

# RMM9041-55

## 10.70 to 12.75 GHz GaAs MMIC DBS Downconverter

### Description

The Raytheon Ku-band MMIC Downconverter is a low cost, high volume GaAs MMIC which is suitable for use in Ku-band DBS systems. The Raytheon RMM9041-55 is the mirror image of the Raytheon RMM9040-54. It is intended to facilitate the PC Board layout for twin LNB applications. The RMM9041 incorporates a switching oscillator which can be used in LNBs where frequency band switching is necessary (Astra Universal, Primestar, etc). The MMIC provides LNB manufacturers the ability to produce high volume, low cost LNBs with low component count and high reliability.

### Features

- Integrated Monolithic Downconverter
- Typical noise figure of 6.5 dB
- Typical conversion gain of 35 dB
- Mirror Image of RMM9040-54.

### Maximum Ratings

Rating	Symbol	Value	Unit
DC Supply Voltage	$V_{DD}$	+10	Volts
RF Input Power (from 50Ω source)	$P_{RF}$	+10	dBm
LO Input Power (from 50Ω source)	$P_{LO}$	+17	dBm
Operating Case Temperature Range	$T_C$	-55 to +85	°C
Storage Temperature Range	$T_S$	-55 to +100	°C

### Electrical Characteristics

Parameter	Min	Typ	Max	Unit
RF Frequency Range	10.70		12.75	GHz
LO-1 Frequency		9.75		GHz
LO-2 Frequency		10.60		GHz
IF Frequency	0.95		2.15	GHz
Noise Figure <sup>1</sup>		6.5	9.0	dB
Conversion Gain <sup>1</sup>	31	35	40	dB
Input Source Impedance		50		Ohms
Output VSWR (75Ω) <sup>3</sup>		1.5:1	2.0:1	---
Gain Flatness <sup>1</sup>			±3.0	dB
Gain Ripple (over 27 MHz) <sup>3</sup>			0.6	dB
Image Rejection <sup>3</sup>	2.0	6.0		dB

Note 1: Specifications are valid for  $V_{DD} = +6V$ ,  $T_C = +25°C$ , as measured in Raytheon's test fixture, unless otherwise stated.

Note 2: LO phase noise and stability are largely dependent on the external dielectric resonator, its coupling and the cavity.

Note 3: The following parameter (minimum or maximum) limits are based on characterization and are not 100% tested: Gain Ripple, Image Rejection, LO-IF Leakage, LO-RF Leakage, 3rd Order Intercept Point, LO Phase Noise, and Output VSWR, Output Power, LO Stability over Temperature.

Note 4: Measured with 2 tones, 27 MHz apart.

Raytheon reserves the right to update or change specifications without notice.

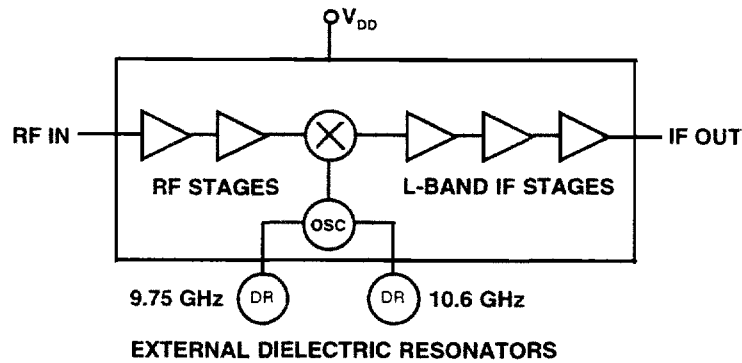
Product Information

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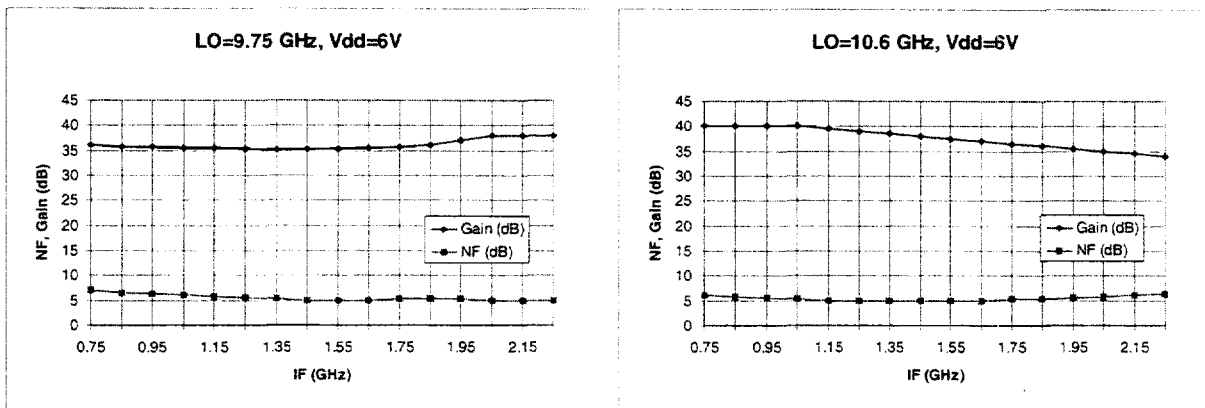
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Electrical Characteristics (Continued)	Parameter	Min	Typ	Max	Unit
	LO-RF leakage <sup>3</sup>			-16	dBm
	LO-IF leakage <sup>3</sup>			-5	dBm
	Output Power (-1dB)	+5	+6		dBm
	3rd Order Intercept Point <sup>3,4</sup>	+14	+16		dBm
	LO Phase Noise <sup>2, 3</sup>				
	10KHz Offset			-85	dBc/Hz
	100KHz Offset			-110	dBc/Hz
	LO Stability Over Temp <sup>2</sup>		±1.0		MHz
	V <sub>DD</sub> Supply Voltage	5.9	6.0	6.1	V
	LO Control Voltage (on)	-0.2	0	+0.5	V
	LO Control Voltage (off)	-3.0	-2	-1.5	V
	Supply Current		80	100	mA

### Functional Block Diagram



### Typical Characteristics

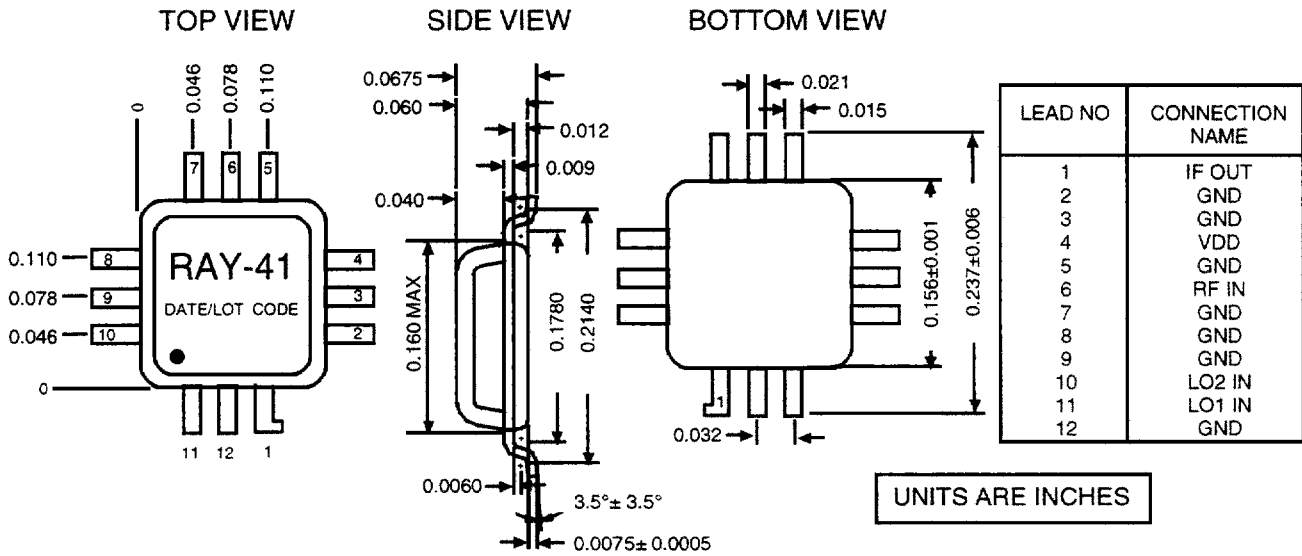


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### Outline Characteristics



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