SKYWORKS®

SKY77344 PA Module for Quad-Band GSM / EDGE

Applications

- Quad-band cellular handsets:

  GMSK Modulation
  - Class 4 GSM850/900
  - Class 1 DCS1800/ PCS1900
  - Class 12 GPRS multi-slot operation

  EDGE modulation
  - Class E2 GSM850/900
  - Class E2 DCS1800/ PCS1900

Features

- High efficiency:
  - GSM850 51% @ 34.5 dBm
  - GSM900 50% @ 34.5 dBm
  - DCS1800 50% @ 32.5 dBm
  - PCS1900 48% @ 32.5 dBm

- Input/Output matching 50 Ω internal (with DC blocking)

- Integrated Couplers and Detector

- Detector Output Linear dB/V

- 20-pad MCM

- Small outline: 5 x 5 mm

- Low profile: < 1 mm

NEW Skyworks Green™ products are lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide and brominated flame retardants.

Description

The SKY77344 Power Amplifier Module (PAM) is designed in a compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, PCS1900, supporting GMSK and linear EDGE modulation. Class 12 General Packet Radio Service (GPRS) multi-slot operation is also supported.

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 Multi-function Power Amplifier Control (MFC) block. A custom BICMOS integrated circuit provides the internal MFC function and interface circuitry.

Two separate Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single InGaP 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 InGaP die, the silicon die, and the passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

RF input and output ports are internally matched to 50 Ω to reduce the number of external components. Extremely low leakage current (2.5 µA, typical) maximizes handset standby time. Band select (BS) circuitry selects GSM transmit frequency band (logic 0) and DCS/PCS transmit frequency band (logic 1). MODE circuitry selects GMSK modulation (logic 0) or EDGE modulation (logic 1). VRAMP controls the output power for GMSK modulation and provides bias optimization for EDGE modulation depending on the state of MODE control.

The integrated multi-function control (MFC) provides closed loop power control in GMSK mode, reducing sensitivity to antenna load, input drive, temperature, power supply, and process variation. In EDGE mode, the MFC configures the PA for fixed gain, and provides the ability to optimize the PA bias operation at different power levels.
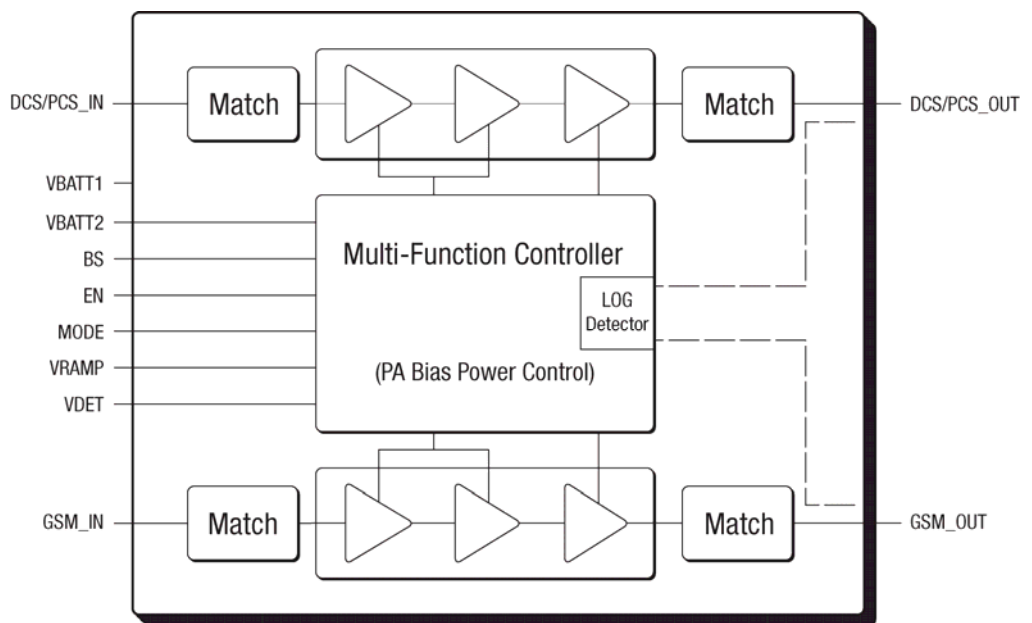

Figure 1. SKY77344 Functional Block Diagram

Ordering Information

Model Number	Manufacturing Part Number	Product Revision	Package	Operating Temperature
SKY77344	SKY77344		5 x 5 x 0.95 mm	−25 °C to +85 °C