

**4-HEAD PLAYBACK AND RECORD AMPLIFIER FOR VCR**

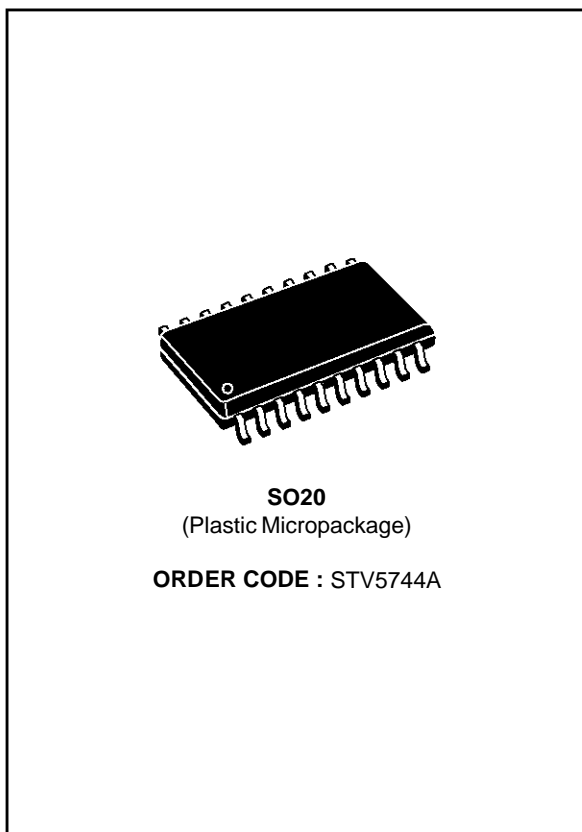
- ONE 5V POWER SUPPLY
- PLAYBACK/RECORD MODE SELECTION THROUGH A LOGIC INPUT
- SO20 PACKAGE
- NO ADJUSTMENT FOR LUMINANCE RECORDING

**PLAYBACK MODE**

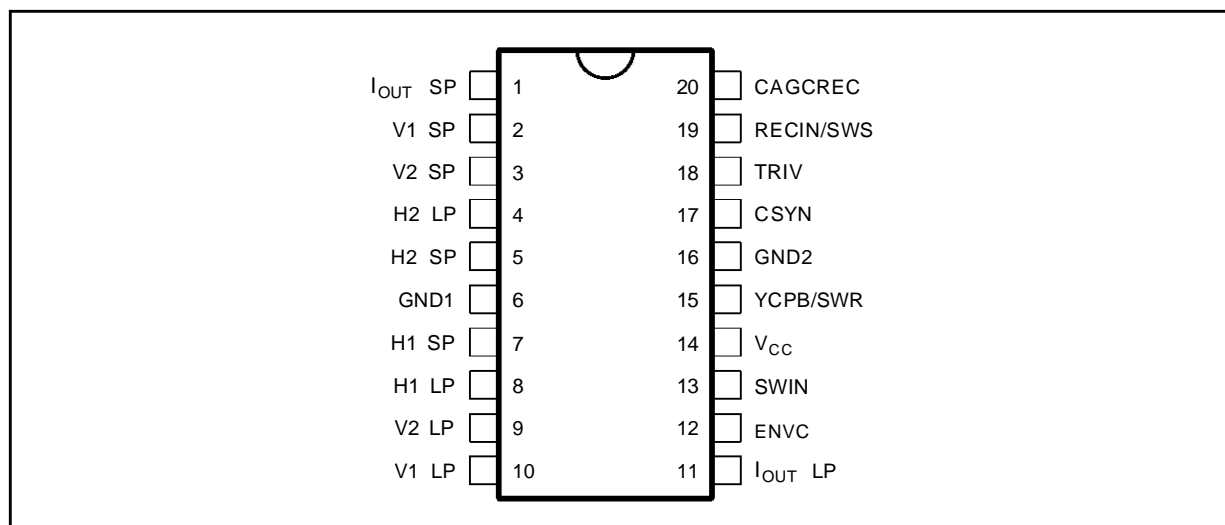
- LOW NOISE AND WIDE BAND AMPLIFIERS FOR 4 HEADS
- AUTOMATIC OFFSET CANCELLATION BETWEEN THE 2 SELECTED HEADS
- ONE PLAYBACK OUTPUT
- ONE OUTPUT FOR AUTOMATIC VIDEO TRACKING
- SP/LP ENVELOPE COMPARATOR
- SHORT-CIRCUIT SWITCHES ON UNUSED HEADS

**RECORD MODE**

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

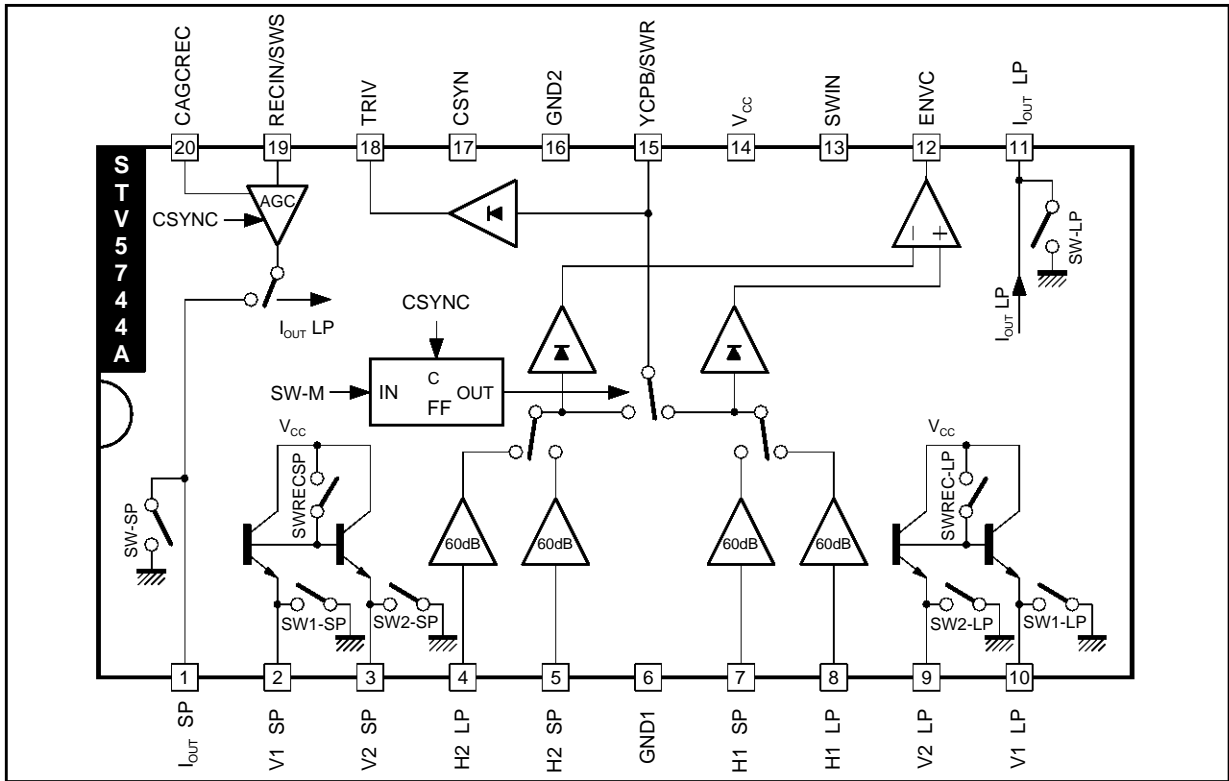


**PIN CONNECTIONS**



5744A-01.EPS

BLOCK DIAGRAM



5744A-02.EPS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Power Supply Voltage	6	V
T <sub>j</sub>	Junction Temperature	150	°C
T <sub>oper</sub>	Operating Temperature	0, +70	°C

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THERMAL DATA

Symbol	Parameter	Value	Unit
R <sub>th(j-a)</sub>	Junction-ambient Thermal Resistance	Max. 75	°C/W

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RECOMMENDED OPERATING CHARACTERISTICS

Symbol	Parameter	Min.	Typ.	Max.	Unit
V <sub>CC</sub>	Power Supply	4.75	5	5.25	V
CAGC	Capacitance on Pin CAGCREC	4.7			nF
RECADJ	Record Biasing Resistor	10		33	kΩ

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**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 $V_i/H_i$	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

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## STV5744A

### 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	$\text{VRCY} = 400\text{mV}_{PP} @ 4\text{MHz}$ , 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
DVLR	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, $V_{IN} = 300\text{mV}_{PP} @ 4\text{MHz}$		-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 : Signal disappears on Pin YCPB	22nF between Hi/Vi		1		$\mu\text{s}$
t2	Delay from record to playback : Signal appears on Pin YCPB			1.9		ms
t3	Delay from playback to record : Signal appears on Pin $I_{OUT}$	$\text{VRCY} = 300\text{mV}_{PP} @ 4\text{MHz}$		2		ms
t4	Delay from record to playback : 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	$\mu\text{A}$

5744A-05.TBL

INTERNAL SCHEMATICS

Figure 1

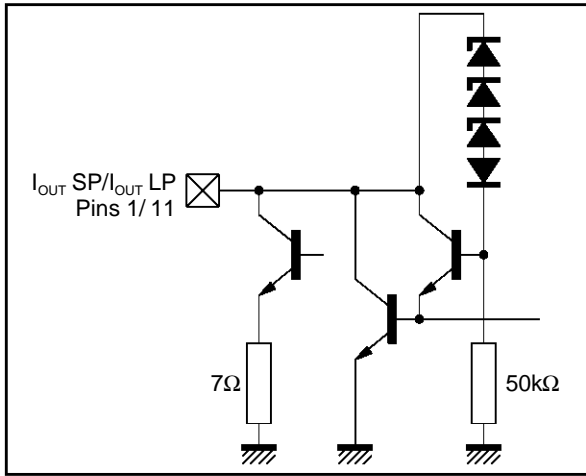


Figure 2

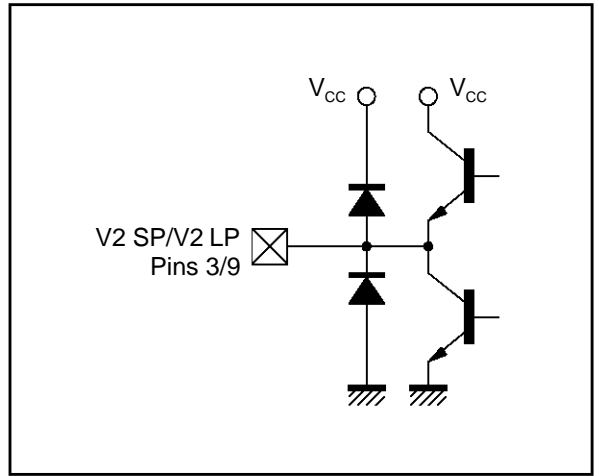


Figure 3

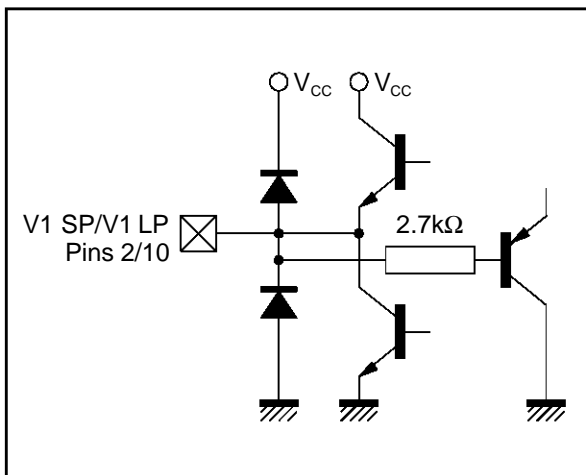


Figure 4

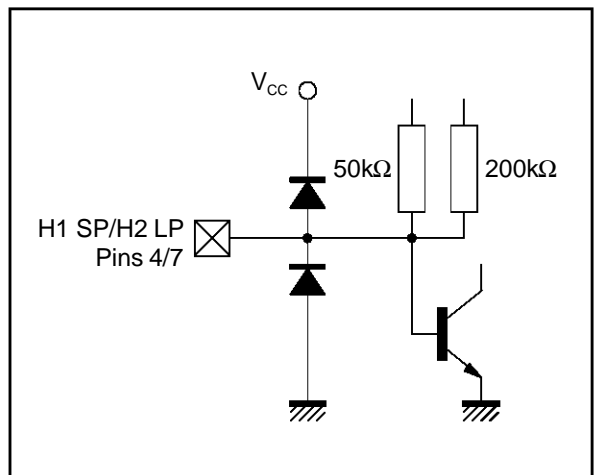


Figure 5

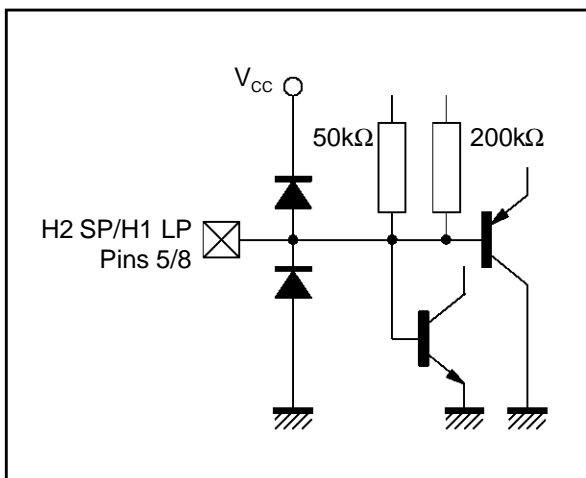
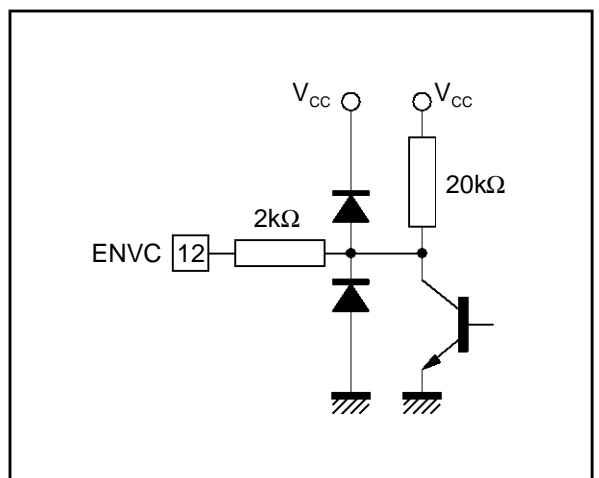
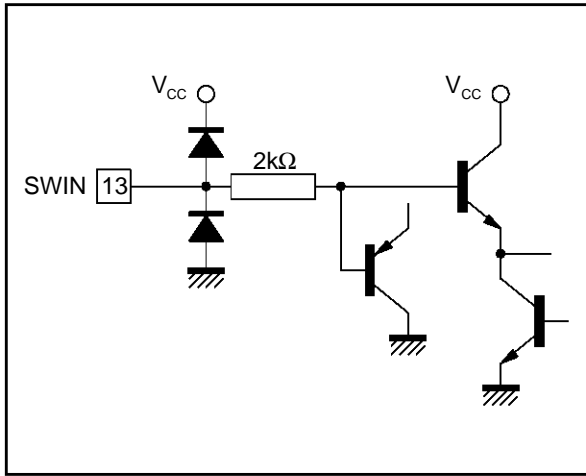


Figure 6



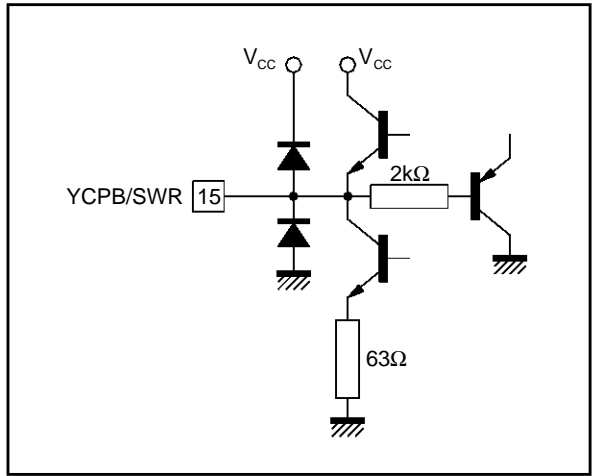
INTERNAL SCHEMATICS (continued)

Figure 7



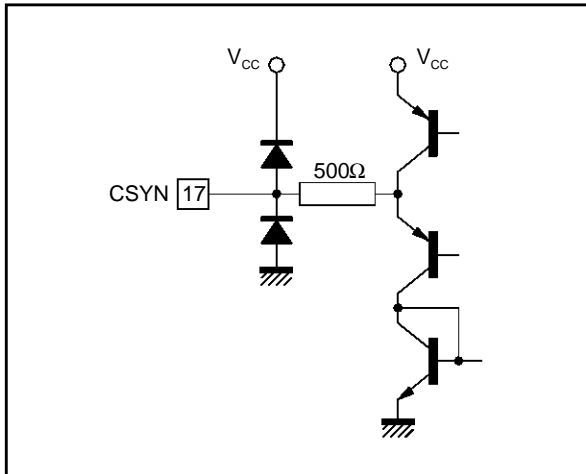
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Figure 8



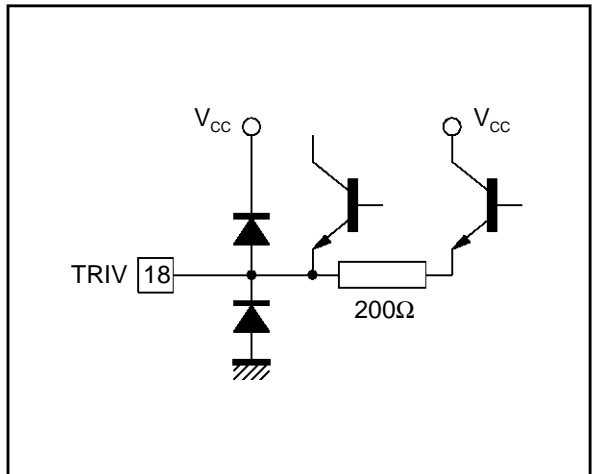
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Figure 9



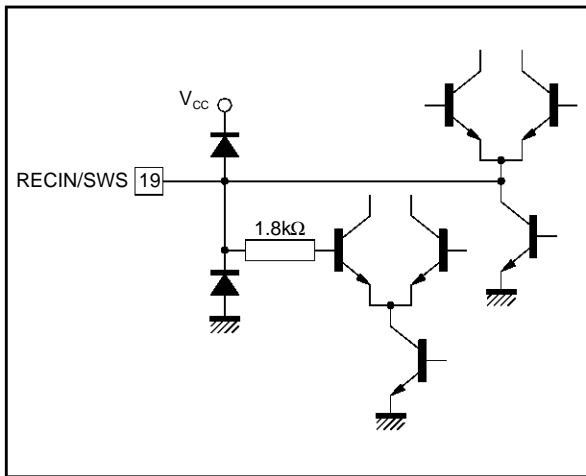
5744A-11.EPS

Figure 10



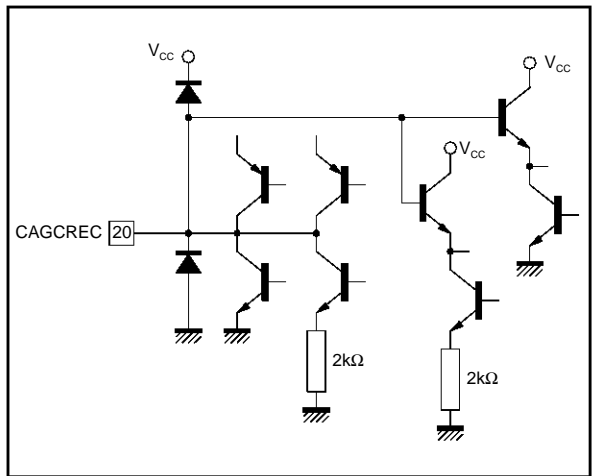
5744A-12.EPS

Figure 11



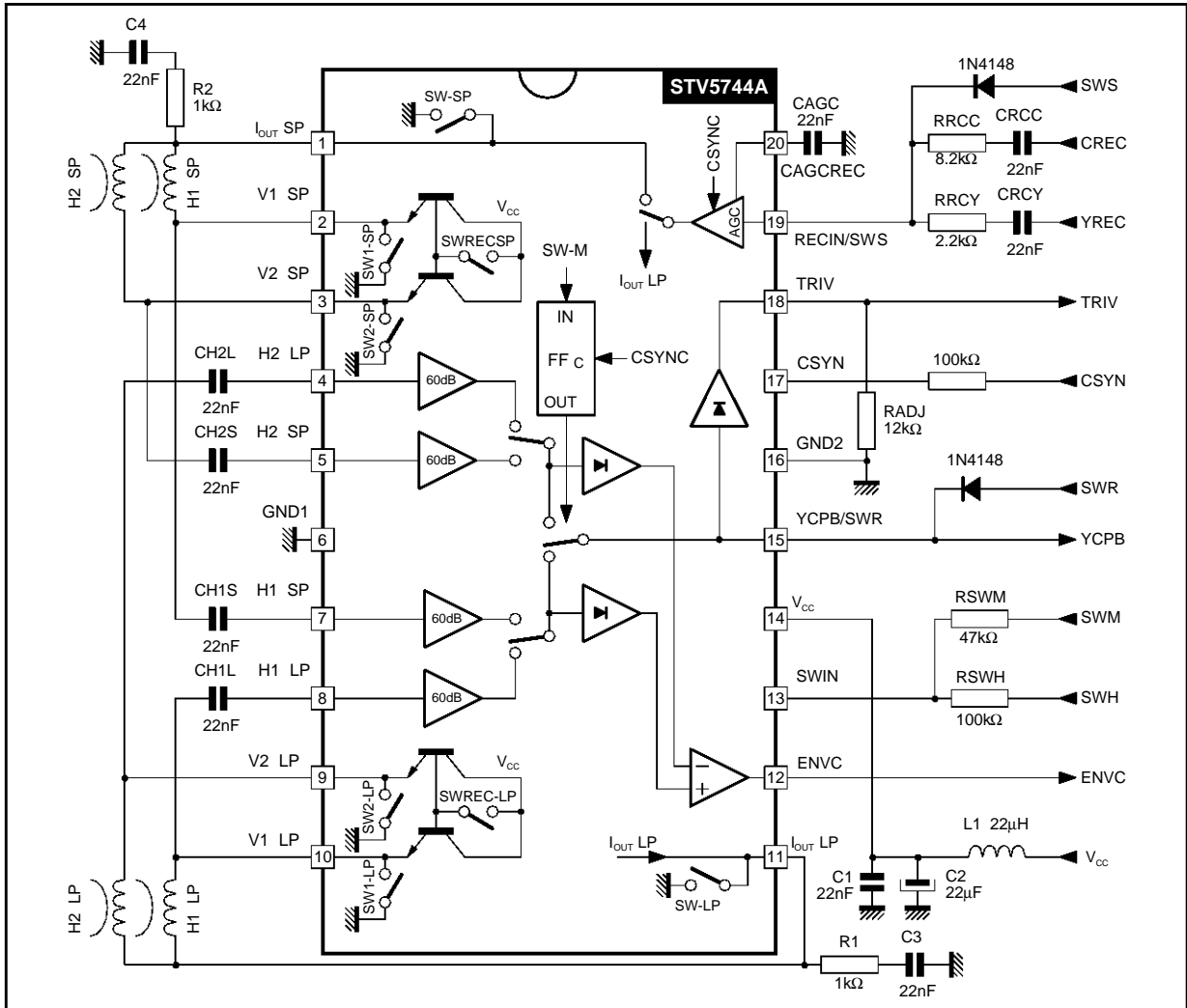
5744A-13.EPS

Figure 12



5744A-14.EPS

APPLICATION DIAGRAM



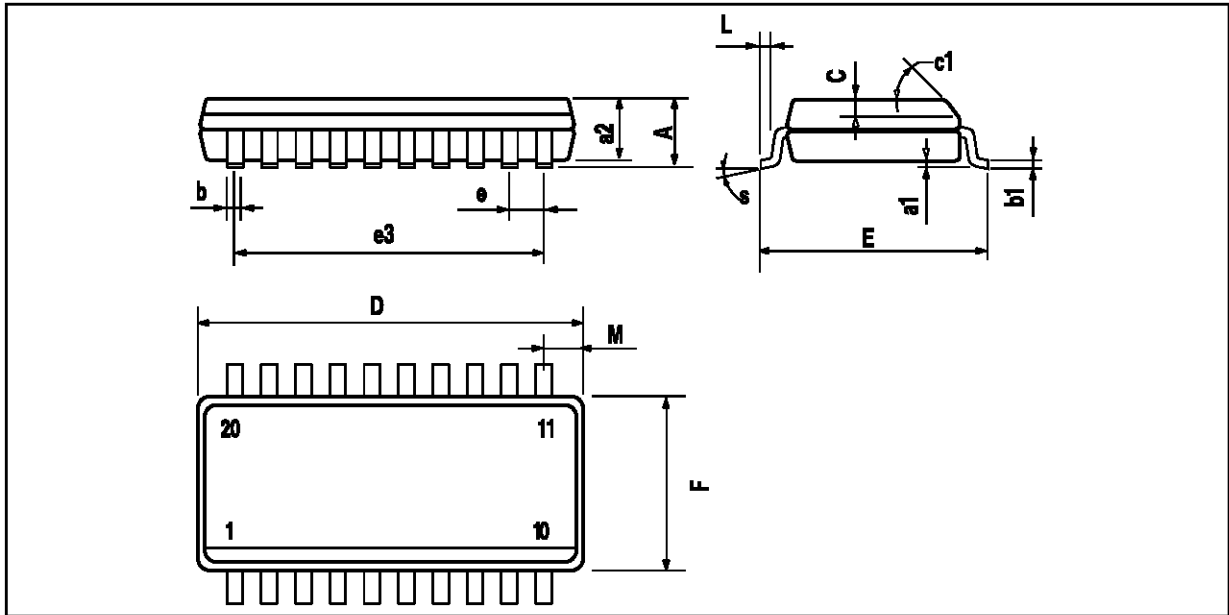
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SWITCH TABLE

SW-R	SW-M	SW-S	SW-H	Channel	SW1-SP SW2-SP	SW1-LP SW2-LP	SW-SP	SW-LP	SWREC-SP	SWREC-LP	ENVC (SPLP)
L	L	L	L	2-SP	OFF	OFF	ON	ON	OFF	OFF	High IF LP > SP Low IF LP < SP
			H	1-SP							
			L	1-LP							
			H	2-LP							
	L	H	H	L	2-SP	OFF	ON	OFF	ON	ON	
				H	1-SP						
				L	1-LP						
				H	2-LP						
H	L	L	L	SP	OFF	ON	OFF	ON	OFF	High	
			H	LP							
			L	LP							
			H	LP							

5744A-06.TBL

**PACKAGE MECHANICAL DATA**  
 20 PINS - PLASTIC MICROPACKAGE (SO)



PM-SO20.EPS

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.)					

SO20C.TBL

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