



**THE DATASHEET OF  
ACPM-5813-TR1**



# ACPM-5813

3×3 mm Power Amplifier Module

LTE Band 13/14 (777 – 798 MHz)



## Product Brief

### Description

The ACPM-5813 is a fully matched 10-pin surface mount module developed for LTE Band 13 and Band 14, operating in the 777 – 798 MHz bandwidth. The ACPM-5813 meets stringent LTE linearity requirements up to 27.5 dBm output power (MPR = 0 dB). The 3 mm × 3 mm form factor package is self-contained, incorporating 50 Ω input and output matching networks. The PA also contains internal DC blocking capacitors for RF input and output ports.

The ACPM-5813 features CoolPAM circuit technology which supports 2 power modes – low and high power modes. The CoolPAM is stage bypass technology enhancing PAE (power added efficiency) at low and medium power range. The stage bypass feature is used to enhance PAE further at a 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 and so extends the talk time of mobile devices and prolongs a battery life. It can be used with Average Power Tracking (APT) 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, supporting a daisy chain. The integrated coupler has excellent coupler directivity, which minimizes the coupled output power variation or delivered power variation caused by the load mismatch from the antenna. The coupler directivity, or the output power variation into the mismatched load, is critical to the TRP and SAR performance of the mobile phones in real-field operations as well as compliance tests for the system specifications.

The ACPM-5813 has integrated on-chip Vref and on-module bias switch as the one of the key features of the CoolPAM-5, so an external constant voltage source is not required, eliminating the external LDO regulators and switches from circuit boards of mobile devices. It also makes the PA fully digital-controllable by the Ven pin that simply turns the PA on and off from the digital control logic input from baseband chipsets. All of the digital

control input pins such as the Ven and Vmode are fully CMOS compatible and can operate down to the 1.35V logic level. The current consumption by digital control pins is negligible.

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

### Features

- Thin Package (0.9 mm typ.)
- Excellent Linearity
- Compliant with 3GPP Public Safety Band Emission (NS\_07) Spec
- 2-mode power control with Vmode:  
Low Power Mode/High Power Mode
- High Efficiency at max output power
- Average Power Tracking (APT) operation
- 10-pin surface mounting package
- Internal 50 Ω matching networks for both RF input and output
- Integrated coupler  
Coupler and Isolation ports for daisy chain
- Lead-free, RoHS compliant, Green

### Applications

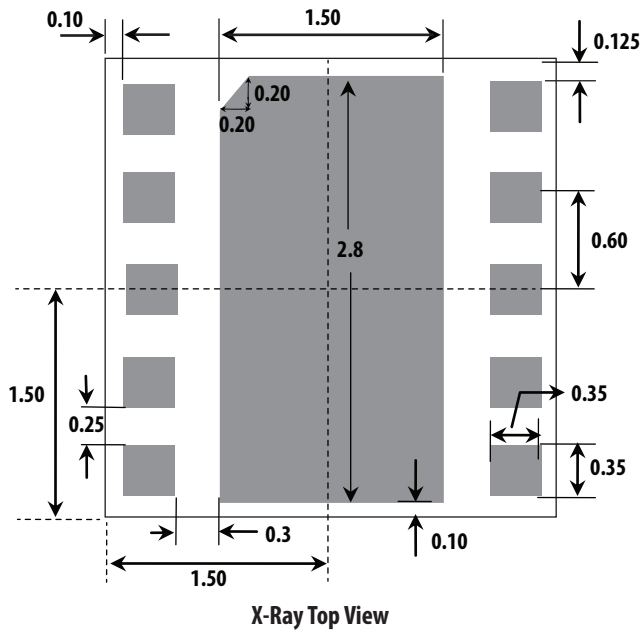
- LTE Band 13/Band 14 Handset and Data Card

### Ordering Information

Part Number	Number of Devices	Container
ACPM-5813-TR1	1000	178 mm (7") Tape/Reel
ACPM-5813-BLK	100	Bulk

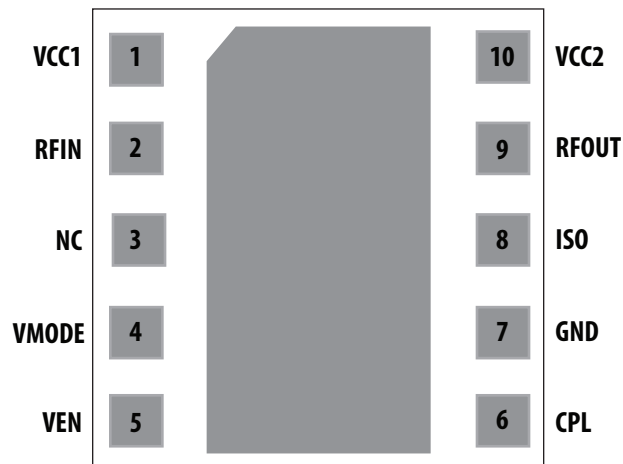
## Footprint

All dimensions are in millimeters.  
 (Tolerance of pad dimension:  $\pm 0.05$  mm)



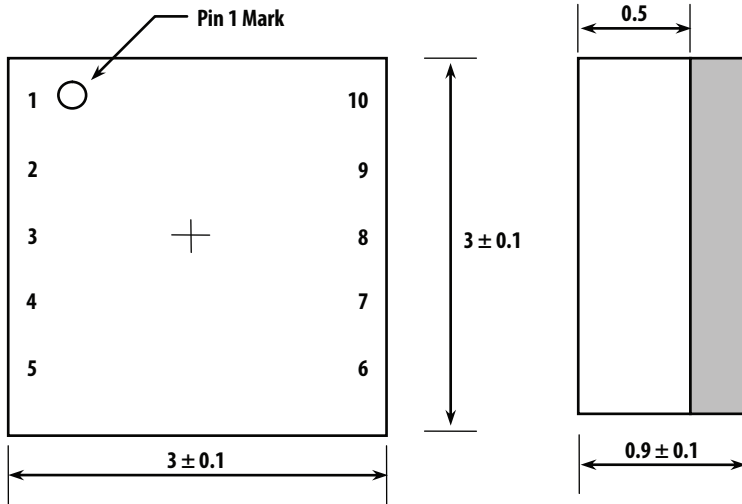
## PIN Description

Pin #	Name	Description
1	Vcc1	DC Supply Voltage
2	RFin	RF Input
3	NC	Not Connected
4	Vmode	Mode Control
5	Ven	PA Enable
6	CPL	Coupling port of Coupler
7	GND	Ground
8	ISO	Isolation port of Coupler
9	RFOut	RF Out
10	Vcc2	DC Supply Voltage

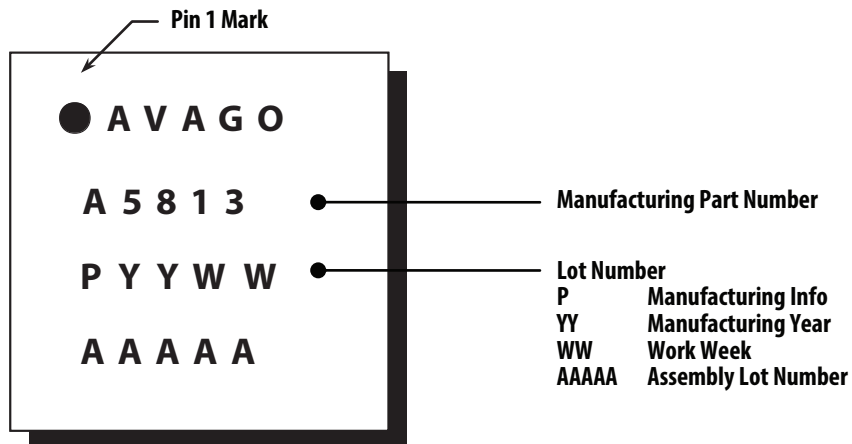


## Package Dimensions

All dimensions are in millimeters.



## Marking Specification



For product information and a complete list of distributors, please go to our web site: [www.avagotech.com](http://www.avagotech.com)

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