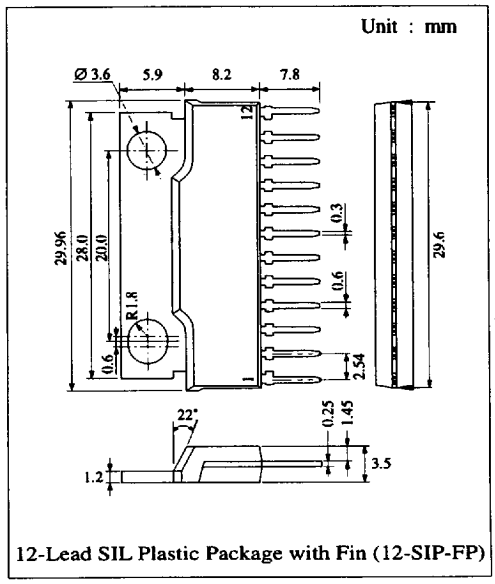
AN7178

Dual 5.7W Audio Power Amplifier

■ Description

The AN7178 is a monolithic integrated circuit designed for dual audio high power amplifiers in consumer applications suitable for car audio and portable component radio cassette recorders.



12-Lead SIL Plastic Package with Fin (12-SIP-FP)

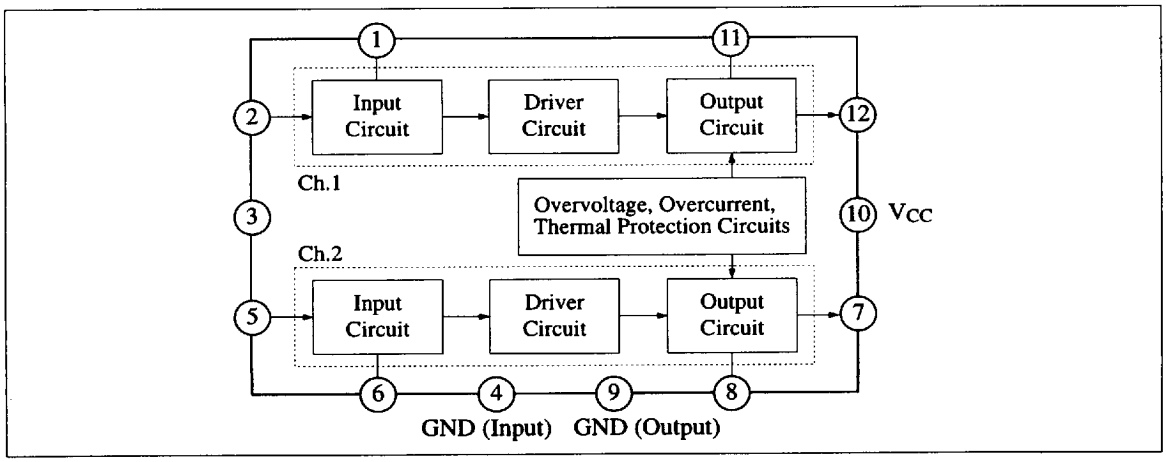
■ Features

- Very high maximum output power: P_O = 5.7W at V_{CC} = 13.2V, R_L = 4Ω
- High gain: G_V = 54dB

■ Pin

Pin No	Pin Name	Pin No	Pin Name
1	N.F.B. Ch.1	7	Output Ch.2
2	Input Ch.1	8	Bootstrap Ch.2
3	Ripple Filter & Muting	9	GND (Output)
4	GND (Input)	10	V_{CC}
5	Input Ch.2	11	Bootstrap Ch.1
6	N.F.B. Ch.2	12	Output Ch.1

■ Block Diagram



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■ Absolute Maximum Ratings (Ta=25°C)

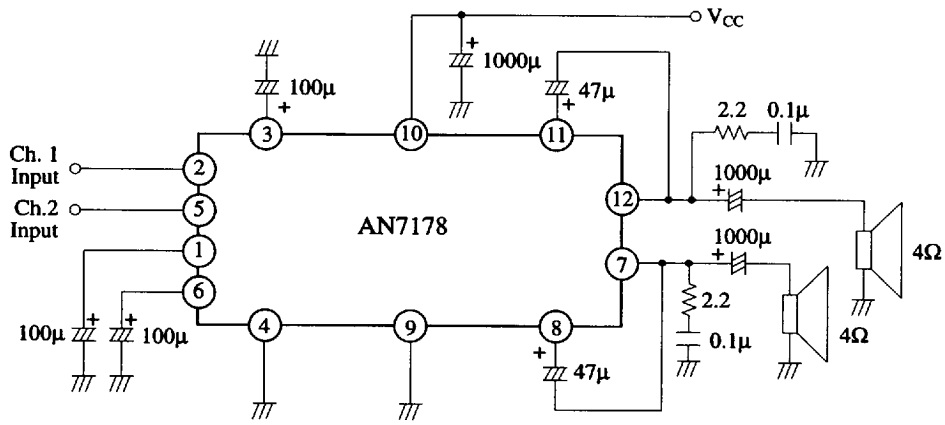
Item	Symbol	Rating	Unit
Supply Voltage	V_{CC}	18	V
Supply Current	I_{CC}	4	A
Power Dissipation	P_D	41.7	W
Operating Ambient Temperature	Topr	-30 ~ +75	°C
Storage Temperature	Tstg	-55 ~ +150	°C

Operating Supply Voltage Range: V_{CC} = 8.0V ~ 18.0V

■ Electrical Characteristics (V_{CC}=13.2V, R_L=4Ω, f=1kHz, Ta=25±2°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Quiescent Current	I_{CQ}	V_{in} = 0mV	30	55	100	mA
Total Harmonic Distortion	THD	P_O = 0.5W, f = 1kHz		0.1	0.5	%
		P_O = 0.5W, f = 100Hz		0.1		
		P_O = 0.5W, f = 10kHz		0.2		
Maximum Output Power	P_O	THD = 10%	5.0	5.7		W
		THD = 10%, R_L = 2Ω		8.9		
		THD = 10%, R_L = 8Ω		3.1		
Voltage Gain	G_V	P_O = 0.5W	52	54	56	dB
Output Noise Voltage	V_{no}	R_g = 10kΩ, 1000pF, f = 15Hz~30kHz, 12dB/OCT		0.8	1.5	mV
		R_g = 10kΩ, 1000pF Without filter		1.1		
Channel Balance	CB	P_O = 0.5W		0	1	dB
Channel Separation	CS	P_O = 0.5W	40	50		dB
Ripple Rejection	RR	R_g = 10kΩ, V_r = 280mV, f_r = 120Hz	35	41		dB
Offset Voltage	$V_{O(offset)}$	V_{in} = 0mV		0	200	mV

■ Application Circuit



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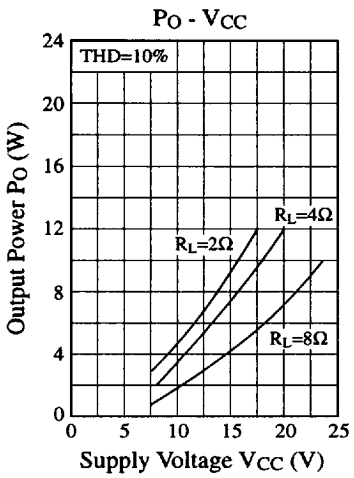
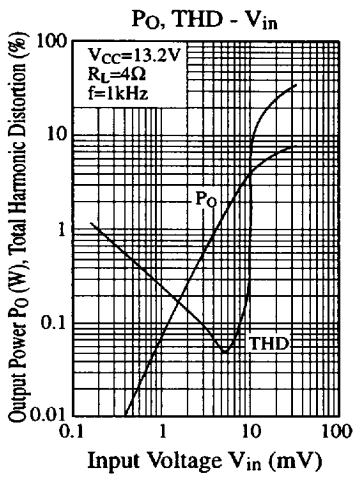
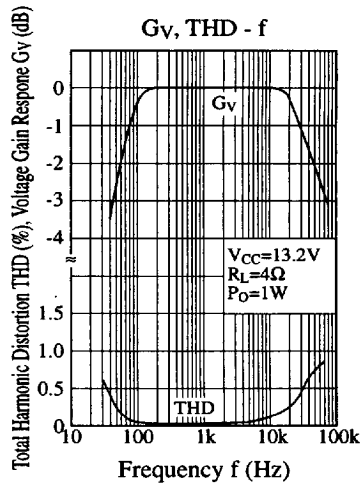
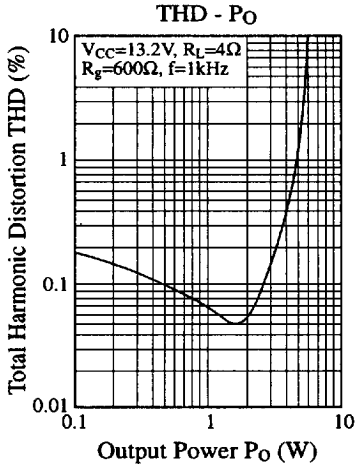
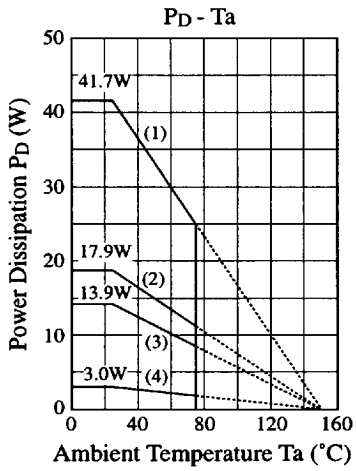
■ Characteristics Curve





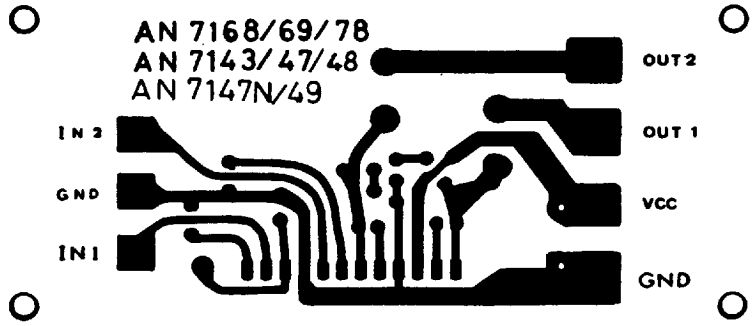






(1) Tc=Ta (θ_{j-c}=3°C/W)
(2) With a 100cm^2 x 3mm Al heat sink (black colour coated) or a 200cm^2 x 2mm Al heat sink (not lacquered)
(3) With a 100cm^2 x 2mm Al heat sink (not lacquered)
(4) Without heat sink

■ Printed Circuit Board Layout (Scale: 1:1)



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