

## Very Low Phase Noise 300MHz ÷ 10/11

The SP8401 is a very low phase noise variable modulus divider. Special circuit techniques have been used to reduce the phase noise considerably below that produced by standard dividers. The modulus control input is CMOS or TTL compatible.

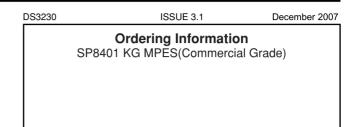
The SP8401 is packaged in a 28 pin plastic SO package to be compatible with the SP8400 and SP8402 devices.

#### **FEATURES**

- Very low Phase Noise (Typically -160dBc/Hz at 1kHz offset)
- Supply Voltage 5V

#### **ABSOLUTE MAXIMUM RATINGS**

Supply Voltage 6.5V
Output Current 20mA
Storage Temperature Range -55°C to +125°C
Maximum Clock Input Voltage 2.5V p-p



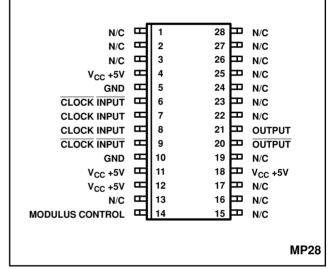


Fig.1 Pin connections - top view

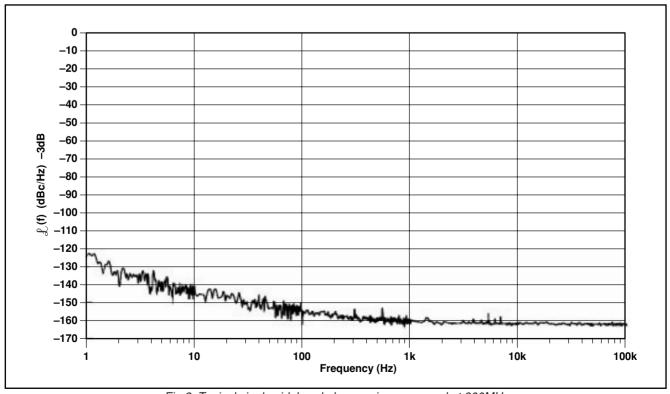


Fig.2 Typical single sideband phase noise measured at 300MHz

### **ELECTRICAL CHARACTERISTICS**

Guaranteed over: Supply voltage  $V_{CC}$  = +4.75V to +5.25V Temperature  $T_{amb}$  = -20°C to +85°C Tested at +4.75V and +5.25V at  $T_{amb}$  = +25°C

Characteristic	Pin	Value			Units	Conditions
		Min.	Тур.	Max.		Conditions
Supply current	4, 11, 12, 18	50	57	64	mA	Output loaded with 300R See Fig.5
Output voltage swing	20, 21	340	440		mV	p-p @ 330MHz input ÷ 11 mode
						Output loaded with 300R
Input sensitivity 50MHz to 300MHz	7, 8			140	mV	RMS Sine wave into 50 Ohms
				(-4)	dBm	(dBm equivalent) See Fig.3
Modulus Control Inputs						
Logic high voltage	14	2.2			V	÷ 10 mode
Low low voltage	14			0.8		÷ 11 mode
Input current	14			180	μΑ	Modulus control input voltage 5V
Set up time t <sub>s</sub>	14		4		ns	
Release time t <sub>r</sub>	14		4		ns	

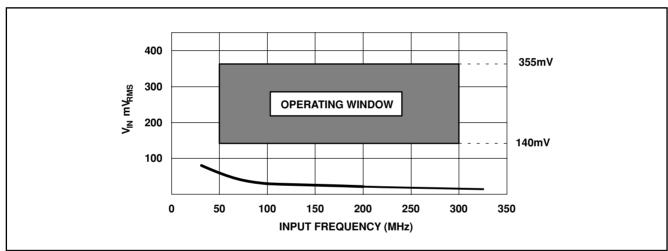


Fig.3 Typical input sensitivity

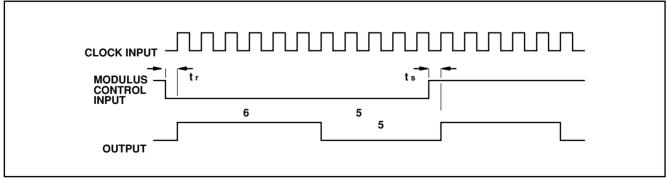


Fig.4 Timing diagram

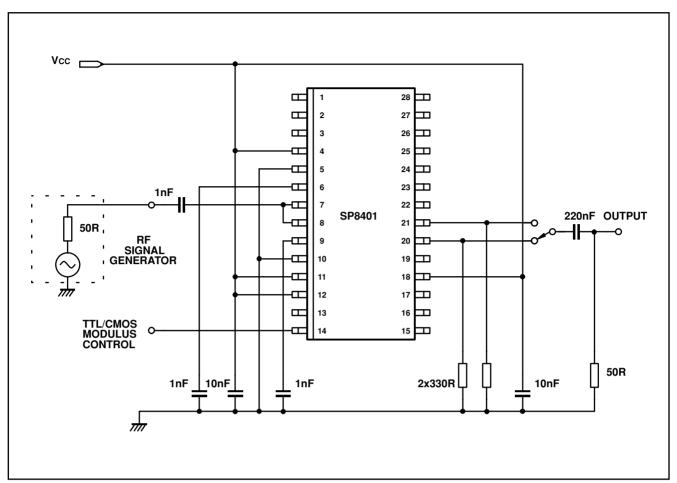


Fig.4 Test circuit



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