

CXG1108K (cdmaOne) CXG1103K (W-CDMA)

Sony has always provided the cellular phone MMIC device products, such as antenna switches, low-noise amplifiers, and mixers, that defined the industry standard. Now, Sony is adding power amplifier modules for cdmaOne and W-CDMA to its product lineup.

These devices are based on Sony's extensive experience in GaAs MMIC technology, and are miniature power amplifier modules that achieve high efficiency, low distortion, and single positive power supply operation.

These devices can prove useful in creating appealing communication terminals for the start of the broadband age.

- High efficiency and low distortion
- Single positive power supply operation
- Miniature module
- Temperature compensation circuit

The CXG1108K and CXG1103K are power amplifier modules for cdmaOne and W-CDMA, respectively. Sony developed the JPHEMT*1 structure (see figure 1) device to acquire high-efficiency and low-distortion characteristics in these products. (See table 1, figures 2 and 3.) This device structure also achieves high reliability.

■ High Efficiency and Low Distortion

The JPHEMT*1 structure device is unique to Sony, and, as compared to the previous PHEMT*2 structure device, features a wider gate voltage range, consistent and high gm characteristics, and a low on-resistance. These features allow the implementation of low-distortion power amplifier modules that operate at high efficiency.

■ Positive Power Supply Operation

The JPHEMT structure features a high built-in voltage, and provides large-signal power amplifier operation simply by applying a positive voltage to the gate electrode. This obviates the need for a negative voltage generation circuit and other peripheral circuits, and thus can contribute to further terminal miniaturization.

■ Miniature Module

These products take maximal advantage of Sony's existing MMIC design technology, and integrate part of the power amplifier matching circuit on the MMIC chip. This allows the number of components mounted on the module substrate to be reduced and achieves the industry's smallest module. (See figures 4 and 5.)

■ Temperature Compensation Circuit

The temperature compensation bias circuit was also integrated on the IC chip. In the CXG1103K, variation in the idle current is held to approximately 5 mA over the temperature range of -20 to +65°C, thus minimizing temperature variations in the ACPR characteristics.

*1 JPHEMT: Junction Pseudomorphic High Electron Mobility Transistor

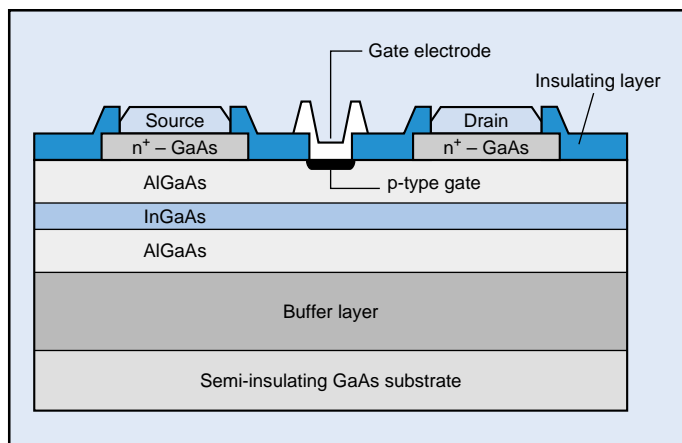
*2 PHEMT: Pseudomorphic High Electron Mobility Transistor

V O I C E

It is no exaggeration to say that the performance of a power amplifier is determined by how well the circuit is "tuned." Getting the maximum performance from a circuit requires not only high-level technologies and simulation, but also circuit tuning based on the accumulated experience and physical intuition of engineers. The CXG1108K and CXG1103K introduced here were created by unrelenting striving for ultimate performance based on fusing the latest technology JPHEMT with circuit tuning.



*New
Products*



■ Figure 1 JPHEMT Cross Section

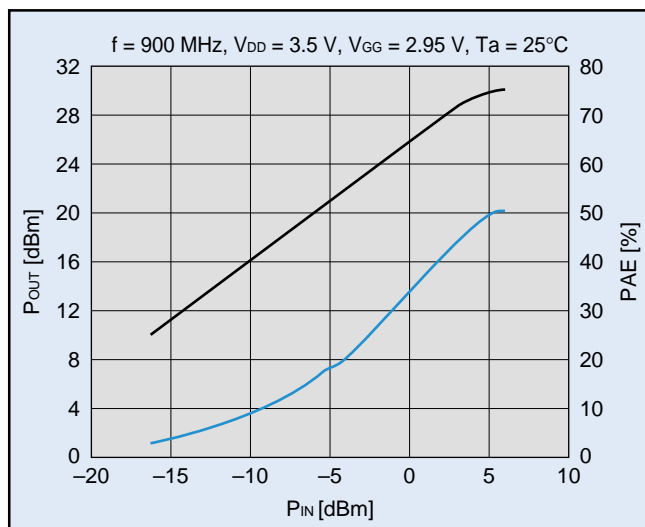
■ Table 1 Main Characteristics

Ta = 25°C

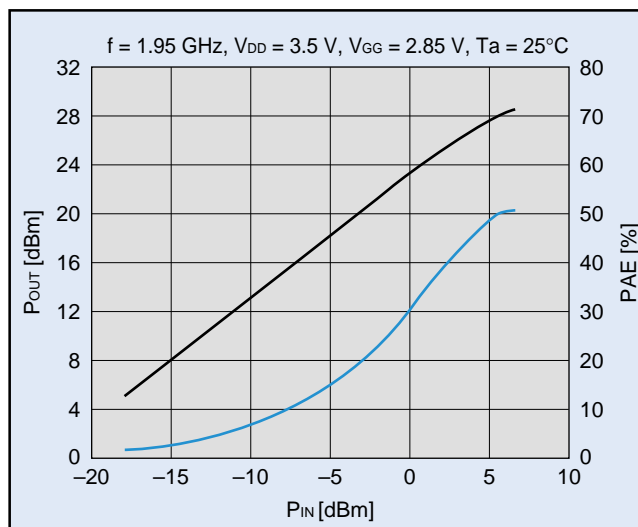
	CXG1108K	CXG1103K
P _{OUT}	27.0 dBm	26.5 dBm
Gain	26.0 dB	22.0 dB
PAE	38%	42%
ACPR*	-51 dBc/30 kHz	-38 dBc
f	887 to 925 MHz	1.92 to 1.98 GHz
V _{DD}	3.5 V	3.5 V
V _{GG}	2.95 V	2.85 V

* ACPR test conditions

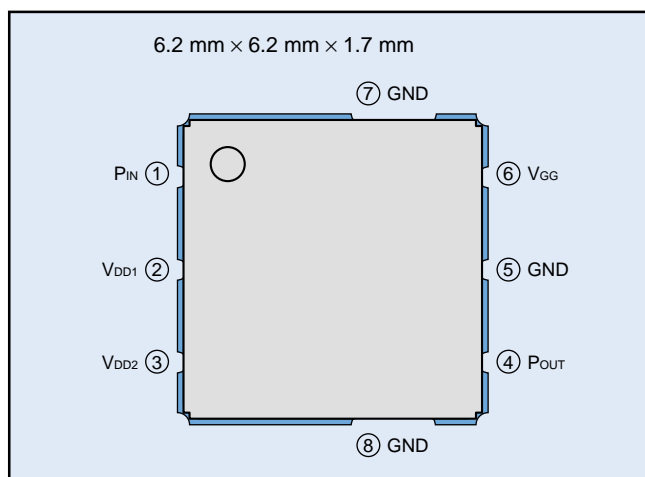
CXG1108K: ±900 kHz offset, CXG1103K: ±5 MHz offset



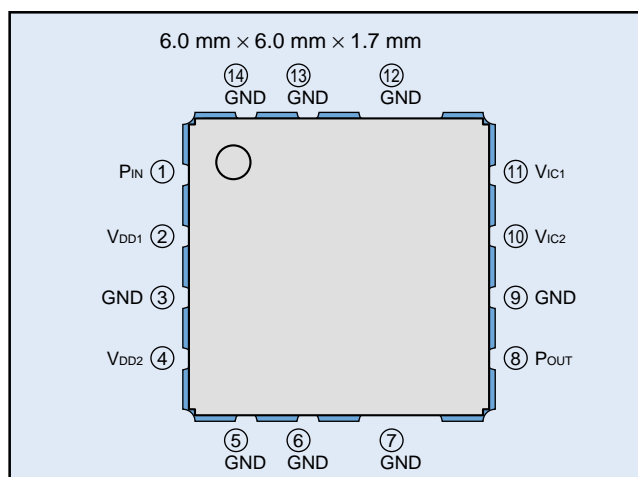
■ Figure 2 CXG1108K Input Power Dependency of Output Power & Power Added Efficiency



■ Figure 3 CXG1103K Input Power Dependency of Output Power & Power Added Efficiency



■ Figure 4 CXG1108K Package Dimensions



■ Figure 5 CXG1103K Package Dimensions