M54477L/AP

1/128, 1/136 2-MODULUS HIGH SPEED DIVIDER WITH ECL OUTPUT

DESCRIPTION

The M54477L/AP is a semiconductor integrated circuit consisting of a 1/128, 1/136 2-modulus divider using emitter-coupled logic(ECL).

FEATURES

- High-speed operation(fmax=1.0GHz)
- Operates at low input amplitudes (−20dBm min)
- ECL level output

APPLICATION

Prescalers for PLL synthesized TV tuners, and general use in consumer and industrial digital equipment.

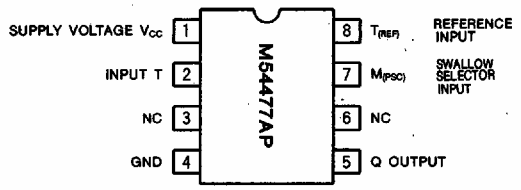
RECOMMENDED OPERATING CONDITION

Supply voltage.....4.5~5.5V
Input amplitude.....−20~4dBm(f_{IN}=80~1000MHz)

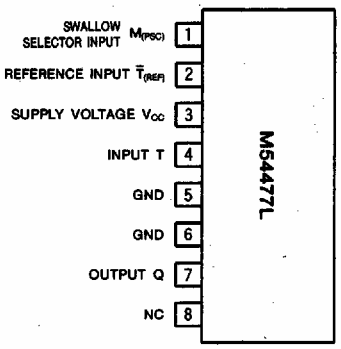
FUNCTION

The M54477L/AP, 1/128 or 1/136 prescaler, consists of a high speed frequency divider using an ECL circuit con-figuration. When the clocks are applied to the pulse swallow control input terminal M, the dividing ratio is 1/136, and when M is stable "H" or " L ", it is 1/128. This prescaler operates in the frequency range 80MHz~1000MHz.
The output is the ECL level (1.30Vp-p typ).

PIN CONFIGURATION (TOP VIEW)



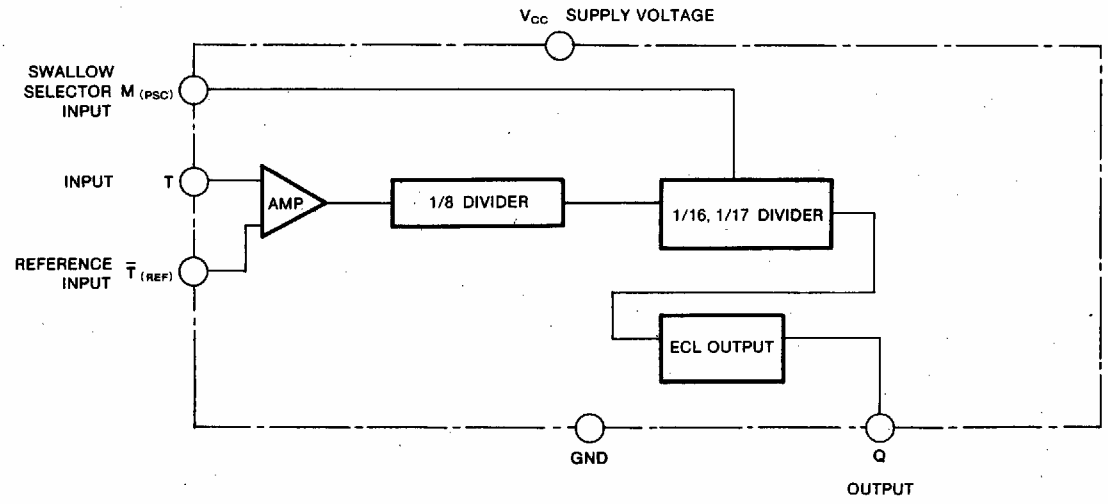
Outline 8P4



Outline 8P5

NC : No Connection

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

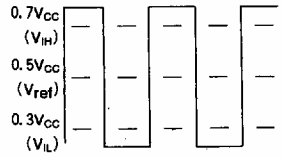
Symbol	Parameter	Ratings	Unit
V_{CC}	Supply voltage	−0.4~7	V
V_I	Input voltage	0~V_{CC}	V
Pd	Power dissipation	1.15	W
Topr	Operating temperature	−20~75	℃
Tstg	Storage temperature	−55~125	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃, V_{CC}=5.0V, unless otherwise noted)

Symbol	Parameter		Test conditions	Limits			Unit
				Min.	Typ.	Max.	
I_{CC}	Supply current		V_{CC}=5.5V, Ta=25℃		33	50	mA
V_{IN}	Input sensitivity		f_{IN}=80~1000MHz	−20		4	dBm
V_O	Output amplitude		f_{IN}=80~1000MHz, V_{CC}=4.5V	0.9	1.3	1.7	V_{P-P}
V_{IH}	When the dividing ratio is 1/136	High-level input voltage	M terminal ＊Note	0.7V_{CC}			V
V_{IL}		Low-level input voltage	M terminal ＊Note			0.3V_{CC}	V
I_{IH}		High-level input current	M terminal ＊Note V_{CC}=5.0V, V_{IL}=3.5V			50	μA
I_{IL}		High-level input current	M terminal ＊Note V_{CC}=5.0V, V_{IL}=1.5V			−150	μA

The typical values are at V_{CC}=5.0V, Ta=25℃.

＊Note : Input conditions of pulse swallow control input terminal M

Dividing ratio	Input conditions	Description
1/136		When the clocks are applied to the M terminal as shown in the left figure, the dividing ratio changes from 1/128 to 1/136.
1/128	V_{IL}=0V, V_{IH}=VCC or V_{IH}=OPEN	M terminal is stable at GND or V_{CC} or is opened.

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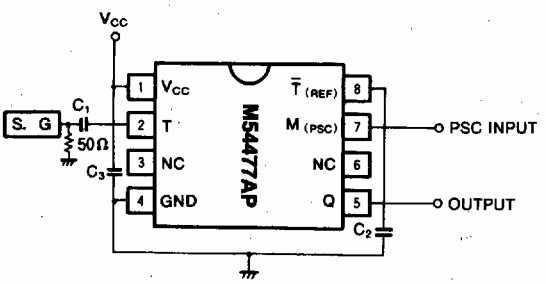
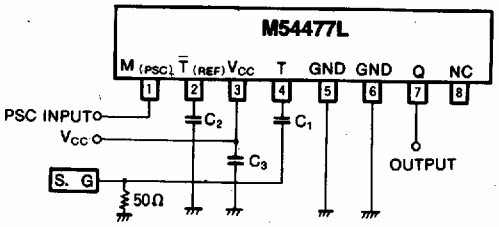
TEST CIRCUIT



$C_1 \simeq C_2 \simeq 1000_{pF}$, $C_3 \simeq 0.1\mu F$



$C_1 \simeq C_2 \simeq 1000_{pF}$, $C_3 \simeq 0.1\mu F$

TYPICAL CHARACTERISTICS

INPUT AMPLITUDE VS INPUT FREQUENCY