controlled |
| 28 | VOUT5FB | Output | Feed Back signal  for VOUT5 output |
| 29 | VOUT5 | Output | VOUT5 signal output |
| 30 | VOUT4FB | Output | Feed Back signal  for VOUT4 output |
| 31 | VOUT4 | Output | VOUT4 signal output |
| 32 | VOUT3FB | Output | Feed Back signal  for VOUT3 output |

■ Pin Descriptions (continued)

| Pin No. | Pin name | Type | Description |
|---|---|---|---|
| 33 | VOUT3 | Output | VOUT3 signal output |
| 34 | OUT2(Pr) | Output | OUT2(Pr) signal output |
| 35 | OUT2(Pb) | Output | OUT2(Pb) signal output |
| 36 | OUT2(CY) | Output | OUT2(CY) signal output |
| 37 | GND3 | Ground | Ground |
| 38 | OUT1(Pr) | Output | OUT1(Pr) signal output |
| 39 | OUT1(Pb) | Output | OUT1(Pb) signal output |
| 40 | OUT1(CY) | Output | OUT1(CY) signal output |
| 41 | VOUT | Output | Independent V signal output |
| 42 | HOUT | Output | Independent H signal output |
| 43 | HVOE | Input | Independent signal  output control |
| 44 | VOUT7 | Output | VOUT7  signal output |
| 45 | VCC4 | Power supply | 9.0 V power supply |
| 46 | FBLOUT | Output | First Blanking signal output |
| 47 | FBL3 | Input | First Blanking signal input |
| 48 | FBL2 | Input | First Blanking signal input |
| 49 | FBL1 | Input | First Blanking signal input |
| 50 | FBLOE | Input | First Blanking signal output control |
| 51 | G1 | Input | G1 signal input |
| 52 | VIN1 | Input | Independent V signal input 1 |
| 53 | B1 | Input | B1 signal input |
| 54 | HIN1 | Input | Independent H signal input 1 |
| 55 | R1 | Input | R1 signal input |
| 56 | GND4 | Ground | Ground |
| 57 | G2 | Input | G2 signal input |
| 58 | VIN2 | Input | Independent V signal input 2 |
| 59 | B2 | Input | B2 signal input |
| 60 | HIN2 | Input | Independent H signal input 2 |
| 61 | R2 | Input | R2 signal input |
| 62 | NC | — | N.C. |
| 63 | G3 | Input | G3 signal input |
| 64 | TEST | input | Test pin |

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## ■ Pin Descriptions (continued)

| Pin No. | Pin name | Type | Description |
|---------|----------|------|-------------|
| 65 | B3 | Input | B3 signal input |
| 66 | NC | — | N.C. |
| 67 | R3 | Input | R3 signal input |
| 68 | NC | — | N.C. |
| 69 | VCC1 | Power supply | 9.0 V power supply |
| 70 | NC | — | N.C. |
| 71 | G4 | Input | G4 signal input |
| 72 | LP1 | Input | Pin Status detection |
| 73 | B4 | Input | B4 signal input |
| 74 | L31 | Input | Aspect ratio detection |
| 75 | R4 | Input | R4 signal input |
| 76 | NC | — | N.C. |
| 77 | G5 | Input | G5 signal input |
| 78 | LP2 | Input | Pin Status detection |
| 79 | B5 | Input | B5 signal input |
| 80 | L32 | Input | Aspect ratio detection |
| 81 | R5 | Input | R5 signal input |
| 82 | GND1 | Ground | Ground |
| 83 | SDA | Input/Output | $I^2C$ bus data input |
| 84 | SCL | Input | $I^2C$ bus clock input |
| 85 | FLAG | Output | Read Flag signal output |
| 86 | BIAS | Output | Internal bias monitor |
| 87 | V9 | Input | V9 signal input |
| 88 | NC | — | N.C. |
| 89 | V8 | Input | V8 signal input |
| 90 | NC | — | N.C. |
| 91 | V7 | Input | V7 signal input |
| 92 | O4 | Output | Control signal output pin |
| 93 | V6 | Input | V6 signal input |
| 94 | LP7 | Input | Pin Status detection |
| 95 | V5 | Input | V5 signal input |
| 96 | S13 | Input | Pin Status detection |

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■ Pin Descriptions (continued)

| Pin No. | Pin name | Type | Description |
|---------|----------|------|-------------|
| 97 | Y5 | Input | Y5 signal  input |
| 98 | S23 | Input | Aspect ratio detection |
| 99 | C5 | Input | C5 signal  input |
| 100 | LP6 | Input | Pin Status detection |

■ Absolute Maximum Ratings

| A No. | Parameter | Symbol | Rating | Unit | Note |
|-------|-----------|--------|--------|------|------|
| 1 | Supply voltage | $V_{CC}$ | 10.0 | V | *1 |
| 2 | Supply current | $I_{CC}$ | 120 | mA | |
| 3 | Power dissipation | $P_D$ | 715 | mW | *2 |
| 4 | Operating ambient temperature | $T_{opr}$ | −20 to +75 | °C | *3 |
| 5 | Storage temperature | $T_{stg}$ | −55 to +150 | °C | *3 |

Note) *1:  The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.

*2:  The power dissipation shown is the value at $T_a$ = 75°C for the independent (unmounted) IC package.

*3:  Except for the power dissipation, operating ambient temperature, and storage temperature, all ratings are for $T_a$ = 25°C.

■ Operating Supply Voltage Range

| Parameter | Symbol | Range | Unit | Note |
|-----------|--------|-------|------|------|
| Supply voltage range | $V_{CC}$ | 8.5 to 9.5 | V | * |

Note)  *: The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.