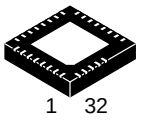
1.8 V Differential 2:1 M Inp t to 1.2 V/1.8 V 1:6 CML Clock/Data Fano t B ffer / Translator

Multi−Level Inputs w/ Internal Termination

NB7V586M

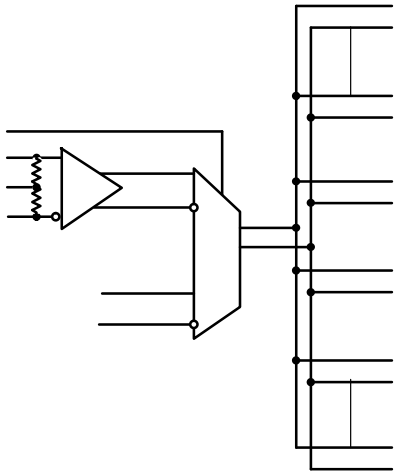


QFN32
MN SUFFIX
CASE 488AM

MARKING DIAGRAM*

*For additional marking information, refer to Application Note AND8002/D.

SIMPLIFIED LOGIC DIAGRAM



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

Description

Features

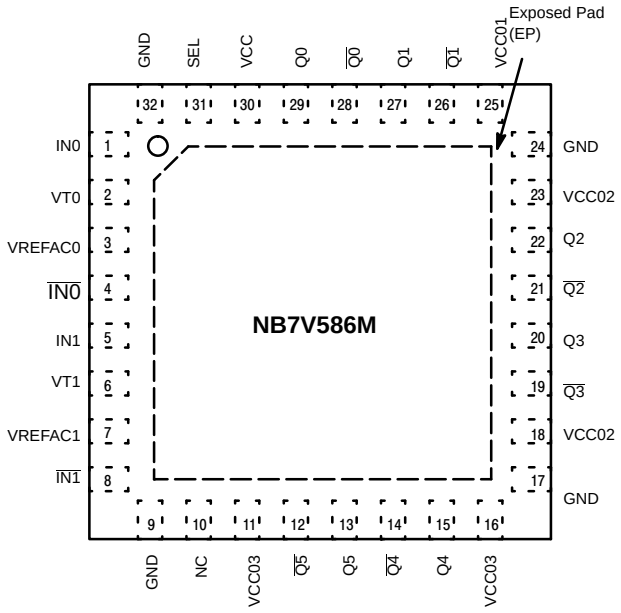


Figure 1. 32−Lead QFN Pinout (Top View)

Table 1. INPUT SELECT FUNCTION TABLE

SEL*	CLK Input Selected
0	IN0
1	IN1

Table 3. ATTRIBUTES

Characteristics		Value
ESD Protection	Human Body Model Machine Model	> 2 kV > 200 V
Input Pullup Resistor (R_{PU})		75 kΩ
Moisture Sensitivity (Note 3)		Level 1
Flammability Rating	Oxygen Index: 28 to 34	UL 94 V−0 @ 0.125 in
Transistor Count		308
Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test		

3. 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_{CCOx}	Positive Power Supply	GND = 0 V		3.0	V
V_{IO}	Input/Output Voltage	GND = 0 V	$-0.5 \le V_{IO} \le V_{CC} + 0.5$	-0.5 to $V_{CC} + 0.5$	V
V_{INPP}	Differential Input Voltage $\lvert IN_x - \overline{IN_x}\rvert$			1.89	V
I_{IN}	Input Current Through R_T (50 Ω Resistor)			±40	mA
I_{OUT}	Output Current	Continuous Surge		34 40	mA
$I_{VFREFAC}$	V_{REFAC} 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 4)	0 lfpm 500 lfpm	QFN−32 QFN−32	31 27	C/W C/W
θ_{JC}	Thermal Resistance (Junction−to−Case) (Note 4)	Standard Board	QFN−32	12	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

Table 5. DC CHARACTERISTICS − CML OUTPUT V_{CC} = 1.8 V ±5%, V_{CCO1} = 1.2 V ±5% or 1.8 V ±5%, V_{CCO2} = 1.2 V ±5% or 1.8 V ±5%, V_{CCO3} = 1.2 V ±5% or 1.8 V ±5%, GND = 0 V, T_A = −40 C to 85 C (Note 5)

Symbol	Characteristic	Min	Typ	Max	Unit
POWER SUPPLY CURRENT (Inputs and Outputs open)					
I_{CC}	Power Supply Current for V_{CC} (Inputs and Outputs Open)		75	125	mA
I_{CCO}	Power Supply Current for VCCOx (Inputs and Outputs Open)		95	105	
CML OUTPUTS (Note 6)					
V_{OH}	Output HIGH Voltage	V_{CCOx} – 40	V_{CCOx} – 20	V_{CCOx}	mV
	V_{CC} = 1.8 V, VCCOx = 1.8 V	1760	1780	1800	
	V_{CC} = 1.8 V, VCCOx = 1.2 V	1160	1180	1200	

Table 6. AC CHARACTERISTICS V_{CC} = 1.8 V ±5%, V_{CCO1} = 1.2 V ±5% or 1.8 V ±5%, V_{CCO2} = 1.2 V ±5% or 1.8 V ±5%, V_{CCO3} = 1.2 V ±5% or 1.8 V ±5%, GND = 0 V, T_A = −40 C to 85 C (Note 11)

Symbol	Characteristic	Min	Typ	Max	Unit
f_{MAX}	Maximum Input Clock Frequency, V_{OUTPP} ≥ 200 mV	4.0	6.0		GHz
$f_{DATAMAX}$	Maximum Operating Input Data Rate (PRBS23)	10			Gbps
V_{OUTPP}	Output Voltage Amplitude (See Figures 4, Note 15) f_{in} ≤ 4.0 GHz	200	330		mV
t_{PLH}, t_{PHL}	Propagation Delay to Output Differential @ 1 GHz, IN_x/INmV				

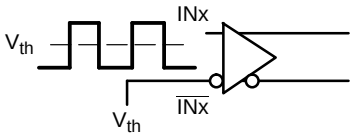


Figure 6. Differential Input Driven Single−Ended

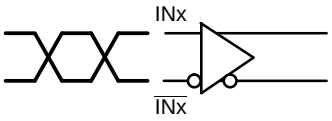


Figure 7. Differential Inputs Driven Differentially

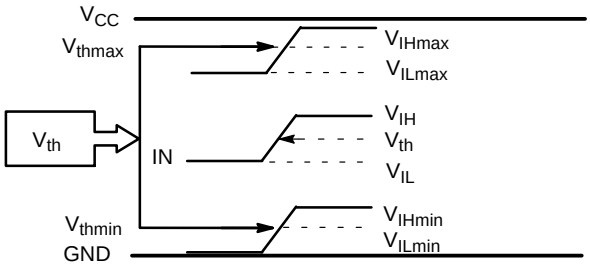


Figure 8. V_{th} Diagram

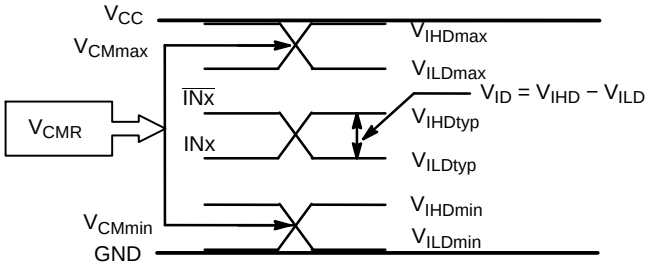
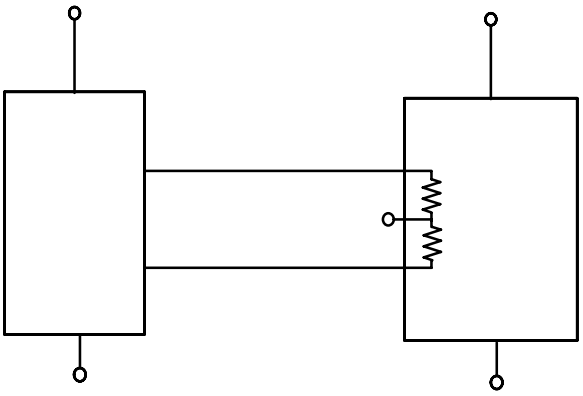


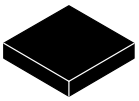
Figure 9. V_{CMR} Diagram



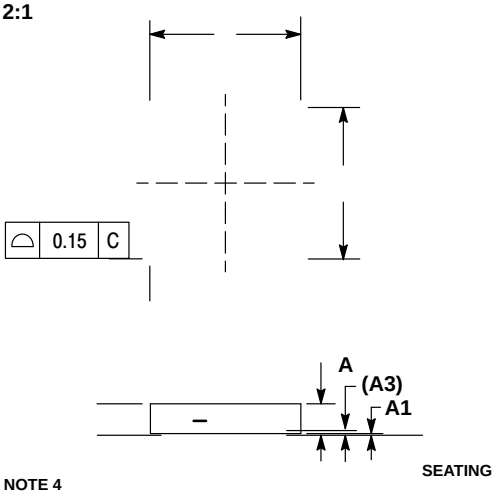
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

QFN32 5x5, 0.5P
CASE 488AM
ISSUE A

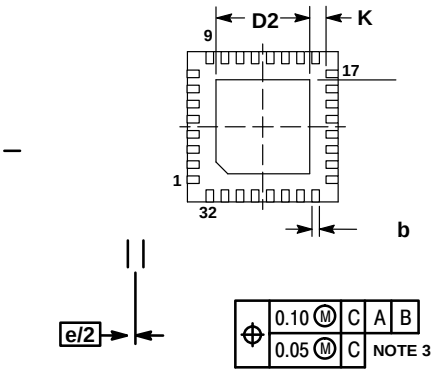
DATE 23 OCT 2013



SCALE 2:1

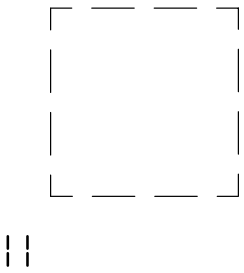


	MIN	MAX
A	0.80	1.00
A1	---	0.05
A3	0.20 REF	
b	0.18	0.30
D	5.00 BSC	
D2	2.95	3.25
E	5.00 BSC	
E2	2.95	3.25
e	0.50 BSC	
K	0.20	---
L	0.30	0.50
L1	---	0.15



XXXXXXXX
XXXXXXXX
AWLYYWW▪
▪Free indicator, “G” or

RECOMMENDED



PITCH

DIMENSION: MILLIMETERS

DOCUMENT NUMBER:	98AON20032D	