

**DESCRIPTION**

The M54460 is a semiconductor integrated circuit consisting of a built-in 1/10 and 1/100 high speed frequency divider featuring an ECL circuit configuration.

**FEATURES**

- High-speed operation ( $f_{max} = 130\text{MHz}$ )
- Operation at low input amplitudes (200mV<sub>P-P</sub> minimum input amplitude)
- Open collector type of output

**APPLICATION**

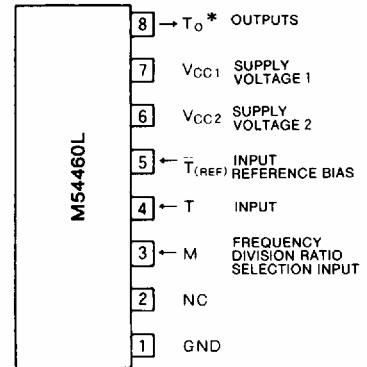
FM radio prescalers  
Digital equipment for consumer and industrial applications.

**FUNCTION**

This driver is based on an ECL circuit configuration. When a frequency up to a maximum of 130MHz is applied to the T input pin, a 1/10-divided output is produced when the division ratio selection input pin (M) is low-level or a 1/100-divided output is produced when the division ratio selection input pin (M) is high-level. The output (T<sub>0</sub>) is an open collector output.

When you use the V<sub>CC1</sub> (7pin), the V<sub>CC2</sub> (6pin) must be opened. And you use the V<sub>CC2</sub> (6pin), the V<sub>CC1</sub> (7pin) must be opened.

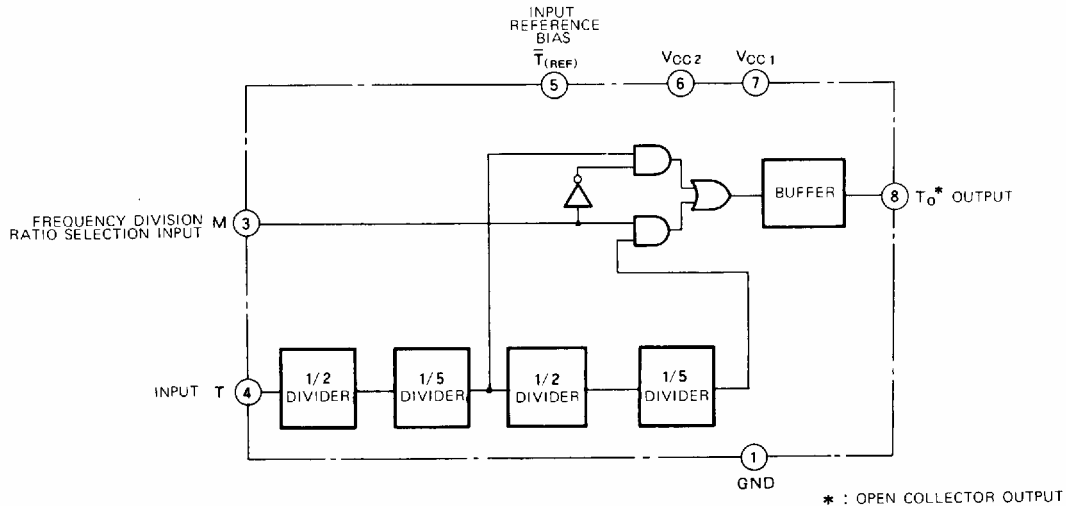
**PIN CONFIGURATION (TOP VIEW)**



\* : Open connector output  
NC : No connection

Outline 8P5

**BLOCK DIAGRAM**



\* : OPEN COLLECTOR OUTPUT

1/10, 1/100 HIGH SPEED DIVIDER

ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = -10~+75°C, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>CC1</sub>	Supply voltage 1		5	V
V <sub>CC2</sub>	Supply voltage 2		7	V
V <sub>I</sub>	Input voltage		2.5	V
V <sub>O</sub>	Output applied voltage		5.5	V
P <sub>d</sub>	Power dissipation	T <sub>a</sub> = 75°C	650	mW
T <sub>opr</sub>	Operating temperature		-10~+75	°C
T <sub>stg</sub>	Storage temperature		-55~+125	°C

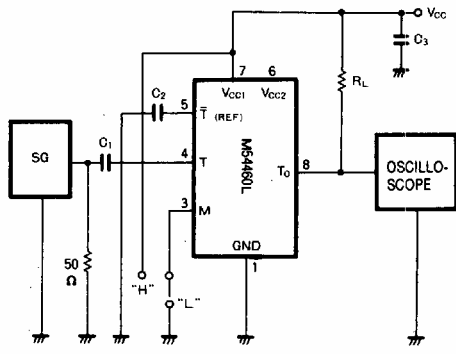
RECOMMENDED OPERATING CONDITIONS (T<sub>a</sub> = -10~+75°C, unless otherwise noted)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
V <sub>CC1</sub>	Supply voltage 1		2.7	3	3.3	V
V <sub>CC2</sub>	Supply voltage 2		4.5	5	5.5	V
f <sub>IN</sub>	Input frequency		30		130	MHz
V <sub>IN</sub>	Input amplitude	V <sub>CC1</sub> = 3V, f <sub>IN</sub> = 30~130MHz	200		800	mV <sub>P-P</sub>
V <sub>IH(M)</sub>	High-level M input voltage	V <sub>CC1</sub> = 3V, V <sub>CC2</sub> : Open	2.6		3	V
V <sub>IL(M)</sub>	Low-level M input voltage	V <sub>CC1</sub> : Open, V <sub>CC2</sub> = 5V				
					0.4	V

ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = -10~+75°C, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I <sub>CC1</sub>	Supply current 1	V <sub>CC1</sub> = 3V		6	9	mA
I <sub>CC2</sub>	Supply current 2	V <sub>CC2</sub> = 5V		8		mA
V <sub>IN</sub>	Input frequency	V <sub>CC1</sub> = 3V, f <sub>IN</sub> = 30~130MHz, T <sub>a</sub> = 25°C			150	mV <sub>P-P</sub>
I <sub>IH(M)</sub>	High-level M input current	V <sub>CC</sub> = 3V, V <sub>IH(M)</sub> = 2.6V		2		μA
I <sub>IL(M)</sub>	Low-level M input current	V <sub>CC</sub> = 3V, V <sub>IL(M)</sub> = 0.4V		0.1		μA
I <sub>O(leak)</sub>	Output leak current	V <sub>CC</sub> = 3V, V <sub>O</sub> = 5.5V			100	μA
V <sub>OL</sub>	Low-level output voltage	V <sub>CC</sub> = 3V, I <sub>OL</sub> = 5mA			0.5	V

f<sub>max</sub> TEST CIRCUIT



C<sub>1</sub> ≈ 1000pF, C<sub>2</sub> ≈ 1000pF, C<sub>3</sub> ≈ 0.1μF, R<sub>L</sub> = 3~5KΩ.

Notes : The "H" level of the frequency divider ratio change input M should be 2.6V (min) and 3V (max) when V<sub>CC1</sub> is used as the power supply, M input can be connected directly to V<sub>CC1</sub>.  
When V<sub>CC2</sub> is used, "H" level should be seen within the range of values given above.

TYPICAL CHARACTERISTICS

INPUT AMPLITUDE VS INPUT FREQUENCY

