

# ACPM-9013

## LTE Band 13/14 GPIO APT PA

### 2.0 mm × 2.5 mm

## Power Amplifier Module

### Product Brief

#### Description

The ACPM-9013 is a fully matched 10-pin surface mount power amplifier module developed for LTE Band 13 and Band 14. It meets stringent linearity power up to LTE (MPR=0 dBm) 27.5 dBm. The 2 mm × 2.5 mm form-factor package is self contained, and it incorporates 50 ohm input and output matching networks.

The ACPM-9013 features CoolPAM circuit technology that supports two power modes—low and high. The CoolPAM is a stage bypass technology that enhances PAE (power added efficiency) at low power range. The stage bypass feature enhances PAE further at low output range, and it enables the PA to have exceptionally low quiescent current. Without a DC-DC converter, it dramatically saves average current consumption, extends the talk time of mobiles, and prolongs a battery life. It can be used with the APT (average power tracking) operation to reduce the power consumption when VCC1 is connected to the battery and VCC2 is connected to a DC-DC converter, which adjusts the VCC2 voltage according to the output power level.

A directional coupler is integrated into the module, and both coupling and isolation ports are available externally, which support a daisy chain. The integrated coupler has excellent coupler directivity, which minimizes the coupled output power variation or delivered power variation caused by a load mismatch from the antenna.

The power amplifier is manufactured on an advanced InGaP HBT (hetero-junction bipolar transistor) MMIC (microwave monolithic integrated circuit) technology that offers state-of-the-art reliability, temperature stability, and ruggedness.

#### Features

- Thin package (0.93 mm typical)
- Excellent linearity in APT mode
- Two-mode power control with Vmode
- Compatible with the APT application
- High efficiency at maximum output power
- Ten-pin surface mounting package
- Compliant with the 3GPP Public Safety Band Emission (NS\_07) specification
- Internal 50-ohm matching networks for both RF input and output
- Integrated coupler
  - Coupler and isolation ports for a daisy chain
- Green – Lead-free and RoHS compliant

#### Applications

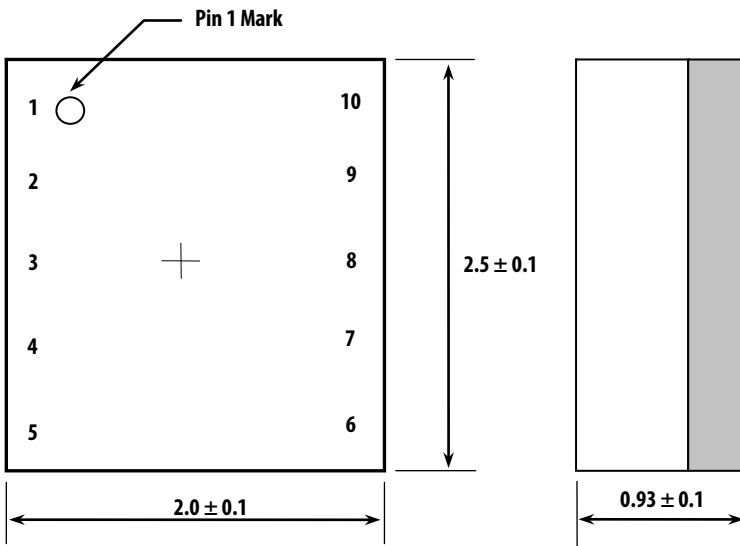
- Band 13 LTE
- Band 14 LTE

#### Ordering Information

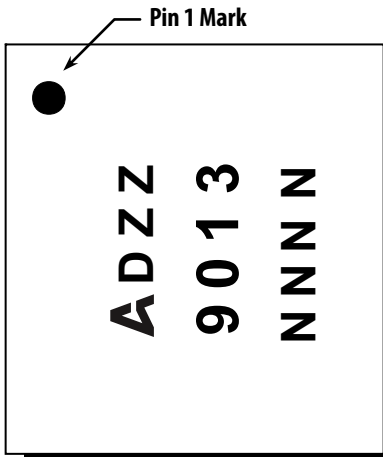
Part Number	Number of Devices	Container
ACPM-9013-TR1	1,000	178 mm (7 in.) tape/reel

## Package Dimensions

The dimensions are in millimeters.



## Marking Specification



- D – Date Code
- ZZ – Assembly Lot Identification
- 9013 – Device Code

## Pin Description

Pin #	Name	Description
1	VCC1	DC supply voltage, connect to bias circuitry with a fixed voltage (higher than 3.2V)
2	RFIN	RF input
3	NC	NC
4	Vmode	Mode control
5	Ven	PA enable
6	CPL	Coupling port of the coupler
7	GND	Ground
8	ISO	Isolation port of the coupler
9	RFOUT	RF output
10	VCC2	DC supply voltage, connect to the RF stages' collector to which APT is applied (0.5V~3.5V)

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For product information and a complete list of distributors, please go to our web site:

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