

AN2458SH

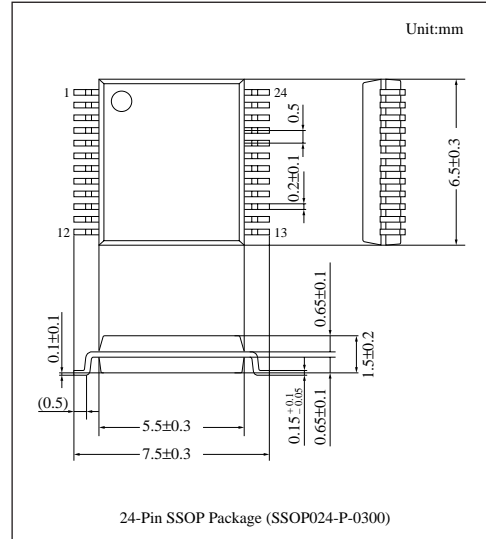
Color Encoder IC (NTSC/PAL) for CCD Video Camera

■ Overview

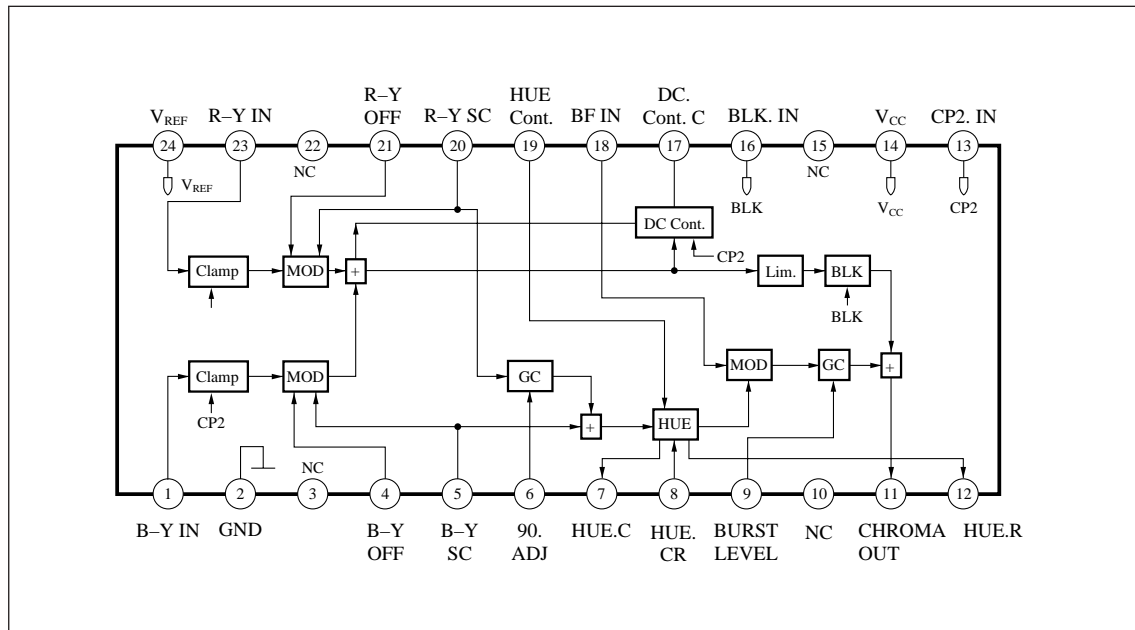
The AN2458SH is a color encoder IC for NTSC/PAL-compatible CCD video camera. It outputs chroma signal after modulation of inputted R-Y and B-Y color difference signals with subcarrier signals.

■ Features

- Compatible with NTSC and PAL
- Carrier leak adjustment available
- Built-in blanking circuit
- Color phase adjustment available
- Improved temperature characteristics of color phase shift (within $\pm 5^{\circ}\text{C}$)



■ Block Diagrams



■ Absolute Maximum Ratings

| Parameter | Symbol | Rating | Unit |
|--|-----------|-------------|------|
| Supply voltage | V_{CC} | 5.5 | V |
| Supply current | I_{CC} | 25 | mA |
| Power dissipation | P_D | 120 | mW |
| Operating ambient temperature ^{Note 1)} | T_{opr} | -20 to +75 | °C |
| Storage temperature ^{Note 1)} | T_{sig} | -55 to +125 | °C |

Note 1) $T_a=25^{\circ}\text{C}$ except operating ambient temperature and storage temperature.

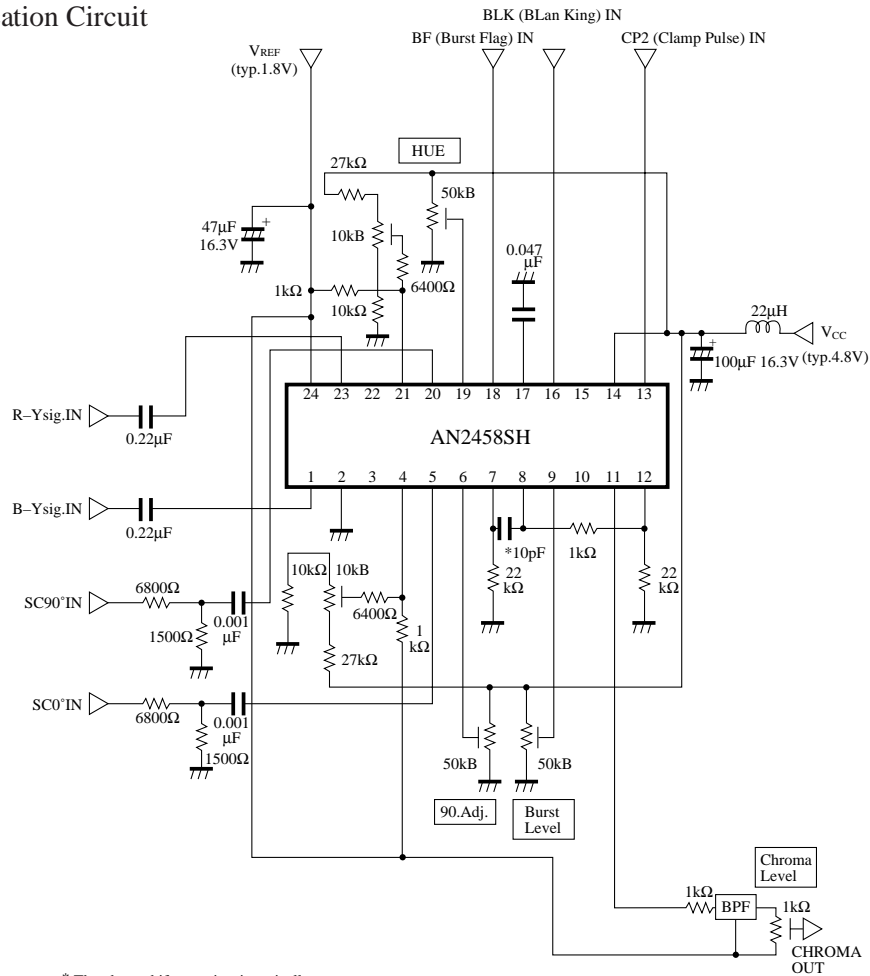
■ Recommended Operating Range ($T_a=25^{\circ}\text{C}$)

| Parameter | Symbol | Range |
|--------------------------------|----------|--------------|
| Operating supply voltage range | V_{CC} | 4.6V to 5.0V |

■ Electrical Characteristics ($T_a=25\pm 2^{\circ}\text{C}$)

| Parameter | Symbol | Condition | min | typ | max | Unit |
|------------------------|------------------|---|------|------|------|-------------------|
| Supply current | I_{CC} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ | 12.0 | 16.0 | 20.0 | mA |
| CP2 threshold 1 | $V_{TH (CP2-1)}$ | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ | 1.5 | 1.8 | 2.1 | V |
| CP2 threshold 2 | $V_{TH (CP2-2)}$ | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ | 2.0 | 2.4 | 2.8 | V |
| BLK threshold | $V_{TH (BLK)}$ | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ | 1.9 | 2.2 | 2.5 | V |
| Terminal voltage Pin5 | V_5 | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ difference from V_{REF} | -100 | 0 | 100 | mV |
| Terminal voltage Pin11 | V_{11} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ | 1.8 | 2.3 | 2.8 | V |
| Terminal voltage Pin20 | V_{20} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ difference from V_{REF} | -100 | 0 | 100 | mV |
| R-Y GAIN | G_{V1} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ 250mV _{P-P} input | 480 | 600 | 720 | mV _{P-P} |
| B-Y GAIN | G_{V2} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ 250mV _{P-P} input | -7.0 | -5.5 | -3.5 | dB |
| CHROMA CLIP | G_{V3} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ 600mV _{P-P} input | 0.5 | 3.0 | 4.5 | dB |
| BLK CONTROL | G_{V4} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ 250mV _{P-P} input $BLK=3V_{OP}$ | 300 | 600 | 900 | mV _{P-P} |
| BURST GC (1) | G_{V5} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ $V_9=V_{REF}$ | 290 | 350 | 430 | mV _{P-P} |
| BURST GC (2) | G_{V6} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ $V_9=V_{REF}\pm 0.5\text{V}$ | 1.5 | 3.0 | 4.5 | dB |
| BURST GC (3) | G_{V7} | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ $V_9=V_{REF}-0.5\text{V}$ | -6.0 | -4.5 | -2.5 | dB |
| BURST PHASE (1) | θ_1 | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ $V_{19}=V_{REF}+0.5\text{V}$ | -45 | -30 | -15 | deg |
| BURST PHASE (2) | θ_2 | $V_{CC}=4.8\text{V}$, $V_{REF}=1.8\text{V}$ $V_{19}=V_{REF}-0.5\text{V}$ | 0 | 15 | 30 | deg |

Application Circuit



* The phase-shift capacitor is typically 10 pF for both NTSC and PAL.

Pin Descriptions

| Pin No. | Pin name | Pin No. | Pin name |
|---------|------------------------------|---------|------------------------------|
| 1 | Color difference (B-Y) input | 13 | Clamp pulse input |
| 2 | GND | 14 | V _{CC} (4.8V typ.) |
| 3 | N. C. | 15 | N. C. |
| 4 | Subcarrier (0°) OFF | 16 | Blanking pulse input |
| 5 | Subcarrier(0°) input | 17 | DC playback capacitor |
| 6 | 90° adjustment | 18 | Burst flag input |
| 7 | Phase-shift capacitor | 19 | Phase adjustment |
| 8 | Phase-shift capacitor | 20 | Subcarrier (90°/270°) input |
| 9 | Burst amplitude adjustment | 21 | Subcarrier (90°/270°) OFF |
| 10 | N. C. | 22 | N. C. |
| 11 | Chroma plus burst output | 23 | Color difference (R-Y) input |
| 12 | Phase-shift resistors | 24 | V _{REF} (1.8V typ.) |