Listing 1: SKILL code for ind_dual

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

strCellName="ind_dual";

pcDefinePCell(
list(ddGetObj(strLibName),strCellName, "layout"),
(
        (OD "float" 50.0)
        (W "float" 2.0)
        (OPENING "float" 5.0)
        (OP2 "float" 5.0)
        (LEAD "float" 10.0)
        (S "float" 2.0)
        (NT "int" 2)
        (strName "string" "ind_dual")
        (PIN_TXT "string" "P1")
        (NT_N "boolean" nil)
)
let((P DUMMYL m_ind_sym m_vias m_lead m_base_em_gr) ,
        P=W+S /* Line pitch: width + space */
        DUMMYL = "RFVLSI"
        dbCreateLabel(pcCellView, list(DUMMYL, "dummy5"), 0:-1, sprintf(nil "%L" W), "centerCenter", "R0"
            , "roman", 1)
        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)
        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)
        m_ind_sym = dbOpenCellViewByType(pcCellView~>lib "ind_sym" "layout" )
        m_base_em_gr = dbOpenCellViewByType(pcCellView~>lib "base_em_gr" "layout" )
        m_vias = dbOpenCellViewByType(pcCellView~>lib "vias" "layout" )
        m_lead = dbOpenCellViewByType(pcCellView~>lib "base_lead" "layout" )

    dbCreateParamInst(pcCellView m_ind_sym nil (-OD/2-OP2-OPENING):0 "R0" 1 list(
                list("OD"      "float" OD)
        list("W"       "float" W)
        list("OPENING"     "float" 4.0)
        list("LEAD"    "float" OP2)
        list("S"       "float" S)
        list("NT"  "int" NT)
        list("NT_N"      "boolean" NT_N)
        list("dummy"       "boolean" nil)
                )
        )
    dbCreateParamInst(pcCellView m_ind_sym nil (OD/2+OP2+OPENING):0 "MY" 1 list(
                list("OD"      "float" OD)
        list("W"       "float" W)
        list("OPENING"     "float" 4.0)
        list("LEAD"    "float" OP2)
        list("S"       "float" S)
        list("NT"  "int" NT)
        list("NT_N"      "boolean" NT_N)
        list("dummy"       "boolean" nil)
        ))

        dbCreateRect(pcCellView MetalVec(8) list((-OPENING:4.0) (OPENING:4.0+W)))
        dbCreateRect(pcCellView list("RFVLSI" "drawing") list((-OPENING-OP2):-4.0-W OPENING+OP2:4.0+W))
        dbCreateRect(pcCellView list("RFVLSI_LVS" "dummy9") list((-OPENING-OP2):-4.0-W OPENING+OP2:4.0+W)
            )
        dbCreateParamInst(pcCellView m_lead nil W/2:4.0+W "R90" 1
        list(
        list("L" "float" (LEAD+OD/2-4.0-W))
        list("W" "float" W)
        list("PINTXT" "string" PIN_TXT)
        list("TOP_ME" "string" "9")
        list("BTM_ME" "string" "9")
        ) /* end of parameter list */
    ) /* end */

        dbCreateParamInst(pcCellView m_base_em_gr nil 0:0 "R0" 1
        list(
                list("W" "float" (2*OD+2*LEAD+2*OP2+2*OPENING))
            list("L" "float" (OD+2*LEAD-4))
            list("LW" "float" 2.0)
        list("boundary_ext" "float" 10.0)
```

```
            list("priority" "int" 2)
77      ))

79      rfvlsiEMVport(PIN_TXT,-W/2, (OD/2+LEAD), W/2, (OD/2+LEAD),0,8,2);
)) /* end of */
```

Listing 2: SKILL code for ind_duals

```
/* Intellectual Properties of RFVLSI LAB, NCTU, TAIWAN.
2 Intended for Internal Use Only, All Rights Reserved, 2012
*DO NOT DISCLOSE*
4 Author : Tao-Yi Lee */

6 strCellName="ind_duals";

8 pcDefinePCell(
list(ddGetObj(strLibName),strCellName, "layout"),
10 (
        (OD "float" 50.0)
12      (W "float" 2.0)
        (OPENING "float" 5.0)
14      (OP2 "float" 5.0)
        (LEAD "float" 10.0)
16      (S "float" 2.0)
        (NT "int" 2)
18      (strName "string" "ind_duals")
        (NT_N "boolean" nil)
20 )
let((P DUMMYL m_ind_dual m_vias m_lead_pair m_lead boundary_ext),
22      DUMMYL = "RFVLSI"
        dbCreateLabel(pcCellView, list(DUMMYL, "drawing"), 0:5, strName, "centerCenter", "R0", "roman",
            1)
24
        m_ind_dual = dbOpenCellViewByType(pcCellView~>lib "ind_dual" "layout" )
26      m_vias = dbOpenCellViewByType(pcCellView~>lib "vias" "layout" )
        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(
            list("OD"     "float" OD)
32      list("W"      "float" W)
        list("S"      "float" S)
34      list("OPENING"    "float" OPENING)
        list("LEAD"   "float" LEAD)
36      list("NT" "int" NT)
        list("NT_N"     "boolean" NT_N)
38      list("OP2"     "float" OP2)
            list("strName" "string" "ind_duals")
40          )
        )
42      dbCreateRect(pcCellView MetalVec(8) list(-OPENING:-4.0 OPENING:-4.0-W))
        dbCreateParamInst(pcCellView m_lead nil W/2:-4.0-W "MYR90" 1
44      list(
        list("L" "float" (LEAD+OD/2-4.0-W))
46      list("W" "float" W)
        list("PINTXT" "string" "N1")
48      list("TOP_ME" "string" "9")
        list("BTM_ME" "string" "9")
50      ) /* end of parameter list */
    ) /* end */
52
        boundary_ext = 30
54      rfvlsiEMVport("N1",-W/2, (-OD/2-LEAD), W/2, (-OD/2-LEAD),0,8,2);
)) /* end of */
```

Listing 3: SKILL code for ind_dualp

```
1 /* Intellectual Properties of RFVLSI LAB, NCTU, TAIWAN.
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3 *DO NOT DISCLOSE*
Author : Tao-Yi Lee */
5
strCellName="ind_dualp";
7
pcDefinePCell(
9 list(ddGetObj(strLibName),strCellName, "layout"),
(
11      (OD "float" 50.0)
        (W "float" 2.0)
13      (OPENING "float" 5.0)
        (OP2 "float" 5.0)
15      (LEAD "float" 10.0)
```

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

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

    dbCreateParamInst(pcCellView m_ind_dual nil 0:0 "R0" 1 list(
                list("OD"      "float" OD)
        list("W"       "float" W)
        list("OPENING"     "float" OPENING)
        list("LEAD"    "float" LEAD)
        list("S"       "float" S)
        list("NT" "int" NT)
        list("NT_N"      "boolean" NT_N)
                list("strName" "string" strName)
                list("PIN_TXT" "string" "CT")
                list("OP2" "float" OP2)
                )
        )
        dbCreateParamInst(pcCellView m_lead_pair nil 0:-4.0-W "MYR90" 1
        list(
        list("LEAD" "float" (LEAD+OD/2-4.0-W))
        list("W" "float" W)
        list("OPENING" "float" OPENING)
        list("P1TXT" "string" "P1")
        list("N1TXT" "string" "N1")
        list("TOP_ME" "string" "9")
        list("BTM_ME" "string" "8")
        ) /* end of parameter list */
    ) /* end */

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

Listing 4: SKILL code for ind_dualpp

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

strCellName="ind_dualpp";

pcDefinePCell(
list(ddGetObj(strLibName),strCellName, "layout"),
(
        (OD "float" 50.0)
        (W "float" 2.0)
        (OPENING "float" 5.0)
        (OP2 "float" 5.0)
        (LEAD "float" 10.0)
        (S "float" 2.0)
        (NT "int" 2)
        (strName "string" "ind_dualpp")
        (NT_N "boolean" nil)
)
let((P DUMMYL m_ind_sym m_vias m_lead_pair base_em_gr),
        P=W+S /* Line pitch: width + space */
        DUMMYL = "RFVLSI"
        dbCreateLabel(pcCellView, list(DUMMYL, "dummy5"), 0:-1, sprintf(nil "%L" W), "centerCenter", "R0"
            , "roman", 1)
        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)
        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)

```

```
        m_ind_sym = dbOpenCellViewByType(pcCellView~>lib "ind_sym" "layout" )
        m_base_em_gr = dbOpenCellViewByType(pcCellView~>lib "base_em_gr" "layout" )
        m_vias = dbOpenCellViewByType(pcCellView~>lib "vias" "layout" )
        m_lead_pair = dbOpenCellViewByType(pcCellView~>lib "base_lead_pair" "layout" )


    dbCreateParamInst(pcCellView m_ind_sym nil -OD/2-OP2-OPENING:0 "R0" 1 list(
                list("OD"      "float" OD)
        list("W"       "float" W)
        list("OPENING"     "float" 4.0)
        list("LEAD"    "float" OP2)
        list("S"       "float" S)
        list("NT" "int" NT)
        list("NT_N"      "boolean" NT_N)
        list("dummy"      "boolean" nil)
                )
        )
    dbCreateParamInst(pcCellView m_ind_sym nil OD/2+OP2+OPENING:0 "MY" 1 list(
                list("OD"      "float" OD)
        list("W"       "float" W)
        list("OPENING"     "float" 4.0)
        list("LEAD"    "float" OP2)
        list("S"       "float" S)
        list("NT" "int" NT)
        list("NT_N"      "boolean" NT_N)
        list("dummy"      "boolean" nil)
        ))

        dbCreateRect(pcCellView list("RFVLSI" "drawing") list(-OPENING-OP2:-4.0-W OPENING+OP2:4.0+W))
        dbCreateRect(pcCellView list("RFVLSI_LVS" "dummy9") list(-OPENING-OP2:-4.0-W OPENING+OP2:4.0+W))
        dbCreateParamInst(pcCellView m_lead_pair nil 0:4.0+W "R90" 1
        list(
        list("LEAD" "float" (LEAD+OD/2-4.0-W))
        list("W" "float" W)
        list("OPENING" "float" OPENING)
        list("P1TXT" "string" "N1")
        list("N1TXT" "string" "N2")
        list("TOP_ME" "string" "9")
        list("BTM_ME" "string" "8")
        ) /* end of parameter list */
    ) /* end */
        dbCreateParamInst(pcCellView m_lead_pair nil 0:-4.0-W "MYR90" 1
        list(
        list("LEAD" "float" (LEAD+OD/2-4.0-W))
        list("W" "float" W)
        list("OPENING" "float" OPENING)
        list("P1TXT" "string" "P1")
        list("N1TXT" "string" "P2")
        list("TOP_ME" "string" "9")
        list("BTM_ME" "string" "8")
        ) /* end of parameter list */
    ) /* end */
  dbCreateParamInst(pcCellView m_base_em_gr nil 0:0 "R0" 1
    list(
        list("W" "float" (2*OD+2*LEAD+2*OP2+2*OPENING))
        list("L" "float" (OD+2*LEAD-4.0))
        list("LW" "float" 2.0)
        list("boundary_ext" "float" 10.0)
        list("priority" "int" 2)
    ))

        rfvlsiEMVport("N1", (-OPENING-W), (OD/2+LEAD), (-OPENING), (OD/2+LEAD),0,8,2);
        rfvlsiEMVport("N2", OPENING, (OD/2+LEAD), (OPENING+W), (OD/2+LEAD),0,8,2);
        rfvlsiEMVport("P1", (-OPENING-W), (-OD/2-LEAD), (-OPENING), (-OD/2-LEAD),0,8,2);
        rfvlsiEMVport("P2", OPENING, (-OD/2-LEAD), (OPENING+W), (-OD/2-LEAD),0,8,2);
)) /* end of */
```