ON Semi technology services through CMP

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Gerhard Koops
(gerhard.koops@onsemi.com)
ON introduction

- Top 20 international semiconductor player
- >20 FAB sites in US, Europe and Asia
  - Wafer fabs
  - Assembly fabs
  - Test facilities
- Focus on smart power and high-reliable products with long lifetimes

Custom Foundry
- Team in Pocatello (US) → US customers
- Team in Oudenaarde (Be) → EU&APAC
- Custom Foundry addresses design houses and companies with own design teams
  - Wafer sales (low/high volumes)
  - FoundryPlus (package, ATE test,....)

Headquarters: Phoenix, AZ
Employees: 35,000 globally
Revenue: ~$5.9Bn
Market Capitalization: ~$8Bn
Ticker: ON
### Technology overview

#### 350 nm Technology

1. **C035U**
   - Base line 350nm including analog options

2. **I3T25U, 3.3/25V**
   - 25V BCD technology

3. **I3T50E**
   - BCD/HV technology (36V operational)
   - Trench isolation

#### 180 nm Technology

1. **ONC18 G M/S**
   - Base line 180 nm digital, mixed-signal

2. **ONC18 18V/18V**
   - 1.8V, 18 V core with 5V input
   - 18V gate, 18V drain option

3. **I4T45/70**
   - BCD/HV technology (45V/70V)
   - Trench isolation

- Both technologies are high runners in industrial ... automotive products ➔ longevity, support
- Stitching can be done for both technologies
- Small process changes (e.g. passivation tunes supporting post-processing) can be considered
- Libraries included (core, IO, libraries.... )
350 nm Platform

I3T50E

I3T50E (2\textsuperscript{nd} source)

C035U/I3T25

50V VnDMOS
50V LpDMOS
50V Floating Nepi
Deep Trench Isolation

25V LnDMOS
25V LpDMOS
25V Floating Nepi

3LM
3.3V Vg
MIMC capa (1.5fF/\mu m\textsuperscript{2})
High res poly (1k\Omega/\mu m)
Floating Nepi

I3T50

I3T50 EEPROM / OTP LeafCells

I3T25

I3T25 EEPROM

CMOS 0.35\mu m
3.3V Mixed Signal
15k gates/mm\textsuperscript{2}

C3 EEPROM

3LM-5LM

Power Metal – 3\mu m

High Temp
Tamb=175\degree C
Tjunc=200\degree C

4kV ESD
0.35\textmu m I3T50

- Deep trench isolation for compact HV devices
- Characterized till 200°C
- Qualified up to 190°C
- 4kV HBM, 750V CDM and 250V MM capabilities
- Automotive qualified
- Lifetime of technology will be very long (ongoing automotive design-ins)

- Deep Trench Isolation
- Extensive ESD library
- EEPROM and OTP
- 3-5 Metal layers
- 50V DMOS
- 3.3V IO
- HR poly
- MIM capacitors

Wafer fab Oudenaarde (Belgium)
## ONC18 Platform Integration

- Extended temperature range:
- Qualified from -45 °C – 200 °C
- Cryo models
- Trench isolation for I4T70 (>100V)
- Stitching
- Planarized passivation

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<thead>
<tr>
<th>Vg = Vd =</th>
<th>1.8V</th>
<th>3.3V</th>
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0.18μm I4T-70V

- Deep trench isolation for compact HV devices
- 30V, 45V and 70V DMOS
- Characterized till 200°C and cryo-models available
- Very well suited for automotive and other high reliable applications
- Automotive qualified

✓ DTI isolation > 100V
✓ EEPROM and OTP
✓ ESD cells
✓ 4-6 Metal layers
✓ 30, 45 and 70V DMOS
✓ 1.8 and 3.3V Core-cell libraries
✓ 5V tolerant I/Os
✓ HR poly and MIM capacitors
✓ High Vt (low leakage) options

Wafer fab Gresham (US), 8 inch, Full SMIF, production down to 0.11 μm.
ON – CMP offering

MPW schedule available Q2 2019
- Ideal for prototyping
- Shuttle schedule available
- Pricing available
- Wide range of QTA options

Technology offering available Q2 2019
- MLM (Multi-layer mask set)
- SLM (Production mask set)
- QTA
- Engineering / Production
Thank You

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