PRELIMINARY PRODUCT SUMMARY

SKY77329 PA Module for Quad-Band GSM / EDGE

Applications

- Quad-band cellular handsets:
  - Class 4 GSM850/900
  - DCS1800
  - PCS1900
  - EDGE polar modulation
  - Class 12 GPRS multi-slot operation

Features

- High efficiency:
  - GSM850, 55%
  - GSM900, 55%
  - DCS, 53%
  - PCS, 53%
- Wideband envelope control path
- Input/output matching
- 22-pin MCM
- Small outline
  - 6 mm x 8 mm
- Low profile
  - 1.2 mm
- Gold-plated, lead-free contacts

Skyworks offers lead (Pb)-free “environmentally friendly” packaging that is RoHS compliant (European Parliament for the Restriction of Hazardous Substances).

Description

The SKY77329 Power Amplifier Module (PAM) is designed in a compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, PCS1900, and supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM850/900 PA block and a DCS1800/PCS1900 PA block, impedance-matching circuitry for 50 Ω input and output impedances, and a Power Amplifier Control (PAC) block. A custom CMOS integrated circuit provides the internal PAC function and interface circuitry.

Two separate Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto InGaP/GaAs die; one supports the GSM850/900 bands, the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The GaAs die, the silicon die, and the passive components are mounted on a multi-layer laminate substrate and the entire assembly is encapsulated with plastic overmold.

RF input and output ports are internally matched to 50 Ω to reduce the number of external components for a quad-band design. Extremely low leakage current (10 µA, typical) of the dual PA module maximizes handset standby time. The SKY77329 also contains band select switching circuitry to select GSM (logic 0) and DCS/PCS (logic 1) as determined from the Band Select (BS) signal. In the functional block diagram (Figure 1), the BS pin selects the PA output (DCS/PCS OUT or GSM OUT) while the Analog Power Control (APC) controls the level of output power.

The integrated power amplifier control (PAC) function provides envelope amplitude control by reducing sensitivity to input drive, temperature, power supply, and process variation. The TX Enable input signal (pin 3) allows initial turn-on of the PAC circuitry to minimize battery drain.

![Figure 1. SKY77329 Functional Block Diagram](image_url)