

Listing 1: SKILL code for ind\_dual

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1  /* Intellectual Properties of RFVLSI LAB, NCTU, TAIWAN.
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3  *DO NOT DISCLOSE*
   Author : Tao-Yi Lee */
5
7  strCellName="ind_dual";
9
11 pcDefinePCell(
12     list(ddGetObj(strLibName),strCellName, "layout"),
13     (
14         (OD "float" 50.0)
15         (W "float" 2.0)
16         (OPENING "float" 5.0)
17         (OP2 "float" 5.0)
18         (LEAD "float" 10.0)
19         (S "float" 2.0)
20         (NT "int" 2)
21         (strName "string" "ind_dual")
22         (PIN_TXT "string" "P1")
23         (NT_N "boolean" nil)
24     )
25 )
26 let((P DUMMYL m_ind_sym m_vias m_lead m_base_em_gr) ,
27     P=W+S /* Line pitch: width + space */
28     DUMMYL = "RFVLSI"
29     dbCreateLabel(pcCellView, list(DUMMYL, "dummy5"), 0:-1, sprintf(nil "%L" W), "centerCenter", "R0"
30         , "roman", 1)
31     dbCreateLabel(pcCellView, list(DUMMYL, "dummy6"), 0:-3, sprintf(nil "%L" S), "centerCenter", "R0"
32         , "roman", 1)
33     dbCreateLabel(pcCellView, list(DUMMYL, "dummy7"), 0:1, sprintf(nil "%L" OD), "centerCenter", "R0"
34         , "roman", 1)
35     dbCreateLabel(pcCellView, list(DUMMYL, "dummy8"), 0:3, sprintf(nil "%L" NT), "centerCenter", "R0"
36         , "roman", 1)
37     dbCreateLabel(pcCellView, list(DUMMYL, "drawing"), 0:5, strName, "centerCenter", "R0", "roman",
38         1)
39     m_ind_sym = dbOpenCellViewByType(pcCellView~>lib "ind_sym" "layout" )
40     m_base_em_gr = dbOpenCellViewByType(pcCellView~>lib "base_em_gr" "layout" )
41     m_vias = dbOpenCellViewByType(pcCellView~>lib "vias" "layout" )
42     m_lead = dbOpenCellViewByType(pcCellView~>lib "base_lead" "layout" )
43
44     dbCreateParamInst(pcCellView m_ind_sym nil (-OD/2-OP2-OPENING):0 "R0" 1 list(
45         list("OD" "float" OD)
46         list("W" "float" W)
47         list("OPENING" "float" 4.0)
48         list("LEAD" "float" OP2)
49         list("S" "float" S)
50         list("NT" "int" NT)
51         list("NT_N" "boolean" NT_N)
52         list("dummy" "boolean" nil)
53     )
54 )
55 dbCreateParamInst(pcCellView m_ind_sym nil (OD/2+OP2+OPENING):0 "MY" 1 list(
56     list("OD" "float" OD)
57     list("W" "float" W)
58     list("OPENING" "float" 4.0)
59     list("LEAD" "float" OP2)
60     list("S" "float" S)
61     list("NT" "int" NT)
62     list("NT_N" "boolean" NT_N)
63     list("dummy" "boolean" nil)
64 ))
65
66 dbCreateRect(pcCellView MetalVec(8) list((-OPENING:4.0) (OPENING:4.0+W)))
67 dbCreateRect(pcCellView list("RFVLSI" "drawing") list((-OPENING-OP2):-4.0-W OPENING+OP2:4.0+W))
68 dbCreateRect(pcCellView list("RFVLSI.LVS" "dummy9") list((-OPENING-OP2):-4.0-W OPENING+OP2:4.0+W))
69
70 dbCreateParamInst(pcCellView m_lead nil W/2:4.0+W "R90" 1
71 list(
72     list("L" "float" (LEAD+OD/2-4.0-W))
73     list("W" "float" W)
74     list("PINTXT" "string" PIN_TXT)
75     list("TOP_ME" "string" "9")
76     list("BTM_ME" "string" "9")
77 ) /* end of parameter list */
78 ) /* end */
79
80 dbCreateParamInst(pcCellView m_base_em_gr nil 0:0 "R0" 1
81 list(
82     list("W" "float" (2*OD+2*LEAD+2*OP2+2*OPENING))
83     list("L" "float" (OD+2*LEAD-4))
84     list("LW" "float" 2.0)
85     list("boundary_ext" "float" 10.0)

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77         list("priority" "int" 2)
78     ))
79     rfvlslsiEMVport(PIN.TXT,-W/2, (OD/2+LEAD), W/2, (OD/2+LEAD),0,8,2);
80 )) /* end of */

```

Listing 2: SKILL code for ind\_duals

```

/* Intellectual Properties of RFVLSI LAB, NCTU, TAIWAN.
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*DO NOT DISCLOSE*
4 Author : Tao-Yi Lee */

6 strCellName="ind_duals";

8 pcDefinePCell(
9     list(ddGetObj(strLibName),strCellName, "layout"),
10     (
11         (OD "float" 50.0)
12         (W "float" 2.0)
13         (OPENING "float" 5.0)
14         (OP2 "float" 5.0)
15         (LEAD "float" 10.0)
16         (S "float" 2.0)
17         (NT "int" 2)
18         (strName "string" "ind_duals")
19         (NT.N "boolean" nil)
20     )
21 let((P DUMMYL m_ind_dual m_vias m_lead_pair m_lead boundary_ext),
22     DUMMYL = "RFVLSI"
23     dbCreateLabel(pcCellView, list(DUMMYL, "drawing"), 0:5, strName, "centerCenter", "R0", "roman",
24         1)

25     m_ind_dual = dbOpenCellViewByType(pcCellView~>lib "ind_dual" "layout" )
26     m_vias = dbOpenCellViewByType(pcCellView~>lib "vias" "layout" )
27     m_lead_pair = dbOpenCellViewByType(pcCellView~>lib "base_lead_pair" "layout" )
28     m_lead = dbOpenCellViewByType(pcCellView~>lib "base_lead" "layout" )

30     dbCreateParamInst(pcCellView m_ind_dual nil 0:0 "R0" 1 list(
31         list("OD" "float" OD)
32         list("W" "float" W)
33         list("S" "float" S)
34         list("OPENING" "float" OPENING)
35         list("LEAD" "float" LEAD)
36         list("NT" "int" NT)
37         list("NT.N" "boolean" NT.N)
38         list("OP2" "float" OP2)
39         list("strName" "string" "ind_duals")
40     )
41     )
42     dbCreateRect(pcCellView MetalVec(8) list(-OPENING:-4.0 OPENING:-4.0-W))
43     dbCreateParamInst(pcCellView m_lead nil W/2:-4.0-W "MYR90" 1
44     list(
45         list("L" "float" (LEAD+OD/2-4.0-W))
46         list("W" "float" W)
47         list("PINTXT" "string" "N1")
48         list("TOP_ME" "string" "9")
49         list("BTM_ME" "string" "9")
50     ) /* end of parameter list */
51 ) /* end */

52     boundary_ext = 30
53     rfvlslsiEMVport("N1",-W/2, (-OD/2-LEAD), W/2, (-OD/2-LEAD),0,8,2);
54 )) /* end of */

```

Listing 3: SKILL code for ind\_dualp

```

1 /* Intellectual Properties of RFVLSI LAB, NCTU, TAIWAN.
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4 Author : Tao-Yi Lee */

5 strCellName="ind_dualp";

7 pcDefinePCell(
9     list(ddGetObj(strLibName),strCellName, "layout"),
10     (
11         (OD "float" 50.0)
12         (W "float" 2.0)
13         (OPENING "float" 5.0)
14         (OP2 "float" 5.0)
15         (LEAD "float" 10.0)

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17     (S "float" 2.0)
    (NT "int" 2)
    (strName "string" "ind_dualp")
19     (NT_N "boolean" nil)
)
21 let ((DUMMYL m_ind_dual m_vias m_lead_pair m_lead boundary_ext),
    DUMMYL = "RFVLSI"
23     dbCreateLabel(pcCellView, list(DUMMYL, "drawing"), 0:5, strName, "centerCenter", "R0", "roman",
        1)

25     m_ind_dual = dbOpenCellViewByType(pcCellView~>lib "ind_dual" "layout" )
    m_vias = dbOpenCellViewByType(pcCellView~>lib "vias" "layout" )
27     m_lead_pair = dbOpenCellViewByType(pcCellView~>lib "base_lead_pair" "layout" )
    m_lead = dbOpenCellViewByType(pcCellView~>lib "base_lead" "layout" )

29     dbCreateParamInst(pcCellView m_ind_dual nil 0:0 "R0" 1 list(
31         list("OD" "float" OD)
        list("W" "float" W)
33         list("OPENING" "float" OPENING)
        list("LEAD" "float" LEAD)
35         list("S" "float" S)
        list("NT" "int" NT)
37         list("NT_N" "boolean" NT_N)
            list("strName" "string" strName)
39             list("PIN_TXT" "string" "CT")
            list("OP2" "float" OP2)
41         )
    )
43     dbCreateParamInst(pcCellView m_lead_pair nil 0:-4.0-W "MYR90" 1
        list(
45         list("LEAD" "float" (LEAD+OD/2-4.0-W))
        list("W" "float" W)
47         list("OPENING" "float" OPENING)
        list("P1TXT" "string" "P1")
49         list("N1TXT" "string" "N1")
        list("TOP_ME" "string" "9")
51         list("BTM_ME" "string" "8")
        ) /* end of parameter list */
53 ) /* end */

55     boundary_ext = 30
    rfvlslEMVport("CT", (-W/2), (OD/2+LEAD), W/2, (OD/2+LEAD), 0, 8, 2);
57     rfvlslEMVport("P1", (-OPENING-W), (-OD/2-LEAD), (-OPENING), (-OD/2-LEAD), 0, 8, 2);
    rfvlslEMVport("N1", OPENING, (-OD/2-LEAD), (OPENING+W), (-OD/2-LEAD), 0, 8, 2);
59 )) /* end of */

```

Listing 4: SKILL code for ind\_dualpp

```

1 /* Intellectual Properties of RFVLSI LAB, NCTU, TAIWAN.
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3 *DO NOT DISCLOSE*
   Author : Tao-Yi Lee */
5
7 strCellName="ind_dualpp";
9
11 pcDefinePCell(
    list(ddGetObj(strLibName), strCellName, "layout"),
13 (
    (OD "float" 50.0)
    (W "float" 2.0)
15     (OPENING "float" 5.0)
    (OP2 "float" 5.0)
    (LEAD "float" 10.0)
17     (S "float" 2.0)
    (NT "int" 2)
    (strName "string" "ind_dualpp")
19     (NT_N "boolean" nil)
    )
21 let((P DUMMYL m_ind_sym m_vias m_lead_pair base_em_gr),
    P=W+S /* Line pitch: width + space */
23     DUMMYL = "RFVLSI"
    dbCreateLabel(pcCellView, list(DUMMYL, "dummy5"), 0:-1, sprintf(nil "%L" W), "centerCenter", "R0"
        , "roman", 1)
25     dbCreateLabel(pcCellView, list(DUMMYL, "dummy6"), 0:-3, sprintf(nil "%L" S), "centerCenter", "R0"
        , "roman", 1)
    dbCreateLabel(pcCellView, list(DUMMYL, "dummy7"), 0:1, sprintf(nil "%L" OD), "centerCenter", "R0"
        , "roman", 1)
27     dbCreateLabel(pcCellView, list(DUMMYL, "dummy8"), 0:3, sprintf(nil "%L" NT), "centerCenter", "R0"
        , "roman", 1)
    dbCreateLabel(pcCellView, list(DUMMYL, "drawing"), 0:5, strName, "centerCenter", "R0", "roman",
        1)
29 )

```

```

31 m_ind_sym = dbOpenCellViewByType(pcCellView~>lib "ind_sym" "layout" )
32 m_base_em_gr = dbOpenCellViewByType(pcCellView~>lib "base_em_gr" "layout" )
33 m_vias = dbOpenCellViewByType(pcCellView~>lib "vias" "layout" )
34 m_lead_pair = dbOpenCellViewByType(pcCellView~>lib "base_lead_pair" "layout" )
35
36 dbCreateParamInst(pcCellView m_ind_sym nil -OD/2-OP2-OPENING:0 "R0" 1 list(
37     list("OD" "float" OD)
38     list("W" "float" W)
39     list("OPENING" "float" 4.0)
40     list("LEAD" "float" OP2)
41     list("S" "float" S)
42     list("NT" "int" NT)
43     list("NT_N" "boolean" NT_N)
44     list("dummy" "boolean" nil)
45 )
46 )
47 dbCreateParamInst(pcCellView m_ind_sym nil OD/2+OP2+OPENING:0 "MY" 1 list(
48     list("OD" "float" OD)
49     list("W" "float" W)
50     list("OPENING" "float" 4.0)
51     list("LEAD" "float" OP2)
52     list("S" "float" S)
53     list("NT" "int" NT)
54     list("NT_N" "boolean" NT_N)
55     list("dummy" "boolean" nil)
56 ))
57
58 dbCreateRect(pcCellView list("RFVLSI" "drawing") list(-OPENING-OP2:-4.0-W OPENING+OP2:4.0+W))
59 dbCreateRect(pcCellView list("RFVLSILLVS" "dummy9") list(-OPENING-OP2:-4.0-W OPENING+OP2:4.0+W))
60 dbCreateParamInst(pcCellView m_lead_pair nil 0:4.0+W "R90" 1
61     list(
62         list("LEAD" "float" (LEAD+OD/2-4.0-W))
63         list("W" "float" W)
64         list("OPENING" "float" OPENING)
65         list("P1TXT" "string" "N1")
66         list("N1TXT" "string" "N2")
67         list("TOP_ME" "string" "9")
68         list("BTLMME" "string" "8")
69     ) /* end of parameter list */
70 ) /* end */
71 dbCreateParamInst(pcCellView m_lead_pair nil 0:-4.0-W "MYR90" 1
72     list(
73         list("LEAD" "float" (LEAD+OD/2-4.0-W))
74         list("W" "float" W)
75         list("OPENING" "float" OPENING)
76         list("P1TXT" "string" "P1")
77         list("N1TXT" "string" "P2")
78         list("TOP_ME" "string" "9")
79         list("BTLMME" "string" "8")
80     ) /* end of parameter list */
81 ) /* end */
82 dbCreateParamInst(pcCellView m_base_em_gr nil 0:0 "R0" 1
83     list(
84         list("W" "float" (2*OD+2*LEAD+2*OP2+2*OPENING))
85         list("L" "float" (OD+2*LEAD-4.0))
86         list("LW" "float" 2.0)
87         list("boundary_ext" "float" 10.0)
88         list("priority" "int" 2)
89     ))
90
91 rfvlslEMVport("N1", (-OPENING-W), (OD/2+LEAD), (-OPENING), (OD/2+LEAD), 0, 8, 2);
92 rfvlslEMVport("N2", OPENING, (OD/2+LEAD), (OPENING+W), (OD/2+LEAD), 0, 8, 2);
93 rfvlslEMVport("P1", (-OPENING-W), (-OD/2-LEAD), (-OPENING), (-OD/2-LEAD), 0, 8, 2);
94 rfvlslEMVport("P2", OPENING, (-OD/2-LEAD), (OPENING+W), (-OD/2-LEAD), 0, 8, 2);
95 )) /* end of */

```