

5V ESD CLAMPS

IN GLOBALFOUNDRIES 180nm LPe TECHNOLOGY

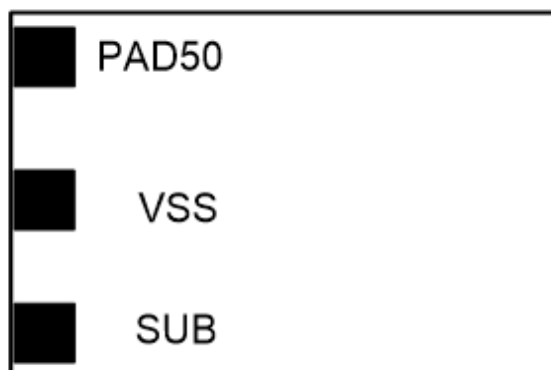


GlobalFoundries 180nm Specialized 5V ESD Clamps

SUMMARY

This sheet details a stand-alone 5V, ESD clamp in GlobalFoundries 180nm that can be used for either signal protection or 1.8V Power supplies. The clamp is a compact single cell, 44um x 32um in size. It is built from substrate to metal 6. The clamp is very dense in metal, and Diffusion, a wide area around the clamp (3um to 10um) should have minimum metals between layers 1 and 3, as well as little diffusion, to pass directly at chip top.

BLOCK DIAGRAM



CELL NAMES AND VARIATIONS

Cell names	Description
<i>Esd50_ggnmos</i>	Standard 5V clamp

ELECTRICAL SPECIFICATIONS

Parameter	Description	Min	Typ	Max	Unit
V_{max}	Maximum Voltage at PAD 50	-0.5	5	5.6	Volts
I_{leak}	Leakage Current		1.5	15	nA
C_{max}	Load Capacitance			0.5*	pF

*:Estimated capacitance-based SPECTRE

PIN OUT AND FUNCTION

Parameter	Description	Functional Description
PAD50	Signal/Power	Connects to the protection structure
VSS	Ground	GROUND Reference for ESD
SUB	SOI-Substrate	SOI-SUBSTRATE. Connect to CDL Only

METALLIZATION

Pin	Description	Functional Description
PAD50	Metal 4	Primary ESD current path. Robust connection, in wide thick metals and lots of vias, compliant with ESD
VSS	Metal 4	Primary ESD current path. Robust connection, in wide thick metals and lots of vias, compliant with ESD
SUB	NONE – schematic only	There is no layout connection for SUB. This is the SUB connection inherent to whatever layout top level the clamp is placed into. The CDL netlist however has a pin for it, and must connect to the SUB net of the top-level block the layout is placed in. GROUND Reference for ESD

Certus also supports IO libraries in the following GlobalFoundries node: 65nm, 55nm, 28nm, 12nm. Additional Certus libraries are available across technologies supported by TSMC & Samsung. Certus is particularly suited at providing custom variants in a cost-efficient framework. Feel free to inquire for supplementary physical or electrical features to suit your needs.