

# RF AMPLIFIER

## MODEL *TM6509PM*

Available as: TM6509PM, 4 Pin TO-8 (T4)  
 TN6509PM, 4 Pin .450" Sq. Surface Mount (SM3)  
 PN6509PM, 4 Pin .375" Sq. Surface Mount (SM14)  
 FP6509PM, 4 Pin .500" Sq. Flatpack (FP4)  
 BX6509PM, SMA Connectorized Housing (H1)

### Features

- Superior Phase Noise Performance
- High Output Power: +23 dBm Typical
- High Third Order Intercept: +36 dBm Typical
- Operating Temp. -55 °C to +85 °C
- Environmental Screening Available

### Specifications

CHARACTERISTIC	TYPICAL Ta= 25 °C	MIN/MAX Ta = -55 °C to +85 °C
Frequency	5 - 500 MHz	5 - 500 MHz
Gain (dB)	14.5	13.0 Min.
Power @ 1 dB Comp. (dBm)	+23	+20 Min.
Reverse Isolation (dB)	-18	-15 Max.
VSWR In	1.4:1	2.0:1 Max.
Out	1.2:1	2.0:1 Max.
Noise Figure (dB)	4.6	6.0 Max.
Power Vdc	+15	+15
mA	88	95 Max.

Note: Care should always be taken to effectively ground the case of each unit.

Revision 10/21/2013

### Typical Intermodulation Performance at 25 °C

Second Order Harmonic Intercept Point ..... +56 dBm (Typ.)  
 Second Order Two Tone Intercept Point ..... +50 dBm (Typ.)  
 Third Order Two Tone Intercept Point ..... +36 dBm (Typ.)

### Maximum (No Damage) Ratings

Ambient Operating Temperature ..... -55°C to +100 °C  
 Storage Temperature ..... -62°C to +125 °C  
 Case Temperature ..... +125 °C  
 DC Voltage ..... +18 Volts  
 Continuous RF Input Power ..... +13 dBm  
 Short Term RF Input Power ..... 50 mW (1 Minute Max.)  
 Maximum Peak Power ..... 0.5 Watt (3 µsec Max.)

### MTBF Calculation for Ground Benign Environment

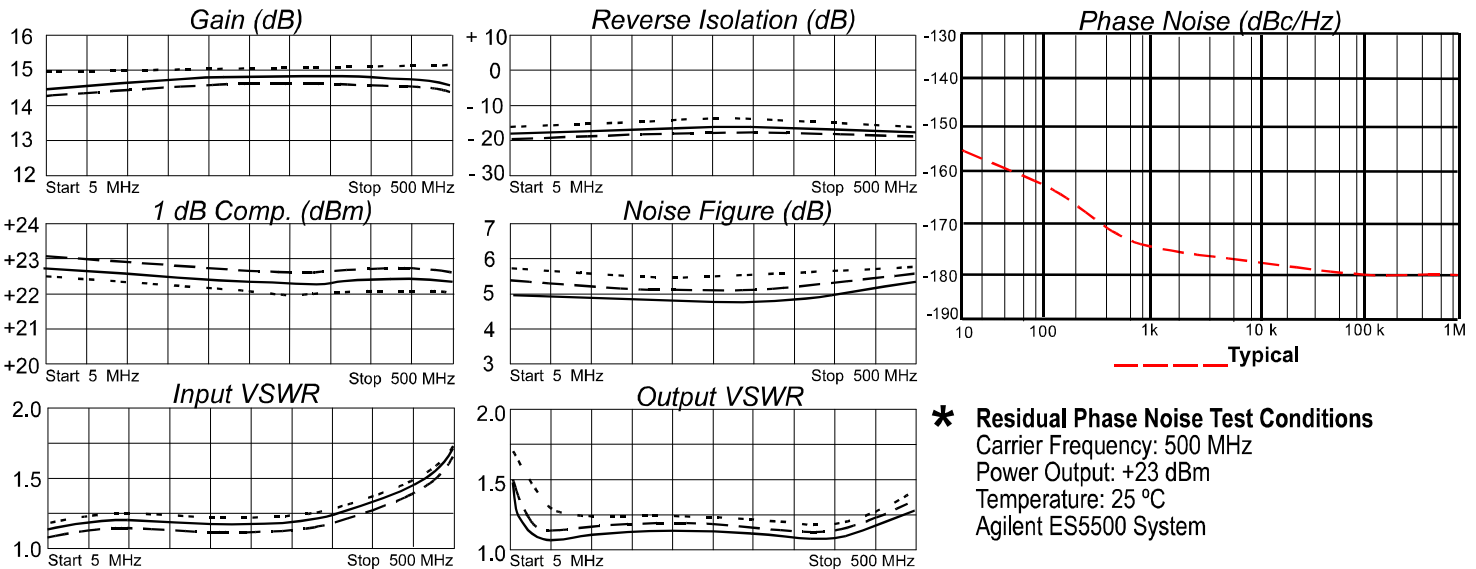
@ 25 °C ..... 9,248,445 hrs  
**Guaranteed @ 25 °C (500 MHz) Phase Noise Performance (dBc/Hz)\***

Frequency	Typical	Guaranteed
10 Hz	-155	-145
100 Hz	-162	-155
1 kHz	-175	-168
10 kHz	-177	-172
100 kHz	-180	-172
1 MHz	-180	-172

\*Note: Phase Noise Performance typically tested at midband.

Bandedge performance may vary.

### Typical Performance Data



### \* Residual Phase Noise Test Conditions

Carrier Frequency: 500 MHz  
 Power Output: +23 dBm  
 Temperature: 25 °C  
 Agilent ES5500 System

Legend ——— +25 °C    - - - - +85 °C    ······ -55 °C

### Linear S-Parameters

FREQ. MHz	S11		S21		S12		S22	
	Mag	Deg	Mag	Deg	Mag	Deg	Mag	Deg
5	.23	-41	5.86	-163	.08	19	.27	86
100	.13	80	5.46	159	.11	3	.05	23
200	.40	24	5.51	137	.12	3	.04	23
300	.58	-31	5.50	114	.14	2	.04	45
400	.10	-91	5.53	90	.15	-1	.08	71
500	.20	-137	5.45	64	.17	-9	.17	66



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