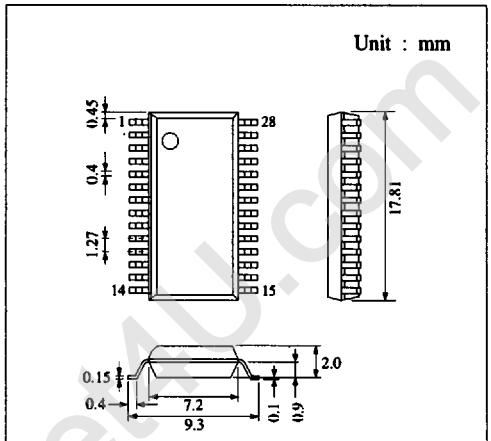
AN7463S

FM Noise Canceller/Stereo Multiplex Demodulator for Car Radio

■ Description

The AN7463S is a monolithic integrated circuit for car stereo configured FM noise canceller and PLL multiplex demodulator in a single chip. It has the same function/performance/pin compatible as the AN7465S except for ASC . ATC characteristics.

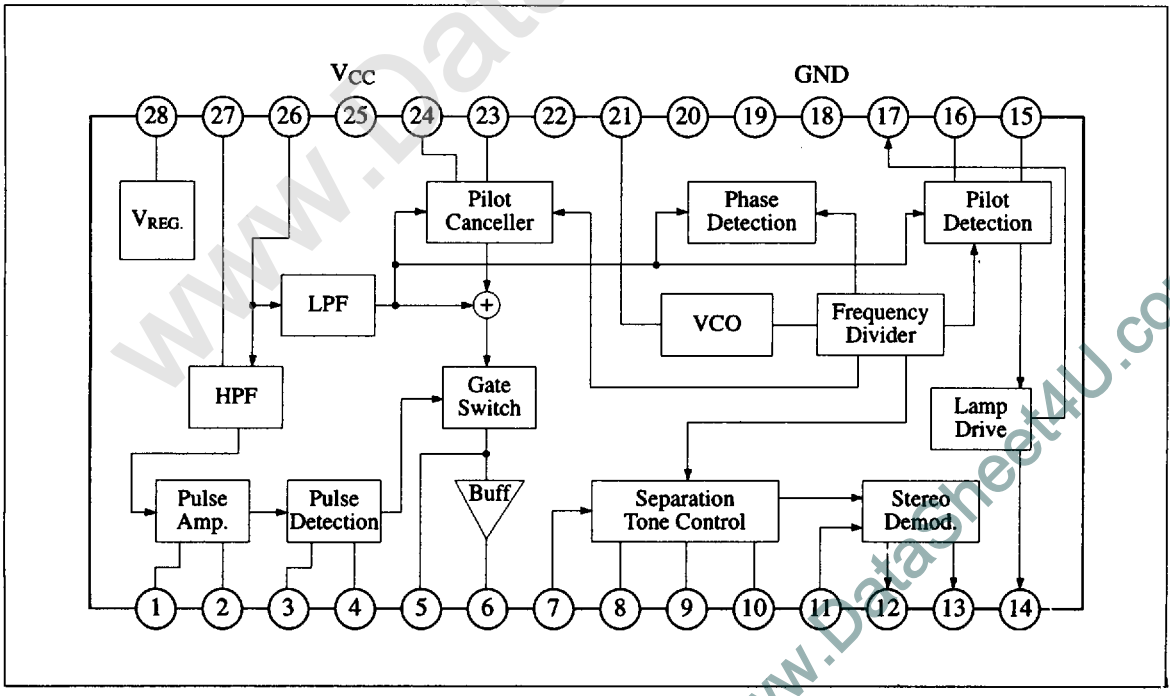


28-Lead PANAFLAT Plastic Package (SO-28D)

■ Features

- HPF/LPF of noise canceller input section built-in
- Good S/N and distortion by using quasi sinewave as pilot canceller negative wave
- HPF band width auto switching by monaural and stereo
- With ASC . ATC functions reducing noise at weak electric field smoothly
- With forced monaural and VCO stop functions

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{CC}	10	V
Supply Current (Without Lamp)	$I_{CC(1)}$	25	mA
Supply Current (With lamp)	$I_{CC(2)}$	30	mA
Power Dissipation	P_D	280	mW
Operating Ambient Temperature	Topr	-30 ~ +85	°C
Storage Temperature	Tstg	-55 ~ +125	°C

Operating Supply Voltage Range: V_{CC} = 6.0V ~ 10.0V

■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Total Circuit Current	I_{tot}	V_{in} = 0mV	10	15	20	mA
AGC Voltage (1)	V_{AGC1}	V_{in} = 0mV, R_s = 10kΩ		0.05	0.4	V
AGC Voltage (2)	V_{AGC2}	V_{in} = 2mV, f = 150kHz	1	1.3	1.5	V
Noise Detection Voltage	V_{DET}	V_{in} = 100mV, f = 150kHz		0.05	0.3	V
Gate Pulse Width	PW	V_{in} = 0.3V_{p-p} Pulse, t_W = 1μs, f = 1kHz	20	25	30	μs
Residual Noise Voltage	V_{NR}	V_{in} = 1V_{p-p} Pulse*, t_W = 10μs, f = 1kHz		0.3	0.7	mV
Output Voltage	V_O	V_{in} = 300mV, f = 1kHz	250	290	330	mV
Channel Balance	CB	V_{in} = 300mV, f = 1kHz		0	1	dB
Separation (1) (R9 = 820Ω fixed)	Sep_1	$V_{(L+R)}$ = 270mV, V_p = 30mV, f = 1kHz	22	32		dB
Separation (2) (at R9 adjustment)	Sep_2	At $V_{(L+R)}$ = 270mV, V_p = 30mV, f = 1kHz, Adjustment		40		dB
Total Harmonic Distortion (Stereo)	THD	$V_{(L+R)}$ = 270mV, V_p = 30mV, f = 1kHz		0.05	0.3	%
Total Harmonic Distortion (Mono)	THD	V_{in} = 300mV, f = 1kHz		0.05	0.3	%
Residual Pilot Voltage	V_{PC}	V_p = 30mV		2.5	10	mV
Lamp ON Pilot Voltage	$V_{p(ON)}$	Input only Pilot Signal	11	16	21	mV
Lamp OFF Pilot Voltage	$V_{p(OFF)}$	Input only Pilot Signal		8		mV
Capture Range	CR	V_p = 30mV	±1.8	±3		%
VCO Stop Voltage	$V_{14\text{-}18}$	Pin 14, VCO Stop Voltage	3	3.4	3.8	V
Maximum Input Voltage	$V_{in(max)}$	f = 1kHz, Input at lamp ON	0.7			V
Input Impedance	Z_{in}	Pin 26		53		kΩ
Output Impedance	Z_O	Pin 12, 13		3.3		kΩ

*Input through LPF of R = 150Ω, C = 0.033μF

■ Pin

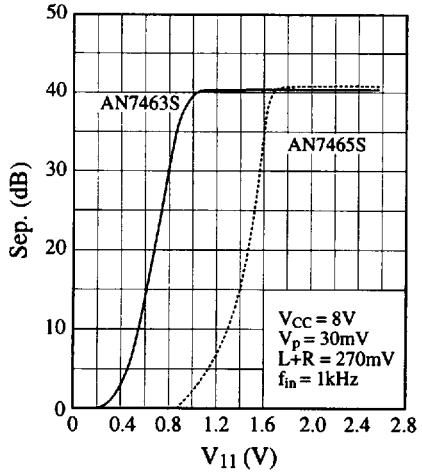
Pin No	Pin Name	Pin No	Pin Name
1	Low Pass Filter for Noise Amplifier	15	Low Pass Filter for Pilot Detection
2	Low Pass Filter for Noise Amplifier	16	Low Pass Filter for Pilot Detection
3	Error Operation Check AGC Sen. Time Const.	17	Stereo Lamp Driver
4	Gate Pulse Width Time Const.	18	GND
5	Signal Holding Capacitor	19	PLL Low Pass Filter
6	Noise Suppression Circuit Signal Output	20	PLL Low Pass Filter
7	Stereo Modulation Signal Input	21	VCO Oscillation Time Const.
8	ATC Low Pass Filter	22	Pilot Cancelling Control Low Pass Filter
9	Separation Adjustment Resistance	23	Pilot Cancelling Control Low Pass Filter
10	Tone Control	24	Pilot Cancelling Signal Generation Capacitor
11	Separation Control	25	V_{CC}
12	Left Signal Outpt	26	Signal Input
13	Right Signal Output	27	HPF Adjustment Resistance
14	Forced Monaural, VCO Stop Control	28	Reference Voltage

■ Difference Between AN7463S and AN7465S

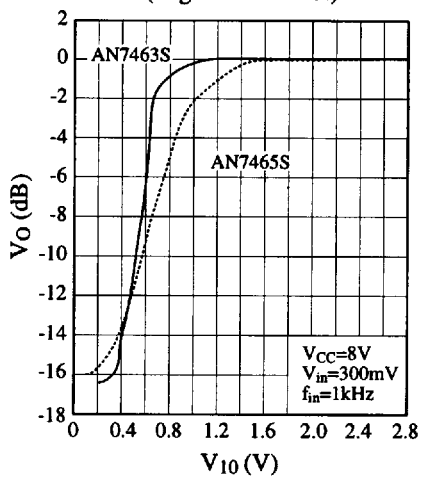
The AN7463S is all the same as the AN7465S except for ASC/ATC control characteristics. Refer to the AN7465S for electrical characteristics and application circuit.

- ASC, ATC Characteristics Comparison

ASC Characteristics
(Separation Control)



ATC Characteristics
(High Cut Control)



■ Supplementary Explanation

● Noise Canceller/MPX IC Series for Car Radio Comparison List

Noise canceller/MPX IC series for car radio integrated noise canceller for FM radio and FM stereo MPX circuit on a single chip, which is most suitable series for cost down of high performance car radio.

Item \ Type Name	AN7465K/S	AN7463S
Package	K ··· 28-Pin · Shrunk DIL S ··· 28-Pin · Flat	28-Pin · Flat
Supply Voltage	6V ~ 10V	6V ~ 10V
Supply Current	15mA	15mA
Noise Canceller	O	O
Pilot Canceller	O	O
ATC (Refer to previous page diagram)	O	O
ASC (Refer to previous page diagram)	O	O
Forced Monaural/VCO STOP	O	O
Noise Cancneller HPF Switching	O	O
Multipath Detection Amp.	X	X

● Application circuit please refer to AN7465K/S