

**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**

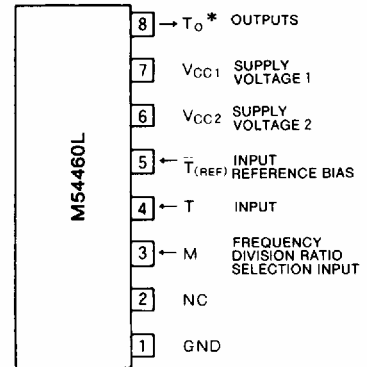
FM radio prescalers  
Digital equipment for consumer and industrial applications.

**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.

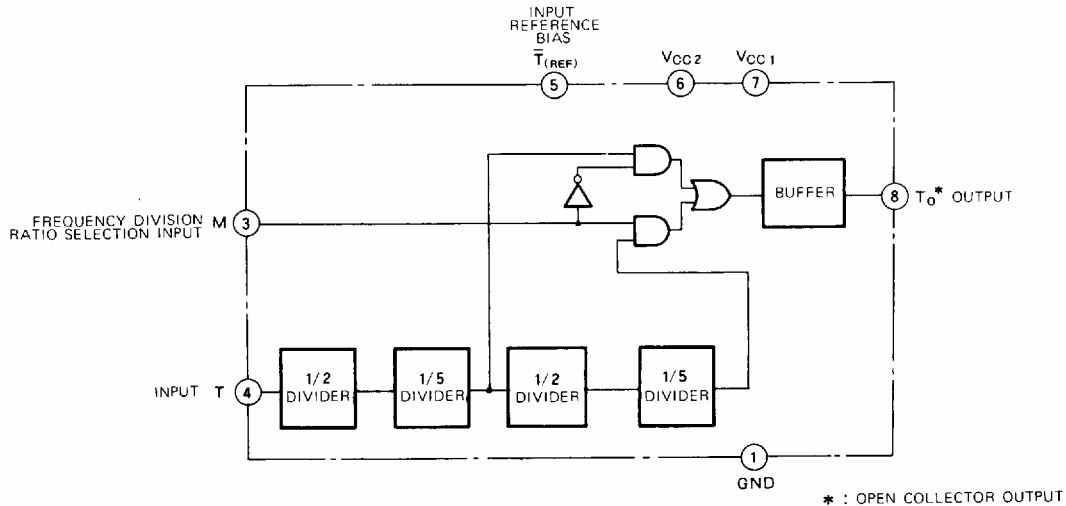
**PIN CONFIGURATION (TOP VIEW)**



\* : Open connector output  
NC : No connection

Outline 8P5

**BLOCK DIAGRAM**



\* : OPEN COLLECTOR OUTPUT

1/10, 1/100 HIGH SPEED DIVIDER

**ABSOLUTE MAXIMUM RATINGS** ( $T_a = -10 \sim +75^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CC1}$	Supply voltage 1		5	V
$V_{CC2}$	Supply voltage 2		7	V
$V_i$	Input voltage		2.5	V
$V_o$	Output applied voltage		5.5	V
$P_d$	Power dissipation	$T_a = 75^\circ\text{C}$	650	mW
$T_{opr}$	Operating temperature		$-10 \sim +75$	$^\circ\text{C}$
$T_{stg}$	Storage temperature		$-55 \sim +125$	$^\circ\text{C}$

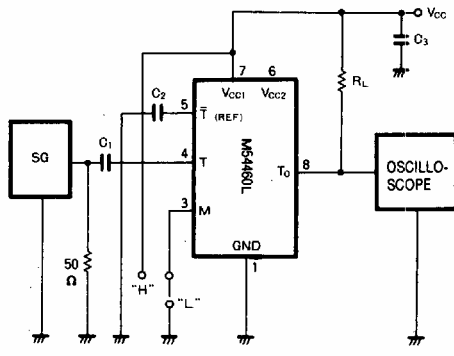
**RECOMMENDED OPERATING CONDITIONS** ( $T_a = -10 \sim +75^\circ\text{C}$ , unless otherwise noted)

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

**ELECTRICAL CHARACTERISTICS** ( $T_a = -10 \sim +75^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$I_{CC1}$	Supply current 1	$V_{CC1} = 3\text{V}$		6	9	mA
$I_{CC2}$	Supply current 2	$V_{CC2} = 5\text{V}$		8		mA
$V_{IN}$	Input frequency	$V_{CC1} = 3\text{V}, f_{IN} = 30 \sim 130\text{MHz}, T_a = 25^\circ\text{C}$			150	mV <sub>P-P</sub>
$I_{IH(M)}$	High-level M input current	$V_{CC} = 3\text{V}, V_{IH(M)} = 2.6\text{V}$		2		$\mu\text{A}$
$I_{IL(M)}$	Low-level M input current	$V_{CC} = 3\text{V}, V_{IL(M)} = 0.4\text{V}$		0.1		$\mu\text{A}$
$I_{O(leak)}$	Output leak current	$V_{CC} = 3\text{V}, V_o = 5.5\text{V}$			100	$\mu\text{A}$
$V_{OL}$	Low-level output voltage	$V_{CC} = 3\text{V}, I_{OL} = 5\text{mA}$			0.5	V

**f<sub>max</sub> TEST CIRCUIT**



$C_1 \approx 1000\text{pF}, C_2 \approx 1000\text{pF}, C_3 \approx 0.1\mu\text{F}, R_L = 3 \sim 5\text{K}\Omega$

Notes : The "H" level of the frequency divider ratio change input M should be 2.6V (min) and 3V (max) when  $V_{CC1}$  is used as the power supply, M input can be connected directly to  $V_{CC1}$ .  
When  $V_{CC2}$  is used, "H" level should be see to with in the range of values given above.

**TYPICAL CHARACTERISTICS**

