

1.8 V/2.5 V, 10 GHz ÷4 Clock Divider with CML Outputs

Multi-Level Inputs w/ Internal Termination

NB7V33M

Description

The NB7V33M is a 10 GHz ÷4 clock divider with CML outputs. It features multi-level inputs with internal termination and is designed for high-speed applications. The device is available in a 16-pin package.

A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week

Features

- 10 GHz ÷4 clock divider
- Multi-level inputs with internal termination
- CML outputs
- 16-pin package
- 1.8 V/2.5 V supply
- Low power consumption
- High speed
- Wide temperature range
- RoHS compliant

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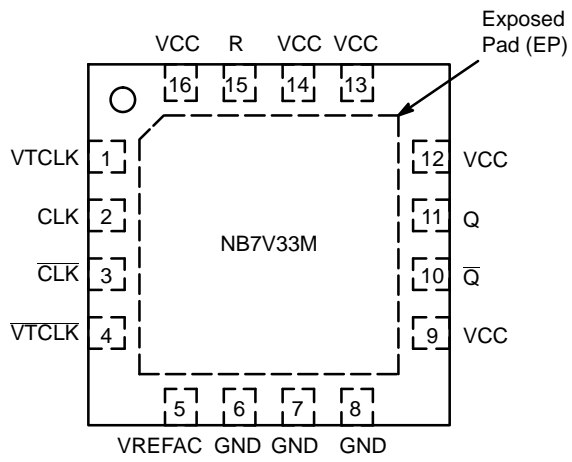


Figure 2. Pin Configuration (Top View)

Table 1. TRUTH TABLE

CLK	CLK
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NB7V33M



NB7V33M

Table 5. DC CHARACTERISTICS POSITIVE CML OUTPUT $V_{CC} = 1.71\text{ V to }2.625\text{ V}$; $GND = 0\text{ V}$; $T_A = -40^\circ\text{C to }85^\circ\text{C}$ (Note 5)

Symbol	Characteristic	Min	Typ	Max	Unit
POWER SUPPLY CURRENT					
I_{CC}	Power Supply Current (Inputs and Outputs Open) $V_{CC} = 2.5\text{ V} \pm 5\%$ $V_{CC} = 1.8\text{ V} \pm 5\%$		95 85	115 100	mA
CML OUTPUTS					
V_{OH}	Output HIGH Voltage (Note 6) $V_{CC} = 2.5\text{ V}$ $V_{CC} = 1.8\text{ V}$	$V_{CC} - 30$ 2470 1770	$V_{CC} - 10$ 2490 1790	V_{CC} 2500 1800	mV
V_{OL}	Output LOW Voltage (Note 6) $V_{CC} = 2.5\text{ V}$ $V_{CC} = 1.8\text{ V}$	$V_{CC} - 650$ 1850 $V_{CC} - 600$ 1200	$V_{CC} - 550$ 1950 $V_{CC} - 500$ 1300	$V_{CC} - 450$ 2050 $V_{CC} - 400$ 1400	mV
DIFFERENTIAL INPUTS DRIVEN SINGLE-ENDED (Note 7) (Figures 5 & 6)					
V_{th}	Input Threshold Reference Voltage Range (Note 8)	1050		$V_{CC} - 100$	mV
V_{IH}	Single-ended Input HIGH Voltage	$V_{th} + 100$		V_{CC}	mV
V_{IL}	Single-ended Input LOW Voltage	GND		$V_{th} - 100$	mV
V_{ISE}	Single-ended Input Voltage ($V_{IH} - V_{IL}$)	200		1200	mV
VREFAC					
V_{REFAC}	Output Reference Voltage @100 μA for Capacitor- Coupled Inputs, Only $V_{CC} = 2.5\text{ V}$ $V_{CC} = 1.8\text{ V}$	$V_{CC} - 850$ $V_{CC} - 750$		$V_{CC} - 500$ $V_{CC} - 450$	mV
DIFFERENTIAL INPUTS DRIVEN DIFFERENTIALLY (Figures 7 & 8) (Note 9)					
V_{IHD}	Differential Input HIGH Voltage	1100		V_{CC}	mV
V_{ILD}	Differential Input LOW Voltage	GND		$V_{CC} - 100$	mV
V_{ID}	Differential Input Voltage ($V_{IHD} - V_{ILD}$)	100		1200	mV
V_{CMR}	Input Common Mode Range (Differential Configuration, Note 10) (Figure 9)	1050		$V_{CC} - 50$	mV
I_{IH}	Input HIGH Current ($V_{Tx}/\sqrt{T_x}$ Open)	-150		150	μA
I_{IL}	Input LOW Current ($V_{Tx}/\sqrt{T_x}$ Open)	-150		150	μA
CONTROL INPUT (Reset pin)					
V_{IH}	Input HIGH Voltage for Control Pin	$V_{CC} - 200$		V_{CC}	mV
V_{IL}	Input LOW Voltage for Control Pin	GND		200	mV
I_{IH}	Input HIGH Current	-150		150	μA
I_{IL}	Input LOW Current	-150		150	μA
TERMINATION RESISTORS					
R_{TIN}	Internal Input Termination Resistor	45	50	55	Ω
R_{TOUT}	Internal Output Termination Resistor	45	50	55	Ω

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lpm.

- Input and output parameters vary 1:1 with V_{CC} .
- CML outputs loaded with 50- Ω

NB7V33M

Table 6. AC CHARACTERISTICS $V_{CC} = 1.71 \text{ V to } 2.625 \text{ V}$; $GND = 0 \text{ V}$; $T_A = -40^\circ\text{C to } 85^\circ\text{C}$ (Note 11)

Symbol	Characteristic	Min	Typ	Max	Unit
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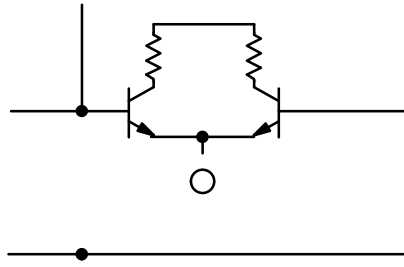
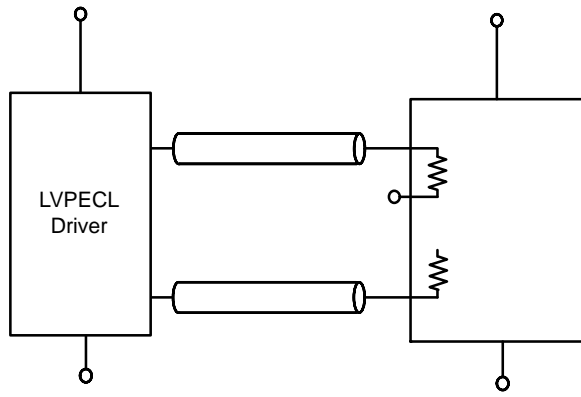


Figure 4. Input Structure

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DEVICE ORDERING INFORMATION

Device	Package	Shipping†
NB7V33MMNG	QFN-16 (Pb-Free)	123 Units / Rail
NB7V33MMNHTBG	QFN-16 (Pb-Free)	100 / Tape & Reel
NB7V33MMNTXG	QFN-16 (Pb-Free)	3,000 / Tape & Reel

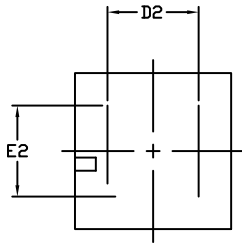
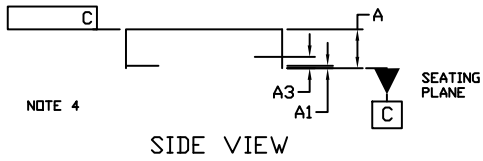
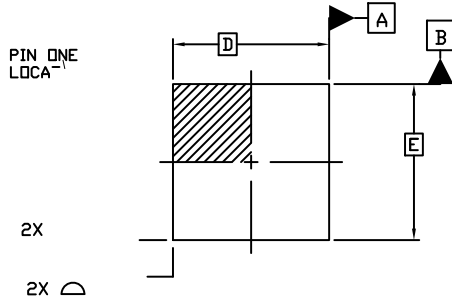
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging



1
SCALE 2:1

QFN16 3x3, 0.5P
CASE 485G
ISSUE G

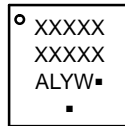
DATE 08 OCT 2021



NOTE 3

BOTTOM VIEW

GENERIC MARKING DIAGRAM*



- XXXXX = Specific Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- W = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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