

CXA3355Z

GPS (Global Positioning System) functionality is now often included in mobile equipment such as cellular phones and digital still cameras, resulting in increasing desires for further miniaturization and further reductions in the number of external components required in GPS devices.

At the same time as adopting single conversion as the frequency conversion method, the CXA3355Z incorporates all of the two SAW filters, the LNA, and the passive components (inductors, capacitors, and resistors) in the package itself. Thus Sony has achieved RF downconverter functionality in a single package with no external components.

- Includes all required components, including the SAW filters, the LNA, and the passive components (inductors, capacitors, and resistors) in the package itself
- Total gain ≥ 100 dB, TTL NF ≈ 3 dB
- Ultraminiature package
6.3 mm (L) \times 6.15 mm (W) \times 1.3 mm (T)

■ All External Components Integrated in the Package

The CXA3355Z is an RF module that, in addition to the passive components, about thirty inductors, capacitors, and resistors, also integrates two SAW filters and a low-noise amplifier in the same package, achieving the ultraminiature size of 6.3 mm \times 6.15 mm \times 1.3 mm.

Components such as the matching components, the PLL loop filter, and the bypass capacitors are all integrated in the package and shielded in a metal case.

By integrating two SAW filters and a low-noise amplifier, the CXA3355Z is able to achieve superb interference rejection char-

acteristics, a total gain of 100 dB or higher, and a TTL NF of about 3 dB. The CXA3355Z can contribute significantly to GPS block simplification.

■ RF IC Implemented in Sony's 0.25 μ m SiGe BiCMOS Process

The RF IC used in the CXA3355Z combines both SiGe HBT and 0.25 μ m CMOS devices and achieves both the ultralow power consumption optimal for mobile equipment by combining this high-potential process technology with Sony's circuit technology as well as improved sensitivity by integrating a low-noise amplifier on the same chip.

The system adopts the single conversion method and includes both a high-sensitivity low-noise amplifier and a newly-developed image rejection mixer that achieves a high image rejection ratio. The PLL circuit features a programmable structure and supports a wide variety of TCXO frequencies in the 10 to 26 MHz range. The power-on reset function is enabled and bus control is not required at representative TCXO frequencies (13, 16.368, and 18.414 MHz). Single-bit digital output was selected as the output format. The CXA3355Z supports interface at levels from 1.6 to 3.3 V.

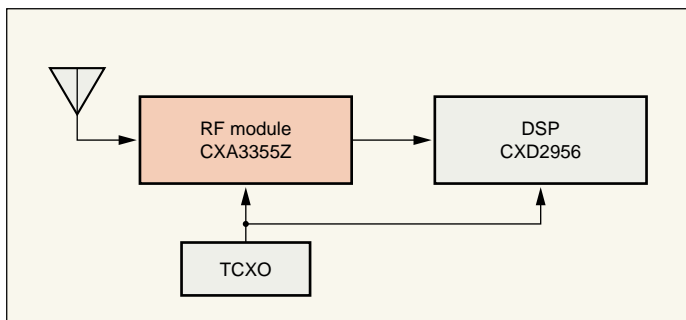
■ Ultraminiature Package

Sony achieved extreme miniaturization to a mere 6.3 mm \times 6.15 mm \times 1.3 mm in the CXA3355Z, which includes all the required components in a single package. In addition to the CXA3355Z RF module, Sony also provides a lineup including the CXA3355ER 5.1 mm \times 5.1 mm \times 0.8 mm RF IC provided in a 44-pin VQFN package, and the CXA3355TQ, which is an alternative package version of the CXA3355ER and which adopts a 48-pin TQFP package with an easy-to-mount 0.5 mm lead pitch.

In addition, the CXA3355ER/TQ feature a built-in antenna sensing function that automatically determines whether or not an antenna is connected.

V O I C E

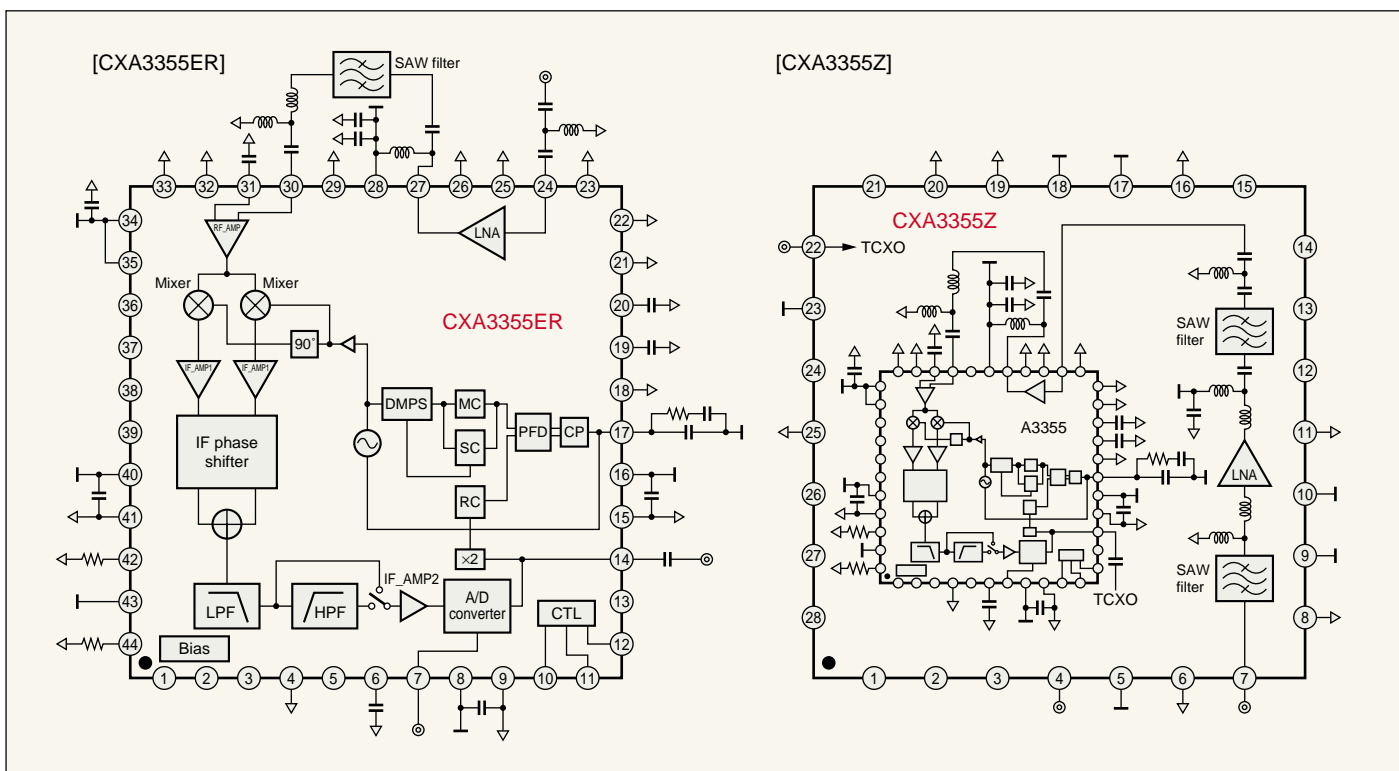
While the market for portable equipment with GPS functionality is expected to grow rapidly in the future, we hope to achieve even further reductions in power consumption and improvements in performance. Since we are committed to developing products that will satisfy our customers' needs in this area, you can look forward to an ever expanding line of GPS products from Sony in the future.



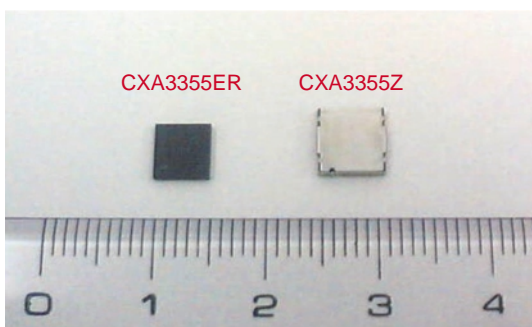
■ Figure 1 System Structure Example

■ Table 1 CXA3355Z Main Characteristics

Item	Specification
Current consumption	14 mA
Supply voltage	1.8 V, 3 V (LNA block only)
TTL gain	100 dB or higher
TTL NF	3 dB
IF frequency	1 MHz, 4 MHz



■ Figure 2 Application Circuit Examples (CXA3355ER and CXA3355Z)



■ Photograph 1 External Dimensions (CXA3355ER and CXA3355Z)

■ Table 2 Package Lineup

	CXA3355Z	CXA3355ER	CXA3355TQ
Functions	RF module	RF IC	RF IC
Number of external components	0 or 1	About 30	About 30
Package	28-pin LTCC	44-pin VQFN	48-pin TQFP
Lead pitch	0.6 mm	0.4 mm	0.5 mm
External dimensions	6.3 mm × 6.15 mm × 1.3 mm	5.1 mm × 5.1 mm × 0.8 mm	9.0 mm × 9.0 mm × 1.2 mm