National Semiconductor

DS8673/DS8674 Low Power VHF/UHF Prescalers

General Description

The DS8673 and DS8674 products are low power prescalers which divide by 64 and 256 respectively. The devices are used in frequency synthesis applications such as TV/CATV, cellular phone, and instrumentation to divide a very high frequency down to a frequency usable by low power MOS PLL's.

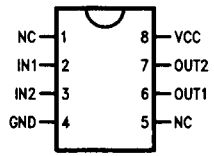
The devices have differential buffered inputs and complementary ECL outputs. The inputs provide high input sensitivity and good isolation. The DS8673 is pin compatible with Plessey's SP4531, SP4632, and Motorola's MC12073 products. The DS8674 is pin compatible with Plessey's SP4653 and Motorola's MC12074 products.

Features

- 1.0 GHz operating frequency
- 25 mA typical supply current
- 20 mV rms input sensitivity
- 0.8V complementary ECL outputs
- Low output radiation

Block and Connection Diagrams

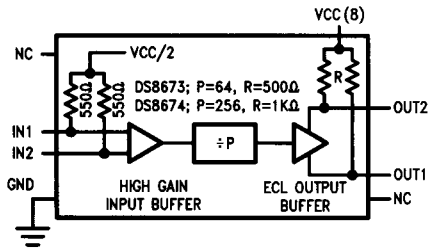
Dual-In-Line Package



TL/F/9340–1

Top View

Order Number DS8673N or DS8674N
See NS Package Number N08E



TL/F/9340–2

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	7V
Output Voltage	V_{CC} + 0.5V
Operating Free Air Temperature Range	−40°C to +85°C
Storage Temperature Range	−65°C to +150°C

ESD rating is to be determined.

Recommended Operating Conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{CC}	Power Supply Voltage Range		4.5		5.5	V
F_{IN}	Input Frequency Range	V_{IN} Min	80		1,000	MHz
V_{IN}	Input Sensitivity into 50Ω	80 MHz	20		200	mV rms
		300 MHz	20		200	
		500 MHz	20		200	
		700 MHz	20		200	
		1 GHz	20		200	

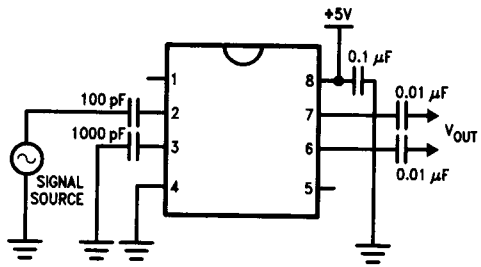
DC Electrical Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Units
I_{CC}	Power Supply Current	V_{CC} = 5.5V		25	35	mA
V_{OUT}	Output Voltage Swing	Peak-to-Peak (no load)	0.8	1.2	1.6	V

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Typical Applications

Typical Wiring Configuration



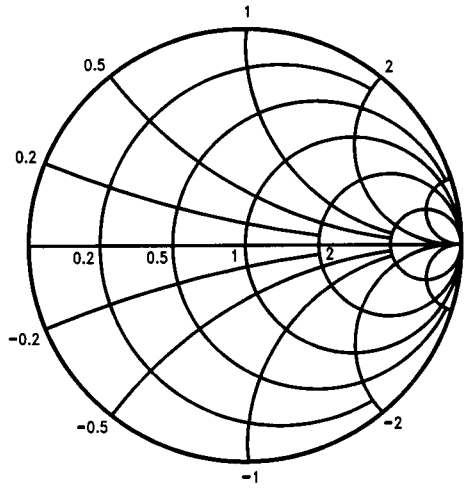
TL/F/9340–3

6

Typical Applications (Continued)

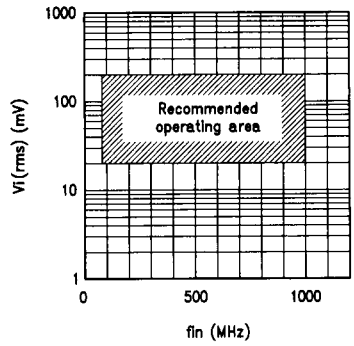
Typical Input Impedance

Reference value = 50Ω
Vi (rms) = 25 mV
V_{CC} = 5V
Waveshape is TBD



TL/F/9340–4

Typical Sensitivity Curve Under Nominal Conditions



TL/F/9340–5