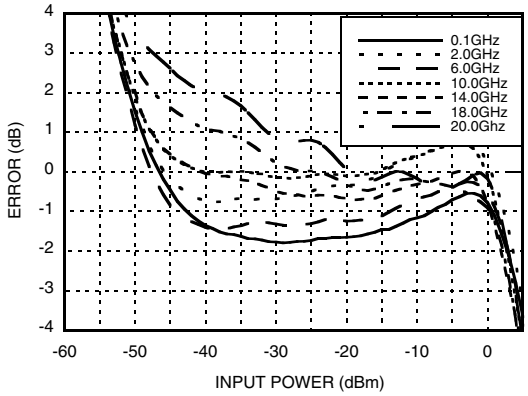
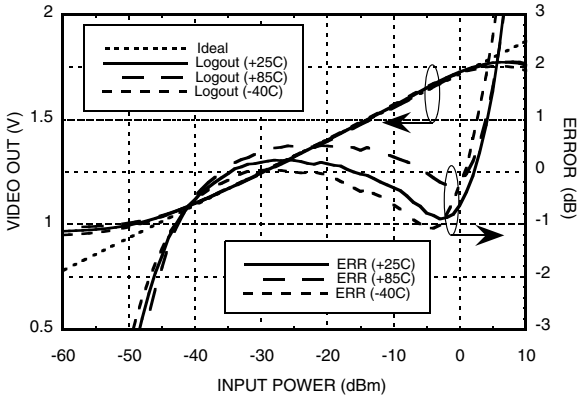
SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA), 0.1 - 20 GHz

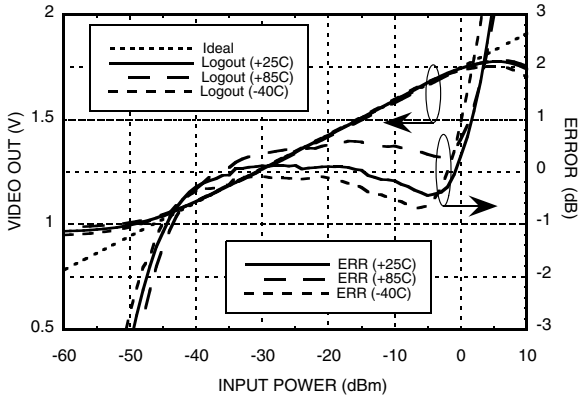
Error Flatness vs. Input Power Over Frequency [1][2]



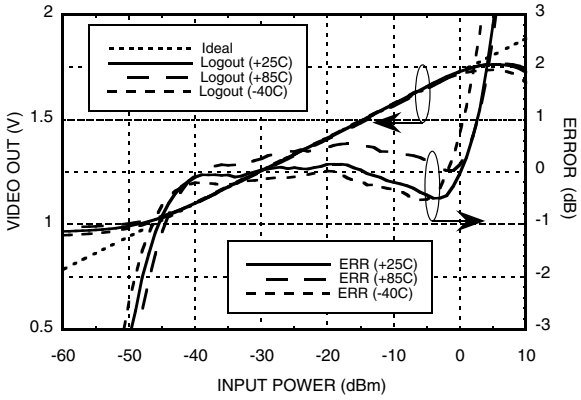
VIDEO OUT & Error vs. Input Power, Fin = 100 MHz [1]



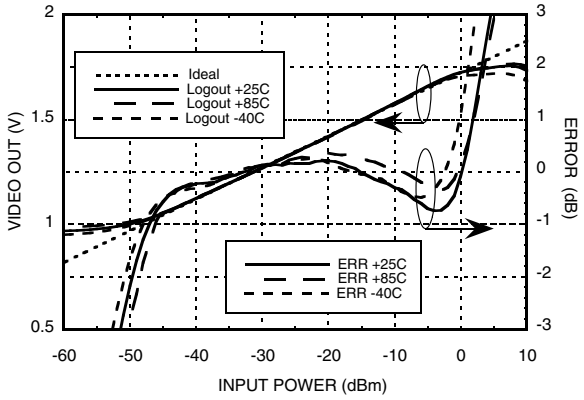
VIDEO OUT & Error vs. Input Power, Fin = 2 GHz [1]



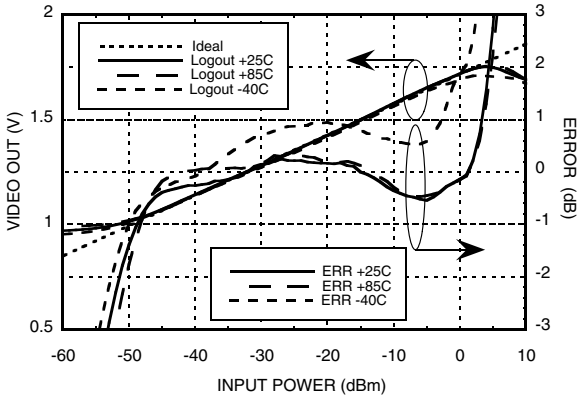
VIDEO OUT & Error vs. Input Power, Fin = 6 GHz [1]



VIDEO OUT & Error vs. Input Power, Fin = 10 GHz [1]



VIDEO OUT & Error vs. Input Power, Fin = 14 GHz [1]



[1] Electrical Specs and performance plots are given at single-ended operation
[2] An average ideal line is used to calculate error curves.

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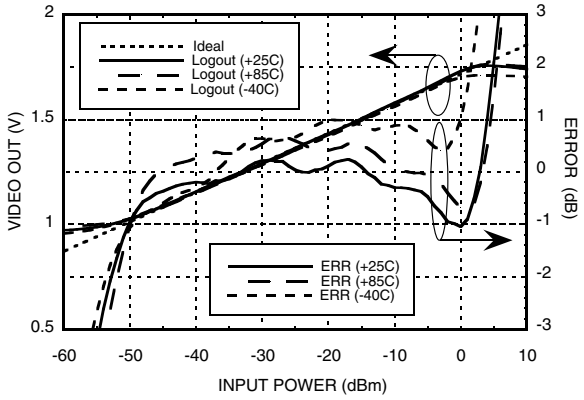
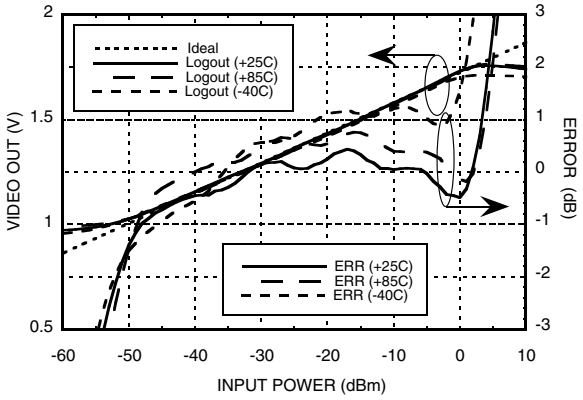
SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA), 0.1 - 20 GHz

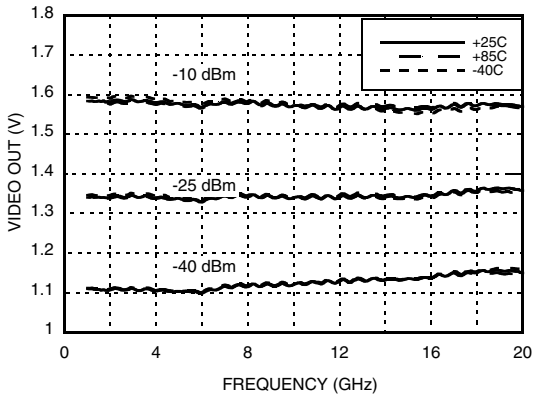
VIDEO OUT & Error vs. Input Power, Fin = 18 GHz [1]



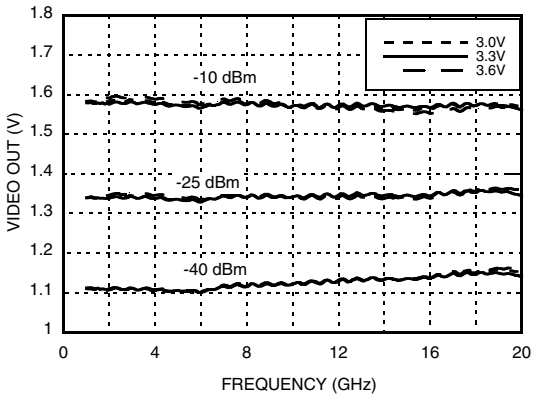
VIDEO OUT & Error vs. Input Power, Fin = 20 GHz [1]



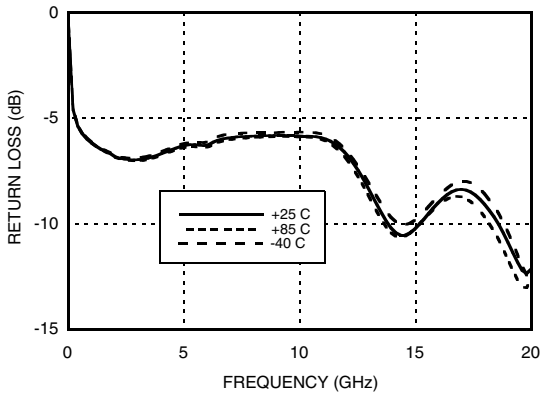
VIDEO OUT vs. Frequency Over Input Power & Temperature [1]



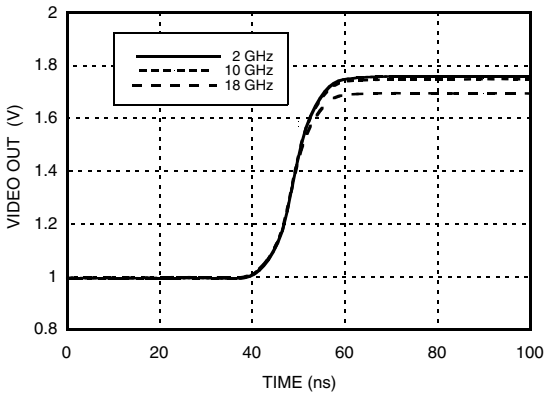
VIDEO OUT vs. Frequency Over Input Power & Bias Voltage [1]



Input Return Loss vs. Frequency [1]



Rise Time @ Different Frequency @ 0 dBm [1]



[1] Electrical Specs and performance plots are given at single-ended operation

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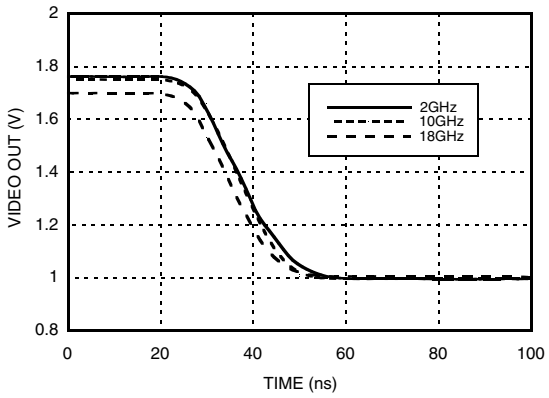
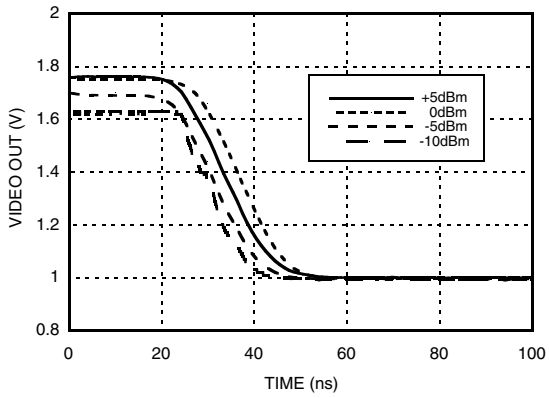
SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA), 0.1 - 20 GHz

Fall Time @ Different Frequency @ 0 dBm [1]



Fall Time @ Different Power Levels @ 10 GHz [1]



[1] Electrical Specs and performance plots are given at single-ended operation

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RoHS✓ EARTH FRIENDLY

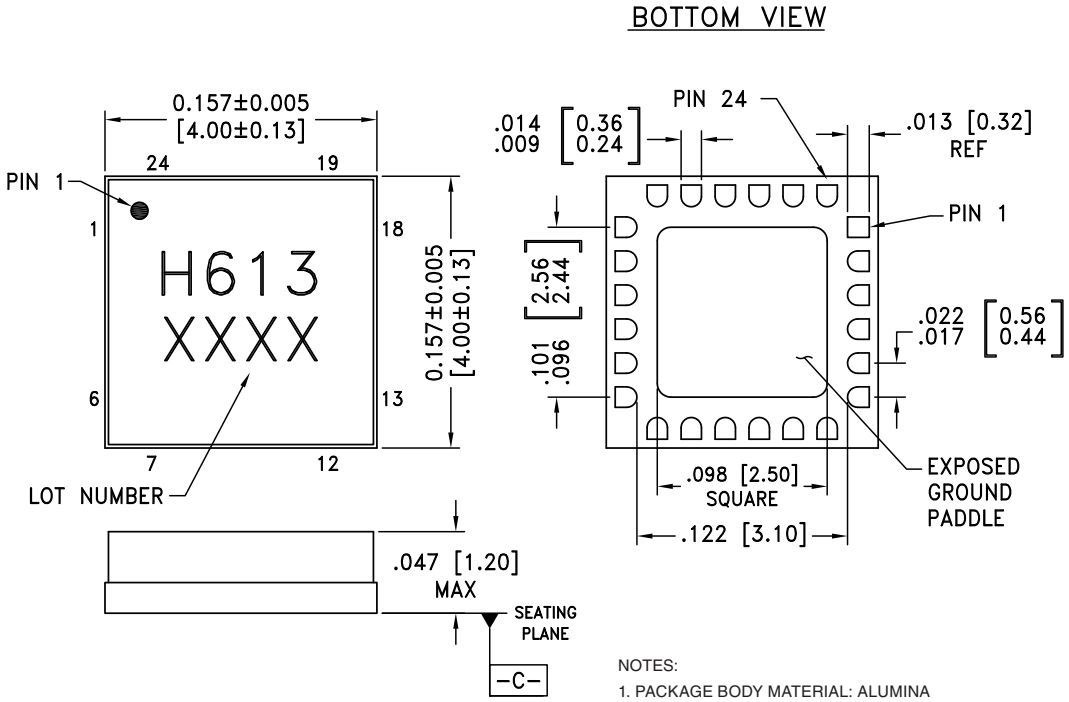
SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA), 0.1 - 20 GHz

Absolute Maximum Ratings

Vcc1, Vcc2	3.7 V
Input Signal Amplitude	12 dBm
Junction Temperature	125 °C
Continuous Pdiss (T=85 °C) Derate 11.5 mW/°C above 85 °C	0.46 W
Thermal Resistance (R_{th}) (junction to package bottom)	87.1 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 0

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:
1. PACKAGE BODY MATERIAL: ALUMINA
2. LEAD AND GROUND PADDLE PLATING: 30-80 MICROINCHES GOLD OVER 50 MICROINCHES MINIMUM NICKEL.
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm DATUM -C-
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [2]
HMC613LC4B	Alumina, White	Gold over Nickel	MSL3 [1]	H613 XXXX

[1] Max peak reflow temperature of 260 °C
[2] 4-Digit lot number XXXX

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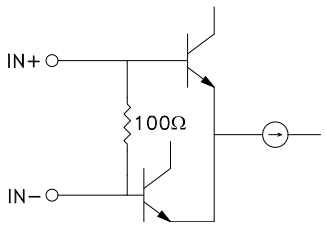
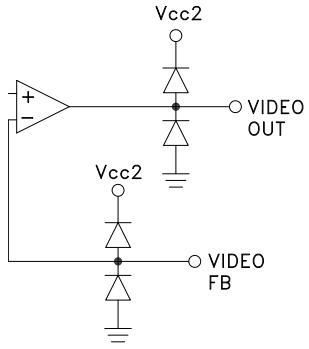
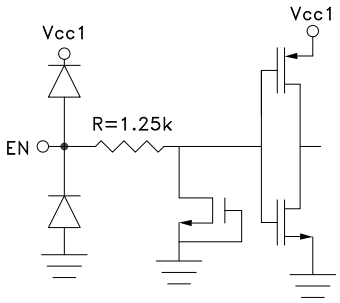
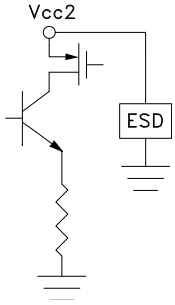
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 2, 7, 10 - 12, 18, 19	N/C	These pins are not internally connected.	
3, 6, 13, 16, 20, 24	N/C	These pins are not connected internally. However, this product is specified with these pins connected to RF/DC Ground.	
4, 5	IN+, IN-	RF Input pins Connect RF to IN+, and AC couple IN- to ground via 50 Ohm for single ended operation.	
8, 9	GND	These pins and the exposed package bottom must be connected to a high quality RF/DC ground.	
14, 15	Video FB, Video Out	Video out and feedback. These pins should be shorted to each other (see application circuit). Video out load should be at least 1K Ohm or higher.	
17	EN	Enable pin connected to Vcc1 or Vcc2 for normal operation. Total supply current reduced to less than 3mA when EN is set to 0V.	
21	Vcc2	Bias Supply. Connect supply voltage to these pins with appropriate filtering. Connect Vcc2 with Vcc1. See application circuit. To ensure proper start-up supply rise time should be faster than 100usec	

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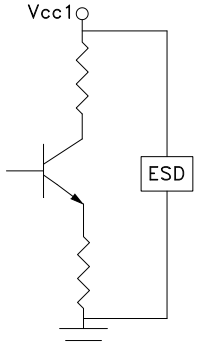
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
22, 23	Vcc1	Bias Supply. Connect Supply Voltage to these pins with appropriate filtering. Connect Vcc2 with Vcc1. See application circuit. To ensure proper start-up supply rise time should be faster than 100usec	

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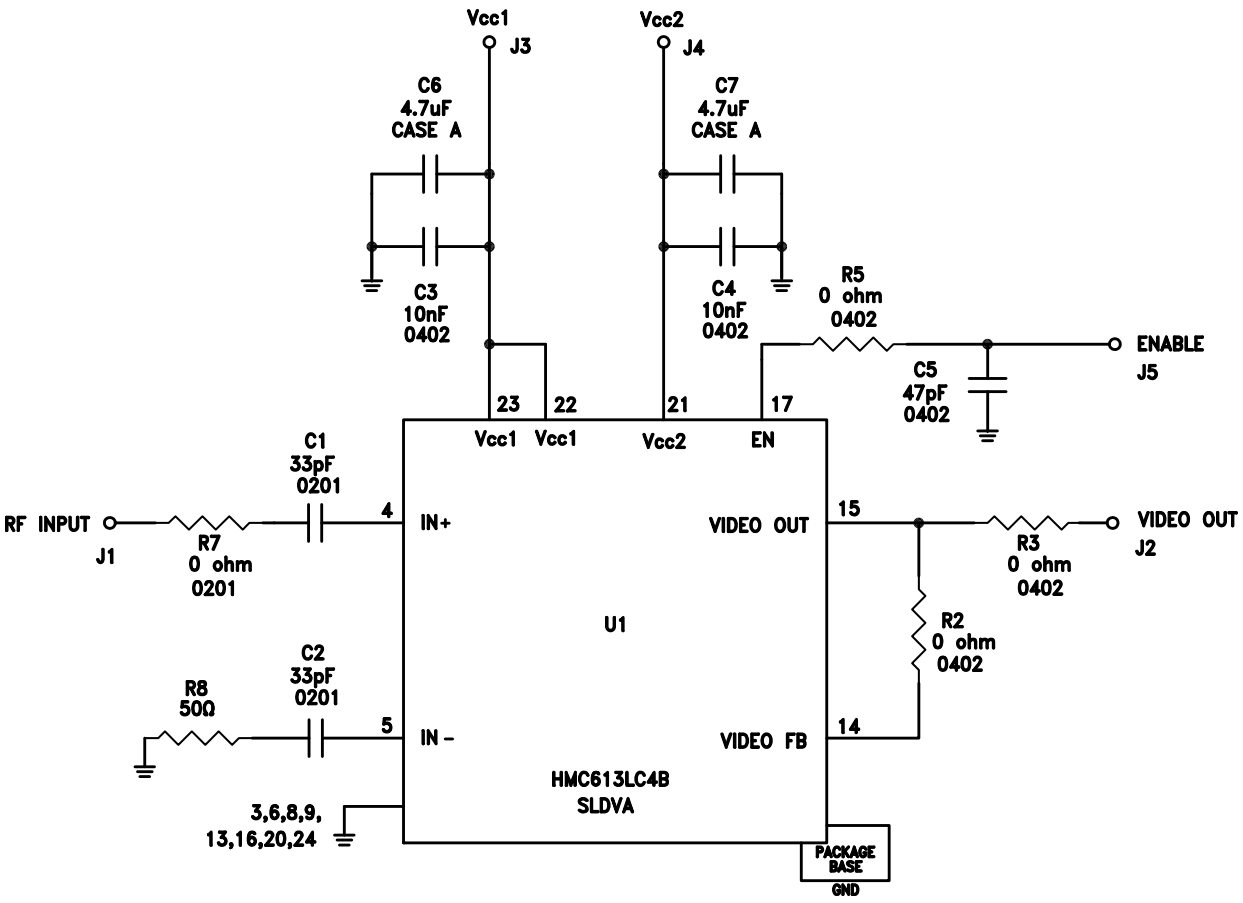
Application Circuit



Note1: Connect Vcc2 and Vcc1 together for Nominal operation.
Note2: Video output load should be 1K Ohm or higher.

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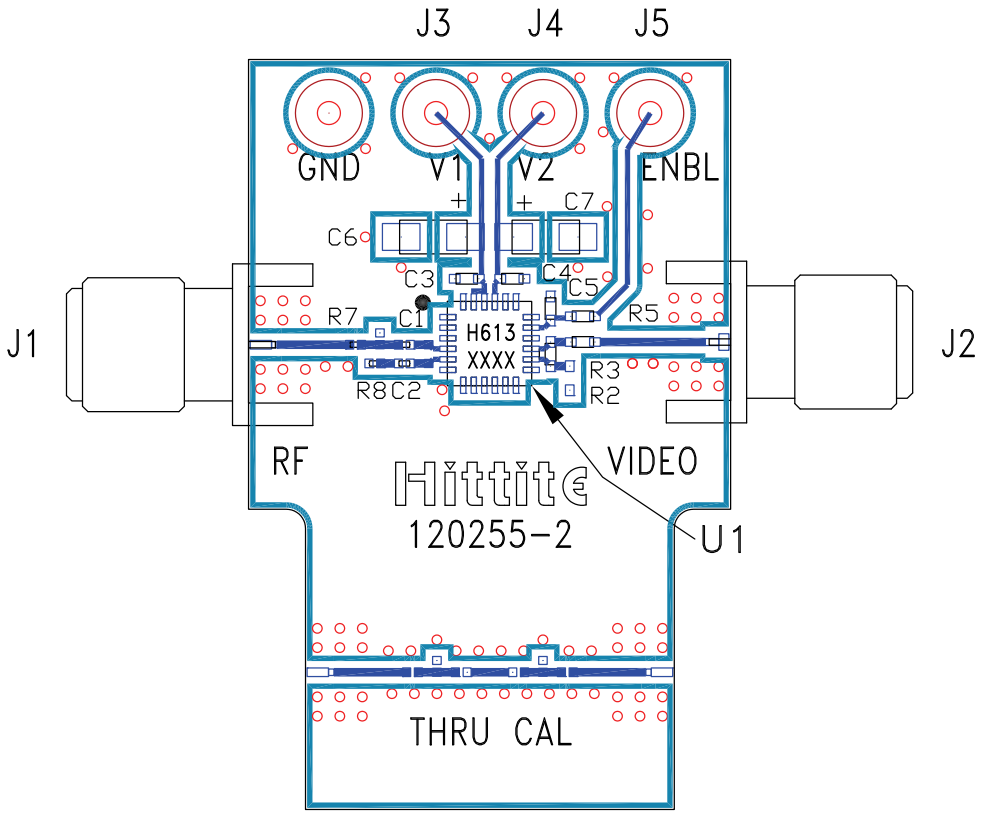
Evaluation PCB



List of Materials for Evaluation PCB 120257 [1]

Item	Description
J1	K-Type Connector
J2	SMA Connector
J3 - J5	DC Pins
C1, C2	33 pF Capacitor, 0201 Pkg.
C3, C4	10k pF Capacitor, 0402 Pkg.
C5	47 pF Capacitor, 0402 Pkg.
C6, C7	4.7 µF Capacitor, CASE A Pkg.
R2, R3, R5	0 Ohm Resistor, 0402 Pkg.
R7	0 Ohm Resistor, 0201 Pkg.
R8	49.9 Ohm Resistor, 0201 Pkg.
U1	HMC613LC4B SDLVA
PCB [2]	120255 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Arlon 25 FR

The circuit board used in the 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.

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