ASPEC 0.5um ~ 0.35um process application list

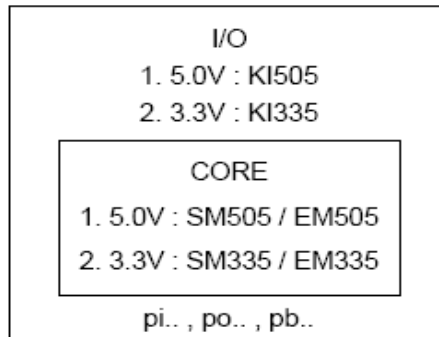| Process	Core voltage	I/O voltage
0.5um G/A (HDA9000)	5V (sm505, em505)	5V (ki505)
		3.3V (ki535)
		5V/3.3V (ki505, ki535)
	3.3V (sm335, em335)	5V (ki355)
		3.3V (ki335)
		5V/3.3V (ki355, ki335)
	S53 (sm505, em505 / sm335, em335)	S53~ (ki505, ki335)
		S53~ 5V/3.3V (ki505, ki335, ki535, ki355)
0.35um G/A (HDA10000)	3.3V (sm333, em333)	3.3V (MI333)
		3.3V with 5V-Tolerant (TI333)
		3.3V / 3.3V with 5V-Tolerant

Notes :

1. The sign "S53" means selectable 5V or 3.3V, according to application .
2. The sign "S53~" means selectable 5V or 3.3V, according to core voltage application.
3. Metal memory compiler include Async single-port RAM and Async dual-port RAM.
4. Embedded Options include embedded ARRAY, embedded memory, embedded custom blocks, embedded IP, embedded special I/O…etc.

ASPEC 0.5um ~ 0.35um library application note

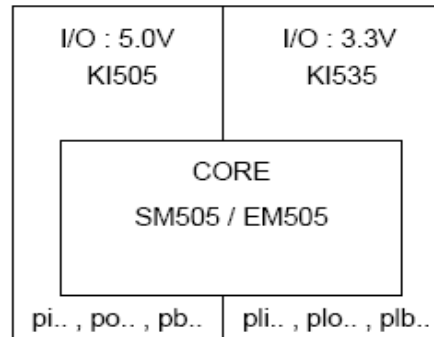- ## 0.5um / 5.0V Process : (dm5/dm5p1 or tm5/tm5p1)

1. Pure 5.0V Core & I/O (tsmc50)
2. Pure 3.3V Core & I/O (tsmc33)

I/O
1. 5.0V : KI505
2. 3.3V : KI335

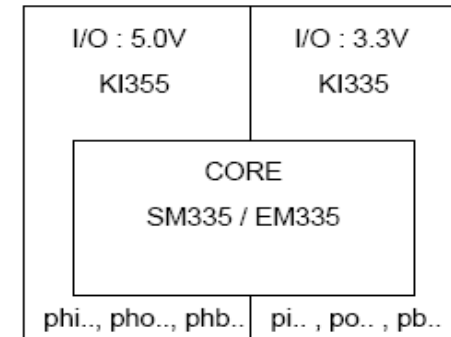| CORE |
|---|
| 1. 5.0V : SM505 / EM505 |
| 2. 3.3V : SM335 / EM335 |

pi.. , po.. , pb..

ps. a) Pure 5.0V Core & 3.3V I/O (tsmc53)
    b) Pure 3.3V Core & 5.0V I/O (tsmc35)

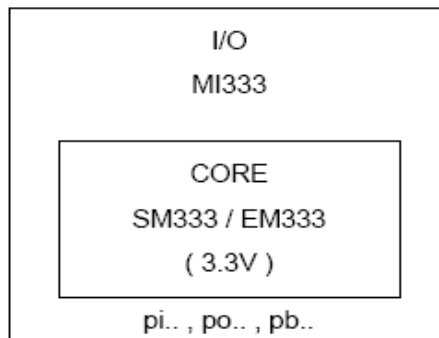**3. Core:5.0V & I/O Mixed Power**
(tsmc50) (with Power Cut)

I/O : 5.0V KI505	I/O : 3.3V KI535
CORE SM505 / EM505	
pi.. , po.. , pb..	pli.. , plo.. , plb..

4. Core.3.3V & I/O Mixed Power
(tsmc33) (with Power Cut)

I/O : 5.0V KI355	I/O : 3.3V KI335
CORE SM335 / EM335	
phi.., pho.., phb..	pi.. , po.. , pb..

- ## 0.35um / 3.3V Process : (tm3/tm3p3 or qm3/qm3p3)

1. Pure 3.3V Core & I/O (tsmc33)

I/O
MI333

CORE
SM333 / EM333
(3.3V)

pi.. , po.. , pb..

2. Core:3.3V & I/O 5V-Tolerant
(need 5V PowerPad)

I/O : 5V-Tolerant
TI333

CORE
SM333 / EM333
(3.3V)

pti.. , pto.. , ptb..
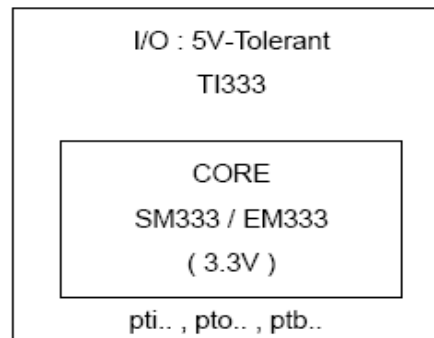
2. Core:3.3V & IO 3.3V&5V-Tolerant
(need 5V PowerPad)

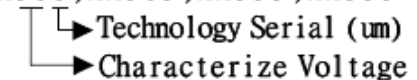| I/O : 3.3V MI333	I/O : 5VT TI333
CORE SM333 / EM333 (3.3V)	
pi.., po.., pb..	pti..,pto..,ptb..
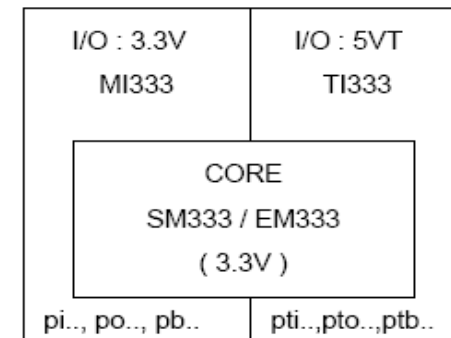
Ps. 5V-Tolerant: Input can accept 3.3V&5.0V , Output only 3.3V

ASPEC library list

		Viewlogic	Synopsys (.db / .sdb)	Synopsys (.lib)	Verilog (.v)	Verilog (.prim)	Vital
1	dm5	em505 / sm505	em / sm335 ; em / sm505	em / sm335 ; em / sm505	em / sm335 ; em / sm505	aspec	em505 / sm505
2	dm5p1	ki505	ki335 / 355 ; ki505 / 535	ki335 / 355 ; ki505 / 535	ki335 / 355 ; ki505 / 535	aspec	ki505
3	tm5	em505 / sm505	em / sm335 ; em / sm505	em / sm335 ; em / sm505	em / sm335 ; em / sm505	aspec	em505 / sm505
4	tm5p1	ki505	ki335 / 355 ; ki505 / 535	ki335 / 355 ; ki505 / 535	ki335 / 355 ; ki505 / 535	aspec	ki505
5	tm3	x	em333 / sm333	em333 / sm333	em333 / sm333	aspec	x
6	tm3p3	x	mi333 / ti333	mi333 / ti333	mi333 / ti333	aspec	x
7	qm3	x	em333 / sm333	em333 / sm333	em333 / sm333	aspec	x
8	qm3p3	x	mi333 / ti333	mi333 / ti333	mi333 / ti333	aspec	x

```
dm5/tm5       : TSMC 1P2M/3M 0.5um  5.0V process  / 5.0V or 3.3V products MacroCell
dm5p1/tm5p1   : TSMC 1P2M/3M 0.5um  5.0V process  / 5.0V or 3.3V products I/O  Cell
tm3/qm3       : TSMC 1P3M/4M 0.35um 3.3V process  /     3.3V     products MacroCell
tm3p3/qm3p3   : TSMC 1P3M/4M 0.35um 3.3V process  /  3.3V or 5v-tolerant products I/O Cell
```

```
MacroCell naming:
Xx506,xx505,xx335,xx333
        └──►Technology Serial (um)
        └──►Characterize Voltage
```

```
<ps> 1. MacroCell  -> sm : standard cell ; em : extend cell
        I / O Cell -> mi & ki : normal i/o cell ;  ti : tolerant i/o cell
     2. 0.5um Pad & Power select :
        a. ki505 -> Pure 5.0v on I/O and Core , Pad: "pi…","po…","pb…" , PG: "vddi…"
        b. ki535 -> 5.0v Core and 3.3v I/O interface , Pad: "pLi…","pLo…","pLb…" , PG: "vddiL…"
        c. ki335 -> Pure 3.3v on I/O and Core , Pad: "pi…","po…","pb…" , PG: "vddi…"
        d. ki355 -> 3.3v Core and 5.0v I/O interface , Pad: "pHi…","pHo…","pHb…" , PG: "vddiH…"
```