CX65002

700 – 1000 MHz Linear Power Amplifier Driver

Conexant's CX65002 Microwave Monolithic Integrated Circuit (MMIC) power amplifier driver offers a desirable combination of features that provide superb performance and ease of use in a low-cost Surface-Mounted Technology (SMT) package. The Gallium Arsenide (GaAs) Heterojunction Bipolar Transistor (HBT) power amplifer driver was developed and optimized for extreme linear performance in a variety of applications. It is ideal as a driver or output stage for transceivers and repeaters in AMPS/CDMA/TDMA/GSM paging base stations, mobile radios, telematics, and many other applications.

Figure 1 shows a functional block diagram for the CX65002. The device package and pinout are shown in Figure 2.
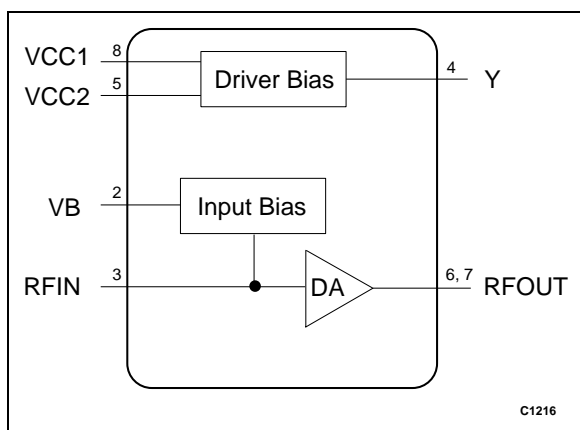
Features

- 5 V single supply operation
- Excellent linearity
- Wide dynamic range
- Broad frequency coverage
- Internal bias circuits
- Surface mounted Small Outline Integrated Circuit (SOIC) 8-pin package with downset paddle

Applications

- AMPS/CDMA/TDMA/GSM
- Wireless Local Loop (WLL) and Industrial, Scientific, Medical (ISM) bands
- Repeaters
- Paging
- Mobile radios
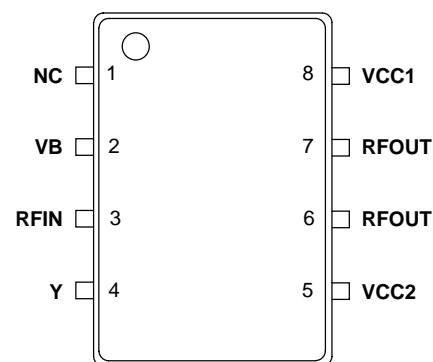- Telematics
- VHF/UHF TV broadcast

Figure 1. CX65002 Functional Block Diagram

Figure 2. CX65002 Pinout – 8-Pin SOIC Package Top View

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Electrical and Mechanical Specifications

The signal pin assignments and functions are described in Table 1. The absolute maximum ratings of the CX65002 are provided in Table 2. The recommended operating conditions are specified in Table 3 and electrical specifications are provided in Table 4.

Typical performance characteristics of the CX65002 are illustrated in Figures 3, 4, 5, and 6. Figure 7 shows an application schematic diagram. The package PCB mounting footprint dimensions for the 8-pin CX65002 SOIC are shown in Figure 8 and the package dimensions are provided in Figure 9. Figure 10 provides the tape and reel dimensions.

Electro-Static Discharge (ESD) Sensitivity

The CX65002 is a static-sensitive electronic device. Do not operate or store near strong electrostatic fields. Take proper ESD precautions.

Table1. CX65002 Signal Descriptions

Pin #	Name	Description
1	NC	No connection
2	VB	Input bias for driver amplifier
3	RFIN	RF input
4	Y	Output of internal bias circuit
5	VCC2	Supply voltage
6	RFOUT	RF output
7	RFOUT	RF output
8	VCC1	Supply voltage

Table 2. CX65002 Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Units
RF input power	P_{IN}			10	dBm
Supply voltage	VCC			5.5	V
Case operating temperature	T_C	−30		+100	°C
Storage temperature	T_{ST}	−55		+125	°C
Note: No damage to device if only one parameter is applied at a time with other parameters at nominal conditions.					

Table 3. CX65002 Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units
Supply voltage	VCC		5		V
Operating frequency	F_O	700	900	1000	MHz
Case operating temperature	T_C	−30	+25	+85	°C

Table 4. CX65002 Electrical Characteristics
(VCC = 5 V, Frequency = 900 MHz, Tc = 25 °C)

Parameter	Symbol	Test Conditions	Min	Typical	Max	Units
Analog Inputs						
Frequency range			700	900	1000	MHz
Quiescent current	Iq			180	190	mA
Gain	G	P_{IN} = –15 dBm		17.5		dB
Output power	P_{OUT}	P_{IN} = +7 dBm		24		dBm
Efficiency	PAE	P_{IN} = +7 dBm		33		%
Noise Figure (NF)	NF			6		dB
Output IP3	OIP3	Two tones with 100 kHz spacing P_{IN} = –10 dBm per tone		44		dBm
Note: The above specifications apply only to the 900 MHz operating frequency.						
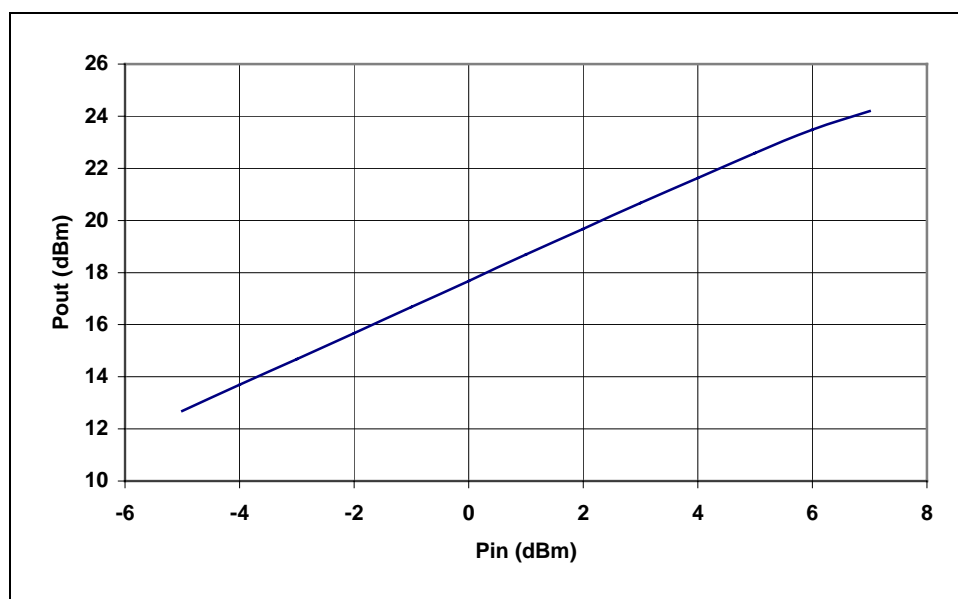
Figure 3. Typical Output Power vs Input Power @ 900 MHz
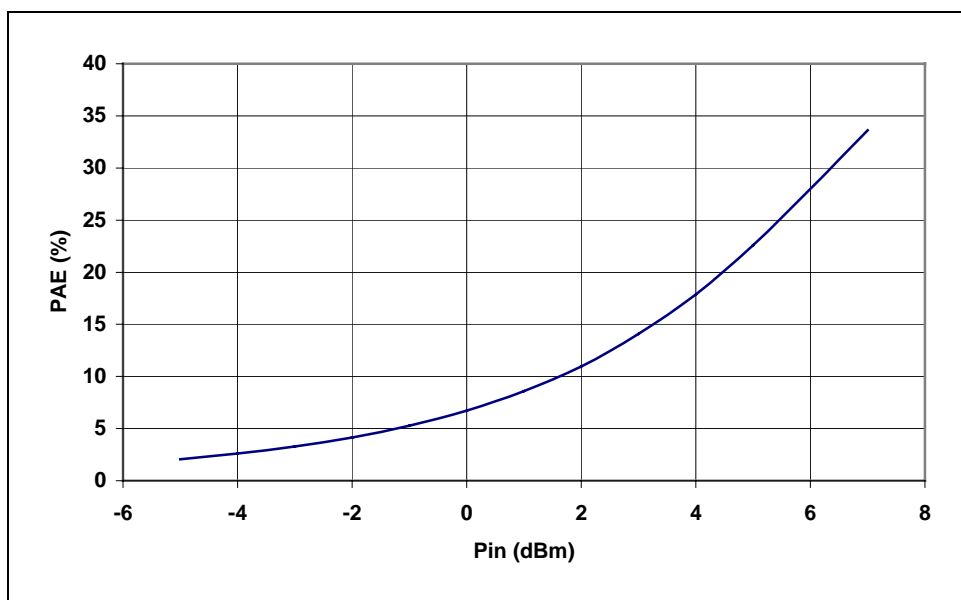
Figure 4. Typical Efficiency vs Input Power @ 900 MHz
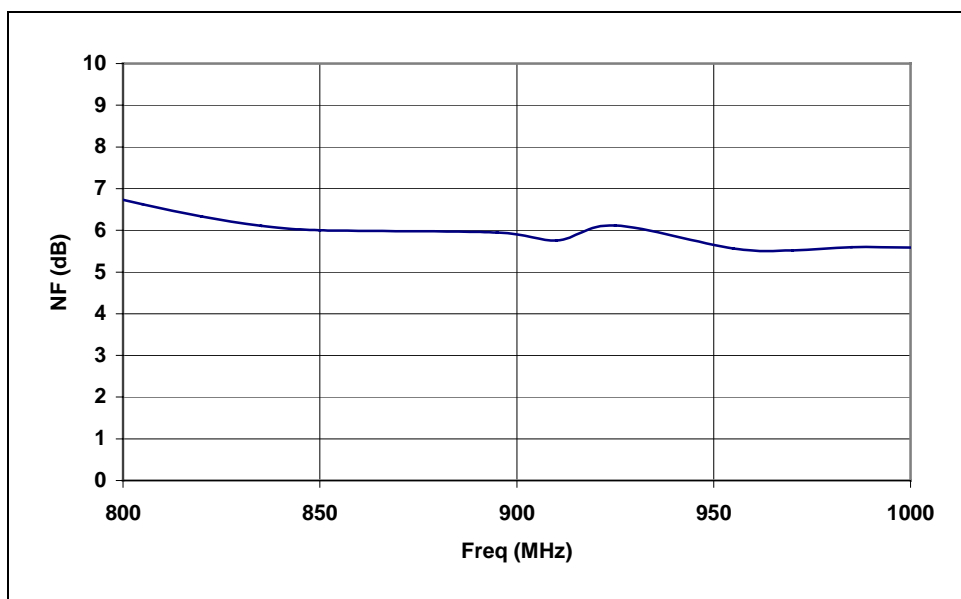
Figure 5. Typical Noise Figure vs Frequency

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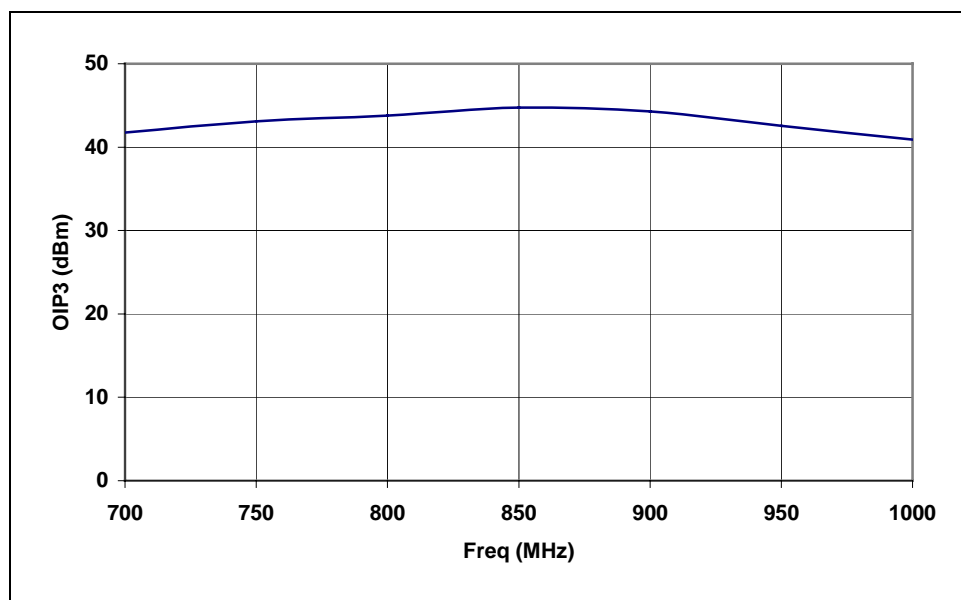
Figure 6. Typical OIP3 vs Frequency
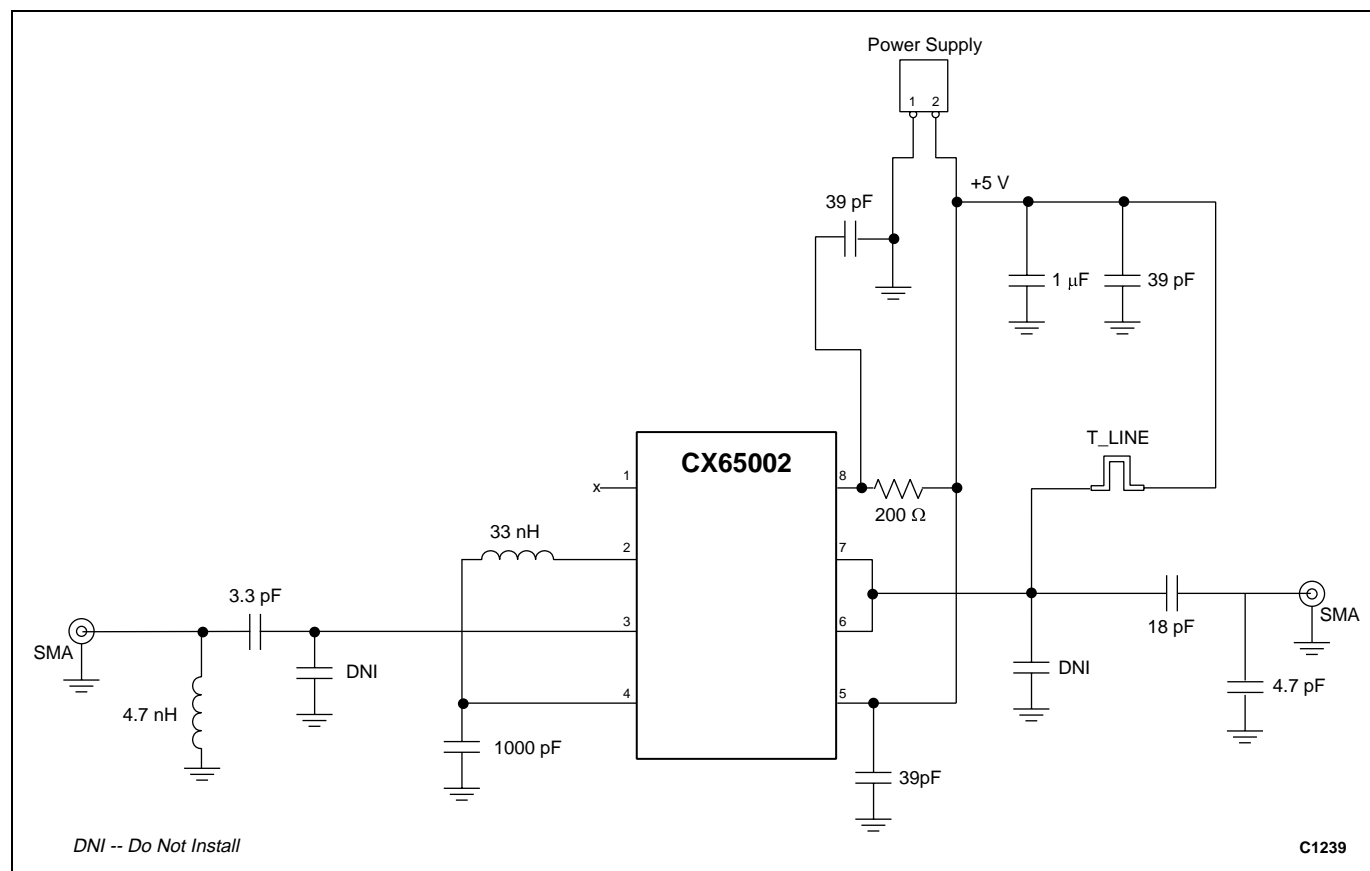
Figure 7. CX65002 Application Schematic

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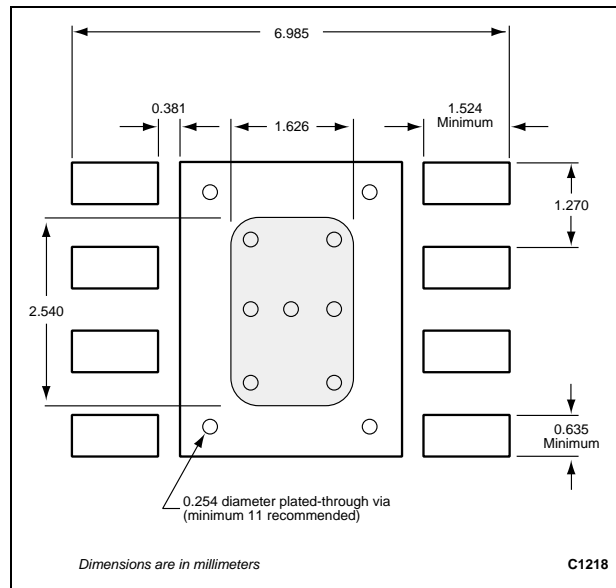
Figure 8. PCB Mounting Footprint
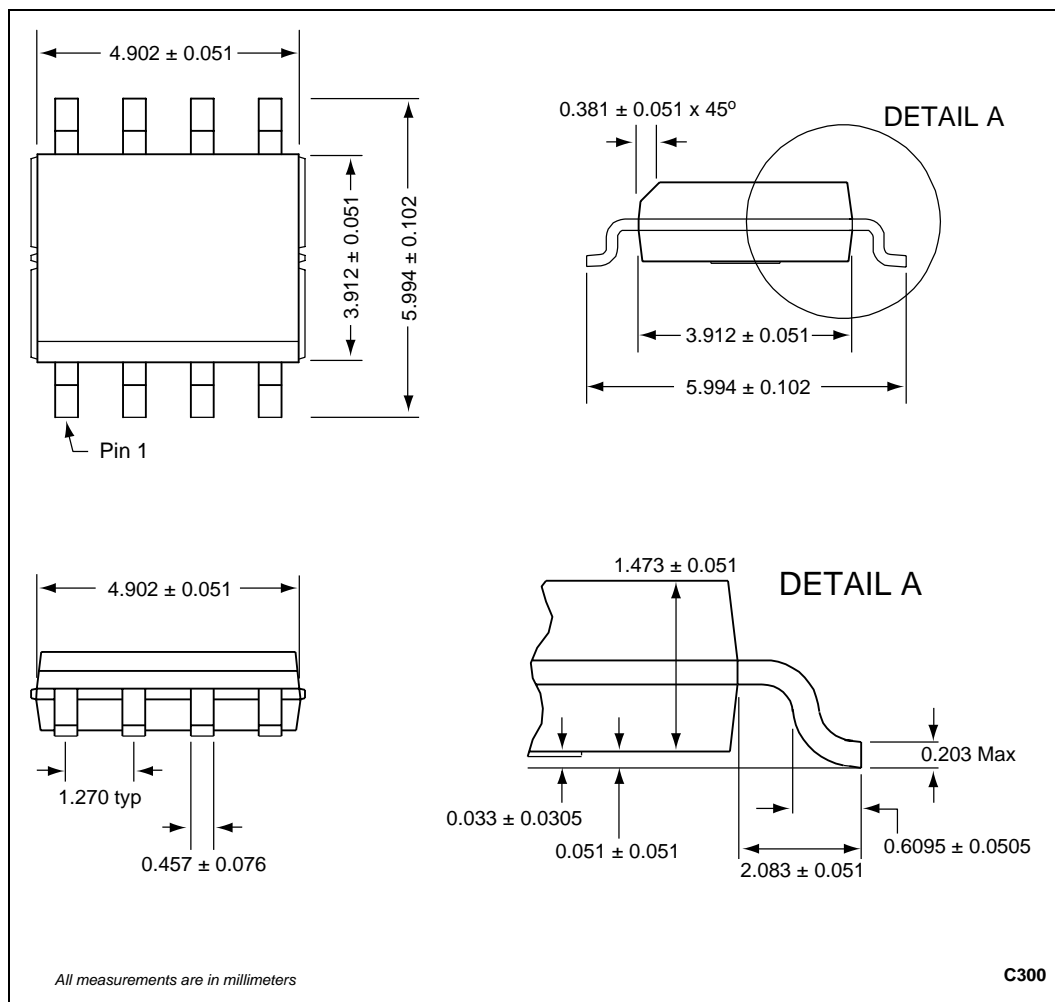
Figure 9. CX65002 8-Pin SOIC Package Dimension Drawing

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8.00 ± 0.10 4.00 ± 0.10 1.55 ± 0.05 2.00 ± 0.05 1.75 ± 0.10

5.50 ± 0.05

12.00 + 0.30/–0.10

B

A   A

B

1.50 ± 0.25

0.292 ± 0.13

8° Max

6.88 ± 0.10

A

1.68 ± 0.10

5.49 ± 0.10

5° Max

B

1. Carrier tape: black conductive polycarbonate.
2. Cover tape material: transparent conductive PSA.
3. Cover tape size: 9.3 mm wide.
4. All dimensions are in millimeters.

C1242

Figure 10. CX65002 8-Pin SOIC Tape and Reel Dimensions

Ordering Information

Model Name	Ordering Part Number	Evaluation Kit Part Number
CX65002 700-1000 MHz Linear Power Amplifier Driver	CX65002-12	TW10-D252

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