

Clock Generation and Clock and Data Marking and Ordering Information Guide



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APPLICATION NOTE

Introduction

This application note describes the device markings and ordering information for the following ON Semiconductor families (refer to the respective family data book for family information):

- ECLinPS Lite™
- ECLinPS MAX™
- ECLinPS Plus™
- ECLinPS™
- GigaComm™
- Low Voltage ECLinPS Plus™
- Low Voltage ECLinPS Lite™
- Low Voltage ECLinPS™
- PureEdge™

Note that data sheet information takes precedence over this application note if there are any differences.

Application Note Information

This application note is divided into the following sections:

- Section 1: Data Sheet Marking Diagrams – The diagrams provide identification, traceability, date, and packaging information.
- Section 2: Data Sheet Ordering Information Tables – The tables list the device order numbers for every available device configuration.

SECTION 1: Data Sheet Marking Diagrams

Device Marking Examples

The marking format is dependent upon the device package, and larger device packages allow the inclusion of more information on the face of the device. On the larger packages where marking space permits, the Pb Free designator will be an additional suffix letter G added to the traceability and date code line. A marking example for the large 52-pin NB100LVEP222 is shown below. Note that the device marking includes the following coded information that is described in later sections:

- Code 1. Circuit Identification Code
- Code 2. Temperature Compensation Code
- Code 3. Family Identification Code
- Code 4. Function Type Code
- Code 5. Assembly Location Traceability Code
- Code 6. Wafer Lot Traceability Code
- Code 7. Year Date Code
- Code 8. Work Week Date Code
- Code 9. Pb Free Designator

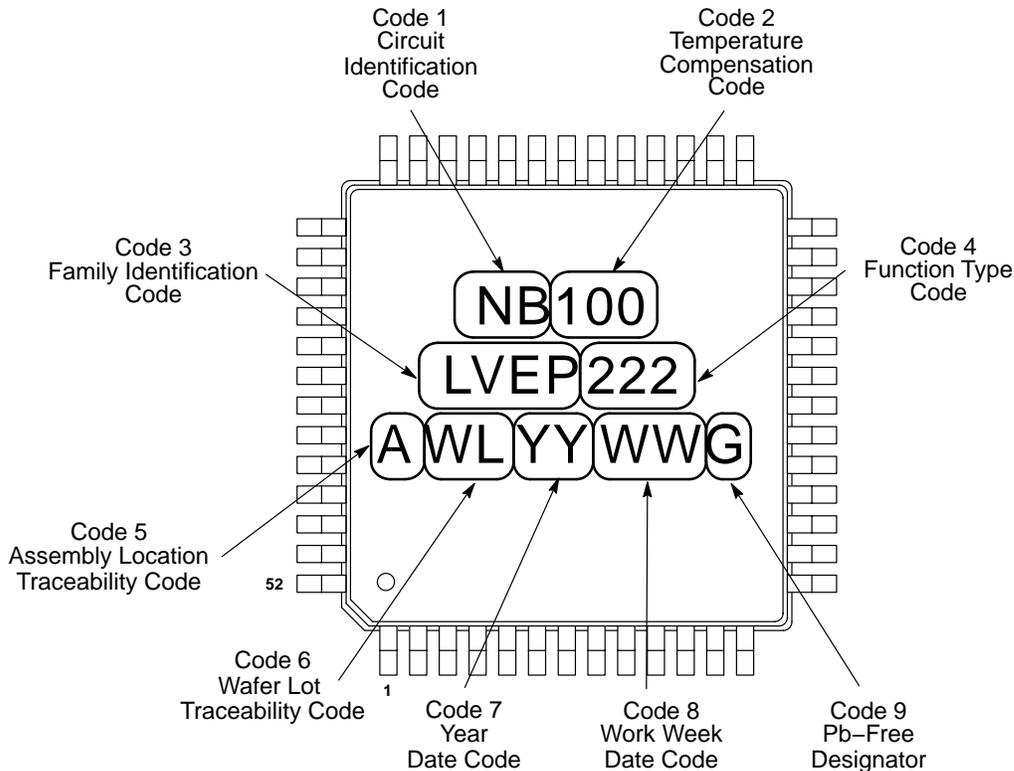


Figure 1. 52-Pin Marking Example

A marking example for the 8-pin TSSOP MC100EP16 device is shown in Figure 2. Note that the 8-pin package does not allow for as much marking information as the 52-pin package. On the smaller package where marking space is limited, the Pb Free designator will be an additional "Dot" centered below the traceability and date code line, or else a "Microdot" positioned below the right side of the traceability and date code line.

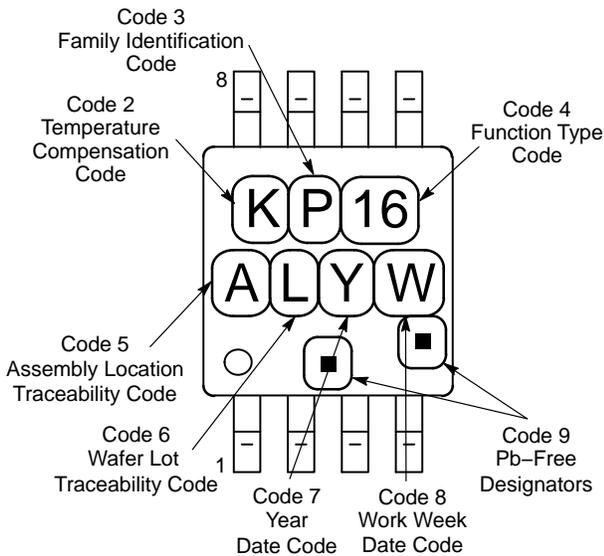


Figure 2. 8-Pin Marking Example

Code 2. Temperature Compensation Code

There are two Temperature Compensation codes. The “10” code indicates that the device characteristics are temperature dependent (refer to AND8066/D for additional information). The “100” identification code indicates that the device characteristics are not temperature dependent.

Code 3. Family Identification Code

Family Identification Codes are shown in the following table.

Code 1. Circuit Identification Code

MC identifies Motorola Circuits that are now owned by ON Semiconductor. NB identifies circuits that were introduced by ON Semiconductor. XC (X on 8-pin packages) identifies Preproduction/Prereliability devices, and PC (P on 8-pin packages) identifies Prototype devices. Contact ON Semiconductor for further information on non-released device markings.

Table 1. FAMILY IDENTIFICATION CODES

Family	TSSOP – 8 Code 3	SO – 8 Code 3	Over 8 – Pin Code 3
ECLinPS Lite	L	EL	EL
ECLinPS MAX	6L	6L	6L
ECLinPS Plus	P	EP	EP
ECLinPS			E
GigaComm			SG, 7
Low Voltage ECLinPS Plus	U	VP	LVEP
Low Voltage ECLinPS Lite	V	VL	LVEL
Low Voltage ECLinPS			LVE
PureEdge			X, V, T
ECLinPS Lite Translator	T	LT	ELT
ECLinPS Plus Translator	A	PT	EPT
Low Voltage ECLinPS Lite Translator	R	VT	LVELT

Code 4. Function Type Code

Each device is assigned a unique function type identifier.

Code 5. Assembly Location Traceability Code

The one character Assembly Location Traceability Codes identify the final assembly location and are shown in the following table.

AND8002/D

Table 2. ASSEMBLY LOCATION TRACEABILITY CODES

Code 5	Assembly Site	Location
5	UNISEM International LTD	Batam Island, Indonesia
ZR or 5	Amkor Technology Philippines	Manila, Philippines
9	ASAT Holdings Limited	New Territories, Hong Kong
G	UTAC Thai LTD	Bangkok, Thailand
C	ASE (Korea) Inc.	Seoul, Korea
P	ON Semiconductor Carmona	Carmona, Philippines
R	ON Semiconductor Sbn	Seremban, Malaysia
D1	ASE – Chung Li (METL)	Chung – Li, Taiwan
SL	SPEL Semiconductor LTD	Tamil Nadu, India
H	HANA Semiconductor LTD	Bangkok, Thailand
3	Carsem	Perak, Malaysia
F	Lingsen Precision Industries LTD	Taipei, Taiwan
M	MERCURY Electronic LTD	Taipei, Taiwan
A	Amkor Technology Korea	Seoul, Korea

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Code 6: Wafer Lot Traceability Code

The use of a one or two character Wafer Lot Traceability Code is dependent upon the package size and is shown in Table 3. The Wafer Lot Traceability Code in conjunction with the Work Week Date Code provides unique wafer lot identification.

Code 7: Year Date Code

The use of a one or two character Year Date Code is dependent upon the package size and as shown in Table 3.

Code 8: Work Week Date Code

The use of a one or two character Work Week Date Code is dependent upon the package size and is listed in Table 3.

Traceability and Date Code Tables

The coding and an example for each available package type is shown in Table 3. Note that the smaller packages use a one-character alpha code for the “Year”, and a one-character alpha code for the “Work Week”. The alpha codes are deciphered in Table 4.

Table 3. TRACEABILITY AND DATE CODE MARKINGS AND EXAMPLES

Package	Traceability Codes		Date Codes	
	Assembly Code (Code 5)	Wafer Lot (Code 6)	Year (Code 7)	Work Week (Code 8)
CDIP-16 Example	A	WL	YY	WW
	5 ATP1	AA First Lot	96 1996	46 46th Week
EIAJ SO-14 Example	A	L	Y	W
	X ASE CL	B Second Lot	B End 2014	T 46th Week
FCBGA-16 Example	A	L	Y	W
	K ASE K	A First Lot	B End 2014	T 46th Week
LQFP-32, LQFP-52, LQFP-64 Example	A	WL	YY	WW
	X ASE CL	AA First Lot	96 1996	46 46th Week
PLCC-20, PLCC-28 Example	A	WL	YY	WW
	P OSPI	AA First Lot	96 1996	46 46th Week
QFN-10, QFN-16, QFN-24 Example	A	L	Y	W
	9 ASAT	B Second Lot	B End 2014	T 46th Week
SO-8 Example	A	L	Y	W
	X ASE CL	B Second Lot	B End 2014	T 46th Week
SO-16 Example	A	WL	Y	WW
	X ASE CL	AA First Lot	B End 2014	46 46th Week
SO-20 Example	A	WL	YY	WW
	2 AIT	AA First Lot	96 1996	46 46th Week
TSSOP-8, TSSOP-16, TSSOP-20 Example	A	L	Y	W
	5 ATP1	B Second Lot	B End 2014	T 46th Week

Table 4. ALPHA YEAR AND WORK WEEK DATE CODES

Alpha Year Date Codes (Code 7)		Alpha Work Week Date Codes (Code 8)	
Year	First or Second Half-Year	First Half-Year Work Week	Second Half-Year Work Week
I = 2006	First Half	A = 01	A = 27
J = 2006	Second Half	B = 02	B = 28
K = 2007	First Half	C = 03	C = 29
L = 2007	Second Half	D = 04	D = 30
M = 2008	First Half	E = 05	E = 31
N = 2008	Second Half	F = 06	F = 32
P = 2009	First Half	G = 07	G = 33
R = 2009	Second Half	H = 08	H = 34
S = 2010	First Half	I = 09	I = 35
T = 2010	Second Half	J = 10	J = 36
U = 2011	First Half	K = 11	K = 37
V = 2011	Second Half	L = 12	L = 38
W = 2012	First Half	M = 13	M = 39
X = 2012	Second Half	N = 14	N = 40
Y = 2013	First Half	O = 15	O = 41
Z = 2013	Second Half	P = 16	P = 42
A = 2014	First Half	Q = 17	Q = 43
B = 2014	Second Half	R = 18	R = 44
C = 2015	First Half	S = 19	S = 45
D = 2015	Second Half	T = 20	T = 46
E = 2016	First Half	U = 21	U = 47
F = 2016	Second Half	V = 22	V = 48
G = 2017	First Half	W = 23	W = 49
H = 2017	Second Half	X = 24	X = 50
		Y = 25	Y = 51
		Z = 26	Z = 52

Package Information

The marking diagram includes the following package information:

- Package: The industry standard designation for the package.
- Package Suffix: This suffix is used to order the device, and is part of the device order number listed in the

Ordering Information table. Refer to the following “Ordering Information” section.

- Package Case Number: The industry standard case designation for the package.
Packaging information examples from the MC100EP16 and NB100LVEP222 data sheets are shown below.



SO-8
D SUFFIX
CASE 751



TSSOP-8
DT SUFFIX
CASE 948R



52-LEAD LQFP
THERMALLY ENHANCED
CASE 848H
FA SUFFIX

Figure 3. 8-Pin Packaging Information Example

Figure 4. 52-Pin Packaging Information Example

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SECTION 2: Data Sheet Ordering Information Tables

Ordering Information Examples

Ordering Information tables from the MC100EP16, NB100LVEP222, and NBSG16 data sheets are shown below.

Table 5. ORDERING INFORMATION TABLE EXAMPLES

Data Sheet	Ordering Information Table		
	Device	Package	Shipping
MC10/100EP16	MC10EP16D	SO-8	98 Units/Rail
	MC10EP16DR2	SO-8	2500 Tape & Reel
	MC100EP16D	SO-8	98 Units/Rail
	MC100EP16DR2	SO-8	2500 Tape & Reel
	MC10EP16DT	TSSOP-8	100 Units/Rail
	MC10EP16DTR2	TSSOP-8	2500 Tape & Reel
	MC100EP16DT	TSSOP-8	100 Units/Rail
	MC100EP16DTR2	TSSOP-8	2500 Tape & Reel
NB100LVEP222	NB100LVEP222FA	LQFP-52	160 Units/Tray
	NB100LVEP222FAR2	LQFP-52	1500 Tape & Reel
NBSG16	NBSG16BA	4x4 mm FCBGA-16	810 Units/Rail
	NBSG16BAR2	4x4 mm FCBGA-16	2500 Tape & Reel
	NBSG16BA100	4x4 mm FCBGA-16	100 Units/Tray
	NBSG16BA500R2	4x4 mm FCBGA-16	500 Tape & Reel

The following table decodes the device order numbers for some of the above examples. Note that the order number is made up of the Codes from the data sheet Marking Diagram. Refer to the previous “Code” sections for a description of the codes.

Table 6. DEVICE ORDER NUMBER DECODING

Device Order Number	Circuit Identification Code (Code 1)	Temperature Compensation Code (Code 2)	Family Identification Code (Code 3)	Function Type Code (Code 4)	Package Suffix
MC100EP16DT	MC Motorola Circuit	100	EP ECLinPS Plus	16 Unique Identifier	DT TSSOP-20
NB100LVEP222FA	NB ON Circuit	100	LVEP Low Voltage EP	222 Unique Identifier	FA LQFP-52
NBSG16BA	NB ON Circuit	N/A	SG GigaComm	16 Unique Identifier	BA FCBGA-16

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Package Suffix

The package suffixes are shown in the data sheet Marking Diagram.

Table 7. ECLinPS AND GigaComm PACKAGE SUFFIXES

Suffix	Package	Pins	Case	Description
BA	FCBGA-16	16	489	Ball Grid Array
D	SO-16	16	751B	Small Outline IC
D	SO-8	8	751	Small Outline IC
D	SO-14	14		Small Outline IC
DT	TSSOP-16	16	948F	Thin Shrink Small Outline Package
DT	TSSOP-20	20	948E	Thin Shrink Small Outline Package
DT	TSSOP-28	28	948A	Thin Shrink Small Outline Package
DT	TSSOP-8	8	948R	Thin Shrink Small Outline Package
DW	SO-20	20	751D	Small Outline IC
FA	LQFP-32	32	873A	Leaded Quad Flat Pack
FA	LQFP-52	52	848-D	Leaded Quad Flat Pack
FA	LQFP-52	52	848H	Leaded Quad Flat Pack
FA	LQFP-64	64	848G	Leaded Quad Flat Pack
FN	PLCC-20	20	775	Plastic Leaded Chip Carrier
FN	PLCC-28	28	776	Plastic Leaded Chip Carrier
L	CDIP-16	16	620	Ceramic DIP
LN	CLCC-6	6	848AB	Ceramic Leadless Chip Carrier 6.5 x 7 mm
M	Micro-10	10	846B	Micro-10
M	EIAJ SO-14	14	965	EIAJ Small Outline IC
M	EIAJ SO-16	16	966	EIAJ Small Outline IC
MN	DFN8	8	506AA	Dual Flat No-Lead
MN	QFN-16	16	485G	Quad Flat No-Lead
MN	QFN-24	24	485L	Quad Flat No-Lead
MN	QFN-52	52	485M	Quad Flat No-Lead
P	PDIP-16	16	648	Plastic DIP
P	PDIP-24	24	724	Plastic DIP

Shipping Specification

The “Shipping” column in the Ordering Information table specifies the shipping configuration that corresponds to the device order number. Add R2 to the regular package suffix to order tape and reel shipping configurations. Refer to Brochure BRD8011/D for further tape and reel information.

For Additional Information

Additional traceability and date code information is available upon request. To make a request, please visit our website at <http://www.onsemi.com> and click on “Technical Support,” or contact the Technical Information Center (TIC) at 1-800-282-9855.

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