

20MHz to 2GHz Precise 90° Active Power Splitter

FUNCTIONAL BLOCK DIAGRAM

FEATURES

Operation frequency from 20MHz to 2GHz

Gain match better than 2dB

Phase match better than 3 Degree

Output third-order intercept 24dBm

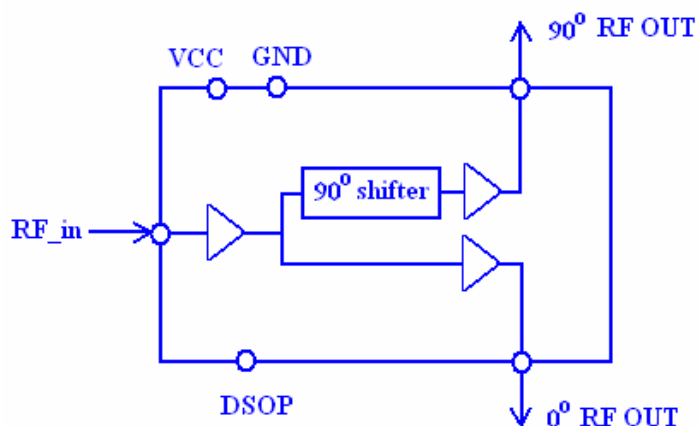
Output 1dB compression point 11dBm

Single-supply voltage 4.75V to 5.25V

APPLICATIONS

RF Modulators

Instrumentation equipment



GENERAL DESCRIPTION

The WS07618 is a wideband 90° two-way active power splitter. The major advantage of this active power splitter is that the magnitude and the phase of the RF outputs are feedback-controlled. As a result, the gain and the phase errors can be kept less than 2dB and 3 degree, respectively, for a wide frequency range (20MHz to 2GHz). The benefit for the users is this excellent magnitude and the phase matches are remained across temperature corners and for a long-term usage without any calibrations.

The input and the outputs are matched to 50 Ω with SMA interface.

SPECIFICATIONS**Table I** **V_{cc} = 5V, Z_L = 50 Ω**

Parameters	Conditions	Min	Typ	Max	Unit
Frequency Range		20		2000	MHz
Output Amplitude Unbalance	20MHz to 2GHz	-2		0	dB
Output Phase Unbalance	20MHz to 2GHz		1	3	Degree
Gain (S21) each channel	900MHz	13		16	dB
Input Return Loss (S11)	500Mhz to 2GHz		-12		dB
Output Return Loss (S22)	500MHz to 2GHz		-10		dB
Reverse Isolation (S12)	500MHz to 2GHz		-20		dB
Output IP3	2GHz		19		dBm
Output 1dB Compression Point	2GHz		9.6		dBm
Noise Figure	20MHz to 2GHz			4	dB
Output Settling time	20MHz to 2GHz			1	ms
Power Supply		4.75	5	5.25	V
Power Dissipation	VCC = 5V			800	mA
Power Dissipation at Disable	VCC = 5V			200	mA

MEASUREMENT RESULTS

$V_s = 5V$, $T_A = 25^{\circ}C$, $P_{in} = -20dBm$, $Z_L = 50\ \Omega$

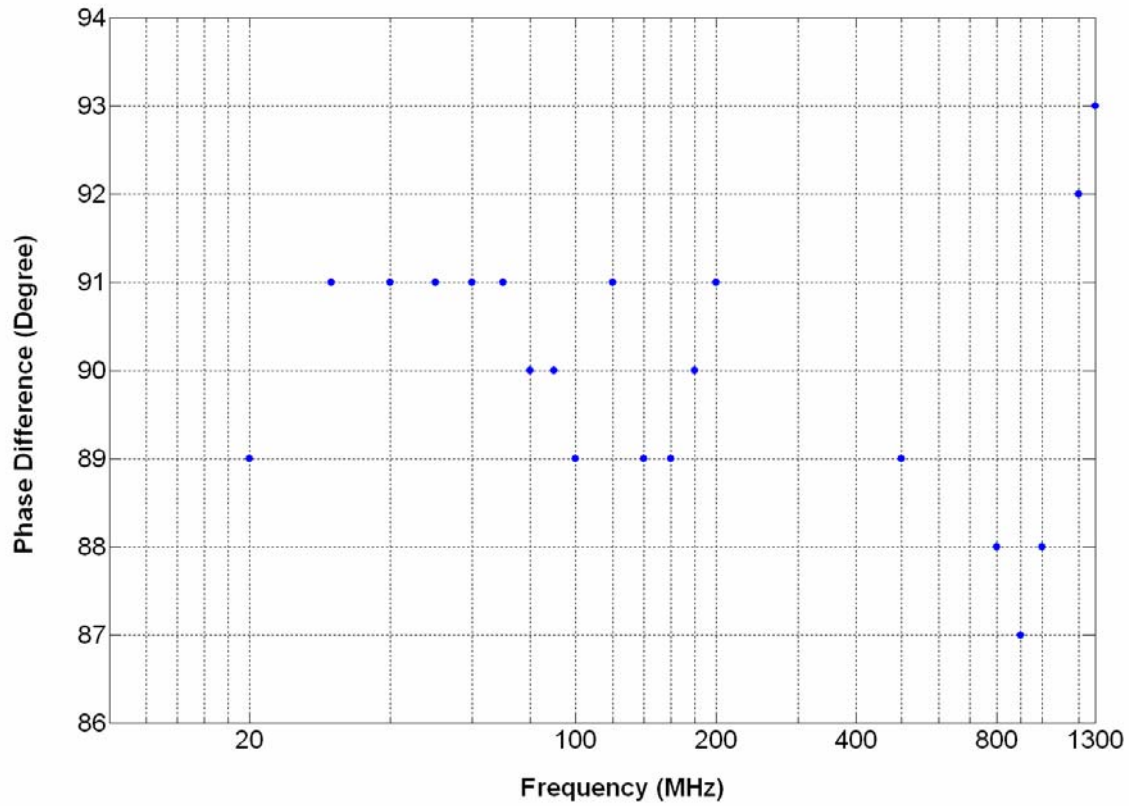


Figure 1. Phase difference between the two RF outputs

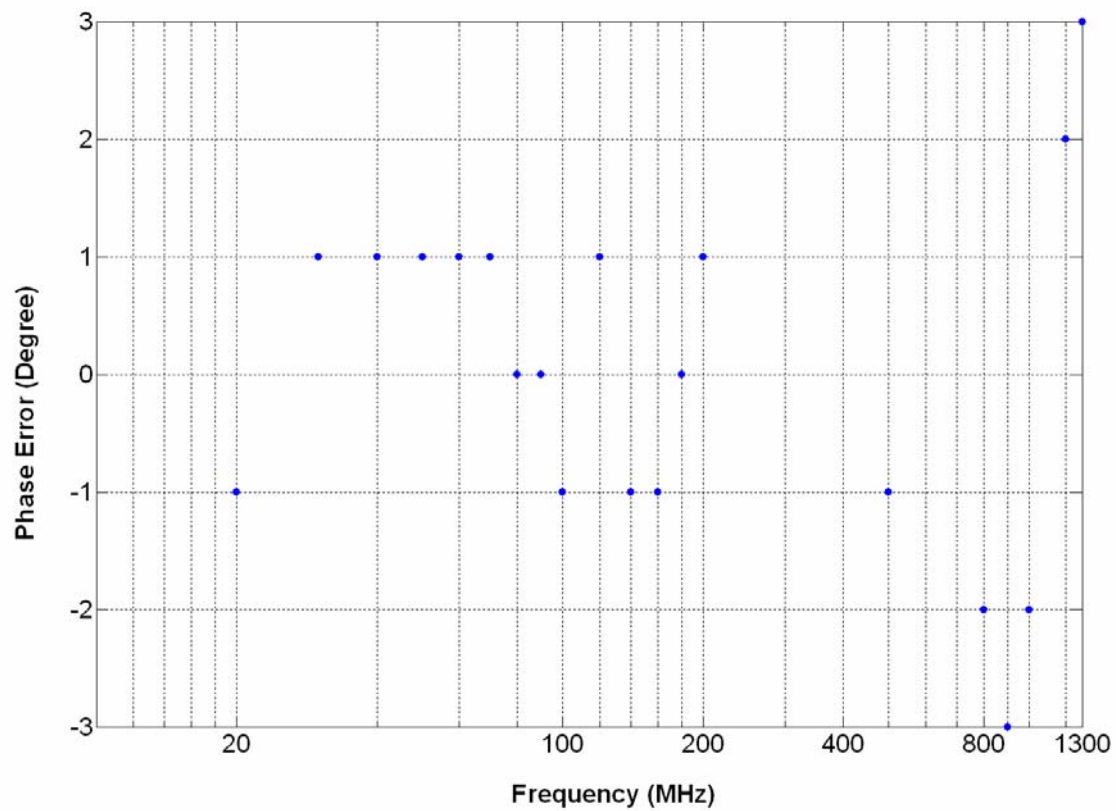


Figure 2. Errors of phase difference from 90°

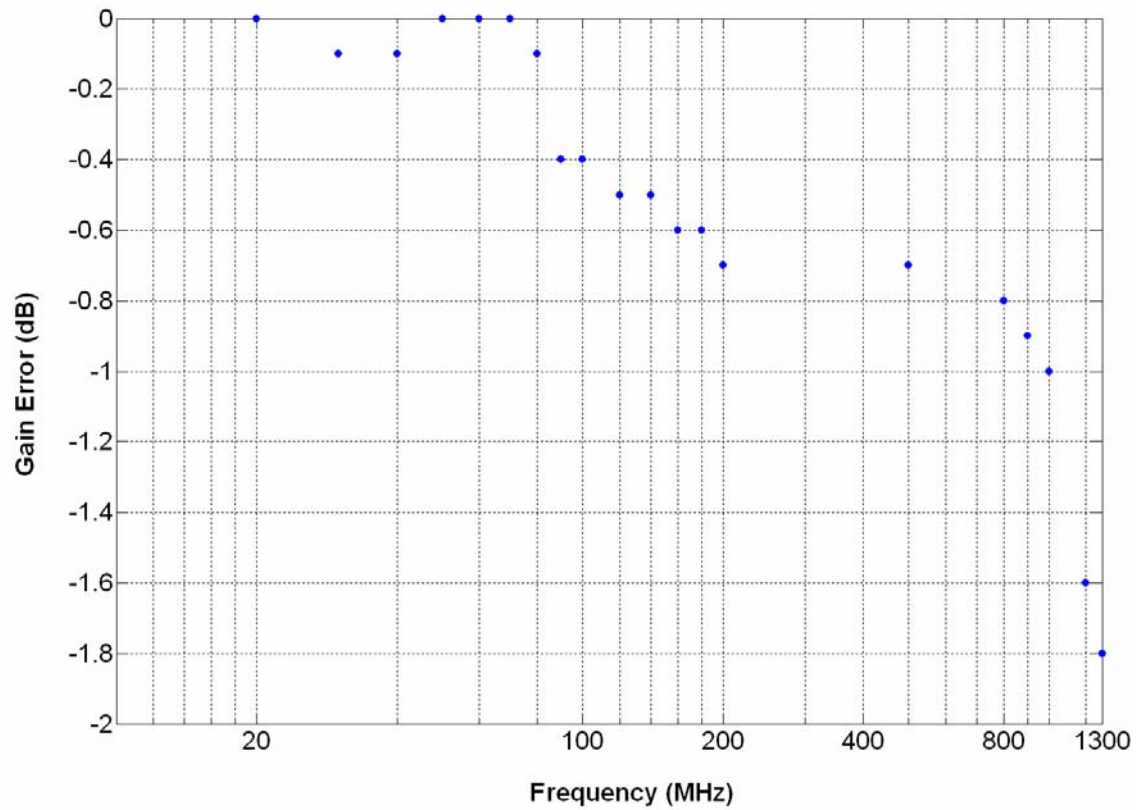


Figure 3. Gain mismatch between the two RF outputs, i.e. the ratio of the output powers P_{90°/P_{0° in dB