

Electrical Specifications, (continued)

Parameter	Conditions	Min.	Typ.	Max.	Units
LOGOUT Interface					
Output Voltage Range		0		V _{CC} -1.0	V
Output Rise Time [3] / Fall Time [4]			10 / 10		ns
VSET Interface					
Input Impedance			30		kΩ
Input Voltage Range			0.25 to 1.35		V
Low Frequency Gain	VSET to LOGOUT		56		dB
Open Loop Corner Frequency			700		kHz
Power Down (EN) Interface					
Voltage Range for Normal Mode		0.8 x V _{CC} [1]		V _{CC} [1]	V
Voltage Range for Powerdown Mode		0		0.2 x V _{CC} [1]	V
Threshold Voltage			V _{CC} [1]/2		V
Power Supply (Vcc1, Vcc2, Vcc3)					
Operating Voltage Range		4.5		5.5	V
Supply Current in Normal Mode			106		mA
Supply Current in Power Down Mode			1		mA

[1] V_{CC}= V_{CC1}= V_{CC2}= V_{CC3}= +5V [3] -10 dBm Input Pulsed; measured from 10% to 70%; C9 removed from board

[4] -10 dBm Input Pulsed; measured from 90% to 10%; C9 removed from board

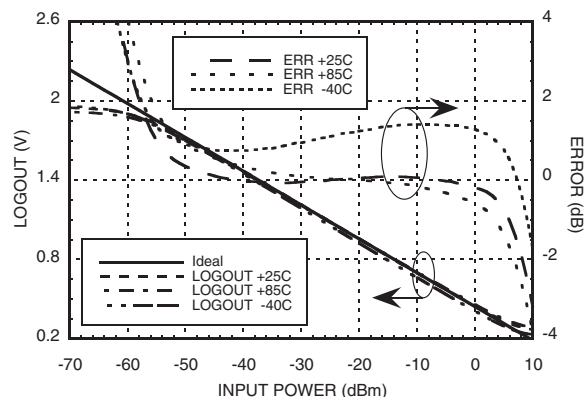
Test Conditions

Parameter	Condition
V _{CC1} = V _{CC2} = V _{CC3}	+5V
Input Z ₀	50 Ω
T _A	+25 C
F _{in}	900 MHz

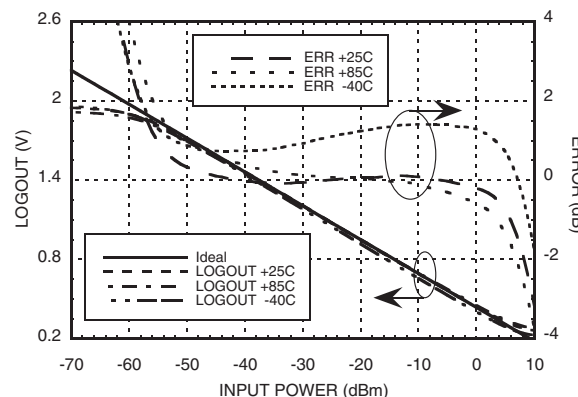
Component Values Used at Key Application Frequencies with V_{CC} = +5V

Component	Frequency (MHz)										
	50	100	900	1900	2200	3600	5800	7000	7500	8000	10000
C1	100nF	100nF	100pF	100pF	100pF	100pF	100pF	100pF	100pF	100pF	100pF
C2	100nF	100nF	100pF	100pF	100pF	100pF	100pF	100pF	100pF	100pF	100pF

LOGOUT Voltage & Error vs. Input Power, F_{in} = 50 MHz



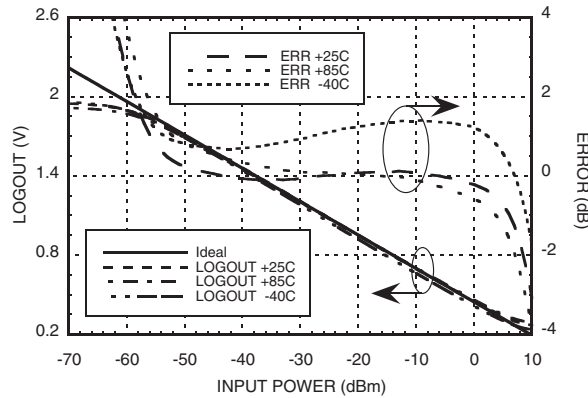
LOGOUT Voltage & Error vs. Input Power, F_{in} = 100 MHz



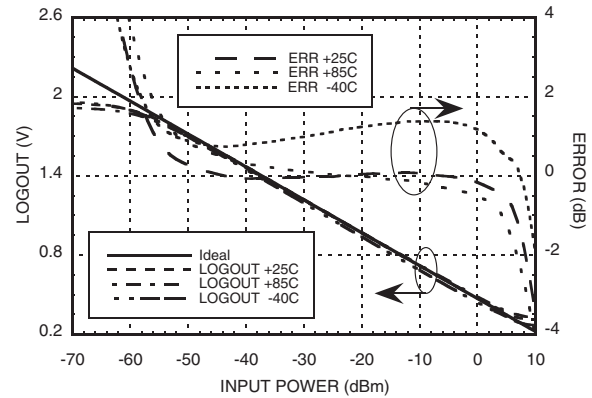
Unless otherwise noted: V_{CC1}, V_{CC2}, V_{CC3} = +5V, T_A = +25C

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
20 Alpha Road, Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order On-line at www.hittite.com

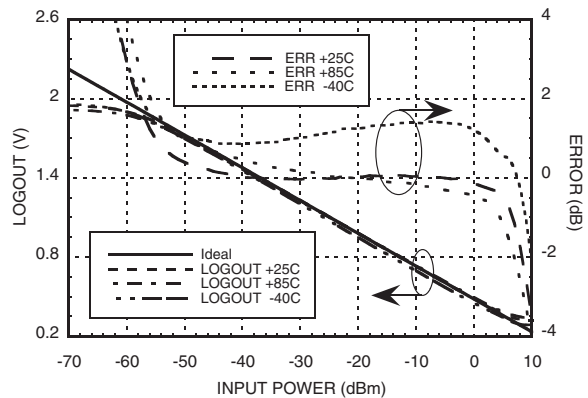
**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 900$ MHz**



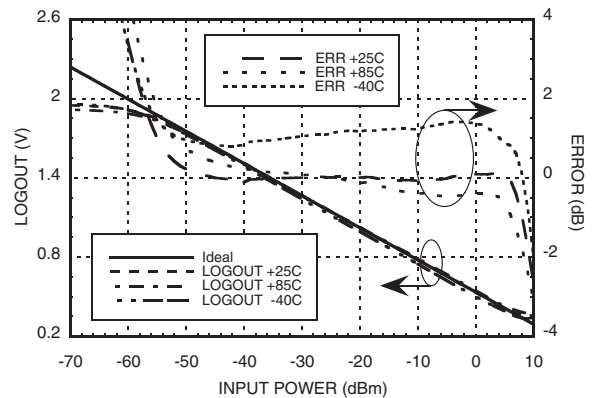
**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 1900$ MHz**



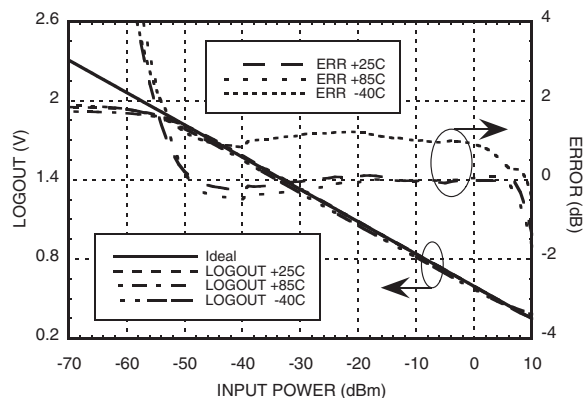
**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 2200$ MHz**



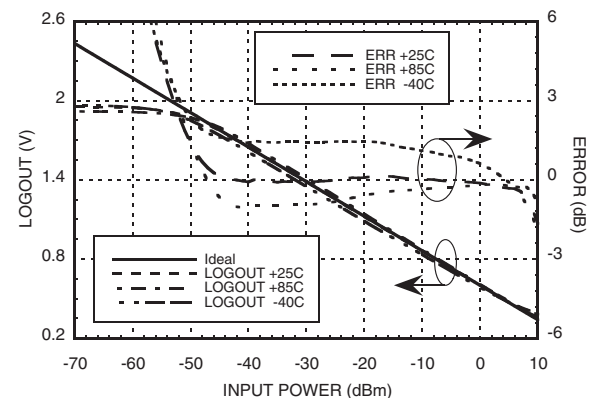
**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 3600$ MHz**



**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 5800$ MHz**



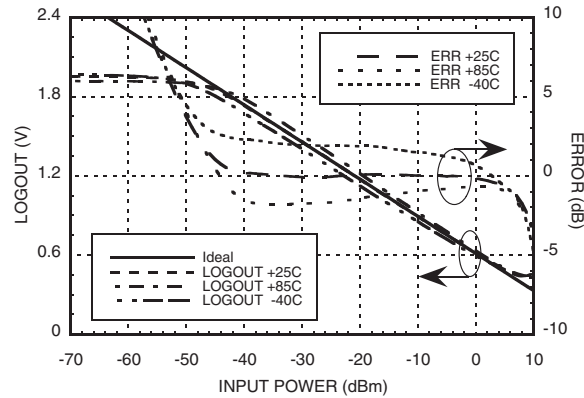
**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 7000$ MHz**



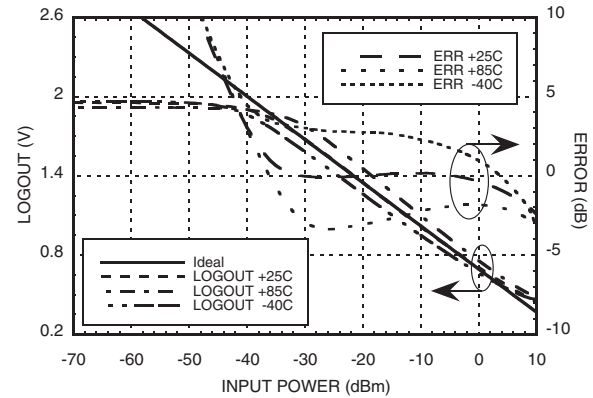
Unless otherwise noted: V_{cc1} , V_{cc2} , $V_{cc3} = +5V$, $T_A = +25C$

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
20 Alpha Road, Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order On-line at www.hittite.com

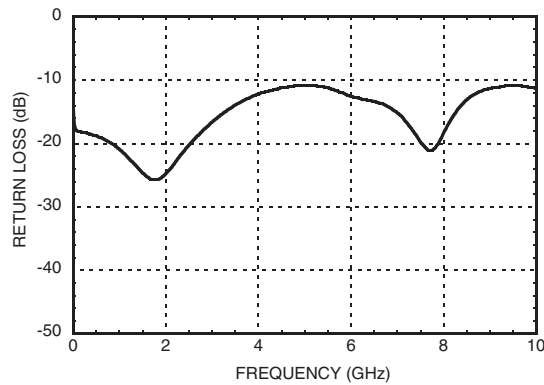
**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 8000$ MHz**



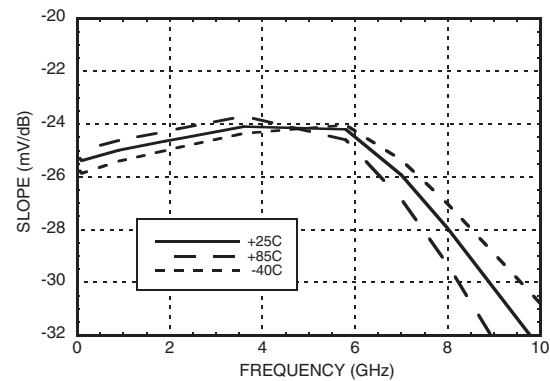
**LOGOUT Voltage & Error
vs. Input Power, $F_{in} = 10000$ MHz**



Input Return Loss



LOGOUT Slope vs. Frequency



Unless otherwise noted: V_{cc1} , V_{cc2} , $V_{cc3} = +5V$, $T_A = +25C$

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
20 Alpha Road, Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order On-line at www.hittite.com



MICROWAVE CORPORATION

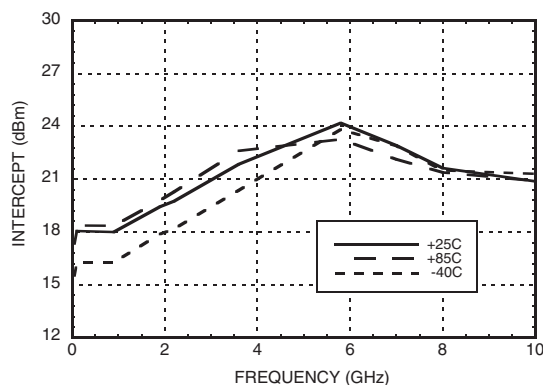
v04.0309



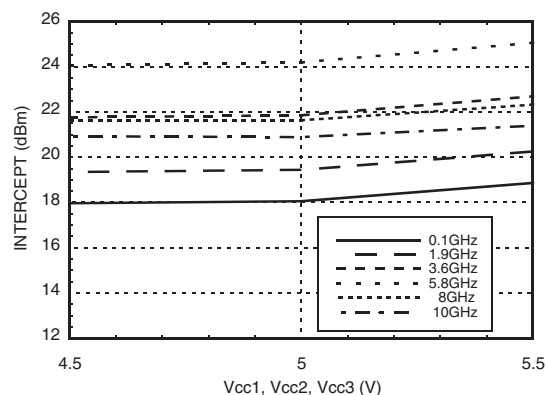
HMC611LP4 / 611LP4E

**60 dB, LOGARITHMIC
DETECTOR / CONTROLLER, 1 - 10000 MHz**

LOGOUT Intercept vs. Frequency



LOGOUT Intercept vs. Supply Voltage



Absolute Maximum Ratings

Vcc1, Vcc2, Vcc3	+5.6V
EN	+5.6V
VSET Input Voltage	+5.6V
LOGOUT Output Current	3 mA
RF Input Power	+15 dBm
Junction Temperature	125 °C
Continuous P _{diss} (T = 85°C) (Derate 7.95 mW/°C above 85°C)	1.55 Watts
Thermal Resistance (R _{th}) (junction to lead)	42 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

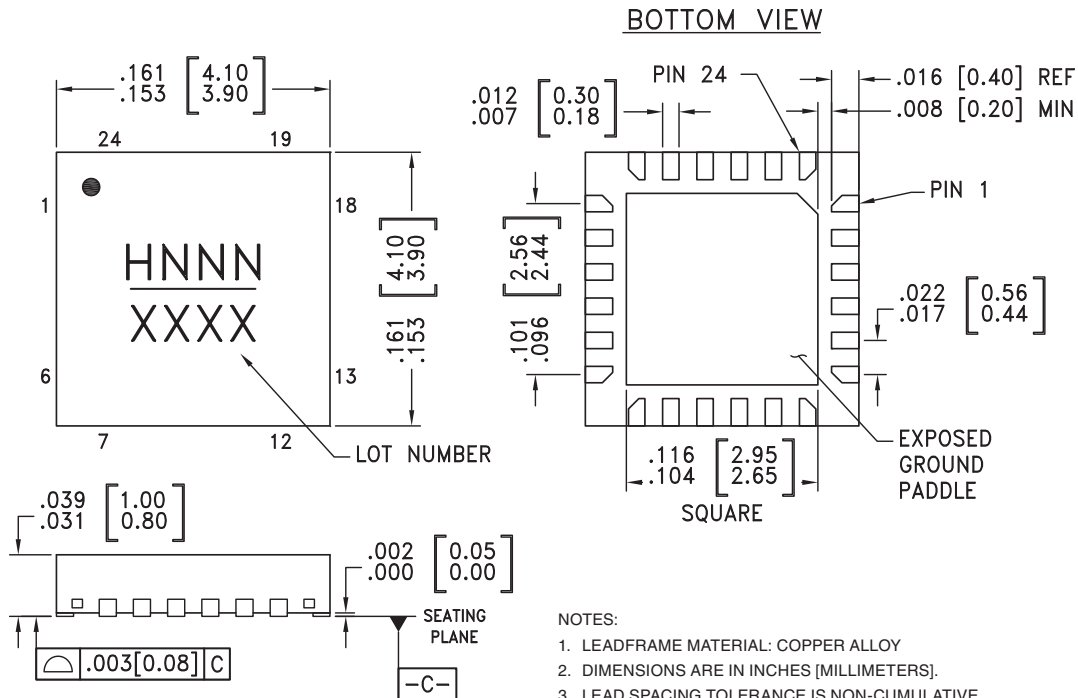


**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

[1] Unless otherwise noted: Vcc1, Vcc2, Vcc3 = +5V, T_A = +25C

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
20 Alpha Road, Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order On-line at www.hittite.com

Outline Drawing



Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC611LP4	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 ^[1]	H611 XXXX
HMC611LP4E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	H611 XXXX

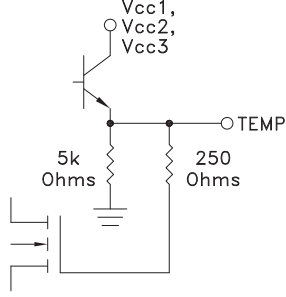
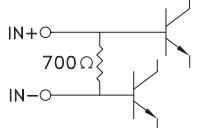
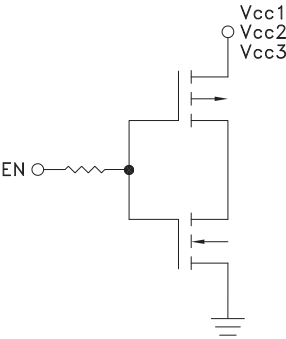
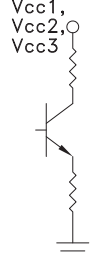
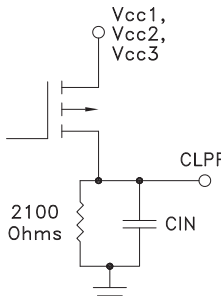
[1] Max peak reflow temperature of 235 °C

[2] Max peak reflow temperature of 260 °C

[3] 4-Digit lot number XXXX



Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 6, 7, 13, 17, 18, 21, 22	N/C	These pins are not connected internally.	
2	TEMP	Temperature sensor output pin	
3, 4	IN+, IN-	RF Input pins. Connect RF to IN+, and AC couple IN- to ground for single-ended operation.	
5	EN	Enable pin, connect to Vcc1, Vcc2, Vcc3 for normal operation. Applying voltage <0.2 x (Vcc1, Vcc2, Vcc3) will initiate power saving mode.	
8 - 12, 19, 20, 23, 24	Vcc1, Vcc2, Vcc3	Bias supply. Connect supply voltage to these pins with appropriate filtering.	
14	CLPF	Loop filter capacitor for output ripple filtering.	



MICROWAVE CORPORATION

v04.0309



HMC611LP4 / 611LP4E

**60 dB, LOGARITHMIC
DETECTOR / CONTROLLER, 1 - 10000 MHz**

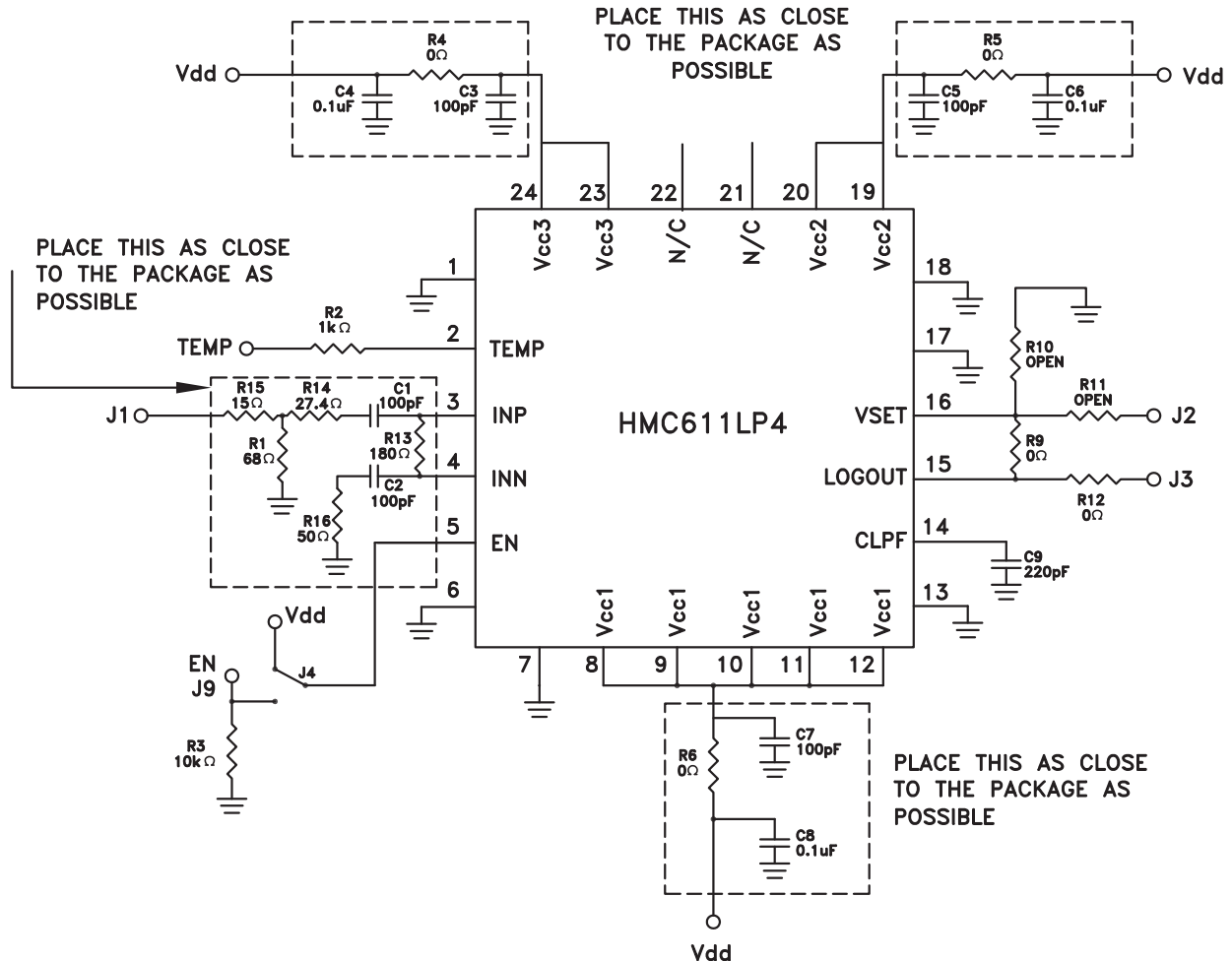
Pin Descriptions (Continued)

Pin Number	Function	Description	Interface Schematic
15	LOGOUT	Logarithmic output that converts the input power to a DC level in detector mode. Short this pin to VSET for detector mode.	
16	VSET	VSET input in controller mode. Short this pin to LOGOUT for detector mode.	
Package Base	GND	Exposed paddle must be connected to RF and DC ground.	

12

POWER DETECTORS - SMT

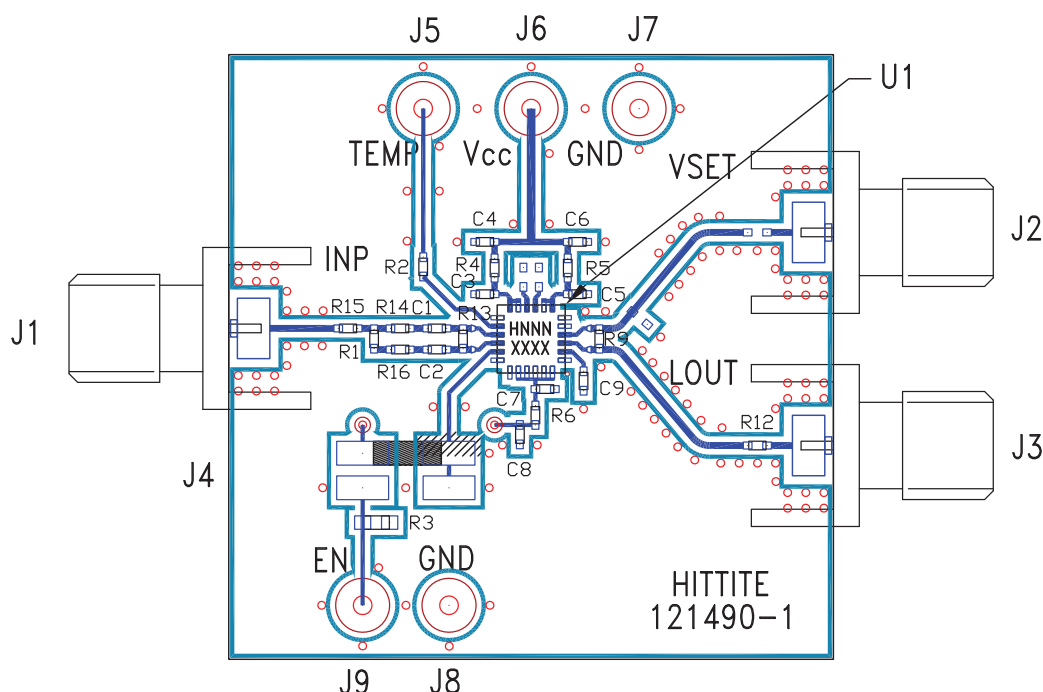
Application & Evaluation PCB Schematic



Notes

- Note 1: The HMC611LP4 & HMC611LP4E evaluation boards are pre-assembled for single-ended input, and detector/RSSI mode.
- Note 2: For detector mode, connect high impedance volt meter to the LOGOUT port, and make no connection to VSET. LOGOUT is shorted to VSET by R9, as required for detector mode.
- Note 3: For controller mode, remove R9 and install 0 ohm resistor (R11), then make appropriate connection to LOGOUT and VSET. In controller mode, the LOGOUT output can be used to drive a variable gain amplifier, or a variable attenuator, either directly or through a buffer or microcontroller. VSET should be connected to an external supply, typically between +0.6 and +1.9V.

Evaluation PCB



List of Materials for Evaluation PCB 121493 ^[1]

Item	Description
J1 - J3	PC Mount SMA Connector
J4	Molex Connector Header
J5 - J9	DC Pin
C1, C2, C3, C5, C7	100 pF Capacitor, 0402 Pkg.
C4, C6, C8	0.1µF Capacitor, 0402 Pkg.
C9	220 pF Capacitor, 0402 Pkg.
R1	68Ω Resistor, 0402 Pkg.
R2	1k Ω Resistor, 0402 Pkg.
R3	10k Ω Resistor, 0402 Pkg.
R4 - R6, R9, R12	0Ω Resistor, 0402 Pkg.
R13	180Ω Resistor, 0402 Pkg.
R14	27.4Ω Resistor, 0402 Pkg.
R15	15Ω Resistor, 0402 Pkg.
R16	49.9Ω Resistor, 0402 Pkg.
U1	HMC611LP4 / HMC611LP4E Logarithmic Detector / Controller
PCB ^[2]	121490 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

The circuit board used in the final application should use RF circuit design techniques. Signal lines should have 50 ohm impedance while the package ground leads and exposed paddle should be connected directly to the ground plane similar to that shown. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation circuit board shown is available from Hittite upon request.