

DESCRIPTION

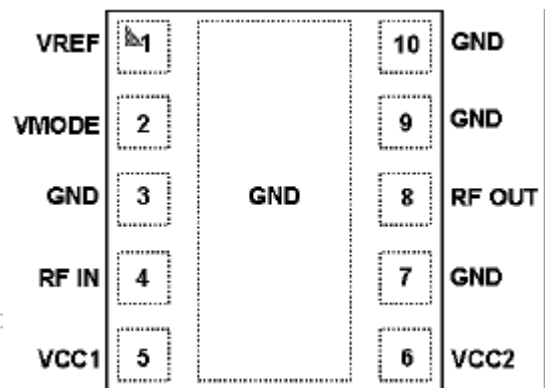
The FC7103 is a high power, high efficiency amplifier module for dual mode AMPS/CDMA wireless handset applications. The device is manufactured on an advanced InGaP HBT MMIC technology. Selectable bias modes that optimize efficiency for different output power levels, and a shutdown mode with low leakage current, serve to increase handset talk and standby time. The 10 Pin 4mm X 4mm surface mount package offers premium performance in a 50 Ω system.

FEATURES

- Operating Frequency: 824~849MHz
- High Efficiency
 - 56% AMPS, 42.5% CDMA
- Very Low Quiescent Current: 32mA
- Low Leakage Current in Shutdown Mode: < 3uA
- Optimized for a 50 Ω System

powerRF™
APPLICATIONS

- Single Mode CDMA Wireless Handsets
- Dual Mode AMPS/CDMA Wireless Handsets

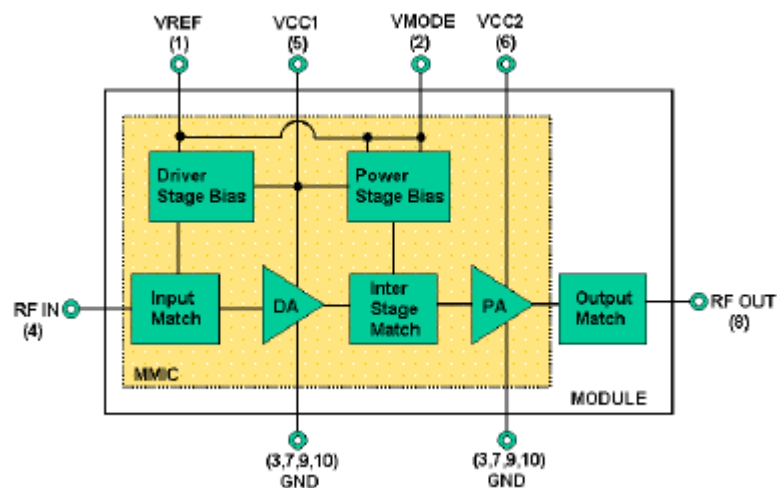
PIN CONFIGURATION

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DataShee

FUNCTIONAL BLOCK DIAGRAM

(X-ray Transparency Top View)



For latest specifications, technical questions and additional product information, visit our website or e-mail us.

FCI Inc.
2nd Fl. Korea First Bank B/D, 6-8 Sunae-Dong Pundang-Gu,
Sungham City, Kyunggi-do,
463-020, KOREA

Web: <http://www.fci.co.kr>
E-mail : info@fci.co.kr

Tel : 82-31-711-6444
Fax: 82-31-714-6576

ABSOLUTE MAXIMUM RATINGS

Parameter	Unit	Min	Max
Supply Voltage (Vcc)	V	0	+5
Mode Control Voltage (VMODE)	V	0	+3.5
Reference Voltage (VREF)	V	0	+3.5
RF Input Power (RF IN)	dBm	-	+7
Storage Temperature (Tstg)	°C	-40	+150

Stress in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

RECOMMENDED OPERATING CONDITIONS

Parameter	Unit	Min	Typ	Max	Note
Operating Frequency(f)	MHz	824	-	849	
Supply Voltage(Vcc)	V	+3.0	+3.4	+4.2	
Reference Voltage (VREF)	V	+2.8 0	+2.85 -	+2.9 +0.5	PA "on" PA "shut down"
Mode Control Voltage(VMODE)	V	+2.5 0	+3.0 -	+3.1 +0.5	Low Bias Mode High Bias Mode
RF Output Power (RF OUT)	dBm	- -	+31 +28	- -	AMPS, Vcc=+3.4V CDMA, Vcc=+3.4V

The device may be operated safely over these conditions.

BIAS CONTROL

Power Mode	VREF	VMODE	Range
CDMA High Power Mode	2.85V	0~0.5V	<28dBm
CDMA Low Power Mode	2.85V	2.5~3V	<28dBm
AMPS Mode	2.85V	0~0.5V	<31dBm
Shut Down	0.0V	0.0V	-

ELECTRICAL CHARACTERISTICS

(Typical values are at T = +25 and Vcc = 3.4V)

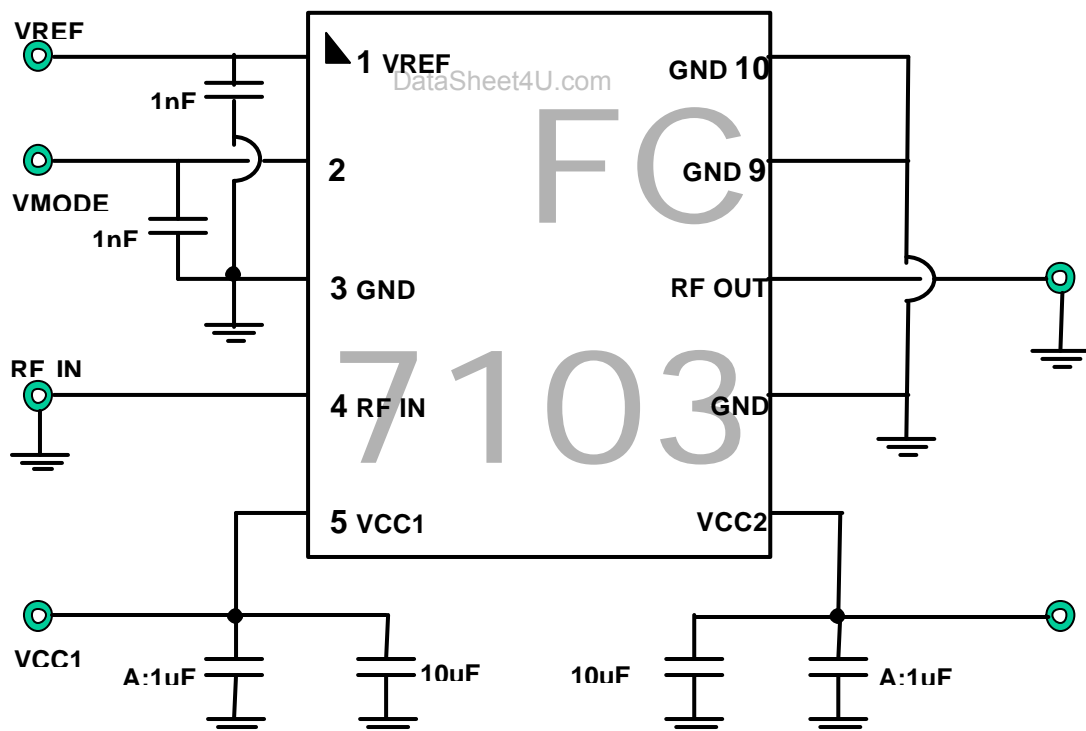
Parameter		Unit	Specification			Note
			Min	Typ	Max	
High Mode (Vmode=0V)	Gain	dB	-	27 27.5 26	-	Pout=31dBm Pout=28dBm Pout=16dBm
	Adjacent Channel Power at $\pm 885\text{kHz}$ offset*	dBc	-	-50 -59	-	Pout=28dBm Pout=16dBm
	Adjacent Channel Power At $\pm 1.98\text{MHz}$ offset*	dBc	-	-57 -77	-	Pout=28dBm Pout=16dBm
	Power-Added Efficiency	%	-	56 40.5 8.5	-	Pout=31dBm Pout=28dBm Pout=16dBm
	Quiescent Current (Icq)	mA	-	85	-	
Low Mode (Vmode=3V)	Gain	dB	-	24.5 25.5 24.5	-	Pout=31dBm Pout=28dBm Pout=16dBm
	Adjacent Channel Power at $\pm 885\text{kHz}$ offset*	dBc	-	-49 -52	-	Pout=28dBm Pout=16dBm
	Adjacent Channel Power At $\pm 1.98\text{MHz}$ offset*	dBc	-	-55 -68	-	Pout=28dBm Pout=16dBm
	Power-Added Efficiency	%	-	58 42.5 10.0	-	Pout=31dBm Pout=28dBm Pout=16dBm
	Quiescent Current (Icq)	mA	-	32	-	
Reference Current	mA	-	3	-	Through Vref Pin	
Mode Control Current	mA	-	1	-	Through Vmode Pin	
Leakage Current	μA	-	3	-	Vcc=3.4V, Vref=0V, Vmode=0V	
Noise in Receive Band	DBm/H z	-	-138	-	869MHz to 894MHz	
Harmonics 2fo Harmonics 3fo	dBc	-	-50 -50	-	Pout<31dBm	
Input Impedance	VSWR	-	1.5:1	-		
Ruggedness-No damage	VSWR	-	10:1	-	Pout<28dBm, all phases	

*Test Condition; Primary Channel BW=1.23 MHz, Adjacent Channel BW=30 kHz

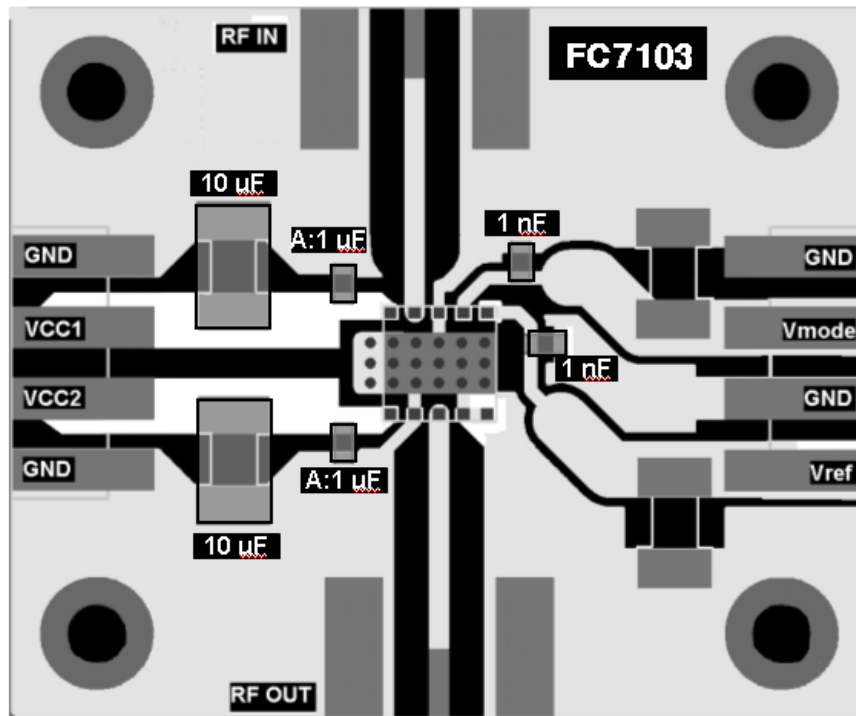
PIN DESCRIPTION

Pin	Name	Description	Pin	Name	Description
1	VREF	Reference Voltage	6	VCC2	Supply Voltage
2	VMODE	Mode Control Voltage	7	GND	Ground
3	GND	Ground	8	RFOUT	RF Output
4	RF IN	RF Input	9	GND	Ground
5	VCC1	Supply Voltage	10	GND	Ground

EVALUATION BOARD SCHEMATIC



EVALUATION BOARD ASSEMBLY DIAGRAM



'A' Place Caps at closest to PAM with the capacitor grounds directly connected to the PAM grounds.

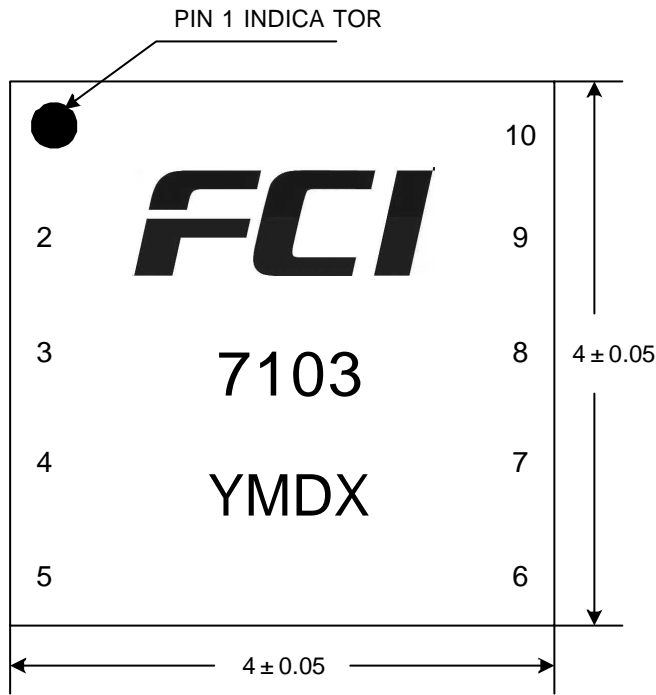
TURN ON SEQUENCE

1. Connect the amplifier to 50Ω RF input and output cables.
2. Set the VCC1 and VCC2 supplies to +3.4V, and observed a current of 0mA.
3. Set the VREF supply to +2.85V. Observe a current draw of approximately 85mA from the VCC supplies. (VMODE=0V, so the amplifier is in High Bias Mode)
4. Apply an RF signal and measure the RF performance.

TURN OFF SEQUENCE

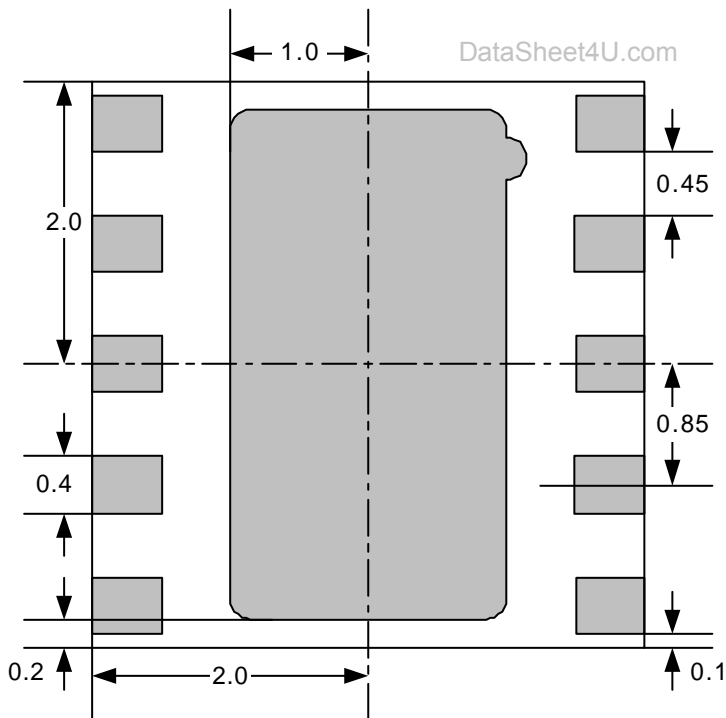
1. Turn off the RF signal. Do not disconnect the PA from the RF SMAs before first turn off the DC connections.
2. Turn off the VREF and VMODE first and then turn off the VCC1 and VCC2.
3. Disconnect the PAM from the test set up.

PACKAGE OUTLINE AND DIMENSIONS

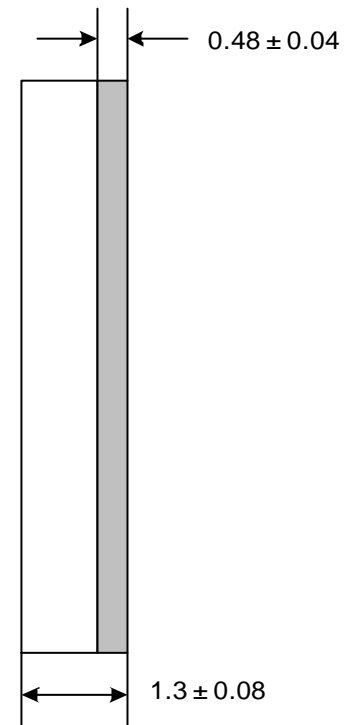


TOP VIEW

Line	Device Marking Description
1	FCI's Company Name
2	7103 = Product Name
3	YMDX LOT Code Y = Year code M = Month code D = Day code X = Manufacture code
	Pin 1 Identifier



BOTTOM VIEW



SIDE VIEW