

0.5-11.5 GHz Divide by 4 Static Prescaler

GaAs Monolithic Microwave IC

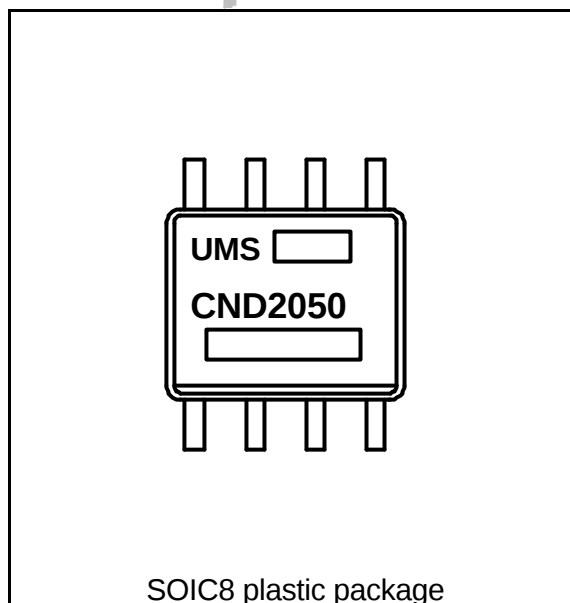
Description

The CND2050 is a low power consumption and very high speed divider by 4 manufactured with a 0.6 μ m GaAs self aligned implanted MESFET process. The design is full differential input/output that allows direct drive into 50 Ω load.

The CND2050 is available in SOIC8 package form .

Main Features

Very broad operating frequency range
Low power dissipation: 250mW
Single supply operation: + 5V or -5V
High input sensitivity:
-10dBm@10 GHz at 25°C
Low phase noise: -139dBc/Hz at 1KHz



Main Characteristics

at Tamb= +25°C

Symbol	Parameter	Min	Typ	Max	Unit
Vdd	Bias supply (with Vss = 0)	3.3	5	6	V
Vss	Bias supply (with Vdd = 0)	-6	-5	-3.3	V
Pdiss	Power dissipation	90	250	350	mW
Fmin	Minimum input frequency			0.5	GHz
Fmax	Maximum input frequency (Vdd=5V)	10	12		GHz

ESD Protections: Electrostatic discharge sensitive device. Observe handling precautions!

Electrical Characteristics (1)

Guaranteed electrical specifications at +25°C

Tested under configuration described in Fig.1 and Fig.2

Vdd = 5V , Vss = 0 ; Pin = 0 dBm ; Zo = 50 Ω

Symbol	Parameter	Min	Typ	Max	Unit
Fmin	Minimum input frequency (Differential or single input)			0.5	GHz
Fmax	Maximum input frequency differential input	10	12		GHz
	single input	9	11		GHz
Pout	Minimum output power (Differential or single input)	-5	-2		dBm

Guaranteed electrical specifications at +25°C

Tested under configuration described in Fig.1

Differential inputs ; Vss = 0 ; Pin = 0 dBm ; Zo = 50 Ω

Symbol	Parameter	Min	Typ	Max	Unit
Fmin	Minimum input frequency Vdd = 3.3 to 5 V			0.5	GHz
Fmax	Maximum input frequency Vdd = 5V	10	12		GHz
	Vdd = 3.3V	9	11		GHz
Pout	Minimum output power Vdd = 5V	-5	-2		dBm
	Vdd = 3.3V	-10	-7		dBm

Electrical Characteristics (2)

Guaranteed electrical specifications over the temperature range of -40°C to +85°C

Tested under configuration described in Fig.1

Differential inputs ; Vss = 0 ; Pin = 0 dBm ; Zo = 50 Ω

Symbol	Parameter	Min	Typ	Max	Unit
Fmin	Minimum input frequency Vdd = 3.3 to 5 V			0.5	GHz
Fmax	Maximum input frequency Vdd = 5V	9	11		GHz
	Vdd = 3.3V	8	10		GHz
Pout	Minimum output power Vdd = 5V	-6	-3		dBm
	Vdd = 3.3V	-11	-8		dBm

Guaranteed electrical specifications over the temperature range of -40°C to +85°C

Single or differential inputs ; Vss = 0 ; Zo = 50 Ω

Symbol	Parameter	Min	Typ	Max	Unit
Pin max	Maximum operational input power Vdd = 3.3 to 5 V			10	dBm
Idd	Supply current Vdd = 5V	35	45	70	mA
	Vdd = 3.3V	20	25	40	mA
Hr	Harmonic rejection (output signal)	10			dBc

Absolute Maximum Ratings (1)

Tamb= 25°C

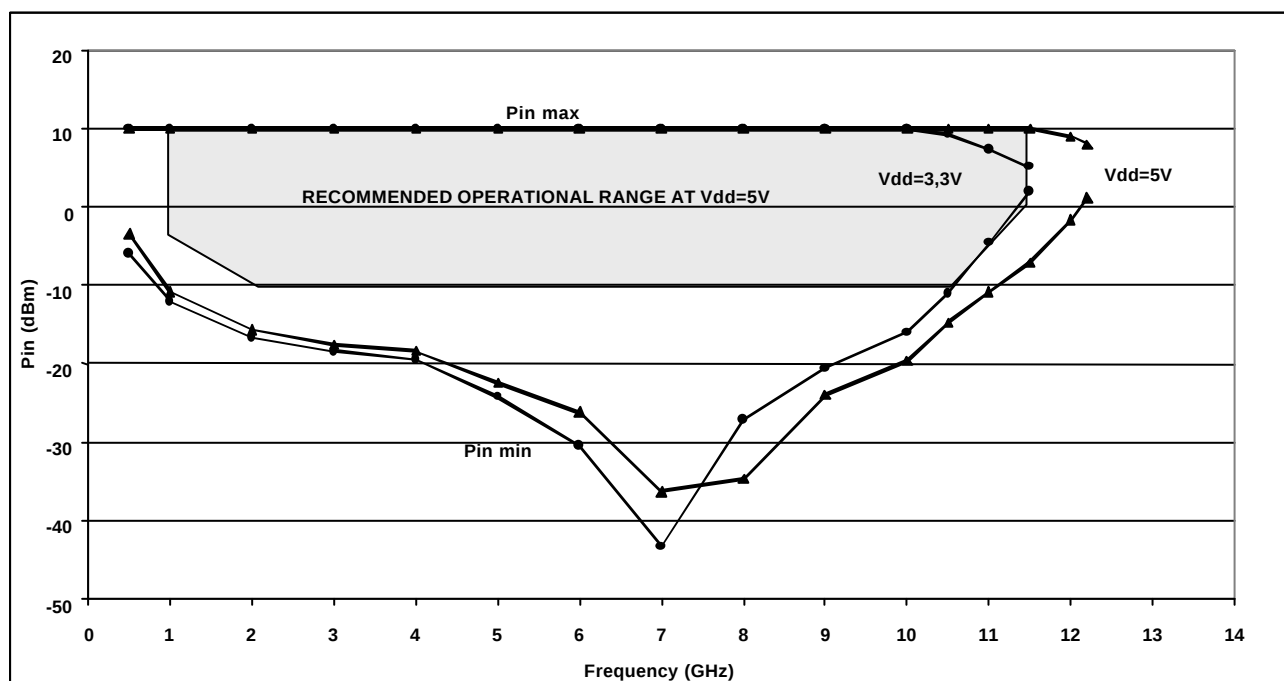
Symbol	Parameter	Values	Units
Vdd	Drain voltage	7	V
Pin	Maximum input power (2)	15	dBm
Top	Operating temperature range	-40 to +85	°C
Tstg	Storage temperature range	-65 to +175	°C

(1) Operation of this device above any one of these parameters may cause permanent damage

(2) Duration <1s.

Typical Characteristics (1)

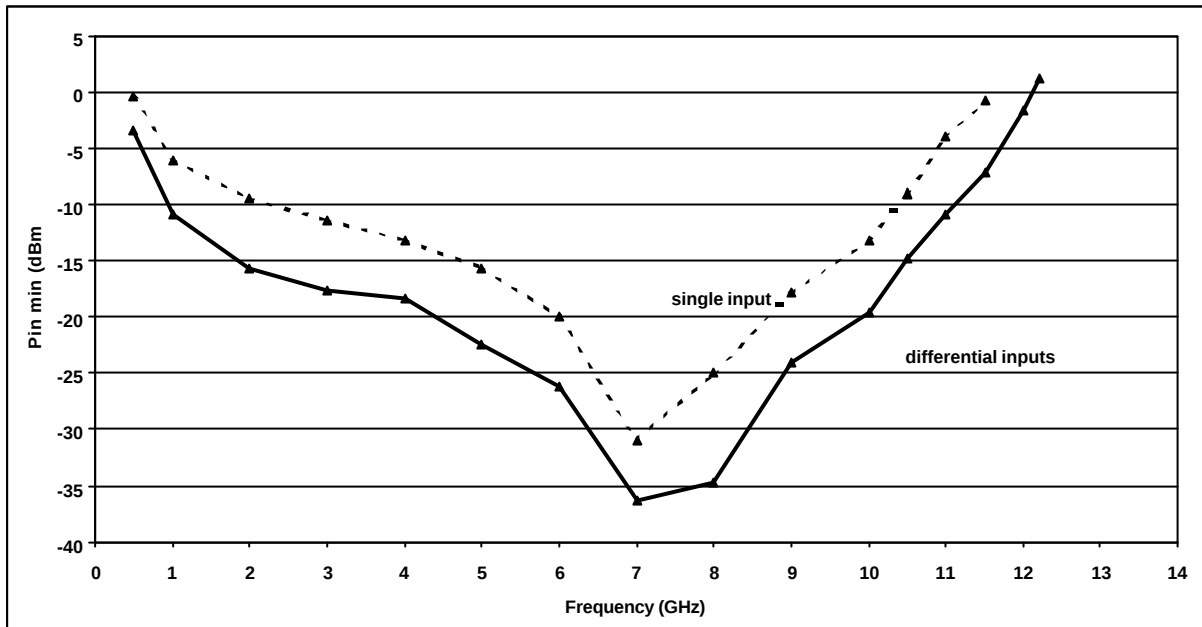
Typical input power versus frequency



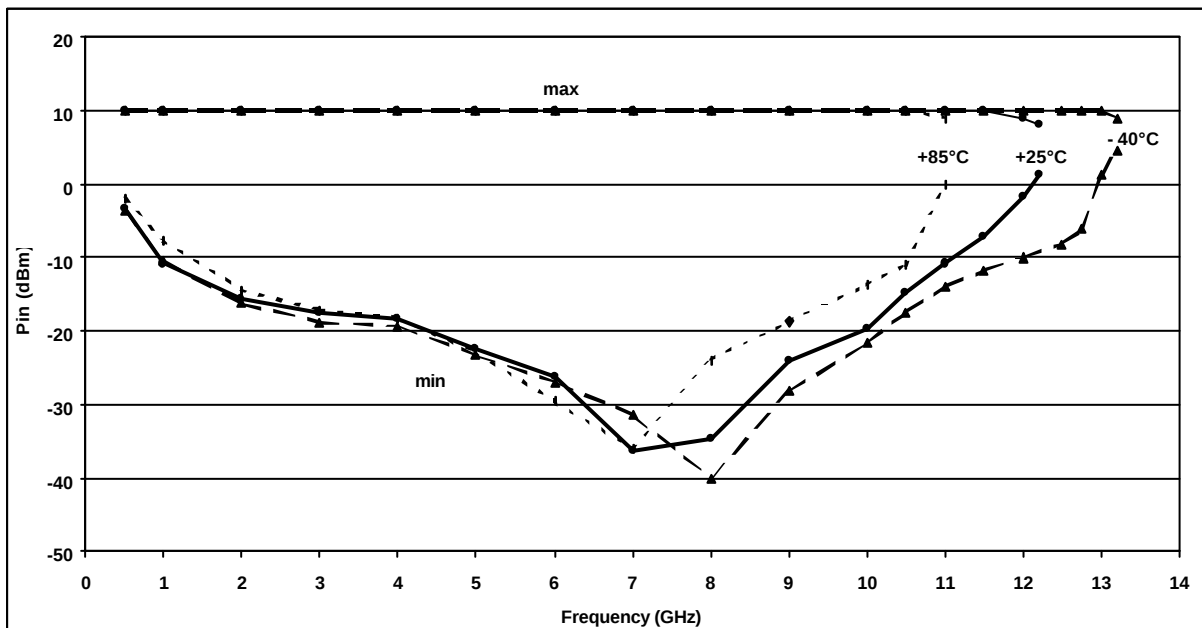
Tamb= 25°C, Zo=50Ω, Vdd=5V or 3.3V ; Vss = 0 ; differential inputs

Typical Characteristics (2)

Typical input power versus frequency



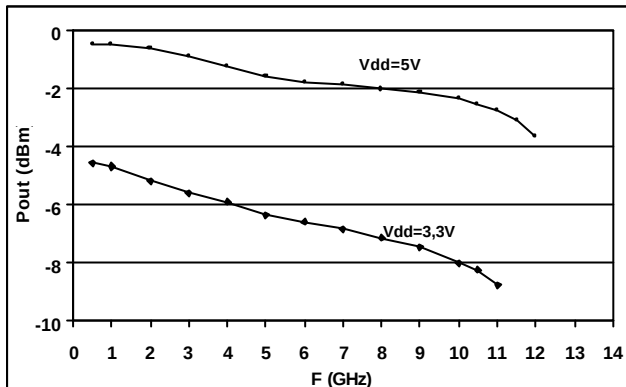
Tamb= 25°C, Zo=50Ω, Vdd=5V ; Vss = 0 ; differential inputs or single input



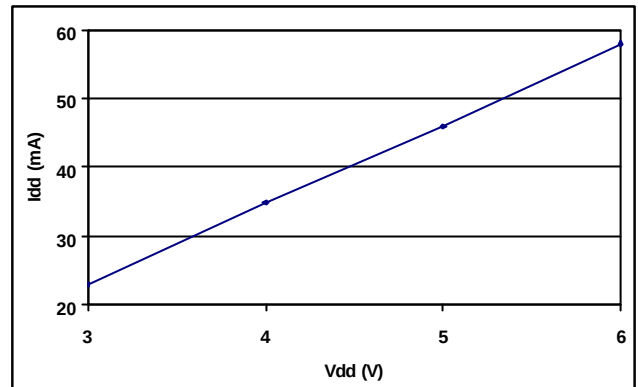
Tamb= -40 to +85°C, Zo=50Ω, Vdd=5V ; Vss = 0 ; differential inputs

Typical Characteristics (3)

Output power versus frequency

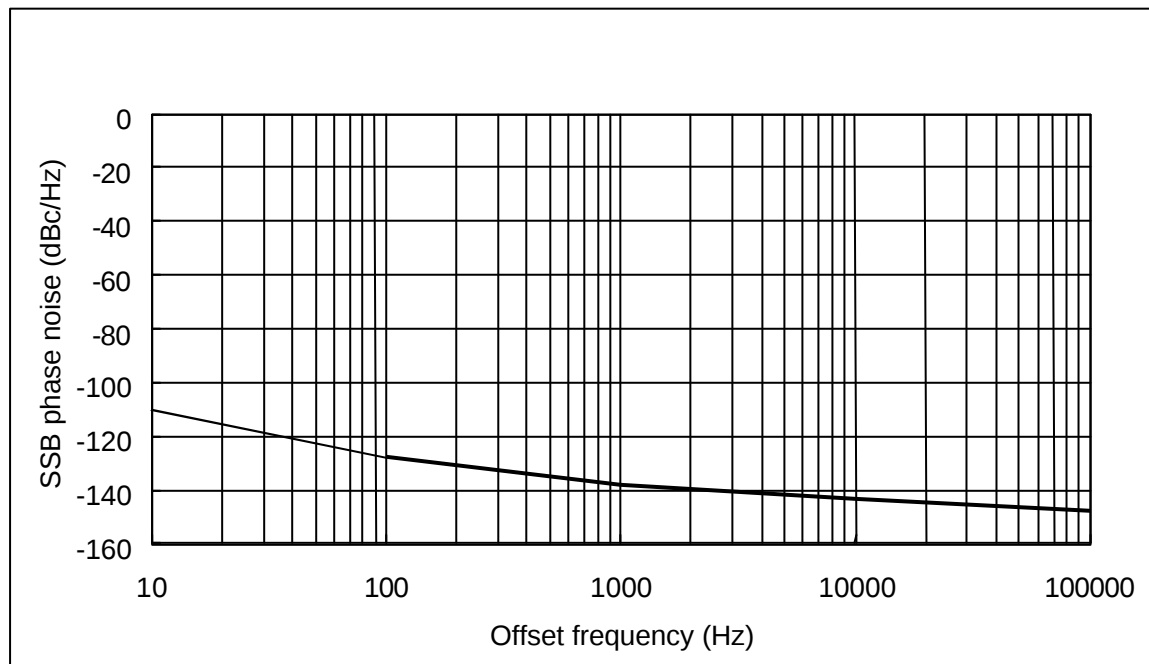


Bias current versus Vdd



Tamb= 25°C, Zo=50Ω, Vdd=5V or 3.3V ; Vss = 0 ; differential inputs or single input

SSB Phase noise versus Offset Frequency (Fin=4GHz)



Typical bias tuning

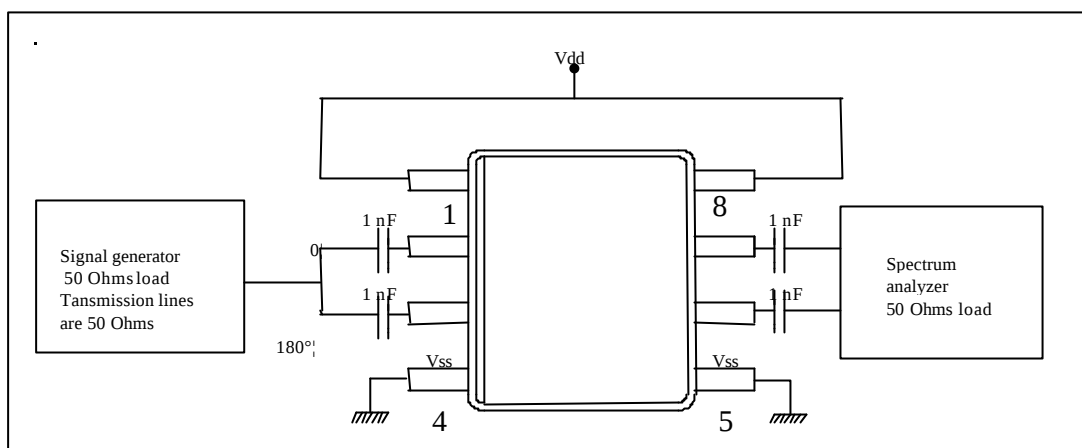


Fig.1 : Typical measurement and RF biasing configuration with differential inputs

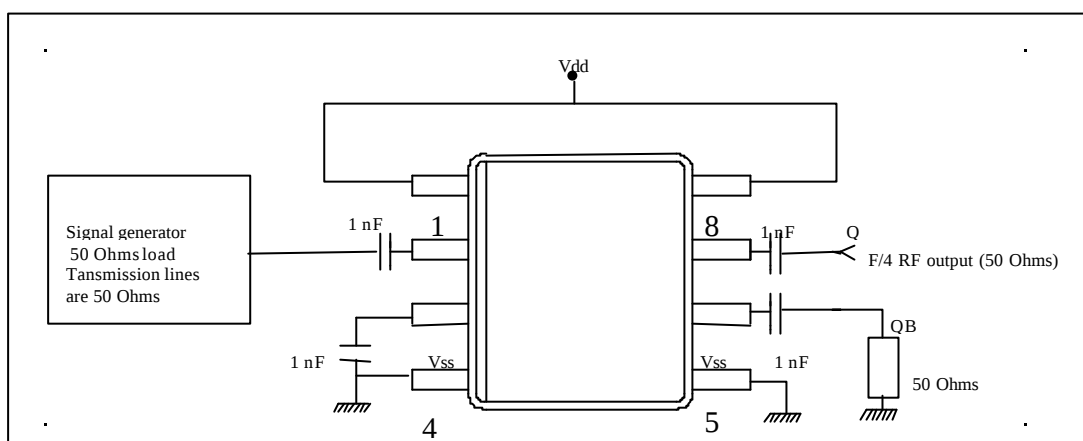


Fig.2 : RF biasing configuration with single input and output

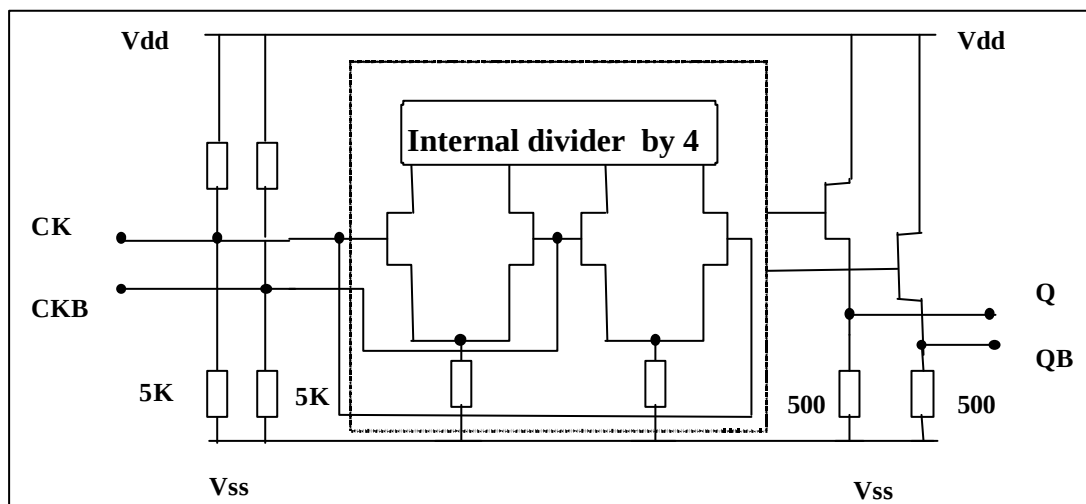


Fig.3 : Chip block diagram

The drawing shows the mechanical specifications for the UMS CND2050 component. The top view includes dimensions for the overall width (5+/-0.15 mm [0.20+/-0.006]), the distance between the inner pins (3.81 mm [.15]), and the pin pitch (1.27 mm [0.05]). The overall height is 6+/-0.15 mm [.236+/-0.006], and the distance from the top of the component to the center of the pins is 3.7 mm [.145]. The bottom view shows the pin spacing (0.4 mm [.015]) and the pin numbers (1, 4, 5, 8). The side view shows the component's profile with a maximum height of 1.7 mm [0.067], a maximum width of 1.4 mm [0.055], and a maximum angle of 8°.

Unit: mm [In]
General tolerance +/-0.05 [+/-0.002]

Pin out	Signal
1	Vdd
2	CK
3	CKB
4	Vss
5	Vss
6	QB
7	Q
8	Vdd

SOIC8 Package : CND2050-DAF/20

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