

1.8 /2.5 , 10 2
D d M L

Multi-Level Inputs w/ Internal Termination

B7 32M

Description

The NB7V32M is a differential ÷2 Clock divider with asynchronous reset. The differential Clock inputs incorporate internal 50 Ω termination resistors and will accept LVPECL, CML and LVDS logic levels.

The NB7V32M produces a ÷2 output copy of an input Clock operating up to 10 GHz with minimal jitter.

The RESET Pin is asserted on the rising edge. Upon power up, the internal flip flops will attain a random state; the Reset allows for the synchronization of multiple NB7V32M’s in a system.

The 16 mA differential CML output provides matching internal 50 Ω termination which guarantees 400 mV output swing when externally receiver terminated with 50 Ω to V_{CC} .

The NB7V32M is the 1.8 V/2.5 V version of the NB7L32M (2.5 V/3.3 V) and is offered in a low profile 3 mm x 3 mm 16 pin QFN package. The NB7V32M is a member of the GigaComm family of high performance clock products. Application notes, models, and support documentation are available at www.onsemi.com.

A = Assembly Location
 L = Wafer Lot
 Y = Year

Features

- Maximum Input Clock Frequency > 10 GHz, typical
- Random Clock Jitter < 0.8 ps RMS
- 200 ps Typical Propagation Delay
- 35 ps Typical Rise and Fall Times
- Differential CML Outputs, 400 mV Peak to Peak, Typical
- Operating Range: V_{CC} = 1.71 V to 2.625 V with GND = 0 V
- Internal 50 Ω Input Termination Resistors
- QFN 16 Package, 3 mm x 3 mm
- 40 C to +85 C Ambient Operating Temperature
- These Devices are Pb Free and RoHS Compliant

NB7V32M

VCC R VCC VCC
16 15 14 13

VTCLK 12 VCC
CLK Q
 $\overline{\text{CLK}}$ $\overline{\text{Q}}$
VCC

5 6 7 8
VREFAC GND GND GND

NB7V32M

Table 3. ATTRIBUTES

Characteristics	Value
ESD Protection Human Body Model Machine Model	> 4 kV > 200 V
Moisture Sensitivity 16-QFN	Level 1
Flammability Rating Oxygen Index: 28 to 34	UL 94 V-0 @ 0.125 in
Transistor Count	164
Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test	

For additional information, see Application Note [AND8003/D](#).

Table 4. MAXIMUM RATINGS

Symbol	Parameter	Condition 1	Condition 2	Rating	Unit
V_{CC}	Positive Power Supply	GND = 0 V		3.0	V
V_{IN}	Positive Input Voltage	GND = 0 V		-0.5 to $V_{CC} + 0.5$ V	V
V_{INPP}	Differential Input Voltage D - \bar{D}			1.89	V
I_{IN}	Input Current Through R_T (50 Ω Resistor)			40	mA
I_{OUT}	Output Current Through R_T (50 Ω Resistor)			40	mA
I_{VREFAC}	VREFAC Sink/Source Current			1.5	mA
T_A	Operating Temperature Range			-40 to +85	C
T_{stg}	Storage Temperature Range			-65 to +150	C
θ_{JA}	Thermal Resistance (Junction-to-Ambient) (Note 3)	0 lfpm 500 lfpm	QFN-16 QFN-16	42 35	C/W C/W
θ_{JC}	Thermal Resistance (Junction-to-Case) (Note 3)		QFN-16	4	C/W
T_{sol}	Wave Solder Pb-Free			265	C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

3. JEDEC standard multilayer board – 2S2P (2 signal, 2 power) with 8 filled thermal vias under exposed pad.

NB7V32M

Table 5. DC CHARACTERISTICS POSITIVE CML OUTPUT $V_{CC} = 1.71\text{ V to }2.625\text{ V}$; $GND = 0\text{ V}$; $T_A = -40\text{ C to }85\text{ C}$ (Note 4)

Symbol	Characteristic	Min	Typ	Max	Unit
--------	----------------	-----	-----	-----	------

POWER SUPPLY CURRENT

I_{CC}	Power Supply Current (Inputs and Outputs Open)				mA
		$V_{CC} = 2.5\text{ V } 5\%$		90	
		$V_{CC} = 1.8\text{ V } 5\%$		80	90

CML OUTPUTS

V_{OH}	Output HIGH Voltage (Note 5)				
		$V_{CC} = 2.5\text{ V}$			
		$V_{CC} = 1.8\text{ V}$			

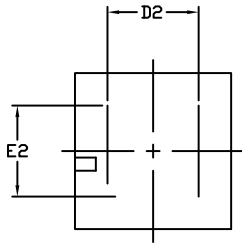
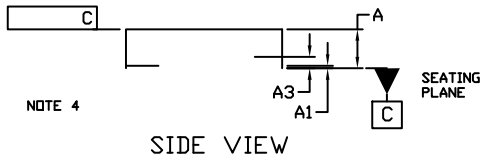
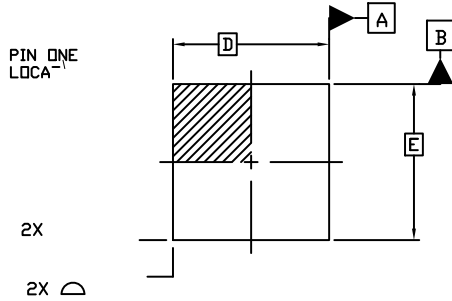
NB7V32M



1
SCALE 2:1

QFN16 3x3, 0.5P
CASE 485G
ISSUE G

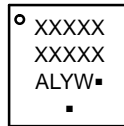
DATE 08 OCT 2021



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.

onsemi, **onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi**
