

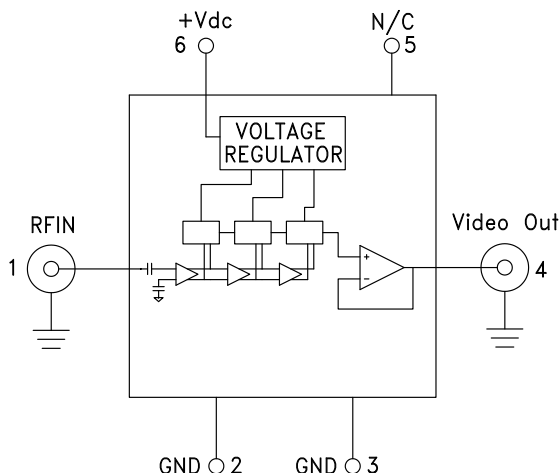
**SUCCESSIVE DETECTION LOG VIDEO
AMPLIFIER (SDLVA), 1 - 20 GHz**

Not Recommended for New Designs


Typical Applications

The HMC-C052 is ideal for:

- EW, ELINT & IFM Receivers
- DF Radar Systems
- ECM Systems
- Broadband Test & Measurement
- Power Measurement & Control Circuits
- Military & Space Applications

Functional Diagram

Electrical Specifications, $T_A = +25^\circ\text{C}$ $V_{dc} = +12\text{V}$

Parameter	Conditions	Typ.	Units
Input Frequency Range		1 - 20	GHz
Frequency Flatness	$P_{in} = -30\text{ dBm}$	± 2	dB
Log Linearity	$P_{in} = -50\text{ dBm}$ to $+0\text{ dBm}$	± 1	dBm
Log Linearity over Temperature	-55 to $+85^\circ\text{C}$, $P_{in} = -30\text{ dBm}$	± 1	dB
Minimum Logging Range	to $\pm 3\text{ dB}$ error	-54	dBm
Maximum Logging Range	to $\pm 3\text{ dB}$ error	+5	dBm
Input Return Loss		9	dB
Log Video Minimum Output Voltage		0.9	V

Features

- 1 to 20 GHz Operation
- High Logging Range: 59 dB
- Output Frequency Flatness: $\pm 2\text{ dB}$
- Internal Voltage Regulation
- Fast Rise/Fall Times: 2/7 ns
- Hermetically Sealed Module
- Single Positive Supply: +7V to +16V
- -55°C to $+85^\circ\text{C}$ Operating Temperature

General Description

The HMC-C052 is a Successive Detection Log Video Amplifier (SDLVA) which operates from 1 to 20 GHz. The HMC-C052 provides a logging range of 59 dB.

This product comes standard with two female SMA field replaceable connectors but can also be used with blind mate SMP connectors or as a drop-in module. The package size measures 1.086 x 0.85 x 0.23" (27.58 x 21.6 x 5.84 mm) making it ideal for environmentally robust applications where space is limited.

The HMC-C052 has an integrated voltage regulator that allows the SDLVA to operate from a single supply between +7 and +16V without any appreciable change in performance.

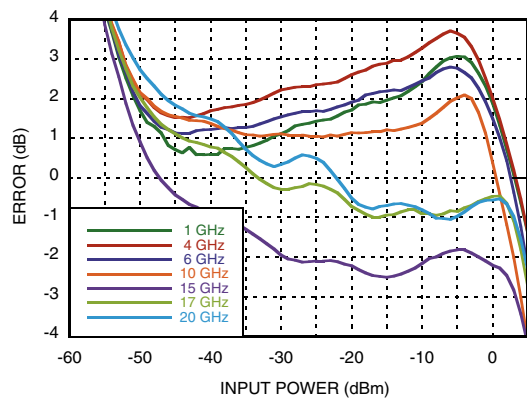
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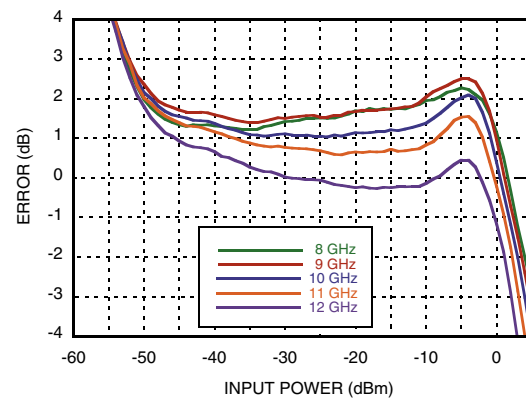
Electrical Specifications, (continued)

Parameter	Conditions	Typ.	Units
Log Video Maximum Output Voltage		1.5	V
Log Video Output Rise Time	Pin = -20 dBm, 10% to 90%	2	ns
Log Video Output Fall Time	Pin = -20 dBm, 90% to 10%	7	ns
Vdc Voltage Range	7 - 16	12	V
Log Video Recovery Time	-50 dBm to 0 dBm	21	ns
Log Video Output Slope		14	mV/dB
Log Video Output Slope Variation over Temperature	@ 10 GHz	5	μV/dB°C
Log Video Propagation Delay		3	ns
Supply Current (Idc)		86	mA

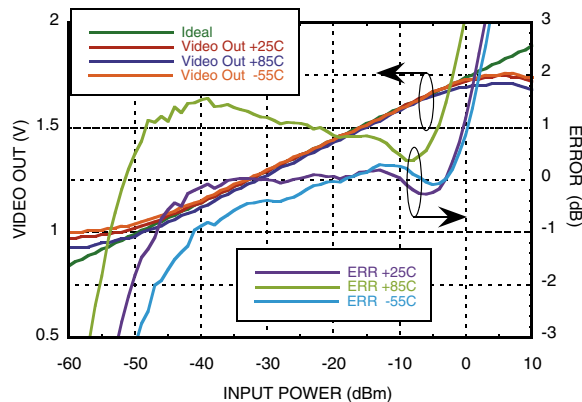
Error Flatness vs. Input Power Over Frequency



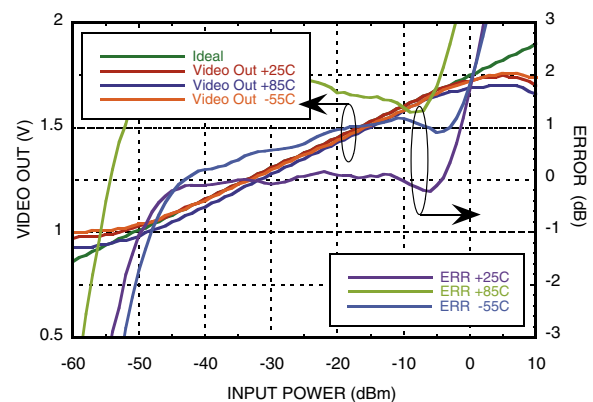
X-Band Error Flatness vs. Input Power Over Frequency



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



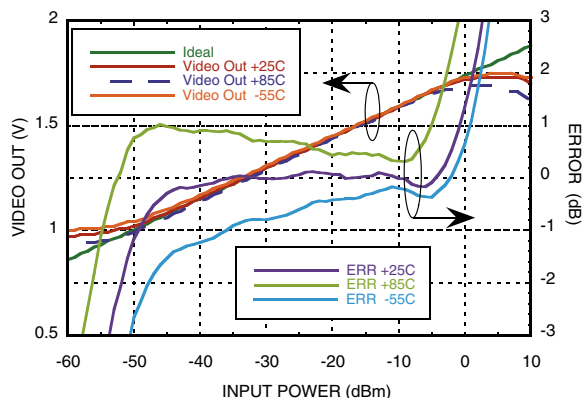
VIDEO OUT & Error vs. Input Power, Fin= 4 GHz



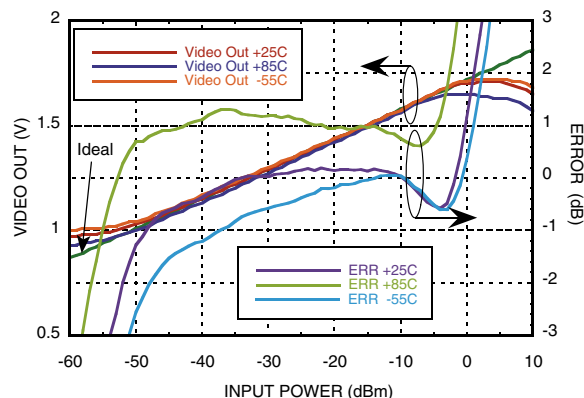
SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA), 1 - 20 GHz

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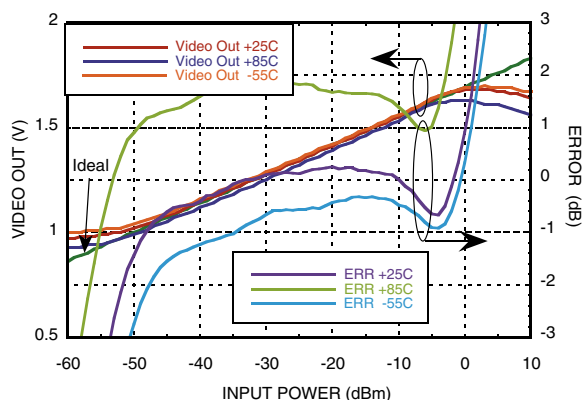
VIDEO OUT & Error vs. Input Power, F_{in} = 6 GHz



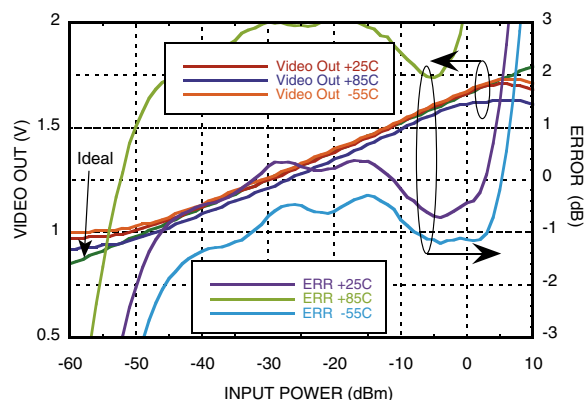
VIDEO OUT & Error vs. Input Power, F_{in} = 10 GHz



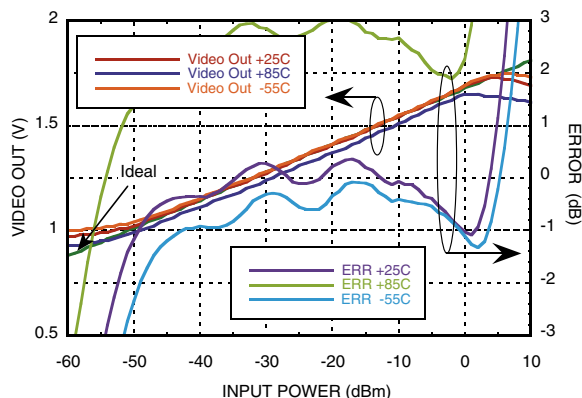
VIDEO OUT vs. Error vs. Input Power, F_{in} = 12 GHz



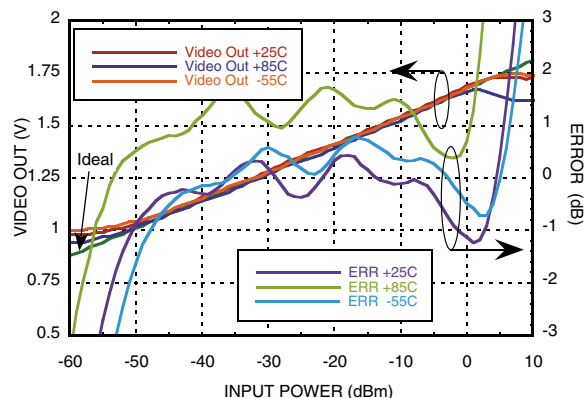
VIDEO OUT & Error vs. Input Power, F_{in} = 15 GHz



VIDEO OUT & Error vs. Input Power, F_{in} = 17 GHz



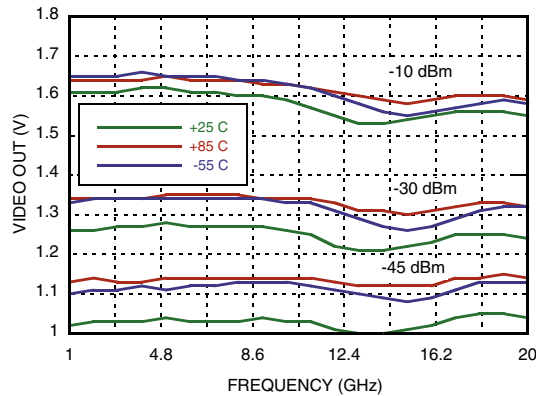
VIDEO OUT & Error vs. Input Power, F_{in} = 20 GHz



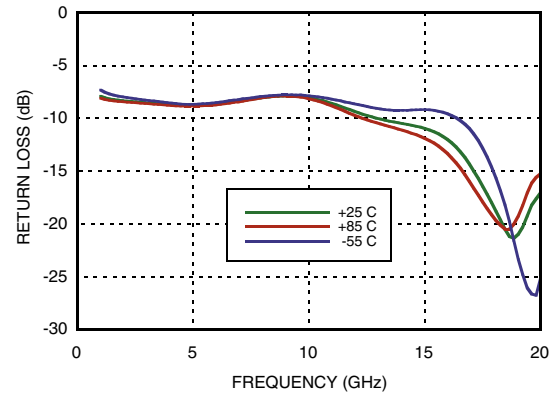
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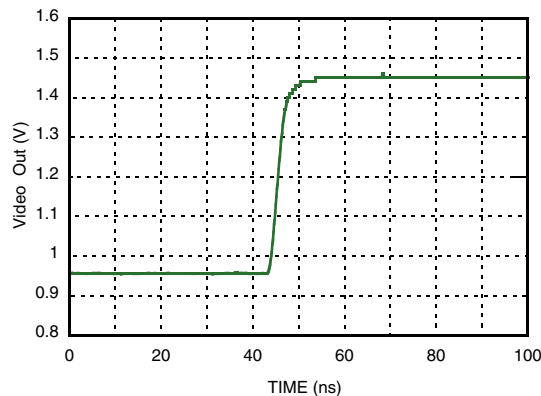
**VIDEO OUT vs. Frequency
Over Input Power & Temperature**



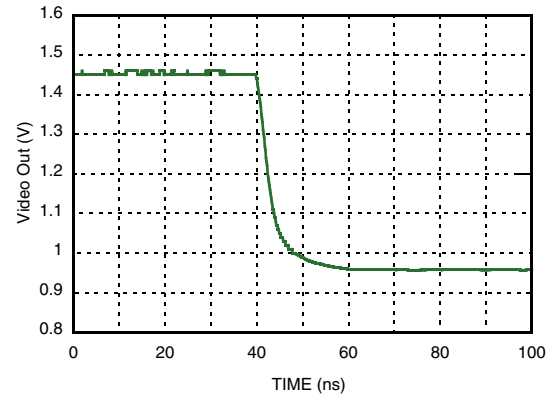
Input Return Loss vs. Frequency



Rise Time @ 10 GHz @ -20 dBm



Fall Time @ 10 GHz @ -20 dBm



Absolute Maximum Ratings

Icc	100 mA
Input Signal Amplitude	18 dBm
Junction Temperature	125 °C
Continuous P _{diss} (T=85°C) Derate 59 mW/°C above 85°C	1.6 W
Thermal Resistance (R _{th}) (junction to package bottom)	17 °C/W
Vdc Max	+16V
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
ESD Sensitivity (HBM)	Class 0 (<250V)



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Not Recommended for New Designs

Technical drawings of the HMC-C052 1-20 GHz SDLVA component, showing dimensions in inches and millimeters.

Top View:

- Overall width: 1.836 [46.63mm]
- Overall height: 0.721 [18.31mm]
- Pin J3: 0.255 [6.48mm] from left edge, 0.030 [0.76] DIA X 0.12 [3.0] LG, 4X
- Pin J4: 0.416 [10.55mm] from left edge, 4X Ø0.098 [Ø2.39mm]
- Pin J1: 0.064 [1.63mm] from top edge
- Pin J2: 0.160 [4.06mm] from top edge
- Mounting holes: 2X 0.180 [4.57mm]
- Mounting holes: 2X 0.425 [10.80mm]
- Labels: +VDC, HMC-C052, 1-20 GHz SDLVA, N/C, VIDEO OUT, RFIN, GND, XXXX, LOT NO.
- CHAMFER INDICATES ORIENTATION

Side View:

- Overall height: 0.850 [21.59mm]
- Pin J3: 0.288 [7.32mm] from left edge
- Pin J4: 0.798 [20.27mm] from left edge
- Pin J1: 0.050 [1.27mm] from top edge
- Pin J2: 0.050 [1.27mm] from top edge
- Mounting holes: 2X 0.050 [1.27mm]
- Mounting holes: 2X 0.425 [10.80mm]
- Mounting holes: 2X 0.075 [1.91mm]
- Mounting holes: 2X 0.195 [4.95mm]
- Labels: +VDC, HMC-C052, 1-20 GHz SDLVA, N/C, VIDEO OUT, RFIN, GND, XXXX

Bottom View:

- Overall width: 1.086 [27.58mm]
- Overall height: 0.850 [21.59mm]
- Pin J3: 0.288 [7.32mm] from left edge
- Pin J4: 0.798 [20.27mm] from left edge
- Pin J1: 0.050 [1.27mm] from top edge
- Pin J2: 0.050 [1.27mm] from top edge
- Mounting holes: 2X 0.050 [1.27mm]
- Mounting holes: 2X 0.425 [10.80mm]
- Mounting holes: 2X 0.075 [1.91mm]
- Mounting holes: 2X 0.195 [4.95mm]
- Labels: +VDC, HMC-C052, 1-20 GHz SDLVA, N/C, VIDEO OUT, RFIN, GND, XXXX

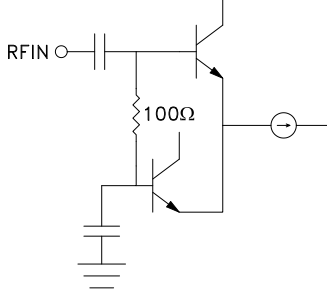
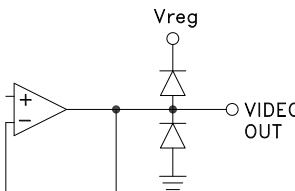
Field Replaceable SMA Connector 2 Places

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Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	RFIN	RF Input pin.	
2, 3	GND	These pins must be connected to a high quality RF/DC ground.	
4	VIDEO OUT	Video Out is a voltage that is proportional to the log of the Input Power.	
5	N/C	The pins are not connected internally; however, all data shown herein was measured with these pins connected to RF/DC ground externally.	
6	Vdc	Bias Supply pin.	