

# SOX – BOM / FMEDA for Semiconductor

### **SOX FMEDA** – Create new BOM



| O S  | OX Wor                                | rkbench   |               |                 |      |            |         |       |          |
|------|---------------------------------------|-----------|---------------|-----------------|------|------------|---------|-------|----------|
| File | Edit                                  | Papyru    | s Variants    | Administra      | tion | Window     | Help    |       |          |
| R    | H ê                                   | ) 🔁 🗘     | ୬ ୬   7 🔁     | ≝ ⇔ ⇔           | ix,  | • 🗸 🛛      | • 🗐 •   | · 👝 📱 | <b>i</b> |
| 85 F | Reposito                              | ory       |               |                 |      | l.         | 🖹 🔁 🗄   | ~ "   |          |
| 銜    | $\langle - \zeta \rangle$             | >         |               |                 |      |            |         |       |          |
| ~    | 양 [TP                                 | 1] Test P | roject 1 [/Te | st Projects] [V | 7]   |            |         |       |          |
|      | > 80                                  | • Main    |               |                 |      |            |         |       |          |
|      | Ð                                     | RM        |               |                 |      |            |         |       |          |
|      | > 🗁                                   | DESIGN    |               |                 |      |            |         |       |          |
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|      | e e e e e e e e e e e e e e e e e e e | ATA       |               |                 |      |            |         |       |          |
|      |                                       | FMEA      |               |                 |      |            |         |       |          |
|      |                                       | FINEDA    |               |                 |      |            |         |       |          |
|      |                                       | ROM       |               |                 |      |            |         |       |          |
|      |                                       | TE        | New           | >               |      | New BOM    | / file  |       |          |
| >    | 🏥 Aut                                 | on 😠      | Delete        | Delete          | B    | New Fold   | er      |       |          |
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|      | > 80                                  | •         | Show in       | >               | (S)  | Project cz | talog   |       |          |
|      | Þ                                     | RN        | Rename        | F2              | -    |            | , and g |       |          |
|      | > 🗁                                   | DE        | Innert        |                 | 1.   |            |         |       |          |
|      | Ð                                     | H/ 🔤      | import        |                 |      |            |         |       |          |
|      | 6                                     | TA 🖆      | Export        |                 |      |            |         |       |          |
|      | C-                                    | AIA       |               |                 |      |            |         |       |          |

| Target folder      | Projects/Test Projects/Test Project 1/BOM | Browse.        |
|--------------------|---|----------------|
| Filename           | Semiconductor                             |                |
| Failure Modes Set  | <not set=""></not>                        | v              |
| Allow module lev   | el failure modes                          |                |
| Component catalog  |   | Ŷ              |
| FIT analysis types |   | <b>4</b><br>Si |
| Set τ_off to zero  |   |                |

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#### Click device from context menu



#### Enter name and description

| O Add device   |   |   |
|----------------|---|---|
| Create a new   | device  | 岱 |
| Please specify | the device parameters and click livext to specify Package and Die |   |
| Name           | Device 1  |   |
| Description    |   | ^ |
|                |   |   |
|                |   |   |
|                |   |   |
|                |   | ~ |
| Catalog        | SN29500-1   | ¥ |
|                | The Device consists of more than one technology Technologies      | 2 |
|                |   |   |

### Set catalog and number of technologies used. Click Next

#### Enter name and number of pins

| O Add device                          |                      |        | × |  |  |  |  |  |  |
|---------------------------------------|----------------------|--------|---|--|--|--|--|--|--|
| Create a new Pack                     | Create a new Package |        |   |  |  |  |  |  |  |
| Please specify the package parameters |                      |        |   |  |  |  |  |  |  |
| Name                                  | Package              |        |   |  |  |  |  |  |  |
| Description                           |                      | 1      |   |  |  |  |  |  |  |
|                                       |                      |        |   |  |  |  |  |  |  |
|                                       |                      |        | / |  |  |  |  |  |  |
| Package Type (λ3)                     |                      | `      | 1 |  |  |  |  |  |  |
| Anzahl an Pins                        | 10                   |        |   |  |  |  |  |  |  |
| ?                                     | < Back Next > Finish | Cancel |   |  |  |  |  |  |  |

Click Next

Package Type is IEC specific and can be neglected For SN.



| Add device           |                                |   |       | $\times$ |
|----------------------|--------------------------------|---|-------|----------|
| Create a new DIE     | or technology 1                |   | a     | 1.1      |
| Please specify the D | IE parameters for technology 1 |   | 2     |          |
| Name                 | СРИ                            |   |       |          |
| Description          |                                |   |       | ^        |
|                      |                                |   |       |          |
|                      |                                |   |       |          |
|                      |                                |   |       |          |
|                      |                                |   |       | ~        |
| Anzahl an Blöcken    | 4                              |   |       |          |
|                      |                                |   |       |          |
| ?                    | < Back Next > Finish           | ( | Cance | I        |

| O Add device         |                                | $\Box$ $\times$ |
|----------------------|--------------------------------|-----------------|
| Create a new DIE     | for technology 2               | - <b>1</b> 10   |
| Please specify the D | IE parameters for technology 2 |                 |
| Name                 | SRAM                           |                 |
| Description          |                                | ^               |
|                      |                                |                 |
|                      |                                |                 |
|                      |                                |                 |
|                      |                                | ~               |
| Anzahl an Blöcken    | 2                              |                 |
| (?)                  | < Back Next > Finish           | Cancel          |
| <u> </u>             |                                |                 |

## **SOX FMEDA** – Define technologies

### BOM is generated:

| Overa   | ll system  |                    |             |          |                      |               |  |          |  |                   |         |               |         |                        |           |                    |         |
|---------|--|--------------------|-------------|----------|----------------------|---------------|--|----------|--|-------------------|---------|---------------|---------|------------------------|-----------|--------------------|---------|
|         |  |                    |             |          |                      |               | Compone                                | nt       |  |                   |         |               |         |                        |           |                    |         |
|         | Status   | Name               | Description | Factor   | Product Code         | Module        | Basis FIT                              | FIT %    | FIT                                    | Total FIT         |         |               |         |                        |           |                    |         |
|         | Y  | V                  | ×           | 7        | 5                    | 7 7           | ' \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | Y        | ' \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | $\nabla$          |         |               |         |                        |           |                    |         |
| 1       | Open   | 🗱 N Device 1       |             |          |                      |               |  |          | 0.000                                  | 0.000             |         |               |         |                        |           |                    |         |
| 1.1     | Open   | 🕂 💽 Total DIE      |             |          |                      | Device 1      |  |          | 0.000                                  | 0.000             |         |               |         |                        |           |                    |         |
| 1.1.1   | 🖃 Open   | 🕂 🖸 CPU            |             |          |                      | Total DIE     |  | 0.000 %  | 0.000                                  | 0.000             |         |               |         |                        |           |                    |         |
| 1.1.1.1 | Ор   | 🔛 N Block1         |             | 1        |                      | CPU           |  |          | 0.000                                  | 0.000             |         |               |         |                        |           |                    |         |
| 1.1.1.2 | Ор   | 🔛 N Block2         |             | 1        |                      | CPU           |  |          | 0.000                                  | 0.000             |         |               |         |                        |           |                    |         |
| 1.1.1.3 | Ор   | 🔛 N Block3         |             | 1        |                      | CPU           |  |          | 0.000                                  | 0.000             | _       |               |         |                        |           |                    |         |
| 1.1.1.4 | Ор   | 🔛 N Block4         |             | 1        |                      | CPU           |  |          | 0.000                                  | 0.000             | Τ       | saale         | e n     | nodul                  | e dis     | ;Dl:               | av for  |
| 1.1.2   | Open   | 🕂 💽 SRAM           |             |          |                      | Total DIE     |  | 0.000 %  | 0.000                                  | 0.000             |         | - 33-         |         |                        | <b>_</b>  | 1                  |         |
| 1.1.2.1 | Ор   | 👯 N Block1         |             | 1        |                      | SRAM          |  |          | 0.000                                  | 0.000             | e       | ditor         | to      | see l                  | Jevic     | )es                | S, DIES |
| 1.1.2.2 | Ор   | 🔛 N Block2         |             | 1        |                      | SRAM          |  |          | 0.000                                  | 0.000             | _       |               | 1       |                        |           |                    | ,       |
| 1.2     | Open   | 📑 <b>N</b> Package |             |          |                      | Device 1      | 0.000                                  |          | 0.000                                  | 0.000             | ar      | na Pa         | ac      | kage                   |           |                    |         |
| 1.2.1   | Open   | 📍 💽 Pin1           |             | 1        |                      | Package       | 0.000                                  |          | 0.000                                  | 0.000             |         |               |         | Ŭ                      |           |                    |         |
| 1.2.2   | Open   | T N Pin2           | : 40        | la 🖢 ,   | 🖉 🤟 🗸 i 🖛 s          | - Barkanan I  | . م <u>مم</u> م. <sub>س</sub>          | 📂 🏙 Ae   | """ : "" ∩ ∩ Ω.                        | ·:==:•            | .ee u   | · •           | + · · · | s                      | ·   75 #  | L <del>T</del> J ' |         |
| 1.2.3   | Open   | T Pin3             | **          | Semicond | uctor Beispiel[Main] | 🛛 💥 Automatis | scher Heckspoil                        | er[Main] | 🛄 Standard Mission I                   | Profiles IEC62380 |         |               |         |                        |           |                    | 📩 FIT   |
| 1.2.4   | Open   | T 🔊 Pin4           |             |          |                      |               |  | I        |  | - Filter All      |         |               |         |                        |           |                    | CIT N   |
| 1.2.5   | Open   | T 🖸 Pin5           | G           | esamtsy  | stem                 |               |  |          |  | Alle              | ×   ::: | è 👬 🍯         | N       |                        | " 🕈 👬     | FI                 |         |
| 1.2.6   | Open   | 📍 💽 Pin6           |             |          |                      |               |  |          |  |                   |         |               |         |                        |           |                    |         |
| 1.2.7   | Open   | T 🖸 Pin7           |             |          | Neture Ne            |               |  | D.       | Bauteil                                |                   | Falter  | Desidual de C | a da    | Devenue                | Denie CIT | <b>1</b>           | Bau     |
| 1.2.8   | Open   | 👎 <b>N</b> Pin8    |             |          |                      |               |  | DR       | eschreibung                            |                   |         | Produkt C     | V       | baugruppe              |           | 7                  | Bau     |
|         | Open       Image: Comparison of the comparis |                    |             |          |                      |               |  |          |  |                   |         |               |         | Feh<br><br>Mis:<br>Tem |           |                    |         |

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Set FIT fraction for Package or other parameters as needed:

#### **Overall system**

|         | Status | Name          | De |
|---------|--------|---------------|----|
|         | Y      | Y             |    |
| 1       | Open   | 🗱 N Device 1  |    |
| 1.1     | Open   | 🕂 💽 Total DIE |    |
| 1.1.1   | 🖃 Open | 🕂 🖸 CPU       |    |
| 1.1.1.1 | Ор     | 🜐 N Block1    |    |
| 1.1.1.2 | Ор     | 🔛 N Block2    |    |
| 1.1.1.3 | Ор     | 🔛 🔣 Block3    |    |
| 1.1.1.4 | Op     | 🔛 🔣 Block4    |    |
| 1.1.2   | 🖃 Open | 🕂 🔣 SRAM      |    |
| 1.1.2.1 | Ор     | 🔛 🔣 Block1    |    |
| 1.1.2.2 | Ор     | 🔛 N Block2    |    |
| 1.2     | Open   | 📑 💽 Package   |    |
| 1.2.1   | Open   | 🕇 🚺 Pin1      |    |
| 1.2.2   | Open   | T Pin2        |    |
| 1.2.3   | Open   | T Pin3        |    |
| 1.2.4   | Open   | T 💽 Pin4      |    |
| 1.2.5   | Open   | 👎 💽 Pin5      |    |
| 1.2.6   | Open   | 👎 💽 Pin6      |    |
| 1.2.7   | Open   | 🕇 💟 Pin7      |    |
| 1.2.8   | Open   | T 🔊 Pin8      |    |

#### Specific Device settings

| T Calculation for SemiconDevice: Device 1         Catalog       SN29500-1         Componen       Specify an optional overstress as in I         Failure Mode Type       Set FIT fraction         Imperature Profile       Set FIT fraction         Interface (\lambda overstress)       0.00         IT package fraction (% 0.100)       20.00         Area based distribution       Chose area based calculate the calculat   | FIT Details 🛛      | Temperature prof     | iles 🔔 Mission profiles | i) 🛛 🔁 🔽 🛛             |
|--|--------------------|----------------------|-------------------------|------------------------|
| Catalog SN29500-1<br>Componen Specify an optional overstress as in I<br>Failure Mode Type<br>Temperature Profile<br>Temperature Profile<br>Temperature Profile<br>Temperature Profile<br>Temperature (\lambda overstress)<br>Trackage fraction (\% 0100)<br>Trackage fraction (\% 0100)<br>DIE<br>Chose area based distribution<br>Chose area based distribution<br>Chose area based calculate the<br>The size will filt<br>Fit will be dist   | TT Calculation fo  | r SemiconDevice: Dev | ice 1                   |                        |
| Componen Specify an optional overstress as in I<br>Failure Mode Type<br>Temperature Profile<br>Interface (\lambda overstress)<br>The package fraction (% 0100)<br>Area based distribution<br>DIE<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Package<br>Die<br>Die<br>Package<br>Die<br>Die<br>Die<br>Die<br>Package<br>Die<br>Die<br>Die<br>Die<br>Die<br>Die<br>Die<br>Di   | Catalog            | SN29500-1            |                         | ۲                      |
| Failure Mode Type       Set FIT fraction         Iterface (λ overstress)       0.00       how the calculate and Package         It package fraction (% 0100)       20.00       and Package         Area based distribution       Chose area base       calculate the calculate the the size will fill         Verstress       0.000       0.000       The size will fill   | Componen S         | pecify an o          | ptional ove             | erstress as in IEC.    |
| Imperature Profile       Set FIT fraction         Interface (\lambda overstress)       0.00       how the calculate and Package         IT package fraction (% 0100)       20.00       and Package         Area based distribution       0.000       0.000         DIE       0.000       0.000         Outerstress       0.000       0.000         Overstress       0.000       0.000         Base / Resulting FIT:       0.000       The size will fit will be distributed in the   | Failure Mode Typ   | e /                  |                         |                        |
| Interface (\lambda overstress)       0.00       III package fraction (% 0100)       20.00       and Package         IT package fraction (% 0100)       20.00       0.000       Chose area b         It package       0.000       0.000       Chose area b         It package       0.000       0.000       Chose area b         Ole       0.000       0.000       Chose area b         Overstress       0.000       0.000       The size will         Base / Resulting FIT:       0.000       Fit will be distribution   | Temperature Pro    | file                 |                         | Set FIT fraction for   |
| Area based distribution<br>Chose area based distribution<br>Chos | Interface (λ overs | tress)               | 0.00                    | now the calculated     |
| Area based distribution  Area based distribution  Area based distribution  Chose area b  Chose area b  Chose area b  Calculate the  Chose area b  Calculate the  The size will  Fit will be dist   | FIT package fract  | ion (% 0100)         | 20.00                   | and Package.           |
| DIE 0.000 0.000 Chose area b<br>Chose area b<br>Chose area b<br>Chose area b<br>Chose area b<br>Calculate the<br>The size will<br>Fit will be disc   | Area based di      | stribution           |                         |                        |
| Package 0.000 0.000<br>Overstress 0.000<br>Base / Resulting FIT: 0.000<br>Fit will be dist   | DIE                |                      | 0.000                   | Chose area base d      |
| Dverstress 0.000<br>Base / Resulting FIT: 0.000<br>Fit will be dist  | Package            | 0.00                 | 0 0.000                 | calculate the DIE s    |
| Base / Resulting FIT: 0.000 I NE SIZE WIII<br>Fit will be dis  | Overstress         |                      | 0.000                   |                        |
| Fit will be dis  | Base / Resulting   | FIT:                 | 0.000                   | The size will take th  |
|  |                    |                      |                         | Fit will be distribute |

Set FIT fraction for Package. This setting specifies now the calculated fit is distributed between DIE and Package.

Chose area base distribution if you want to build calculate the DIE size bottom up from the blocks. The size will take the place of the percentage. Fit will be distributed according to the percentage of the block with respect to the total size.



Set Component Type for Total DIE or separately for each technology used.

#### **Overall system**

|       | Status   | Name               | Description | Factor    |  |
|-------|--|--------------------|-------------|-----------|--|
|       | Y  | Y                  | Y           | $\forall$ |  |
| 1     | Open   | 🗱 💽 Device 1       |             |           |  |
| 1.1   | 🖃 Open   | 🕂 🚺 Total DIE      |             |           |  |
| 1.1.1 | Open     Open | 🕂 N CPU            |             |           |  |
| 1.1.2 | + Open   | 🕂 🔣 SRAM           |             |           |  |
| 1.2   | 🖃 Open   | 📑 <b>N</b> Package |             |           |  |
| 1.2.1 | Open   | 👎 💽 Pin1           |             | 1         |  |
| 1.2.2 | Open   | 📍 💽 Pin2           |             | 1         |  |
| 1.2.3 | Open   | 👎 💽 Pin3           |             | 1         |  |
| 1.2.4 | Open   | 👎 💽 Pin4           |             | 1         |  |
| 1.2.5 | Open   | 📍 💽 Pin5           |             | 1         |  |
| 1.2.6 | Open   | 📍 💽 Pin6           |             | 1         |  |
| 1.2.7 | Open   | 🕇 💟 Pin7           |             | 1         |  |
| 1.2.8 | Open   | 🕇 💟 Pin8           |             | 1         |  |

| · B I A ▼ ⊕ ▼ . # ▼   |                     |   | E   | 0 🦂 |   |  |  |  |
|---|---------------------|---|-----|-----|---|--|--|--|
|   | 🗴 FIT Details 🛛     | 🜡 Temperature profiles 🚊 Mission profiles | 📑 🚭 | - 5 | 3 |  |  |  |
| ✓ ※ ≥ # ≠ /*   = =   # / - #   #  | FIT Calculation for | r SemiconDie: CPU                         |     |     |   |  |  |  |
| Failure Mode      Failure mode Type   | Catalog             | SN29500-1                                 | *   | ×   |   |  |  |  |
|   | Component Typ       | [select a type]                           | *   | ×   |   |  |  |  |
| <ul> <li>[01] ASICs (Bipolar, ECL [gate number 10-1k, transistor number 50-5k])</li> <li>[01] ASICs (Bipolar, ECL [gate number &gt; 1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (Bipolar, TTL [gate number &gt; 1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (Bipolar, TTL [gate number 10-1k, transistor number 5k -50k])</li> <li>[01] ASICs (Bipolar, TTL [gate number &gt; 1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (Bipolar, TTL [gate number &gt; 1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (CMOS, BICMOS - HV &gt; 50V [gate number &gt; 1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (CMOS, BICMOS - HV &gt; 50V [gate number &gt; 1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (CMOS, BICMOS - HV &gt; 50V [gate number &gt; 1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number 10-1k, transistor number 50-5k])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number &gt; 100k - 10k, transistor number 50M - 500M])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number &gt; 100k - 100k, transistor number 50M - 500M])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number &gt; 100k - 100k, transistor number 50K - 500k])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number &gt; 10k - 100k, transistor number 50K - 500k])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number &gt; 10k - 100k, transistor number 50K - 500k])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number &gt; 10k - 100k, transistor number 50K - 500k])</li> <li>[01] ASICs (CMOS, BICMOS - digital analog/mixed [gate number &gt; 1k - 10k, transistor number 5M - 500k])</li> <li>[01] ASICs (NMOS [gate number &gt; 10-1k, transistor number &gt; 1k - 10k, transistor number 5K - 50k])</li> <li>[01] ASICs (NMOS [gate number &gt; 10-1k], transistor number &gt; 1k - 50k])</li> </ul>  |                     |   |     |     |   |  |  |  |
| <ul> <li>[01] ASICs (CMOS,BICMOS - digital analog/mixed [gate number &gt;1k -10k, transistor number 5k -50k])</li> <li>[01] ASICs (NMOS [gate number 10-1k, transistor number 50-5k])</li> <li>[01] ASICs (NMOS [gate number &gt;1k -10k, transistor number 5k -50k])</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [CMOS ; BICMOS Transistoranzahl &gt;3k]; for drift-sensitive circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [CMOS ; BICMOS Transistoranzahl &gt;3k]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [CMOS ; BICMOS Transistoranzahl &gt;3k]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [bipolar Transistoranzahl &gt;30-300]; for drift-sensitive circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [bipolar Transistoranzahl &gt;30-300]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [bipolar Transistoranzahl &gt;30-300]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [bipolar Transistoranzahl &gt;30-300]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [bipolar Transistoranzahl &gt;30-300]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [bipolar Transistoranzahl &gt;30-300]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF Transmitter, Receiver [bipolar Transistoranzahl &gt;30-30]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF modulator, demodulator [CMOS, BICMOS Transistoranzahl &gt;30-300]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF modulator, demodulator [CMOS, BICMOS Transistoranzahl &gt;30-300]; for non-drift circuits)</li> <li>[01] analog integrated circuits (HF modulator, demodulator [CMOS, BICMOS Transistoranzahl &gt;30-300]; for drift-sensitive circuits)</li> <li>[01] analog integrated circuits (HF modulator, demodulator [CMOS, BICMOS Transistoranzahl</li></ul> |                     |   |     |     |   |  |  |  |

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### Set Component Type for Total DIE or separately for each technology used.

| Devic   | e 1, Total D | IE, CPU, RAM       | , Package   |        |              |           |           |         | 80% 7     | Fotal DIE | ▼ Filter: Al | I 🔻 🔛 🔛 🚅 🥖                        | 10 |
|---------|--------------|--------------------|-------------|--------|--------------|-----------|-----------|---------|-----------|-----------|--------------|------------------------------------|----|
|         |              |                    |             |        |              |           | Compone   | nt /    |           |           |              | •                                  |    |
|         | Status       | Name               | Description | Factor | Product Code | Module    | Basis FIT | FIT %   | FIT       | Total FIT | Catalog      | Catalog component type             |    |
|         | Y            | Y                  | Y           | Y      | Y            | Y         | Y         |         | $\forall$ | Y         | Y            | $\bigtriangledown$                 |    |
| 1       | Open         | 🗱 N Device 1       |             |        |              |           | 40.000    |         | 65.000    | 65.000    |              |                                    |    |
| 1.1     | Open         | 🕂 💽 Total DIE      |             |        |              | Device 1  | 32.000    |         | 52.000    | 52.000    |              |                                    |    |
| 1.1.1   | 🖃 Open       | 🕂 N CPU            |             |        |              | Total DIE | 20.000    | 0.000 % | 40.000    | 40.000    | SN29500-1    | analog integrated circuits (HF Tra |    |
| 1.1.1.1 | Op           | 🔛 N Block1         |             | 1      |              | CPU       | 0.000     | 0.000 % | 0.000     | 0.000     | [SN29500-1]  | analog integrated circuits (HF Tra | •  |
| 1.1.1.2 | Op           | 🔛 N Block2         |             | 1      |              | CPU       | 0.000     | 0.000 % | 0.000     | 0.000     | [SN29500-1]  | analog integrated circuits (HF Tra | •  |
| 1.1.1.3 | Op           | 🔛 N Block3         |             | 1      |              | CPU       | 0.000     | 0.000 % | 0.000     | 0.000     | [SN29500-1]  | analog integrated circuits (HF Tra | •  |
| 1.1.1.4 | Op           | 🔛 N Block4         |             | 1      |              | CPU       | 0.000     | 0.000 % | 0.000     | 0.000     | [SN29500-1]  | analog integrated circuits (HF Tra | •  |
| 1.1.2   | 🖃 Open       | 🕂 🖸 RAM            |             |        |              | Total DIE | 12.000    | 0.000 % | 12.000    | 12.000    | SN29500-1    | memories (MOS, CMOS; BISCMOS       |    |
| 1.1.2.1 | Op           | 🔛 N Block1         |             | 1      |              | RAM       | 0.000     | 0.000 % | 0.000     | 0.000     | [SN29500-1]  | memories (MOS,CMOS;BISCMOS         | •  |
| 1.1.2.2 | Op           | 🔛 🔊 Block2         |             | 1      |              | RAM       | 0.000     | 0.000 % | 0.000     | 0.000     | [SN29500-1]  | memories (MOS,CMOS;BISCMOS         | •  |
| 1.2     | Open         | 📑 <b>N</b> Package |             |        |              | Device 1  | 8.000     | _       | 13.000    | 13.000    |              |                                    |    |
| 1.2.1   | Open         | 📍 💽 Pin1           |             | 1      |              | Package   | 1.000     |         | 1.625     | 1.625     |              |                                    | •  |
| 1.2.2   | Open         | T 🛛 Pin2           |             | 1      |              | Package   | 1.000     |         | 200/ 6    | Dackaga   | ac by El     | T fraction                         | •  |
| 1.2.3   | Open         | T N Pin3           |             | 1      |              | Package   | 1.000     |         | 20 /0 F   | ackaye    | as by FI     | пасноп.                            |    |
| 1.2.4   | Open         | T 🖸 Pin4           |             | 1      |              | Package   | 1.000     |         | 1.625     | 1.625     |              |                                    | •  |
| 1.2.5   | Open         | 📍 💽 Pin5           |             | 1      |              | Package   | 1.000     |         | 1.625     | 1.625     |              |                                    |    |
| 1.2.6   | Open         | 📍 💽 Pin6           |             | 1      |              | Package   | 1.000     |         | 1.625     | 1.625     |              |                                    | •  |
| 1.2.7   | Open         | T 🛛 Pin7           |             | 1      |              | Package   | 1.000     |         | 1.625     | 1.625     |              |                                    | •  |
| 1.2.8   | Open         | 📍 💽 Pin8           |             | 1      |              | Package   | 1.000     |         | 1.625     | 1.625     |              |                                    |    |

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#### Set FIT% for all Blocks.

|       |        |               |             |        |              |                    | Componer  | nt        |
|-------|--------|---------------|-------------|--------|--------------|--------------------|-----------|-----------|
|       | Status | Name          | Description | Factor | Product Code | Module             | Basis FIT | FIT %     |
|       | Y      | $\forall$     | Y           | Y      | Y            | $\bigtriangledown$ | $\nabla$  | Y         |
| 1     | Open   | 🗱 N Device 1  |             |        |              |                    | 40.000    |           |
| 1.1   | 🖃 Open | 🕂 🔪 Total DIE |             |        |              | Device 1           | 32.000    |           |
| .1.1  | 🖃 Open | 🕂 🖸 CPU       |             |        |              | Total DIE          | 20.000    | 100.000 % |
| 1.1.1 | Op     | 🔛 N Block1    |             | 1      |              | CPU                | 5.000     | 25.000 %  |
| 1.1.2 | Op     | 🔛 N Block2    |             | 1      |              | CPU                | 5.000     | 25.000 %  |
| 1.1.3 | Op     | 🔛 🖪 Block3    |             | 1      |              | CPU                | 5.000     | 25.000 %  |
| 1.1.4 | Op     | 🔛 🖪 Block4    |             | 1      |              | CPU                | 5.000     | 25.000 %  |
| .1.2  | 🖃 Open | 🕂 🖪 RAM       |             |        |              | Total DIE          | 12.000    | 0.000 %   |
| 1.2.1 | Op     | Block1        |             | 1      |              | RAM                | 0.000     | 0.000 %   |
| 1.2.2 | Op     | Block2        |             | 1      |              | RAM                | 0.000     | 0.000 %   |
| 1.2   | Open   | 🔚 🖪 Package   |             |        |              | Device 1           | 8.000     |           |
| .2.1  | Open   | 📍 💽 Pin1      |             | 1      |              | Package            | 1.000     |           |
| 1.2.2 | Open   | T N Pin2      |             | 1      |              | Package            | 1.000     |           |
| 1.2.3 | Open   | T N Pin3      |             | 1      |              | Package            | 1.000     |           |
| 1.2.4 | Open   | T 🔊 Pin4      |             | 1      |              | Package            | 1.000     |           |
| .2.5  | Open   | T N Pin5      |             | 1      |              | Package            | 1.000     |           |
| .2.6  | Open   | T N Pin6      |             | 1      |              | Package            | 1.000     |           |
| .2.7  | Open   | T N Pin7      |             | 1      |              | Package            | 1.000     |           |
| 1.2.8 | Open   | T N Pin8      |             | 1      |              | Package            | 1.000     |           |

| 🕉 FIT Details 🖾    | 👃 Temperature profiles 🚊 Mission profiles              |   |   |
|--------------------|--|---|---|
|                    |  |   | 6 |
| FIT Calculation fo | r SemiconBlock: Block4                                 |   |   |
| Calculation is loc | ked by partition                                       |   |   |
| Catalog            | [SN29500-1] v  | × |   |
| Component Typ      | [analog integrated circuits (HF Transmitter, Receive 🗸 | 8 |   |
| Failure Mode Typ   | e  |   |   |
| Temperature Prot   | ïle 🗸  | 8 |   |
| FIT % (0100)       | 25.000   |   | _ |
| Base / Resulting   | FIT: 5.000 5.448                                       |   |   |

If sum is 100% color turns black.

#### Alternatively check "Area based distribution"

#### Device 1, Total DIE, CPU, RAM, Package

|         |           |               |             |        |              |           |           |           |        |           | ~~~~~  |
|---------|-----------|---------------|-------------|--------|--------------|-----------|-----------|-----------|--------|-----------|--------|
|         |           |               |             |        |              |           | Compone   | ent       |        |           |        |
|         | Status    | Name          | Description | Factor | Product Code | Module    | Basis FIT | FIT %     | FIT    | Total FIT | FIT Ca |
|         | $\forall$ | Y             | Y           | Y      | Y            | Y         | Y         | Y         | Y      | Y         |        |
| 1       | Open      | 🗱 N Device 1  |             |        |              |           | 40.000    | 100.0 mm  | 42.239 | 42.239    |        |
| 1.1     | 🖃 Open    | 🕂 🖸 Total DIE |             |        |              | Device 1  | 32.000    | 100.0 mm  | 33.791 | 33.791    | Catalo |
| 1.1.1   | 🖃 Open    | 🕂 🖸 CPU       |             |        |              | Total DIE | 20.000    | 100.0 mm  | 21.791 | 21.791    | Comp   |
| 1.1.1.1 | Op        | 🔛 🔊 Block1    |             | 1      |              | CPU       | 5.000     | 25.000 mm | 5.448  | 5.448     | Failur |
| 1.1.1.2 | Op        | 🔛 🔊 Block2    |             | 1      |              | CPU       | 5.000     | 25.000 mm | 5.448  | 5.448     |        |
| 1.1.1.3 | Op        | 🔛 🔊 Block3    |             | 1      |              | CPU       | 5.000     | 25.000 mm | 5.448  | 5.448     | Temp   |
| 1.1.1.4 | Op        | 🔛 🔊 Block4    |             | 1      |              | CPU       | 5.000     | 25.000 mm | 5.448  | 5.448     | Interf |
| 1.1.2   | 🖃 Open    | 🕂 💽 RAM       |             |        |              | Total DIE | 12.000    | 0.0 mm    | 12.000 | 12.000    | inten  |
| 1.1.2.1 | Ор        | 🔛 🔊 Block1    |             | 1      |              | RAM       | 0.000     | 0.000 mm  | 0.000  | 0.000     | FIT pa |
| 1.1.2.2 | Op        | 🔛 🔊 Block2    |             | 1      |              | RAM       | 0.000     | 0.000 mm  | 0.000  | 0.000     | M [An  |
| 1.2     | 🖃 Open    | 🔚 💽 Package   |             |        |              | Device 1  | 8.000     |           | 8.448  | 8.448     | Tota   |
| 1.2.1   | Open      | 📍 💽 Pin1      |             | 1      |              | Package   | 1.000     |           | 1.056  | 1.056     | Раска  |
| 1.2.2   | Open      | T N Pin2      |             | 1      |              | Package   | 1.000     |           | 1.056  | 1.056     | Overs  |
| 1.2.3   | Open      | T N Pin3      |             | 1      |              | Package   | 1.000     |           | 1.056  | 1.056     | Base   |
| 1.2.4   | Open      | T N Pin4      |             | 1      |              | Package   | 1.000     |           | 1.056  | 1.056     |        |
| 1.2.5   | Open      | T 🛐 Pin5      |             | 1      |              | Package   | 1.000     |           | 1.056  | 1.056     |        |
| 1.2.6   | Open      | 📍 💽 Pin6      |             | 1      |              | Package   | 1.000     |           |        |           |        |
| 1.2.7   | Open      | T N Pin7      |             | 1      |              | Package   | 1.000     |           |        | values    | WIII   |
| 1.2.8   | Open      | 👎 💽 Pin8      |             | 1      |              | Package   | 1.000     |           | 1.056  | 1.056     |        |

| 🕉 FIT Details 🔀               | Temperature profiles       | A Mission profiles           |                                  |
|-------------------------------|----------------------------|------------------------------|----------------------------------|
|                               |                            |                              | 📑 🖸                              |
| FIT Calculation for           | SemiconDevice: Device      | 1                            |                                  |
|                               |                            |                              |                                  |
| Catalog                       | SN29500-1                  |                              | × 🔀                              |
| Component Typ                 | [type not applicable for s | election]                    | <ul> <li>×</li> <li>×</li> </ul> |
| Esilure Mode Time             |                            |                              |                                  |
| Failure Mode Type             |                            |                              |                                  |
| Temperature Profile           | e                          | ~                            | 🗶                                |
| Interface (λ overstr          | ess)                       | 0.00                         |                                  |
| FIT package fractio           | n (% 0100)                 | 20.00                        |                                  |
| Area based dist               | ribution                   |                              |                                  |
| Total area of devi            | ce is calculated bottom u  | p from partial area definiti | ons of blocks.                   |
| Percentage is calo<br>Package | culated as block_area/2bl  | ock_area.                    |                                  |
| Overstress                    |                            | 0.000                        |                                  |
| Base / Resulting Fl           | T: 40.000                  | 42.239                       |                                  |
|                               |                            |                              |                                  |

### T values will be interpreted as area / mm<sup>2</sup>.

## **SOX FMEDA** – BOM Import



#### Create new BOM and select BOM import.





#### Select file. SOX template must be used!

## **SOX FMEDA** – BOM Import

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### Excel template:

|    | А         | В              | C D                        | E       | F        | G | н  | 1                      | J                        | к    | LN          | 1 N                 | 0        | Р                      | Q R      | s                       | т          |
|----|-----------|----------------|----------------------------|---------|----------|---|--|------------------------|--------------------------|------|-------------|---------------------|----------|------------------------|----------|-------------------------|------------|
| 1  | Compone   |                | Productode FIT salue Model | 110     | Je<br>Je |   | NE TOCO COMPONENT UP                                 |                        | Description<br>Tempeours | offe | Teneseus II | Aure Valase         | Jriot    | Curentili<br>Curentili | Inet Ope | to opening to the state | ine<br>ate |
| 2  | Block_1_1 | BI1_1          |                            | SubDie1 | 25       |   | ASICs (CMOS,BICMOS - digital analog/mixed [Gatterza  | ahl >100k              | TempProfile 1            | 40   | 5           |                     |          | 1                      | 0 12     | 20                      |            |
| 3  | Block_1_2 | Bl1_2          |                            | SubDie1 | 25       |   | ASICs (CMOS, BICMOS - digital analog/mixed [Gatterza | ahl >100k              | TempProfile 1            | 40   | 5           |                     |          | 1                      | 0 12     | 20                      |            |
| 4  | Block_1_3 | BI1_3          |                            | SubDie1 | 25       |   | ASICs (CMOS,BICMOS - digital analog/mixed [Gatterza  | ahl >100k              | TempProfile 1            | 40   | 5           |                     |          | 1                      | 0 12     | 20                      |            |
| 5  | BIOCK_1_4 | BI1_4<br>BI2_1 |                            | SubDie2 | 25       |   | ASICS (CMOS, BICMOS - digital analog/mixed [Gatterza | ani >100k              | TempProfile 1            | 40   | 5           |                     |          | 1                      | 0 12     | 20                      |            |
| 7  | Block 2 2 | BI2_1          |                            | SubDie2 | 10       |   | ASICs (CMOS, DICMOS - digital analog/mixed [Gatterz  | ahl >100k              | TempProfile 1            | 40   |             |                     |          |                        |          |                         |            |
| 8  | Block 2.3 | BI2_2          |                            | SubDie2 | 10       |   | ASICS (CMOS, BICMOS - digital analog/mixed [Gatterza | ahl >100k              | TempProfile 1            | 40   |             |                     |          |                        |          |                         |            |
| 9  | Block 2 4 | BI2 4          |                            | SubDie2 | 70       |   | ASICs (CMOS, BICMOS - digital analog/mixed [Gatterza | ahl >100k              | TempProfile 1            | 40   |             | G                   |          | ні                     |          | J                       |            |
| 10 | Block_3_1 | BI3_1          |                            | SubDie3 | 5        |   | ASICs (CMOS, BICMOS - digital analog/mixed [Gatterza | ahl >100k              | TempProfile 1            | 40   |             |                     |          |                        |          |                         |            |
| 11 | Block_3_2 | BI3_2          |                            | SubDie3 | 5        |   | ASICs (CMOS, BICMOS - digital analog/mixed [Gatterza | ahl >100k              | TempProfile 1            | 40   |             |                     |          |                        |          |                         |            |
| 12 | Block_3_3 | BI3_3          |                            | SubDie3 | 5        |   | ASICs (CMOS,BICMOS - digital analog/mixed [Gatterza  | ahl >100k              | TempProfile 1            | 40   |             |                     |          |                        |          |                         |            |
| 13 | Block_3_4 | BI3_4          |                            | SubDie3 | 85       |   | ASICs (CMOS, BICMOS - digital analog/mixed [Gatterza | ahl >100k              | TempProfile 1            | 40   |             | - / 14 <sup>8</sup> | *        |                        |          |                         |            |
| 14 | Block_4_1 | BI4_1          |                            | SubDie4 | 25       |   | ASICs (CMOS,BICMOS - digital analog/mixed [Gatterza  | ahl >100k              | TempProfile 1            | 40   |             |                     |          |                        |          | Ser                     |            |
| 15 | Block_4_2 | BI4_2          |                            | SubDie4 | 25       |   | ASICs (CMOS,BICMOS - digital analog/mixed [Gatterza  | ahl >100k              | TempProfile 1            | 40   | /           | (                   |          | /                      | 1.5      |                         |            |
| 16 | Block_4_3 | BI4_3          |                            | SubDie4 | 25       |   | ASICs (CMOS,BICMOS - digital analog/mixed [Gatterza  | ahl >100k              | TempProfile 1            | 40   |             |                     |          |                        |          |                         |            |
| 17 | Block_4_4 | BI4_4          |                            | SubDie4 | 25       |   | ASICs (CMOS,BICMOS - digital analog/mixed [Gatterza  | ahl >100k <sup>-</sup> | TempProfile 1            | 40   | Semi        | onDevice            | <u>,</u> |                        | TempPro  | file 1                  |            |
|    |           |                |                            |         |          |   | ·  |                        |                          |      | Somi        | onDio               | -        |                        | TompPro  | filo 1                  |            |
| Т  | Tab "B    | OM"            |                            |         |          |   |  |                        |                          |      | Carrie      | ondie               |          |                        | TempFie  | 411- 4                  |            |
| •  |           |                |                            |         |          |   |  |                        |                          |      | Semio       | onDie               |          | <u> </u>               | Tempero  | mei                     |            |
|    |           |                |                            |         |          |   |  | ct cc                  | nrect tv                 | no   |             | nDevice             |          |                        | TempPro  | file 1                  |            |
|    |           |                |                            |         |          |   | OCIC   |                        | JIICOL LY                | ρc   | Semico      | nDie                |          |                        | TempPro  | file 1                  |            |
|    |           |                |                            |         |          |   | on ta  | ab "N                  | /lodules                 | "·   | Semico      | nPackage            |          |                        | TempPro  | file 1                  |            |
|    |           |                |                            |         |          |   |  |                        |                          |      | Semio       | onPackag            | ge       |                        | TempPro  | file 1                  |            |

### BOM is import.

| Overa    | ll system       |                      |                 |           |                     |                    |           |           |           |           |             | <ul> <li>Filter: All</li> </ul>  | Y ::: ≥  ¥ ≠ №   |                    |
|----------|-----------------|----------------------|-----------------|-----------|---------------------|--------------------|-----------|-----------|-----------|-----------|-------------|----------------------------------|------------------|--------------------|
| Import 1 | Pattern Type: B | 3-Muster, Project: E | xample Semicond | urctor BO | M, Creator: Ingo Ir | ngenieur, BOM No.: | 42        |           |           |           |             |                                  |                  |                    |
|          |                 |                      |                 |           |                     |                    | Compone   | nt        |           |           |             | •                                | Fa               | ailure Mod         |
|          | Status          | Name                 | Description     | Factor    | Product Code        | Module             | Basis FIT | FIT %     | FIT       | Total FIT | Catalog     | Catalog component type           | Failuremode Type |                    |
|          | $\forall$       | Y                    | Y               | $\nabla$  | Y                   | 7                  | $\nabla$  | $\nabla$  | $\forall$ | $\forall$ | $\forall$   |                                  |                  | $\bigtriangledown$ |
| 1        | Open            | 🗱 N Device           |                 |           |                     |                    | 280.000   |           | 23.339    | 23.339    |             |                                  |                  |                    |
| 1.1      | Open            | 🕂 💽 Total DIE        |                 |           |                     | Device             | 280.000   |           | 23.339    | 23.339    |             |                                  |                  |                    |
| 1.1.1    | 🖃 Open          | 🕂 💽 SubDie1          |                 |           |                     | Total DIE          | 70.000    | 100.000 % | 5.835     | 5.835     | SN29500-1   | ASICs (CMOS, BICMOS - digital an |                  |                    |
| 1.1.1.1  | Ор              | 🔛 🖪 Block_1_1        |                 | 1         | BI1_1               | SubDie1            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | •                |                    |
| 1.1.1.2  | Ор              | 🔛 💽 Block_1_2        |                 | 1         | BI1_2               | SubDie1            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | 0                |                    |
| 1.1.1.3  | Ор              | 🔛 💽 Block_1_3        |                 | 1         | BI1_3               | SubDie1            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | 8                |                    |
| 1.1.1.4  | Ор              | 🔛 🖪 Block_1_4        |                 | 1         | BI1_4               | SubDie1            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | 8                |                    |
| 1.1.2    | Open            | 🕂 🚺 SubDie2          |                 |           |                     | Total DIE          | 70.000    | 100.000 % | 5.835     | 5.835     | SN29500-1   | ASICs (CMOS, BICMOS - digital an |                  |                    |
| 1.1.2.1  | Op              | 🔛 🖪 Block_2_1        |                 | 1         | BI2_1               | SubDie2            | 7.000     | 10.000 %  | 0.583     | 0.583     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | 0                |                    |
| 1.1.2.2  | Op              | Block_2_2            |                 | 1         | BI2_2               | SubDie2            | 7.000     | 10.000 %  | 0.583     | 0.583     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | 0                |                    |
| 1.1.2.3  | Op              | 🔛 🔣 Block_2_3        |                 | 1         | BI2_3               | SubDie2            | 7.000     | 10.000 %  | 0.583     | 0.583     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |                    |
| 1.1.2.4  | Op              | IBlock_2_4           |                 | 1         | BI2_4               | SubDie2            | 49.000    | 70.000 %  | 4.084     | 4.084     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |                    |
| 1.1.3    | 🖃 Open          | 🕂 🚺 SubDie3          |                 |           |                     | Total DIE          | 70.000    | 100.000 % | 5.835     | 5.835     | SN29500-1   | ASICs (CMOS, BICMOS - digital an |                  |                    |
| 1.1.3.1  | Op              | IBlock_3_1           |                 | 1         | BI3_1               | SubDie3            | 3.500     | 5.000 %   | 0.292     | 0.292     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |                    |
| 1.1.3.2  | Op              | Block_3_2            |                 | 1         | BI3_2               | SubDie3            | 3.500     | 5.000 %   | 0.292     | 0.292     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |                    |
| 1.1.3.3  | Op              | IBlock_3_3           |                 | 1         | BI3_3               | SubDie3            | 3.500     | 5.000 %   | 0.292     | 0.292     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |                    |
| 1.1.3.4  | Op              | IBlock_3_4           |                 | 1         | BI3_4               | SubDie3            | 59.500    | 85.000 %  | 4.960     | 4.960     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |                    |
| 1.1.4    | 🖃 Open          | 🕂 💽 SubDie4          |                 |           |                     | Total DIE          | 70.000    | 100.000 % | 5.835     | 5.835     | SN29500-1   | ASICs (CMOS, BICMOS - digital an |                  |                    |
| 1.1.4.1  | Op              | IBlock_4_1           |                 | 1         | BI4_1               | SubDie4            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |                    |
| 1.1.4.2  | Op              | IBlock_4_2           |                 | 1         | BI4_2               | SubDie4            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |                    |
| 1.1.4.3  | Op              | Block_4_3            |                 | 1         | BI4_3               | SubDie4            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |                    |
| 1.1.4.4  | Op              | IBlock_4_4           |                 | 1         | BI4_4               | SubDie4            | 17.500    | 25.000 %  | 1.459     | 1.459     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | <b>(1)</b>       |                    |
| 1.2      | Open            | 📑 💽 Package          |                 |           |                     | Device             | 0.000     |           | 0.000     | 0.000     |             |                                  |                  |                    |
| 1.2.1    | Open            | T 🔊 Pin1             |                 | 1         |                     | Package            | 0.000     |           | 0.000     | 0.000     | SN29500-1   |                                  | •                |                    |
| 1.2.2    | Open            | T N Pin2             |                 | 1         |                     | Package            | 0.000     |           | 0.000     | 0.000     | SN29500-1   |                                  | •                |                    |
| 1.2.3    | Open            | T N Pin3             |                 | 1         |                     | Package            | 0.000     |           | 0.000     | 0.000     | SN29500-1   |                                  | •                |                    |
| 1.2.4    | Open            | T N Pin4             |                 | 1         |                     | Package            | 0.000     |           | 0.000     | 0.000     | SN29500-1   |                                  | •                |                    |
| 1 D E    | 0.000           | Die5                 |                 | 1         |                     | Dackage            | 0.000     |           | 0.000     | 0.000     | CN120500 1  |                                  | m                |                    |

## $\bigcirc$

## **SOX FMEDA** – BOM Import

## $\bigcirc$

#### You may add some parameters not defined in Excel template.

#### **Overall system**

| Import 1   | 1 Pattern Type: E | B-Muster, Project: E | kample Semicondu | urctor BO | M, Creator: Ingo In | genieur, BOM |
|------------|-------------------|----------------------|------------------|-----------|---------------------|--------------|
|            | Status            | Name                 | Description      | Factor    | Product Code        | Module       |
|            | Y                 | V                    | V                | Y         | V                   |              |
| 1          | Open              | 🗱 🚺 Device           |                  |           |                     |              |
| 1.1        | 🖃 Open            | 🕂 🚺 Total DIE        |                  |           |                     | Device       |
| 1.1.1      | 🖃 Open            | 🕂 🚺 SubDie1          |                  |           |                     | Total DIE    |
| 1.1.1.1    | Op                | Block_1_1            |                  |           | BI1_1               | SubDie1      |
| 1.1.1.2    | Op                | Block_1_2            |                  |           | BI1_2               | SubDie1      |
| 1.1.1.3    | Op                | Block_1_3            |                  | 1         | BI1_3               | SubDie1      |
| 1.1.1.4    | Op                | Block_1_4            |                  |           | BI1_4               | SubDie1      |
| 1.1.2      | 🖃 Open            | 🕂 🖸 SubDie2          |                  |           |                     | Total DIE    |
| 1.1.2.1    | Op                | Block_2_1            |                  | 1         | BI2_1               | SubDie2      |
| 1.1.2.2    | Op                | Block_2_2            |                  |           | BI2_2               | SubDie2      |
| 1.1.2.3    | Op                | Block_2_3            |                  |           | BI2_3               | SubDie2      |
| 1.1.2.4    | Op                | Block_2_4            |                  |           | BI2_4               | SubDie2      |
| 1.1.3      | 🖃 Open            | 🕂 🖸 SubDie3          |                  |           |                     | Total DIE    |
| 1.1.3.1    | Op                | Block_3_1            |                  |           | BI3_1               | SubDie3      |
| 1.1.3.2    | Op                | Block_3_2            |                  |           | BI3_2               | SubDie3      |
| 1.1.3.3    | Op                | Block_3_3            |                  |           | BI3_3               | SubDie3      |
| 1.1.3.4    | Op                | Block_3_4            |                  |           | BI3_4               | SubDie3      |
| 1.1.4      | 🖃 Open            | 🕂 🖸 SubDie4          |                  |           |                     | Total DIE    |
| 1.1.4.1    | Op                | Block_4_1            |                  |           | BI4_1               | SubDie4      |
| 1.1.4.2    | Op                | Block_4_2            |                  |           | BI4_2               | SubDie4      |
| 1.1.4.3    | Op                | Block_4_3            |                  |           | BI4_3               | SubDie4      |
| 1.1.4.4    | Op                | Block_4_4            |                  |           | BI4_4               | SubDie4      |
| 1.2        | 🖃 Open            | 📑 <b>N</b> Package   |                  |           |                     | Device       |
| 1.2.1      | Open              | T N Pin1             |                  | 1         |                     | Package      |
| 1.2.2      | Open              | T N Pin2             |                  | 1         |                     | Package      |
| 1.2.3      | Open              | T N Pin3             |                  | 1         |                     | Package      |
| 1.2.4      | Open              | T N Pin4             |                  | 1         |                     | Package      |
| 1 h e<br>K | Open              | IN Die5              |                  | 1         |                     | Dackage      |

|  | 💋 FIT Details 🛛             | Temperature profiles  | 🚊 Mission profiles             | 5]          |
|--|-----------------------------|---|--------------------------------|-------------|
| 🖻 🗉 📳 🖊 🗕 🔢 🚍  |                             |   |                                | 1           |
| ilure Mode   | FIT Calculation fo          | r SemiconDevice: Device   |                                |             |
| Failure Mode   | Catalog                     | SN29500-1   |                                | × ×         |
|  | Component Typ               | [type not applicable for s  | election]                      | × 8         |
|  | Failure Mode Typ            | e   |                                |             |
|  | Temperature Prof            | ïle   |                                | × ×         |
|  |                             |   |                                |             |
|  | Interface (λ overs          | tress)  |                                |             |
| Default Values Available default values for at Select one value an click 'OK'.   | Interface (λ overs          | tress)<br>DiodesAsInterface.  | × 23.339                       | ]           |
| Default Values Available default values for at Select one value an click 'OK'. Name  | Interface ( $\lambda$ overs | DiodesAsInterface.  | ×<br>23.339<br>0.000           | ]           |
| Default Values Available default values for at Select one value an click 'OK'. Name Computer   | Interface ( $\lambda$ overs | DiodesAsInterface.  | ×<br>23.339<br>0.000<br>0.000  | ]<br>]<br>] |
| Default Values Available default values for at Select one value an click 'OK'. Name Computer Telecoms switching  | Interface (A overs          | Value<br>10.0<br>15.0   | ×<br>23.339<br>0.000<br>23.339 | ]<br>]<br>] |
| Default Values Available default values for at Select one value an click 'OK'. Name Computer Telecoms switching Telecoms transmitting access   | Interface (A overs          | Value           10.0           15.0           40.0  | ×<br>23.339<br>0.000<br>23.339 | ]<br>]<br>] |
| Default Values          Available default values for at         Select one value an click 'OK'.         Name         Computer         Telecoms switching         Telecoms subscriber cards   | Interface (A overs          | Value           10.0           15.0           40.0  | ×<br>23.339<br>0.000<br>23.339 | ]<br>]<br>] |
| Default Values  Available default values for at Select one value an click 'OK'.  Name Computer Telecoms switching Telecoms subscriber cards Telecoms subscriber equipmer   | Interface (A overs          | Value           10.0           15.0           40.0           70.0                                 | ×<br>23.339<br>0.000<br>23.339 | ]<br>]<br>] |
| Default Values     Available default values for at Select one value an click 'OK'.     Name     Computer     Telecoms switching     Telecoms transmitting access     Telecoms subscriber cards     Telecoms subscriber equipmer     Railways   | Interface (A overs          | Value           10.0           15.0           40.0           70.0           100.0                 | ×<br>23.339<br>0.000<br>23.339 | ]<br>]<br>] |
| Default Values     Available default values for at Select one value an click 'OK'.     Name     Computer     Telecoms switching     Telecoms transmitting access     Telecoms subscriber cards     Telecoms subscriber cards | Interface (A overs          | Value           10.0           15.0           40.0           70.0           100.0           100.0 | ×<br>23.339<br>0.000<br>23.339 | ]<br>]<br>] |

| FIT Details 🖂        | Temperature profiles     | 🚊 Mission profiles |        |   |
|----------------------|--------------------------|--------------------|--------|---|
|                      |                          |                    |        |   |
| FIT Calculation for  | SemiconDevice: Device    | 2                  |        |   |
| Catalog              | SN29500-1                |                    | ~      | × |
| Component Typ        | [type not applicable for | election]          | $\sim$ | × |
| Failure Mode Type    | 2                        |                    |        |   |
| Temperature Profi    | le                       |                    | ×      | × |
| Interface (λ overst  | ress)                    | 40.00              |        |   |
| FIT package fraction | on (% 0100)              | 20.00              |        |   |
| Area based dist      | tribution                |                    |        |   |
| DIE                  | 224.000                  | 18.671             |        |   |
| Package              | 56.000                   | 4.668              |        |   |
| Overstress           |                          | 40.000             |        |   |
| Base / Resulting F   | IT: 280.000              | 63.339             |        |   |

## **SOX FMEDA** – Define soft error

# $\bigcirc$

#### In document properties you may define additional types of error.

#### SOX Workbench File Edit Papyrus Variants Administration Window Help Properties for 🕼 🔚 🗁 🗸 🏷 | 🚝 🚝 🗇 수 🔌 💌 🍸 🖉 🕶 🚘 🎆 🌆 🙆 Repository 🗄 🗘 🔿 > 🦻 🔹 Main 🗁 RM > 🗁 DESIGN 🗁 HARA 🗁 TARA 🗁 ATA 🗁 FMEA 🗁 FMEDA 🗁 FTA 🗸 🗁 BOM BOM1] Semiconductor [V2] > 💑 [BOM2] BOM 2 [V11 New > 🕞 TEST Open Open with > 🐹 Delete Delete F2 Rename ? import... Export... Document properties

| M Document | BOM 2.sxbom                                     | ↓ ↓ ↓ ↓ |
|------------|---|---------|
|            | Failure Modes Set <pre><not set=""></not></pre> | ~       |
|            | Allow module level failure modes                |         |
|            | Component catalog                               | ~       |
|            | Description                                     |         |
|            | ×   |         |
|            | N   |         |
|            | Name SoftError1                                 |         |
|            | Type SOFT_ERROR V                               |         |
|            |   | +       |
|            | OK Cancel                                       | ~       |
|            | Cancer  | 00      |
|            |   |         |
|            |   |         |
|            |   |         |
|            |   |         |
|            |   |         |
|            |   |         |
|            | Set T_off to zero                               |         |
|            |   |         |

| Overa   | III system      | Muster Deci    |        |                |              |          |    | 1. Constant la se la |       |
|---------|-----------------|----------------|--------|----------------|--------------|----------|----|----------------------|-------|
| Import  | Pattern Type: t | S-Muster, Proj | ect: I | example semico | na           | urctor B |    | vi, Creator: ingo in | igeni |
|         | Status          | Name           |        | Description    |              | Facto    | r  | Product Code         |       |
|         | Y               |                | $\neg$ |                | $\mathbb{Y}$ | ~        | 7  | Y                    |       |
| 1       | Open            | 🗱 🗋 Device     |        |                |              |          |    |                      |       |
| 1.1     | Open            | 🕂 💽 Total D    | IE     |                |              |          |    |                      | Dev   |
| 1.1.1   | Open            | 🕂 🔊 SubDie     | 1      |                |              |          |    |                      | Tota  |
| 1.1.1.1 | Op              | 🜐 N B          | • •    | 1              |              | 4        | 1  | BI1_1                | Sub   |
| 1.1.1.2 | Op              | 🜐 N B          | Nev    | N              |              |          |    | BI1_2                | Sub   |
| 1.1.1.3 | Op              | 🜐 N B          | Edit   | t              | E            | nter     |    | BI1_3                | Sub   |
| 1.1.1.4 | Op              | 🕀 🖪 🖻          | Fit /  | Analysis       |              | >        | S  | SoftError1           | μb    |
| 1.1.2   | Open            | 🕂 🔪 S          | Мо     | dule           |              | >        | 13 | SoftError1           | pta   |
| 1.1.2.1 | Op              | 🖽 🖪 🕒 👘        | Cha    | ange State     |              | >        | ň  | 012_1                | Jub   |
| 1.1.2.2 | Op              | ₩ 🛯 B          | _      |                |              |          | Π  | BI2_2                | Sub   |
| 1.1.2.3 | Op              | # 🛯   🗎        | Cop    | ру             | Ct           | l+C      |    | BI2_3                | Sub   |
| 1.1.2.4 | Op              | 🜐 🖪 B 🖹        | Cop    | py style       |              |          |    | BI2_4                | Sub   |
| 1.1.3   | 🖃 Open          | 🕂 🛛 S 💥        | Del    | ete            | De           | lete     |    |                      | Tota  |
| 1.1.3.1 | Op              | 🜐 🖪 B          | She    | w in           |              | >        |    | BI3_1                | Sub   |
| 1.1.3.2 | Op              | 🜐 N B          | Da     | ///            |              | E2       |    | BI3_2                | Sub   |
| 1.1.3.3 | Op              | () N B         | Ken    | lame           | _            | F2       | ]  | BI3_3                | Sub   |
| 1.1.3.4 | Op              | 🔛 🖪 Block_     | 3_4    |                |              | 1        |    | BI3_4                | Sub   |

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#### Soft error can be applied to Blocks, for example, and FIT value can be edited in table.

| Overa     | ll system                           |                      |                  |            |                     |                   |             |                                  |         |           |             | <ul> <li>Filter: All</li> </ul>  | v 💠 🔛 🔛 🖊        |             |
|-----------|-------------------------------------|----------------------|------------------|------------|---------------------|-------------------|-------------|----------------------------------|---------|-----------|-------------|----------------------------------|------------------|-------------|
| Import '  | Pattern Type:                       | B-Muster, Project: B | Example Semicond | lurctor BC | M, Creator: Ingo Ir | ngenieur, BOM No. | : 42        |                                  |         |           |             |                                  |                  |             |
|           |                                     |                      |                  |            |                     |                   | Compone     | nt                               |         |           |             | •                                | Fa               | ailure Mode |
|           | Status                              | Name                 | Description      | Factor     | Product Code        | Module            | Basis FIT   | FIT %                            | FIT     | Total FIT | Catalog     | Catalog component type           | Failuremode Type |             |
|           | Y                                   | $\nabla$             | V                | 7 V        | · \                 | 7                 | Y           | Y                                | V       | Y         | V           | ∀                                |                  | Y           |
| 1         | Open                                | 🗱 <b>N</b> Device    |                  |            |                     |                   | 280.000     |                                  | 63.339  | 63.339    |             |                                  |                  |             |
| 1.1       | Open                                | 🕂 🖸 Total DIE        |                  |            |                     | Device            | 224.000     |                                  | 18.671  | 18.671    |             |                                  |                  |             |
| 1.1.1     | Open                                | 🕂 💽 SubDie1          |                  |            |                     | Total DIE         | 56.000      | 100.000 %                        | 4.668   | 4.668     | SN29500-1   | ASICs (CMOS,BICMOS - digital an  |                  |             |
| 1.1.1.1   | ⊟ Ор                                | Block_1_1            |                  | 1          | BI1_1               | SubDie1           | 14.000      | 25.000 %                         | 1.167   | 1.167     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | 0                |             |
| 1.1.1.1.1 |                                     |                      |                  |            |                     |                   |             |                                  | 2 4.000 | 4.000     |             |                                  | S SoftError1     |             |
| 1.1.1.2   | Ор                                  | Block_1_2            |                  | 1          | BI1_2               | SubDie1           | 14.000      | 25.000 %                         | 1.167   | 1.167     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.1.3   | Op                                  | Block_1_3            |                  | 1          | BI1_3               | SubDie1           | 14.000      | 25.000 %                         | 1.167   | 1.167     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.1.4   | Op                                  | Block_1_4            |                  | 1          | BI1_4               | SubDie1           | 14.000      | 25.000 %                         | 1.167   | 1.167     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | •                |             |
| 1.1.2     | Open                                | 🕂 💽 SubDie2          |                  |            |                     | Total DIE         | 56.000      | 100.000 %                        | 4.668   | 4.668     | SN29500-1   | ASICs (CMOS, BICMOS - digital an |                  |             |
| 1.1.2.1   | Op                                  | Block_2_1            |                  | 1          | BI2_1               | SubDie2           | 5.600       | 10.000 %                         | 0.467   | 0.467     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.2.2   | Op                                  | Block_2_2            |                  | 1          | BI2_2               | SubDie2           | 5.600       | 10.000 %                         | 0.467   | 0.467     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | 0                |             |
| 1.1.2.3   | Ор                                  | Block_2_3            |                  | 1          | BI2_3               | SubDie2           | 5.600       | 10.000 %                         | 0.467   | 0.467     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.2.4   | Op                                  | Block_2_4            |                  | 1          | BI2_4               | SubDie2           | 39.200      | 70.000 %                         | 3.267   | 3.267     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.3     | Open                                | 🕂 🔊 SubDie3          |                  |            |                     | Total DIE         | 56.000      | 100.000 %                        | 4.668   | 4.668     | SN29500-1   | ASICs (CMOS, BICMOS - digital an |                  |             |
| 1.1.3.1   | Ор                                  | Block_3_1            |                  | 1          | BI3_1               | SubDie3           | 2.800       | 5.000 %                          | 0.233   | 0.233     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | •                |             |
| 1.1.3.2   | Ор                                  | Block_3_2            |                  | 1          | BI3_2               | SubDie3           | 2.800       | 5.000 %                          | 0.233   | 0.233     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | <b>(</b> )       |             |
| 1.1.3.3   | Ор                                  | Block_3_3            |                  | 1          | BI3_3               | SubDie3           | 2.800       | 5.000 %                          | 0.233   | 0.233     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.3.4   | Op                                  | Block_3_4            |                  | 1          | BI3_4               | SubDie3           | 47.600      | 85.000 %                         | 3.968   | 3.968     | [SN29500-1] | ASICs (CMOS,BICMOS - digital an  | <b>(1)</b>       |             |
| 1.1.4     | Open                                | 🕂 🔊 SubDie4          |                  |            |                     | Total DIE         | 56.000      | 100.000 %                        | 4.668   | 4.668     | SN29500-1   | ASICs (CMOS, BICMOS - digital an |                  |             |
| 1.1.4.1   | Ор                                  | Block_4_1            |                  | 1          | BI4_1               | SubDie4           | 14.000      | 25.000 %                         | 1.167   | 1.167     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.4.2   | Op                                  | Block_4_2            |                  | 1          | BI4_2               | SubDie4           | 14.000      | 25.000 %                         | 1.167   | 1.167     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
| 1.1.4.3   | .3 Op ::: Block_4_3 1 Bl4_3 SubDie4 |                      | 14.000           | 25.000 %   | 1.167               | 1.167             | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •       |           |             |                                  |                  |             |
| 1.1.4.4   | Ор                                  | Block_4_4            |                  | 1          | BI4_4               | SubDie4           | 14.000      | 25.000 %                         | 1.167   | 1.167     | [SN29500-1] | ASICs (CMOS, BICMOS - digital an | •                |             |
|           |                                     |                      |                  |            |                     |                   |             |                                  |         |           |             |                                  |                  |             |

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