

NCP2890, NCV2890

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The NCP2890 is an audio power amplifier designed for portable communication device applications such as mobile phone applications. The NCP2890 is capable of delivering 1.0 W of continuous average power to an 8.0 Ω BTL load from a 5.0 V power supply, and 320 mW to a 4.0 Ω BTL load from a 2.6 V power supply.

The NCP2890 provides high quality audio while requiring few external components and minimal power consumption. It features a low-power consumption shutdown mode, which is achieved by driving the SHUTDOWN pin with logic low.

The NCP2890 contains circuitry to prevent from “pop and click” noise that would otherwise occur during turn-on and turn-off transitions.

For maximum flexibility, the NCP2890 provides an externally controlled gain (with resistors), as well as an externally controlled turn-on time (with the bypass capacitor).

Due to its excellent PSRR, it can be directly connected to the battery, saving the use of an LDO.

This device is available in a 9-Pin Flip-Chip CSP (standard –Lead and Lead-Free versions) and a Micro8™ package.

Features

- 1.0 W to an 8.0 Ω BTL Load from a 5.0 V Power Supply
- Excellent PSRR: Direct Connection to the Battery
- “Pop and Click” Noise Protection Circuit
- Ultra Low Current Shutdown Mode
- 2.2 V–5.5 V Operation
- External Gain Configuration Capability
- External Turn-on Time Configuration Capability
- Up to 1.0 nF Capacitive Load Driving Capability
- Thermal Overload Protection Circuitry
- AEC-Q100 Qualified Part Available
- Pb-Free Packages are Available
- NCV Prefix for Automotive and Other Applications Requiring Site and Control Changes

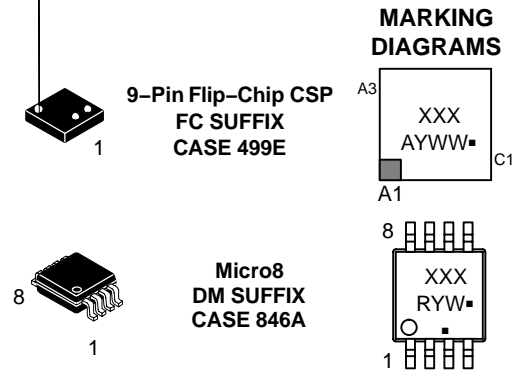
Typical Applications

- Portable Electronic Devices
- PDAs
- Wireless Phones



ON Semiconductor

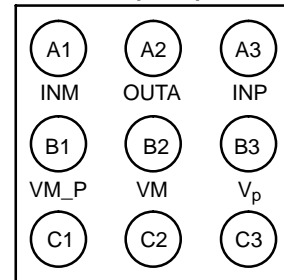
<http://onsemi.com>



XXX = Specific Device Code,
A, R = Assembly Location
Y = Year
WW, W = Work Week
▪ = Pb-Free Package

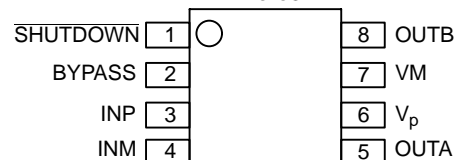
PIN CONNECTIONS

9-Pin Flip-Chip CSP



BYPASS OUTB SHUTDOWN
(Top View)

Micro8



(Top View)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 14 of this data sheet.

NCP2890, NCV2890

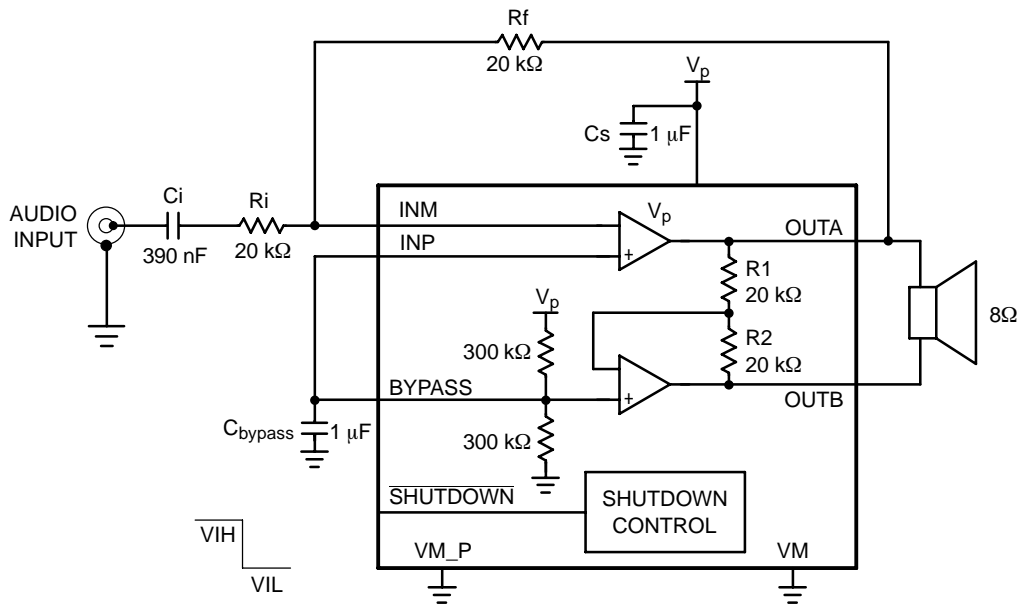


Figure 1. Typical Audio Amplifier Application Circuit with Single Ended Input

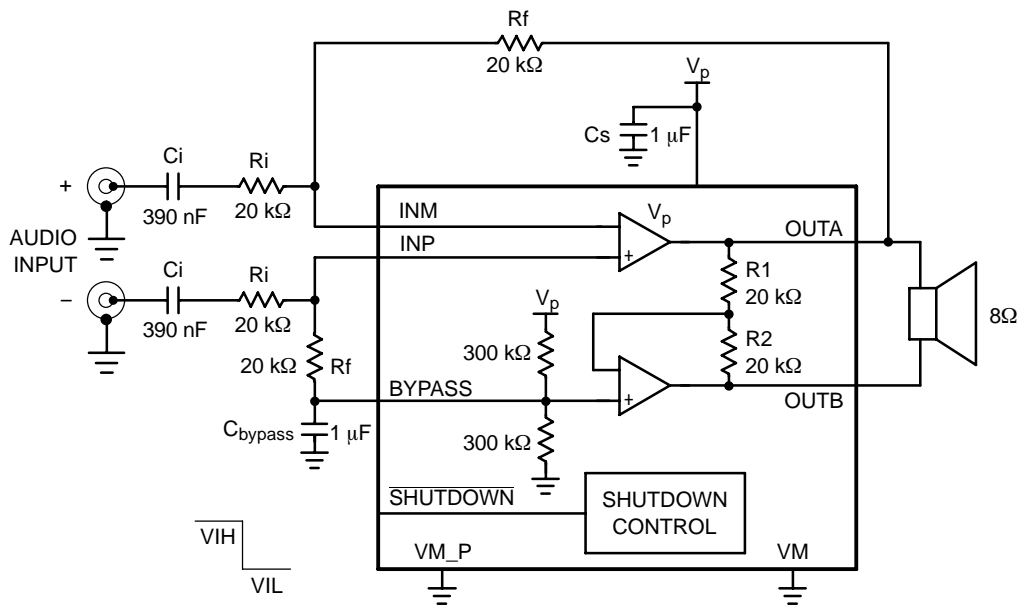


Figure 2. Typical Audio Amplifier Application Circuit with a Differential Input

This device contains 671 active transistors and 1899 MOS gates.

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PIN DESCRIPTION

9-Pin Flip-Chip CSP	Micro8	Type	Symbol	Description
A1	4	I	INM	Negative input of the first amplifier, receives the audio input signal. Connected to the feedback resistor R_f and to the input resistor R_{in} .
A2	5	O	OUTA	Negative output of the NCP2890. Connected to the load and to the feedback resistor R_f .
A3	3	I	INP	Positive input of the first amplifier, receives the common mode voltage.

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ELECTRICAL CHARACTERISTICS Limits apply for T_A between -40°C to $+85^{\circ}\text{C}$ (Unless otherwise noted).

Characteristic	Symbol	Conditions	Min (Note 6)	Typ	Max (Note 6)	Unit
Supply Quiescent Current	I_{dd}	V				

TYPICAL PERFORMANCE CHARACTERISTICS

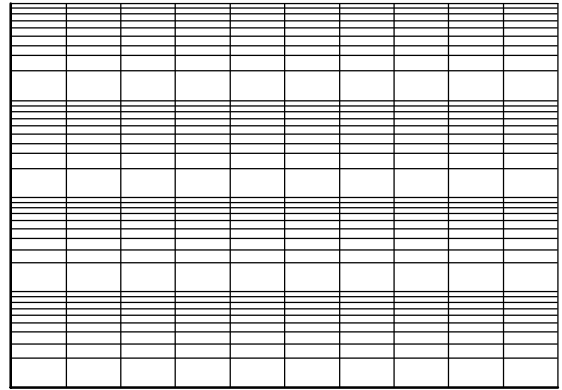
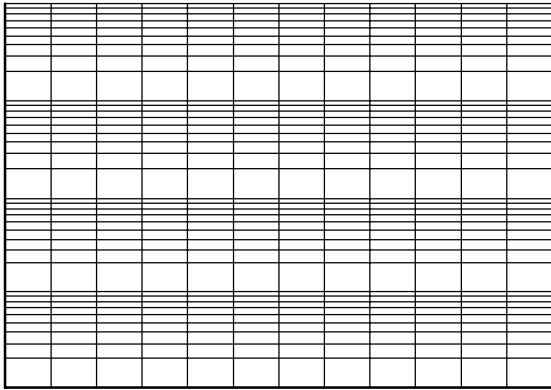
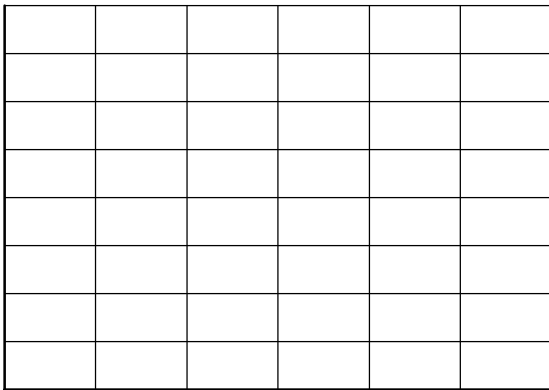
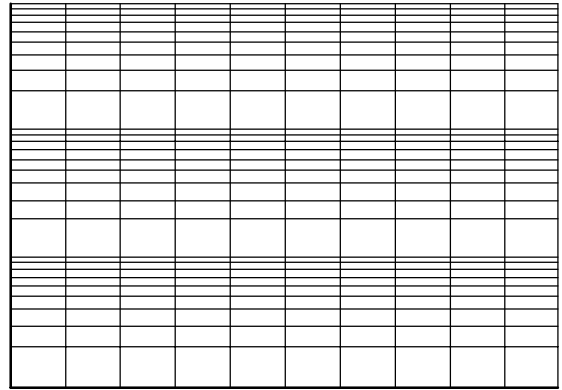
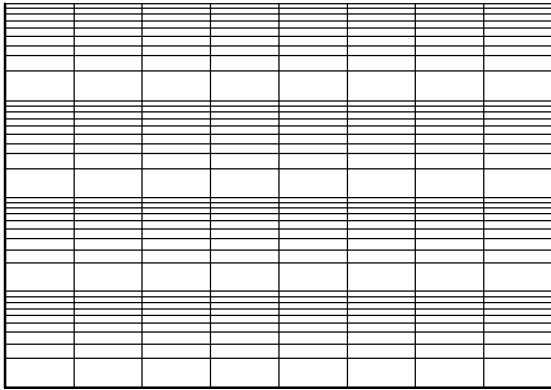
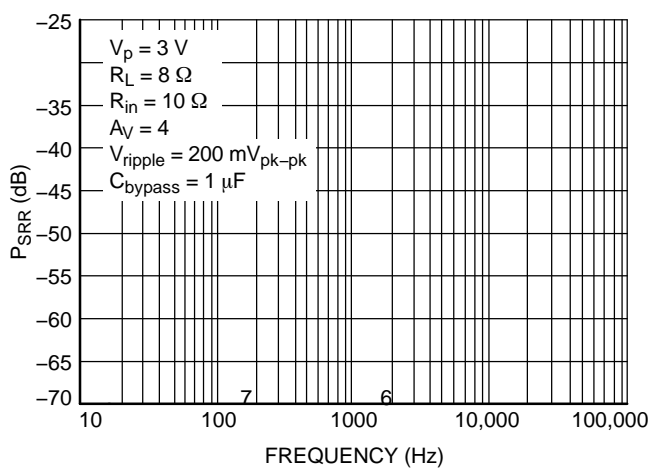
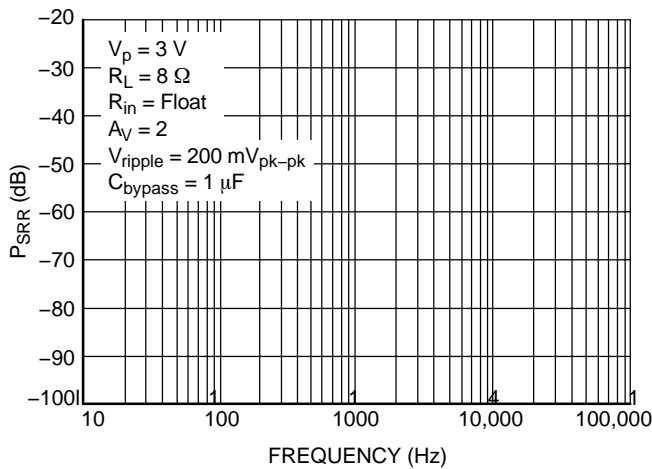
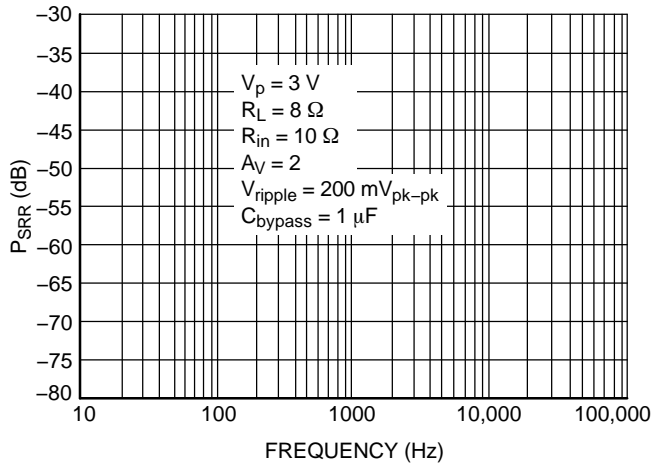
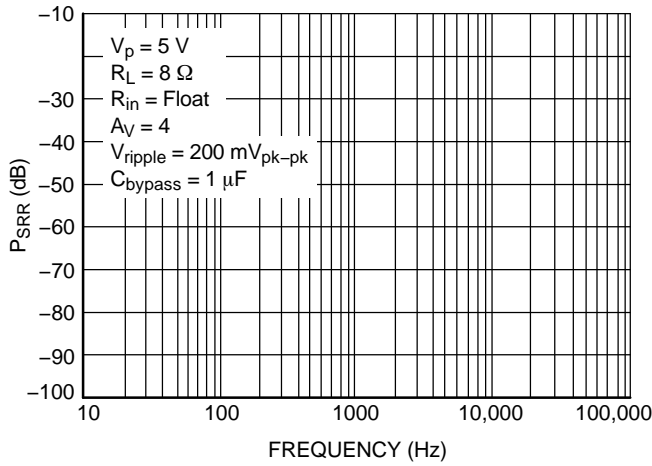
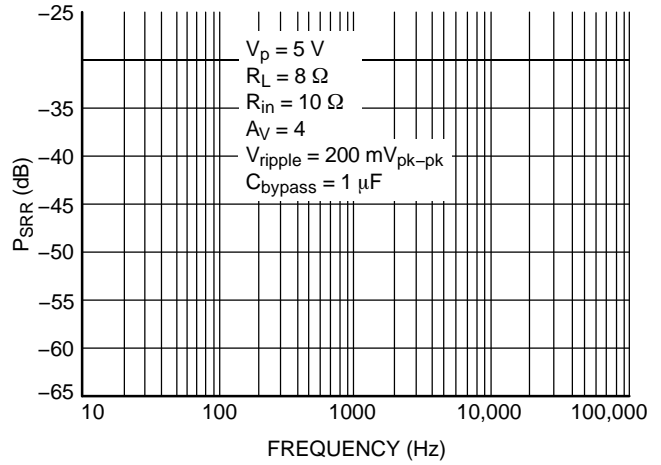


Figure 7. THD +



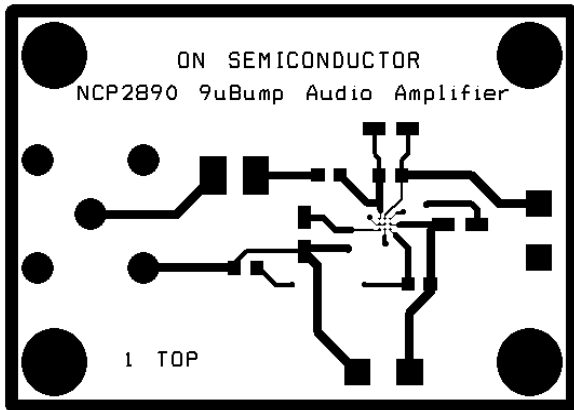
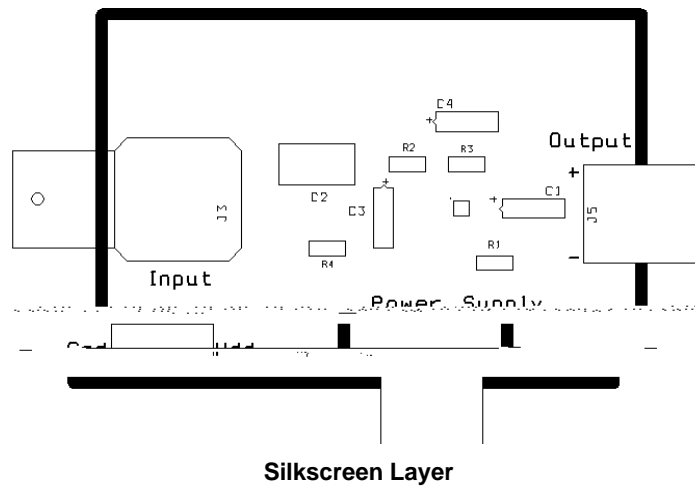
NCP2890, NCV2890

TYPICAL PERFORMANCE CHARACTERISTICS

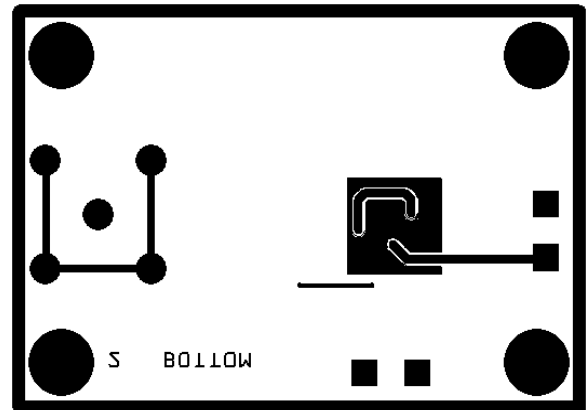


NCP2890, NCV2890

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Top Layer



Bottom Layer

Figure 38. Demonstration Board for 9-Pin Flip-Chip CSP Device – PCB Layers

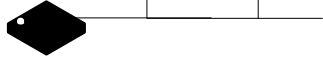
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BILL OF MATERIAL

Item	Part Description	Ref.	PCB Footprint	Manufacturer	Manufacturer Reference
1	NCP2890 Audio Amplifier	-	-	ON Semiconductor	NCP2890
2	SMD Resistor 100 K Ω	R1	0805	Vishay-Draloric	D12CRCW Series
3	SMD Resistor 20 K Ω	R2, R3	0805	Vishay-Draloric	CRCW0805 Series
4	Ceramic Capacitor 1.0 μ F 16 V X7R	C1	1206	Murata	GRM42-6X7R105K16
5	Ceramic Capacitor 390 nF 50 V Z5U	C2	1812	Kemet	C1812C394M5UAC
6	Ceramic Capacitor 1.0 μ F 16 V X7R	C3	1206	Murata	GRM42-6X7R105K16
7	Not Mounted	R4, C4	-	-	-
8	BNC Connector	J3	-	Telegartner	JO1001A1948
9	I/O Connector. It can be plugged by BLZ5.08/2 (Weidmüller Reference)	J4, J5	-	Weidmüller	SL5.08/2/90B

ORDERING INFORMATION

9 PIN FLIP-CHIP
CASE 499E 01
ISSUE A



SCALE 4:1

DATE 30 JUN 2004

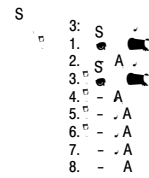
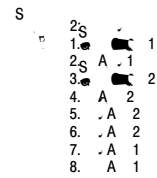
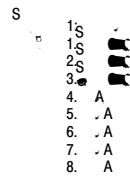
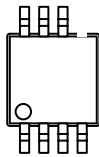
DIM	MILLIMETERS	
	MIN	MAX
A	0.540	0.660
A1	0.210	0.270
A2		



SCALE 2:1

Micro8
CASE 846A-02
ISSUE K

DATE 16 JUL 2020



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