

AN7259S

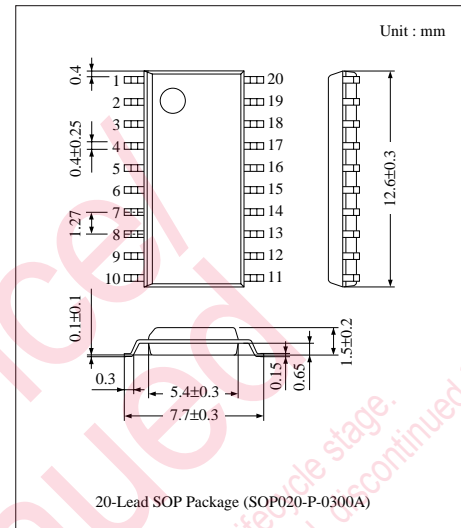
FM-IF Amplifier Circuit for Car Radio

■ Overview

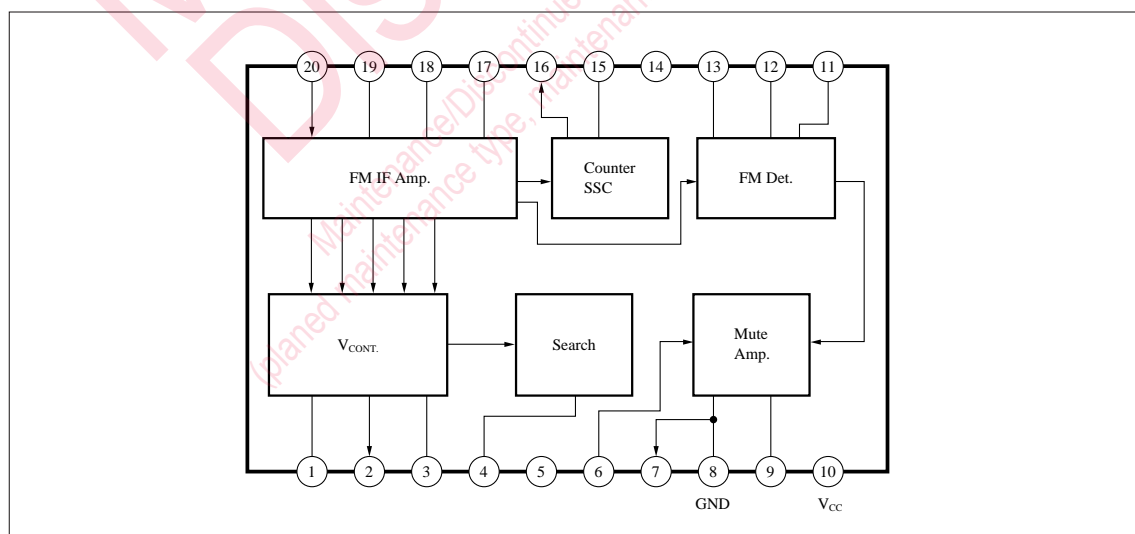
The AN7259S is an FM-IF/DET IC for car radio/car stereo and has each function necessary for electronic-tuner.

■ Features

- Quadrature detection system and fewer external parts
- Good linearity of control voltage output used for AGC and separation control, etc.
- IF counter output and search output in channel selection signal as electronic tuning and with IF counter output ON/OFF circuit (SSC)
- Adjustment of search band width and search output center frequency
- Soft muting adjusting function



■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	9.6	V
Supply Current	I_{CC}	23	mA
Power Dissipation (Ta = 75°C)	P_D	230	mW
Operating Ambient Temperature	T_{opr}	-30 ~ + 75	°C
Storage Temperature	T_{stg}	-55 ~ + 125	°C

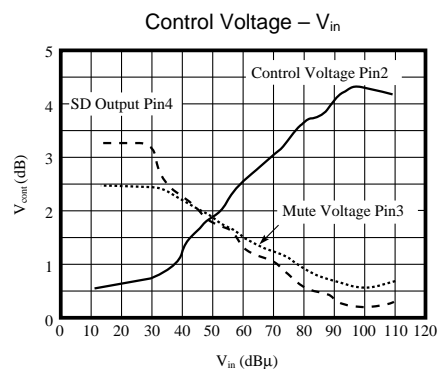
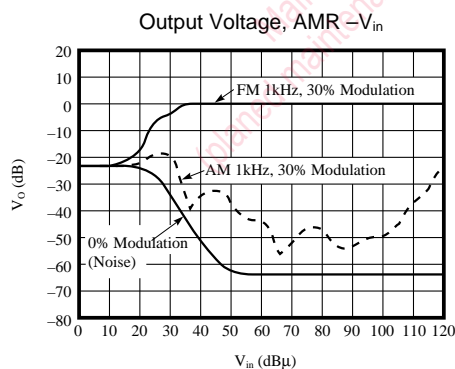
■ Recommended Operating Range (Ta=25°C)

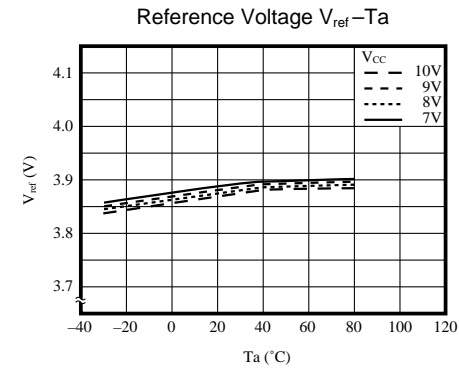
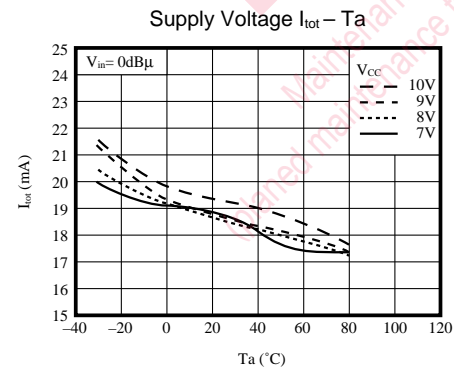
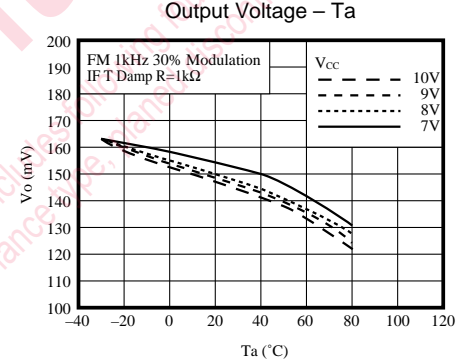
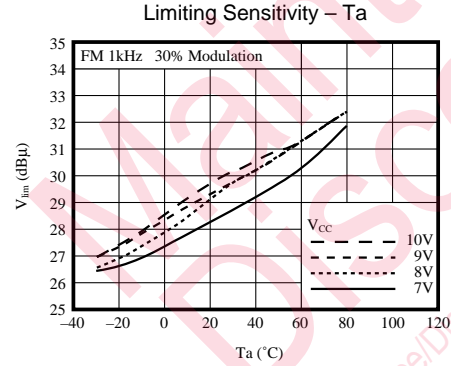
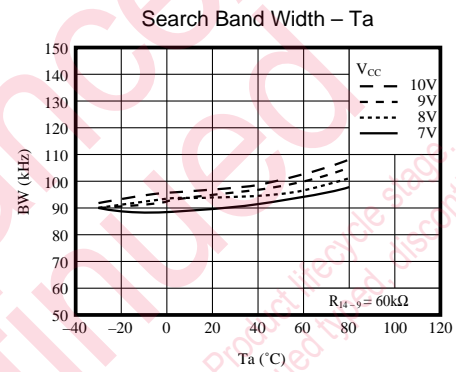
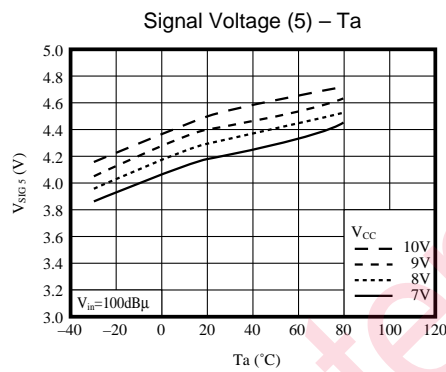
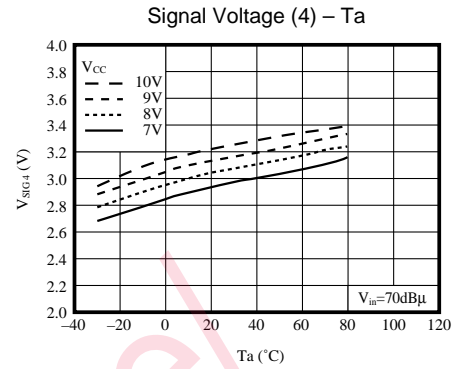
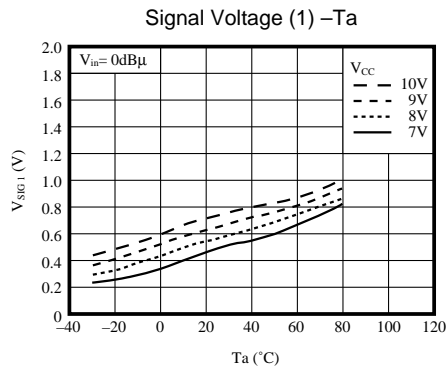
Parameter	Symbol	Range
Operating Supply Voltage Range	V_{CC}	7.3V ~ 9.6V

■ Electrical Characteristics ($V_{CC} = 8V$, FM 1kHz 30% Modulation, Ta= 25°C)

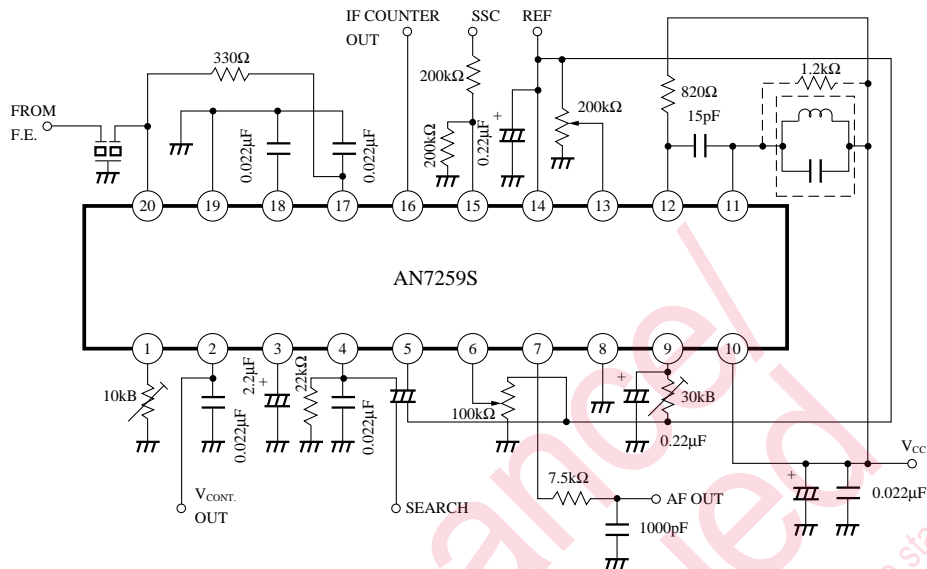
Parameter	Symbol	Condition	min.	typ.	max.	Unit
Limiting Sensitivity	V_{lim}	Input at $V_O = -3dB$	26.5	29.5	32.5	dBμ
Detection Output Level	V_O	$V_{in} = 70dBμ$	150	175	210	mVrms
AFC Offset Voltage	V_{offset}	$V_{in} = 0dBμ$, Pin9 -14 voltage	-240	0	240	mV
Signal Voltage (1)	V_{SIG1}	$V_{in} = 0dBμ$, Pin2 voltage	0.19	0.52	0.85	V
Signal Voltage (2)	V_{SIG2}	$V_{SIG4} - V_{SIG1}$	2.51	2.92	3.33	V
Signal Voltage (3)	V_{SIG3}	$V_{SIG5} - V_{SIG4}$	1.15	1.45	1.75	V
Signal Voltage (4)	V_{SIG4}	$V_{in} = 70dBμ$, Pin2 voltage	2.92	3.4	3.98	V
Signal Voltage (5)	V_{SIG5}	$V_{in} = 100dBμ$, Pin2 voltage	4.11	4.8	5.56	V
Search Signal Band Width	BW	Band width at Pin4 DC voltage = 2.5V, R = 30kΩ	145	165	185	kHz
Supply Current	I_{tot}	$V_{in} = 0dBμ$	15	19	23	mA
THD		Mod. = 30%, $V_{in} = 100dBμ$	—	0.1	—	%
THD		Mod. = 100%, $V_{in} = 100dBμ$	—	0.3	—	%
S/N		Mod. = 30%, $V_{in} = 100dBμ$	—	63	—	dB
IF Counter Output Level		Pin16, 10.7MHz Output	—	250	—	mVrms
AMR		AM = 30% Mod., FM = 30% Mod.	—	50	—	dB
Residual Noise Level		$V_{in} = 0dBμ$	—	-23	—	dB
Control Voltage Adjusting Width		Referred to Input	30	—	—	dB
Reference Voltage			—	3.9	—	V
AF Output Impedance			—	300	—	Ω

■ Characteristics Curve





■ Application Circuit



■ Pin Descriptions

• Control Signal Output Block

The AN7259S has linear level meter output (control voltage on Pin2) whose dynamic range is about 60dB wider for change of the input. This control voltage is adjustable by the resistor R_4 of Pin1. The adjustable range at $R_4 = 0.8k\Omega \sim 10k\Omega$ is more than 30dB in conversion of the input.

The polarity of the output voltage from Pin3 is reverse to that of the voltage to be output from Pin2. This output from Pin3 requires insertion of a capacitor ($C_5 = 4.7\mu F$) since it is used for soft muting. The search output (right sketch) to be used for channel selection is obtainable on Pin4. The band width of this search output is adjustable. (Refer to Detection Block.)

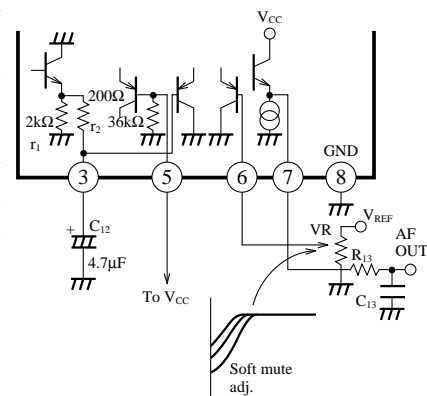
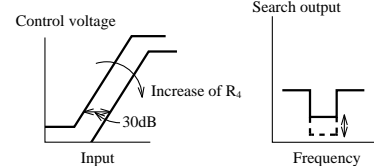
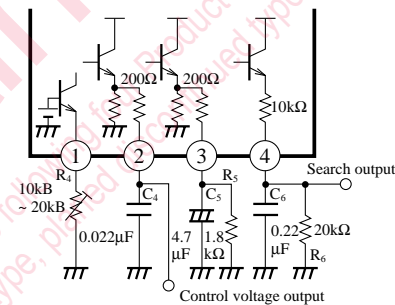
The search stop sensitivity is externally adjustable because the L level value varies with the input signal level.

• Soft Mute

Pin7 is the AF output pin, and the emitter follower output of $\approx 300\Omega$ in output impedance is obtainable on this pin.

Pin6 is the soft mute adjusting pin to adjust the attenuation at the non-input mode.

Soft mute here denotes muting by the level signal output from Pin3, and the soft mute response varies with the time constant of this voltage output. The r_2 and C_{12} are related to the weak input S/N and the soft mute ON time, and with increase of the C_{12} value, the weak input S/N is proportionately improved, but the speed of response accordingly becomes lower. The r_1 , on the other hand, is related to the soft mute OFF time. Each value specified in the right sketch denotes a recommended value.



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