

0.5-11.5 GHz Divide by 4 Static Prescaler

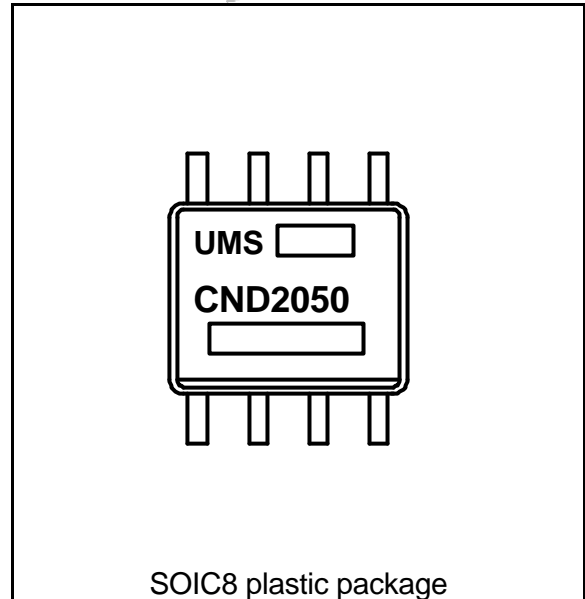
GaAs Monolithic Microwave IC

preliminary

Description

The CND2050 is a low power consumption and very high speed divider by 4 manufactured with a 0.6µm GaAs self aligned implanted MESFET process. The design is full differential input/output that allows direct drive into 50Ω 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 (ouput signal)	10			dBc

Absolute Maximum Ratings (1)

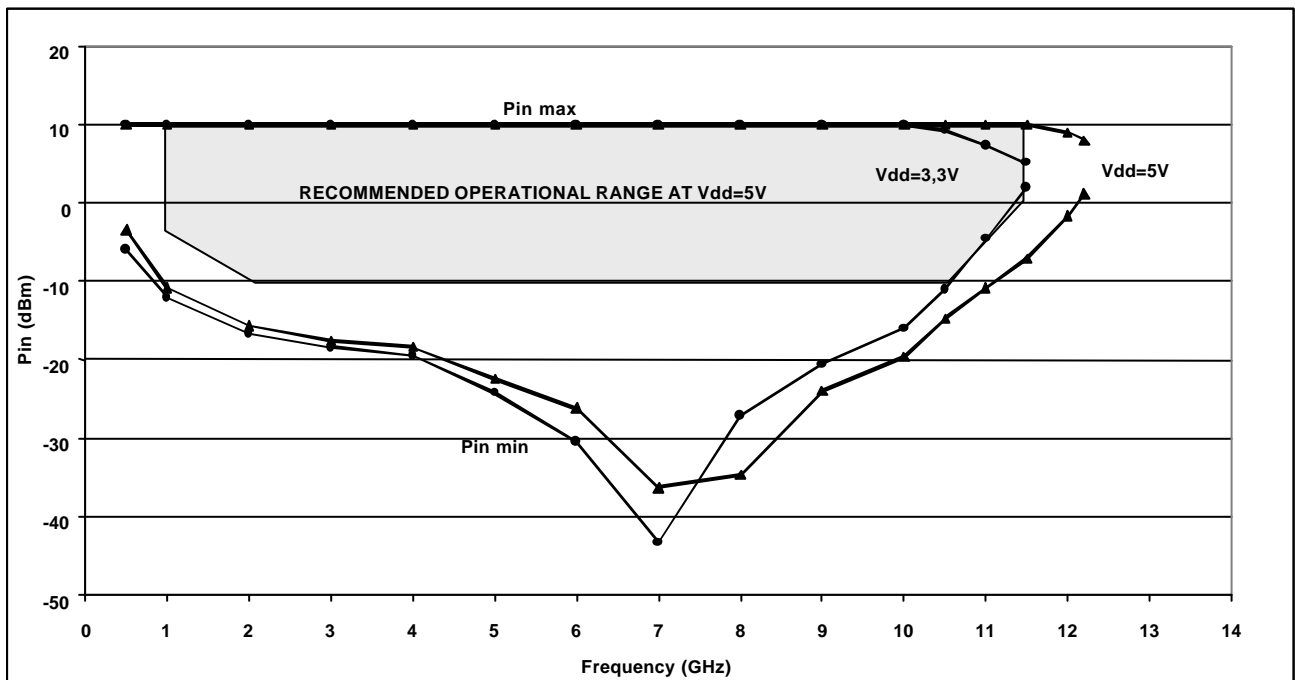
Tamb= 25°C

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 anyone of these parameters may cause permanent damage
- (2) Duration <1s.

Typical Characteristics (1)

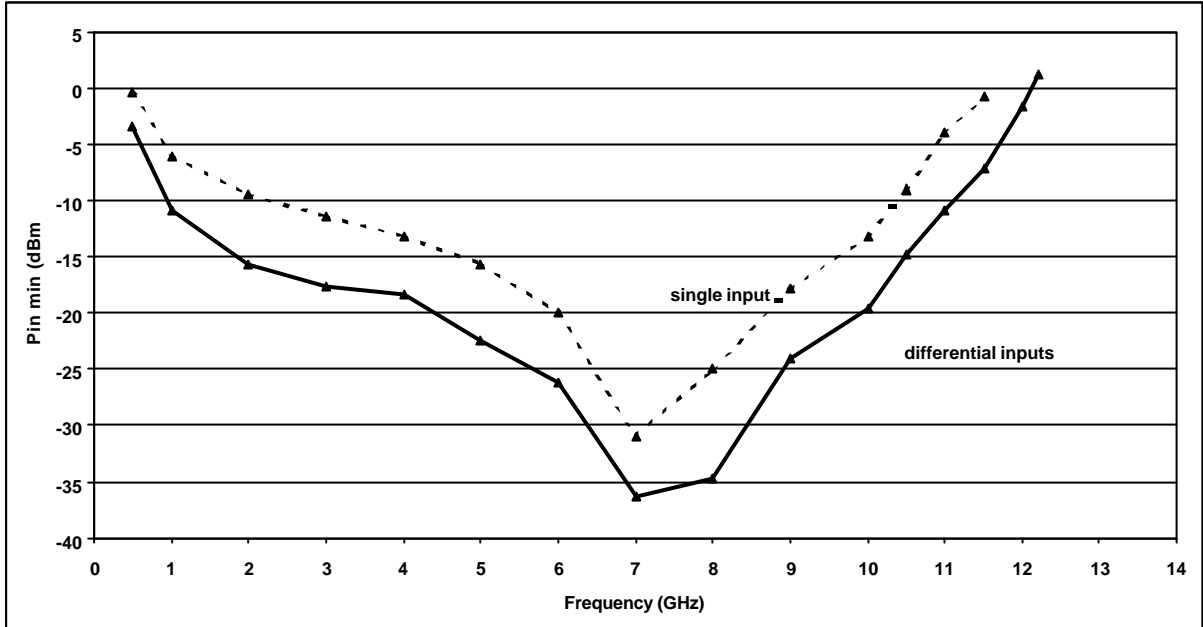
Typical input power versus frequency



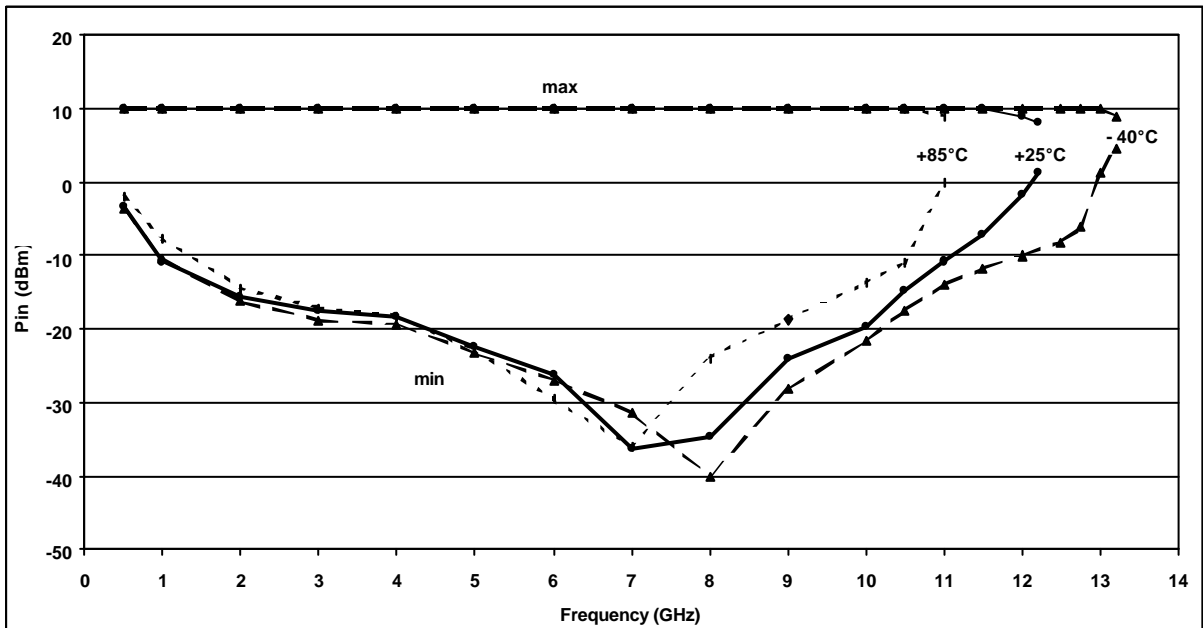
Tamb= 25°C, Zo=50Ω, Vdd=5V or 3.3V ; Vss = 0 ; differential inputs

Typical Characteristics (2)

Typical input power versus frequency



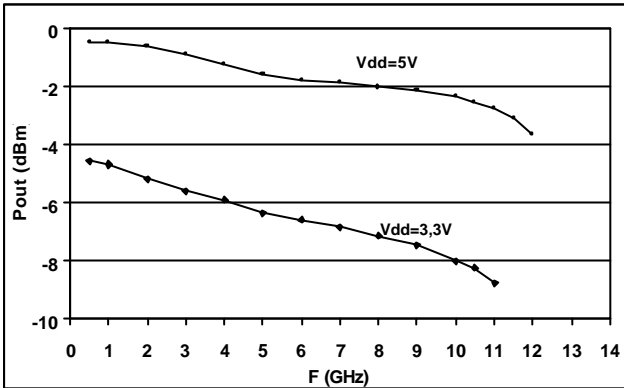
Tamb= 25°C, Zo=50Ω, Vdd=5V ; Vss = 0 ; differential inputs or single input



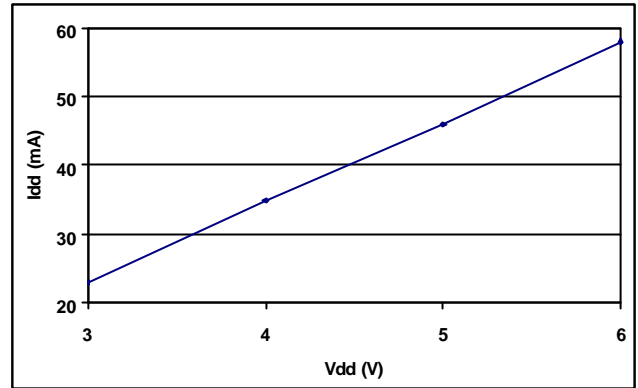
Tamb= -40 to +85°C, Zo=50Ω, Vdd=5V ; Vss = 0 ; differential inputs

Typical Characteristics (3)

Output power versus frequency

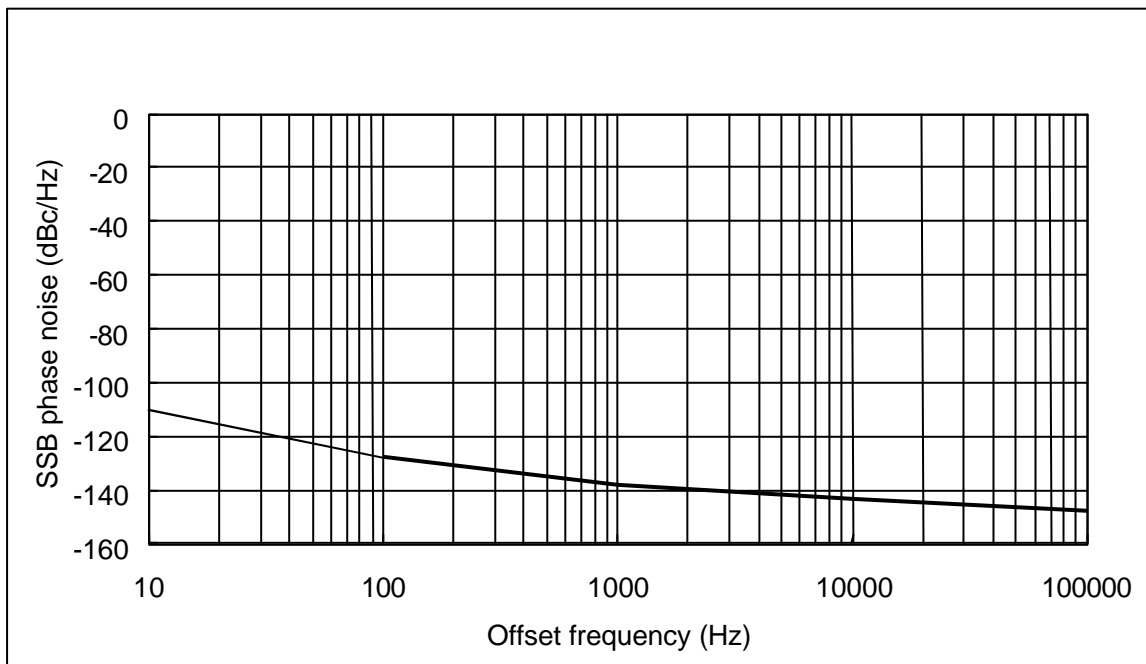


Bias current versus Vdd



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

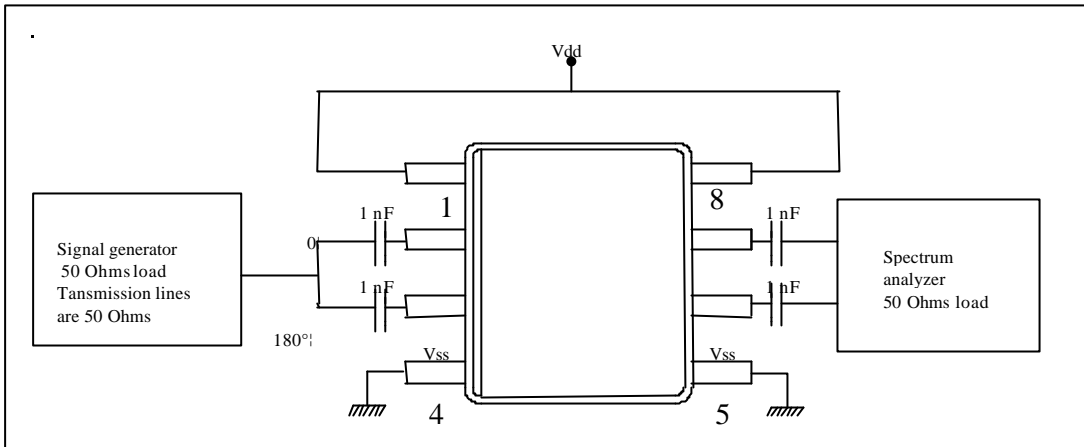


Fig.1 : Typical measurement and RF biasing configuration with differential inputs

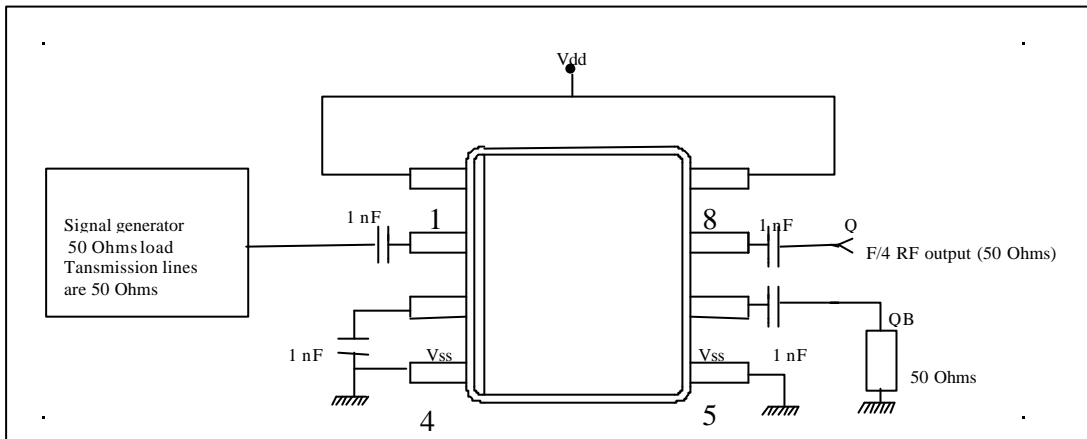


Fig.2 : RF biasing configuration with single input and output

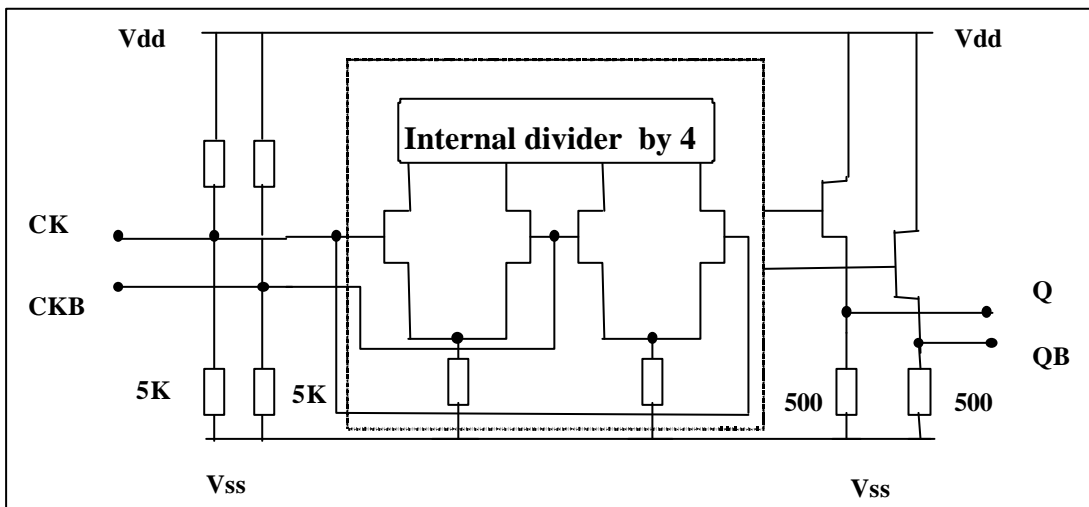
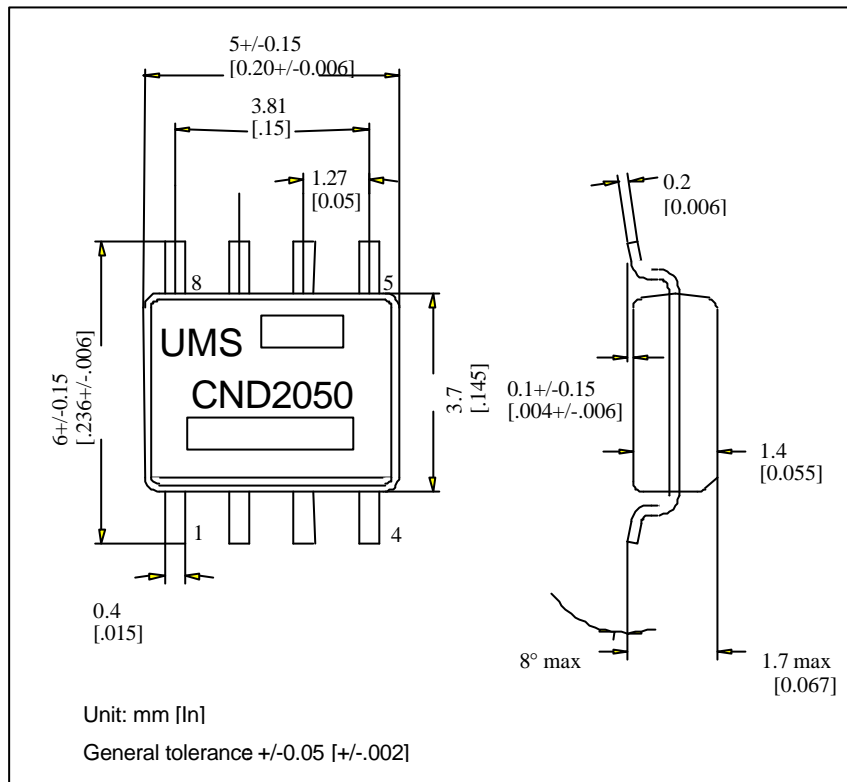


Fig.3 : Chip block diagram

SOIC8 Mechanical Data



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

Ordering Information

SOIC8 Package : CND2050-DAF/20

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