

阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

NB7N017M

3.3 V SiGe 8-Bit Dual Modulus Programmable Divider/Prescaler with CML Outputs

Description

The NB7N017M is a high speed 8-bit dual modulus programmable divider/prescaler with 16 mA CML outputs capable of switching at input frequencies greater than 3.5 GHz. The CML output structure contains internal 50 Ω source termination resistor to V_{CC} . The device generates 400 mV output amplitude with 50 Ω receiver resistor to V_{CC} . This I/O structure enables easy implementation of the NB7N017M in 50 Ω systems.

The differential inputs contain 50 Ω termination resistors to VT pads and all differential inputs accept RSECL, ECL, LVDS, LVCMOS, LVTTTL, and CML.

Internally, the NB7N017M uses a > 3.5 GHz 8-bit programmable down counter. A select pin, SEL, is used to select between two words, Pa[0:7] and Pb[0:7], that are stored in REGa and REGb respectively. Two parallel load pins, PLa and PLb, are used to load the level triggered programming registers, REGa and REGb, respectively. A differential clock enable, CE, pin is available.

The NB7N017M offers a differential output, TC. Terminal count output, TC, goes high for one clock cycle when the counter has reached the all zeros state. To reduce output phase noise, TC is retimed with the rising edge triggered latches.

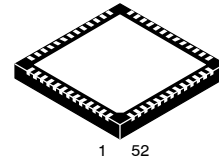
Features

- Maximum Input Clock Frequency > 3.5 GHz Typical
- Differential CLK Clock Input
- Differential CE Clock Enable Input
- Differential SEL Word Select Input
- 50 Ω Internal Input and Output Termination Resistors
- Differential TC Terminal Count Output
- All Outputs 16 mA CML with 50 Ω Internal Source Termination to V_{CC}
- All Single-Ended Control Pins CMOS and PECL/NECL Compatible
- Counter Programmed Using One of Two Single-Ended Words, Pa[0:7] and Pb[0:7], Stored in REGa and REGb
- REGa and REGb Implemented with Level Triggered Latch
- Compatible with Existing 3.3 V LVEP, EP, and SG Devices
- Ability to Program the Divider without Disturbing Current Settings
- Positive CML Output Operating Range:
 - ♦ $V_{CC} = 3.0 \text{ V to } 3.465 \text{ V}$ with $V_{EE} = 0 \text{ V}$
- Negative CML Output Operating Range:
 - ♦ $V_{CC} = 0 \text{ V}$ with $V_{EE} = -3.0 \text{ V to } -3.465 \text{ V}$
- V_{BB} Reference Voltage Output
- CML Output Level: 400 mV Peak-Peak Output with 50 Ω Receiver Resistor to V_{CC}
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant



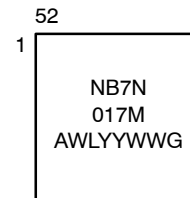
ON Semiconductor®

www.onsemi.com



QFN-52
MN SUFFIX
CASE 485M-01

MARKING DIAGRAM*



A = Assembly Site
WL = Wafer Lot
YY = Year
WW = Work Week
G = Pb-Free Package

*For additional marking information, refer to Application Note [AND8002/D](#).

ORDERING INFORMATION

Device	Package	Shipping†
NB7N017MMNG	QFN-52 (Pb-Free)	260 Tray JEDEC
NB7N017MMNR2G	QFN-52 (Pb-Free)	2000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

NB7N017M

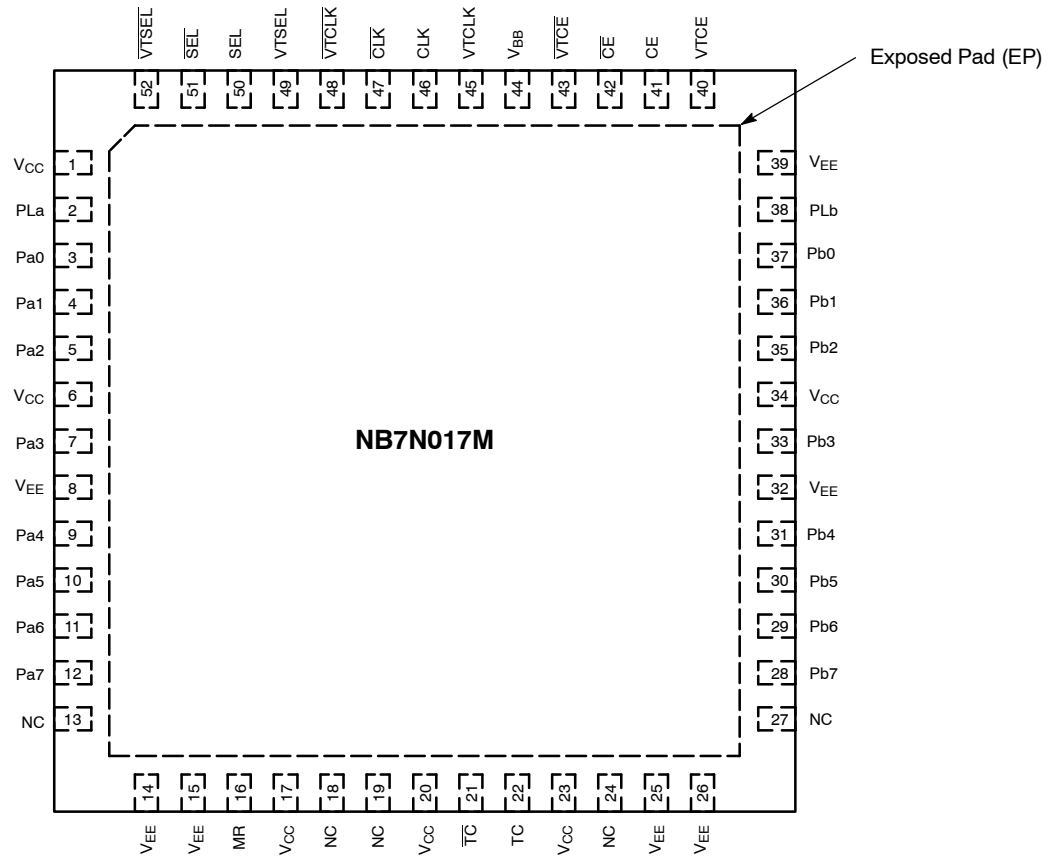


Figure 1. Pinout (Top View)

NB7N017M

Table 1. PIN DESCRIPTION

Pin Name	I/O	Default State	Single/Differential (Notes 1 and 2)	Description
CLK	ECL, CML, LVCMOS, LVDS, LVTTTL Input	-	Differential	Clock
CE	ECL, CML, LVCMOS, LVDS, LVTTTL Input	-	Differential	Clock Enable
MR	CMOS, ECL Input	Low	Single	Asynchronous Master Reset: Counter set to 0000 0000 to reload at next CLK pulse, REGa and REGb = 1111 1111 and TC = 1.
SEL	ECL, CML, LVCMOS, LVDS, LVTTTL Input	-	Differential	Divide Select
PLa, PLb	CMOS, ECL Input	Low	Single	Parallel Load Counter Latch from Pa[0:7], Pb[0:7] (Level Triggered)
TC	CML Output	-	Differential	Terminal Count, 16 mA CML output with 50 Ω Source Termination to V _{CC} (Note 5)
Pa[0:7], Pb[0:7]	CMOS, ECL Input	High	Single	Counter Program Pins. CMOS and PECL/NECL compatible Pa7 = MSB, Pb7 = MSB
V _{CC}	Power	-	-	Positive Supply
V _{EE}	Power	-	-	Negative Supply
VTCLK, \overline{VTCLK} , VTSEL, \overline{VTSEL} , VTCE, \overline{VTCE}	Termination	-	Differential	50 Ω Internal Input Termination Resistor (Note 6)
V _{BB}	Output	-	-	CMOS/ECL Reference Voltage Output
NC	N/A	-	-	No Connect (Note 4)
EP	-	-	-	Exposed Pad (Note 3)

1. All high speed inputs and outputs are differential to improve performance.
2. All single-ended inputs are CMOS and NECL/ECL compatible.
3. All V_{CC} and V_{EE} pins must be externally connected to external power supply voltage to guarantee proper device operation. The thermally exposed pad (EP) on package bottom (see case drawing) must be attached to a heat-sinking conduit. Exposed pad is bonded to the lowest voltage potential, V_{EE}.
4. The NC pins are electrically connected to the die and must be left open.
5. CML outputs require 50 Ω receiver termination resistor to V_{CC} for proper operation.
6. In the differential configuration when the input termination pins are connected to the common termination voltage, and if no signal is applied then the device will be susceptible to self-oscillation.

NB7N017M

Table 2. CE Truth Table

CE	Clock Status
LOW	Clock Disabled
HIGH	Clock Enabled

Table 3. SEL Truth Table

SEL	Active Register
LOW	REGa
HIGH	REGb

Table 4. Register Programming Values for Various Divide Ratios

Pa7/Pb7	Pa6/Pb6	Pa5/Pb5	Pa4/Pb4	Pa3/Pb3	Pa2/Pb2	Pa1/Pb1	Pa0/Pb0	Divide By
0	0	0	0	0	0	0	0	undefined
0	0	0	0	0	0	0	1	2
0	0	0	0	0	0	1	0	3
0	0	0	0	0	0	1	1	4
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
1	1	1	1	1	1	0	1	254
1	1	1	1	1	1	1	0	255
1	1	1	1	1	1	1	1	256

Table 5. Function Table

MR	Pla	PLb	SEL	CE	CLK	Function
H	X	X	X	X	X	Master Reset (Counter programmed to 0000 0000, REGa and REGb programmed to 1111 1111 and TC to 1)
L	H	L	X	X	X	REGa is transparent to Pa[0:7]
L	L	H	X	X	X	REGb is transparent Pb[0:7]
L	L	L	L	H	Z	Count; At TC pulse, load counter from REGa
L	L	L	H	H	Z	Count; At TC pulse, load counter from REGb
L	X	X	X	L	X	Hold

X – Don't Care

H – HIGH

L – LOW

Z – Rising Edge

NB7N017M

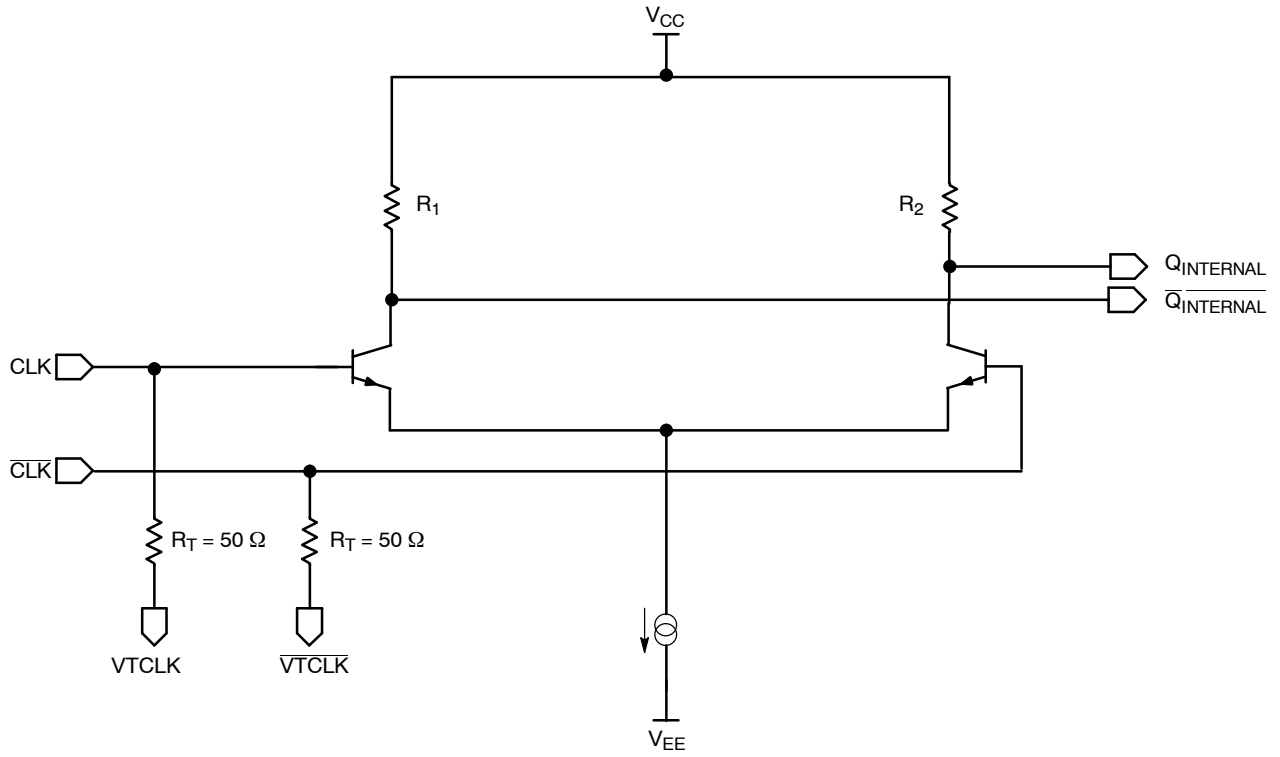


Figure 2. Input Structure

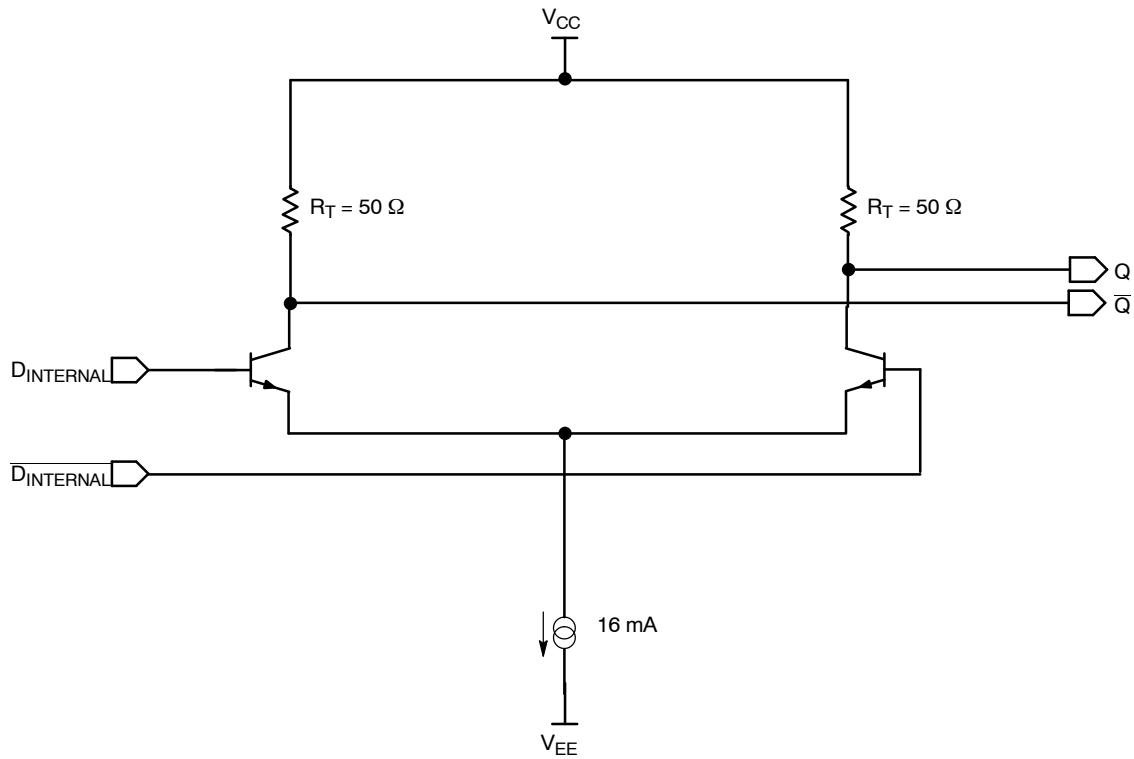


Figure 3. Output Structure

NB7N017M

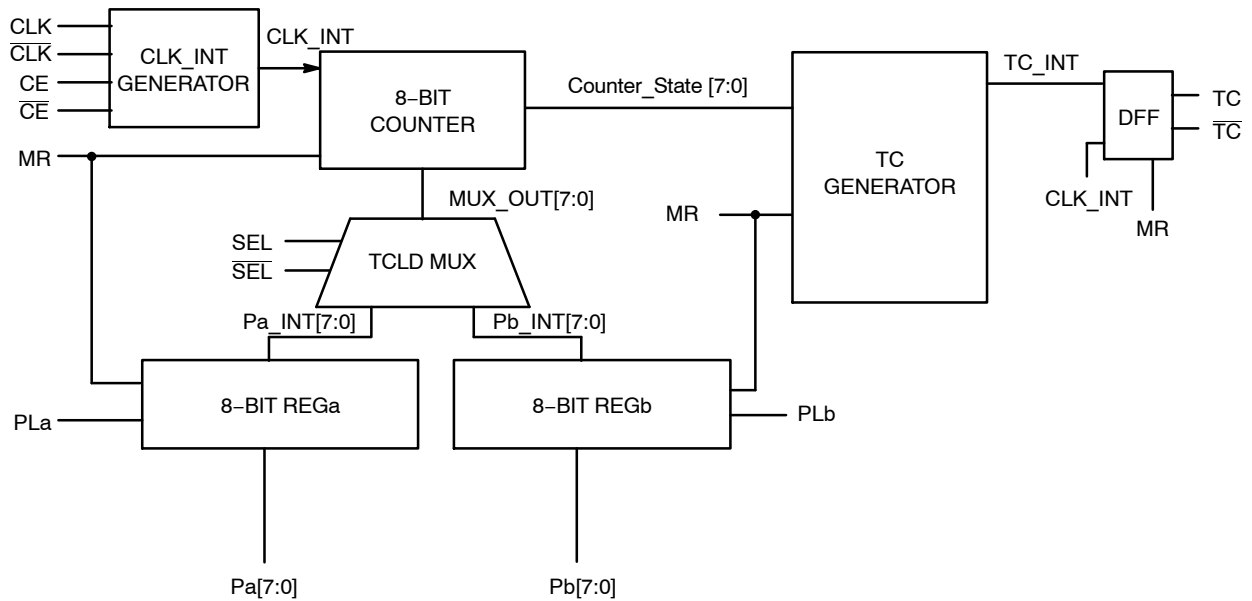


Figure 4. Block Diagram

Table 6. Interface Options

CLK INPUT interfacing options	CLK INPUT INTERFACING OPTIONS
CML	Connect VTCLK and \overline{VTCLK} to V_{CC}
LVDS	Connect VTCLK and \overline{VTCLK} together
AC-COUPLED	Bias VTCLK and \overline{VTCLK} Inputs within (VIHCMR) Common Mode Range
RSECL, PECL, NECL	Standard ECL Termination Techniques or connect VTCLK and \overline{VTCLK} to V_{TT}
LVTTL, LVCMOS	An Entered Voltage Should be Applied to the unused Complementary Differential Input. Nominal Voltage is 1.5 V for LVTTL and $V_{CC}/2$ for LVCMOS Inputs.

Table 7. ATTRIBUTES

Characteristic	Value
Internal Input Pulldown Resistor (MR, PLa, PLb)	75 k to V_{EE}
Internal Input Pullup Resistor (Pa[0:7], Pb[0:7])	75 k to V_{CC}
ESD Protection Human Body Model Machine Model Charged Device Model	> 500 V > 10 V > 2 kV
Moisture Sensitivity (Note 1)	Pb-Free Pkg
QFN-52	Level 2
Flammability Rating Oxygen Index: 28 to 34	UL 94 V-0 @ 0.125 in
Transistor Count	1914
Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test	

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

NB7N017M

Table 8. MAXIMUM RATINGS

Symbol	Parameter	Condition 1	Condition 2	Rating	Units
V _{CC}	Positive Power Supply	V _{EE} = 0 V		3.6	V
V _{EE}	Negative Power Supply	V _{CC} = 0 V		-3.6	V
V _I	Positive Input Negative Input	V _{EE} = 0 V V _{CC} = 0 V	V _I ≤ V _{CC} V _I ≥ V _{EE}	3.6 -3.6	V
V _{INPP}	Differential Input Voltage CLK - $\overline{\text{CLK}}$	V _{CC} - V _{EE} ≥ 2.8 V		2.8 V	V
I _{in}	Input Current through R _T (50 Ω Resistor)	Continuous Surge		25 50	mA
I _{out}	Output Current	Continuous Surge		25 50	mA
I _{BB}	V _{BB} Sink/Source			±0.5	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 1)	0 lfpm 500 lfpm	QFN-52	25 - 32 20 - 27	°C/W
θ _{JC}	Thermal Resistance (Junction-to-Case)	2S2P (Note 1)	QFN-52	4 - 15	°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.

1. JEDEC standard multilayer board – 2S2P (2 signal, 2 power).

NB7N017M

Table 9. DC CHARACTERISTICS, POSITIVE CML OUTPUT ($V_{CC} = 3.0\text{ V to }3.465\text{ V}$; $V_{EE} = 0\text{ V}$ (Note 3))

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_{CC}	Positive Power Supply Current	170	200	230	170	200	230	170	200	230	mA
V_{OH}	Output HIGH Voltage (Note 4)	V_{CC} -40	V_{CC} -10	V_{CC}	V_{CC} -40	V_{CC} -10	V_{CC}	V_{CC} -40	V_{CC} -10	V_{CC}	mV
V_{OL}	Output LOW Voltage (Note 4)		V_{CC} -400	V_{CC} -330		V_{CC} -400	V_{CC} -330		V_{CC} -400	V_{CC} -330	mV

DIFFERENTIAL INPUT DRIVEN SINGLE-ENDED (Figures 19, 21) (Note 5)

V_{th}	Input Threshold Reference Voltage Range (Note 1)	800		V_{CC} -75	800		V_{CC} -75	800		V_{CC} -75	mV
V_{IH}	Single-Ended Input HIGH Voltage	1200		V_{CC}	1200		V_{CC}	1200		V_{CC}	mV
V_{IL}	Single-Ended Input LOW Voltage	V_{EE}		V_{CC} -150	V_{EE}		V_{CC} -150	V_{EE}		V_{CC} -150	mV
V_{ISE}	Single-Ended Input Voltage ($V_{IH} - V_{IL}$)	150		2500	150		2500	150		2500	mV

DIFFERENTIAL INPUTS DRIVEN DIFFERENTIALLY (Figures 20, 22) (Note 6)

V_{IHD}	Differential Input HIGH Voltage	1200		V_{CC}	1200		V_{CC}	1200		V_{CC}	mV
V_{ILD}	Differential Input LOW Voltage	V_{EE}		V_{CC} -100	V_{EE}		V_{CC} -100	V_{EE}		V_{CC} -100	mV
V_{CMR}	Input Common Mode Range (Differential Cross-Point Voltage) (Note 2)	800		V_{CC} -50	800		V_{CC} -50	800		V_{CC} -50	mV
V_{ID}	Differential Input Voltage	100		2500	100		2500	100		2500	mV
V_{BB}	Output Voltage Reference @ -100 μA	1840	1970	2100	1840	1960	2100	1820	1970	2100	mV
R_{TIN}	Internal Input Termination Resistor	45	50	55	45	50	55	45	50	55	Ω
R_{TOUT}	Internal Output Resistor	45	50	55	45	50	55	45	50	55	Ω
I_{IH}	Input HIGH Current CLK, CE, SEL MR, PLa, PLb Pa[0:7], Pb[0:7]	0 0 -50	7 30 -10	15 60 0	0 0 -50	7 30 -10	15 60 0	0 0 -50	7 30 -10	15 60 0	μA
I_{IL}	Input LOW Current CLK, CE, SEL MR, PLa, PLb Pa[0:7], Pb[0:7]	-0.5 0 -50	 20 -20	0.5 60 0	-0.5 0 -50	 20 -20	0.5 60 0	-0.5 0 -50	 20 -20	0.5 60 0	μA

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained airflow greater than 500 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- V_{th} is applied to the complementary input when operating in single-ended mode. $V_{th} = (V_{IH} - V_{IL})/2$.
- V_{CMR} minimum varies 1:1 with V_{EE} , V_{CMR} maximum varies 1:1 with V_{CC} . The V_{CMR} range is referenced to the most positive side of the differential input signal.
- Input and output parameters vary 1:1 with V_{CC} . V_{EE} can vary +0.925 V to -0.165 V.
- All loading with 50 Ω to V_{CC} .
- V_{th} , V_{IH} , V_{IL} and V_{ISE} parameters must be complied with simultaneously.
- V_{IHD} , V_{ILD} , V_{ID} and V_{CMR} parameters must be complied with simultaneously.

NB7N017M

Table 10. DC CHARACTERISTICS, NEGATIVE CML OUTPUT ($V_{CC} = 0\text{ V}$; $V_{EE} = -3.465\text{ V to }-3.0\text{ V}$ (Note 3))

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_{CC}	Positive Power Supply Current	170	200	230	170	200	230	170	200	230	mA
V_{OH}	Output HIGH Voltage (Note 4)	V_{CC} -40	V_{CC} -10	V_{CC}	V_{CC} -40	V_{CC} -10	V_{CC}	V_{CC} -40	V_{CC} -10	V_{CC}	mV
V_{OL}	Output LOW Voltage (Note 4)		V_{CC} -400	V_{CC} -330		V_{CC} -400	V_{CC} -330		V_{CC} -400	V_{CC} -330	mV

DIFFERENTIAL INPUT DRIVEN SINGLE-ENDED (Figures 19, 21) (Note 5)

V_{th}	Input Threshold Reference Voltage Range (Note 1)	V_{EE} +800		V_{CC} -75	V_{EE} +800		V_{CC} -75	V_{EE} +800		V_{CC} -75	mV
V_{IH}	Single-Ended Input HIGH Voltage	V_{EE} +1200		V_{CC}	V_{EE} +1200		V_{CC}	V_{EE} +1200		V_{CC}	mV
V_{IL}	Single-Ended Input LOW Voltage	V_{EE}		V_{CC} -150	V_{EE}		V_{CC} -150	V_{EE}		V_{CC} -150	mV
V_{ISE}	Single-Ended Input Voltage ($V_{IH} - V_{IL}$)	150		2500	150		2500	150		2500	mV

DIFFERENTIAL INPUTS DRIVEN DIFFERENTIALLY (Figures 20, 22) (Note 6)

V_{IHD}	Differential Input HIGH Voltage	V_{EE} +1200		V_{CC}	V_{EE} +1200		V_{CC}	V_{EE} +1200		V_{CC}	mV
V_{ILD}	Differential Input LOW Voltage	V_{EE}		V_{CC} -100	V_{EE}		V_{CC} -100	V_{EE}		V_{CC} -100	mV
V_{CMR}	Input Common Mode Range (Differential Cross-Point Voltage) (Note 2)	V_{EE} +800		V_{CC} -50	V_{EE} +800		V_{CC} -50	V_{EE} +800		V_{CC} -50	mV
V_{ID}	Differential Input Voltage	100		2500	100		2500	100		2500	mV
V_{BB}	Output Voltage Reference @ -100 μA	-1460	-1330	-1200	-1460	-1330	-1200	-1460	-1330	-1200	mV
R_{TIN}	Internal Input Termination Resistor	45	50	55	45	50	55	45	50	55	Ω
R_{TOUT}	Internal Output Resistor	45	50	55	45	50	55	45	50	55	Ω
I_{IH}	Input HIGH Current CLK, CE, SEL MR, PLa, PLb Pa[0:7], Pb[0:7]	0 0 -50	7 30 -10	15 60 0	0 0 -50	7 30 -10	15 60 0	0 0 -50	7 30 -10	15 60 0	μA
I_{IL}	Input LOW Current CLK, CE, SEL MR, PLa, PLb Pa[0:7], Pb[0:7]	-0.5 0 -50	 20 -20	0.5 60 0	-0.5 0 -50	 20 -20	0.5 60 0	-0.5 0 -50	 20 -20	0.5 60 0	μA

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained airflow greater than 500 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

- V_{th} is applied to the complementary input when operating in single-ended mode. $V_{th} = (V_{IH} - V_{IL})/2$.
- V_{CMR} minimum varies 1:1 with V_{EE} , V_{CMR} maximum varies 1:1 with V_{CC} . The V_{CMR} range is referenced to the most positive side of the differential input signal.
- Input and output parameters vary 1:1 with V_{CC} .
- All loading with 50 Ω to V_{CC} .
- V_{th} , V_{IH} , V_{IL} and V_{ISE} parameters must be complied with simultaneously.
- V_{IHD} , V_{ILD} , V_{ID} and V_{CMR} parameters must be complied with simultaneously.

NB7N017M

Table 11. AC CHARACTERISTICS ($V_{CC} = 0\text{ V}$; $V_{EE} = -3.465\text{ V}$ to -3.0 V or $V_{CC} = 3.0\text{ V}$ to 3.465 V ; $V_{EE} = 0\text{ V}$ (Note 1))

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OUTPP}	Output Voltage Amplitude @ $\div 2$ Mode $f_{in} = 3.5\text{ GHz}$ (See Figure 5)	300	400		300	400		300	400		mV
t_{PLH} , t_{PHL}	Propagation Delay to Output Differential CLK to TC MR to TC	435 100		555 500	455 100		575 500	475 100		595 500	ps
t_{JITTER}	RMS Random Clock Jitter (See Figure 5) $f_{in} = 3.5\text{ GHz}$			2.5			3.0			3.0	ps
V_{INPP}	Input Voltage Swing/Sensitivity (Differential Configuration) (Note 2)	100		2500	100		2500	100		2500	mV
t_r t_f	Output Rise/Fall Times (20% – 80%)	25	45	65	25	45	65	25	45	65	ps
t_s	Setup Time (Figure 23) Pa[7:0] to PLa Pb[7:0] to PLb CE to CLK SEL to CLK PLa to CLK PLb to CLK Pa[7:0] to CLK Pb[7:0] to CLK	3750 4500 400 300 2500 3250 4750 3000	2500 2000 30 120 2000 2750 3500 2500		3750 4500 400 300 2500 3250 4750 3000	2500 2000 30 120 2000 2750 3500 2500		3750 4500 400 300 2500 3250 4750 3000	2500 2000 30 120 2000 2750 3500 2500		ps
t_H	Hold Time (Figure 23) PLa to Pa[7:0] PLb to Pb[7:0] CLK to CE CLK to SEL CLK to PLa CLK to PLb CLK to PLb[7:0] CLK to PLb[7:0]	-1500 -1250 450 0 -1750 -2250 -2250 -2000	-2700 -1900 40 -110 -1900 -2700 -3200 -2500		-1500 -1250 450 0 -1750 -2250 -2250 -2000	-2700 -1900 40 -110 -1900 -2700 -3200 -2500		-1500 -1250 450 0 -1750 -2250 -2250 -2000	-2700 -1900 40 -110 -1900 -2700 -3200 -2500		ps
t_{SKEW}	Device-to-Device (Note 3)		40	75		40	75		40	75	ps
t_{PW}	Minimum Pulse Width MR	250	85		250	85		250	85		ps
t_{RR}	Reset Recovery MR to CLK/CLK	3000	2500		3000	2500		3000	2500		ps

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 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

1. Measured using a 400 mV source, 50% duty cycle clock source at $f_{in} = 1\text{ GHz}$ unless stated otherwise. All loading with $50\ \Omega$ to V_{CC} . Input edge rates 40 ps (20% – 80%).
2. V_{INPP} (MAX) cannot exceed $V_{CC} - V_{EE}$.
3. Device-to-Device skew for identical transitions at identical V_{CC} levels.

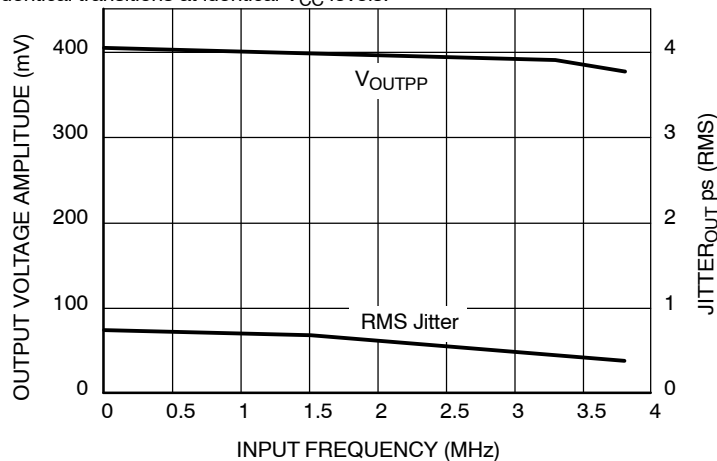


Figure 5. Output Voltage Amplitude (V_{OUTPP}) / RMS Jitter vs. Input Frequency (f_{in}) @ Ambient Temperature (Typical)

NB7N017M

Application Information

The differential inputs can accept LVPECL, CML, LVDS, LVC MOS and LVTTTL signal levels. The differential input amplitude range is from 100 mV to

2500 mV, where the input high voltage, V_{IH} , can range from 1.2 V to V_{CC} ; see DC Characteristics Table 9. Examples of input interfaces are illustrated below in a $50\ \Omega$ environment ($Z = 50\ \Omega$)

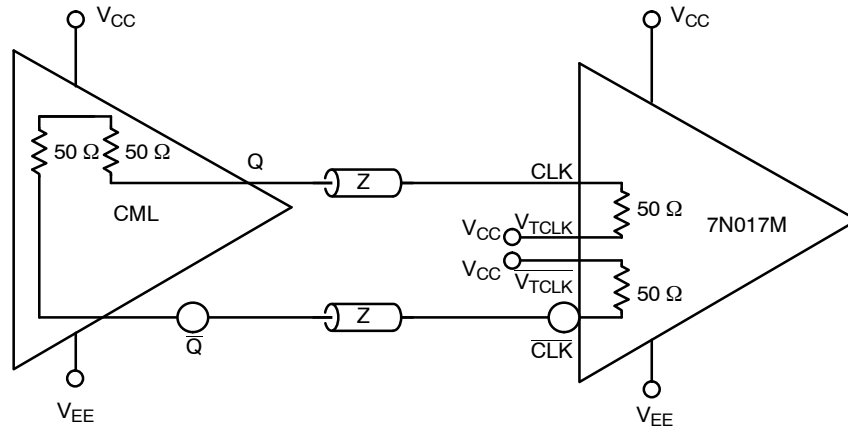


Figure 6. CML Interface

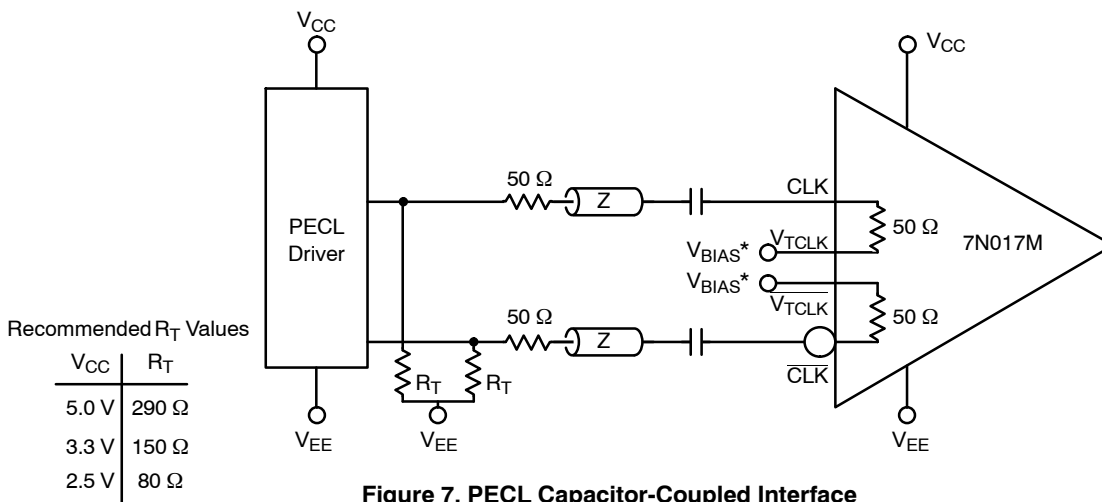


Figure 7. PECL Capacitor-Coupled Interface

* V_{BIAS} is within V_{CMR} Range.

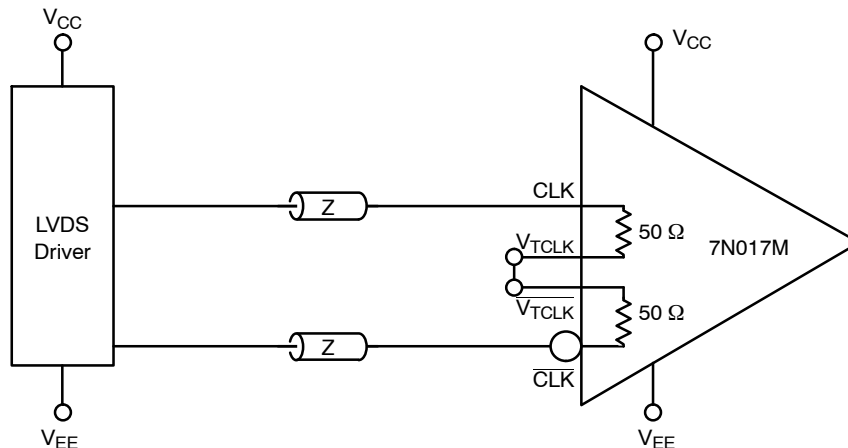


Figure 8. LVDS Interface

NB7N017M

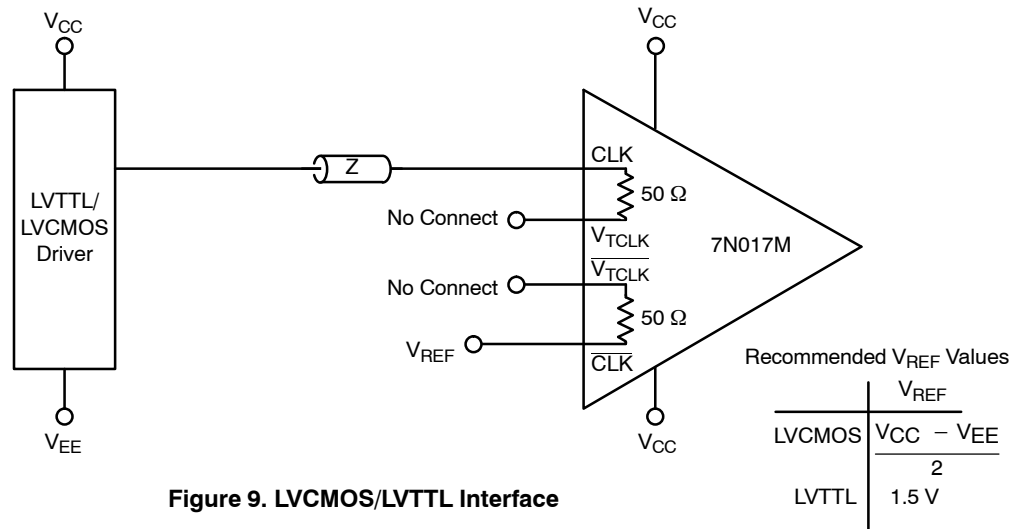


Table 12. OPERATION TABLE

MR	Pa	PLa	Pb	PLb	SEL	CE	CLK	CLK_INT	TC_INT	TC
1	XXXXXXXX	x	XXXXXXXX	X	X	X	X	X	X	X
0	00000101	H	00000100	H	X	H	L	H	H	H
0	00000101	H	00000100	H	X	H	L	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X

X - Don't Care
H - HIGH
L - LOW

NB7N017M

Table 12. OPERATION TABLE

MR	Pa	PLa	Pb	PLb	SEL	CE	CLK	CLK_INT	TC_INT	TC
0	XXXXXXXX	L	XXXXXXXX	L	H	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	L	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	L	L	L	X	X
0	0000010	H	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	00000001	H	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	H	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	L	H	H	H	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	L	L	X	X
0	XXXXXXXX	L	XXXXXXXX	L	X	H	H	H	X	X

X - Don't Care
H - HIGH
L - LOW

NB7N017M

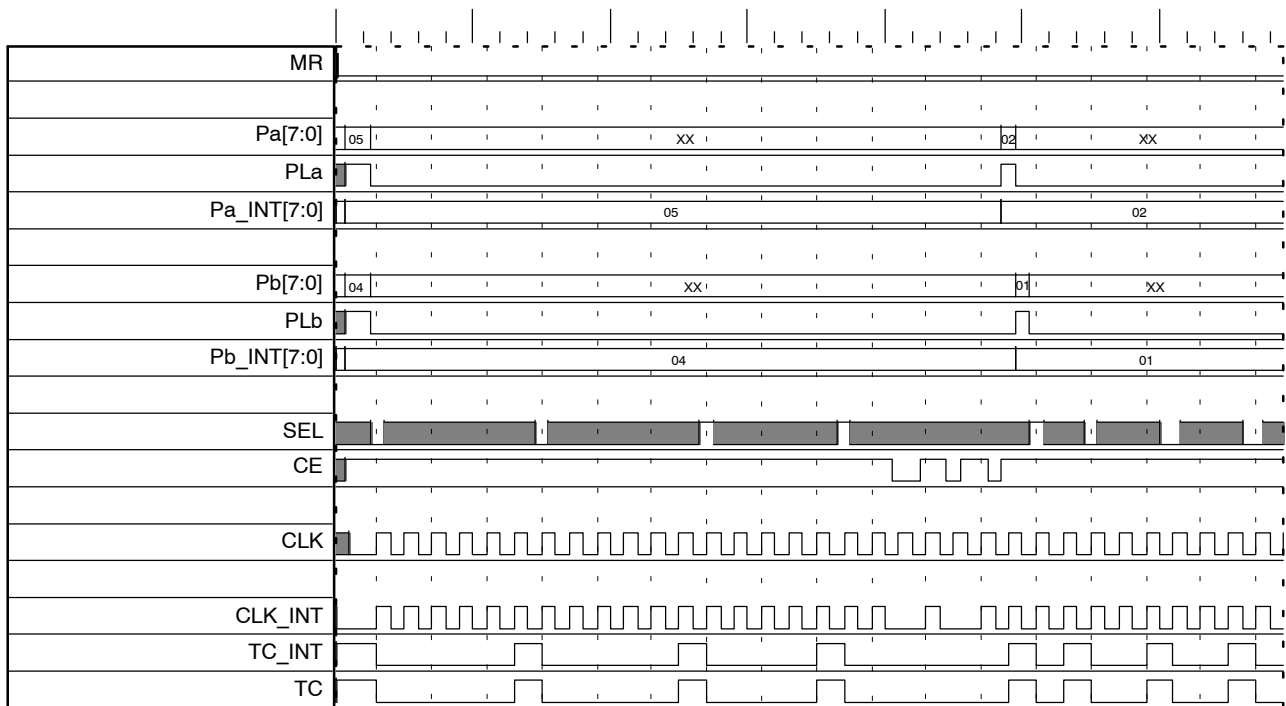


Figure 10. Device Timing Diagram for Table 12

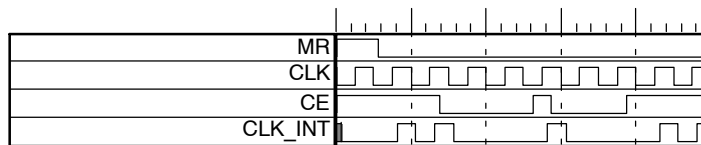
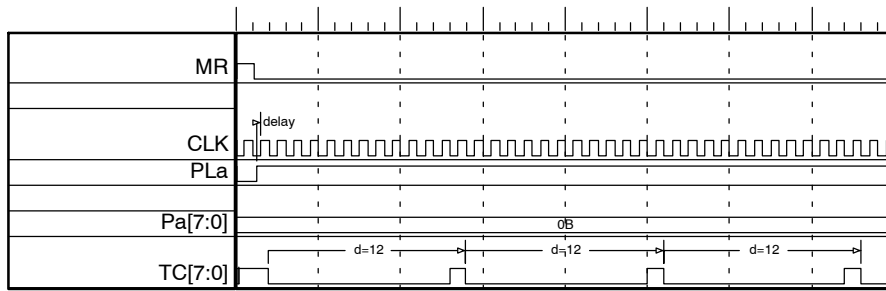
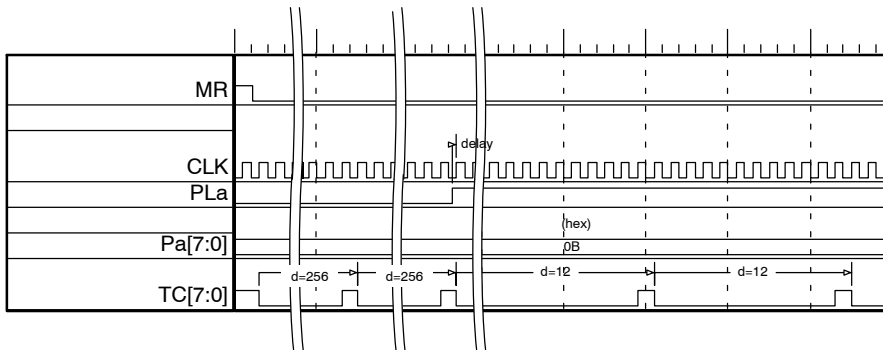


Figure 11. Timing Diagram for CE Input

NB7N017M



**Figure 12. Timing Diagram for PLa / PLb Inputs
(SEL is Low)**

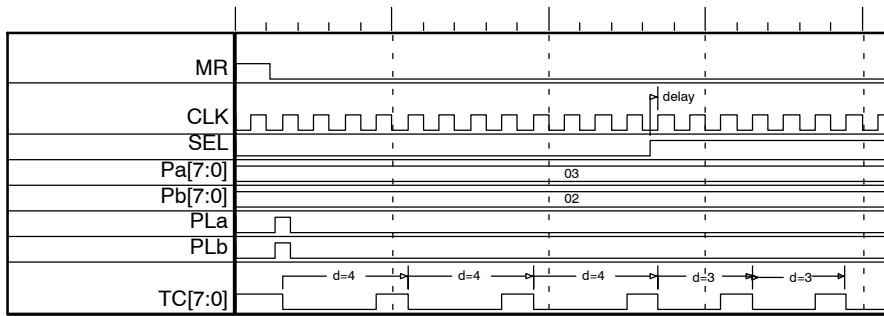


**Figure 13. Timing Diagram for PLa / PLb Inputs
(Before Critical Rising Edge of CLK)
(SEL is Low)**

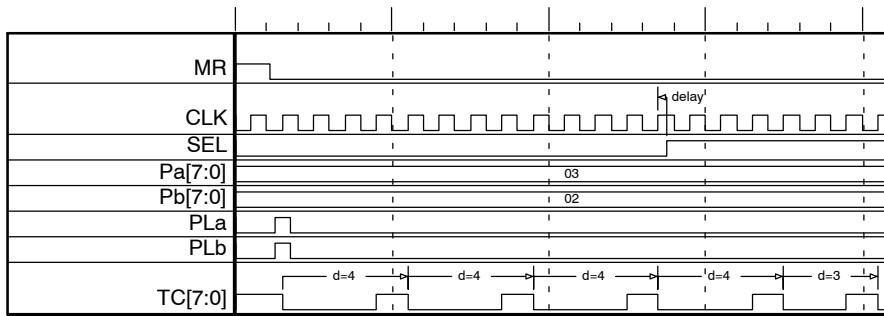


**Figure 14. Timing Diagram for PLa / PLb Inputs
(After Critical Rising Edge of CLK)
(SEL is Low)**

NB7N017M



**Figure 15. Timing Diagram for SEL Input
(Before Critical Rising Edge of CLK)**



**Figure 16. Timing Diagram for SEL Input
(After Critical Rising Edge of CLK)**

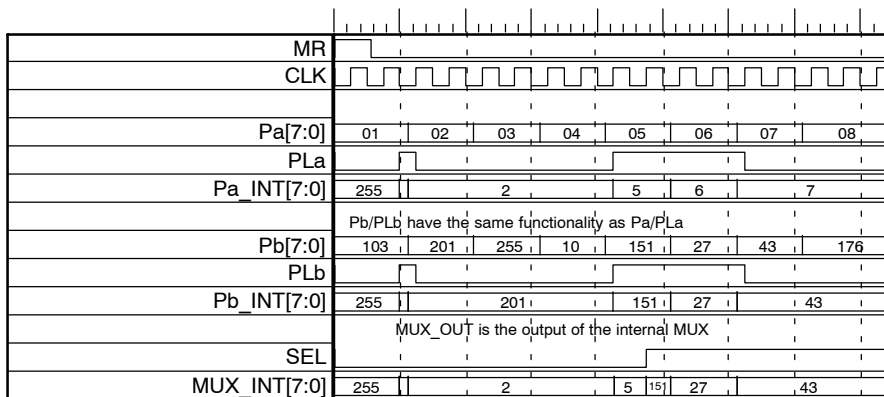


Figure 17. Timing Diagram Relating PLa, PLb, Pa(0:7), Pb(0:7)

NB7N017M

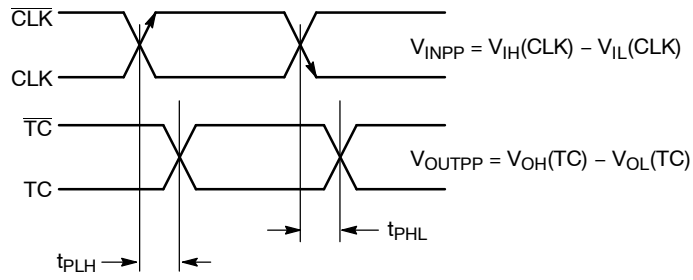


Figure 18. AC Reference Measurement

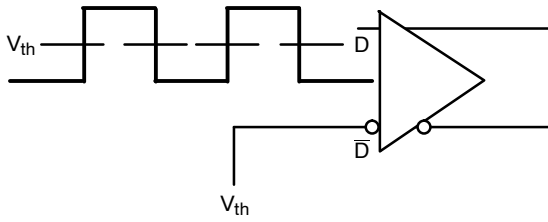


Figure 19. Differential Input Driven Single-Ended

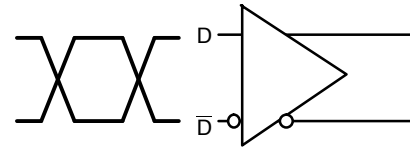


Figure 20. Differential Inputs Driven Differentially

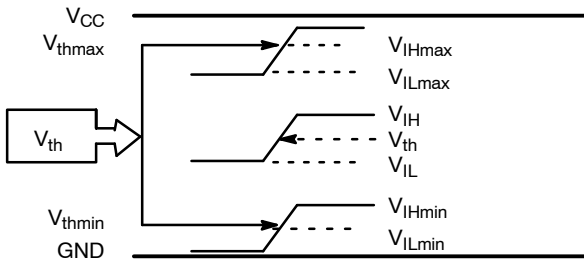


Figure 21. V_{th} Diagram

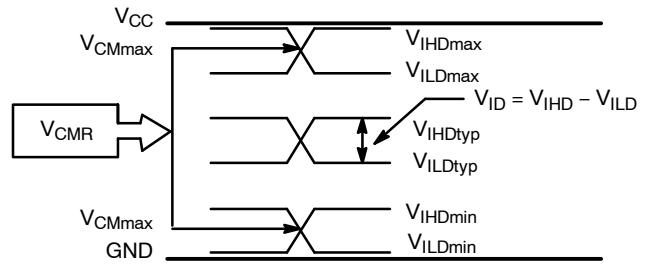


Figure 22. V_{CMR} Diagram

NB7N017M

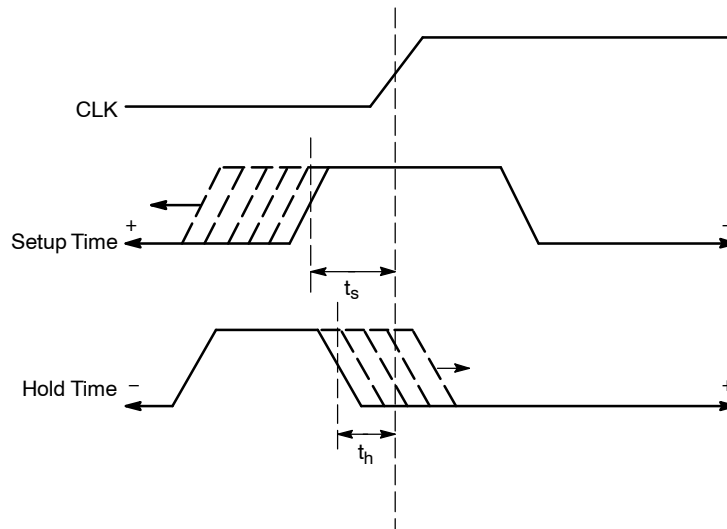


Figure 23. Setup and Hold Time

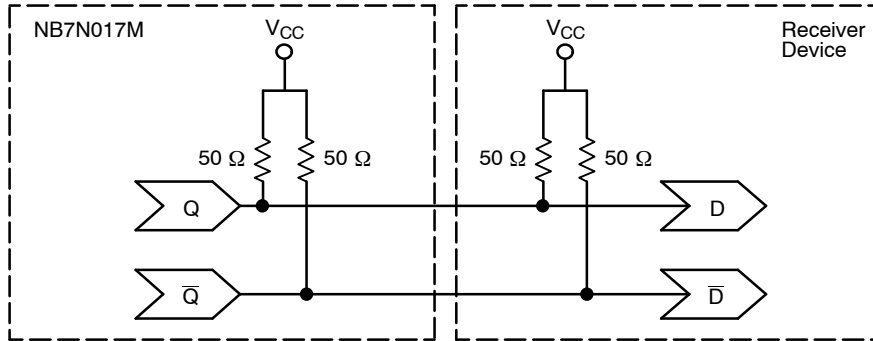
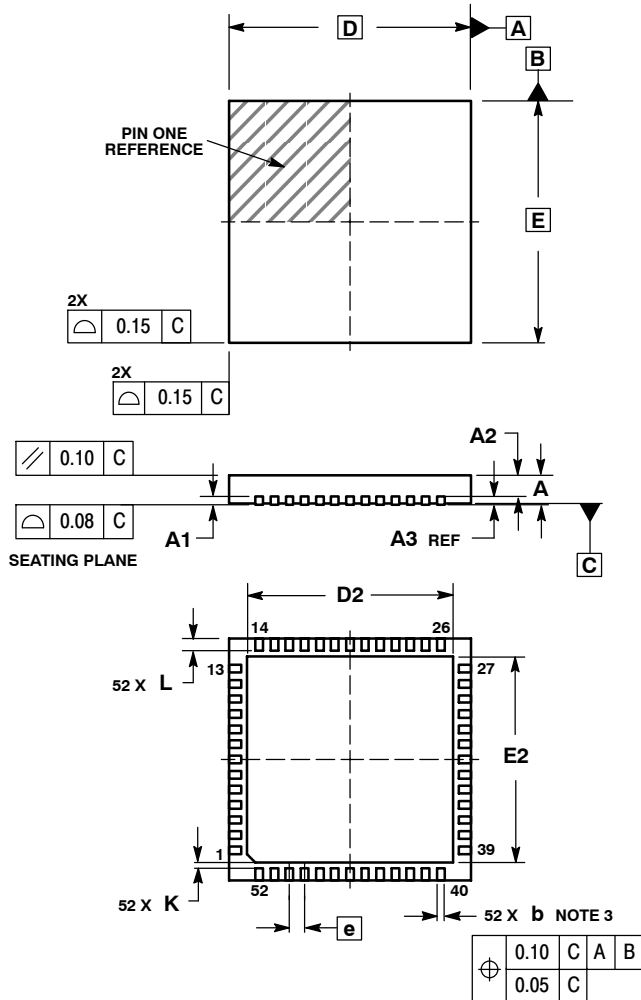


Figure 24. Typical Termination for 16 mA Output Drive and Device Evaluation

NB7N017M

PACKAGE DIMENSIONS

QFN-52 8x8, 0.5P
CASE 485M-01
ISSUE C

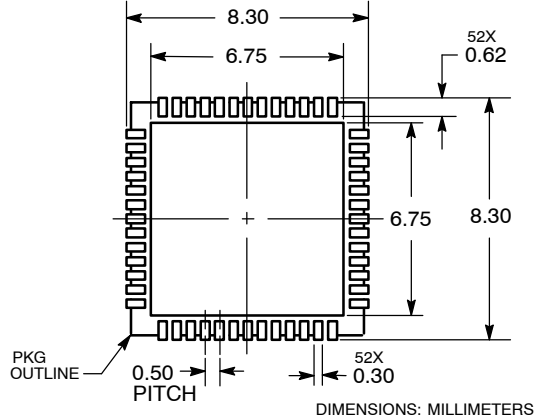


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.25 AND 0.30 MM FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A2	0.60	0.80
A3	0.20 REF	
b	0.18	0.30
D	8.00 BSC	
D2	6.50	6.80
E	8.00 BSC	
E2	6.50	6.80
e	0.50 BSC	
K	0.20	---
L	0.30	0.50

RECOMMENDED SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, [SOLDDERM/D](#).

ECLinPS is a registered trademark of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries.

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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 ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative