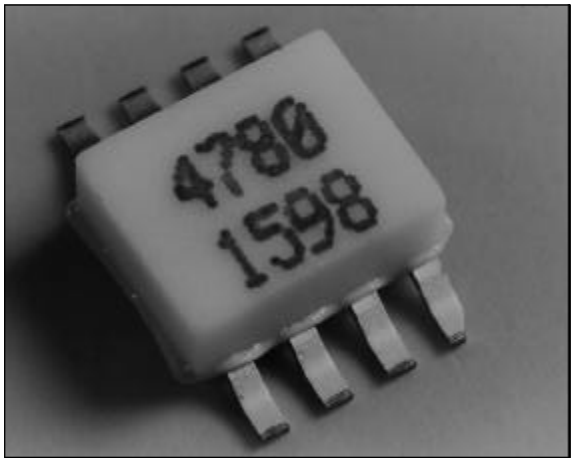
MMIC Power Amplifier and T/R Switch for 1.7-3GHz Wireless Applications



Features

· 25dBm Output Power
· High Gain; typically 26dB
· Surface mount package
· Tx/Rx diversity switch

Description

The P35-4780-C06 is a high performance GaAs MMIC containing a two stage Tx power amplifier and a Tx/Rx diversity switch. This device is designed to complement the P35-4712/3 wireless transceiver MMICs in applications requiring linear power amplification. Thus it is primarily intended for wireless applications in the 2.4 to 2.5GHz ISM band but it can also be used for other applications in the 1.7-3GHz frequency range where high gain and power are required.

The power amplifier requires positive and negative power supplies (nominally ±5V). The switch is controlled by the application of complimentary 0V/-5V signals to the control lines in accordance with the truth table below.

This die is fabricated using MOC's 0.5µm gate length MESFET process (S20) and is fully protected using Silicon Nitride passivation for excellent performance and reliability. This device is packaged in a SO8 sized surface mount ceramic package.

Electrical Performance

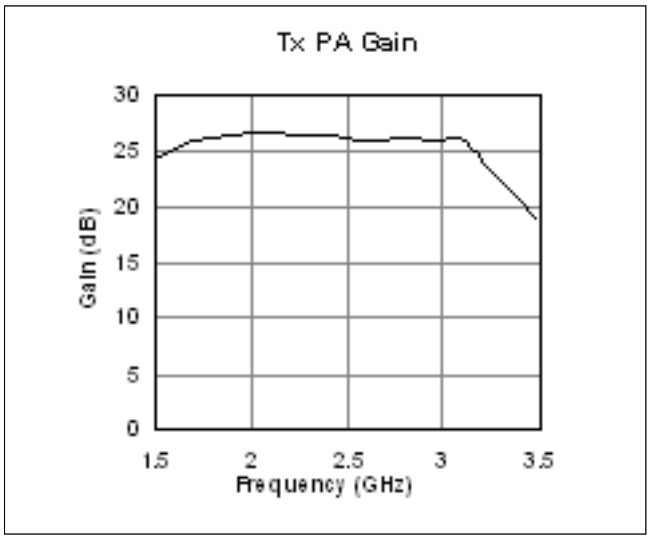
Ambient temperature = 22±3°C , Z_O = 50Ω, Vdd = +5V, Vgg = -5V unless otherwise stated

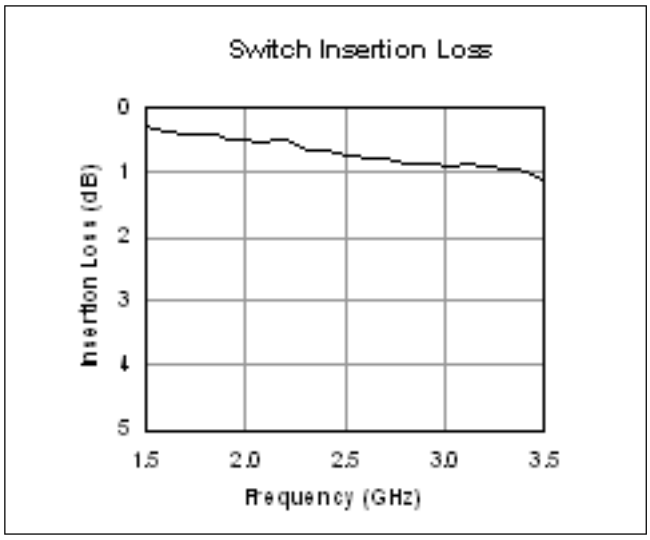
Parameter	Conditions	Min	Typ	Max	Units
Gain	1.7 - 3.0GHz	24	26	28	dB
Input Return Loss	1.7 - 3.0GHz	10	15	-	dB
Output Return Loss	1.7 - 3.0GHz	10	17	-	dB
Noise Figure	1.7 - 3.0GHz	-	5	7	dB
1dB Compression point	Vdd = +3V; Vgg = -3V	18	19	-	dBm
	Vdd = +5V; Vgg = -5V	22	23	-	dBm
	Vdd = +7V; Vgg = -4V	24.5	25.5	-	dBm
Saturated output power	Vdd = +3V; Vgg = -3V	20	21	-	dBm
	Vdd = +5V; Vgg = -5V	24	25	-	dBm
	Vdd = +7V; Vgg = -4V	25	26.5	-	dBm
Positive supply current (Idd)	Vdd = +5V	-	220	280	mA
Negative supply current (Igg)	Vgg = -5V	-	1.5	3	mA
Rx switch insertion loss	1.7 - 3.0GHz	-	0.8	1.0	ns

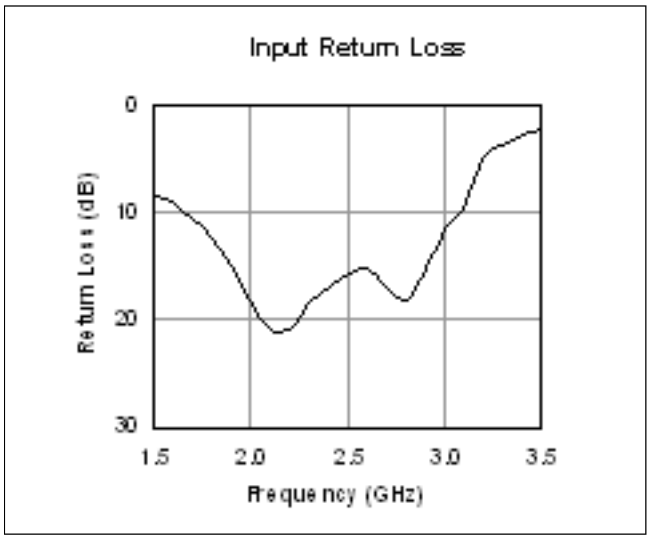
Notes

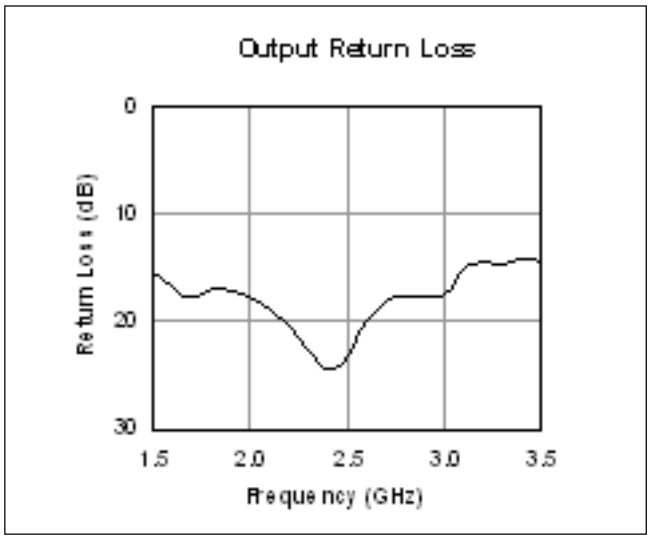
1. Return Loss measured in transmit switch state.
2. Input power at which insertion loss compresses by 1dB.
3. Output power with +5dBm input power.

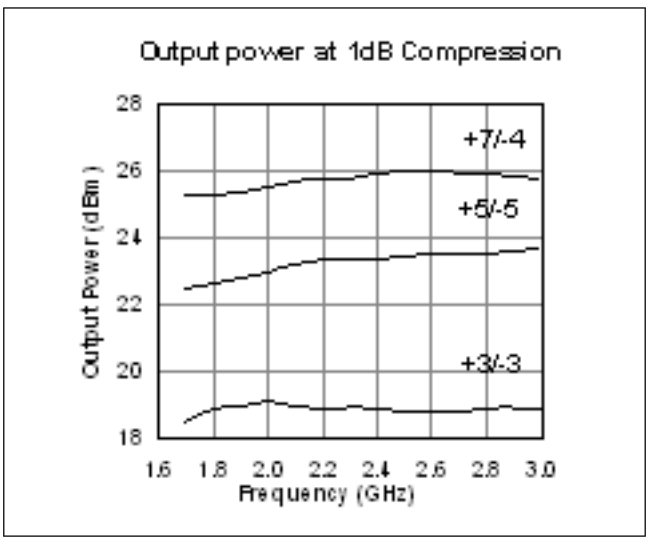
Typical Performance at 22°C

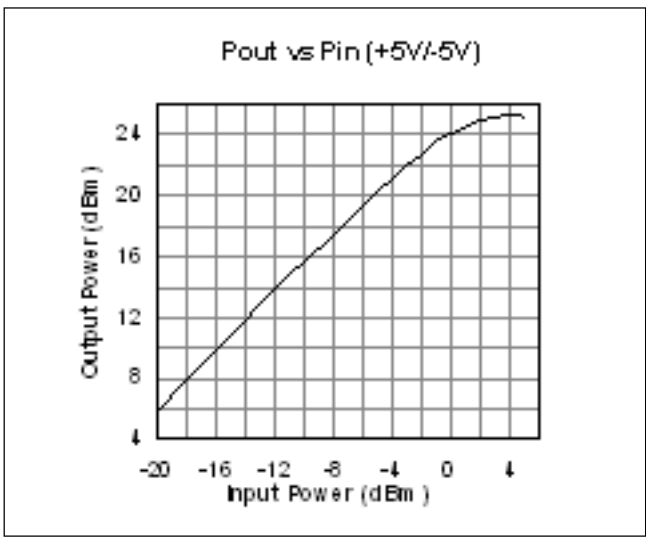




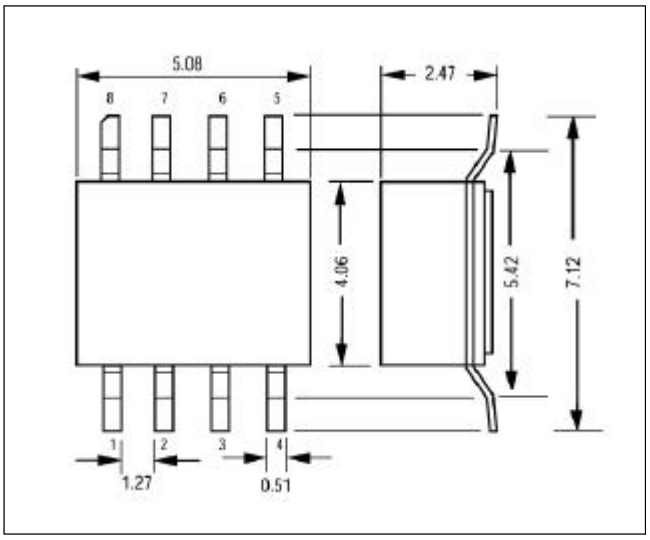




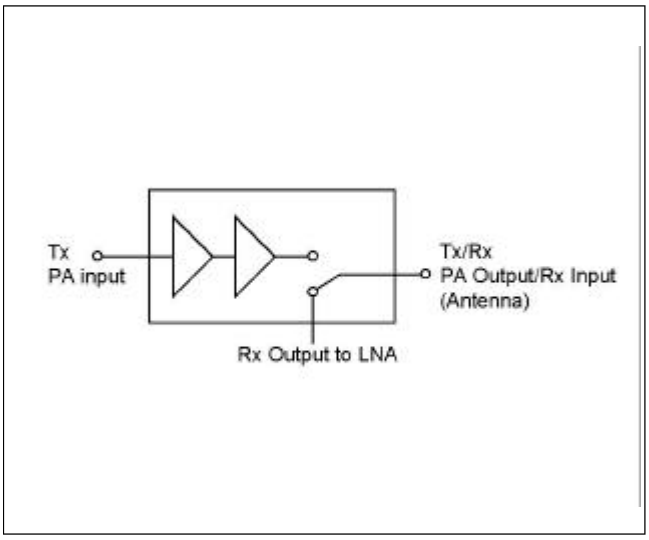




Package Outline



Functional Block Diagram



Pin Details

Pin	Function
1	Vdd
2	Vdd
3	Vgg
4	PA Input
5	Tx Control
6	Rx Control
7	Rx Output to LNA
8	PA Output/Rx Input
Base	Ground

Switching Truth Table

Tx	Rx	Mode of Operation
0V	-5V	Transmit
-5V	0V	Receive
-5V	-5V	Standby

Absolute Maximum Ratings

Max Vdd	+7.5V*
Max Vgg	-5.5V*
Max I/P power	+20 dBm
Operating temperature	-20°C to +70°C
Storage temperature	-65°C to +150°C
Soldering temperature	+250°C for 5 sec

*Maximum supply difference (Vdd-Vgg) is 12V

Ordering Information: P35-4780-C06-200

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MOC, Caswell, Towcester, Northants, NN12 8EQ, Tel:+44 1327 356468 Fax +44 1327 356698

www.moc.marconi.com