

# LOW CAPACITANCE AND LOW LEAKAGE HIGH VOLTAGE ESD IN TSMC 180NM BCD PROCESSES

## TSMC PROCESSES



### High Voltage ESD Devices Optimized for Low capacitance and Low Leakage

#### FEATURES

##### Class I ESD Devices

*Class I ESD Devices in TSMC 180nm BCD use standard devices, require no special implants, will LVS and pass DRC.*

Low Cap: < 250fF including Bondpad  
Voltage Ranges: 6V, 8V, 12V, 16V, 20V, 24V, 29V and 30V  
Leakage: < 3nA Max (<1nA Typ)  
ESD compliance  
3kV HBM  
>500V CDM  
>200V MM

##### Class II ESD Devices

*Class II ESD Devices in TSMC 180nm BCD use non-standard devices, though they require no special implants, they do require DRC/LVS Waivers.*

Low Cap: < 90fF including Bondpad  
Voltage Ranges: 20V, 24V, 29V and 36V  
Leakage: < 100pA Max (<50pA Typ)  
ESD compliance  
2kV-8kV HBM options  
>500V CDM  
>200V MM

#### SUMMARY

Certus Semiconductor has acquired a special expertise in creating very unique High Voltage ESD structures in TSMC's 180nm BCD Gen 2 processes. Working with a customer's product application, we have extensive experience in crafting for them high voltage ESD protection solutions, suited to their needs. These devices are all silicon proven, and select variants of them are currently in full production.

#### MODELS and SUPPORT FILES

GDS Layouts  
Schematics models for functional simulation

*It should be noted that Class II ESD structures will not DRC/LVS properly and as such require careful usage.*

#### FRONT-END DEVICES

We only work with standard base and deep-nwell layers, no additional special mask or implants (ESD for example) required.

#### VARIANTS

If current designs to meet an exact customer needs, variants and tuning are standard design options

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