

# ASIC Technology

## Product Letter

# 0.5 $\mu\text{m}$

## CMOS-N5 Gate Array ICs

### Description

To serve the low-end gate-array market, where 5 Volt supply voltage is still a common requirement, NEC has released its 0.5  $\mu\text{m}$  CMOS-N5 family of cost optimised gate-arrays. Drastic cost reductions have been achieved compared with the conventional CMOS-6 (1  $\mu\text{m}$ ) and CMOS-8 (0.6  $\mu\text{m}$ ) families due to higher integration by the adoption of 0.5  $\mu\text{m}$  technology, and lowering the package assembly cost. Based on the experience of previous 0.5  $\mu\text{m}$  gate array technologies, CMOS-N5 is positioned to offer both high operating speed and high density. If required, the 2-metal layer process can be operated at 3 V power supply as well, using the standard library.

CMOS-N5 is integrated into NEC's consistent OpenCAD design environment. Tool and library support enables an easy migration from other designs, hard-wired or programmed.

### Features

- Low cost process using 0.5  $\mu\text{m}$  design rule
- Number of raw gates: 3k to 120k gates
- Number of usable gates: 2k to 74k gates
- Supply voltage: 5 V  $\pm$  10%, characterised for 3 V with same library
- High operating frequency: 60 MHz
- Gate delay time: 0.2 ns (2-input power NAND, FO = 2, standard wiring length)
- Low power consumption (internal gate): 1.35  $\mu\text{W}/\text{MHz}/\text{gate}$  @ 5 V
- Output drive capability: 3, 6, 9, 12, 18, 24 mA
- Broad choice of RAM cells: 90 types

### Lineup

CMOS-N5										
Master Name	65880	65881	65882	65883	65884	65885	65887	65889	65890	65893
Number of Gates	3456	5880	13952	25344	33864	40768	56496	76000	99528	123384
Number of usable Gates	2073	3528	8371	15206	20318	24460	33897	45600	59716	74030
Number of Pads	72	88	120	160	184	244	284	324	372	412
160 QFP (FP)	-	-	-	-	-	▲	▲	-	-	-
208 QFP (FP)	-	-	-	-	-	▲	▲	▲	▲	▲
240 QFP (FP)	-	-	-	-	-	-	▲	▲	△	△
304 QFP (FP)	-	-	-	-	-	-	-	-	▲	▲
48 TQFP	▲	▲	▲	-	-	-	-	-	-	-
64 TQFP	-	▲	△	△	□	□	□	□	□	□
80 TQFP	-	-	▲	□	□	□	▲	□	□	□
44 LQFP	▲	△	□	□	□	□	□	□	-	-
100 LQFP	-	-	▲	▲	▲	▲	□	□	□	□
160 LQFP	-	-	-	-	▲	-	-	△	△	□

▲ Available    △ Support planned    □ Under Study    - Cannot be supported

System @ IC  
Solutions on a Chip

# NEC

# 0.5 $\mu\text{m}$

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### NEC Offices

**NEC Electronics (Europe) GmbH**, Oberrather Str. 4, D-40472 Düsseldorf,  
Tel. (02 11) 65 03 01, Fax (02 11) 65 03-3 27

**NEC Electronics (Germany) GmbH**, Kanzlerstr. 2, D-40472 Düsseldorf,  
Tel. (02 11) 65 03 02, Fax (02 11) 65 03-4 90  
- Podbielskistr. 164, D-30177 Hannover, Tel. (05 11) 3 34 02-0, Fax (05 11) 3 34 02-34  
- Arabellastr. 17, D-81925 München, Tel. (0 89) 92 10 03-0, Fax (0 89) 91 31 82  
- Industriestr. 3, D-70565 Stuttgart, Tel. (07 11) 9 90 10-0, Fax (07 11) 9 90 10-19

**NEC Electronics (BNL)** - Boschdijk 187a, NL-5612 HB Eindhoven,  
Tel. (0 40) 2 44 58 45, Fax (0 40) 2 44 45 80

**NEC Electronics (Scandinavia)** - Täby Centrum, Entrance S (7th floor),  
S-18322 Täby, Tel. (08) 6 38 08 20, Fax (08) 6 38 03 88

**NEC Electronics (France) S.A.**, 9, rue Paul Dautier, B.P. 187,  
F-78142 Vélizy-Villacoublay Cédex, Tél. (01) 30 67 58 00, Fax (01) 30 67 58 99

**NEC Electronics (France) S.A., Representacion en Espana**,  
Juan Esplandiu 15, E-28007 Madrid, Tel. (91) 5 04 27 87, Fax (91) 5 04 28 60

**NEC Electronics Italiana S.R.L.**, Via Fabio Filzi, 25A, I-20124 Milano,  
Tel. (02) 66 75 41, Fax (02) 66 75 42 99  
- Rome Office, Via Monte Cervialto, 131, I-00139 Roma,  
Tel. (06) 8 86 22 91/2, Fax (06) 8 86 22 39

**NEC Electronics (UK) Ltd.**, Cygnus House, Sunrise Parkway, Milton Keynes,  
GB-MK14 6NP, Tel. (0 19 08) 69 11 33, Fax (0 19 08) 67 02 90  
- Scotland Office, Block 3, Carfin Industrial Estate, Motherwell GB-ML1 4UL,  
Tel. (0 16 98) 73 22 21, Fax (0 16 98) 83 38 68

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### Further Publications

This product letter contains specifications and operational data for the CMOS-N5 family. Additional information is available in NEC's CMOS-N5 Design Manual, Block Library and other related documents.

For further information on NEC's ASICs or other NEC products please visit our European website at [www.nec.de](http://www.nec.de)

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