



## Product Overview

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### NBSG16: SiGe Differential Driver / Receiver with RSECL Outputs

For complete documentation, see the data sheet

#### Product Description

The NBSG16 is a differential receiver/driver targeted for high frequency applications. The device is functionally equivalent to the EP16 and LVEP16 devices with much higher bandwidth and lower EMI capabilities.

Inputs incorporate internal 50-ohm termination resistors and accept NECL (Negative ECL), PECL (Positive ECL), HSTL, LVTTTL, LVCMOS, CML, or LVDS. Outputs are RSECL (Reduced Swing ECL), 400 mV.

The  $V_{BB}$  and  $V_{MM}$  pins are internally generated voltage supplies available to this device only. The  $V_{BB}$  is used as a reference voltage for single-ended NECL or PECL inputs and the  $V_{MM}$  pin is used as a reference voltage for LVCMOS inputs. For all single-ended input conditions, the unused complementary differential input is connected to  $V_{BB}$  or  $V_{MM}$  as a switching reference voltage.  $V_{BB}$  or  $V_{MM}$  may also rebias AC coupled inputs. When used, decouple  $V_{BB}$  and  $V_{MM}$  via a 0.01  $\mu$ F capacitor and limit current sourcing or sinking to 0.5 mA. When not used,  $V_{BB}$  and  $V_{MM}$  outputs should be left open.

#### Features

- Maximum Input Clock Frequency > 12 GHz Typical
- Maximum Input Data Rate > 12 Gb/s Typical
- 120 ps Typical Propagation Delay
- 40 ps Typical Rise and Fall Times
- RSPECL Output with Operating Range:  $V_{CC} = 2.375$  V to 3.465 V with  $V_{EE} = 0$  V
- RSNECL Output with RSNECL or NECL Inputs with Operating Range:  $V_{CC} = 0$  V with  $V_{EE} = -2.375$  V to -3.465 V
- RSECL Output Level (400 mV Peak-to-Peak Output), Differential Output Only
- 50 Internal Input Termination Resistors
- $V_{BB}$  and  $V_{MM}$  Reference Voltage Output
- Compatible with Existing 2.5 V/3.3 V LVEP, EP, and LVEL Devices

#### Applications

- SONET OC-192 / SDH STM-64 Optical Interface
- 10 Gigabit Ethernet
- Optical Networking Equipment
- Advance Test Equipment
- Ultra High Speed Terabit Routers

#### End Products

- ATE Instrumentation, Networking

## Part Electrical Specifications

Product	Compliance	Status	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> R MS Typ (ps)	t <sub>skew(o-p)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	f <sub>max</sub> Cl ock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package Type
NBSG16MNG	Pb-free Halide free	Active	Signal Driver	1	1:1	CML CMOS ECL LVD S TTL	RSECL	2.5 3.3	0.3		0.12	65	12000	12000	QFN-16
NBSG16MNHTBG	Pb-free Halide free	Active	Signal Driver	1	1:1	CML CMOS ECL LVD S TTL	RSECL	2.5 3.3	0.3		0.12	65	12000	12000	QFN-16
NBSG16MNR2G	Pb-free Halide free	Active	Signal Driver	1	1:1	CML CMOS ECL LVD S TTL	RSECL	2.5 3.3	0.3		0.12	65	12000	12000	QFN-16

## Package Availability

Type	Pb-free	Standard
QFN-16	✓	✓
Flip-Chip BGA-16	✓	✓

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