3.3 V 3.2 G b/ D D C /D 2 2 C S CML O ' I T

NB4N840M

Description

The NB4N840M is a high−bandwidth fully differential dual 2 x 2 crosspoint switch with CML inputs/outputs that is suitable for applications such as SDH/SONET, DWDM, Gigabit Ethernet and high speed switching. Fully differential design techniques are used to minimize jitter accumulation, crosstalk, and signal skew, which make this device ideal for loop−through and protection channel switching applications.

Internally terminated differential CML inputs accept AC−coupled LVPECL (Positive ECL) or direct coupled CML signals. By providing internal 50 Ω input and output termination resistor, the need for external components is eliminated and interface reflections are minimized. Differential 16 mA CML outputs provide matching internal 50 Ω terminations, and 400 mV output swings when externally terminated, 50 Ω to V_{CC}.

Single−ended LVCMOS/LVTTL SEL inputs control the routing of the signals through the crosspoint switch which makes this device configurable as 1:2 fan−out, repeater or 2 x 2 crosspoint switch. The device is housed in a low profile 5 x 5 mm 32−pin QFN package.

Features

- Plug−in compatible to the MAX3840 and SY55859L
- Maximum Input Clock Frequency 2.7 GHz
- Maximum Input Data Frequency 3.2 Gb/s
- 225 ps Typical Propagation Delay
-

Table 1. TRUTH TABLE

SELA0/SELB0	SELA1/SELB1	ENA0/ENA1	ENB0/ENB1	QA0/QB0	QA1/QB1	Function
L	L	H	H	DA0/DB0	DA0/DB0	1:2 Fanout
L	H	H	H	DA0/DB0	DA1/DB1	Quad Repeater
H	L	H	H	DA1/DB1	DA0/DB0	Crosspoint Switch
H	H	H	H	DA1/DB1	DA1/DB1	1:2 Fanout
X	X	L	L	Disable/Power Down	Disable/Power Down	No output (@ V_{CC})

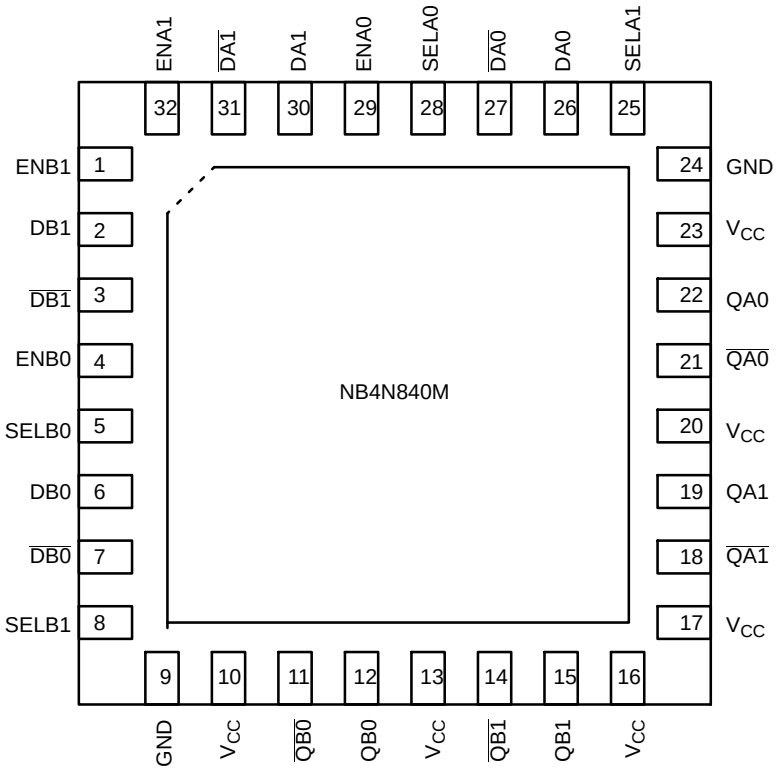


Figure 2. Pin Configuration (Top View)

Table 2. PIN DESCRIPTION

Pin	Name	I/O	Description
1	ENB1	LVTTL	

Table 3. ATTRIBUTES

Characteristics		Value
ESD Protection	Human Body Model Machine Model	> 2000 V > 110 V
Moisture Sensitivity (Note 1)	QFN−32	Level 1
Flammability Rating	Oxygen Index: 28 to 34	UL 94 V−0 @ 0.125 in
Transistor Count		380
Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test		

1. For additional information, refer to Application Note AND8003/D.

Table 4. MAXIMUM RATINGS

Symbol	Parameter	Condition 1	Condition 2	Rating	Unit
V_{CC}	Positive Power Supply	GND = 0 V			

Table 5. DC CHARACTERISTICS, CLOCK INPUTS, CML OUTPUTS V_{CC} = 3.0 V to 3.6 V, T_A = −40°C to +85°C

Symbol	Characteristic	Min	Typ	Max	Unit
I_{CC}	Power Supply Current (All outputs enabled)		130	170	mA
$Vout_{diff}$	CML Differential Output Swing (Note 4, Figures 5 and 12)	640	800	1000	mV
V_{CMR} (Note 6)	CML Output Common Mode Voltage (Loaded 50 Ω to V_{CC})		V_{CC} − 200		mV
	CML Single−Ended Input Voltage Range	V_{CC} − 800		V_{CC} + 400	mV
V_{ID}	Differential Input Voltage (V_{IHD} − V_{ILD})	300		1600	mV
LVTTL CONTROL INPUT PINS					
V_{IH}	Input HIGH Voltage (LVTTL Inputs)	2000			
V_{IL}	Input LOW Voltage (LVTTL Inputs)			800	mV

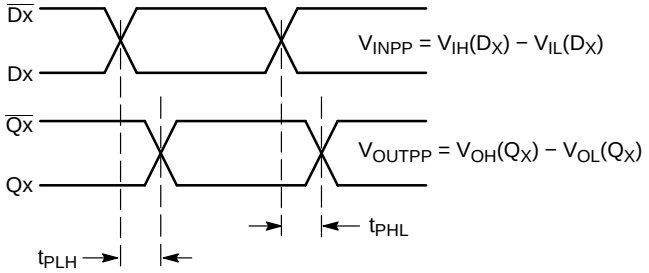


Figure 9. AC Reference Measurement

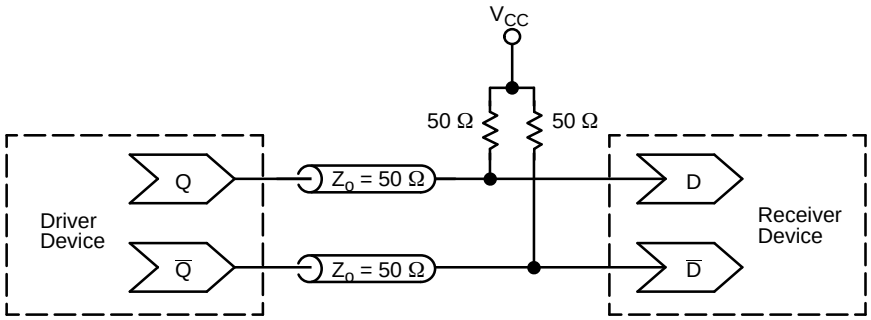


Figure 10. Typical Termination for Output Driver and Device Evaluation (See Application Note AND8173/D)

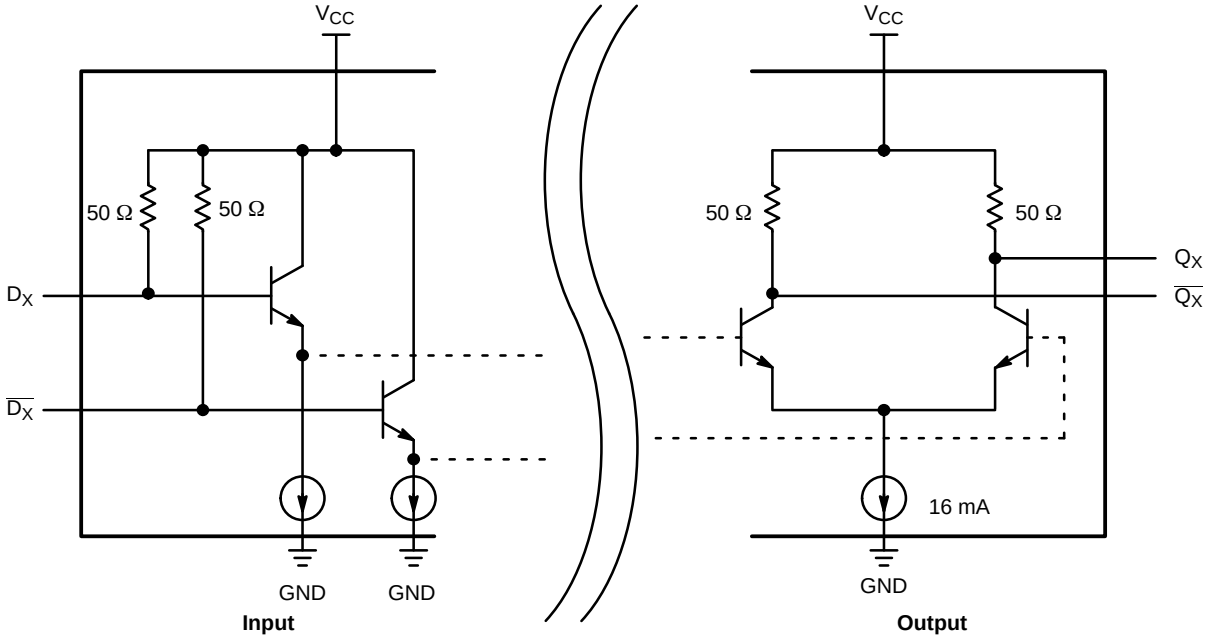


Figure 11. CML Input and Output Structure

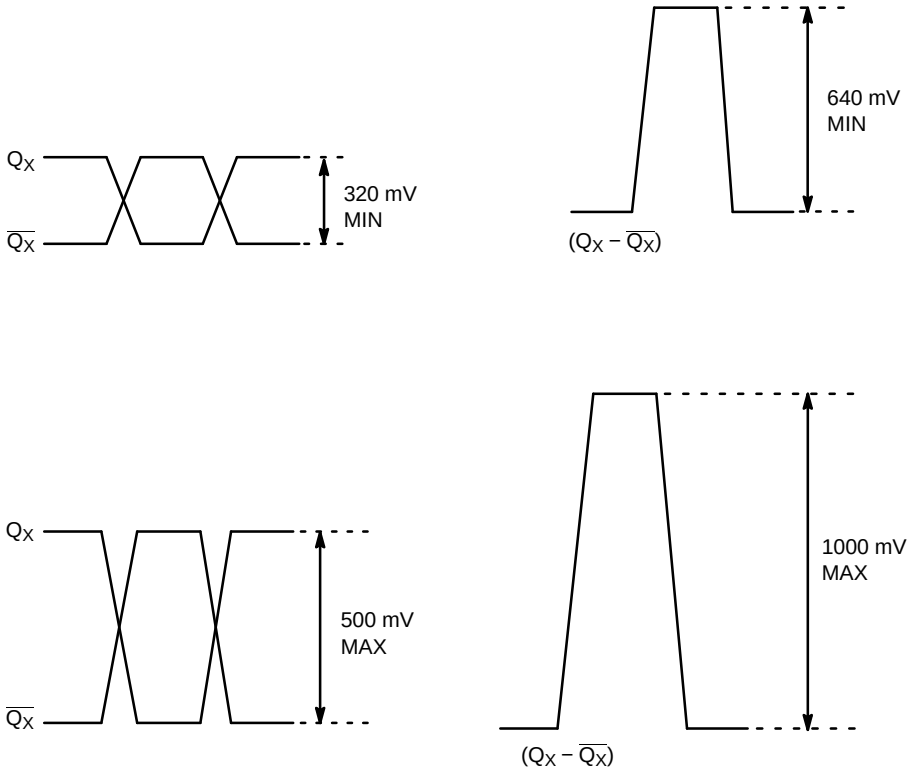


Figure 12. CML Output Levels

ORDERING INFORMATION

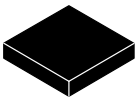
Device	Package	Shipping
NB4N840MMNG	QFN32 (Pb−Free)	74 Units / Rail
NB4N840MMNR4G	QFN32 (Pb−Free)	1000 / Tape & Reel

†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.

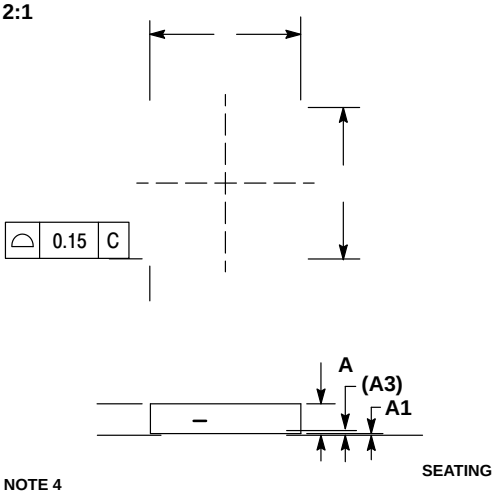
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

QFN32 5x5, 0.5P
CASE 488AM
ISSUE A

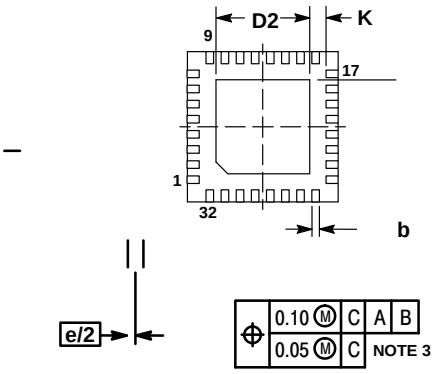
DATE 23 OCT 2013



SCALE 2:1

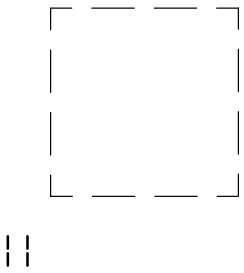


	MIN	MAX
A	0.80	1.00
A1	---	0.05
A3	0.20 REF	
b	0.18	0.30
D	5.00 BSC	
D2	2.95	3.25
E	5.00 BSC	
E2	2.95	3.25
e	0.50 BSC	
K	0.20	---
L	0.30	0.50
L1	---	0.15



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

RECOMMENDED



PITCH

DIMENSION: MILLIMETERS

DOCUMENT NUMBER:	98AON20032D	