

## 4-HEAD PLAYBACK AND RECORD AMPLIFIER FOR VCR

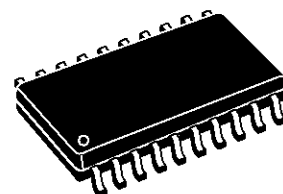
- ONE 5V POWER SUPPLY
- PLAYBACK/RECORD MODE SELECTION THROUGH A LOGIC INPUT
- SO20 PACKAGE
- NO ADJUSTMENT FOR LUMINANCE RECORDING

### PLAYBACK MODE

- LOW NOISE AND WIDE BAND AMPLIFIERS FOR 4 HEADS
- AUTOMATIC OFFSET CANCELLATION BETWEEN THE 2 SELECTED HEADS
- ONE PLAYBACK OUTPUT
- ONE OUTPUT FOR AUTOMATIC VIDEO TRACKING
- SP/LP ENVELOPE COMPARATOR
- SHORT-CIRCUIT SWITCHES ON UNUSED HEADS

### RECORD MODE

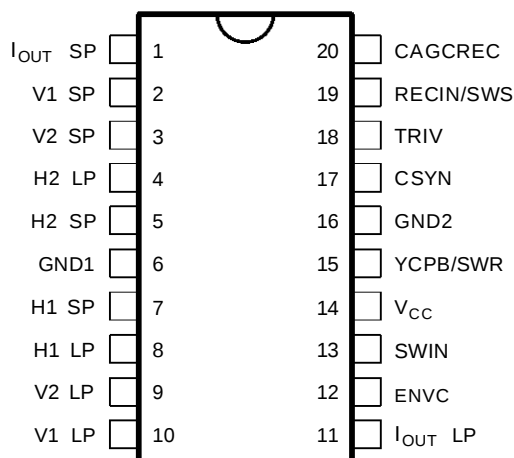
- RECORD AGC AMPLIFIER SAMPLED BY SYNCHRO SIGNAL
- RECORDING SIGNAL LEVEL ADJUSTABLE BY EXTERNAL RESISTOR
- SHORT-CIRCUIT SWITCHES ON UNUSED HEADS



**SO20**  
(Plastic Micropackage)

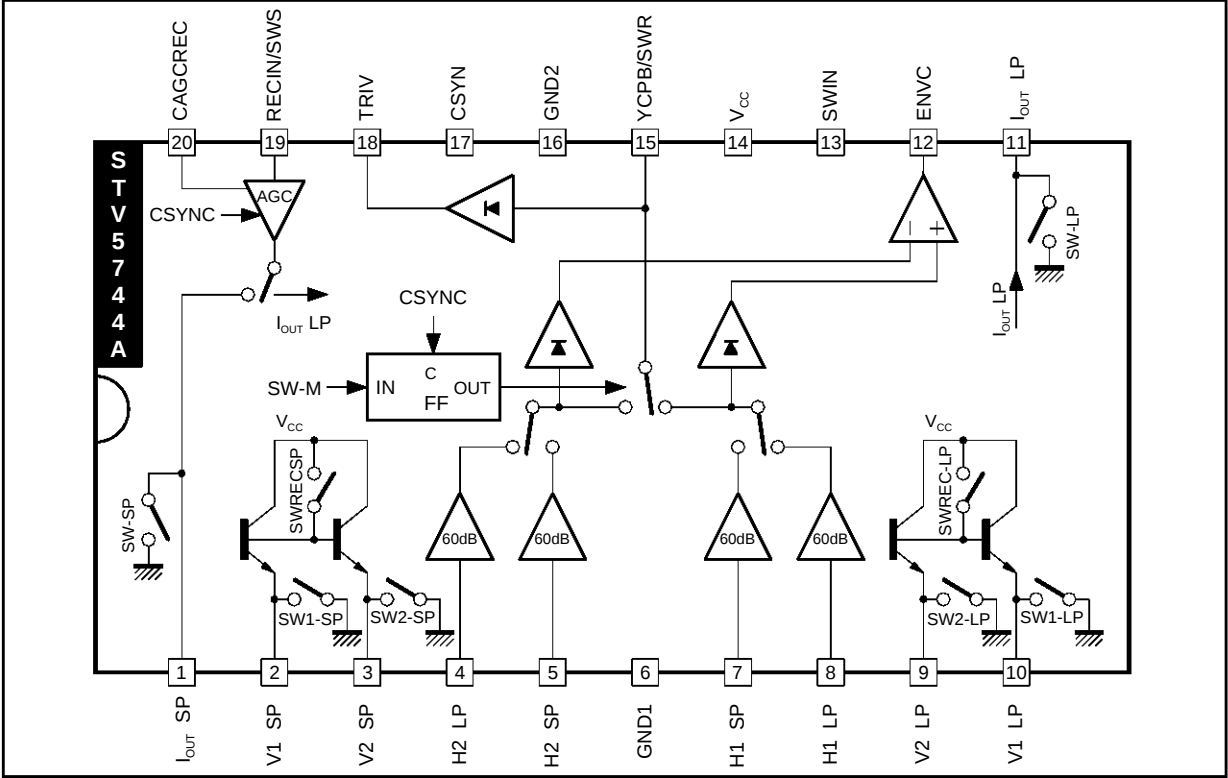
**ORDER CODE : STV5744A**

### PIN CONNECTIONS



5744A-01.EPS

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

| Symbol     | Parameter             | Value  | Unit               |
|------------|-----------------------|--------|--------------------|
| $V_{CC}$   | Power Supply Voltage  | 6      | V                  |
| $T_j$      | Junction Temperature  | 150    | $^{\circ}\text{C}$ |
| $T_{oper}$ | Operating Temperature | 0, +70 | $^{\circ}\text{C}$ |

THERMAL DATA

| Symbol        | Parameter                                | Value | Unit                 |
|---------------|------------------------------------------|-------|----------------------|
| $R_{th(j-a)}$ | Junction-ambient Thermal Resistance Max. | 75    | $^{\circ}\text{C/W}$ |

RECOMMENDED OPERATING CHARACTERISTICS

| Symbol   | Parameter                  | Min. | Typ. | Max. | Unit       |
|----------|----------------------------|------|------|------|------------|
| $V_{CC}$ | Power Supply               | 4.75 | 5    | 5.25 | V          |
| CAGC     | Capacitance on Pin CAGCREC | 4.7  |      |      | nF         |
| RECADJ   | Record Biasing Resistor    | 10   |      | 33   | k $\Omega$ |

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)**Playback Mode** ( $V_{CC} = 5\text{V}$ , no load on Pin YCPB, Recadj =  $12\text{k}\Omega$ )

| Symbol             | Parameter                        | Test Conditions                                       | Min. | Typ. | Max. | Unit                                 |
|--------------------|----------------------------------|-------------------------------------------------------|------|------|------|--------------------------------------|
| PLAYBACK AMPLIFIER |                                  |                                                       |      |      |      |                                      |
| $I_{CC1}$          | Supply Current                   |                                                       | 42   | 52   | 62   | mA                                   |
| GPB                | Playback Gain                    | Sinewave 600kHz, $0.4\text{mV}_{PP}$ on inputs        | 58   | 60   | 62   | dB                                   |
| EN                 | Equivalent Voltage Noise         | Input grounded via $I_{OUT}$ Pin @ 600kHz, BW = 10kHz |      | 0.6  | 0.7  | $\frac{\text{nV}}{\sqrt{\text{Hz}}}$ |
| IN                 | Equivalent Input Current Noise   | Input open @ 6MHz, BW = 10kHz                         |      | 1.7  |      | $\frac{\text{pA}}{\sqrt{\text{Hz}}}$ |
| CRT1               | Crosstalk (LP $\rightarrow$ SP)  | Sinewave @ 4MHz, $0.4\text{mV}_{PP}$                  |      | -45  | -40  | dB                                   |
| CRT2               | Crosstalk (SP $\rightarrow$ LP)  | Sinewave @ 4MHz, $0.4\text{mV}_{PP}$                  |      | -41  | -35  | dB                                   |
| RPBSW              | Playback Switch on Resistor      | @ 6MHz                                                | 5    | 10   | 15   | $\Omega$                             |
| BWLCF              | Attenuation @ 100KHz             | Reference level @ 600kHz                              | -3   | -2   | 1    | dB                                   |
| BWHCF              | Attenuation @ 8MHz               | Reference level @ 4MHz                                | -3   | -1   | 0    | dB                                   |
| $C_{IN}$           | Input Capacitance                | @ 6MHz, 22nF between Vi/Hi                            | 40   | 50   | 60   | pF                                   |
| $Z_{IN}$           | Input Impedance                  | @ 6MHz                                                | 300  | 450  | 600  | $\Omega$                             |
| ZCPB               | Output Resistance                | DC                                                    | 5    | 24   | 50   | $\Omega$                             |
| VDCPB1             | DC Level on Pin YCPB             |                                                       | 1.6  | 2    | 2.4  | V                                    |
| DVDC               | Head Switch Offset               |                                                       | -0.2 | 0    | 0.2  | V                                    |
| SHPB1              | 2nd Harmonic                     | Sinewave @ 4MHz, $0.4\text{mV}_{PP}$                  |      | -45  | -40  | dB                                   |
| RCST               | Off-resistance on unused channel | SW-S high                                             | 10   | 15   | 20   | $\Omega$                             |

## TRIV FUNCTION

|               |                  |                                             |      |      |      |   |
|---------------|------------------|---------------------------------------------|------|------|------|---|
| TRIV0         | Output Level (1) | No input signal                             | 0    | 0.3  | 1    | V |
| TRIV1         | Output Level (2) | Sinewave @ 4MHz, $100\text{mV}_{PP}$ @ YCPB |      | 1.3  |      | V |
| TRIV4         | Output Level (3) | Sinewave @ 4MHz, $400\text{mV}_{PP}$ @ YCPB | 2.5  | 3.1  | 3.5  | V |
| TRIV6         | Output Level (4) | Sinewave @ 4MHz, $600\text{mV}_{PP}$ @ YCPB | 3.15 | 3.65 | 4.15 | V |
| TRIV1 - TRIV0 |                  |                                             | 0.5  | 1    |      | V |

## SP/LP ENVELOPE DETECTOR

|        |              |                                                               |   |     |   |   |
|--------|--------------|---------------------------------------------------------------|---|-----|---|---|
| VENVCH | Output Level |                                                               | 4 | 4.5 | 5 | V |
| VENVCL | Output Level |                                                               | 0 | 0.3 | 1 | V |
| SENS1  | Sensitivity  | $50\mu\text{V}_{PP}$ to $600\mu\text{V}_{PP}$ @ SP input pins |   | 0.3 | 1 | V |
| SENS2  | Sensitivity  | $50\mu\text{V}_{PP}$ to $600\mu\text{V}_{PP}$ @ LP input pins | 4 | 4.5 |   | V |

5744A-04.TBL

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified (continued))

**Record Mode** ( $V_{CC} = 5\text{V}$ ,  $\text{Recadj} = 12\text{k}\Omega$ ,  $\text{SWR} = 5\text{V}$ ,  $\text{CAGCREC} = 470\text{pF}$ ,  $\text{RRCY} = 2.2\text{k}\Omega$ ,  $\text{RRCC} = 8.2\text{k}\Omega$ , Load  $10\mu\text{H}/1\text{k}\Omega$  for each simulated head)

| Symbol           | Parameter                         | Test Conditions                                                                                 | Min. | Typ. | Max. | Unit             |
|------------------|-----------------------------------|-------------------------------------------------------------------------------------------------|------|------|------|------------------|
| RECORD AMPLIFIER |                                   |                                                                                                 |      |      |      |                  |
| $I_{CC2}$        | Current Supply                    |                                                                                                 | 68   | 91   | 115  | mA               |
| IHA0             | DC Current through $I_{OUT}$      |                                                                                                 | 24   | 33   | 41   | mA               |
| IHA1             | Fundamental                       | $\text{VRCY} = 300\text{mV}_{PP} @ 4\text{MHz}$                                                 | 30   | 32   | 34   | $\text{mA}_{PP}$ |
| IHA2             | 2nd Harmonic                      | $\text{VRCY} = 300\text{mV}_{PP} @ 4\text{MHz}$                                                 |      | -40  | -36  | dB               |
| IHA2M            | 2nd Harmonic                      | $\text{VRCY} = 400\text{mV}_{PP} @ 4\text{MHz}$ ,<br>AGC adjusted for IAH1 = $40\text{mA}_{PP}$ |      |      | -34  | dB               |
| BWRECL           | Attenuation at 100kHz             | Reference level @ 600kHz, AGC locked                                                            | -3   | 0    | 1    | dB               |
| BWRECH           | Attenuation at 8MHz               | Reference level @ 4MHz, AGC locked                                                              | -2   | -0.5 | 1    | dB               |
| DVLECL           | Record AGC Sensitivity            | $V_{IN} = 300\text{mV}_{PP} \pm 3\text{dB} @ f = 4\text{MHz}$                                   | -0.2 | 0    | +0.2 | dB               |
| RIOUT            | Output Resistance                 | $\Delta V = 5\text{V}$                                                                          | 3.5  | 5.5  |      | $\text{k}\Omega$ |
| RSAT             | Output Stage Resistance           | $\Delta I = 10\text{mA}$                                                                        | 5    | 10   | 50   | $\Omega$         |
| IRN              | AGC Capacitor downloading Current | 4.5V at CAGC Pin                                                                                |      | 160  |      | $\mu\text{A}$    |
| IRP              | AGC Capacitor uploading Current   | 0.5V at CAGC Pin,<br>$V_{IN} = 300\text{mV}_{PP} @ 4\text{MHz}$                                 |      | -165 |      | $\mu\text{A}$    |

## SWITCHING LEVELS

|          |                                                                       |                                                 |     |      |     |               |
|----------|-----------------------------------------------------------------------|-------------------------------------------------|-----|------|-----|---------------|
| VSWINL   | SWIN Input Voltage                                                    | Selects head H2SP                               | 0   |      | 0.8 | V             |
| VSWIN1   | SWIN Input Voltage                                                    | Selects head H1SP                               | 1.3 |      | 2.3 | V             |
| VSWIN2   | SWIN Input Voltage                                                    | Selects head H1LP                               | 2.8 |      | 3.8 | V             |
| VSWINH   | SWIN Input Voltage                                                    | Selects head H2LP                               | 4.3 |      | 5   | V             |
| ISWINH   | SWIN Input Leakage Current                                            | 5V at SWIN input                                |     | 0.5  |     | $\mu\text{A}$ |
| ISWINL   | SWIN Input Leakage Current                                            | 0V at SWIN input                                |     | -0.2 |     | $\mu\text{A}$ |
| VSWRCH   | SWRC Input Threshold                                                  | Selects record mode, 0 to 5V                    | 3.2 | 3.4  | 3.8 | V             |
| VSWRCL   | SWRC Input Threshold                                                  | Selects playback mode, 5 to 0V                  | 3.1 | 3.35 | 3.8 | V             |
| ISWRCH   | SWRC Input Leakage Current                                            | 5V at SWRC input                                | 2   | 5    | 8   | mA            |
| ISWRCL   | SWRC Input Leakage Current                                            | 0V at SWRC input                                | -20 | 0    | 20  | $\mu\text{A}$ |
| $t_{ON}$ | Delay                                                                 | Signal appears on YCPB                          |     | 1.6  |     | ms            |
| t1       | Delay from playback to record :<br>Signal disappears on Pin YCPB      | 22nF between Hi/Vi                              |     | 1    |     | $\mu\text{s}$ |
| t2       | Delay from record to playback :<br>Signal appears on Pin YCPB         |                                                 |     | 1.9  |     | ms            |
| t3       | Delay from playback to record :<br>Signal appears on Pin $I_{OUT}$    | $\text{VRCY} = 300\text{mV}_{PP} @ 4\text{MHz}$ |     | 2    |     | ms            |
| t4       | Delay from record to playback :<br>Signal disappears on Pin $I_{OUT}$ |                                                 |     | 10   |     | $\mu\text{s}$ |
| VCSYH    | CSYN Input Threshold                                                  | Sampling on ( $I = -25\mu\text{A}$ )            | 2.2 | 2.5  | 2.8 | V             |
| VCSYL    | CSYN Input Threshold                                                  | Sampling off ( $I = 25\mu\text{A}$ )            | 2.2 | 2.5  | 2.8 | V             |
| ICSYH    | Leakage Current                                                       | Sampling on                                     |     |      | -10 | $\mu\text{A}$ |
| ICSYL    | Leakage Current                                                       | Sampling off                                    | 10  |      |     | $\mu\text{A}$ |
| VSWST    | SWS Input Threshold                                                   |                                                 |     | 3    |     | V             |
| ISWSH    | SWS Input Leakage Current                                             | 5V at SWS Input                                 | 90  | 130  | 170 | $\mu\text{A}$ |
| ISWSL    | SWS Input Leakage Current                                             | 0V at SWS Input                                 | -20 | 0    | 20  | $\mu\text{A}$ |

## INTERNAL SCHEMATICS

Figure 1

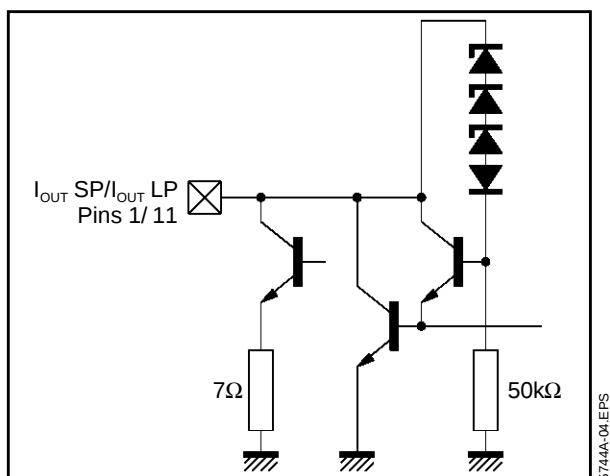


Figure 2

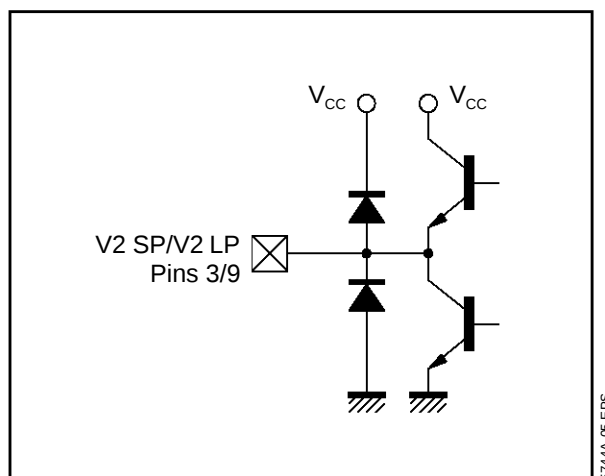


Figure 3

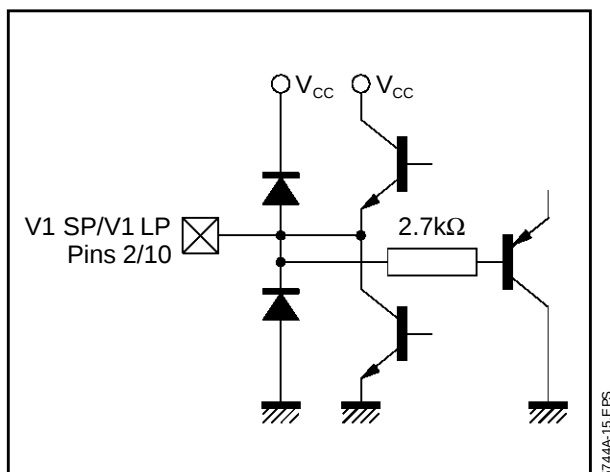


Figure 4

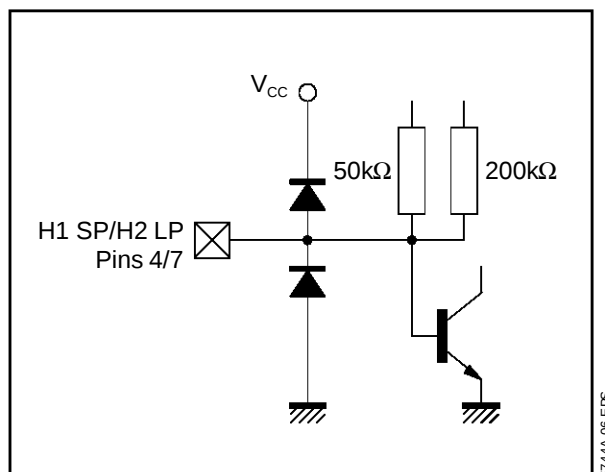


Figure 5

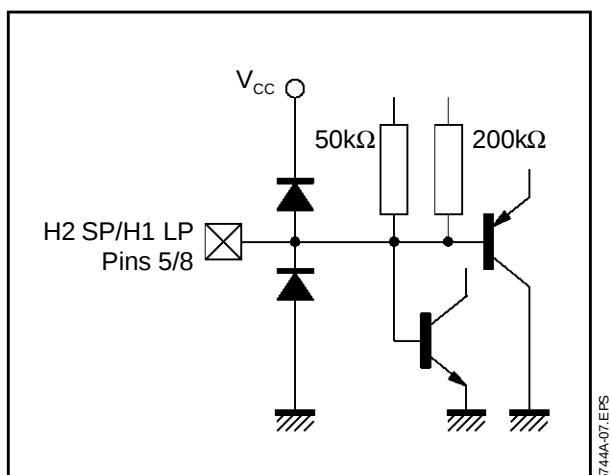
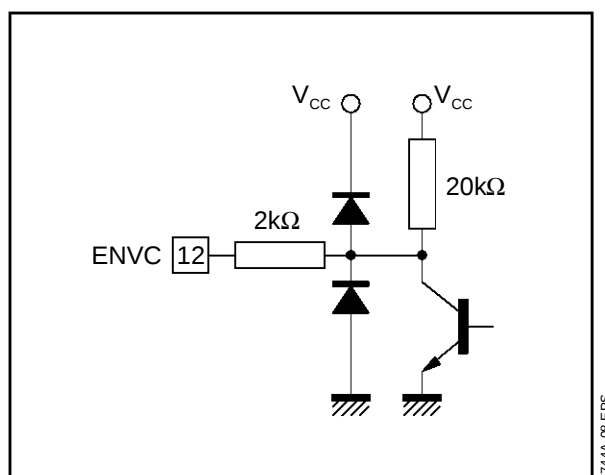


Figure 6



INTERNAL SCHEMATICS (continued)

Figure 7

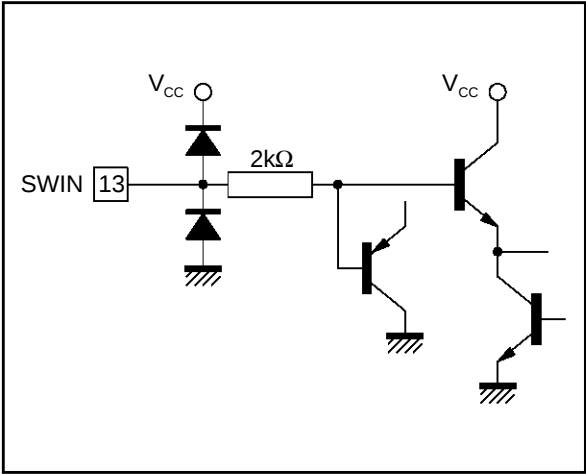


Figure 8

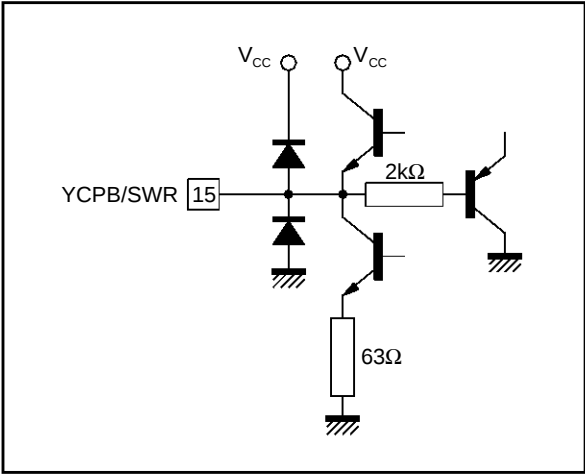


Figure 9

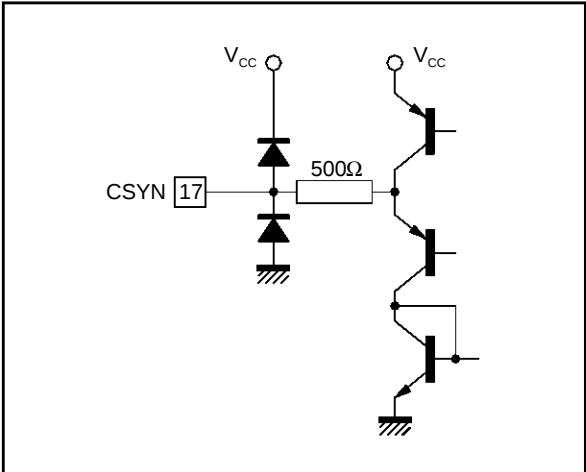


Figure 10

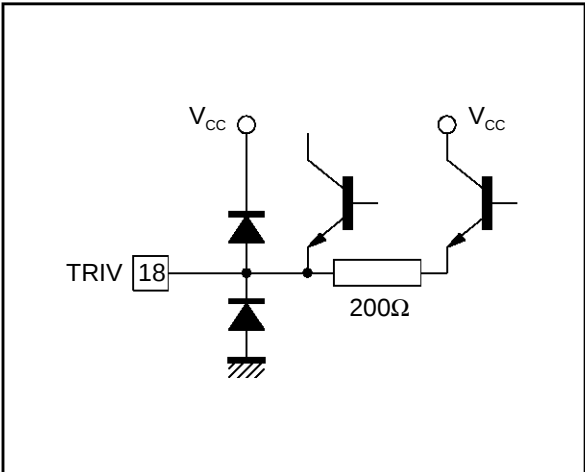


Figure 11

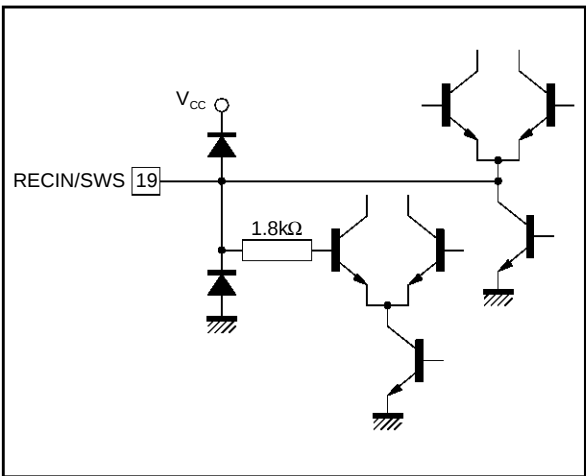
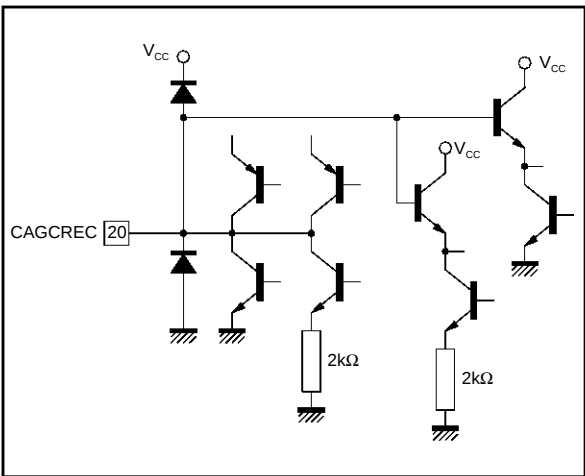
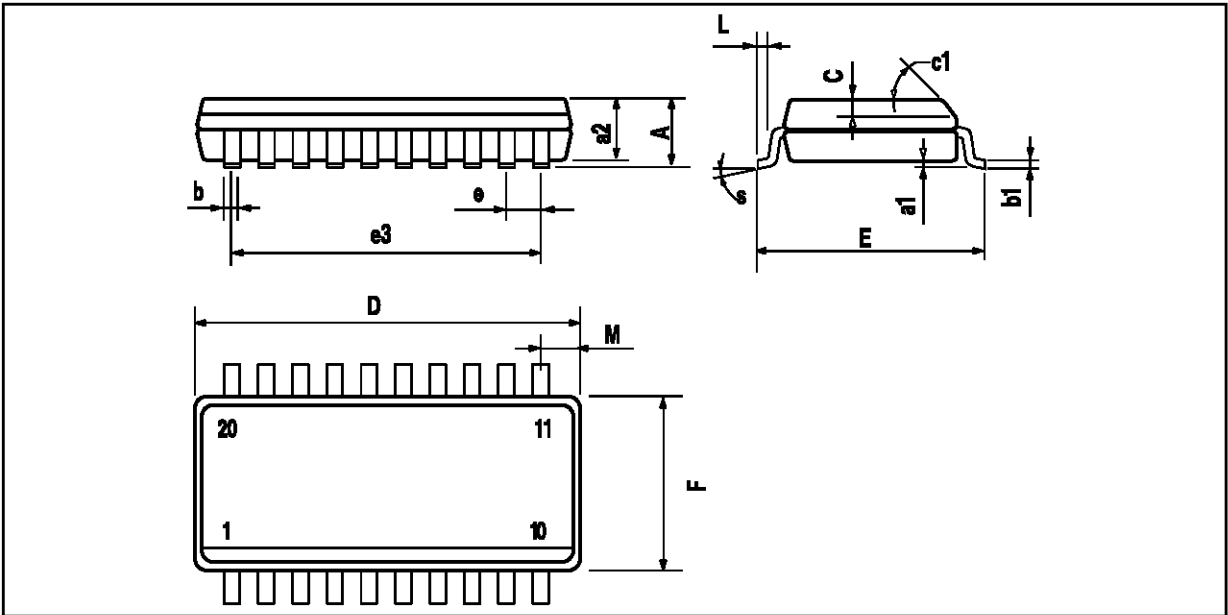


Figure 12





PACKAGE MECHANICAL DATA  
20 PINS - PLASTIC MICROPACKAGE (SO)



| Dimensions | Millimeters |       |       | Inches |       |        |
|------------|-------------|-------|-------|--------|-------|--------|
|            | Min.        | Typ.  | Max.  | Min.   | Typ.  | Max.   |
| A          |             |       | 2.65  |        |       | 0.104  |
| a1         | 0.1         |       | 0.2   | 0.004  |       | 0.0078 |
| 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.)   |       |       |        |       |        |

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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