

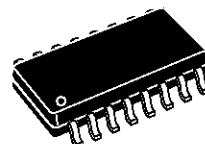
**ADVANCED FM AUDIO PLAY-BACK  
AND RECORD AMPLIFIER FOR VCR**

**PLAY-BACK MODE**

- LOW NOISE 68dB AMPLIFIERS FOR 2 HEADS
- AUTOMATIC OFFSET CANCELLATION BETWEEN THE 2 SELECTED HEADS
- ONE PLAY-BACK OUTPUT
- MODE SELECTION BY LOGIC INPUT

**RECORD MODE**

- ONE INTEGRATED I/I CONVERTER WITH ACCURATE CONTROL OF TRANSCONDUCTANCE
- RECORD AMPLIFIER WITH AUTOMATIC PROTECTION AGAINST SHORT CIRCUIT
- 5V SUPPLY VOLTAGE



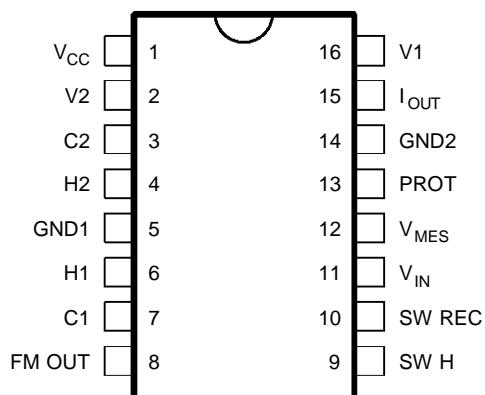
**SO16 NARROW**  
(Plastic Micropackage)

**ORDER CODE : STV5712**

**DESCRIPTION**

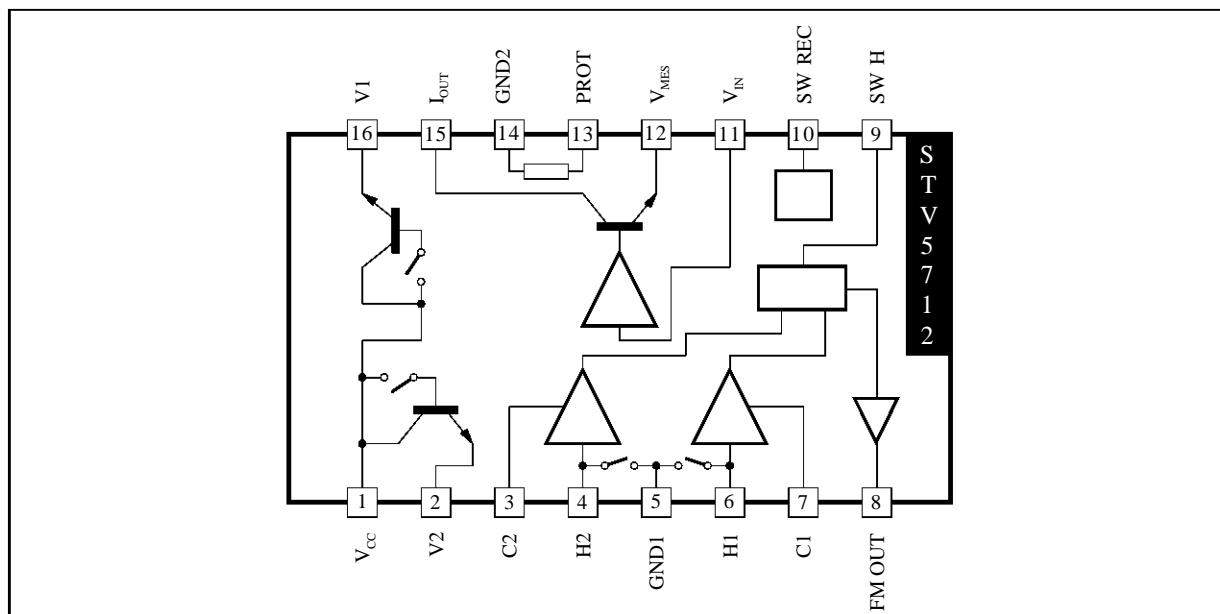
The STV5712 is an advanced two head FM audio record and play-back amplifier for VCR.

**PIN CONNECTIONS**



5712-01.EPS

**BLOCK DIAGRAM**



5712-02.EPS

**FUNCTIONAL DESCRIPTION**

STV5712 is intended for 2 heads FM audio VCR applications.

High performance technology allows very low noise levels (current and voltage). In play-back mode a special feature suppresses the DC offset when switching two channels. Optimized play-back output stage gives to the STV5712 large capability to directly drive a coaxial cable in order to reduce number of external components.

Only one power supply is necessary for play-back and record modes. The mode can be chosen through a logic input. A special care has been taken to avoid current peaks through the rotary transformers.

During play-back mode, record output is grounded via an internal transistor and during record mode preamplifiers are turned off.

There is one output current for the two heads, the DC current and the AC characteristics can be very precisely controlled with accurate external resistors. If recommended resistances are used, a  $\pm 5\%$  transconductance accuracy is guaranteed.

The recording amplifier includes a protection system which protects the IC and the application board against overheating in case of short circuit on the recording transconductance components.

STV5712 is fully protected against ESD.

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Power Supply Voltage	6	V
T <sub>J</sub>	Junction Temperature	+ 150	°C

5712-01.TBL

**THERMAL DATA**

Symbol	Parameter	Value	Unit
R <sub>th (j-a)</sub>	Junction-ambient Thermal Resistance	Typ. 100	°C/W

5712-02.TBL

**ELECTRICAL OPERATING CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)**Power Consumption**

Parameter	Play-Back		Record (1)	
	Typ.	Max.	Typ.	Max.
$V_{CC} = 5V$	25mA	35mA	60mA	80mA

Note : 1.  $R1 = 5.6\Omega$

**Play-back Mode**

$V_{CC} = 5V$ , no load on Pin  $V_{OUT}$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CC1}$	Supply Current			25	35	mA
$V_{CC}$	Supply Voltage		4.75	5	5.25	V

**FM OUT**

$G_{PB}$	Pre-amplification Gain	Sinus wave 1.6MHz 400mV <sub>PP</sub> on output, Input on Pin H1 or H2	63	68	73	dB
$\Delta G_{PB}$	Gain Difference of Output Signal on Pin FM OUT between Channel 1 and Channel 2	Sinus wave 1.6MHz 0.1mV <sub>PP</sub> on inputs H1 or H2			1.2	dB
$e_N$	Equivalent Input Voltage Noise Level	Input grounded via switching transistor on Pins H1, H2		0.34	0.5	nV/ $\sqrt{\text{Hz}}$
$i_N$	Equivalent Input Current Noise	Pins H1, H2		3.6	5.0	pA/ $\sqrt{\text{Hz}}$
CRT	Crosstalk	Sinus wave 1.6MHz 100 $\mu$ V <sub>PP</sub> , All switches combined		-45	-40	dB
$F_{LCPB}$ $F_{HCPB}$	Bandwidth Cut-off Frequency	-3dB attenuation 50 $\Omega$ in parallel on the input  Low High		8	0.1	MHz MHz
$C_{IN}$	Input Capacitance Pins H1, H2			45		pF
$R_{IN}$	Pre-amplifier Input Resistance Pins H1, H2	At 1.6MHz		600		$\Omega$
$Z_{PB}$	Output Impedance	DC		30	50	$\Omega$
$V_{DCPB}$	DC Level at Pin FMOOUT		1.8	2.4	3	V
$\Delta V_{DC}$	Head Switch Offset				150	mV
$SH_{PB1}$	Second Harmonic	Sinus wave 1.6MHz 100 $\mu$ V <sub>PP</sub> on input 500 $\Omega$ //100pF		-45	-40	dB

**ELECTRICAL OPERATING CHARACTERISTICS** ( $T_A = 25^{\circ}\text{C}$  unless otherwise specified) (continued)

**Record Mode**

$V_{CC} = 5\text{V}$ , Load resistor  $50\Omega$  on Pin I<sub>OUT</sub>

Transconductance network defined by :  $R1 = 5.6\Omega$  1% Pins PROT/ $V_{MES}$

$R2 = 1\text{k}\Omega$  1% Pins  $V_{MES}/V_{IN}$

$R3 = 750\Omega$  1% Pins  $V_{IN}$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CC2</sub>	Current Supply	$V_{CC} = 5\text{V}$		60	80	mA

I<sub>OUT</sub>

I <sub>max</sub>	Max. Record Current			70		mA <sub>PP</sub>
I <sub>BIAS</sub>	Biassing Current of the record amplifier		33	40	47	mA
TR	Transconductance	$V_{IN} = 200\text{mV}_{PP}$		220		mA/V
Z <sub>OUT</sub>	Output Resistance		7	100		k $\Omega$
SH <sub>REC</sub>	Second Harmonic	Output Current 40mA <sub>PP</sub> at 1.6MHz		-43	-38	dB
F <sub>LCREC</sub> F <sub>HCREC</sub>	Bandwidth Cut-off Frequency	-3dB attenuation Output current 60mA <sub>PP</sub> Low High	5		0.1	MHz MHz
	Maximum Input Current on Pin PROT	5V on Pin PROT	150	250	400	mA
	Maximum Saturation Voltage on Pin PROT	Input current 50mA		100	150	mV
	Input Resistance	Equivalent value of R3 resistor	500	700	900	$\Omega$

5712-05.TBL

**Switching Levels**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>SWH1</sub>	Head Selection Pin SW	Head number 1 (high level)	2.4		$V_{CC}$	V
V <sub>SWL1</sub>		Head number 2 (low level)	0		1.5	V
I <sub>SWH1</sub>		Input current (high level)		20	50	$\mu\text{A}$
I <sub>SWL1</sub>		Output current (low level)		20	50	$\mu\text{A}$
V <sub>SWH2</sub>	Mode Selection Pin SW REC	Record mode (high level)	2.4		$V_{CC}$	V
V <sub>SWL2</sub>		Play-back mode (low level)	0		1.5	V
I <sub>SWH2</sub>		Input current (high level)		20	50	$\mu\text{A}$
I <sub>SWL2</sub>		Output current (low level)		20	50	$\mu\text{A}$
t <sub>ON1</sub>	Selection Pin SW Transient Response	Delay time selection ON (output signal appears on Pin FM OUT)		250	500	ns
t <sub>OFF1</sub>		Delay time selection OFF (output signal disappears on Pin FM OUT)		250	500	ns
t <sub>ON2</sub>	Selection Pin SW REC Transient Response	Delay time selection ON (output signal appears on Pin I <sub>OUT</sub> )		4	40	$\mu\text{s}$
t <sub>OFF2</sub>		Delay time selection OFF (output signal appears on Pin FM OUT)		1.3	10	ms

5712-06.TBL

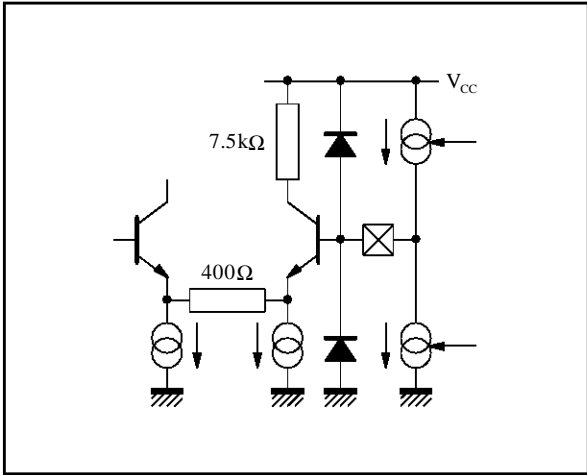
**ELECTRICAL OPERATING CHARACTERISTICS** (T<sub>A</sub> = 25°C unless otherwise specified) (continued)  
**Power Supply**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>CC</sub>	Positive Supply Voltage Pin V <sub>CC</sub>		4.75	5	5.25	V
SVR	Supply Voltage Rejection	0.5mV <sub>PP</sub> on Pin V <sub>CC</sub> 75μV <sub>PP</sub> on Pin H1, H2 Measurement on Pin FM OUT	15	20		dB

5712-07.TBL

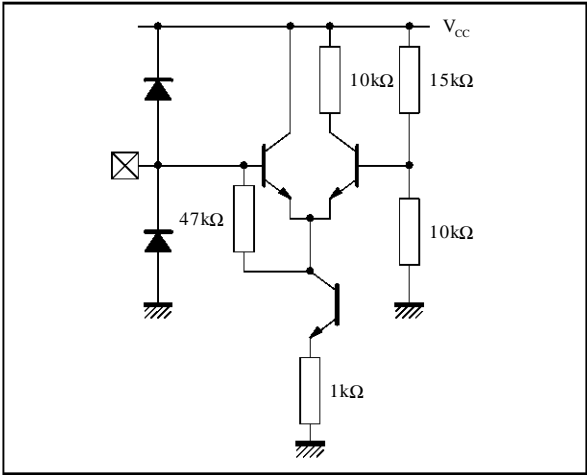
**INPUT/OUTPUTS EQUIVALENT INTERNAL DIAGRAM**

Pins : C1, C2



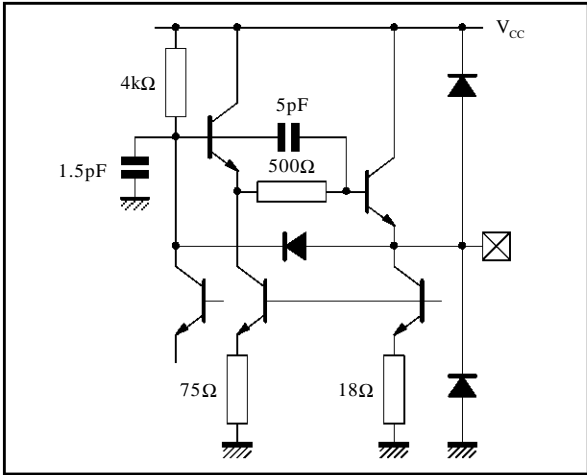
5712-03.EPS

Pin : SW



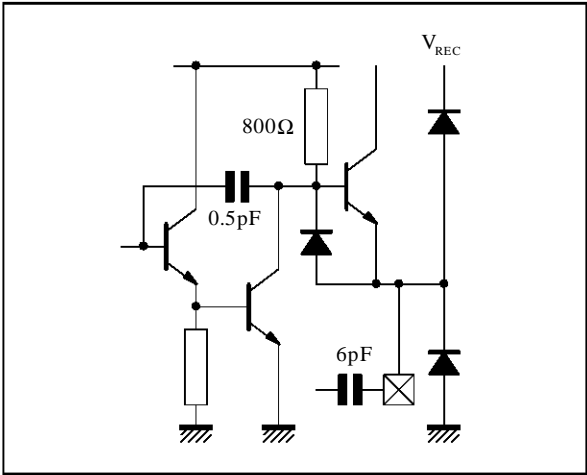
5712-04.EPS

Pin : FM OUT



5712-05.EPS

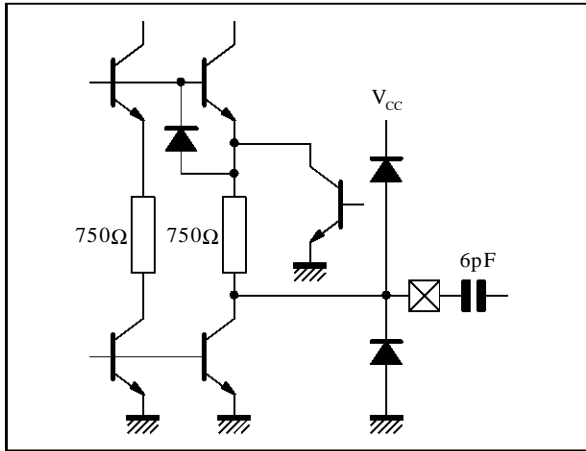
Pin : V<sub>MES</sub>



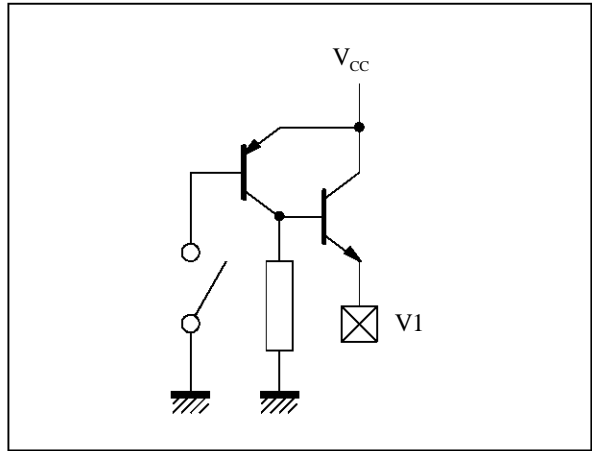
5712-06.EPS

INPUT/OUTPUTS EQUIVALENT INTERNAL DIAGRAM (continued)

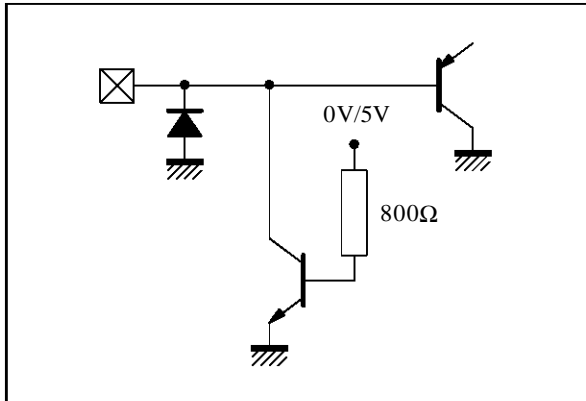
Pin : VIN



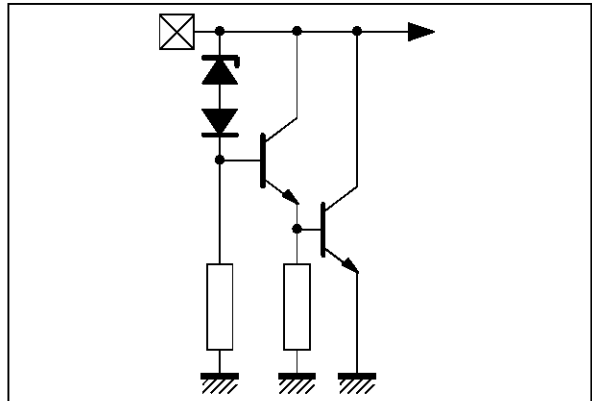
Pin s : V1, V2



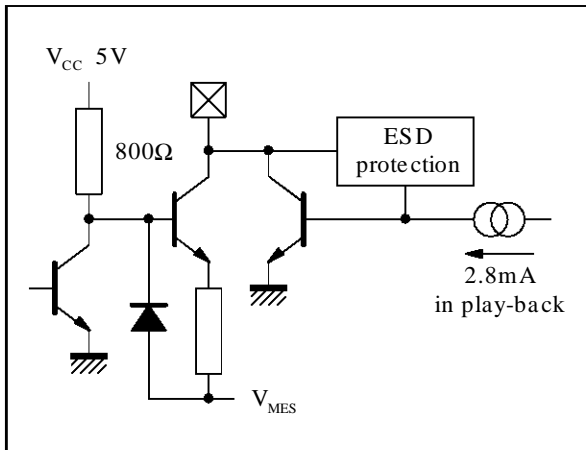
Pin : PROT



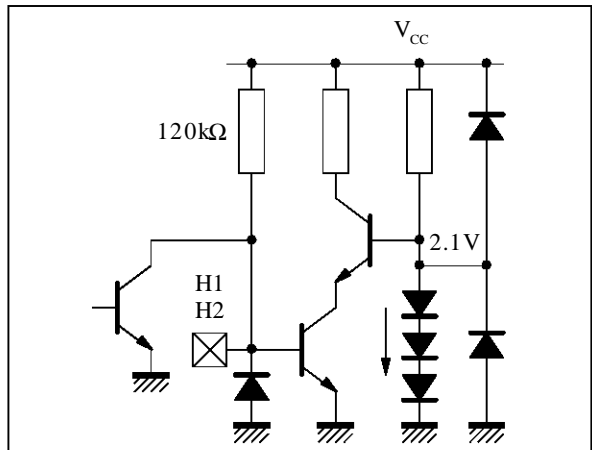
Pin : Vcc



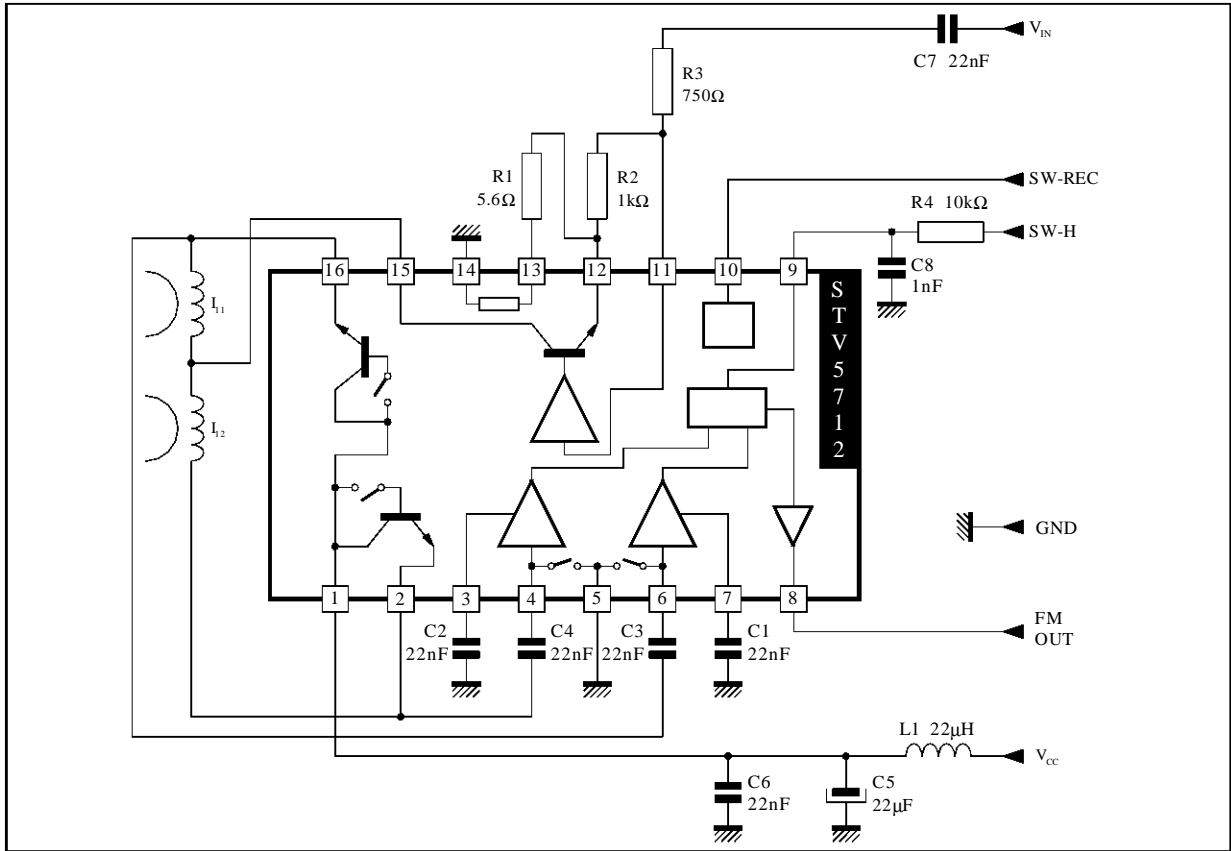
Pin : IOUT



Pins : H1, H2



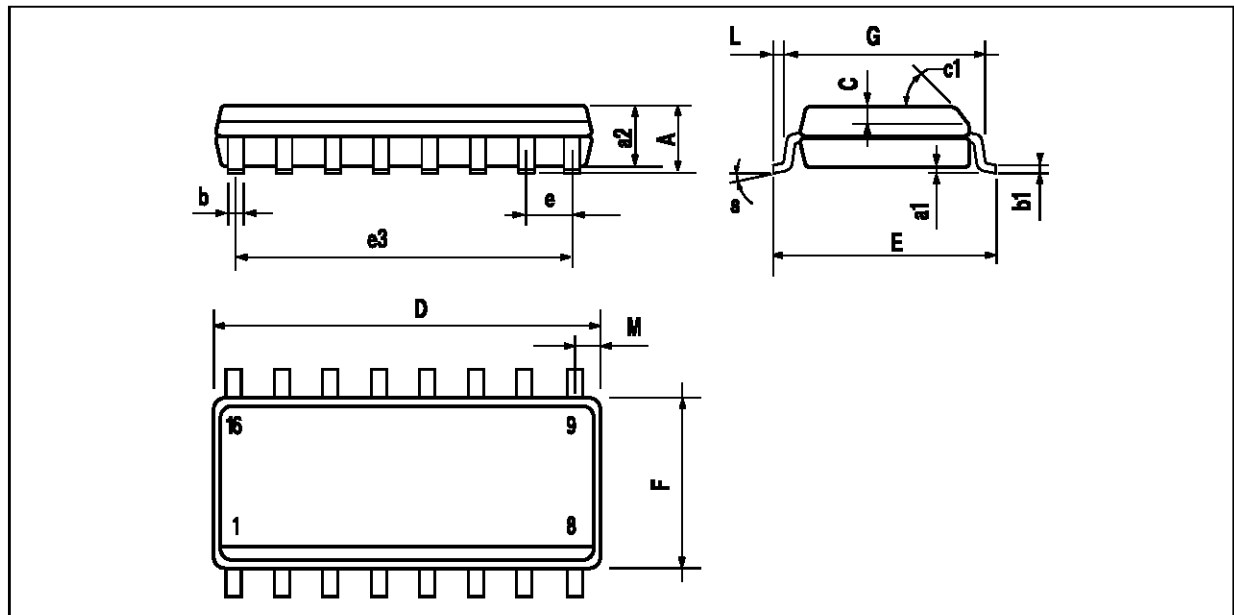
APPLICATION DIAGRAM



5712-13.EPS

**PACKAGE MECHANICAL DATA**

16 PINS - PLASTIC MICROPACKAGE (SO NARROW)



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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