

2-HEAD PLAYBACK AND RECORD AMPLIFIER FOR VCR

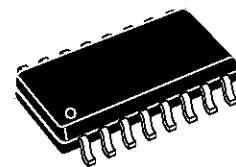
- ONE 5V POWER SUPPLY
- PLAYBACK/RECORD MODE SELECTION THROUGH A LOGIC INPUT
- SO16 PACKAGE
- NO ADJUSTMENT FOR LUMINANCE RECORDING

PLAYBACK MODE

- LOW NOISE AND WIDE BAND AMPLIFIERS FOR 2 HEADS
- AUTOMATIC OFFSET CANCELLATION BETWEEN THE 2 SELECTED HEADS
- ONE PLAYBACK OUTPUT
- ONE OUTPUT FOR AUTOMATIC VIDEO TRACKING

RECORD MODE

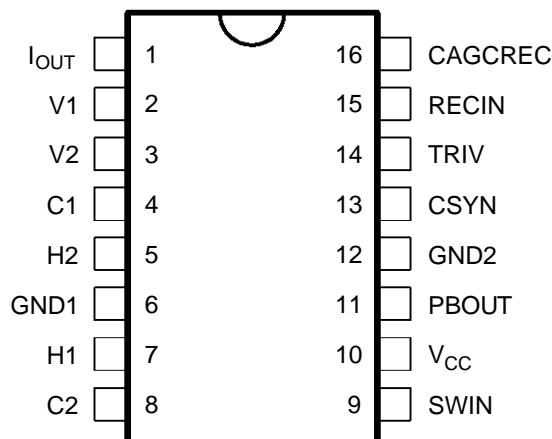
- RECORD AGC AMPLIFIER SAMPLED BY SYNCHRO SIGNAL
- RECORDING SIGNAL LEVEL ADJUSTABLE BY EXTERNAL RESISTOR



SO16 Narrow
(Plastic Package)

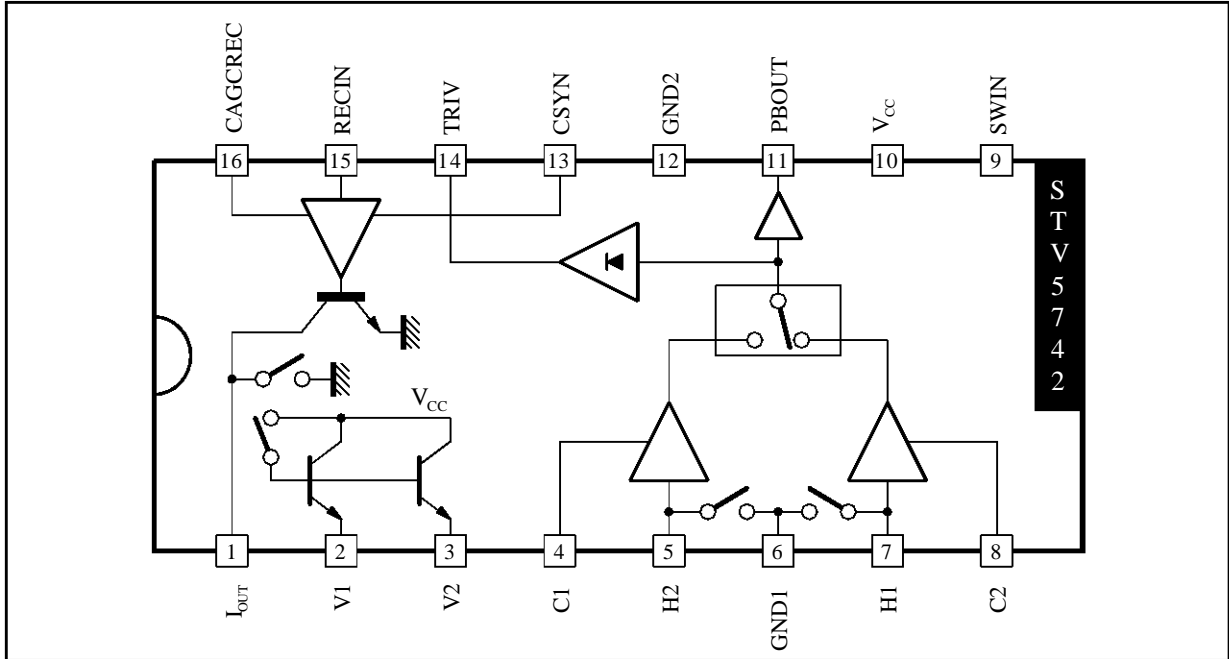
ORDER CODE : STV5742

PIN CONNECTIONS



5742-01.EPS

BLOCK DIAGRAM



5742-02.EPS

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-------------------|-----------------------|--------|------|
| V _{CC} | Power Supply Voltage | 6 | V |
| T _j | Junction Temperature | 150 | °C |
| T _{oper} | Operating Temperature | 0, +70 | °C |

5742-01.TBL

THERMAL DATA

| Symbol | Parameter | Value | Unit |
|----------------------|-------------------------------------|----------|------|
| R _{th(j-a)} | Junction-ambient Thermal Resistance | Max. 100 | °C/W |

5742-02.TBL

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 | kΩ |

5742-03.TBL

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

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------|-----------|-----------------|------|------|------|------|
|--------|-----------|-----------------|------|------|------|------|

PLAYBACK AMPLIFIER

| | | | | | | |
|------------------|--------------------------------|--|------|------|-----|--------------------------------------|
| I _{CC1} | Supply Current | | 19 | 29 | 39 | mA |
| GPB | Playback Gain | Sinewave 600kHz, 0.4mV _{PP} on inputs | 58 | 60 | 62 | dB |
| EN | Equivalent Voltage Noise | Input grounded via I _{OUT} Pin @ 600kHz, BW = 10kHz | | 0.45 | 0.6 | $\frac{\text{nV}}{\sqrt{\text{Hz}}}$ |
| IN | Equivalent Input Current Noise | Input open @ 6MHz, BW = 10kHz | | 2.5 | | $\frac{\text{pA}}{\sqrt{\text{Hz}}}$ |
| CRT1 | Crosstalk | Sinewave @ 4MHz, 0.4mV _{PP} | | -35 | -30 | dB |
| RPBSW | Playback Switch on Resistor | @ 6MHz | 1 | 5 | 10 | Ω |
| BWLCF | Attenuation @ 100KHz | Reference level @ 600kHz | -3 | 0 | 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 | Ω |
| ZCPB | Output Resistance | DC | 5 | 24 | 50 | Ω |
| VDCPB1 | DC Level on Pin PBOUT | | 1.6 | 2 | 2.4 | V |
| DVDC | Head Switch Offset | | -0.1 | 0 | 0.1 | V |
| SHPB1 | 2nd Harmonic | Sinewave @ 4MHz, 0.4mV _{PP} | | -45 | -40 | dB |

TRIV FUNCTION

| | | | | | | |
|-------------|------------------|--|-----|-----|-----|---|
| TRIV0 | Output Level (1) | No input signal | 0 | 0.3 | 1 | V |
| TRIV1 | Output Level (2) | Sinewave @ 4MHz, 100mV _{PP} @ PBOUT | | 1.3 | | V |
| TRIV4 | Output Level (3) | Sinewave @ 4MHz, 400mV _{PP} @ PBOUT | 2.5 | 3.1 | 3.5 | V |
| TRIV6 | Output Level (4) | Sinewave @ 4MHz, 600mV _{PP} @ PBOUT | 3.2 | 3.7 | 4.2 | V |
| TRIV1-TRIV0 | | | 0.5 | 1 | - | V |

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

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------|-----------|-----------------|------|------|------|------|
|--------|-----------|-----------------|------|------|------|------|

RECORD AMPLIFIER

| | | | | | | |
|------------------|-------------------------------------|---|------|------|------|------------------|
| I _{CC2} | Current Supply | | 55 | 85 | 115 | mA |
| IHA0 | DC Current through I _{OUT} | | 28 | 38 | 47.5 | mA |
| IHA1 | Fundamental | VRCY = 300mV _{PP} @ 4MHz | 34 | 36 | 38 | mA _{PP} |
| IHA2 | 2nd Harmonic | VRCY = 300mV _{PP} @ 4MHz | | -40 | -36 | dB |
| IHA2M | 2nd Harmonic | VRCY = 400mV _{PP} @ 4MHz, AGC adjusted for IAH1 = 40mA _{PP} | | -34 | -32 | 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 |
| DVREC | Record AGC Sensitivity | V _{IN} = 300mV _{PP} \pm 3dB @ f = 4MHz | -0.2 | 0 | +0.2 | dB |
| RIOUT | Output Resistance | $\Delta V = 5\text{V}$ | 3.5 | 5.5 | - | $\kappa\Omega$ |
| RSAT | Output Stage Resistance | $\Delta I = 10\text{mA}$ | 5 | 10 | 50 | Ω |
| IRN | AGC Capacitor downloading Current | 4.5V at CAGC Pin | | 165 | | μA |
| IRP | AGC Capacitor uploading Current | 0.5V at CAGC Pin, V _{IN} = 300mV _{PP} @ 4MHz | | -165 | | μA |

SWITCHING LEVELS

| | | | | | | |
|--------|----------------------------|------------------------------|-----|-----|-----|---------------|
| VSWINH | SWIN Input Threshold | Selects head H1, 0 to 5V | 1.5 | 2 | 2.5 | V |
| VSWINL | SWIN Input Threshold | Selects head H2, 5 to 0V | 1.5 | 2 | 2.5 | V |
| ISWINH | SWIN Input Leakage Current | 5V at SWIN input | 5 | 18 | 50 | μA |
| ISWINL | SWIN Input Leakage Current | 0V at SWIN input | -50 | -25 | -5 | μA |
| VSWRCH | SWRC Input Threshold | Selects record mode, 0 to 5V | 3.2 | 3.4 | 3.8 | V |

5742-04.TBL

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

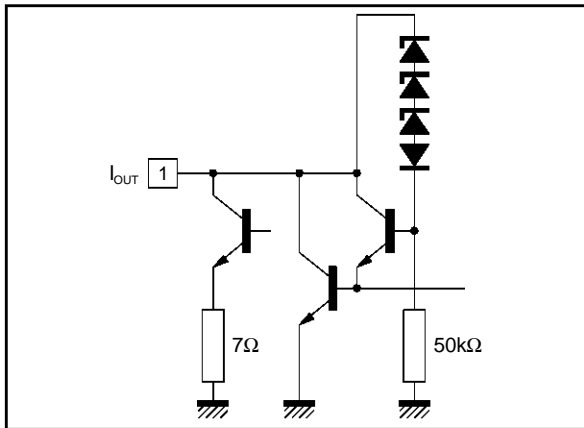
Record Mode ($V_{CC} = 5V$, $Recadj = 12k\Omega$, $SWR = 5V$, $CAGCREC = 470pF$, $RRCY = 2.2k\Omega$, $RRCC = 8.2k\Omega$, Load $10\mu H//1k\Omega$ for each simulated head) (continued)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------------------|--|--------------------------------|------|------|------|---------|
| SWITCHING LEVELS (continued) | | | | | | |
| VSWRCL | SWRC Input Threshold | Selects playback mode, 5 to 0V | 3.1 | 3.3 | 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 | μA |
| t_{ON} | Delay | Signal appears on PBOUT | | 3 | | ms |
| t_1 | Delay from playback to record : Signal disappears on Pin PBOUT | 22nF between Hi/Vi | | 1 | | μs |
| t_2 | Delay from record to playback : Signal appears on Pin PBOUT | 22nF between Hi/Vi | | 5 | | ms |
| t_3 | Delay from playback to record : Signal appears on Pin I _{OUT} | | | 25 | | μs |
| t_4 | Delay from record to playback : Signal disappears on Pin I _{OUT} | | | 7 | | μs |
| VCSYH | CSYN Input Threshold | Sampling on ($I = -25\mu A$) | 2.2 | 2.5 | 2.8 | V |
| VCSYL | CSYN Input Threshold | Sampling off ($I = 25\mu A$) | 2.2 | 2.5 | 2.8 | V |
| ICSYH | Leakage Current | Sampling on | | | -10 | μA |
| ICSYL | Leakage Current | Sampling off | 10 | | | μA |

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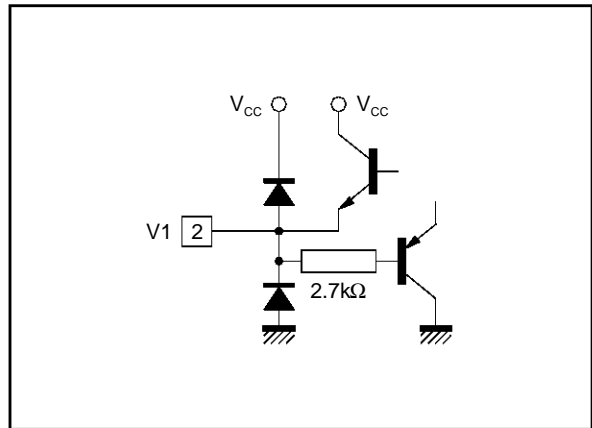
INTERNAL SCHEMATICS

Figure 1



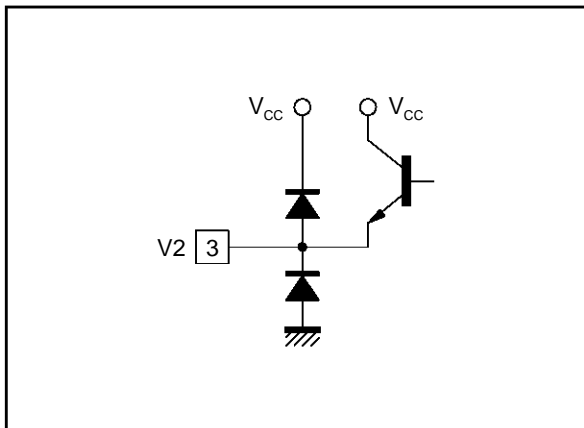
5742-04.EPS

Figure 2



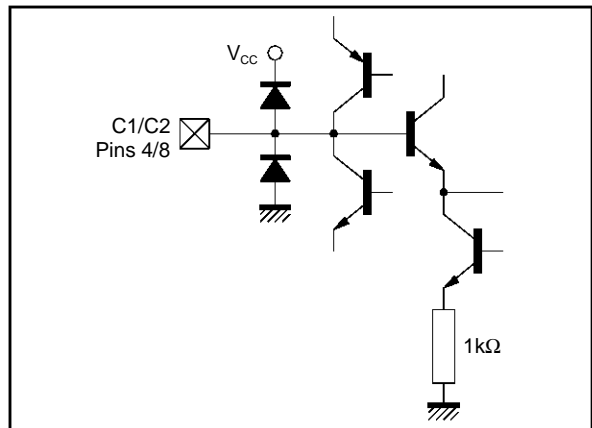
5742-05.EPS

Figure 3



5742-06.EPS

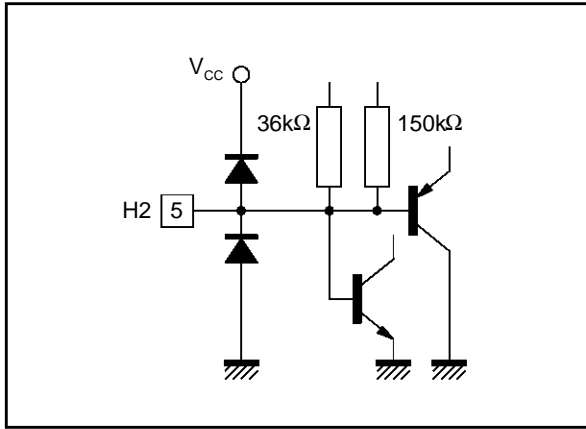
Figure 4



5742-07.EPS

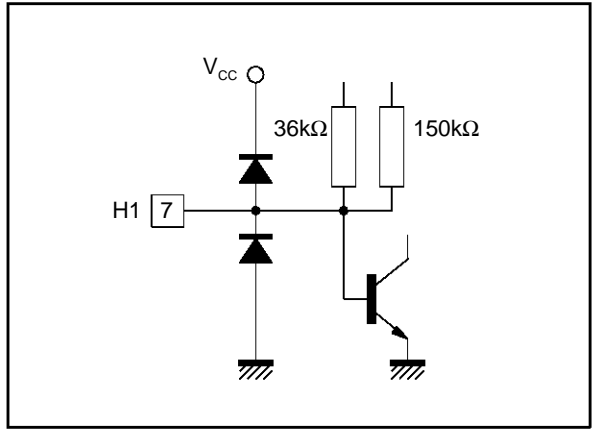
INTERNAL SCHEMATICS (continued)

Figure 5



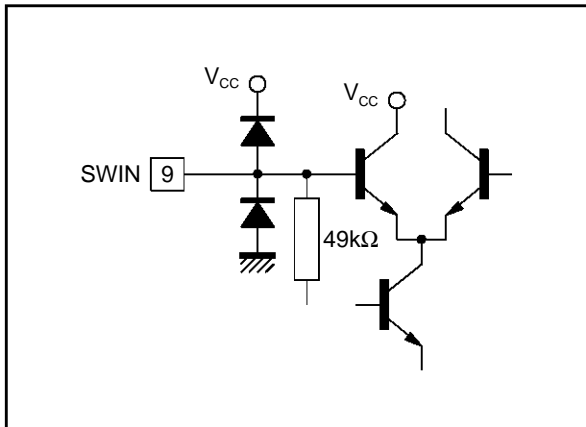
5742-08.EPS

Figure 6



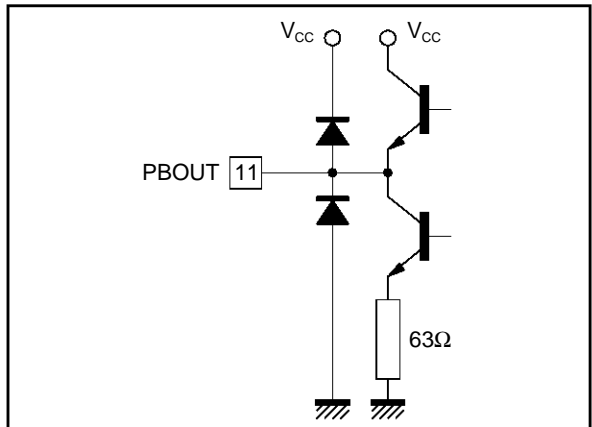
5742-09.EPS

Figure 7



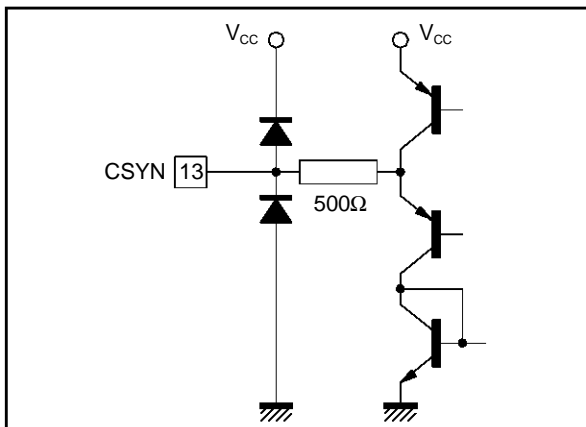
5742-10.EPS

Figure 8



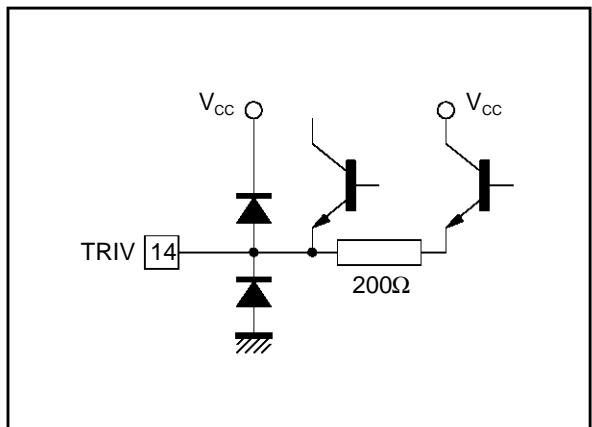
5742-11.EPS

Figure 9



5742-12.EPS

Figure 10



5742-13.EPS

INTERNAL SCHEMATICS (continued)

Figure 11

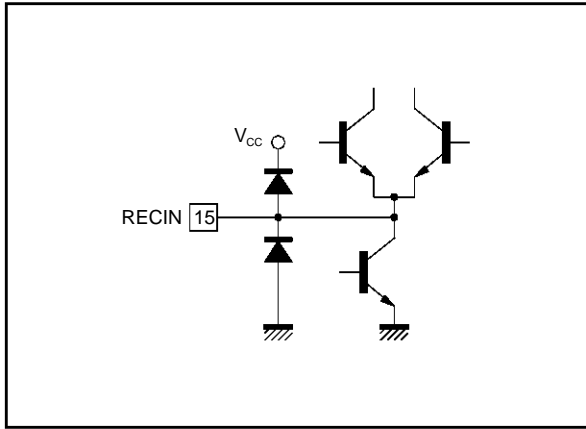
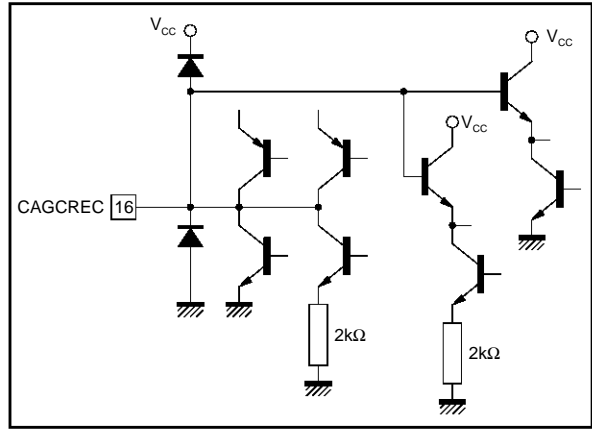
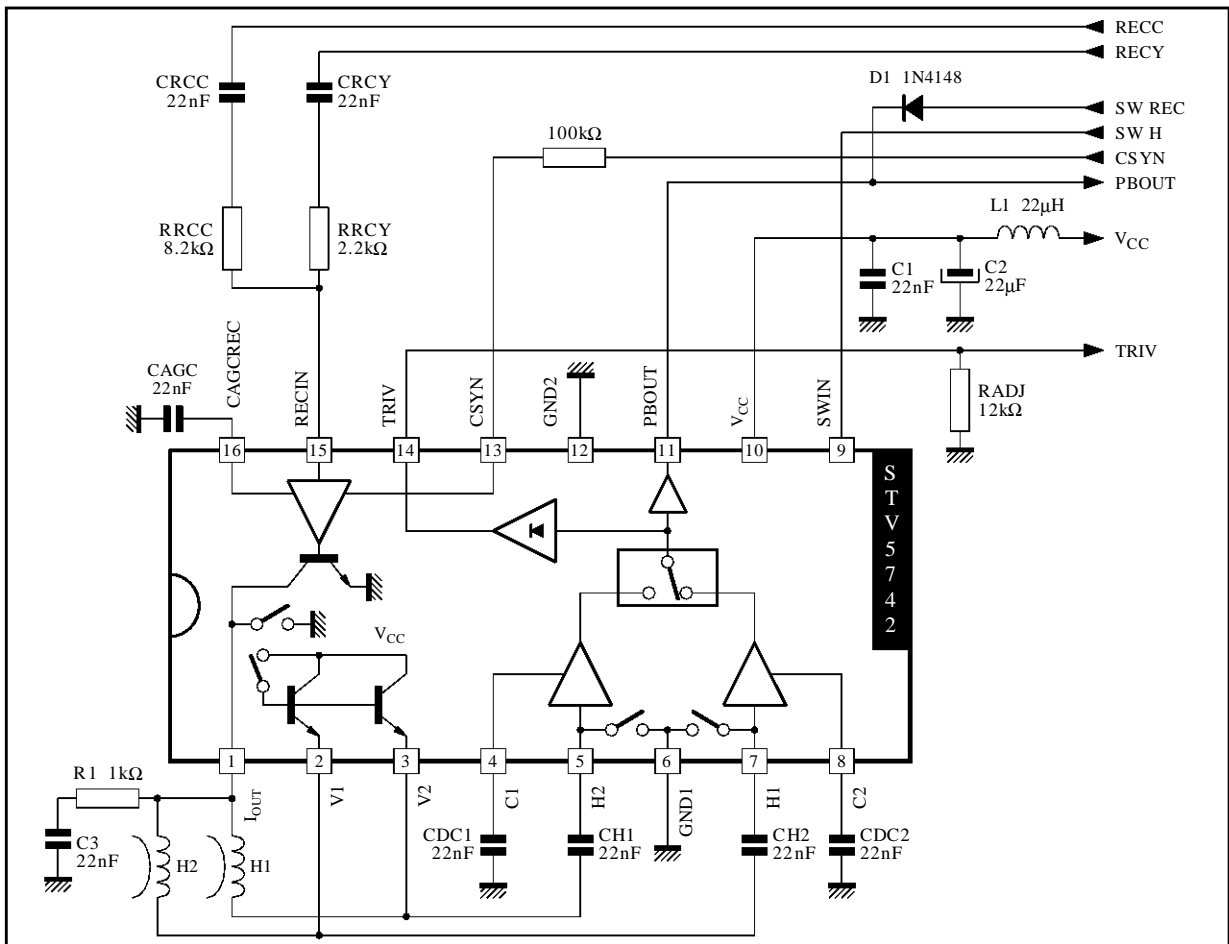


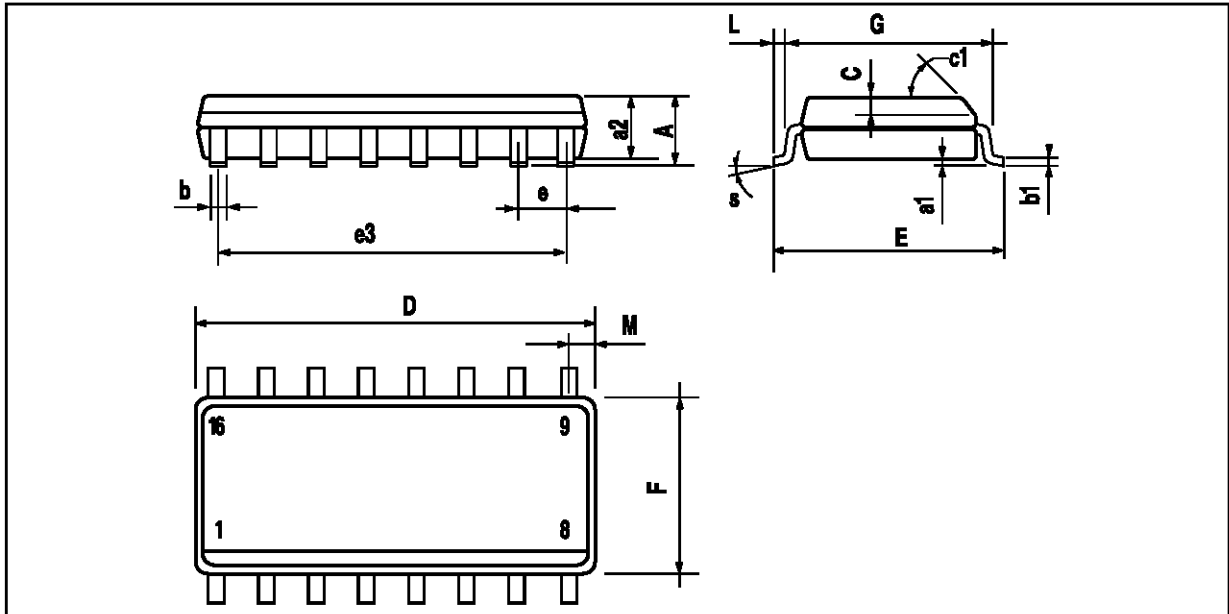
Figure 12



APPLICATION DIAGRAM



PACKAGE MECHANICAL DATA
 16 PINS - PLASTIC MICROPACKAGE (SO)



PM-SO16N.EPS

| Dimensions | Millimeters | | | Inches | | |
|------------|-------------|------|------|--------|-------|-------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | | 1.75 | | | 0.069 |
| a1 | 0.1 | | 0.25 | 0.004 | | 0.009 |
| a2 | | | 1.6 | | | 0.063 |
| b | 0.35 | | 0.46 | 0.014 | | 0.018 |
| b1 | 0.19 | | 0.25 | 0.007 | | 0.010 |
| C | | 0.5 | | | 0.020 | |
| c1 | 45° (typ.) | | | | | |
| D | 9.8 | | 10 | 0.386 | | 0.394 |
| E | 5.8 | | 6.2 | 0.228 | | 0.244 |
| e | | 1.27 | | | 0.050 | |
| e3 | | 8.89 | | | 0.350 | |
| F | 3.8 | | 4.0 | 0.150 | | 0.157 |
| L | 0.4 | | 1.27 | 0.016 | | 0.050 |
| M | | | 0.62 | | | 0.024 |
| S | 8° (Max.) | | | | | |

SO16N.TBL

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