

Datasheet Rev A changed minimum P1dB Specification in the 6 to 10 GHz Frequency Range from 14 dBm to 13 dBm. New 13 dBm value accounts for performance variations observed during production Lot testing.

Rev 0 (3/2019)

HMC8411LP2FE							Data Sheet
6 GHz TO 10 GHz FREQUENCY RANGE							
V <sub>DD</sub> = 5 V, I <sub>DQ</sub> = 55 mA, and T <sub>A</sub> = 25°C, unless otherwise noted.							
Table 3.							
Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions/Comments	
FREQUENCY RANGE		6		10	GHz		
GAIN		11	14		dB		
Gain Variation over Temperature			0.018		dB/°C		
NOISE FIGURE			2		dB		
RETURN LOSS							
Input			15		dB		
Output			17		dB		
OUTPUT							
Output Power for 1 dB Compression	P1dB	14	17		dBm		
Saturated Output Power	P <sub>SAT</sub>		19.5		dBm		
Output Third-Order Intercept	OIP3		33		dBm	Measurement taken at P <sub>OUT</sub> per tone = 6 dBm	
Output Second-Order Intercept	OIP2		40		dBm	Measurement taken at P <sub>OUT</sub> per tone = 6 dBm	
POWER ADDED EFFICIENCY	PAE		23		%	Measured at P <sub>SAT</sub>	
SUPPLY CURRENT	I <sub>DQ</sub>		55		mA		
SUPPLY VOLTAGE	V <sub>DD</sub>	2	5	6	V		

Rev A (5/2019)

HMC8411LP2FE							Data Sheet
6 GHz TO 10 GHz FREQUENCY RANGE							
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Gain Variation over Temperature			0.018		dB/°C		
NOISE FIGURE			2		dB		
RETURN LOSS							
Input			15		dB		
Output			17		dB		
OUTPUT							
Output Power for 1 dB Compression	P1dB	13	16		dBm		
Saturated Output Power	P <sub>SAT</sub>		19.5		dBm		
Output Third-Order Intercept	OIP3		33		dBm	Measurement taken at P <sub>OUT</sub> per tone = 6 dBm	
Output Second-Order Intercept	OIP2		40		dBm	Measurement taken at P <sub>OUT</sub> per tone = 6 dBm	
POWER ADDED EFFICIENCY	PAE		23		%	Measured at P <sub>SAT</sub>	
SUPPLY CURRENT	I <sub>DQ</sub>		55		mA		
SUPPLY VOLTAGE	V <sub>DD</sub>	2	5	6	V		

HMC8411LP2FE Rev C Datasheet changed Thermal Resistance from 82 to 115.35 °C/W. New 115.35 °C/W value is the result of an updated thermal analysis reflecting more accurately the device performance.

Rev B

Data Sheet

HMC8411LP2FE

ABSOLUTE MAXIMUM RATINGS

Parameter <sup>1</sup>	Rating
Drain Bias Voltage (V <sub>DD</sub> )	7 V
Radio Frequency Input (RF <sub>IN</sub> ) Power	20 dBm
Channel Temperature	175°C
Continuous Power Dissipation (P <sub>DSS</sub> ), T = 85°C (Derate 12.2 mW/°C Above 85°C)	1.098 W
Storage Temperature Range	–65°C to +150°C
Operating Temperature Range	–40°C to +85°C
Peak Reflow Temperature Moisture Sensitivity Level 1 (MSL1) <sup>2</sup>	260°C
Electrostatic Discharge (ESD) Sensitivity Human Body Model (HBM)	500 V, Class 1B passed

<sup>1</sup> When referring to a single function of a multifunction pin in the parameters, only the portion of the pin name that is relevant to the specification is listed. For full pin names of multifunction pins, refer to the Pin Configuration and Function Descriptions section.

<sup>2</sup> See the Ordering Guide section for more information.

Stresses at or above those listed under Absolute Maximum Ratings may cause permanent damage to the product. This is a stress rating only; functional operation of the product at these or any other conditions above those indicated in the operational section of this specification is not implied. Operation beyond the maximum operating conditions for extended periods may affect product reliability.


THERMAL RESISTANCE

Thermal performance is directly linked to printed circuit board (PCB) design and operating environment. Close attention to PCB thermal design is required.  
 $\theta_{JC}$  is the junction to case thermal resistance.

Table 5. Thermal Resistance

Package Type	$\theta_{JC}$	Unit
CP-6-12	82	°C/W

ESD CAUTION



**ESD (electrostatic discharge) sensitive device.** Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

Rev C (to be released)

Data Sheet

HMC8411LP2FE

ABSOLUTE MAXIMUM RATINGS

Parameter <sup>1</sup>	Rating
Drain Bias Voltage (V <sub>DD</sub> )	7 V
Radio Frequency Input (RF <sub>IN</sub> ) Power	20 dBm
Channel Temperature	175°C
Continuous Power Dissipation (P <sub>DSS</sub> ), T = 85°C (Derate 8.7 mW/°C Above 85°C)	0.78 W
Storage Temperature Range	–65°C to +150°C
Operating Temperature Range	–40°C to +85°C
Peak Reflow Temperature Moisture Sensitivity Level 1 (MSL1) <sup>2</sup>	260°C
Electrostatic Discharge (ESD) Sensitivity Human Body Model (HBM)	500 V, Class 1B passed

<sup>1</sup> When referring to a single function of a multifunction pin in the parameters, only the portion of the pin name that is relevant to the specification is listed. For full pin names of multifunction pins, refer to the Pin Configuration and Function Descriptions section.

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THERMAL RESISTANCE

Thermal performance is directly linked to printed circuit board (PCB) design and operating environment. Close attention to PCB thermal design is required.  
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Table 5. Thermal Resistance

Package Type	$\theta_{JC}$	Unit
CP-6-12	115.35	°C/W

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