



FINAL PRODUCT/PROCESS CHANGE NOTIFICATION
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12-JUL-2004

SUBJECT: ON Semiconductor Final Product/Process Change Notification #13523

TITLE: Final Notification for IPCN#11335, Wafer Capacity Addition for MOSAIC5 Technology – Group 8

EFFECTIVE DATE: 12-Sep-2004

AFFECTED CHANGE CATEGORY: ON Semiconductor Fab Site

AFFECTED PRODUCT DIVISION: Analog & ECL Products

ADDITIONAL RELIABILITY DATA: Available

Contact your local ON Semiconductor Sales Office or Don Warring <RRGA60@onsemi.com>

SAMPLES: Contact your local ON Semiconductor Sales Office or Clarence Rebello <FFBWPN@onsemi.com>

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:

Contact Sales Office or Clarence Rebello <FFBWPN@onsemi.com>

NOTIFICATION TYPE:

Final Product/Process Change Notification (FPCN)

Final change notification sent to customers. FPCNs are issued at least 60 days prior to implementation of the change.

ON Semiconductor will consider this change approved unless specific conditions of acceptance are provided in writing within 30 days of receipt of this notice. To do so, contact your local ON Semiconductor Sales Office.

DESCRIPTION AND PURPOSE:

ON Semiconductor is pleased to announce the continued expansion and qualification of the COM1 wafer fabrication facility located in Phoenix, Arizona to manufacture MOSAIC5 Bipolar technology products. MOSAIC5 products were previously fabricated in the Motorola MOS6 wafer fabrication facility in Mesa, Arizona.

This is the Final PCN for the listed devices. The effective date of this change will be 60 days from the issuance of this PCN for the devices listed.

Device parameters will continue to meet all Data Book specifications except where detailed below, and reliability will continue to meet or exceed ON Semiconductor standards. In the course of reviewing the electrical data for the Group 8 released parts, the following changes will be made in the Data Sheet:

**Final Product/Process Change Notification #13523**

MC10EP16VA:

- Change VBB NECL Limits at -40 deg C to -1510 to -1310 (was -1550 to -1350) mV
- Change VBB NECL Limits at 25 deg C to -1445 to -1245 (was -1475 to -1275) mV
- Change VBB NECL Limits at 85 deg C to -1385 to -1185 (was -1450 to -1250) mV

MC10EP32:

- Change IEE Upper Limit at All Temperatures to 40 (was 37) mA

MC10EP33:

- Change IEE Upper Limit at All Temperatures to 40 (was 34) mA

MC10EP35 and MC100EP35:

- Change Tplh/Tphl Upper Limit at 85 deg C to 575 (was 500) ps
- Change Setup Lower Limit at All Temperatures to 200 (was 150) ps

MC100EP52:

- Change IEE Lower Limit at -40 deg C and 25 deg C, to 20 (was 26) mA
- Change IEE Lower Limit at 85 deg C, to 20 (was 28) mA

MC10EP57:

- Change VBB NECL Limits at -40 deg C to -1510 to -1310 (was -1565 to -1365) mV
- Change VBB NECL Limits at 25 deg C to -1445 to -1245 (was -1500 to -1300) mV
- Change VBB NECL Limits at 85 deg C to -1385 to -1185 (was -1440 to -1240) mV

MC100EP16VS:

- Change VIL Lower Limit at All Temperatures to -1945 (was -1810) mV

MC100EP16VT:

- Change VIL Lower Limit at All Temperatures to -1945 (was -1810) mV

MC100EP33:

- Change IEE Upper Limit at -40 deg C to 40 (was 33) mA
- Change IEE Upper Limit at 25 and 85 deg C to 45 mA
(were 36 and 37 Respectively)

MC100EP56:

- Add Iil SEL0, SEL1, COM SEL Lower Limit of -150 uA

MC100EP90:

- Change VIH NECL Limits at All Temperatures to -1225 to -885 mV
(were various at -40, 25, 85 deg C)
- Change VIL NECL Limits at All Temperatures to -1945 to -1625 mV
(were various at -40, 25, 85 deg C)

MC100EP101:

- Change IEE Limits at -40 and 25 deg C to 40 to 75 mA
(were 50 to 80 and 55 to 85 Respectively)
- Change IEE Limits at 85 deg C to 45 to 85 (was 60 to 88) mA

MC100EP105:

- Change IEE Upper Limit at -40 deg C to 80 (was 75) mA
- Change IEE Upper Limit at 85 deg C to 85 (was 75) mA

**Final Product/Process Change Notification #13523****MC100EP195:**

- Add Vef Limits of 1.4 to 1.6 (Typical is 1.5) V
- Change Vef Limits at -40 deg C to -1400 to -1250 (was -1385 to -1180) mV
- Change Vef Limits at -40 deg C to -1425 to -1250 (was -1360 to -1110) mV
- Change Vef Limits at -40 deg C to -1450 to -1250 (was -1315 to -1035) mV

MC100EP210S:

- Change IIL for CLKA, CLKB to -150 to 150 uA (was 0.5 minimum)

MC100EPT25:

- Change Tplh/Tphl Limits at All Temperatures to 500 to 1300 ps (were various)
- Change Tr Limits at All Temperatures to 300 to 600 (was 450 to 750) ps

MC10EP139DWR2 (DT version released with Group 3, PCN 12774):

- Change TRR Lower Limit at 85 deg C, to 165 (was 200) ps

Changes reflect typographical errors and Family Specifications, which match MOS6 devices. There were no changes to the actual design or function of the parts.

MC10EP445 and MC100EP445:

- Change Tplh/Tphl Limits at -40 deg C to 1280 to 1710 (was 1230 to 1660) ps
- Change Tplh/Tphl Limits at 25 deg C to 1335 to 1795 (was 1300 to 1795) ps
- Change Tplh/Tphl Limits at 85 deg C to 1450 to 1950 (was 1400 to 1900) ps
- Change Tr/Tf (Q) Limits at -40 deg C to 100 to 400 (was 100 to 250) ps
- Change Tr/Tf (Q) Limits at 25 deg C to 100 to 400 (was 100 to 300) ps
- Change Tr/Tf (Q) Limits at 85 deg C to 125 to 425 (was 125 to 325) ps
- Note: Existing Tr/Tf limits are for PCLK/PCLKB
- Clarify tJitter, CLK SEL=Low, Upper Limit, at 2 GHz, at All Temperatures is 1.5 ps
- Clarify tJitter, CLK SEL=HIGH, Upper Limit, at 2.5 GHz, at -40 and 25 deg C is 1 ps
- Clarify tJitter, CLK SEL=HIGH, Upper Limit, at 3 GHz, at -40 deg C is 1.5 ps
- Clarify tJitter, CLK SEL=HIGH, Upper Limit at 3 GHz, at 25 deg C is 2 ps
- Clarify tJitter, CLK SEL=HIGH, Upper Limit at 3 GHz, at 85 deg C is 2.5 ps

MC10EP446:

- Change IEE Upper Limit at -40 deg C and 25 deg C, to 140 (was 130) mA
- Change IEE Upper Limit at 85 deg C, to 145 (was 135) mA
- Change VBB NECL Limits at -40 deg C to -1510 to -1310 (was -1560 to -1360) mV
- Change VBB NECL Limits at 25 deg C to -1445 to -1245 (was -1495 to -1295) mV
- Change VBB NECL Limits at 85 deg C to -1385 to -1185 (was -1435 to -1235) mV
- Add IIL Lower Limit for SYNCB, at All Temperatures is -150 uA

MC100EP16F:

- Change IEE Upper Limit at -40 deg C to 40 (was 35) mA
- Change IEE Upper Limit at 25 and 85 deg C, to 45 mA (were 38 and 40 Respectively)
- Change VOL Lower Limit at All Temperatures to -1775 (was -1725) mV
- Change VIL Lower Limit to -1945 (was -1810) mV



Final Product/Process Change Notification #13523

RELIABILITY DATA SUMMARY:

RELIABILITY WILL CONTINUE TO MEET OR EXCEED ON SEMICONDUCTOR STANDARDS.

Test	Conditions	Results
High Temp Op Life (HTOL)	Tj =150DegC for 504 hours	0/479
High Temp Bake (HTB)	150DegC for 1008 hours 175DegC for 504 hours	0/480 0/480
Preconditioning for MSL-1 (PC)	IR at 235DegC, TC, HAST, AC (Only for EP16 device)	0/957
Preconditioning for MSL-2 (PC)	IR at 235DegC, TC, THB, AC (Only for EP111 device)	0/720
PC-HAST	130DegC/85% RH/18.8 PSIG for 96 Hrs (Only for EP16 device)	0/240
PC-THB	85DegC/85% RH/18.8 PSIG for 1008 Hrs (Only for EP111 device)	0/240
PC-Autoclave (AC)	121DegC/100% RH/15 PSIG for 96 hours	0/480
PC-Temp Cycling (TC)	-65DegC to +150DegC; for 500 cycles	0/635
Bond Pull Strength (BPS)	Per Factory Testing with CpK>= 1.33	MEETS OR EXCEEDS CRITERIA
Bond Shear Test (BS)	Per Factory Testing with CpK>= 1.33	MEETS OR EXCEEDS CRITERIA
ESD per JEDEC Standard	Human Body Model (HBM) Machine Model (MM) Charge Device Model (CDM)	MEETS OR EXCEEDS CRITERIA
Destructive Physical Analysis (DPA)	Analysis done after PC-Temp Cycling	MEETS OR EXCEEDS CRITERIA
Intrinsic Reliability (IR)	Compare to MOS6 results for Stress migration, Electromigration & Hot Carrier Injection	MEETS OR EXCEEDS CRITERIA
Critical Parameter Shifts Analysis (CPA)	Datalog units and examine VOH and VOL before and after test on all HTOL and Temp cycled units	MEETS OR EXCEEDS CRITERIA
Skew Analysis (SA)	Examine 5 units from each group for tskew before and after HTOL and Temp Cycle tests	MEETS OR EXCEEDS CRITERIA



Final Product/Process Change Notification #13523

Construction Analysis (CA)	Compare to MOS6 results	MEETS OR EXCEEDS CRITERIA
Parameter Verification	Electrical Characterization/distribution summary of Critical Parameters	AVAIL

Qualification Vehicle Justification

<u>Technology</u>	<u>Qualification Device</u>	<u>Reason Chosen</u>
MOSAIC5	MC10EP16DT	Smallest Array Base, TSOP8
	MC100LVEP111FA	Largest Array Base, 32 pin TQFP

ELECTRICAL CHARACTERISTIC SUMMARY:
 Available upon request. Electrical Performance has not changed.

CHANGED PART IDENTIFICATION:
 Product with a date code of ww35 may be built at COM1.

AFFECTED DEVICE LIST(WITHOUT SPECIALS):

PART

- MC100EP101FA
- MC100EP101FAR2
- MC100EP105FA
- MC100EP105FAR2
- MC100EP142FA
- MC100EP142FAR2
- MC100EP16FD
- MC100EP16FDR2
- MC100EP16FDT
- MC100EP16FDTR2
- MC100EP16VSD
- MC100EP16VSDR2
- MC100EP16VSDR2G
- MC100EP16VSDT
- MC100EP16VSDTR2
- MC100EP16VSMP
- MC100EP16VSMR2
- MC100EP16VTD
- MC100EP16VTDR2
- MC100EP16VTDTR2
- MC100EP195FA
- MC100EP195FAR2
- MC100EP210SFA
- MC100EP210SFAR2
- MC100EP210SFAR2G
- MC100EP33D
- MC100EP33DR2
- MC100EP33DR2G
- MC100EP33DT



Final Product/Process Change Notification #13523

MC100EP33DTG
MC100EP33DTR2
MC100EP35D
MC100EP35DR2
MC100EP35DT
MC100EP35DTR2
MC100EP445FA
MC100EP445FAR2
MC100EP451FA
MC100EP451FAG
MC100EP451FAR2
MC100EP56DT
MC100EP56DTR2
MC100EP56DW
MC100EP56DWR2
MC100EP90DT
MC100EP90DTR2
MC100EPT24D
MC100EPT24DG
MC100EPT24DR2
MC100EPT24DT
MC100EPT24DTG
MC100EPT24DTR2
MC100EPT25D
MC100EPT25DG
MC100EPT25DR2
MC100EPT25DT
MC100EPT25DTG
MC100EPT25DTR2
MC100LVEL16VSD
MC100LVEL16VSDR2
MC100LVEL16VSDT
MC100LVEL16VSDTR
MC10EP101FA
MC10EP101FAG
MC10EP101FAR2
MC10EP105FA
MC10EP105FAR2
MC10EP131FA
MC10EP131FAR2
MC10EP139DT
MC10EP139DTR2
MC10EP139DWR2
MC10EP142FA
MC10EP142FAR2
MC10EP16VAD
MC10EP16VADR2
MC10EP16VADT
MC10EP16VADTR2
MC10EP32D
MC10EP32DG
MC10EP32DR2
MC10EP32DT
MC10EP32DTR2
MC10EP33D
MC10EP33DG



Final Product/Process Change Notification #13523

MC10EP33DR2
MC10EP33DT
MC10EP33DTR2
MC10EP35D
MC10EP35DR2
MC10EP35DT
MC10EP35DTR2
MC10EP445FA
MC10EP445FAR2
MC10EP446FA
MC10EP446FAR2
MC10EP52D
MC10EP52DR2
MC10EP52DT
MC10EP52DTG
MC10EP52DTR2
MC10EP57DT
MC10EP57DTR2
MC10EP57DTR2G
MCW100EP142
MCW100EP16F
MCW100EP16VS
MCW100EP16VT
MCW100EP210S
MCW100EP445
MCW100EP451
MCW100EPT24
MCW10EP101
MCW10EP105
MCW10EP142
MCW10EP16VA
MCW10EP32
MCW10EP33
MCW10EP35
MCW10EP445
MCW10EP446
MCW10EP57
MCW12093
MCW12095
PC100EP16VSMP
PC100LVEL16VSD
PC100LVEL16VSDT
PC10EP445FA