

*Evaluation Board Documentation*

***TRF8010 RF Transmit Driver 4.8  
Volt GSM Application***

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*APPLICATION BRIEF: SWRA010*

*Wireless Communications Business Unit*

*Digital Signal Processing Solutions  
21 November 1997*



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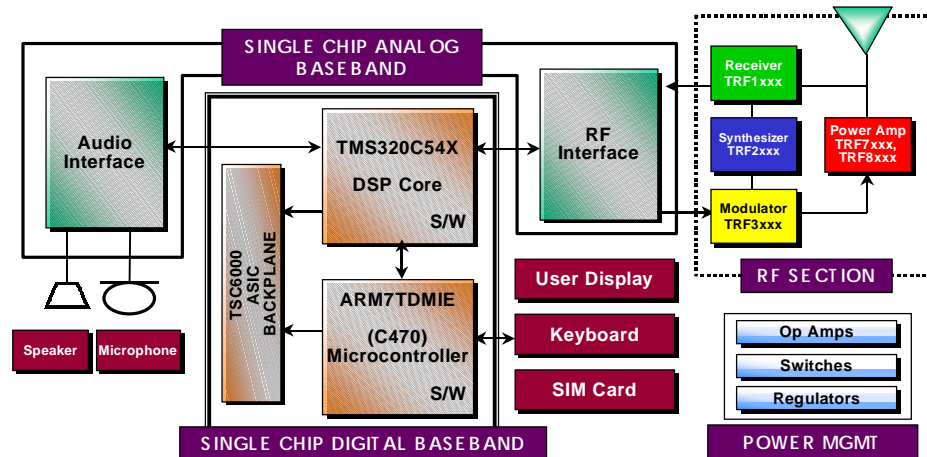
## Abstract

The evaluation board documentation for the TRF8010 RF Transmit Driver is primarily for device assessment. Included in this documentation are the following:

- ❑ The Evaluation Board Mechanical Outline
- ❑ The Evaluation Board Schematic for GSM. The schematic also includes a component list describing the resistors, inductors, and capacitors, along with the suppliers and board material specifications.
- ❑ A Typical RF Performance Graph
- ❑ The Test Bench Diagram with organized instructions for configuration.

## Product Support

### The TI Advantage Extends Beyond RF to Every Other Major Wireless System Block



#### Digital Baseband

TI's single-chip Digital Baseband Platform, combines two high-performance core processors – a digital signal processor tailored for digital wireless applications and a microcontroller designed specifically for low-power embedded systems. The customizable platform helps wireless digital telephone manufacturers lower component counts, save board space, reduce power consumption, introduce new features, save development costs and achieve faster time to market, at the same time giving them flexibility and performance to support any standard worldwide.

#### Analog Baseband

TI analog baseband components provide a Mixed-signal bridge between the real world of analog signals and digital signal processors, the key enabling technology of the digital wireless industry. Using a seamless architecture for wireless communications technology, TI matches its baseband interfaces, radio frequency ICs and power management ICs to digital signal processing engines to create complete DSP Solutions for digital wireless systems.

#### Power Management

TI provides power management solutions with integration levels designed to meet the needs of a range of wireless applications. From discrete LDOs and voltage supervisors to complete power supplies for the baseband section, TI power management solutions play an important role in increasing wireless battery life, time-to-market and system functionality.

**For more information visit the Wireless Communications web site at [www.ti.com/sc/docs/wireless/home.htm](http://www.ti.com/sc/docs/wireless/home.htm).**



## Related Documentation

The following list specifies product names, part numbers, and literature numbers of corresponding TI documentation.

- *TRF8010 900-MHz RF Transmit Driver*, Literature number SLWS031B
- *TRF8010 Product Bulletin*, Literature Number SLWT003

## World Wide Web

Our World Wide Web site at [www.ti.com](http://www.ti.com) contains the most up to date product information, revisions, and additions. Users registering with TI&ME can build custom information pages and receive new product updates automatically via email.

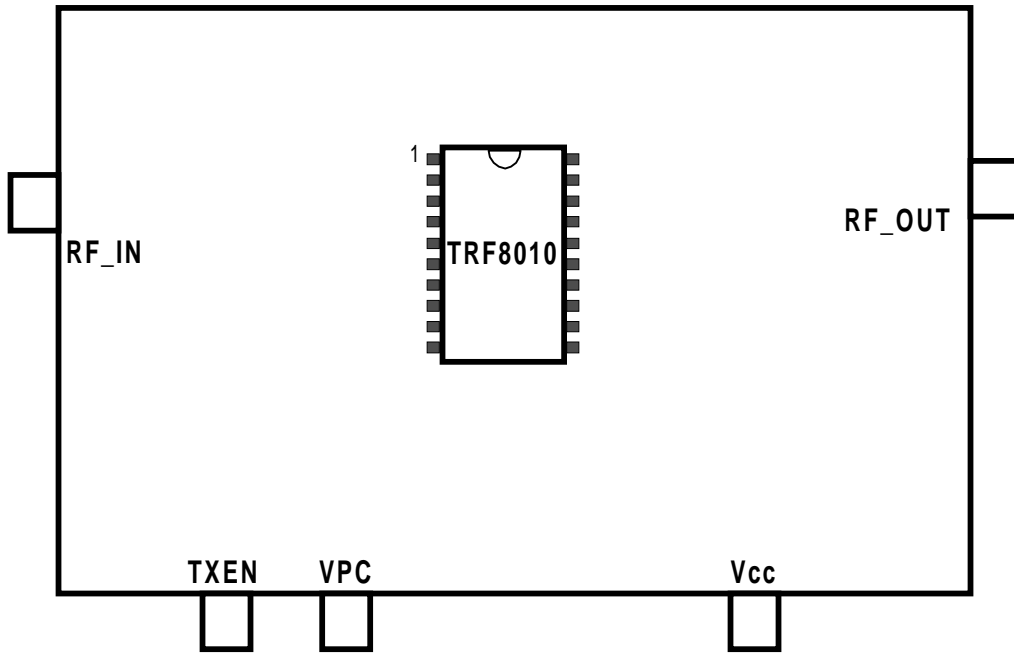
## Email

For technical issues or clarification on switching products, please send a detailed email to [sc-infomaster@ti.com](mailto:sc-infomaster@ti.com). Questions receive prompt attention and are usually answered within one business day.



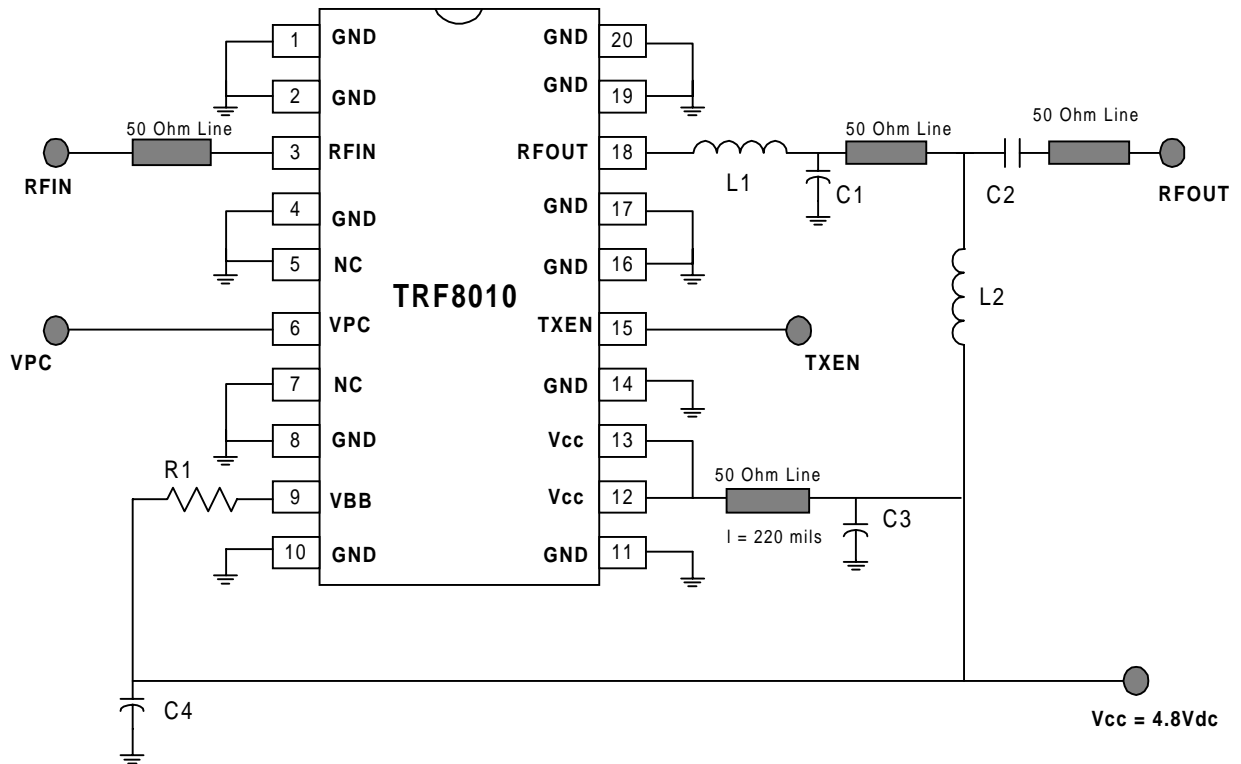
## Evaluation Board Mechanical Outline (Top View)

Figure 1. TRF8010 Evaluation Board Mechanical Outline (top view)



## Evaluation Board Schematic

Figure 2. Evaluation Board Schematic for GSM.



### Component List:

#### Resistor (Ohms)

R1 = 180

#### Inductor (nH)

L1 = 6.8  
L2 = 100

#### Capacitor (pF)

C1 = 3.3  
C2 = 100  
C3 = 100  
C4 = 1000

#### Suppliers:

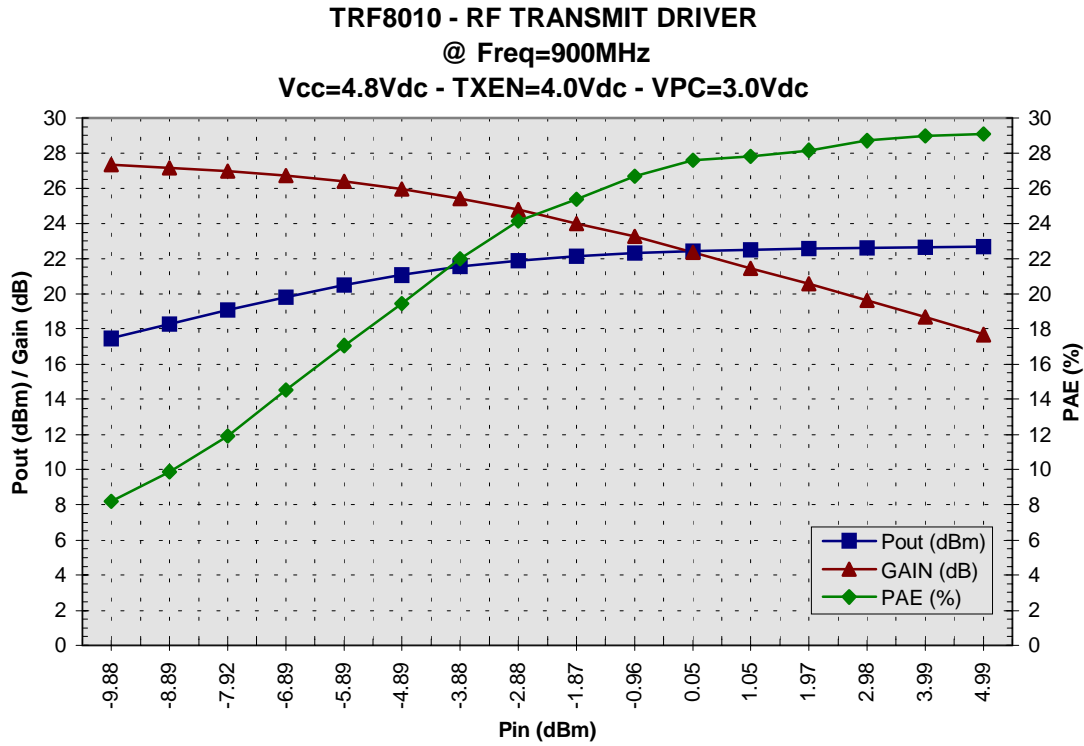
- [IMS](#)  
RCI-0603 series ( resistors )
- [Toko](#)  
LL1608 series ( inductors )
- [Murata](#)  
GRM36C series ( capacitors )  
GRM36X series ( capacitors )

**Board Material Specifications:** Type FR4 ;  $\epsilon = 4.3$  ;  $h = 12$  mils



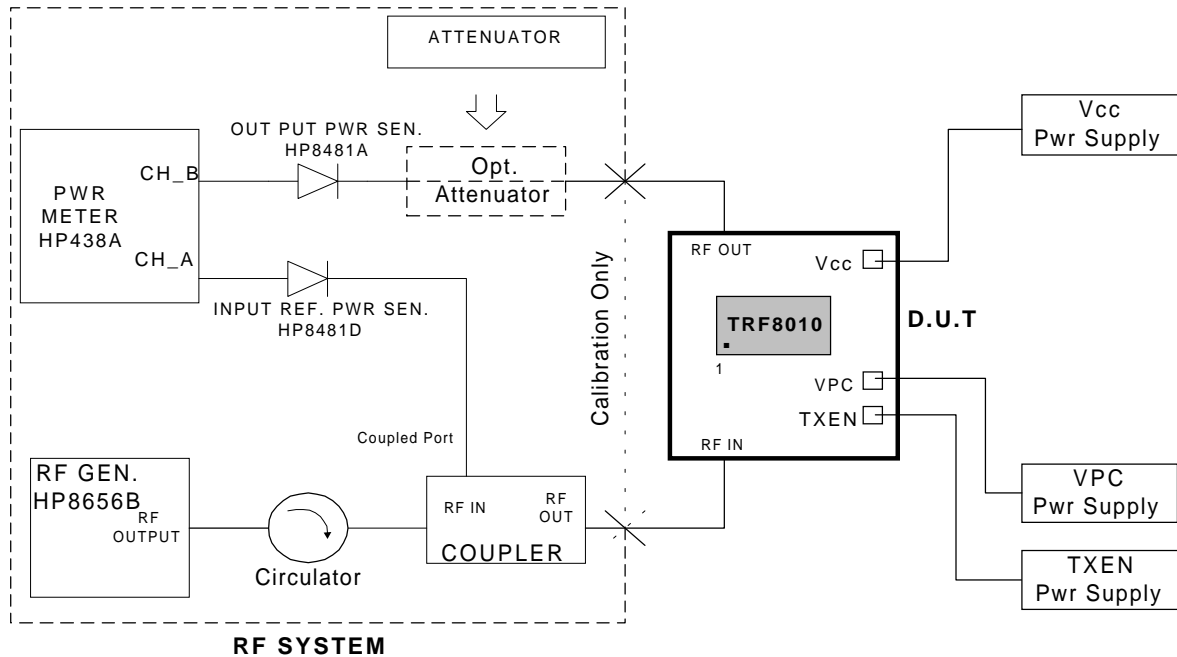
# Typical RF Performance

Figure 3. Typical Pout/Gain/PAE vs. Pin for GSM.



## Test Bench Diagram

Figure 4. Test Bench Configuration.



- 1) Configure Test Bench as shown.
- 2) Calibrate RF SYSTEM - less Device Under Test.
  - a) Zero and calibrate POWER METER, POWER SENSORS.
  - b) Set RF power and frequency on RF GENERATOR.
  - c) RF Input Calibration:
 

Offset Channel A of POWER METER by the difference between the reading of Channel B and Channel A. Verify that Channel A reading and Channel B reading are the same after offsetting.
  - d) RF Output Calibration:
 

Attach an Attenuator to OUTPUT POWER SENSOR. Offset Channel B of POWER METER by the difference between the reading of Channel A and Channel B. Verify that Channel A reading and Channel B reading are the same after offsetting.

- 3) Device D.C. Power-up



- a) Set *Vcc Power Supply* to 4.8Vdc.
- b) Set *TXEN Power Supply* to [ *Vcc* - 0.8Volts ].
- c) Set *VPC Power Supply* to

- \* 3.0Vdc for the Power Test.

- \* 0 to 3.0 Volts for VPC Control Test.

**NOTE: Ensure that *Vcc* is always 4.8V during RF test. Adjustment of *Vcc Power Supply* may be required.**



## Evaluation Board Disclaimer

Please note that the enclosed evaluation boards are experimental Printed Circuit Boards and are therefore only intended for device evaluation.

We would like to draw your attention to the fact that these boards have been processed through one or more of Texas Instruments' external subcontractors which have not been production qualified.

Device parameters measured, using these boards, are not representative of any final datasheet or of a final production version. Texas Instruments does not represent or guarantee that a final version will be made available after device evaluation.

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