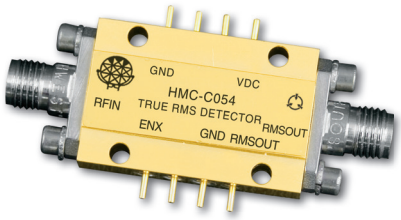
HMC-C054

v00.0608

RMS POWER DETECTOR 70 dB, 0.01 - 2 GHz



Features

±1 dB Detection Accuracy to 2 GHz

Input Dynamic Range: -70 dBm to +10 dBm

RF Signal Wave Shape & Crest Factor Independent

+12V Operation from -55°C to +85°C

Excellent Temperature Stability

Power-Down Mode

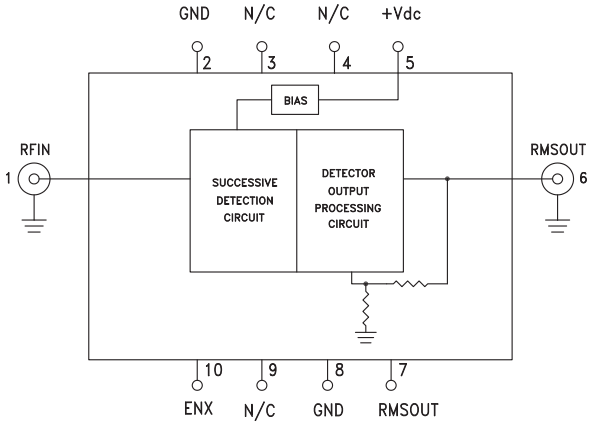
Field Replaceable SMA Female Connectors

Typical Applications

The HMC-C054 is ideal for:

- Log –> Root-Mean-Square (RMS) Conversion
- Received Signal Strength Indication (RSSI)
- Transmitter Signal Strength Indication (TSSI)
- RF Power Amplifier Efficiency Control
- Receiver Automatic Gain Control
- Transmitter Power Control

Functional Diagram



General Description

The HMC-C054 Power Detector is designed for RF power measurement, and control applications for frequencies up to 2 GHz. The detector provides a "true RMS" representation of any RF/IF input signal. The output is a temperature compensated monotonic, representation of real signal power, measured with an input sensing range of 70 dB.

The HMC-C054 is ideally suited to those wide bandwidth, wide dynamic range applications, requiring repeatable measurement of real signal power, especially where RF/IF wave shape and/or crest factor change with time.

Electrical Specifications, T_A = +25C, Vdc= +12V, ENX = 0V

Parameter	Typ.	Typ.	Typ.	Typ.	Typ.	Typ.	Units
Input Frequency	10	100	500	1000	1500	2000	MHz
± 1 dB Dynamic Range [1]	67	70	66	58	54	50	dB
Output Slope [1]	36.1	36.1	36.3	37.4	38.4	39.6	mV / dB
Output Intercept [1]	-74.2	-75.7	-75.2	-72.9	-69.9	-69.6	dBm
Temperature Sensitivity @ -10 dB, Input [1] [2]	2.9	3.5	3.6	3.5	1.8	1.8	mdB / °C

[1] CW Input

[2] Measured from T_A = -55C to T_A = +85C

Parameter	Condition	Min	Typ.	Max.	Units
Supply Voltage			12		V
Supply Current with Pin = -70 dBm	Over Full Temperature Range		81	100	mA
Supply Current with Pin = 0 dBm	Over Full Temperature Range		95	120	mA
Standby Mode Supply Current	ENX = Hi		1		mA
Output Rise Time / Fall Time	From 10% to 90% @ 6 dBm Input		70 / 800		µs

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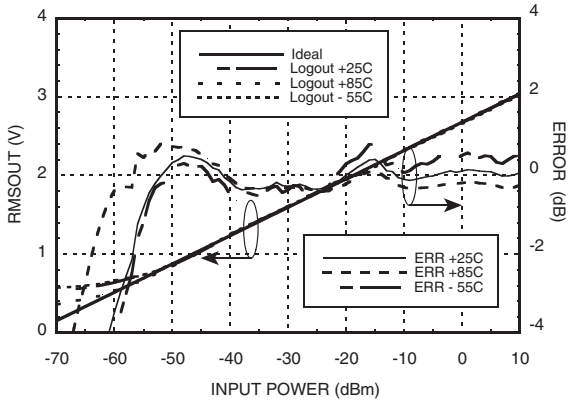
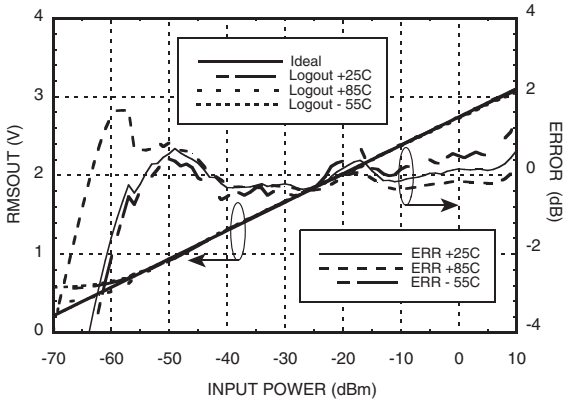
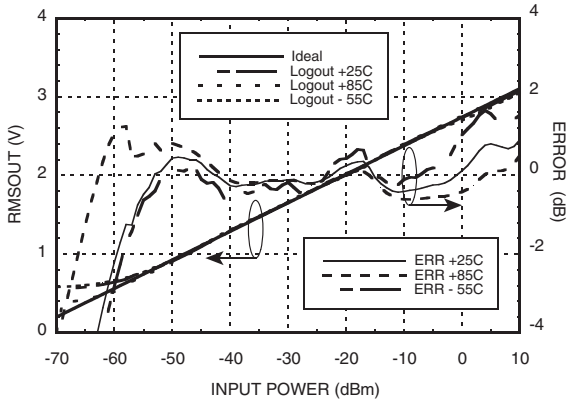
RMSOUT & Error vs. Pin @ 10 MHz [1]



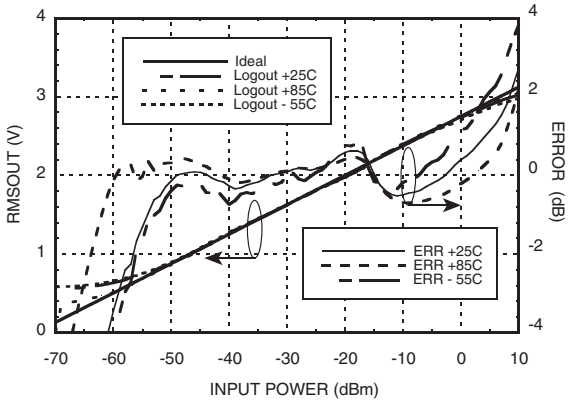
RMSOUT & Error vs. Pin @ 100 MHz [1]



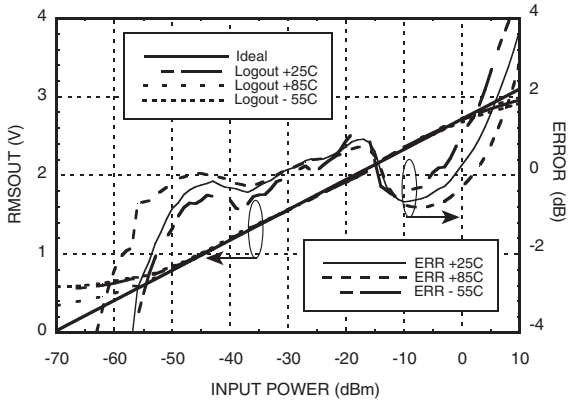
RMSOUT & Error vs. Pin @ 500 MHz [1]



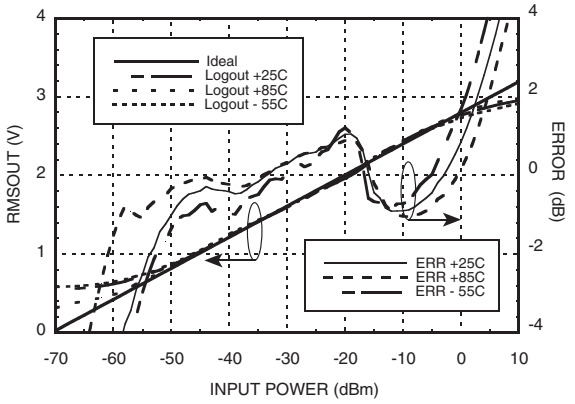
RMSOUT & Error vs. Pin @ 1000 MHz [1]



RMSOUT & Error vs. Pin @ 1500 MHz [1]



RMSOUT & Error vs. Pin @ 2000 MHz [1]



[1] CW input

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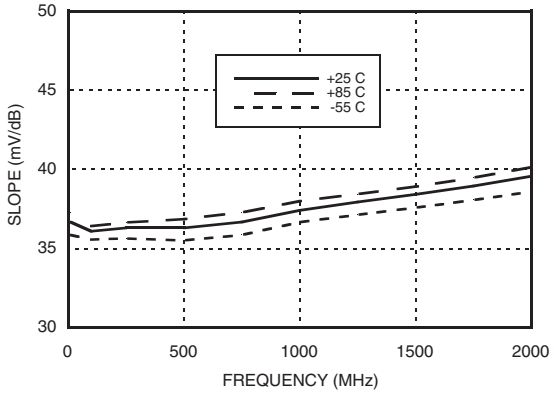
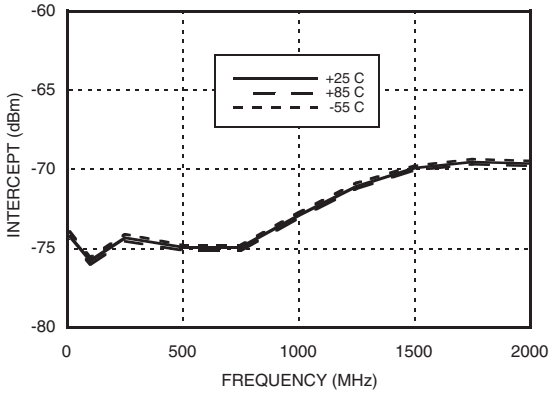
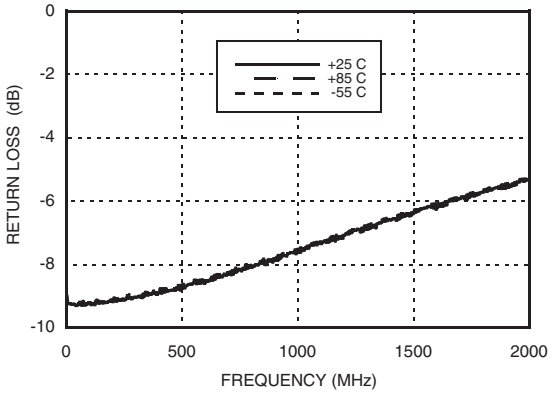
Slope vs. Frequency Over Temperature [1]



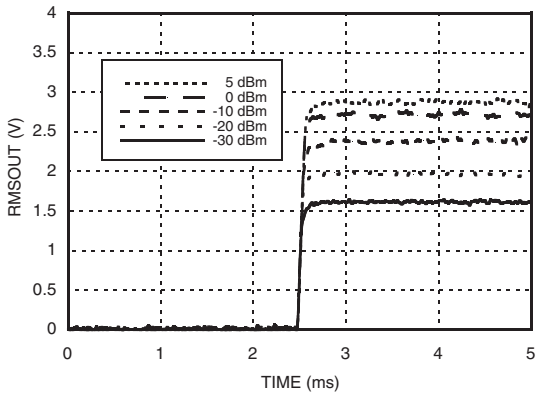
Intercept vs. Frequency Over Temperature [1]



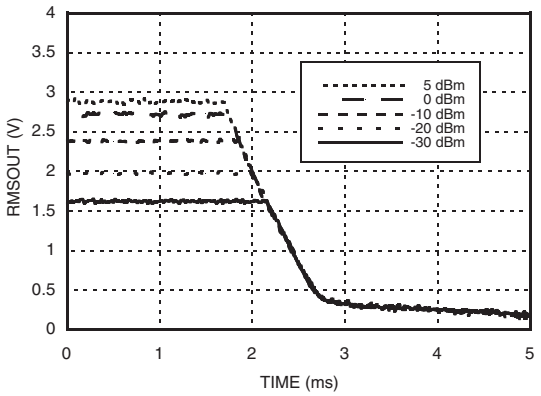
Input Return Loss vs. Frequency Over Temperature



RMSOUT Rise Time Over Input Power [1]



RMSOUT Fall Time Over Input Power [1]



[1] CW Input

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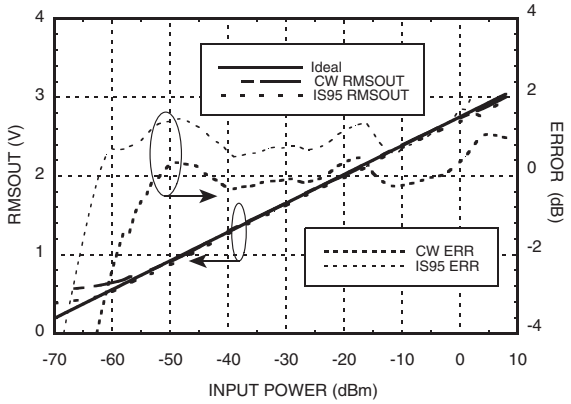
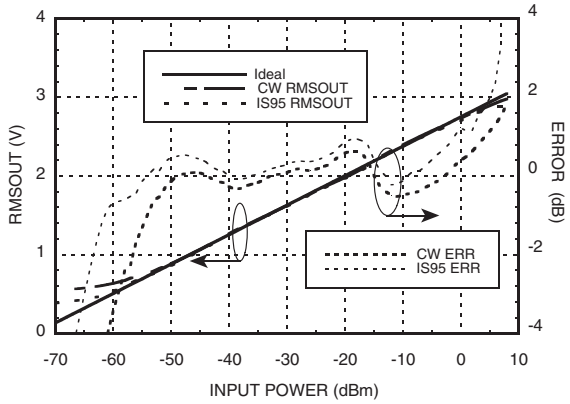
RMS POWER DETECTOR 70 dB, 0.01 - 2 GHz

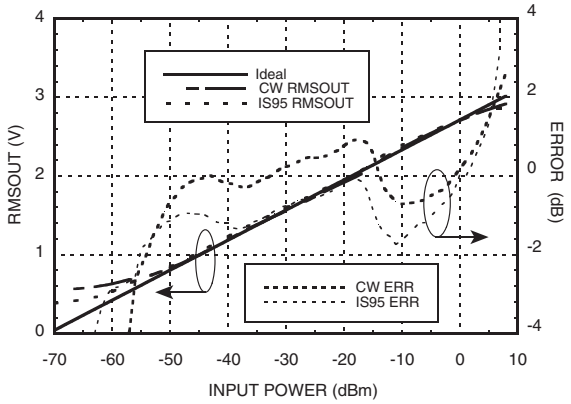
RMSOUT & ERROR vs. Pin for CW & IS95 Reverse Link @ 500 MHz



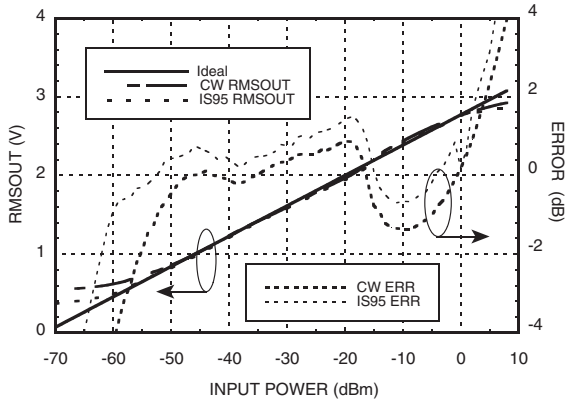
RMSOUT & ERROR vs. Pin for CW & IS95 Reverse Link @ 1000 MHz



RMSOUT & ERROR vs. Pin for CW & IS95 Reverse Link @ 1500 MHz



RMSOUT & ERROR vs. Pin for CW & IS95 Reverse Link @ 2000 MHz



Absolute Maximum Ratings

Supply Voltage	+16 Vdc
RF Input Power	20 dBm
Max. Input Voltage	2.25 Vrms
Channel / Junction Temperature	125 °C
Continuous Pdiss (T = 85°C) (Derate 22.72 mW/°C above 85°C)	0.91 Watts
Thermal Resistance (R_{th}) (junction to ground paddle)	44.02 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

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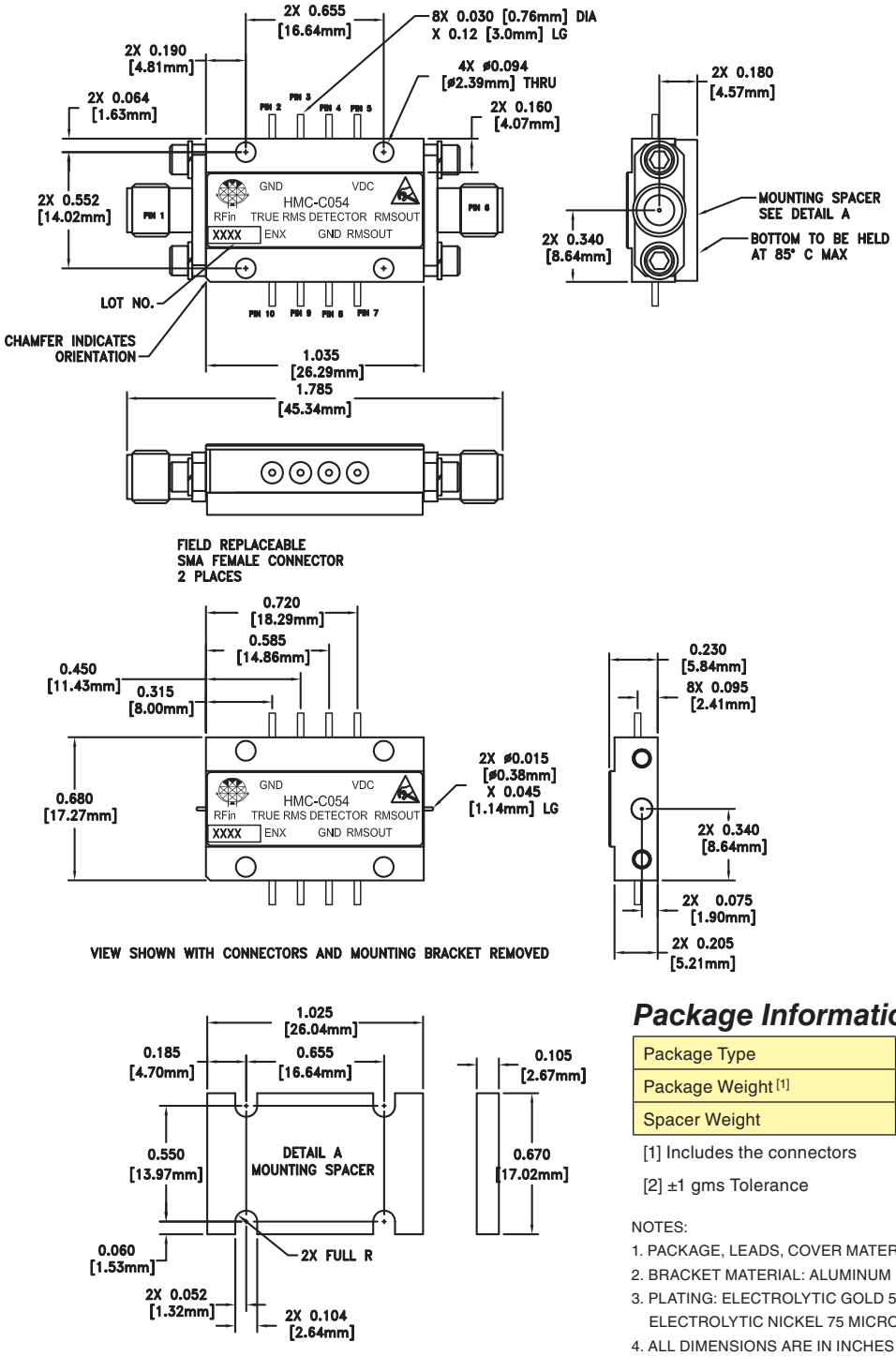
Outline Drawing



Package Information

Package Type	C-6
Package Weight [1]	17.4 gms [2]
Spacer Weight	3 gms [2]

[1] Includes the connectors

[2] ±1 gms Tolerance

NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. BRACKET MATERIAL: ALUMINUM
3. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN., OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. TOLERANCES ±.005 [0.13] UNLESS OTHERWISE SPECIFIED.
6. FIELD REPLACEABLE SMA CONNECTORS. TENSOLITE 5602 - 5CCSF OR EQUIVALENT.

7. MOUNT MODULE TO SYSTEM PLATFORM WITH #2-56 HARDWARE

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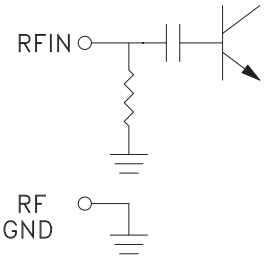
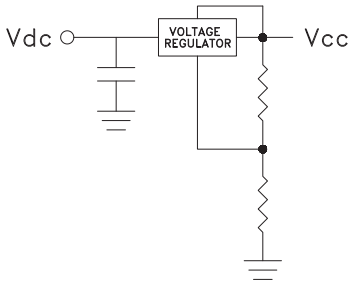
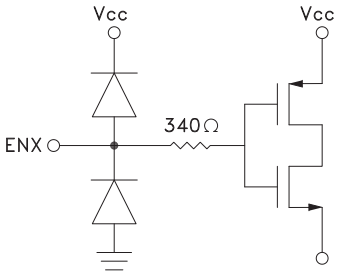
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	RFIN & RF Ground	RF Input connector, coaxial, field replaceable. This pin is AC coupled and matched to 50 Ohms.	
2, 8	GND	These pins must be connected to power supply ground.	
3, 4, 9	N/C	No Connection.	
5	Vdc	Power supply voltage for the power detector.	
6, 7	RMSOUT	RMS Voltage Output	
10	ENX	Disable pin. Connect to GND for normal operation. Applying voltage V>0.8 Vdd will initiate power saving mode.	

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