

The NCP4894 is a differential audio power amplifier designed for portable communication device applications. This feature and the excellent audio characteristics of the NCP4894 are a guarantee of a high quality sound, for example, in mobile phones applications. With a 10% THD+N value the NCP4894 is capable of delivering 1.8 W of continuous average power to an 8.0 Ω load from a 5.5 V power supply. With the same load conditions and a 5.0 V battery voltage, it ensures 1.0 W to be delivered with less than 0.01% distortion.

The NCP4894 provides high quality audio while requiring few external components and minimal power consumption. It features a low-power consumption shutdown mode.

To be flexible, shutdown may be enabled by either a logic high or low

NCP4894

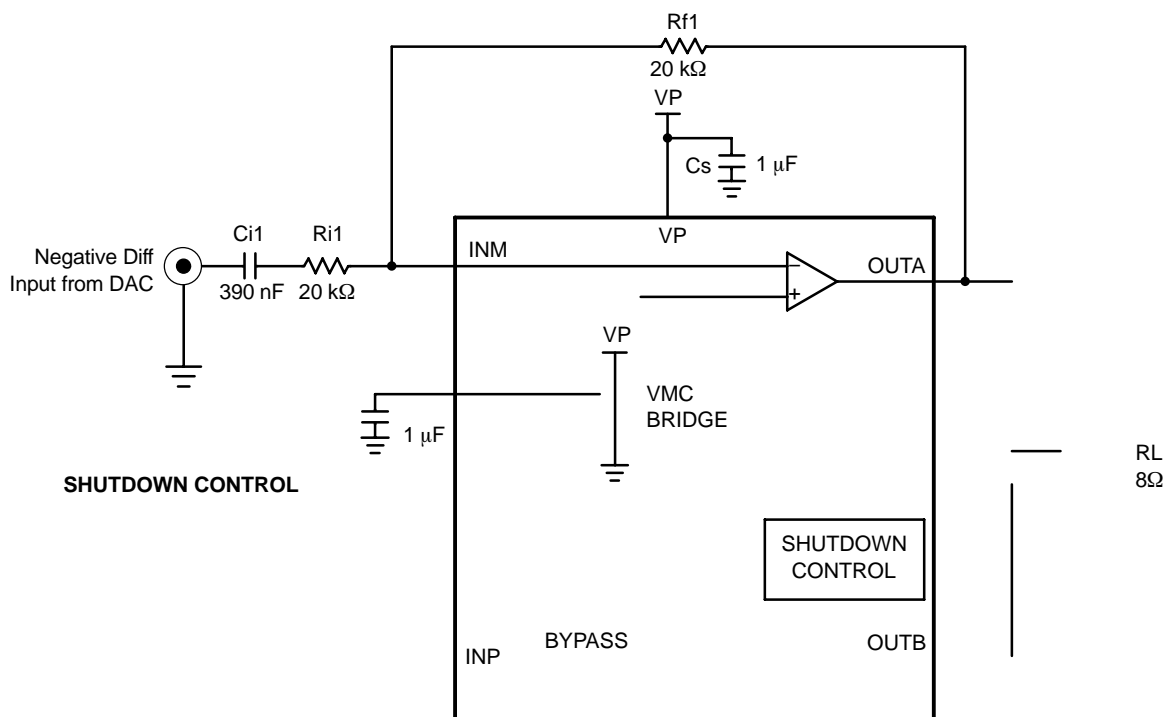


Figure 1. Typical NCP4894 Application Circuit with Differential Input

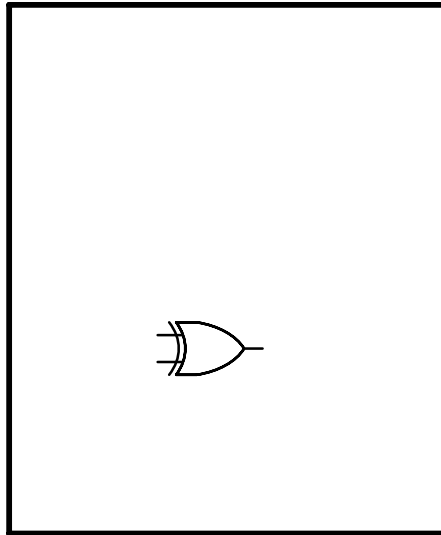
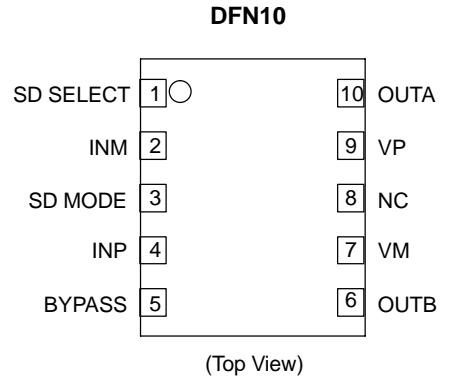
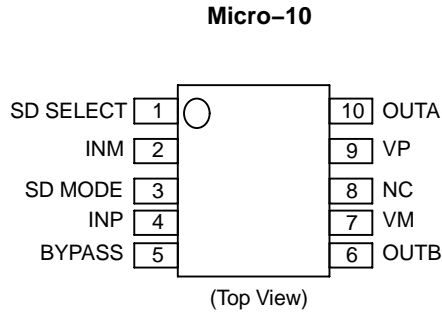
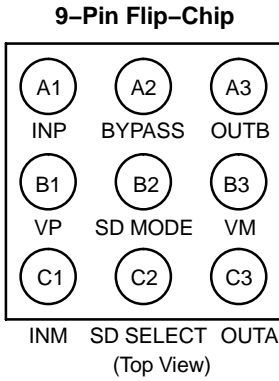


Figure 2. Typical NCP4894 Application Circuit for Driving Earpiece

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PIN CONNECTIONS



PIN DESCRIPTION

9-Pin Flip-Chip	Micro-10/DFN10	Type	Symbol	Description
A1	4	I	INP	Positive Differential Input
A2	5	O	BYPASS	Bypass Capacitor Pin which Provides the Common Mode Voltage
A3	6	I	OUTB	Negative BTL Output
B1	9	I	VP	Positive Analog Supply of the Cell
B2	3	I	SD MODE	Shutdown High or Low Selectivity (Note 1)
B3	7	I	VM	Ground
C1	2	I	INM	Negative Differential Input
C2	1	O	SD SELECT	(Note 1)
C3	10	I	OUTA	

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MAXIMUM RATINGS (Note 2)

Rating	Symbol	Value	Unit
Supply Voltage	VP	6.0	V
Operating Supply Voltage	Op VP	2.2 to 5.5 V	-
Input Voltage	V_{in}		

TYPICAL PERFORMANCE CHARACTERISTICS

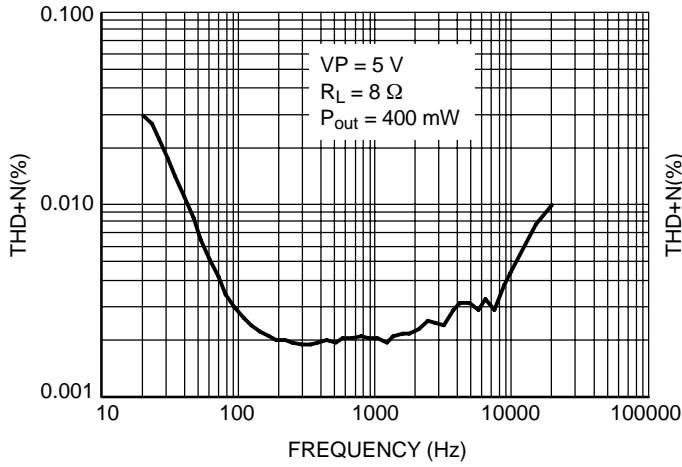


Figure 3. THDN versus Frequency

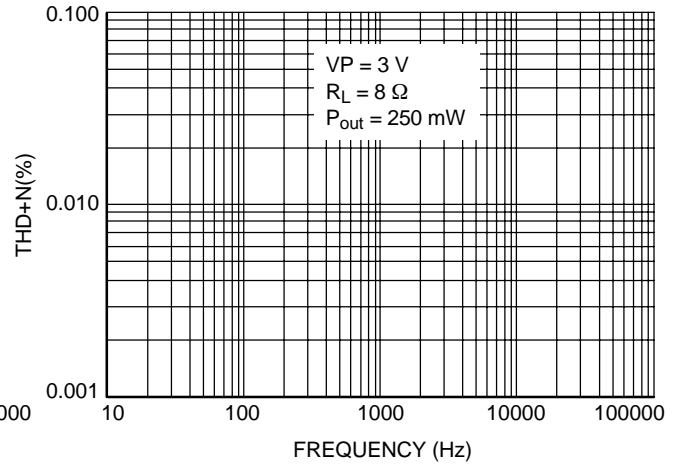


Figure 4. THDN versus Frequency

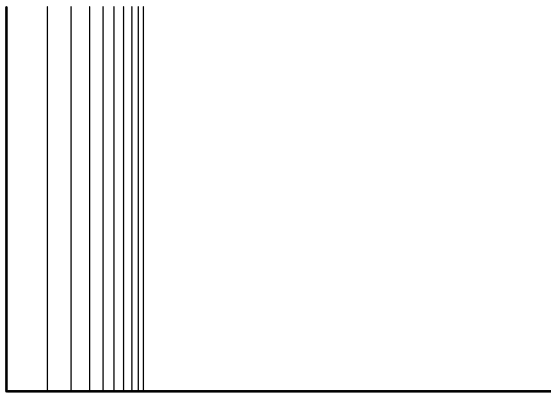


Figure 5. THDN versus Frequency

Figure 6. THDN versus Frequency

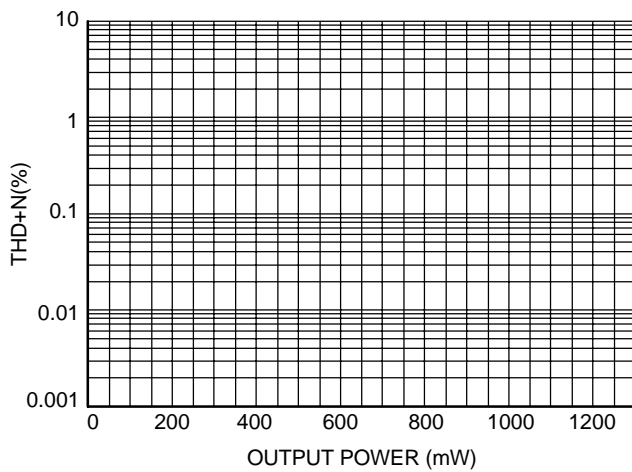
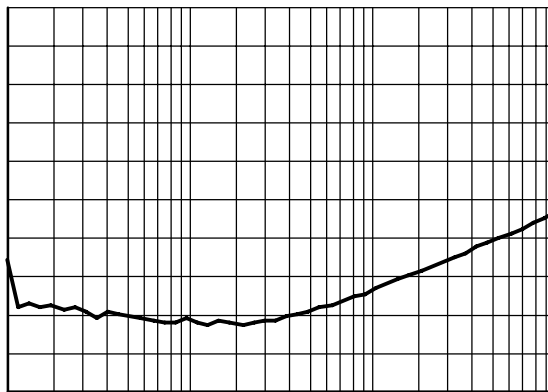
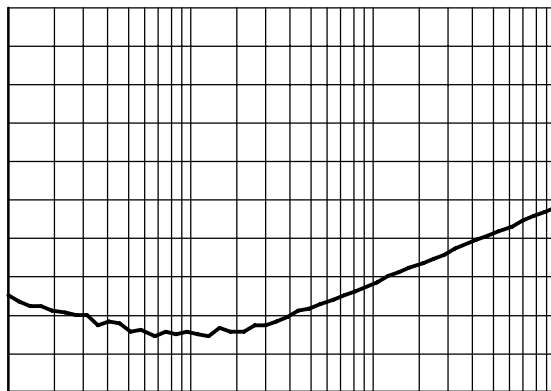
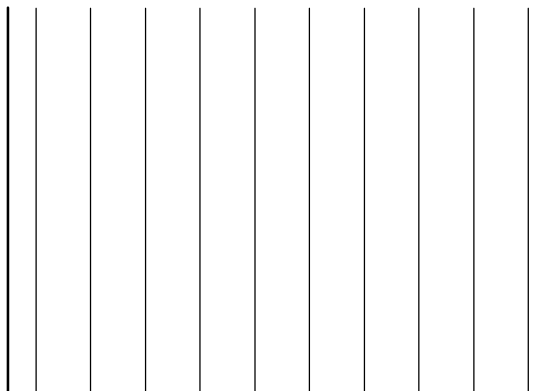


Figure 7. THDN versus Output Power

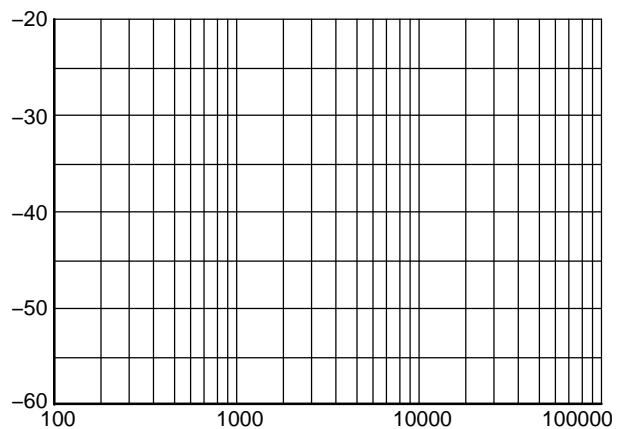
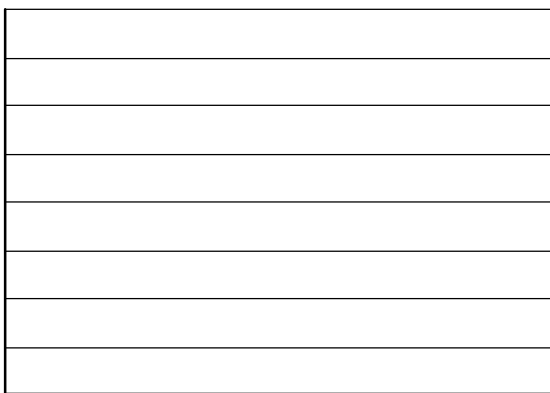
Figure 8. THDN versus Output Power

TYPICAL PERFORMANCE CHARACTERISTICS

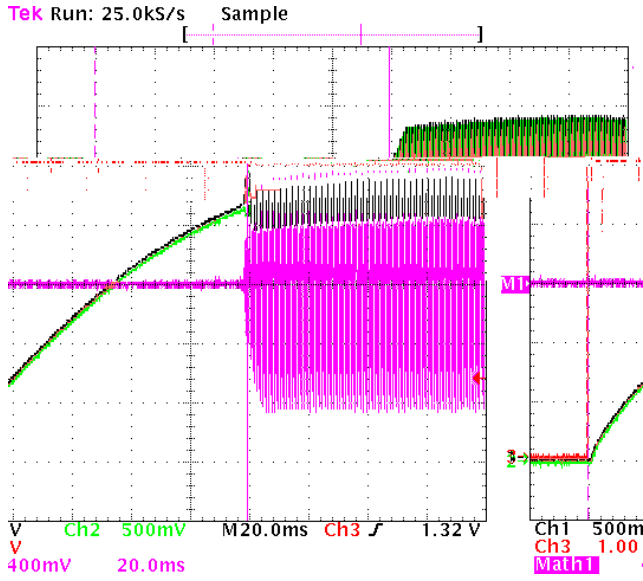


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TYPICAL PERFORMANCE CHARACTERISTICS

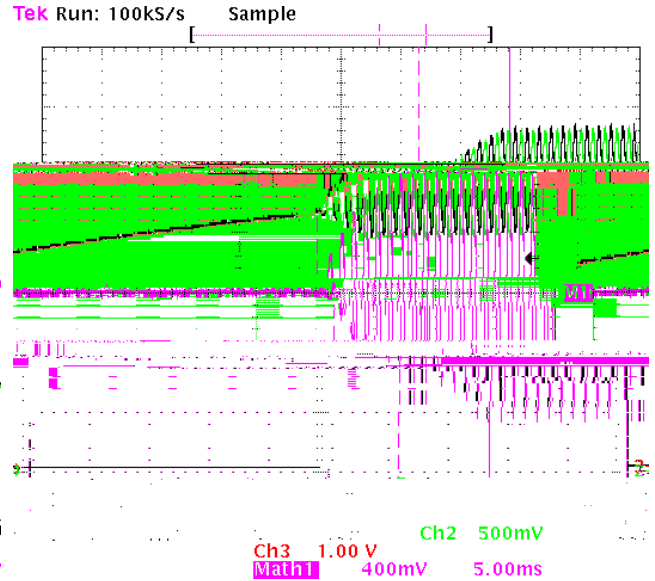


TYPICAL PERFORMANCE CHARACTERISTICS



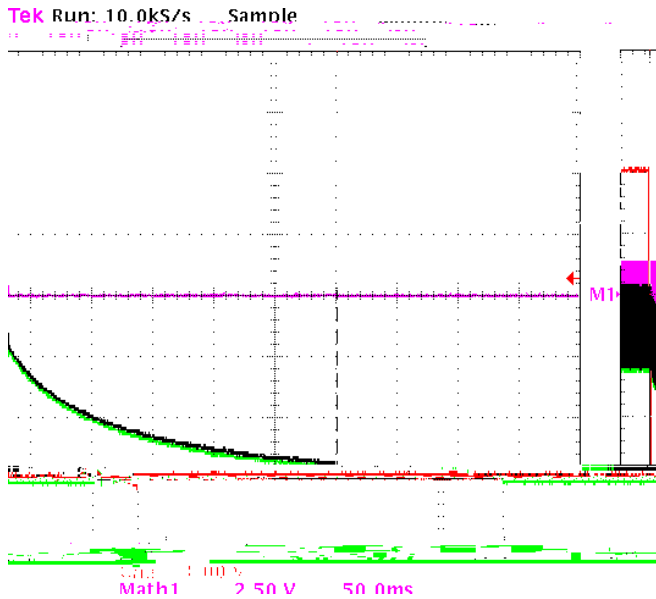
Ch1 = OUTA
 Ch2 = OUTB
 Ch3 = Shutdown &
 Math1 = OUTA-OUTB

Figure 21. Turning-on Sequence
 @ VP = 5 V and f = 1 kHz



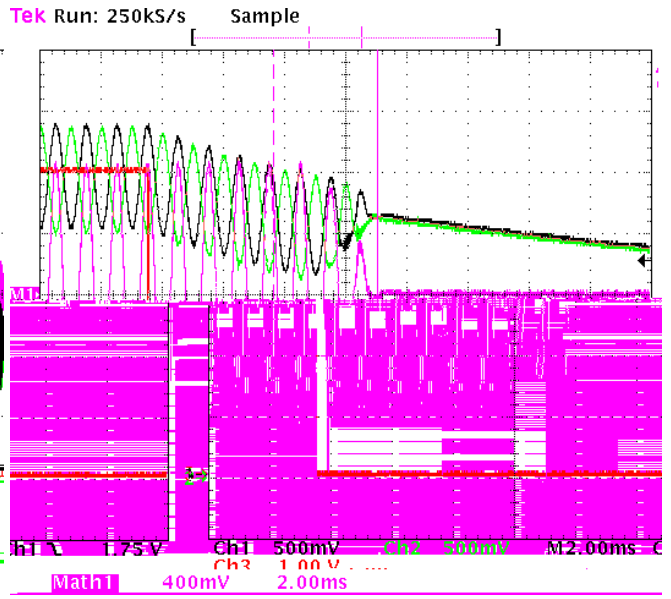
Ch1 = OUTA
 Ch2 = OUTB
 Ch3 = Shutdown &
 Math1 = OUTA-OUTB

Figure 22. Turning-on Sequence Zoom
 @ VP = 5 V and f = 1 kHz



Ch1 = OUTA
 Ch2 = OUTB
 Ch3 = Shutdown &
 Math1 = OUTA-OUTB

Figure 23. Turning-off Sequence
 @ VP = 5 V and f = 1 kHz



Ch1 = OUTA
 Ch2 = OUTB
 Ch3 = Shutdown &
 Math1 = OUTA-OUTB

Figure 24. Turning-off Sequence Zoom
 @ VP = 5 V and f = 1 kHz

TYPICAL PERFORMANCE CHARACTERISTICS

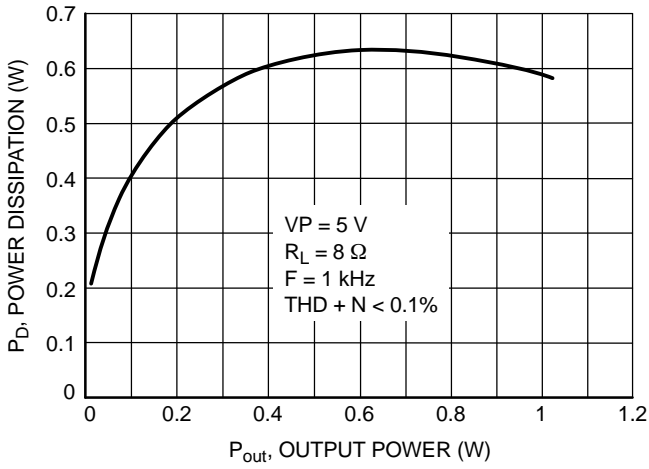


Figure 25. Power Dissipation versus Output Power

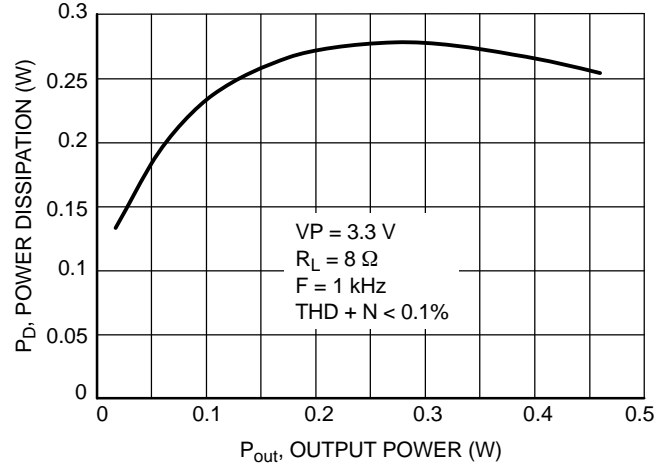


Figure 26. Power Dissipation versus Output Power

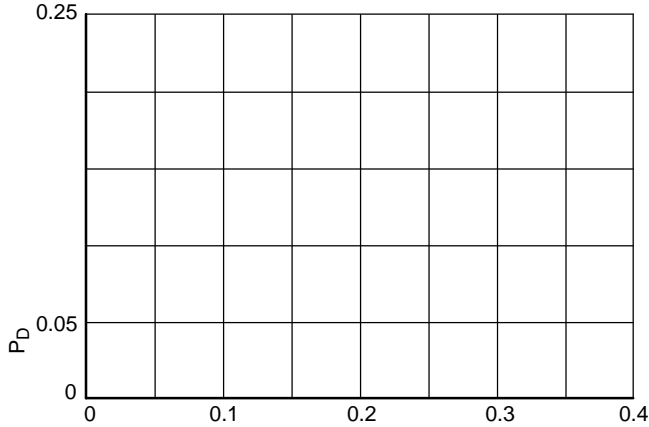
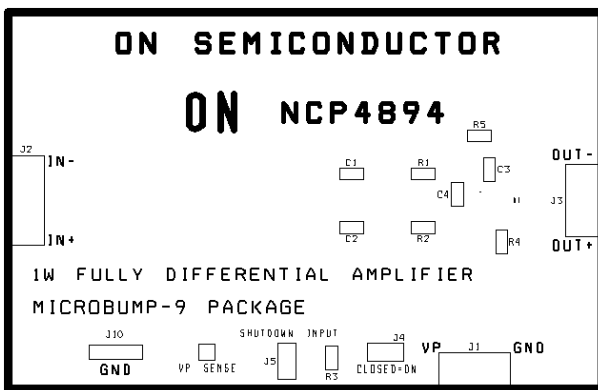


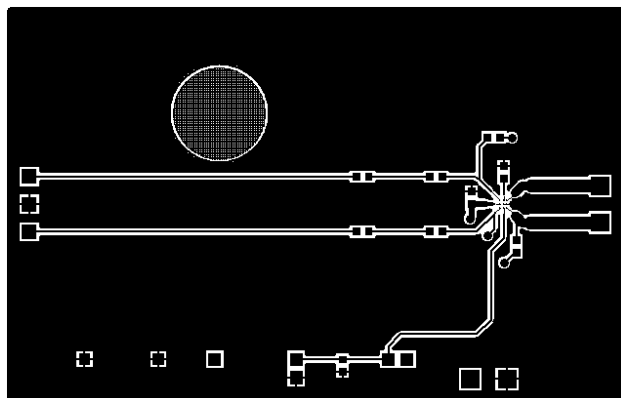
Figure 27. Power Dissipation versus Output Power

Gain-Setting Resistor Selection (R

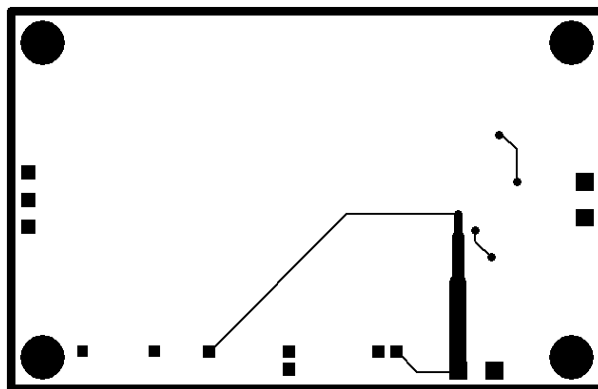
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Silkscreen Layer



Top Layer



Bottom Layer

Figure 32. Demonstration Board for 9-Pin Flip-Chip CSP Device – PCB Layers

NCP4894

BILL OF MATERIAL

Item	Part Description	Ref	PCB Footprint	Manufacturer	Manufacturer Reference
1	NCP4894 Audio Amplifier	-	-	ON Semiconductor	NCP4894
2	SMD Resistor 100 kΩ	R3	0603	Vishay-Draloric	CRCW0603 Series
3	SMD Resistor 20 kΩ	R1, R2 R4, R5	0603	Vishay-Draloric	CRCW0603 Series
4	Ceramic Capacitor 1.0 μF 6.3 V X5R	C1, C2 C3, C4	0603	Murata	GRM188 Series
5	Jumper Header Vertical Mount, 2*1, 100 mils	J4, J5	-	-	-
6	Jumper Connector, 400 mils	J10	-	-	-
7	I/O Connector. It can be plugged by MC-1,5/3-ST-3,81 (Phoenix Contact Reference)	J2	-	Phoenix Contact	MC-1,5/3-c888 Tm(7)TJET388.6 5

9 PIN FLIP CHIP 1.45x1.45x0.596

b-Free
strategy and soldering details, please download
the



Micro10
CASE 846B-03
ISSUE D

SCALE 2:1

DATE 07 DEC 2004

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