

PRELIMINARY PRODUCT SUMMARY

SKY77331 Power Amplifier Module with Integrated Coupler for Quad-Band GSM / EDGE

Applications

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

Features

- High efficiency:
 - GSM850, 55% (Peak)
 - GSM900, 55% (Peak)
 - DCS, 52% (Peak)
 - PCS, 52% (Peak)
- Integrated coupler
- Wideband envelope control path
- Input/output matching
- 16-pad MCM
- Small outline
 - 6 x 8 mm
- Low profile
 - 1.2 mm
- Gold-plated, lead-free contacts

Description

The SKY77331 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, a Power Amplifier Control (PAC) block, and an Integrated Coupler. A custom CMOS IC 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 pads to distribute current. The GaAs die, the silicon die, and the passive components are mounted on a multi-layer laminate substrate with the entire assembly 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, maximum) of the dual PA module maximizes handset standby time. The SKY77331 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 pad selects the PA output (DCS/PCS_OUT or GSM_OUT) while the Power Control (VPC) 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 Enable input signal (pad 1) allows initial turn-on of the PAC circuitry to minimize battery drain.

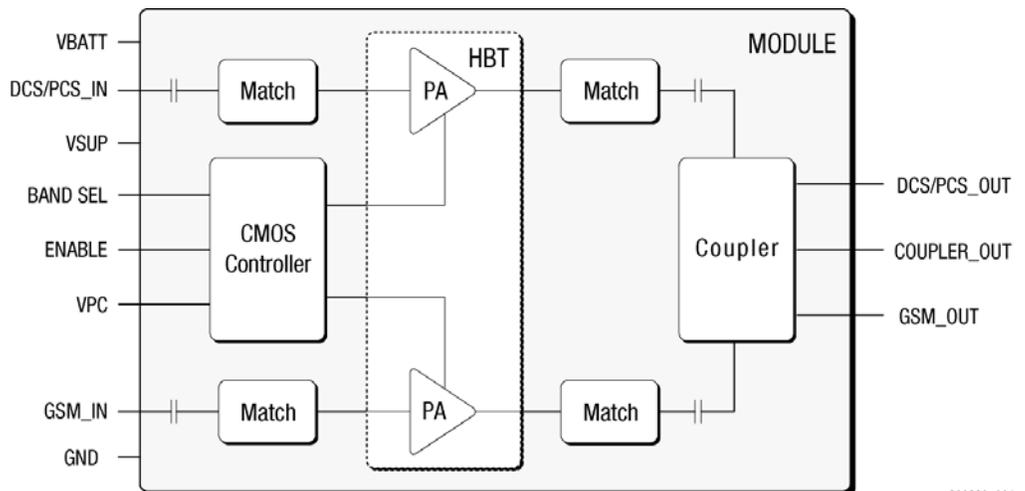


Figure 1. SKY77331 Functional Block Diagram

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