

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

PRELIMINARY DATA

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

**PLAYBACK MODE**

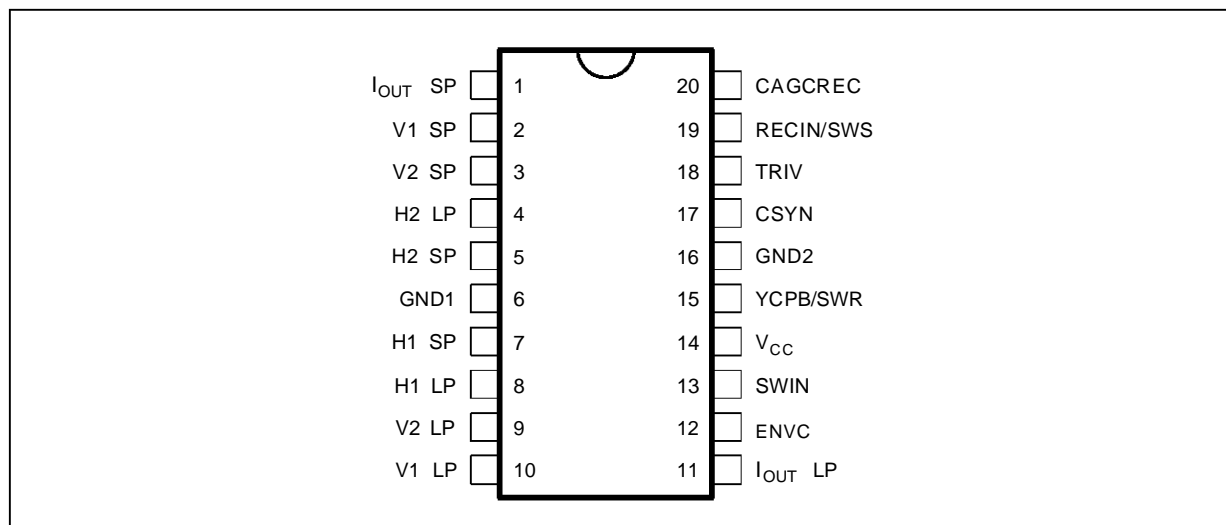
- LOW NOISE AND WIDE BAND AMPLIFIERS FOR 4 HEADS
- AUTOMATIC OFFSET CANCELLATION BETWEEN THE 2 SELECTED HEADS
- ONE PLAYBACK OUTPUT
- ONE OUTPUT FOR AUTOMATIC VIDEO TRACKING
- SP/LP ENVELOPE COMPARATOR
- SHORT-CIRCUIT SWITCHES ON UNUSED HEADS

**RECORD MODE**

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

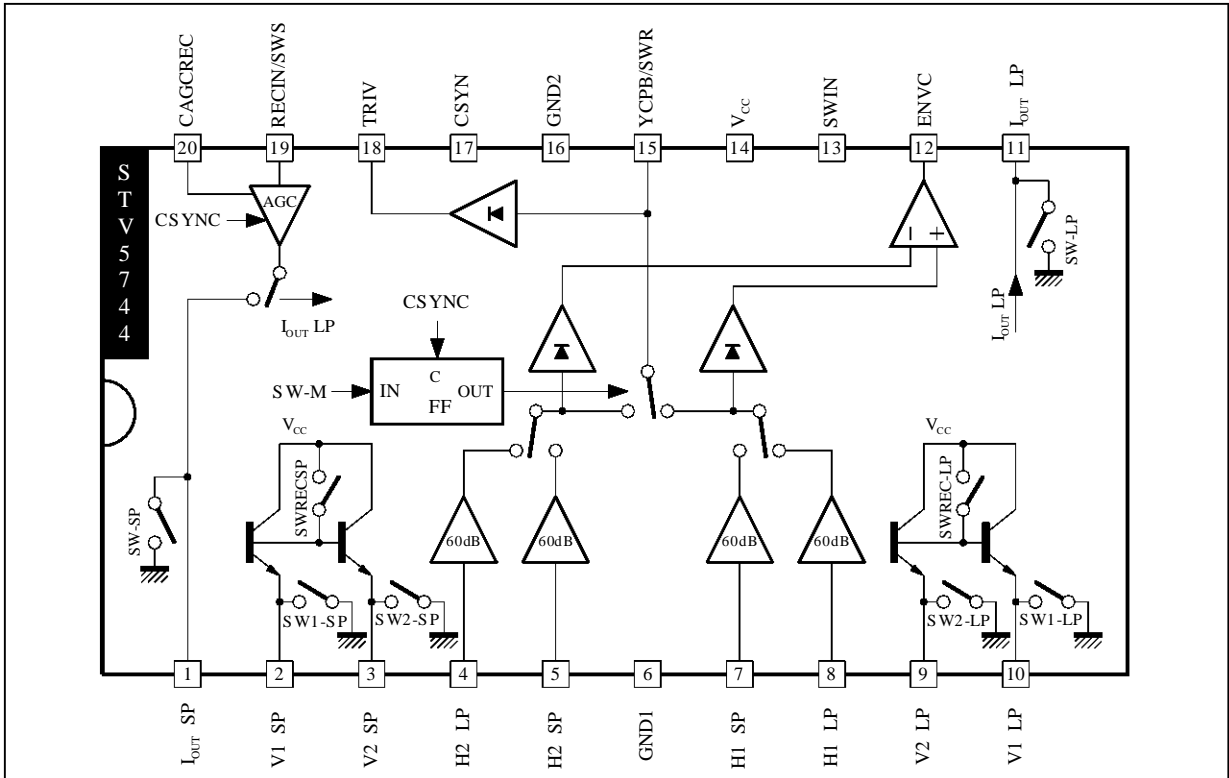


**PIN CONNECTIONS**



5744-01.EPS

BLOCK DIAGRAM



5744-02.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

5744-01.TBL

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

5744-03.TBL

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
PLAYBACK AMPLIFIER						
$I_{CC1}$	Supply Current		42	52	62	mA
GPB	Playback Gain	Sinewave 600kHz, 0.4mV <sub>PP</sub> on inputs	58	60	62	dB
EN	Equivalent Voltage Noise	Input grounded via I <sub>OUT</sub> 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 → SP)	Sinewave @ 4MHz, 0.4mV <sub>PP</sub>		-45	-40	dB
CRT2	Crosstalk (SP → LP)	Sinewave @ 4MHz, 0.4mV <sub>PP</sub>		-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 <sub>IN</sub>	Input Capacitance	@ 6MHz, 22nF between Vi/Hi	40	50	60	pF
Z <sub>IN</sub>	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, 0.4mV <sub>PP</sub>		-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, 100mV <sub>PP</sub> @ YCPB		1.3		V
TRIV4	Output Level (3)	Sinewave @ 4MHz, 400mV <sub>PP</sub> @ YCPB	2.5	3.1	3.5	V
TRIV6	Output Level (4)	Sinewave @ 4MHz, 600mV <sub>PP</sub> @ 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

5744-04.TBL

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

**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)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>RECORD AMPLIFIER</b>						
I <sub>CC2</sub>	Current Supply		68	91	115	mA
I <sub>HA0</sub>	DC Current through I <sub>OUT</sub>		24	33	41	mA
I <sub>HA1</sub>	Fundamental	V <sub>RCY</sub> = 300mV <sub>PP</sub> @ 4MHz	30	32	34	mA <sub>PP</sub>
I <sub>HA2</sub>	2nd Harmonic	V <sub>RCY</sub> = 300mV <sub>PP</sub> @ 4MHz		-40	-36	dB
I <sub>HA2M</sub>	2nd Harmonic	V <sub>RCY</sub> = 400mV <sub>PP</sub> @ 4MHz, AGC adjusted for I <sub>AH1</sub> = 40mA <sub>PP</sub>			-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 <sub>IN</sub> = 300mV <sub>PP</sub> ±3dB @ f = 4MHz	-0.2	0	+0.2	dB
R <sub>IOUT</sub>	Output Resistance	ΔV = 5V	3.5	5.5		kΩ
R <sub>SAT</sub>	Output Stage Resistance	ΔI = 10mA	5	10	50	Ω
I <sub>RN</sub>	AGC Capacitor downloading Current	4.5V at CAGC Pin		160		μA
I <sub>RP</sub>	AGC Capacitor uploading Current	0.5V at CAGC Pin, V <sub>IN</sub> = 300mV <sub>PP</sub> @ 4MHz		-165		μA

**SWITCHING LEVELS**

V <sub>SWINL</sub>	SWIN Input Voltage	Selects head H2SP	0		0.8	V
V <sub>SWIN1</sub>	SWIN Input Voltage	Selects head H1SP	1.3		2.3	V
V <sub>SWIN2</sub>	SWIN Input Voltage	Selects head H1LP	2.8		3.8	V
V <sub>SWINH</sub>	SWIN Input Voltage	Selects head H2LP	4.3		5	V
I <sub>SWINH</sub>	SWIN Input Leakage Current	5V at SWIN input		0.5		μA
I <sub>SWINL</sub>	SWIN Input Leakage Current	0V at SWIN input		-0.2		μA
V <sub>SWRCH</sub>	SWRC Input Threshold	Selects record mode, 0 to 5V	3.2	3.4	3.8	V
V <sub>SWRCL</sub>	SWRC Input Threshold	Selects playback mode, 5 to 0V	3.1	3.35	3.8	V
I <sub>SWRCH</sub>	SWRC Input Leakage Current	5V at SWRC input	2	5	8	mA
I <sub>SWRCL</sub>	SWRC Input Leakage Current	0V at SWRC input	-20	0	20	μA
t <sub>ON</sub>	Delay	Signal appears on YCPB		1.6		ms
t <sub>1</sub>	Delay from playback to record : Signal disappears on Pin YCPB	22nF between Hi/Vi		1		μs
t <sub>2</sub>	Delay from record to playback : Signal appears on Pin YCPB			1.9		ms
t <sub>3</sub>	Delay from playback to record : Signal appears on Pin I <sub>OUT</sub>	V <sub>RCY</sub> = 300mV <sub>PP</sub> @ 4MHz		2		ms
t <sub>4</sub>	Delay from record to playback : Signal disappears on Pin I <sub>OUT</sub>			10		μs
V <sub>CSYH</sub>	CSYN Input Threshold	Sampling on (I = -25μA)	2.2	2.5	2.8	V
V <sub>CSYL</sub>	CSYN Input Threshold	Sampling off (I = 25μA)	2.2	2.5	2.8	V
I <sub>CSYH</sub>	Leakage Current	Sampling on			-10	μA
I <sub>CSYL</sub>	Leakage Current	Sampling off	10			μA
V <sub>SWST</sub>	SWS Input Threshold			3		V
I <sub>SWSH</sub>	SWS Input Leakage Current	5V at SWS Input	90	130	170	μA
I <sub>SWSL</sub>	SWS Input Leakage Current	0V at SWS Input	-20	0	20	μA

5744-05.TBL

INTERNAL SCHEMATICS

Figure 1

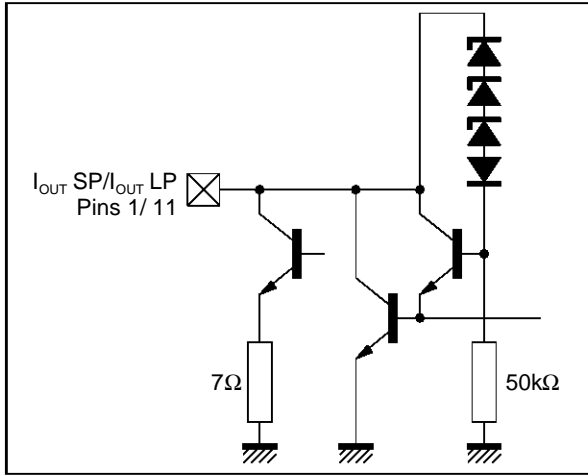


Figure 2

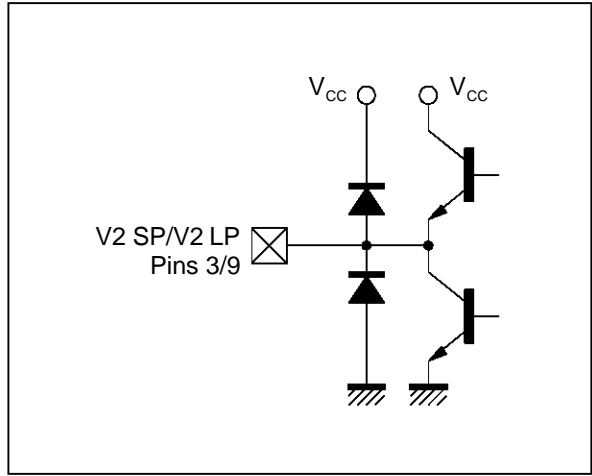


Figure 3

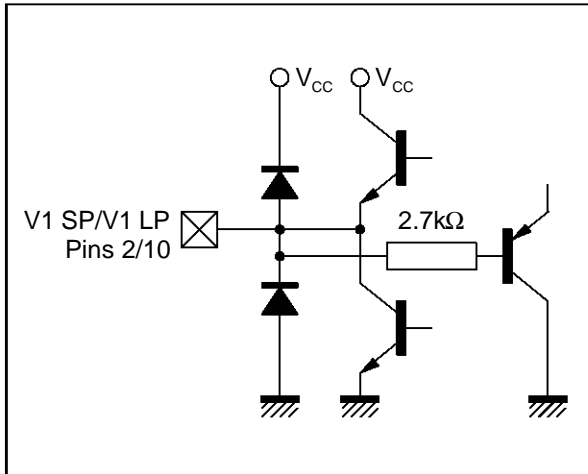


Figure 4

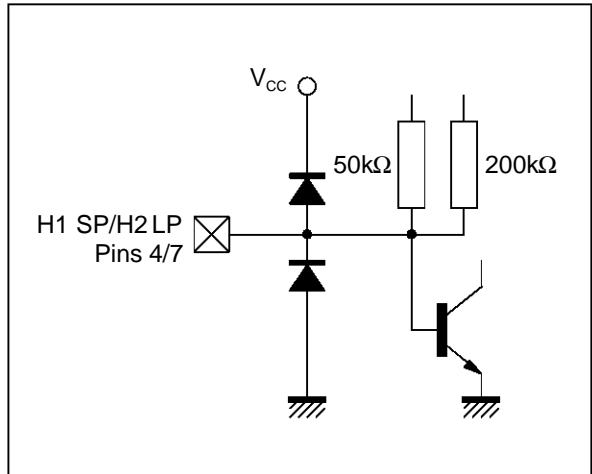


Figure 5

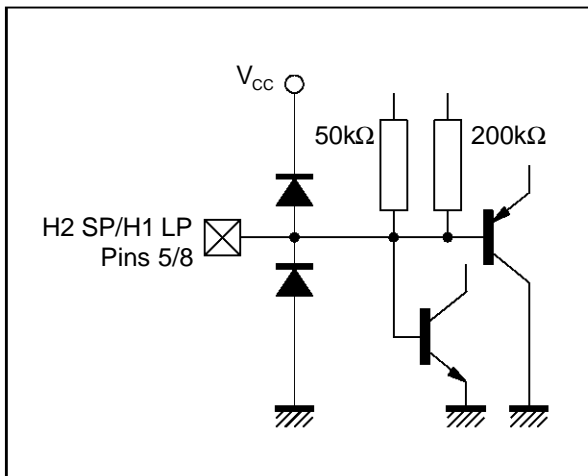
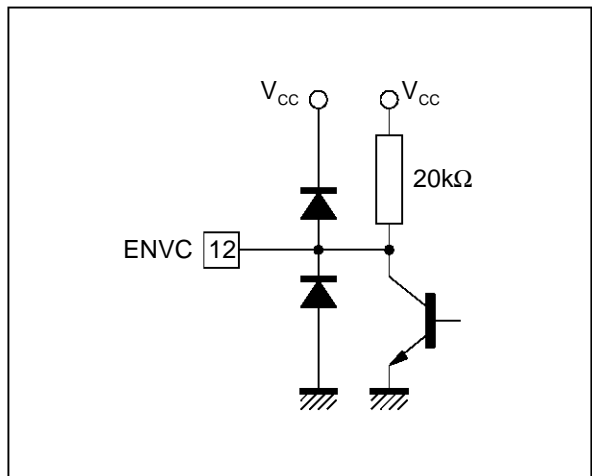
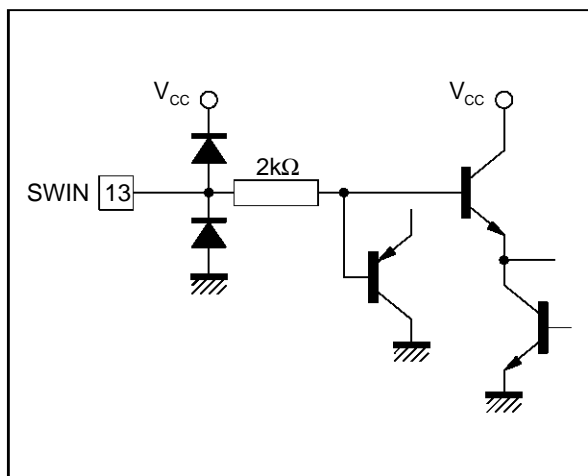


Figure 6



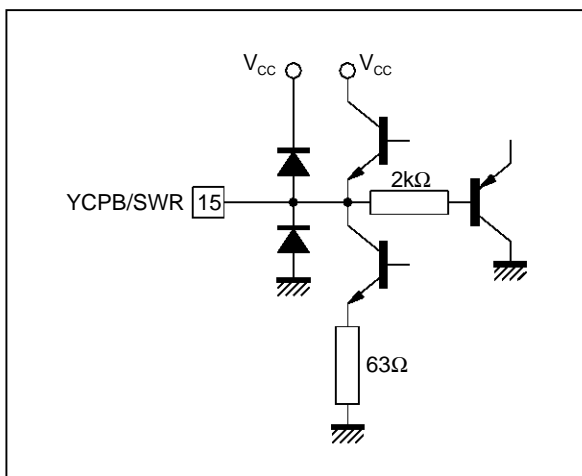
INTERNAL SCHEMATICS (continued)

Figure 7



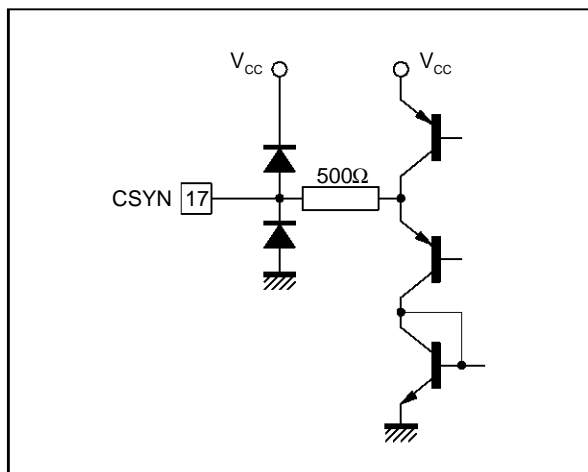
5744-09.EPS

Figure 8



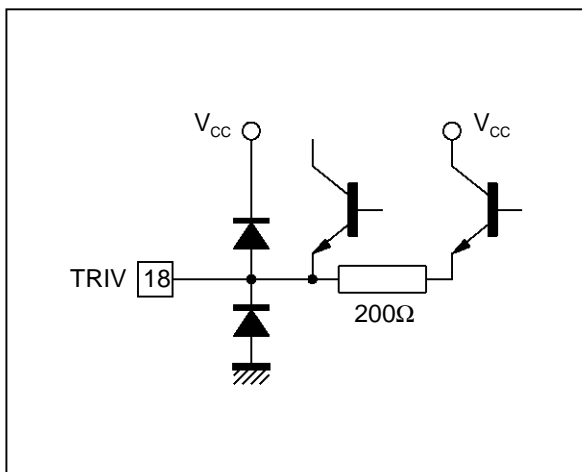
5744-10.EPS

Figure 9



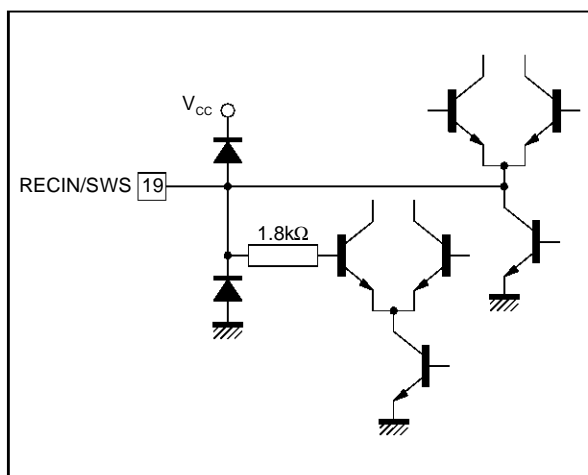
5744-11.EPS

Figure 10



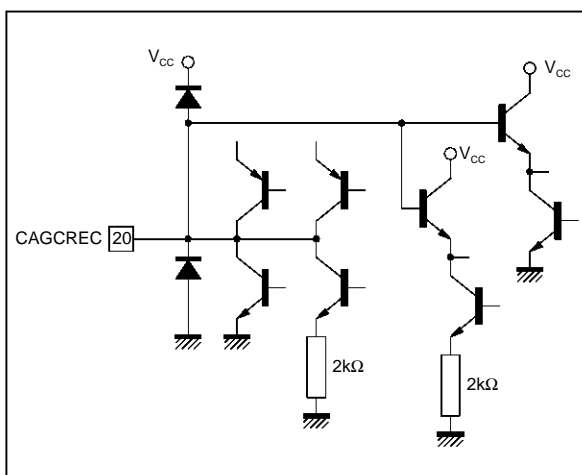
5744-12.EPS

Figure 11



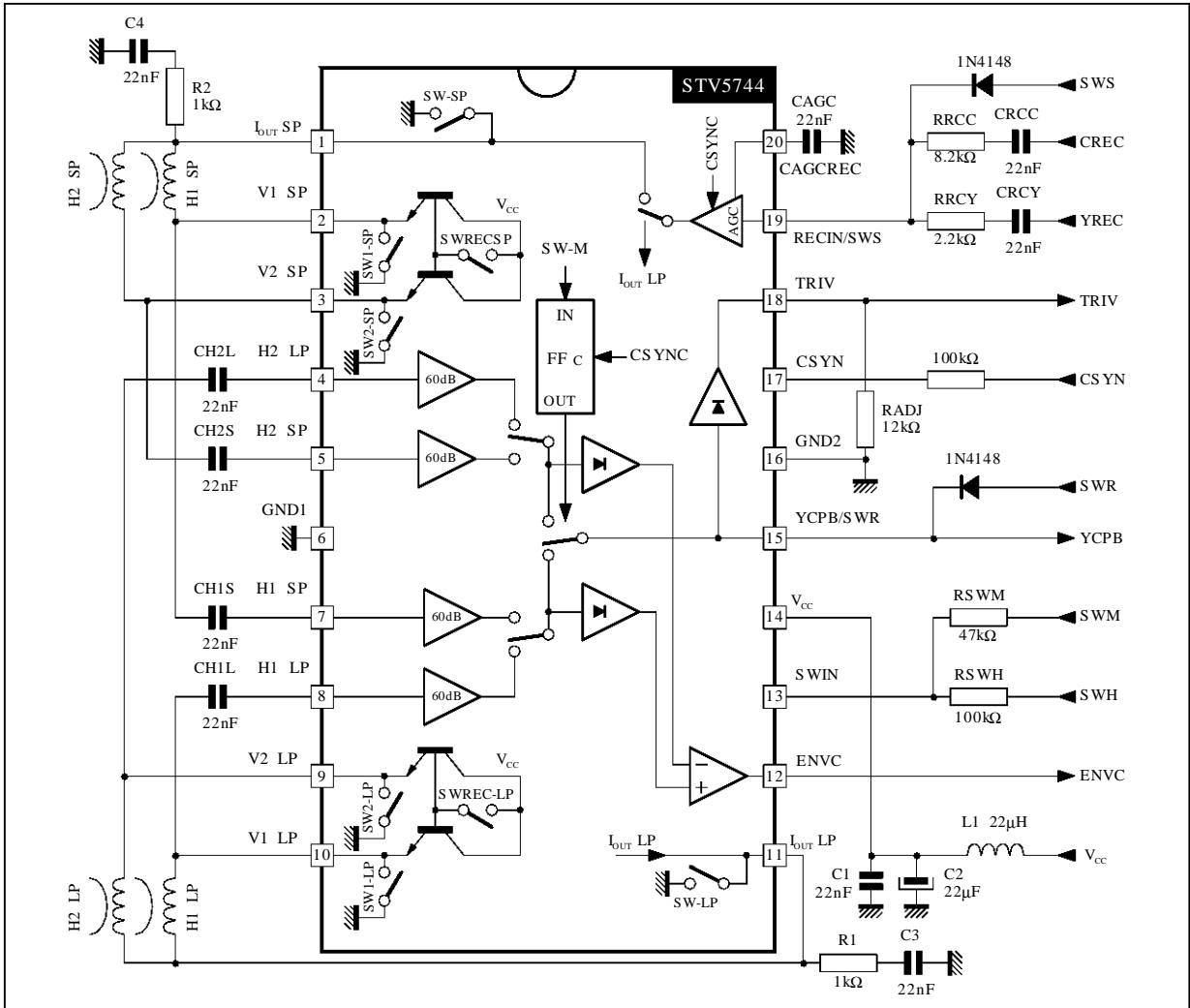
5744-13.EPS

Figure 12



5744-14.EPS

APPLICATION DIAGRAM



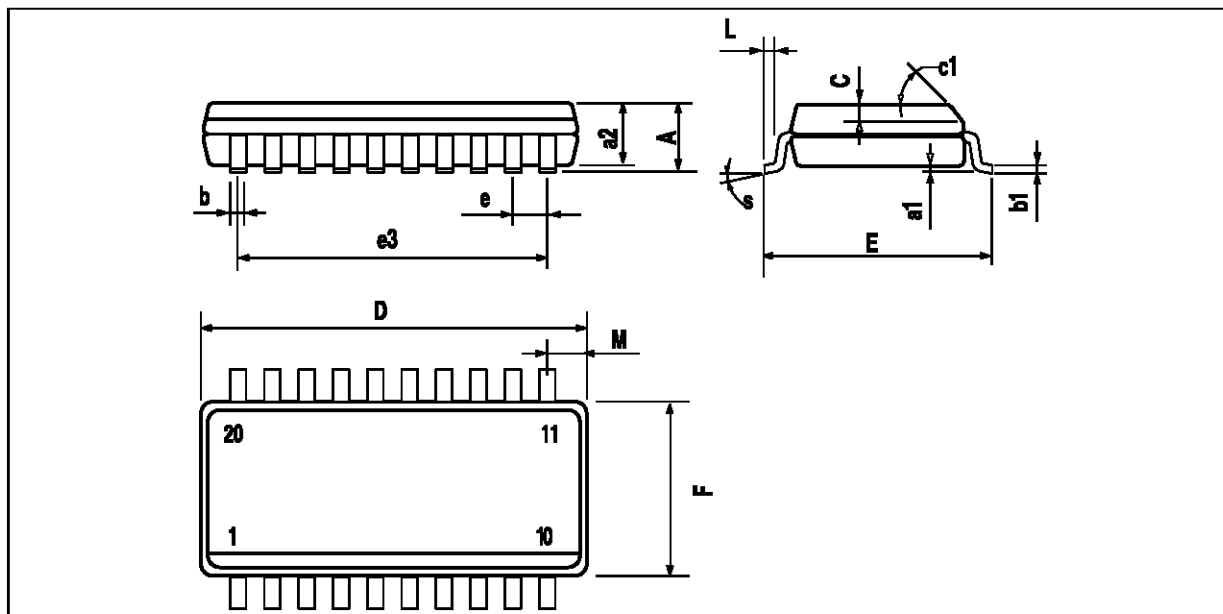
5744-03.EPS

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	L	2-SP	OFF	ON						
	H		1-SP	ON	OFF							
H	L	L	L	SP	OFF	ON	OFF	ON	ON	OFF	High	
			H	LP	ON	OFF	ON	OFF	OFF	ON		
	H		L	SP	OFF	ON	OFF	ON	ON	ON		OFF
			H	LP	ON	OFF	ON	OFF	OFF	OFF		ON

5744-06.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		0.3	0.004		0.012
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.)					

SO20.TBL

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